Savannah River
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September 29, 2022

SRNS-J2000-2022-00681
Track Number: 10666

Ms. Susie O'Connor
University of South Carolina – Aiken
Gregg - Graniteville Library
471 University Parkway
Aiken, SC 29801

2013 RCRA PERMIT RENEWAL APPLICATION: M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (M-AREA AND MET LAB HWMFS) POST CLOSURE (SRNS-IM-2012-00002, VOLUME III, REVISION 3, SEPTEMBER 2022) (CLEAN AND REDLINE PAGES)

Please make the above documents available to the general public for Ten (10) years or until notified to remove on October 3, 2022.

Please acknowledge receipt of the document by email to Dexter.McDaniel@srs.gov. If you have any questions, please call me at (803) 952-7401 or e-mail me at above address.

Sincerely,

Dexter McDaniel
EC & ACP Records/Unclassified Records
730-4B, Room 135A

Cc: Mr. Bill Sudduth
Ms. Melissa Johnson
Ms. LaTasha P. Denard

ADMINISTRATIVE RECORD FILE

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2013 RCRA PERMIT RENEWAL APPLICATION: M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (M-AREA AND MET LAB HWMFS) POST CLOSURE (SRNS-IM-2012-00002, VOLUME III, REVISION 3, SEPTEMBER 2022) (CLEAN AND REDLINE PAGES)

Please make the above document available to the general public for comment for Ten (10) years or until notified to remove starting on October 3, 2022.

If you have any questions, please contact:

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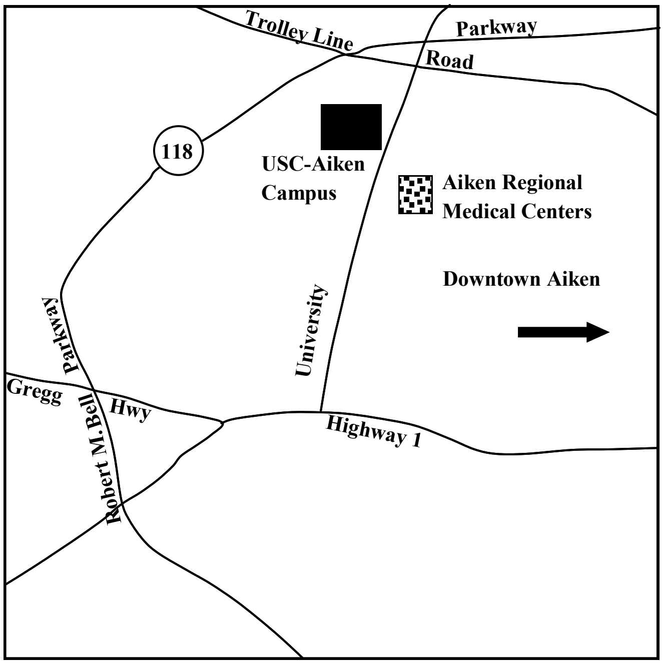

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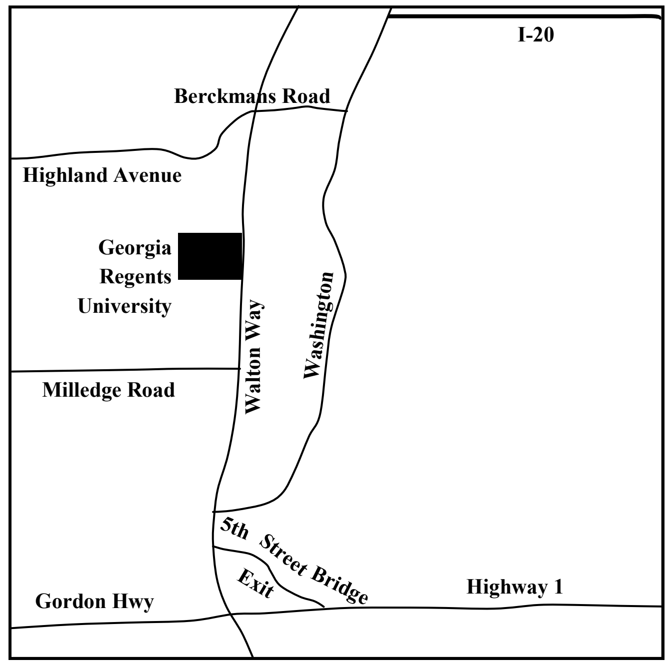

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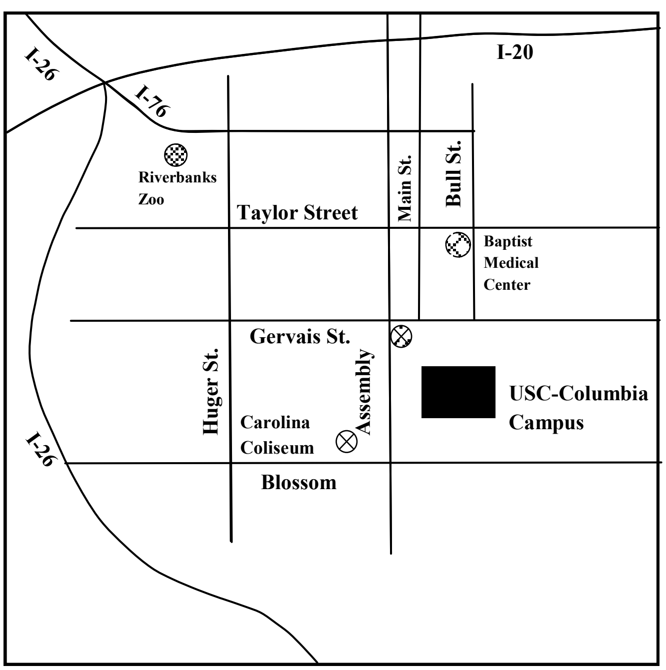

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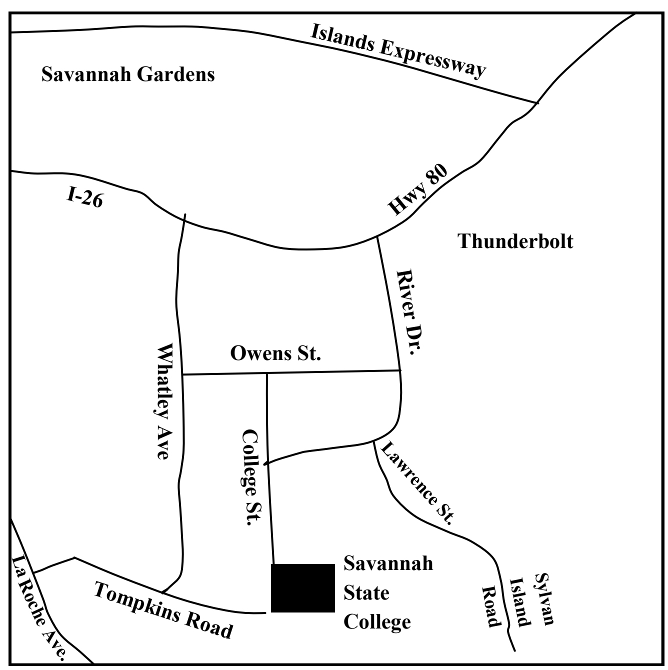

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Catalog Num	Date	Doc Number	Track #	Title	Author	Addressee
023733	05/18/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY {BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
023643	02/02/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
023500	11/09/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION	C. CARTER	
023226	05/11/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST; MANUAL C3; REVISION 3	C. CARTER	
023117	02/25/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
023016	11/10/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
022871	08/17/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
022199	05/15/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	SRNS	
021981	02/25/20	SRNS-J2000-2019	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2018 THROUGH DECEMBER 31, 2018 (SRNS-RP-2019-00102,	SRNS	FEELY,K.
021681	06/07/20	SRNS-J2000-2018	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. McFalls	S. Fulmer J.Richards
021235	08/17/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING THE SAVANNAH RIVER SITE - SC1 890 008 989 FINAL PERMIT DECISIONS FOR M-AREA AND METALLURGICAL LAB MAML HAZARDOUS WASTE MANAGEMENT FACILITIES. F-AREA HAZARDOUS WASTE MANAGEMENT FACILITY HWMF,	DAVID SCATURO	AMY J MEYER
021224	07/28/20	SRNS-J2000-2017	10693	SUBMITTAL OF THE SAVANNAH RIVER SITES COMMENTS ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT DATED JUNE 2017 SRNS-J2000-2017-00396 DATED JULY 28 2017	AMY MEYER	KEEHNA FRASIER
021193	06/19/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING CONDITIONAL COMPLETENESS DETERMINATION AND PUBLIC NOTICE OF A DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT LETTER ORIGINALLY DATED JUNE 14 2017 CORRECTION FOR THE 2000 RCRA PART B PERMIT	KEEHNA FRASIER	AMY J MEYER
019913	01/08/20	019913	10693	THE ENVIRONMENTAL BULLETIN ACTION MEMORANDUM ISSUED FOR THE REMOVAL SITE EVALUATION REPORT/ENGINEERING EVALUATIN/COST ANALYSIS RSER/EE/CA FOR THE REMOVAL ACTION FOR THE 489 D COAL PILE RUNOFF BASIN D 006 OUTFALL AND	SRNS	
016625	01/08/20	016625	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND RECOVER ACT	SRNS	

Catalog Num	Date	Doc Number	Track #	Title	Author	Addressee
016607	01/13/20	016607	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE	SRNS	
016590	01/08/20	016590	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND	SRNS	
015030	12/31/20	015030	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015028	12/13/20	015028	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015026	12/13/20	015026	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION	WSRC	
014461	04/18/20	014461	10693	DOE SUBMITTAL OF THE ANNUAL 2006 M-AREA NA D METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4001, MARCH	A.B. GOULD	
014397	03/05/20	014397	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - AFFIDAVIT OF PUBLICATION ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE	WSRC	
014396	03/05/20	014396	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE, UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES,	WSRC	
013753	08/02/20	013753	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, (WSRC-RP-2002-4160, 9/2002), AUGUST 2, 2006	WSRC	
013741	07/28/20	013741	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, DATED JULY 28, 2006	WSRC	
009134	10/10/20	OE-01-002	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE 1Q/2Q 2002 SEMI-ANNUAL M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE-ACTION	A. B. GOULD	SRS NATURAL RESOURCE TRUSTEES
009991	08/13/20	009991	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - PUBLIC NOTICE ON THE M-AREA, H-AREA, AND A-AREA MISC. RUBBLE PILE OPERABLE UNIT - AUGUST 6, 2003	WSRC	
009444	01/31/20	009444	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - JANUARY 31, 2003	WSRC	
009443	01/07/20	009443	10693	ENVIRONMENTAL BULLETIN FROM THE SAVANNAH RIVER SITE - VOLUME 14, NUMBER 3, DATED FEBRUARY 7, 2003.	WSRC	
009445	02/05/20	009445	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - FEBRUARY 5, 2003	WSRC	

Catalog Num	Date	Doc Number	Track #	Title	Author	Addressee
000532	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 8	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 8 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
011396	08/09/20	011396	10693	NEWSPAPER ADVERTISEMENT - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION PUBLIC MEETING NOTICE - (AIKEN STANDARD) - AUGUST 9, 2004	WSRC	
000627	06/05/92 12:00:00 AM	000627	10693	USEPA COMMENTS ON THE DRAFT FINAL RECORD OF DECISIONS FOR M-AREA GROUND WATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY, M-AREA	J. L. CRANE	J. W. COOK
000631	08/31/92 12:00:00 AM	000631	10693	SCDHEC CONCURRENCE ON THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT ROD	R. L. SHAW	L. C. SJOSTROM/G. C. TIDWELL
000485	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 4	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 4 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
011472	08/11/20	011472	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATIONS PUBLIC METTING NOTICE AUGUST 11, 2004	WSRC	
000484	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 5	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 5 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000597	06/25/92 12:00:00 AM	WSRC-RP-92-743	10693	INTERIM ACTION RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	DOE-SR	
000482	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 2	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 2 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000934	05/06/93 12:00:00 AM	000934	10693	SCDHEC APPROVAL ON THE REQUEST FOR THE INSTALLATION OF FIVE (5) RECOVERY WELLS IN THE M-AREA HWMF NORTHERN SECTOR OF THE SRS	R. B. EDE	J. W. COOK
000486	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 7	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 7 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000483	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 3	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 3 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000354	08/19/91 12:00:00 AM	WSRC-RP-91-821, REV. 0	10693	INTERIM ACTION PROPOSED PLAN M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY CLOSURE AND A/M AREA GROUNDWATER CORRECTIVE ACTION PROGRAM, (WSRC-RP-91-821, REV.0) DATED AUGUST 1991	WSRC	
023847	08/05/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
023296	08/11/20	Q-SDD-M-00003	10693	INTERFERENCE REPORT FOR ABANDONMENT OF RWM-1 (905-1M) NEAR BLDG. 782-2M	B. ZAWACKI	

Catalog Num	Date	Doc Number	Track #	Title	Author	Addressee
023295	08/11/20	Q-SDD-M-00001	10693	INTERFERENCE REPORT FOR INSTALLATION OF RWM-1R NEAR BLDG. 782-2M	B. ZAWACKI	
022613	02/26/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	SRNS	
022425	11/07/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST, ER-IDS-019-022	SRNS	
022329	08/14/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST, ER-IDS-019-022	SRNS	
021949	02/19/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	SRNS	
022726	05/19/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST; ER-IDS-019-022	C. CARTER	
021976	02/01/20	SRNS-J2000-2018	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2017 DECEMBER 31 2017 SRNS-RP-2018-00100 JANUARY 2018	SRNS	KEELY.K.
021972	03/31/20	SRNS-J2000-2014	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2013 THROUGH DECEMBER 31, 2013 (SRNS-RP-2014-00233,	SRNS	FEELY,K.
021975	02/28/20	SRNS-J2000-2017	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL PCB REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2016 THROUGH DECEMBER 31 2016 SRNS-RP-2017-00078 FEBRUARY	SRNS	FEELY,K.
021973	03/19/20	SRNS-J2000-2015	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2014 THROUGH DECEMBER 31, 2014 (SRNS-RP-2015-00109,	SRNS	FEELY,K.
021974	02/10/20	SRNS-J2000-2016	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL PCB REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2015 THROUGH DECEMBER 31 2015 SRNS-RP-2016-00048 FEBRUARY	SRNS	FEELY,K.
021679	06/07/20	021679	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES) - RADIOLOGICAL CONTAMINATION RESPONSE AND PATH	S. McFalls	B.HENNESSEY,J.I
021678	06/07/20	021678	10693	EPA APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	J. Richards	B.HENNESSEY,S.
021680	06/07/20	021680	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. FULMER	S.MCFALLS,J.RIC
018507	09/20/20	018507	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY AND SAVANNAH RIVER OPERATIONS OFFICE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES	SRNS	

Catalog Num	Date	Doc Number	Track #	Title	Author	Addressee
017403	01/25/20	EQMD-11-012	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2010 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	SHERRY SOUTHERN	SRS NATURAL RES. TURST.
016940	04/27/20	EQMD-10-017	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE ANNUAL 2009 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES	SHERRY L. SOUTHERN	SRS NATURAL RESOURCE TRUSTEES
014851	10/01/20	EQMD-07-037	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2007, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II,	A.B. GOULD	SRS NR TRUSTEES
013132	02/21/20	OESH-06-0069-74	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE SEMI-ANNUAL 2005 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF'S) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT	A.B. GOULD	SRS NATURAL RESOURCE TRUSTEES
002148	07/01/76 12:00:00 AM	002148	10693	HYDROGEOLOGIC CONDITIONS IN THE VICINITY OF THE M-AREA SETTLING BASIN AND LOST LAKE	E.I. DU PONT	
000799	06/01/88 12:00:00 AM	000799	10693	APPLICATION FOR A POST-CLOSURE PERMIT M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, VOL. III, BOOK 1A, GEOHYDROLOGY AND CORRECTIVE ACTION PROGRAM	DOE-SR	
000839	09/21/92 12:00:00 AM	WSRC-RP-92-730	10693	RISK EVALUATION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, DRAFT FINAL, SEPTEMBER 21, 1992	WSRC	
000882	02/13/92 12:00:00 AM	000882	10693	DRAFT TECHNOLOGY EVALUATION PLAN FOR SOIL, GROUNDWATER AND AIR REMEDIATION, M-AREA, SRS	J. D. JOHNSTON	J. W. COOK
000877	03/12/92 01:00:00 AM	000877	10693	WORKING MEETING NOTICE FOR M-AREA RODS	J. L. CRANE	C. L. BERGREN
000394	12/11/91 12:00:00 AM	000394	10693	USEPA REVIEW COMMENTS ON DRAFT PROPOSED PLAN FOR M-AREA / MET LAB	J. S. KUTZMAN	J. W. COOK
000393	12/11/91 12:00:00 AM	000393	10693	M-AREA TREATABILITY STUDIES	J. S. KUTZMAN	J. W. COOK
000356	11/06/91 12:00:00 AM	000356	10693	PRIMARY DOCUMENT REVIEW OF DRAFT PROPOSED PLANS FOR M-AREA AND MET LAB (WSRC-RP-91-821, REV. 0 AND WSRC-RP-91-823, REV. 0)	J. S. KUTZMAN	H. W. TRUESDALE
000555	04/23/92 12:00:00 AM	000555	10693	DRAFT FINAL PROPOSED PLAN APPROVAL M-AREA GROUNDWATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY	J. D. JOHNSTON	J. W. COOK
001424.2	05/01/90 12:00:00 AM	WSRC-RP-90-67-1 B	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	
001424.1	05/01/90 12:00:00 AM	WSRC-RP-90-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	

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001426	05/01/93 12:00:00 AM	WSRC-RP-93-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY GROUNDWATER MONITORING REPORT FIRST QUARTER 1993	WSRC	
015706	08/26/20	EQMD-08-054	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2008 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	DENNIS P. RYAN	SRS NATURAL RESOURCE TRUSTEES
015484	06/11/20	EQMD-08-022	10693	DOE SUBMITTAL OF THE ANNUAL 2007 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4086, DATED MARCH	M. PHILLIP PRATER	SRS NATURAL RESOURCE TRUSTEES
000771	08/31/92 12:00:00 AM	000771	10693	SCDHEC CONCURRENCE ON THE INTERIM ACTION RECORD OF DECISION FOR THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	R. L. SHAW	J. C. SJOSTROM/G. C. TIDWELL
020828	08/31/20	020828	10693	SCDHEC LETTER REGARDING SAVANNAH RIVER SITE SC1 890008 989 FINAL PERMIT DECISIONS FOR H-AREA TANK FARM, WASTE TANK 16 AND M-AREA AND MET LAB HWMF POST CLOSURE WSRC-IM-98-30 VOLUME III REVISION 9 DATED JULY 2016	DAVAID M. SCATURO	AMY J. MEYER
023370	09/02/20	SRNS-OS-2021-0	10693	SCDHEC LETTER REGARDING SAVANNAH RIVER SITE (SRS) - SC1 890 008 989 VIRTUAL PUBLIC HEARING AND EXTENDED COMMENT PERIOD ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT FOR 2013 RCRA PERMIT RENEWAL APPLICATION M-AREA	K. FRASIER	A. MEYER

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013396	03/22/20	013396	10693	NEWSPAPER ADVERTISEMENT - (PEOPLE-SENTINEL) - ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, PERMIT MODIFICATION REQUESTED,	WSRC	
013393	03/22/20	013393	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE UNITED STATED DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION REQUEST, DATED	WSRC	
013330	03/22/20	013330	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION REQUESTED, DATED MARCH 22, 2006	WSRC	
009444	01/31/20	009444	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - JANUARY 31, 2003	WSRC	
009443	01/07/20	009443	10693	ENVIRONMENTAL BULLETIN FROM THE SAVANNAH RIVER SITE - VOLUME 14, NUMBER 3, DATED FEBRUARY 7, 2003.	WSRC	
009445	02/05/20	009445	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - FEBRUARY 5, 2003	WSRC	
011396	08/09/20	011396	10693	NEWSPAPER ADVERTISEMENT - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION PUBLIC MEETING NOTICE - (AIKEN STANDARD) - AUGUST 9, 2004	WSRC	
011472	08/11/20	011472	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATIONS PUBLIC METTING NOTICE AUGUST 11, 2004	WSRC	
023733	05/18/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY {BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
023643	02/02/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
018628	09/01/20	SRNS-RP-2012-00 VOLUME I	10693	SEMI-ANNUAL 2012 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT (U) SRNS-RP-2012-00622 VOLUME I PUBLICATION DATE SEPTEMBER 2012	SRNS	
023296	08/11/20	Q-SDD-M-00003	10693	INTERFERENCE REPORT FOR ABANDONMENT OF RWM-1 (905-1M) NEAR BLDG. 782-2M	B. ZAWACKI	
023295	08/11/20	Q-SDD-M-00001	10693	INTERFERENCE REPORT FOR INSTALLATION OF RWM-1R NEAR BLDG. 782-2M	B. ZAWACKI	
023500	11/09/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION	C. CARTER	
023367	08/10/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST; MANUAL C3; REVISION 3	C. CARTER	

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022613	02/26/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	SRNS	
023226	05/11/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST; MANUAL C3; REVISION 3	C. CARTER	
023117	02/25/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
023016	11/10/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
022871	08/17/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	
022425	11/07/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST, ER-IDS-019-022	SRNS	
022329	08/14/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST, ER-IDS-019-022	SRNS	
021949	02/19/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	SRNS	
022726	05/19/20:	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST; ER-IDS-019-022	C. CARTER	
021976	02/01/20	SRNS-J2000-2018	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2017 DECEMBER 31 2017 SRNS-RP-2018-00100 JANUARY 2018	SRNS	KEELY.K.
022199	05/15/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	SRNS	
021973	03/19/20	SRNS-J2000-2015	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2014 THROUGH DECEMBER 31, 2014 (SRNS-RP-2015-00109,	SRNS	FEELY,K.
021975	02/28/20	SRNS-J2000-2017	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL PCB REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2016 THROUGH DECEMBER 31 2016 SRNS-RP-2017-00078 FEBRUARY	SRNS	FEELY,K.
021972	03/31/20	SRNS-J2000-2014	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2013 THROUGH DECEMBER 31, 2013 (SRNS-RP-2014-00233,	SRNS	FEELY,K.
021974	02/10/20	SRNS-J2000-2016	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL PCB REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2015 THROUGH DECEMBER 31 2015 SRNS-RP-2016-00048 FEBRUARY	SRNS	FEELY,K.

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021981	02/25/20	SRNS-J2000-2019	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2018 THROUGH DECEMBER 31, 2018 (SRNS-RP-2019-00102,	SRNS	FEELY,K.
021680	06/07/20	021680	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. FULMER	S.MCFALLS,J.RIC
021678	06/07/20	021678	10693	EPA APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	J. Richards	B.HENNESSEY,S.
021679	06/07/20	021679	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES) - RADIOLOGICAL CONTAMINATION RESPONSE AND PATH	S. McFalls	B.HENNESSEY,J.I
021681	06/07/20	SRNS-J2000-2018	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. McFalls	S. Fulmer J.Richards
021235	08/17/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING THE SAVANNAH RIVER SITE - SC1 890 008 989 FINAL PERMIT DECISIONS FOR M-AREA AND METALLURGICAL LAB MAML HAZARDOUS WASTE MANAGEMENT FACILITIES. F-AREA HAZARDOUS WASTE MANAGEMENT FACILITY HWMF,	DAVID SCATURO	AMY J MEYER
021224	07/28/20	SRNS-J2000-2017	10693	SUBMITTAL OF THE SAVANNAH RIVER SITES COMMENTS ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT DATED JUNE 2017 SRNS-J2000-2017-00396 DATED JULY 28 2017	AMY MEYER	KEEHNA FRASIER
021193	06/19/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING CONDITIONAL COMPLETENESS DETERMINATION AND PUBLIC NOTICE OF A DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT LETTER ORIGINALLY DATED JUNE 14 2017 CORRECTION FOR THE 2000 RCRA PART B PERMIT	KEEHNA FRASIER	AMY J MEYER
019913	01/08/20	019913	10693	THE ENVIRONMENTAL BULLETIN ACTION MEMORANDUM ISSUED FOR THE REMOVAL SITE EVALUATION REPORT/ENGINEERING EVALUATIN/COST ANALYSIS RSER/EE/CA FOR THE REMOVAL ACTION FOR THE 489 D COAL PILE RUNOFF BASIN D 006 OUTFALL AND	SRNS	
000840	02/10/93 12:00:00 AM	WSRC-RP-92-200	10693	FINAL ENGINEERING REPORT: END OF CONSTRUCTION, CLOSURE OF THE M-AREA SETTLING BASIN M-AREA, SAVANNAH RIVER SITE (U)	S. R. MCMULLIN AND J. G. HORVATH	
018507	09/20/20	018507	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY AND SAVANNAH RIVER OPERATIONS OFFICE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES	SRNS	
017403	01/25/20	EQMD-11-012	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2010 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	SHERRY SOUTHERN	SRS NATURAL RES. TURST.
016940	04/27/20	EQMD-10-017	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE ANNUAL 2009 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES	SHERRY L. SOUTHERN	SRS NATURAL RESOURCE TRUSTEES
016625	01/08/20	016625	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND RECOVER ACT	SRNS	
016607	01/13/20	016607	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE	SRNS	

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016590	01/08/20	016590	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND	SRNS	
015030	12/31/20	015030	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015028	12/13/20	015028	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015026	12/13/20	015026	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION	WSRC	
014851	10/01/20	EQMD-07-037	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2007, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II,	A.B. GOULD	SRS NR TRUSTEES
014461	04/18/20	014461	10693	DOE SUBMITTAL OF THE ANNUAL 2006 M-AREA NA D METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4001, MARCH	A.B. GOULD	
014397	03/05/20	014397	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - AFFIDAVIT OF PUBLICATION ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE	WSRC	
014396	03/05/20	014396	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE, UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES,	WSRC	
013753	08/02/20	013753	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, (WSRC-RP-2002-4160, 9/2002), AUGUST 2, 2006	WSRC	
013741	07/28/20	013741	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, DATED JULY 28, 2006	WSRC	
013132	02/21/20	OESH-06-0069-74	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE SEMI-ANNUAL 2005 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF'S) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT	A.B. GOULD	SRS NATURAL RESOURCE TRUSTEES
009134	10/10/20	OE-01-002	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE 1Q/2Q 2002 SEMI-ANNUAL M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE-ACTION	A. B. GOULD	SRS NATURAL RESOURCE TRUSTEES
018534	09/20/20	018534	10693	NEWSPAPER ADVERTISEMENT THE STATE ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY SAVANNAH RIVER OPERATIONS OFFICE M AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT	SRNS	
018206	05/11/20	ER-SOP-012	10693	POST CLOSURE INSPECTION M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY ER-SOP-012 REVISION 6	SRNS	
018202	08/18/20	ER-SOP-012	10693	POST CLOSURE INSPECTION M-AREA HAZARDOUS WASTE MANAGEMENT ER-SOP-012 REVISION 6	SRNS	

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018203	11/19/20	ER-SOP-012	10693	POST CLOSURE INSPECTION M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY ER-SOP-012 REVISION 3	SRNS	
018309	04/30/20	018309	10693	NEWSPAPER ADVERTISEMENT THE STATE ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
018304	05/02/20	018304	10693	NEWSPAPER ADVERTISEMENT THE PEOPLE SENTINEL ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
018302	04/30/20	018302	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
017985	10/21/20	017985	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE NOTICE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY	SRNS	
017976	10/21/20	017976	10693	NEWSPAPER ADVERTISEMENT - THE AIKEN STANDARD - DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY	SRNS	
017974	10/19/20	017974	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY	SRNS	
017760	02/17/20	ER-SOP-012 REV 6	10693	ACP STANDARD OPERATING PROCEDURES MANUAL WSRC-C3 VOL 1 REFERENCE POST CLOSURE INSPECTION M AREA HAZARDOUS WASTE MANAGEMENT FACILITY M AREA SETTLING BASIN 904-51G U	SRNS	
017669	08/09/20	ER-SOP-012 REV 6	10693	STANDARD OPERATING PROCEDURES MANUAL WSRC-C3 VOL 1 REFERENCE POST CLOSURE INSPECTION M AREA HAZARDOUS WASTE MANAGEMENT FACILITY M AREA SETTLING BASIN 904-51G U ER-SOP-012 REVISION 6 CERCLIS NUMBER1 DATED AUGUST	SRNS	
017670	11/08/20	ER-SOP-012 REV 6	10693	STANDARD OPERATING PROCEDURES MANUAL WSRC-C3 VOL 1 REFERENCE POST CLOSURE INSPECTION M AREA HAZARDOUS WASTE MANAGEMENT FACILITY M AREA SETTLING BASIN 904-51G U ER-SOP-012 REVISION 6 CERCLIS NUMBER1 DATED	SRNS	
017668	05/12/20	ER-SOP-012 REV 6	10693	STANDARD OPERATING PROCEDURES MANUAL WSRC-C3 VOL 1 REFERENCE POST CLOSURE INSPECTION M AREA HAZARDOUS WASTE MANAGEMENT FACILITY M AREA SETTLING BASIN 904-51G U ER-SOP-012 REVISION 6 CERCLIS NUMBER 1 DATED MAY 12,	SRNS	
017667	02/11/20	ER-SOP-012 REV 6	10693	STANDARD OPERATING PROCEDURES MANUAL WSRC-C3 VOL 1 REFERENCE POST CLOSURE INSPECTION M AREA HAZARDOUS WASTE MANAGEMENT FACILITY M AREA SETTLING BASIN 904-51G U ER-SOP-012 REVISION 6 CERCLIS NUMBER 1 DATED	SRNS	
000592	03/01/87 12:00:00 AM	DPST-85-703	10693	ENVIRONMENTAL INFORMATION DOCUMENT: M-AREA SETTLING BASIN AND VICINITY	J. B. PICKETT,ET AL	
000583	03/01/88	DPSPU-84-11-11	10693	CLOSURE PLAN FOR THE M-AREA SETTLING BASIN AND VICINITY AT THE SAVANNAH RIVER PLANT	DU PONT DE NEMOURS & CO	
000626	04/10/92 12:00:00 AM	000626	10693	SCDHEC POSITION ON THE RECORD OF DECISION REVIEWS FOR THE M-AREA SETTLING BASIN; MET LAB SETTLING BASIN; M-AREA GROUNDWATER; GUNSITE 113; AND GUNSITE 720	L .R. BEDENBAUGH	J. W. COOK

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000532	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 8	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 8 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
002148	07/01/76 12:00:00 AM	002148	10693	HYDROGEOLOGIC CONDITIONS IN THE VICINITY OF THE M-AREA SETTLING BASIN AND LOST LAKE	E.I. DU PONT	
000627	06/05/92 12:00:00 AM	000627	10693	USEPA COMMENTS ON THE DRAFT FINAL RECORD OF DECISIONS FOR M-AREA GROUND WATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY, M-AREA	J. L. CRANE	J. W. COOK
000631	08/31/92 12:00:00 AM	000631	10693	SCDHEC CONCURRENCE ON THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT ROD	R. L. SHAW	L. C. SJOSTROM/G. C. TIDWELL
002720	02/20/96 12:00:00 AM	ESH-CGP-96-009(	10693	REQUEST FOR THE APPROVAL OF WELL INSTALLATION AT A/M AREA SETTLING BASIN USING RESONANT SONIC TECHNOLOGY	J. W. COOK	M. DEPRATTER
000485	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 4	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 4 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000484	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 5	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 5 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000597	06/25/92 12:00:00 AM	WSRC-RP-92-743	10693	INTERIM ACTION RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	DOE-SR	
000482	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 2	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 2 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000934	05/06/93 12:00:00 AM	000934	10693	SCDHEC APPROVAL ON THE REQUEST FOR THE INSTALLATION OF FIVE (5) RECOVERY WELLS IN THE M-AREA HWMF NORTHERN SECTOR OF THE SRS	R. B. EDE	J. W. COOK
000486	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 7	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 7 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000483	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 3	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 3 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000354	08/19/91 12:00:00 AM	WSRC-RP-91-821, REV. 0	10693	INTERIM ACTION PROPOSED PLAN M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY CLOSURE AND A/M AREA GROUNDWATER CORRECTIVE ACTION PROGRAM, (WSRC-RP-91-821, REV.0) DATED AUGUST 1991	WSRC	
000098	01/01/85 12:00:00 AM	DPSTD-85-121	10693	TECHNICAL DATA SUMMARY, EXTENDED CHARACTERIZATION OF THE M-AREA SETTLING BASIN AND VICINITY	J. B. PICKETT	
023847	08/05/20	ER-IDS-019-022	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY (BLDG. 904-51G) FIELD INSPECTION CHECKLIST	C. CARTER	

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000799	06/01/88 12:00:00 AM	000799	10693	APPLICATION FOR A POST-CLOSURE PERMIT M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, VOL. III, BOOK 1A, GEOHYDROLOGY AND CORRECTIVE ACTION PROGRAM	DOE-SR	
000839	09/21/92 12:00:00 AM	WSRC-RP-92-730	10693	RISK EVALUATION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, DRAFT FINAL, SEPTEMBER 21, 1992	WSRC	
000882	02/13/92 12:00:00 AM	000882	10693	DRAFT TECHNOLOGY EVALUATION PLAN FOR SOIL, GROUNDWATER AND AIR REMEDIATION, M-AREA, SRS	J. D. JOHNSTON	J. W. COOK
000877	03/12/92 01:00:00 AM	000877	10693	WORKING MEETING NOTICE FOR M-AREA RODS	J. L. CRANE	C. L. BERGREN
015706	08/26/20	EQMD-08-054	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2008 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	DENNIS P. RYAN	SRS NATURAL RESOURCE TRUSTEES
015484	06/11/20	EQMD-08-022	10693	DOE SUBMITTAL OF THE ANNUAL 2007 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4086, DATED MARCH	M. PHILLIP PRATER	SRS NATURAL RESOURCE TRUSTEES
000394	12/11/91 12:00:00 AM	000394	10693	USEPA REVIEW COMMENTS ON DRAFT PROPOSED PLAN FOR M-AREA / MET LAB	J. S. KUTZMAN	J. W. COOK
000393	12/11/91 12:00:00 AM	000393	10693	M-AREA TREATABILITY STUDIES	J. S. KUTZMAN	J. W. COOK
000356	11/06/91 12:00:00 AM	000356	10693	PRIMARY DOCUMENT REVIEW OF DRAFT PROPOSED PLANS FOR M-AREA AND MET LAB (WSRC-RP-91-821, REV. 0 AND WSRC-RP-91-823, REV. 0)	J. S. KUTZMAN	H. W. TRUESDALE
000555	04/23/92 12:00:00 AM	000555	10693	DRAFT FINAL PROPOSED PLAN APPROVAL M-AREA GROUNDWATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY	J. D. JOHNSTON	J. W. COOK
000771	08/31/92 12:00:00 AM	000771	10693	SCDHEC CONCURRENCE ON THE INTERIM ACTION RECORD OF DECISION FOR THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	R. L. SHAW	J. C. SJOSTROM/G. C. TIDWELL
001424.2	05/01/90 12:00:00 AM	WSRC-RP-90-67-1 B	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	
001424.1	05/01/90 12:00:00 AM	WSRC-RP-90-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	
001426	05/01/93 12:00:00 AM	WSRC-RP-93-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY GROUNDWATER MONITORING REPORT FIRST QUARTER 1993	WSRC	
019193	10/31/20	SRNS-OS-2013-0(	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE A/M GROUNDWATER AIKEN COUNTY SC1 890 008 989 2014 APPENDIX IX SAMPLING PROPOSAL FOR M AREA AND METALLUGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES POINT OF	KIM D. TAPPA	KEVIN M KOSTELNIK

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020828	08/31/20	020828	10693	SCDHEC LETTER REGARDING SAVANNAH RIVER SITE SC1 890008 989 FINAL PERMIT DECISIONS FOR H-AREA TANK FARM, WASTE TANK 16 AND M-AREA AND MET LAB HWMF POST CLOSURE WSRC-IM-98-30 VOLUME III REVISION 9 DATED JULY 2016	DAVAID M. SCATURO	AMY J. MEYER
023370	09/02/20:	SRNS-OS-2021-0(	10693	SCDHEC LETTER REGARDING SAVANNAH RIVER SITE (SRS) - SC1 890 008 989 VIRTUAL PUBLIC HEARING AND EXTENDED COMMENT PERIOD ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT FOR 2013 RCRA PERMIT RENEWAL APPLICATION M-AREA	K. FRASIER	A. MEYER

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023732	05/18/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	C. CARTER	
023642	02/14/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	C. CARTER	
023501	11/15/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	C. CARTER	
023368	08/11/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST; MANUAL C3; REVISION 6	C. CARTER	
022612	02/25/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	SRNS	
023227	05/11/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST; MANUAL C3; REVISION 6	C. CARTER	
023118	02/26/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	C. CARTER	
023015	11/17/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	C. CARTER	
022869	08/18/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	C. CARTER	
022330	08/12/20	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST, ER-IDS-019-020	SRNS	
022279	05/16/20	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST, ER-IDS-019-020	SRNS	
021946	02/21/20	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	SRNS	
022725	05/14/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST; ER-IDS-019-020	C. CARTER	
021681	06/07/20	SRNS-J2000-2018	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. McFalls	S. Fulmer J.Richards
000002	01/21/91 12:00:00 AM	000002	10693	NOTIFICATION OF METALLURGICAL LABORATORY HWMF CLOSURE PLAN, SCI 890 008 989	D. E. WILSON	C. R. SHERMAN

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021235	08/17/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING THE SAVANNAH RIVER SITE - SC1 890 008 989 FINAL PERMIT DECISIONS FOR M-AREA AND METALLURGICAL LAB MAML HAZARDOUS WASTE MANAGEMENT FACILITIES. F-AREA HAZARDOUS WASTE MANAGEMENT FACILITY HWMF,	DAVID SCATURO	AMY J MEYER
021224	07/28/20	SRNS-J2000-2017	10693	SUBMITTAL OF THE SAVANNAH RIVER SITES COMMENTS ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT DATED JUNE 2017 SRNS-J2000-2017-00396 DATED JULY 28 2017	AMY MEYER	KEEHNA FRASIER
021193	06/19/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING CONDITIONAL COMPLETENESS DETERMINATION AND PUBLIC NOTICE OF A DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT LETTER ORIGINALLY DATED JUNE 14 2017 CORRECTION FOR THE 2000 RCRA PART B PERMIT	KEEHNA FRASIER	AMY J MEYER
019913	01/08/20	019913	10693	THE ENVIRONMENTAL BULLETIN ACTION MEMORANDUM ISSUED FOR THE REMOVAL SITE EVALUATION REPORT/ENGINEERING EVALUATIN/COST ANALYSIS RSER/EE/CA FOR THE REMOVAL ACTION FOR THE 489 D COAL PILE RUNOFF BASIN D 006 OUTFALL AND	SRNS	
018507	09/20/20	018507	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY AND SAVANNAH RIVER OPERATIONS OFFICE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES	SRNS	
017403	01/25/20	EQMD-11-012	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2010 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	SHERRY SOUTHERN	SRS NATURAL RES. TURST.
016625	01/08/20	016625	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND RECOVER ACT	SRNS	
016607	01/13/20	016607	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE	SRNS	
016590	01/08/20	016590	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND	SRNS	
015030	12/31/20	015030	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015028	12/13/20	015028	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015026	12/13/20	015026	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION	WSRC	
014851	10/01/20	EQMD-07-037	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2007, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II,	A.B. GOULD	SRS NR TRUSTEES
014461	04/18/20	014461	10693	DOE SUBMITTAL OF THE ANNUAL 2006 M-AREA NA D METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4001, MARCH	A.B. GOULD	
014397	03/05/20	014397	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - AFFIDAVIT OF PUBLICATION ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE	WSRC	

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014396	03/05/20	014396	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE, UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES,	WSRC	
013753	08/02/20	013753	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, (WSRC-RP-2002-4160, 9/2002), AUGUST 2, 2006	WSRC	
013741	07/28/20	013741	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, DATED JULY 28, 2006	WSRC	
013132	02/21/20	OESH-06-0069-74	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE SEMI-ANNUAL 2005 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF'S) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT	A.B. GOULD	SRS NATURAL RESOURCE TRUSTEES
009134	10/10/20	OE-01-002	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE 1Q/2Q 2002 SEMI-ANNUAL M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE-ACTION	A. B. GOULD	SRS NATURAL RESOURCE TRUSTEES
018228	09/15/20	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HWMF INSPECTION CHECKLIST ER-IDS-019-020 REVISION 2	SRNS	
018205	05/11/20	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HWMF POST CLOSURE INSPECTION ER-IDS-019-020 REVISION 2	SRNS	
018195	11/19/20	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HWMF POST CLOSURE INSPECTION ER-IDS-019-020 REVISION 2	SRNS	
017741	02/17/20	ER-IDS-019-020 REV 2	10693	ACP STANDARD OPERATING PROCEDURES MANUAL C3 USE EVERY TIME METALLURGICAL LABORATORY HWMF POST CLOSURE INSPECTION U	SRNS	
017582	05/12/20	ER-IDS-019-020 REV 2	10693	STANDARD OPERATING PROCEDURES, MANUAL C3: MET LAB FIELD INSPECTION CHECKLIST FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY - 904-110G, ER-IDS-019-020, REVISION 2, CERCLIS NUMBER: 15,	SRNS	
017584	11/16/20	ER-IDS-019-020 REV 2	10693	STANDARD OPERATING PROCEDURES, MANUAL C3: MET LAB FIELD INSPECTION CHECKLIST FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY - 904-110G, ER-IDS-019-020, REVISION 2, CERCLIS NUMBER: 15,	SRNS	
017583	08/03/20	ER-IDS-019-020 REV 2	10693	STANDARD OPERATING PROCEDURES, MANUAL C3: MET LAB FIELD INSPECTION CHECKLIST FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY - 904-110G, ER-IDS-019-020, REVISION 2, CERCLIS NUMBER: 15,	SRNS	
017581	02/22/20	ER-IDS-019-020 REV 2	10693	STANDARD OPERATING PROCEDURES, MANUAL C3: MET LAB FIELD INSPECTION CHECKLIST FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY - 904-110G, ER-IDS-019-020, REVISION 2, CERCLIS NUMBER: 15,	SRNS	
000588	10/01/90 12:00:00 AM	WSRC-RP-90-118	10693	GROUNDWATER QUALITY ASSESSMENT PLAN FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY	K. M. JEROME	
000554	12/11/91 12:00:00 AM	000554	10693	USEPA REVIEW COMMENTS ON DRAFT PROPOSED PLAN FOR M-AREA/MET LAB	J. D. JOHNSTON	J. W. COOK

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000770	08/31/92 12:00:00 AM	000770	10693	SCDHEC CONCURRENCE ON THE INTERIM ACTION ROD FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT UNIT	R. L. SHAW	J. C. SJOSTROM/G. C. TIDWELL
000802	12/01/91 12:00:00 AM	000802	10693	APPLICATION FOR A HAZARDOUS WASTE PART B POST-CLOSURE CARE PERMIT, METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY, VOLUME XIV, BOOK 1, SECTIONS A - I, REV. 1	WSRC	
000626	04/10/92 12:00:00 AM	000626	10693	SCDHEC POSITION ON THE RECORD OF DECISION REVIEWS FOR THE M-AREA SETTLING BASIN; MET LAB SETTLING BASIN; M-AREA GROUNDWATER; GUNSITE 113; AND GUNSITE 720	L .R. BEDENBAUGH	J. W. COOK
000474	03/01/87 12:00:00 AM	DPST-85-689	10693	ENVIRONMENTAL INFORMATION DOCUMENT: METALLURGICAL LABORATORY BASIN	L. M. MICHAEL,ET AL	
000614	08/16/91 12:00:00 AM	WDR 424/001	10693	CLOSURE PLAN FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY, REVISION 5	WSRC	
002270	02/03/93 12:00:00 AM	002270	10693	USEPA COMMENT ON METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY BASIN CLOSURE PLAN, REVISION 8 SC1 890 008 989	G. A. FARMER	J. T. LITTON
000627	06/05/92 12:00:00 AM	000627	10693	USEPA COMMENTS ON THE DRAFT FINAL RECORD OF DECISIONS FOR M-AREA GROUND WATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY, M-AREA	J. L. CRANE	J. W. COOK
002721	02/20/96 12:00:00 AM	ESH-CGP-96-010(	10693	REQUEST FOR THE APPROVAL OF TWENTY-NINE (29) CONE PENETROMETER LOCATIONS AS PART OF THE A/M AREA METALLURGICAL LABORATORY HYDROGEOLOGIC PHASE III CHARACTERIZATION	J. W. COOK	M. DEPRATTER
000355	08/19/91 12:00:00 AM	WSRC-RP-91-823, REV. 0	10693	INTERIM ACTION PROPOSED PLAN METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY CLOSURE, (WSRC-RP-91-823, REV.0) DATED AUGUST 1991	WSRC	
003087	06/10/93 12:00:00 AM	WSRC-SAT-22540	10693	SRP METALLURGICAL LABORATORY HWMF WETLANDS EVALUATION	WSRC	
001297	08/12/93 12:00:00 AM	001297	10693	ATSDR COMMENTS ON THE INTERIM ACTION RECORD OF DECISION FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (WSRC-RP-92-745) (CAT NO. 000599)	J. C. WILLIAMS	D. TAYLOR
000599	06/25/92 12:00:00 AM	WSRC-RP-92-745	10693	INTERIM ACTION RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION: METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	DOE-SR	
002605	03/03/93 12:00:00 AM	002605	10693	USEPA COMMENTS ON THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (MET LAB HWMF) BASIN CLOSURE PLAN, REVISION 8 SC1	G. A. FARMER	J. T. LITTON
000928	12/01/91 12:00:00 AM	000928	10693	APPLICATION FOR A HAZARDOUS WASTE PART B POST-CLOSURE CARE PERMIT, METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY, VOLUME XIV, BOOK 2, APPENDICES C - J, REVISION 1	WSRC	
001113	03/11/93 12:00:00 AM	001113	10693	SCDHEC COMMENTS ON THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY BASIN CLOSURE PLAN - REVISION 8	G. R. THOMPSON	J. V. ODUM

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004923	05/28/98 12:00:00 AM	ESH-CGP-98-0182	10693	REQUEST FOR THE APPROVAL OF HYUDROPHOBIC LANCE INSTALLATION AT A/M AREA METALLURGICAL LABORATORY BASIN	J. W. COOK	M DEPRATTER
000630	08/31/92 12:00:00 AM	000630	10693	SCDHEC CONCURRENCE ON THE METALLURGICAL LABORATORY HAZARDOUS WASTE OPERABLE UNIT ROD	R. L. SHAW	L. C. SJOSTROM/G. C. TIDWELL
003084	06/10/93 12:00:00 AM	ESH-ERG-920278	10693	ENGINEERING CALCULATIONS REFERENCED IN ESH-ERG-92-0266 DATED APRIL 30, 1992 FOR THE METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY BASIN CLOSURE PLAN, REVISION 9 (U)	WSRC	
021679	06/07/20	021679	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES) - RADIOLOGICAL CONTAMINATION RESPONSE AND PATH	S. McFalls	B.HENNESSEY,J.I
021678	06/07/20	021678	10693	EPA APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	J. Richards	B.HENNESSEY,S.
021680	06/07/20	021680	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. FULMER	S.MCFALLS,J.RIC
016940	04/27/20	EQMD-10-017	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE ANNUAL 2009 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES	SHERRY L. SOUTHERN	SRS NATURAL RESOURCE TRUSTEES
000882	02/13/92 12:00:00 AM	000882	10693	DRAFT TECHNOLOGY EVALUATION PLAN FOR SOIL, GROUNDWATER AND AIR REMEDIATION, M-AREA, SRS	J. D. JOHNSTON	J. W. COOK
000877	03/12/92 01:00:00 AM	000877	10693	WORKING MEETING NOTICE FOR M-AREA RODS	J. L. CRANE	C. L. BERGREN
015484	06/11/20	EQMD-08-022	10693	DOE SUBMITTAL OF THE ANNUAL 2007 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4086, DATED MARCH	M. PHILLIP PRATER	SRS NATURAL RESOURCE TRUSTEES
023846	08/04/20:	ER-IDS-019-020	10693	METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) POST CLOSURE FIELD INSPECTION CHECKLIST	C. CARTER	
023791	06/23/20:	PC-2021-00070	10693	COMPLETED POST CLOSURE MAINTENANCE REGISTER FOR METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY (904-110G)	C. CARTER	
015706	08/26/20	EQMD-08-054	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2008 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	DENNIS P. RYAN	SRS NATURAL RESOURCE TRUSTEES

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009443	01/07/20	009443	10693	ENVIRONMENTAL BULLETIN FROM THE SAVANNAH RIVER SITE - VOLUME 14, NUMBER 3, DATED FEBRUARY 7, 2003.	WSRC	
009445	02/05/20	009445	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - FEBRUARY 5, 2003	WSRC	
001238	08/16/93 12:00:00 AM	001238	10693	GROUNDWATER MONITORING OBSERVATIONS IN THE NORTHERN SECTOR, A/M AREA, SRS, DATED JULY 1, 1993 (LOTT TO EDE)	R. B. EDE	J. W. COOK
004880	05/13/92 12:00:00 AM	004880	10693	THE PEOPLE SENTINEL (BARNWELL, SC.) PUBLIC NOTICE AD FOR A/M AREA FUNDAMENTAL STUDY AREA PROPOSED PLAN		
001378	01/01/90 12:00:00 AM	001378	10693	A/M AREA PHASE III MONITORING WELL INSTALLATION REPORT	WSRC	
001033	05/19/92 12:00:00 AM	001033	10693	THE ALLENDALE COUNTY CITIZEN LEADER LEGAL NOTICE FOR THE A/M AREA FUNDAMENTAL STUDY AREA PROPOSED PLAN	WSRC	
001788	12/06/94 12:00:00 AM	001788	10693	SCDHEC APPROVAL OF THE INSTALLATION OF PIEZOMETERS IN THE SOUTHERN SECTOR OF THE A/M AREA (LETTER, COOK TO EDE, DATED 11/29/94)	R. B. EDE	J. W. COOK
023296	08/11/20	Q-SDD-M-00003	10693	INTERFERENCE REPORT FOR ABANDONMENT OF RWM-1 (905-1M) NEAR BLDG. 782-2M	B. ZAWACKI	
023295	08/11/20	Q-SDD-M-00001	10693	INTERFERENCE REPORT FOR INSTALLATION OF RWM-1R NEAR BLDG. 782-2M	B. ZAWACKI	
021973	03/19/20	SRNS-J2000-2015	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2014 THROUGH DECEMBER 31, 2014 (SRNS-RP-2015-00109,	SRNS	FEELY,K.
021981	02/25/20	SRNS-J2000-2019	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2018 THROUGH DECEMBER 31, 2018 (SRNS-RP-2019-00102,	SRNS	FEELY,K.
021681	06/07/20	SRNS-J2000-2018	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. McFalls	S. Fulmer J.Richards
021235	08/17/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING THE SAVANNAH RIVER SITE - SC1 890 008 989 FINAL PERMIT DECISIONS FOR M-AREA AND METALLURGICAL LAB MAML HAZARDOUS WASTE MANAGEMENT FACILITIES. F-AREA HAZARDOUS WASTE MANAGEMENT FACILITY HWMF,	DAVID SCATURO	AMY J MEYER
021224	07/28/20	SRNS-J2000-2017	10693	SUBMITTAL OF THE SAVANNAH RIVER SITES COMMENTS ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT DATED JUNE 2017 SRNS-J2000-2017-00396 DATED JULY 28 2017	AMY MEYER	KEEHNA FRASIER
021193	06/19/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING CONDITIONAL COMPLETENESS DETERMINATION AND PUBLIC NOTICE OF A DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT LETTER ORIGINALLY DATED JUNE 14 2017 CORRECTION FOR THE 2000 RCRA PART B PERMIT	KEEHNA FRASIER	AMY J MEYER

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019913	01/08/20	019913	10693	THE ENVIRONMENTAL BULLETIN ACTION MEMORANDUM ISSUED FOR THE REMOVAL SITE EVALUATION REPORT/ENGINEERING EVALUATIN/COST ANALYSIS RSER/EE/CA FOR THE REMOVAL ACTION FOR THE 489 D COAL PILE RUNOFF BASIN D 006 OUTFALL AND	SRNS	
000807	12/15/92 12:00:00 AM	WSRC-RP-92-130:	10693	ASSESSING DNAPL CONTAMINATION, A/M-AREA, SAVANNAH RIVER SITE: PHASE I RESULTS (U)	WSRC	
000795	10/01/82 12:00:00 AM	DPSTD-82-39	10693	PRELIMINARY TECHNICAL DATA SUMMARY: M-AREA GROUNDWATER CLEANUP FACILITY	D. E. GORDON	
000695	09/01/92 12:00:00 AM	000695	10693	LEGAL NOTICES FOR THE A/M AREA FUNDAMENTAL STUDY AREA INTERIM ACTION RECORD OF DECISION	WSRC	
000682	03/09/92 01:00:00 AM	ESH-ERG-920176	10693	SUBMITTAL OF SAVANNAH RIVER SITE REVISED PROPOSED PLAN FOR THE A/M AREA FUNDAMENTAL STUDY AREA, REVISED PROPOSED PLAN OUTLINE, AND RESPONSE TO EPA-IV COMMENTS	J. W. COOK	J. S. KUTZMAN/H. W. TRUESDALE
000876	03/13/93 12:00:00 AM	ESH-ERG-920183	10693	REVISED DRAFT TECHNOLOGY EVALUATION PLAN FOR SOIL, GROUNDWATER AND AIR REMEDIATION , A/M AREA, SRS (U)	J. W. COOK	J. S. KUTZMAN
018507	09/20/20	018507	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY AND SAVANNAH RIVER OPERATIONS OFFICE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES	SRNS	
017403	01/25/20	EQMD-11-012	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2010 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	SHERRY SOUTHERN	SRS NATURAL RES. TURST.
016940	04/27/20	EQMD-10-017	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE ANNUAL 2009 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES	SHERRY L. SOUTHERN	SRS NATURAL RESOURCE TRUSTEES
016625	01/08/20	016625	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND RECOVER ACT	SRNS	
016607	01/13/20	016607	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE	SRNS	
016590	01/08/20	016590	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND	SRNS	
015030	12/31/20	015030	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015028	12/13/20	015028	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015026	12/13/20	015026	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION	WSRC	

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014851	10/01/20	EQMD-07-037	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2007, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II,	A.B. GOULD	SRS NR TRUSTEES
014461	04/18/20	014461	10693	DOE SUBMITTAL OF THE ANNUAL 2006 M-AREA NA D METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4001, MARCH	A.B. GOULD	
014397	03/05/20	014397	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - AFFIDAVIT OF PUBLICATION ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE	WSRC	
014396	03/05/20	014396	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE, UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES,	WSRC	
013753	08/02/20	013753	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, (WSRC-RP-2002-4160, 9/2002), AUGUST 2, 2006	WSRC	
013741	07/28/20	013741	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, DATED JULY 28, 2006	WSRC	
013132	02/21/20	OESH-06-0069-74	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE SEMI-ANNUAL 2005 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF'S) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT	A.B. GOULD	SRS NATURAL RESOURCE TRUSTEES
009134	10/10/20	OE-01-002	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE 1Q/2Q 2002 SEMI-ANNUAL M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE-ACTION	A. B. GOULD	SRS NATURAL RESOURCE TRUSTEES
018534	09/20/20	018534	10693	NEWSPAPER ADVERTISEMENT THE STATE ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY SAVANNAH RIVER OPERATIONS OFFICE M AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT	SRNS	
018309	04/30/20	018309	10693	NEWSPAPER ADVERTISEMENT THE STATE ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
018304	05/02/20	018304	10693	NEWSPAPER ADVERTISEMENT THE PEOPLE SENTINEL ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
018302	04/30/20	018302	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
000560	08/01/91 12:00:00 AM	WSRC-RP-91-111(OR WSRC-RP-91-830	10693	SUBSURFACE STRATIGRAPHY AND STRUCTURE OF A/M AREA, (WSRC-RP-91-1110 OR WSRC-RP-91-830) DATED AUGUST 1991	W. C. FALLAW	
000736	10/01/82 12:00:00 AM	DPSTD-82-69	10693	PRELIMINARY TECHNICAL DATA SUMMARY: M-AREA GROUNDWATER CLEANUP FACILITY	D. E. GORDON	
000769	08/31/92 12:00:00 AM	000769	10693	SCDHEC CONCURRENCE ON THE INTERIM ACTION RECORD OF DECISION (IROD) FOR THE A/M AREA GROUNDWATER OPERABLE UNIT	R. L. SHAW	J. C. SJOSTROM/G. C. TIDWELL

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013396	03/22/20	013396	10693	NEWSPAPER ADVERTISEMENT - (PEOPLE-SENTINEL) - ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, PERMIT MODIFICATION REQUESTED,	WSRC	
013393	03/22/20	013393	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE UNITED STATED DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION REQUEST, DATED	WSRC	
013330	03/22/20	013330	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION REQUESTED, DATED MARCH 22, 2006	WSRC	
015048	10/16/20	ESH-WPG-2007-0	10693	SRS MEMORANDUM - LDR NOTIFICATION AND CERTIFICATION FOR TREATED DEBRIS, ESH-WPG-2007-00127, RSM TRACK NUMBER: 10667, (ENCLOSED ESH-WPG-2007-00122, REVISION 1, [7099-3220-0002-8249-9574])	HAL W. MORRIS	COLIN COVINGTON
013742	07/28/20	013742	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - TEMPORARY AUTHORIZATION REQUEST FOR SOIL HYDRAULIC FRACTURING DEMONSTRATION AT THE A-014 OUTFALL, DATED JULY 28, 2006	WSRC	
013754	08/02/20	013754	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - ON THE SOIL HYDRAULIC FRACTURING DEMONSTRATION OF THE A-014 OUTFALL, (WSRC-RP-2005-00415, OCTOBER 2005), AUGUST 2, 2006.	WSRC	
009991	08/13/20	009991	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - PUBLIC NOTICE ON THE M-AREA, H-AREA, AND A-AREA MISC. RUBBLE PILE OPERABLE UNIT - AUGUST 6, 2003	WSRC	
009444	01/31/20	009444	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - JANUARY 31, 2003	WSRC	
003116	05/01/92 12:00:00 AM	ESH-ERG-92-027	10693	SUBMITTAL OF SRS DRAFT INTERIM ACTION RECORDS OF DECISION, REMEDIAL ALTERNATIVE SELECTIONS FOR THE A/M AREA. (U)	J.W. COOK	J.D. JOHNSTON,I. BEDENBAUGH
000626	04/10/92 12:00:00 AM	000626	10693	SCDHEC POSITION ON THE RECORD OF DECISION REVIEWS FOR THE M-AREA SETTLING BASIN; MET LAB SETTLING BASIN; M-AREA GROUNDWATER; GUNSITE 113; AND GUNSITE 720	L .R. BEDENBAUGH	J. W. COOK
002970	10/01/95 12:00:00 AM	WSRC-RP-95-154	10693	VERTICAL CONTAINMENT PROFILES IN THE A/M AREA RECOVERY WELLS (WSRC-RP-95-1549) DATED OCTOBER 1995	RUST ENVIRONMENT	
001425	10/01/85 12:00:00 AM	DPSTD-84-112	10693	SUPPLEMENTAL TECHNICAL DATA SUMMARY: M-AREA GROUNDWATER INVESTIGATION	I. W. MARINE,ET AL	
001959	05/02/95 12:00:00 AM	001959	10693	SCDHEC APPROVAL OF THE EXTENSION REQUESTS FOR THE A/M AREA SOUTHERN SECTOR, A/M AREA VADOSE ZONE, AND SRL GROUNDWATER CORRECTIVE ACTION, DATED APRIL 17, 1995	K. A. COLLINSWORTH	T. M. TREGER
000532	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 8	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 8 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000351	11/26/91 12:00:00 AM	000351	10693	USEPA REVIEW COMMENTS ON DRAFT PLAN FOR ADDRESSING DNAPL CONTAMINATION A/M AREA (WSRC-RP-91-915)	J. S. KUTZMAN	J. W. COOK

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011396	08/09/20	011396	10693	NEWSPAPER ADVERTISEMENT - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION PUBLIC MEETING NOTICE - (AIKEN STANDARD) - AUGUST 9, 2004	WSRC	
000627	06/05/92 12:00:00 AM	000627	10693	USEPA COMMENTS ON THE DRAFT FINAL RECORD OF DECISIONS FOR M-AREA GROUND WATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY, M-AREA	J. L. CRANE	J. W. COOK
000468	05/11/92 12:00:00 AM	WSRC-RP-91-821, REV. 3	10693	PROPOSED PLAN (FOR MULTIPLE PROPOSED ACTIONS) A/M AREA FUNDAMENTAL STUDY AREA, (WSRC-RP-91-821, REV.3) DATED MAY 1992	WSRC	
001377	11/25/92 12:00:00 AM	WSRC-TR-92-355	10693	HYDROGEOLOGIC SETTING OF A/M AREA: FRAMEWORK FOR GROUNDWATER TRANSPORT (U)	S. E. LEWIS & R. K. AADLAND	
002147	04/01/83 01:00:00 AM	002147	10693	TUSCALOOSA AQUIFER PUMPING TEST, M-AREA SAVANNAH RIVER PLANT APRIL 1983	E.I. DU PONT	
005046	06/26/98 12:00:00 AM	005046	10693	SCDHEC APPROVAL OF REQUEST TO INSTALL HYDROPUNCH/SIMULPROBE BORINGS IN THE WESTERN SECTOR OF A/M AREA #HW-98-047	M. DEPRATTER	J. W. COOK
000631	08/31/92 12:00:00 AM	000631	10693	SCDHEC CONCURRENCE ON THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT ROD	R. L. SHAW	L. C. SJOSTROM/G. C. TIDWELL
000485	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 4	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 4 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
003099	05/11/92 12:00:00 AM	003099	10693	NEWSPAPER ADVERTISEMENTS FOR PUBLIC NOTICE OF A/M AREA GROUNDWATER PROPOSED PLAN - THE AIKEN STANDARD AND THE STATE.	WSRC	
000629	08/31/92 12:00:00 AM	000629	10693	SCDHEC CONCURRENCE ON THE A/M AREA GROUNDWATER WATER OPERABLE UNIT RECORD OF DECISION (ROD)	R. L. SHAW	L. C. SJOSTROM/G. C. TIDWELL
001344	01/20/94 12:00:00 AM	001344	10693	SCDHEC APPROVAL OF 9 NON-STANDARD MONITORING WELLS IN THE A/M AREA WESTERN SECTOR	R. B. EDE	J. W. COOK
011472	08/11/20	011472	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATIONS PUBLIC METTING NOTICE AUGUST 11, 2004	WSRC	
001338	03/01/92 12:00:00 AM	WSRC-RP-92-440	10693	GEOLOGY AND HYDROSTRATIGRAPHY OF THE A/M AREA, SAVANNAH RIVER SITE	R. K. AADLAND,ET AL	
000598	06/25/92 12:00:00 AM	WSRC-RP-92-744	10693	INTERIM ACTION RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION: A/M AREA GROUNDWATER OPERABLE UNIT	DOE-SR	
000484	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 5	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 5 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	

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002707	02/13/96 12:00:00 AM	ESH-CGP-96-0084	10693	REQUEST FOR THE APPROVAL OF MONITORING WELL INSTALLATION AT A/M AREA	J. W. COOK	M. DEPRATTER
002068	03/11/94 12:00:00 AM	WSRC-TR-92-355 BOOK 1 OF 7	10693	HYDROGEOLOGIC SETTINGS OF A/M AREA: FRAMEWORK FOR GROUNDWATER TRANSPORT, BOOK 1 OF 7 (WSRC-TR-92-355) BOOK 1 0F 7 DATED MARCH 1994	S. E. LEWIS & R. K. AADLAND	
004986	06/17/98 12:00:00 AM	ESH-CGP-98-0203	10693	REQUEST FOR THE APPROVAL OF HYDROPUNCH/SIMULPROBE SAMPLING AT A/M AREA WESTERN SECTOR GROUNDWATER REMEDIATION SITE	J.W. COOK	MARIANNA DEPRATTER
000597	06/25/92 12:00:00 AM	WSRC-RP-92-743	10693	INTERIM ACTION RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	DOE-SR	
000482	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 2	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 2 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000934	05/06/93 12:00:00 AM	000934	10693	SCDHEC APPROVAL ON THE REQUEST FOR THE INSTALLATION OF FIVE (5) RECOVERY WELLS IN THE M-AREA HWMF NORTHERN SECTOR OF THE SRS	R. B. EDE	J. W. COOK
000486	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 7	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 7 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
001978	04/28/95 12:00:00 AM	001978	10693	USEPA APPROVAL OF THE EXTENSION REQUESTS FOR THE THREE A/M AREA FISCAL YEAR 1995 RODS RECORD OF DECISION	J. L. CRANE	T. M. TREGER
000483	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 3	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 3 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000354	08/19/91 12:00:00 AM	WSRC-RP-91-821, REV. 0	10693	INTERIM ACTION PROPOSED PLAN M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY CLOSURE AND A/M AREA GROUNDWATER CORRECTIVE ACTION PROGRAM, (WSRC-RP-91-821, REV.0) DATED AUGUST 1991	WSRC	
000439	03/01/92 12:00:00 AM	WSRC-RP-91-821, REV. 1	10693	PROPOSED PLAN (FOR MULTIPLE PROPOSED ACTIONS) A/M AREA FUNDAMENTAL STUDY AREA, (WSRC-RP-91-821, REV.1) DATED MARCH 1992	WSRC	
018628	09/01/20	SRNS-RP-2012-00 VOLUME I	10693	SEMI-ANNUAL 2012 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT (U) SRNS-RP-2012-00622 VOLUME I PUBLICATION DATE SEPTEMBER 2012	SRNS	
021976	02/01/20	SRNS-J2000-2018	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2017 DECEMBER 31 2017 SRNS-RP-2018-00100 JANUARY 2018	SRNS	KEELY.K.
021975	02/28/20	SRNS-J2000-2017	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL PCB REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2016 THROUGH DECEMBER 31 2016 SRNS-RP-2017-00078 FEBRUARY	SRNS	FEELY,K.
021972	03/31/20	SRNS-J2000-2014	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2013 THROUGH DECEMBER 31, 2013 (SRNS-RP-2014-00233,	SRNS	FEELY,K.

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021974	02/10/20	SRNS-J2000-2016	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL PCB REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2015 THROUGH DECEMBER 31 2015 SRNS-RP-2016-00048 FEBRUARY	SRNS	FEELY,K.
021679	06/07/20	021679	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES) - RADIOLOGICAL CONTAMINATION RESPONSE AND PATH	S. McFalls	B.HENNESSEY,J.I
021678	06/07/20	021678	10693	EPA APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	J. Richards	B.HENNESSEY,S.
021680	06/07/20	021680	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. FULMER	S.MCFALLS,J.RIC
000878	03/11/92 01:00:00 AM	ESH-ERG-920103	10693	GROUNDWATER REMEDIATION IN THE VICINITY OF THE SRL COMPLEX, A/M AREA, SAVANNAH RIVER SITE (U)	J. W. COOK	J. S. KUTZMAN/H. W. TRUESDALE
007768	05/01/20	WSRC-RP-2001-4 REV.0	10693	A/M AREA SOUTHERN SECTOR VOC-CONTAMINATED GROUNDWATER PHYTO-IRRIGATION DEMONSTRATION AIR QUALITY CONTROL EXEMPTION PACKAGE (WSRC-RP-2001-4108, REV.0) DATED MAY 2001	WSRC	
007767	05/01/20	WSRC-RP-2001-4	10693	INDUSTRIAL WASTEWATER TREATMENT FOR THE A/M AREA SOUTHERN SECTOR VOC-CONTAMINATED GROUNDWATER PHYTO-IRRIGATION DEMONSTRATION (U), (WSRC-RP-2001-4107, REV.0) DATED MAY 2001	WSRC	
002028	04/17/95 12:00:00 AM	DD-95-0072	10693	DOE EXTENSION REQUESTS FOR THE RECORDS OF DECISION (RODS) FOR A/M AREA SOUTHERN SECTOR, A/M AREA VADOSE ZONE, AND SRL GROUNDWATER CORRECTIVE ACTIONS	T. M. TREGER	J.C. CRANE/K.A. COLLINSWORTH
000799	06/01/88 12:00:00 AM	000799	10693	APPLICATION FOR A POST-CLOSURE PERMIT M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, VOL. III, BOOK 1A, GEOHYDROLOGY AND CORRECTIVE ACTION PROGRAM	DOE-SR	
000839	09/21/92 12:00:00 AM	WSRC-RP-92-730	10693	RISK EVALUATION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, DRAFT FINAL, SEPTEMBER 21, 1992	WSRC	
000882	02/13/92 12:00:00 AM	000882	10693	DRAFT TECHNOLOGY EVALUATION PLAN FOR SOIL, GROUNDWATER AND AIR REMEDIATION, M-AREA, SRS	J. D. JOHNSTON	J. W. COOK
000877	03/12/92 01:00:00 AM	000877	10693	WORKING MEETING NOTICE FOR M-AREA RODS	J. L. CRANE	C. L. BERGREN
015706	08/26/20	EQMD-08-054	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2008 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	DENNIS P. RYAN	SRS NATURAL RESOURCE TRUSTEES
015484	06/11/20	EQMD-08-022	10693	DOE SUBMITTAL OF THE ANNUAL 2007 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4086, DATED MARCH	M. PHILLIP PRATER	SRS NATURAL RESOURCE TRUSTEES
000394	12/11/91 12:00:00 AM	000394	10693	USEPA REVIEW COMMENTS ON DRAFT PROPOSED PLAN FOR M-AREA / MET LAB	J. S. KUTZMAN	J. W. COOK

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000393	12/11/91 12:00:00 AM	000393	10693	M-AREA TREATABILITY STUDIES	J. S. KUTZMAN	J. W. COOK
000356	11/06/91 12:00:00 AM	000356	10693	PRIMARY DOCUMENT REVIEW OF DRAFT PROPOSED PLANS FOR M-AREA AND MET LAB (WSRC-RP-91-821, REV. 0 AND WSRC-RP-91-823, REV. 0)	J. S. KUTZMAN	H. W. TRUESDALE
007769	05/01/20	ERD-EN-2001-006 REV.0	10693	RCRA TEMPORARY AUTHORIZATION FOR A/M AREA SOUTHERN SECTOR PHYTO-IRRIGATION DEMONSTRATION (ERD-EN-2001-0068, REV.0) DATED MAY 2001	WSRC	
000555	04/23/92 12:00:00 AM	000555	10693	DRAFT FINAL PROPOSED PLAN APPROVAL M-AREA GROUNDWATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY	J. D. JOHNSTON	J. W. COOK
000771	08/31/92 12:00:00 AM	000771	10693	SCDHEC CONCURRENCE ON THE INTERIM ACTION RECORD OF DECISION FOR THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	R. L. SHAW	J. C. SJOSTROM/G. C. TIDWELL
001424.2	05/01/90 12:00:00 AM	WSRC-RP-90-67-1 B	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	
001424.1	05/01/90 12:00:00 AM	WSRC-RP-90-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	
001426	05/01/93 12:00:00 AM	WSRC-RP-93-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY GROUNDWATER MONITORING REPORT FIRST QUARTER 1993	WSRC	
019193	10/31/20	SRNS-OS-2013-0	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE A/M GROUNDWATER AIKEN COUNTY SC1 890 008 989 2014 APPENDIX IX SAMPLING PROPOSAL FOR M AREA AND METALLUGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES POINT OF	KIM D. TAPPA	KEVIN M KOSTELNIK
020828	08/31/20	020828	10693	SCDHEC LETTER REGARDING SAVANNAH RIVER SITE SC1 890008 989 FINAL PERMIT DECISIONS FOR H-AREA TANK FARM, WASTE TANK 16 AND M-AREA AND MET LAB HWMF POST CLOSURE WSRC-IM-98-30 VOLUME III REVISION 9 DATED JULY 2016	DAVAID M. SCATURO	AMY J. MEYER
023370	09/02/20	SRNS-OS-2021-0	10693	SCDHEC LETTER REGARDING SAVANNAH RIVER SITE (SRS) - SC1 890 008 989 VIRTUAL PUBLIC HEARING AND EXTENDED COMMENT PERIOD ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT FOR 2013 RCRA PERMIT RENEWAL APPLICATION M-AREA	K. FRASIER	A. MEYER

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009991	08/13/20	009991	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - PUBLIC NOTICE ON THE M-AREA, H-AREA, AND A-AREA MISC. RUBBLE PILE OPERABLE UNIT - AUGUST 6, 2003	WSRC	
009444	01/31/20	009444	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - JANUARY 31, 2003	WSRC	
009443	01/07/20	009443	10693	ENVIRONMENTAL BULLETIN FROM THE SAVANNAH RIVER SITE - VOLUME 14, NUMBER 3, DATED FEBRUARY 7, 2003.	WSRC	
009445	02/05/20	009445	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - FEBRUARY 5, 2003	WSRC	
000385	05/01/82 12:00:00 AM	DP-1525 REV 1	10693	LOCATIONS AND AREAS OF PONDS AND CAROLINA BAYS AT THE SAVANNAH RIVER PLANT	J. D SHIELDS ET AL.	
000532	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 8	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 8 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
011396	08/09/20	011396	10693	NEWSPAPER ADVERTISEMENT - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION PUBLIC MEETING NOTICE - (AIKEN STANDARD) - AUGUST 9, 2004	WSRC	
000627	06/05/92 12:00:00 AM	000627	10693	USEPA COMMENTS ON THE DRAFT FINAL RECORD OF DECISIONS FOR M-AREA GROUND WATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY, M-AREA	J. L. CRANE	J. W. COOK
000485	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 4	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 4 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
011472	08/11/20	011472	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATIONS PUBLIC METTING NOTICE AUGUST 11, 2004	WSRC	
000484	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 5	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 5 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000597	06/25/92 12:00:00 AM	WSRC-RP-92-743	10693	INTERIM ACTION RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	DOE-SR	
000482	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 2	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 2 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000934	05/06/93 12:00:00 AM	000934	10693	SCDHEC APPROVAL ON THE REQUEST FOR THE INSTALLATION OF FIVE (5) RECOVERY WELLS IN THE M-AREA HWMF NORTHERN SECTOR OF THE SRS	R. B. EDE	J. W. COOK
000486	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 7	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 7 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	

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000483	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 3	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 3 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000354	08/19/91 12:00:00 AM	WSRC-RP-91-821, REV. 0	10693	INTERIM ACTION PROPOSED PLAN M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY CLOSURE AND A/M AREA GROUNDWATER CORRECTIVE ACTION PROGRAM, (WSRC-RP-91-821, REV.0) DATED AUGUST 1991	WSRC	
021678	06/07/20	021678	10693	EPA APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	J. Richards	B.HENNESSEY,S.
021679	06/07/20	021679	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES) - RADIOLOGICAL CONTAMINATION RESPONSE AND PATH	S. McFalls	B.HENNESSEY,J.I
021680	06/07/20	021680	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. FULMER	S.MCFALLS,J.RIC
021681	06/07/20	SRNS-J2000-2018	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. McFalls	S. Fulmer J.Richards
021235	08/17/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING THE SAVANNAH RIVER SITE - SC1 890 008 989 FINAL PERMIT DECISIONS FOR M-AREA AND METALLURGICAL LAB MAML HAZARDOUS WASTE MANAGEMENT FACILITIES. F-AREA HAZARDOUS WASTE MANAGEMENT FACILITY HWMF,	DAVID SCATURO	AMY J MEYER
021224	07/28/20	SRNS-J2000-2017	10693	SUBMITTAL OF THE SAVANNAH RIVER SITES COMMENTS ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT DATED JUNE 2017 SRNS-J2000-2017-00396 DATED JULY 28 2017	AMY MEYER	KEEHNA FRASIER
021193	06/19/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING CONDITIONAL COMPLETENESS DETERMINATION AND PUBLIC NOTICE OF A DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT LETTER ORIGINALLY DATED JUNE 14 2017 CORRECTION FOR THE 2000 RCRA PART B PERMIT	KEEHNA FRASIER	AMY J MEYER
019913	01/08/20	019913	10693	THE ENVIRONMENTAL BULLETIN ACTION MEMORANDUM ISSUED FOR THE REMOVAL SITE EVALUATION REPORT/ENGINEERING EVALUATIN/COST ANALYSIS RSER/EE/CA FOR THE REMOVAL ACTION FOR THE 489 D COAL PILE RUNOFF BASIN D 006 OUTFALL AND	SRNS	
000870	02/04/93 12:00:00 AM	000870	10693	STATUS OF THE THREATENED, ENDANGERED, AND SENSITIVE PLANTS AND ANIMALS LOCATED IN AND AROUND THE METALLURGICAL BASIN/CAROLINA BAY	J. G. IRWIN	L. VOSS
000906	03/01/89 12:00:00 AM	SRO-NERP-18	10693	CAROLINA BAYS OF THE SAVANNAH RIVER PLANT	J. F. SCHALLES,ET AL	
018507	09/20/20	018507	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY AND SAVANNAH RIVER OPERATIONS OFFICE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES	SRNS	
017403	01/25/20	EQMD-11-012	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2010 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	SHERRY SOUTHERN	SRS NATURAL RES. TURST.
016940	04/27/20	EQMD-10-017	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE ANNUAL 2009 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES	SHERRY L. SOUTHERN	SRS NATURAL RESOURCE TRUSTEES

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016625	01/08/20	016625	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND RECOVER ACT	SRNS	
016607	01/13/20	016607	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE	SRNS	
016590	01/08/20	016590	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND	SRNS	
015030	12/31/20	015030	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015028	12/13/20	015028	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015026	12/13/20	015026	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION	WSRC	
014851	10/01/20	EQMD-07-037	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2007, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II,	A.B. GOULD	SRS NR TRUSTEES
014461	04/18/20	014461	10693	DOE SUBMITTAL OF THE ANNUAL 2006 M-AREA NA D METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4001, MARCH	A.B. GOULD	
014397	03/05/20	014397	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - AFFIDAVIT OF PUBLICATION ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE	WSRC	
014396	03/05/20	014396	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE, UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES,	WSRC	
013753	08/02/20	013753	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, (WSRC-RP-2002-4160, 9/2002), AUGUST 2, 2006	WSRC	
013741	07/28/20	013741	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, DATED JULY 28, 2006	WSRC	
013132	02/21/20	OESH-06-0069-74	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE SEMI-ANNUAL 2005 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF'S) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT	A.B. GOULD	SRS NATURAL RESOURCE TRUSTEES
009134	10/10/20	OE-01-002	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE 1Q/2Q 2002 SEMI-ANNUAL M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE-ACTION	A. B. GOULD	SRS NATURAL RESOURCE TRUSTEES
000631	08/31/92 12:00:00 AM	000631	10693	SCDHEC CONCURRENCE ON THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT ROD	R. L. SHAW	L. C. SJOSTROM/G. C. TIDWELL

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001426	05/01/93 12:00:00 AM	WSRC-RP-93-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY GROUNDWATER MONITORING REPORT FIRST QUARTER 1993	WSRC	
000799	06/01/88 12:00:00 AM	000799	10693	APPLICATION FOR A POST-CLOSURE PERMIT M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, VOL. III, BOOK 1A, GEOHYDROLOGY AND CORRECTIVE ACTION PROGRAM	DOE-SR	
000839	09/21/92 12:00:00 AM	WSRC-RP-92-730	10693	RISK EVALUATION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, DRAFT FINAL, SEPTEMBER 21, 1992	WSRC	
000882	02/13/92 12:00:00 AM	000882	10693	DRAFT TECHNOLOGY EVALUATION PLAN FOR SOIL, GROUNDWATER AND AIR REMEDIATION, M-AREA, SRS	J. D. JOHNSTON	J. W. COOK
000877	03/12/92 01:00:00 AM	000877	10693	WORKING MEETING NOTICE FOR M-AREA RODS	J. L. CRANE	C. L. BERGREN
015706	08/26/20	EQMD-08-054	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2008 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	DENNIS P. RYAN	SRS NATURAL RESOURCE TRUSTEES
015484	06/11/20	EQMD-08-022	10693	DOE SUBMITTAL OF THE ANNUAL 2007 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4086, DATED MARCH	M. PHILLIP PRATER	SRS NATURAL RESOURCE TRUSTEES
000394	12/11/91 12:00:00 AM	000394	10693	USEPA REVIEW COMMENTS ON DRAFT PROPOSED PLAN FOR M-AREA / MET LAB	J. S. KUTZMAN	J. W. COOK
000393	12/11/91 12:00:00 AM	000393	10693	M-AREA TREATABILITY STUDIES	J. S. KUTZMAN	J. W. COOK
000356	11/06/91 12:00:00 AM	000356	10693	PRIMARY DOCUMENT REVIEW OF DRAFT PROPOSED PLANS FOR M-AREA AND MET LAB (WSRC-RP-91-821, REV. 0 AND WSRC-RP-91-823, REV. 0)	J. S. KUTZMAN	H. W. TRUESDALE
000555	04/23/92 12:00:00 AM	000555	10693	DRAFT FINAL PROPOSED PLAN APPROVAL M-AREA GROUNDWATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY	J. D. JOHNSTON	J. W. COOK
000771	08/31/92 12:00:00 AM	000771	10693	SCDHEC CONCURRENCE ON THE INTERIM ACTION RECORD OF DECISION FOR THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	R. L. SHAW	J. C. SJOSTROM/G. C. TIDWELL
001424.2	05/01/90 12:00:00 AM	WSRC-RP-90-67-1 B	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	
001424.1	05/01/90 12:00:00 AM	WSRC-RP-90-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	

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018309	04/30/20	018309	10693	NEWSPAPER ADVERTISEMENT THE STATE ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
018304	05/02/20	018304	10693	NEWSPAPER ADVERTISEMENT THE PEOPLE SENTINEL ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
018302	04/30/20	018302	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE DOE REQUESTS TEMPORARY AUTHORIZATION TO MODIFY THE CORRECTIVE ACTION SYSTEM AT THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY A-2 AIR STRIPPER SYSTEM AT THE	SRNS	
013393	03/22/20	013393	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE UNITED STATED DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION REQUEST, DATED	WSRC	
013396	03/22/20	013396	10693	NEWSPAPER ADVERTISEMENT - (PEOPLE-SENTINEL) - ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, PERMIT MODIFICATION REQUESTED,	WSRC	
013330	03/22/20	013330	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION REQUESTED, DATED MARCH 22, 2006	WSRC	
009991	08/13/20	009991	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - PUBLIC NOTICE ON THE M-AREA, H-AREA, AND A-AREA MISC. RUBBLE PILE OPERABLE UNIT - AUGUST 6, 2003	WSRC	
009444	01/31/20	009444	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - JANUARY 31, 2003	WSRC	
009443	01/07/20	009443	10693	ENVIRONMENTAL BULLETIN FROM THE SAVANNAH RIVER SITE - VOLUME 14, NUMBER 3, DATED FEBRUARY 7, 2003.	WSRC	
009445	02/05/20	009445	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - PUBLIC NOTICE ON THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST - M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY - FEBRUARY 5, 2003	WSRC	
011418	08/09/20	011418	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE - AUGUST 9, 2004	WSRC	
001959	05/02/95 12:00:00 AM	001959	10693	SCDHEC APPROVAL OF THE EXTENSION REQUESTS FOR THE A/M AREA SOUTHERN SECTOR, A/M AREA VADOSE ZONE, AND SRL GROUNDWATER CORRECTIVE ACTION, DATED APRIL 17, 1995	K. A. COLLINSWORTH	T. M. TREGER
000475	01/01/90 12:00:00 AM	WSRC-RP-90-133! VOL. 1	10693	A/M-AREA VADOSE ZONE CHARACTERIZATION PROJECT REPORT (U) VOLUME 1: SECTIONS 1-5, APPENDICES A-C, (WSRC-RP-90-1335) VOLUME I, DATED JANUARY 1990	CH2M HILL	
000532	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 8	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 8 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
011396	08/09/20	011396	10693	NEWSPAPER ADVERTISEMENT - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATION PUBLIC MEETING NOTICE - (AIKEN STANDARD) - AUGUST 9, 2004	WSRC	

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000485	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 4	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 4 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
011472	08/11/20	011472	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATIONS PUBLIC METTING NOTICE AUGUST 11, 2004	WSRC	
010221	10/02/20	010221	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE FOR THE HAZARDOUS WASTE PERMIT APPLICATION MODIFICATION REQUEST FOR 2000 RCRA PART B PERMIT RENEWAL APPLICATION FOR VOLUME VII MIXED WASTE MANAGMENT	WSRC	
000484	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 5	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 5 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000597	06/25/92 12:00:00 AM	WSRC-RP-92-743	10693	INTERIM ACTION RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	DOE-SR	
000482	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 2	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 2 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
011421	08/09/20	011421	10693	ENVIRONMENTAL BULLETIN FROM THE SAVANNAH RIVER SITE - VOLUME 15, NUMBER 17 - DATED AUGUST 9, 2004	WSRC	
011417	08/09/20	011417	10693	NEWSPAPER ADVERTISEMENT - (THE AUGUSTA CHRONICLE) - PUBLIC NOTICE ON THE MIXED WASTE MANAGEMENT FACILITY AND M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT MODIFICATIONS PUBLIC MEETING NOTICE	WSRC	
000934	05/06/93 12:00:00 AM	000934	10693	SCDHEC APPROVAL ON THE REQUEST FOR THE INSTALLATION OF FIVE (5) RECOVERY WELLS IN THE M-AREA HWMF NORTHERN SECTOR OF THE SRS	R. B. EDE	J. W. COOK
000486	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 7	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME 3, BOOK 7 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000483	03/01/92 12:00:00 AM	WSRC-IM-91-53, VOL. III, BK. 3	10693	1992 RCRA PART B PERMIT RENEWAL APPLICATION (U) VOLUME III, BOOK 3 OF 8, M-AREA HWMF - POST CLOSURE	WSRC	
000354	08/19/91 12:00:00 AM	WSRC-RP-91-821, REV. 0	10693	INTERIM ACTION PROPOSED PLAN M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY CLOSURE AND A/M AREA GROUNDWATER CORRECTIVE ACTION PROGRAM, (WSRC-RP-91-821, REV.0) DATED AUGUST 1991	WSRC	
018628	09/01/20	SRNS-RP-2012-00 VOLUME I	10693	SEMI-ANNUAL 2012 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT (U) SRNS-RP-2012-00622 VOLUME I PUBLICATION DATE SEPTEMBER 2012	SRNS	
023296	08/11/20	Q-SDD-M-00003	10693	INTERFERENCE REPORT FOR ABANDONMENT OF RWM-1 (905-1M) NEAR BLDG. 782-2M	B. ZAWACKI	
023295	08/11/20	Q-SDD-M-00001	10693	INTERFERENCE REPORT FOR INSTALLATION OF RWM-1R NEAR BLDG. 782-2M	B. ZAWACKI	

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021976	02/01/20	SRNS-J2000-2018	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2017 DECEMBER 31 2017 SRNS-RP-2018-00100 JANUARY 2018	SRNS	KEELY.K.
021973	03/19/20	SRNS-J2000-2015	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2014 THROUGH DECEMBER 31, 2014 (SRNS-RP-2015-00109,	SRNS	FEELY,K.
021975	02/28/20	SRNS-J2000-2017	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL PCB REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2016 THROUGH DECEMBER 31 2016 SRNS-RP-2017-00078 FEBRUARY	SRNS	FEELY,K.
021981	02/25/20	SRNS-J2000-2019	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2018 THROUGH DECEMBER 31, 2018 (SRNS-RP-2019-00102,	SRNS	FEELY,K.
021974	02/10/20	SRNS-J2000-2016	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL PCB REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM WSTS PROJECT AT THE M AREA SETTLING BASIN JANUARY 1 2015 THROUGH DECEMBER 31 2015 SRNS-RP-2016-00048 FEBRUARY	SRNS	FEELY,K.
021972	03/31/20	SRNS-J2000-2014	10693	SRNS SUBMITTAL OF THE ANNUAL POLYCHLORINATED BIPHENYL (PCB) REPORT FOR THE WESTERN SECTOR TREATMENT SYSTEM (WSTS) PROJECT AT THE M-AREA SETTLING BASIN JANUARY 1, 2013 THROUGH DECEMBER 31, 2013 (SRNS-RP-2014-00233,	SRNS	FEELY,K.
021678	06/07/20	021678	10693	EPA APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	J. Richards	B.HENNESSEY,S.
021679	06/07/20	021679	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES) - RADIOLOGICAL CONTAMINATION RESPONSE AND PATH	S. McFalls	B.HENNESSEY,J.I
021680	06/07/20	021680	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. FULMER	S.MCFALLS,J.RIC
021681	06/07/20	SRNS-J2000-2018	10693	SAVANNAH RIVER SITE REQUEST FOR APPROVAL TO EXCAVATE AND REPAIR THE RWM-05 RECOVERY WELL LINE (LOCATED WITHIN THE M-AREA OPERABLE UNIT LAND USE CONTROL BOUNDARIES)	S. McFalls	S. Fulmer J.Richards
021235	08/17/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING THE SAVANNAH RIVER SITE - SC1 890 008 989 FINAL PERMIT DECISIONS FOR M-AREA AND METALLURGICAL LAB MAML HAZARDOUS WASTE MANAGEMENT FACILITIES. F-AREA HAZARDOUS WASTE MANAGEMENT FACILITY HWMF,	DAVID SCATURO	AMY J MEYER
021224	07/28/20	SRNS-J2000-2017	10693	SUBMITTAL OF THE SAVANNAH RIVER SITES COMMENTS ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT DATED JUNE 2017 SRNS-J2000-2017-00396 DATED JULY 28 2017	AMY MEYER	KEEHNA FRASIER
021193	06/19/20	SRNS-OS-2017-0(	10693	SCDHEC LETTER REGARDING CONDITIONAL COMPLETENESS DETERMINATION AND PUBLIC NOTICE OF A DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT LETTER ORIGINALLY DATED JUNE 14 2017 CORRECTION FOR THE 2000 RCRA PART B PERMIT	KEEHNA FRASIER	AMY J MEYER
019913	01/08/20	019913	10693	THE ENVIRONMENTAL BULLETIN ACTION MEMORANDUM ISSUED FOR THE REMOVAL SITE EVALUATION REPORT/ENGINEERING EVALUATIN/COST ANALYSIS RSER/EE/CA FOR THE REMOVAL ACTION FOR THE 489 D COAL PILE RUNOFF BASIN D 006 OUTFALL AND	SRNS	
000803	08/01/91 12:00:00 AM	WSRC-TR-91-475	10693	ALTERNATIVE STUDY ON THE A/M AREA VADOSE ZONE REMEDIATION PROJECT (U)	WSRC	

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018507	09/20/20	018507	10693	NEWSPAPER ADVERTISEMENT AIKEN STANDARD ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY AND SAVANNAH RIVER OPERATIONS OFFICE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES	SRNS	
017403	01/25/20	EQMD-11-012	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2010 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	SHERRY SOUTHERN	SRS NATURAL RES. TURST.
016940	04/27/20	EQMD-10-017	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE ANNUAL 2009 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES	SHERRY L. SOUTHERN	SRS NATURAL RESOURCE TRUSTEES
016625	01/08/20	016625	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND RECOVER ACT	SRNS	
016607	01/13/20	016607	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE SENTINEL) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE	SRNS	
016590	01/08/20	016590	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE CLASS 2 NOTIFICATION M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUEST, 2000 RESOURCE CONSERVATION AND	SRNS	
015030	12/31/20	015030	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015028	12/13/20	015028	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION MODIFICATION REQUESTED	WSRC	
015026	12/13/20	015026	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES, PERMIT APPLICATION	WSRC	
014851	10/01/20	EQMD-07-037	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2007, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II,	A.B. GOULD	SRS NR TRUSTEES
014461	04/18/20	014461	10693	DOE SUBMITTAL OF THE ANNUAL 2006 M-AREA NA D METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF's) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4001, MARCH	A.B. GOULD	
014397	03/05/20	014397	10693	NEWSPAPER ADVERTISEMENT - (AUGUSTA CHRONICLE) - AFFIDAVIT OF PUBLICATION ON THE UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE	WSRC	
014396	03/05/20	014396	10693	NEWSPAPER ADVERTISEMENT - (AIKEN STANDARD) - PUBLIC NOTICE, UNITED STATES DEPARTMENT OF ENERGY, SAVANNAH RIVER OPERATIONS OFFICE, M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES,	WSRC	
013753	08/02/20	013753	10693	NEWSPAPER ADVERTISEMENT - (THE PEOPLE-SENTINEL) - ON THE M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, (WSRC-RP-2002-4160, 9/2002), AUGUST 2, 2006	WSRC	
013741	07/28/20	013741	10693	NEWSPAPER ADVERTISEMENT - (THE STATE) - M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT MODIFICATION REQUESTED, DATED JULY 28, 2006	WSRC	

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013132	02/21/20	OESH-06-0069-74	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE SEMI-ANNUAL 2005 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES (HWMF'S) GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT	A.B. GOULD	SRS NATURAL RESOURCE TRUSTEES
009134	10/10/20	OE-01-002	10693	DOE SUBMITTAL (TO THE SRS NATURAL RESOURCE TRUSTEES) OF THE 1Q/2Q 2002 SEMI-ANNUAL M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE-ACTION	A. B. GOULD	SRS NATURAL RESOURCE TRUSTEES
018534	09/20/20	018534	10693	NEWSPAPER ADVERTISEMENT THE STATE ON THE PUBLIC NOTICE UNITED STATES DEPARTMENT OF ENERGY SAVANNAH RIVER OPERATIONS OFFICE M AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES PERMIT	SRNS	
000476	01/01/90 12:00:00 AM	WSRC-RP-90-133 VOL. 2	10693	A/M-AREA VADOSE ZONE CHARACTERIZATION PROJECT REPORT (U) VOLUME 2: APPENDICES D-F, (WSRC-RP-90-1335) VOLUME II, DATED JANUARY 1990	CH2M HILL	
000631	08/31/92 12:00:00 AM	000631	10693	SCDHEC CONCURRENCE ON THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT ROD	R. L. SHAW	L. C. SJOSTROM/G. C. TIDWELL
001426	05/01/93 12:00:00 AM	WSRC-RP-93-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY GROUNDWATER MONITORING REPORT FIRST QUARTER 1993	WSRC	
002028	04/17/95 12:00:00 AM	DD-95-0072	10693	DOE EXTENSION REQUESTS FOR THE RECORDS OF DECISION (RODS) FOR A/M AREA SOUTHERN SECTOR, A/M AREA VADOSE ZONE, AND SRL GROUNDWATER CORRECTIVE ACTIONS	T. M. TREGER	J.C. CRANE/K.A. COLLINSWORTH
000799	06/01/88 12:00:00 AM	000799	10693	APPLICATION FOR A POST-CLOSURE PERMIT M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, VOL. III, BOOK 1A, GEOHYDROLOGY AND CORRECTIVE ACTION PROGRAM	DOE-SR	
000839	09/21/92 12:00:00 AM	WSRC-RP-92-730	10693	RISK EVALUATION: M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY, DRAFT FINAL, SEPTEMBER 21, 1992	WSRC	
015706	08/26/20	EQMD-08-054	10693	DOE SUBMITTAL OF THE SEMI-ANNUAL 2008 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II	DENNIS P. RYAN	SRS NATURAL RESOURCE TRUSTEES
015484	06/11/20	EQMD-08-022	10693	DOE SUBMITTAL OF THE ANNUAL 2007 M-AREA AND METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, VOLUMES I AND II (WSRC-RP-2007-4086, DATED MARCH	M. PHILLIP PRATER	SRS NATURAL RESOURCE TRUSTEES
000394	12/11/91 12:00:00 AM	000394	10693	USEPA REVIEW COMMENTS ON DRAFT PROPOSED PLAN FOR M-AREA / MET LAB	J. S. KUTZMAN	J. W. COOK
000393	12/11/91 12:00:00 AM	000393	10693	M-AREA TREATABILITY STUDIES	J. S. KUTZMAN	J. W. COOK
000356	11/06/91 12:00:00 AM	000356	10693	PRIMARY DOCUMENT REVIEW OF DRAFT PROPOSED PLANS FOR M-AREA AND MET LAB (WSRC-RP-91-821, REV. 0 AND WSRC-RP-91-823, REV. 0)	J. S. KUTZMAN	H. W. TRUESDALE
000555	04/23/92 12:00:00 AM	000555	10693	DRAFT FINAL PROPOSED PLAN APPROVAL M-AREA GROUNDWATER, M-AREA BASIN/LOST LAKE AND MET LAB BASIN/CAROLINA BAY	J. D. JOHNSTON	J. W. COOK

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000771	08/31/92 12:00:00 AM	000771	10693	SCDHEC CONCURRENCE ON THE INTERIM ACTION RECORD OF DECISION FOR THE M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY OPERABLE UNIT	R. L. SHAW	J. C. SJOSTROM/G. C. TIDWELL
001424.2	05/01/90 12:00:00 AM	WSRC-RP-90-67-1 B	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	
001424.1	05/01/90 12:00:00 AM	WSRC-RP-90-67-1	10693	M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY POST-CLOSURE CARE PERMIT GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM 1990 FIRST QUARTER REPORT	WSRC	
019193	10/31/20	SRNS-OS-2013-0(	10693	SCDHEC APPROVAL OF THE SAVANNAH RIVER SITE A/M GROUNDWATER AIKEN COUNTY SC1 890 008 989 2014 APPENDIX IX SAMPLING PROPOSAL FOR M AREA AND METALLUGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITIES POINT OF	KIM D. TAPPA	KEVIN M KOSTELNIK
020828	08/31/20	020828	10693	SCDHEC LETTER REGARDING SAVANNAH RIVER SITE SC1 890008 989 FINAL PERMIT DECISIONS FOR H-AREA TANK FARM, WASTE TANK 16 AND M-AREA AND MET LAB HWMF POST CLOSURE WSRC-IM-98-30 VOLUME III REVISION 9 DATED JULY 2016	DAVAID M. SCATURO	AMY J. MEYER
023370	09/02/20:	SRNS-OS-2021-0(	10693	SCDHEC LETTER REGARDING SAVANNAH RIVER SITE (SRS) - SC1 890 008 989 VIRTUAL PUBLIC HEARING AND EXTENDED COMMENT PERIOD ON THE DRAFT RCRA HAZARDOUS AND MIXED WASTE PERMIT FOR 2013 RCRA PERMIT RENEWAL APPLICATION M-AREA	K. FRASIER	A. MEYER

LIST OF REVISIONS

REVISION #	REVISION DATE	BOOK	PAGES AFFECTED
0	01/14/2020	1	All
0	01/14/2020	2	All
1		1	1 through 2, x through xb, xvi, A-4, A-7, A-10, B-5a through B-7, B-12, B-14 through B-19, E.1-49, E.1-78 through E.1-78b, E.2-3, E.2-18, E.2-26 through E.2-26b, E.2-29 through E.2-31, E.2-33 through E.2-34, E.2-40, E.2-44, E.2-47, E.3-1, E.4-1 through E.4-6, E.5-2 through E.5-4, E.5-12 E.5-17 through E.5-20, E.8-2 through E.8-3, E.8-5, E.8-8, E.8-17 through E.8-18, E.8-36, E.8-38, E.8-40, E.8-43 through E.8-44, E.8-47 through E.8-49, E.8-52 through E.8-53, E.8-56 through E.8-57, E8-59, E.8-75 through E.8-76, E.8-83, E.8-103, E.8-106, E.8-112, E.8-116 through E.8-117, E.8-128 through E.8-129, E.8-136 through E.8-137, E.8-139 through E.8-141, E.8-145 through E.8-146, E.8-151 through E.8-152, E.8-154 through E.8-156b,

LIST OF REVISIONS (continued)

REVISION #	REVISION DATE	BOOK	PAGES AFFECTED
1	08/27/2020	1	E.8-160, E.8-175, E.8-177, E.8-181 through E.8-182, E.8-197 through E.8-198, E.8-212, E.8-215, E.8-223, E.8-229 through E.8-232, I-20, and K-1 through K-2
1	08/27/2020	2	Appendix 1 and Appendix 3
2	01/12/2022	1	2, xvii through xviii, xxxiii through xxxiv, E.5-4, E.5-6, E.5-8 through E.5-9, E.5-11, E.5-14, E.7-3 through E.7-4, E.7-21, E.7-25, E.7-27 through E.7-27a, E.7-28a, E.8-59, E.8-137, E.8-175, E.8-180 through E.8-180b, E.8-186 through E.8-186b, E.8-196 through E.8-197, E.8-223, E.8-229 through E.8-230, I-2, and K-1 through K-2
3	09/29/2022	1	2, 3, 4, xiii, xvi through xxii, xxxiv, E.5-3 through E.5-3b, E.5-5 through E.5-5b, E.5-11 through E.5-14, E.5-20 E.7-4, E.7-13 through E.7-14 E.7-17 through E.7-19, E.7-27 through E.7-27a, E.8-20 through E.8-21, E.8-23 through E.8--29,

LIST OF REVISIONS (continued)

REVISION #	REVISION DATE	BOOK	PAGES AFFECTED
3	09/29/2022	1	E.8-52 through E.8-52d, E.8-57, E.8-59, E.8-62 through E.8-64, E.8-73 through E.7-74, E.8-76 through E.8-76b, E.8-77a through E.8-78, E.8-89, E.8-92 through E.8-92b, E.8-101a through E.8-101b, E.8-103, E.8-128 through E.8-128b, E.8-136a through E.8-137, E.8-155, E.8-182 through E.8-182b, E.8-186 through E.8-186d, E.8-196b through E.8-197, E.8-214 through E.8-216, E.8-219 through E.8-221, E.8-223, and K-1 through K-2

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LIST OF FIGURES

LIST OF FIGURES (continued)

LIST OF FIGURES (continued)

LIST OF FIGURES (continued)

LIST OF ACRONYMS AND ABBREVIATIONS

µg	microgram
ABRP	A-Area Burning/Rubble Pits
ac	acre
ACL	alternate concentration limit
ANOVA	analysis of variance
AQC	air quality control
ARL	average run length
ARP	A-Area Miscellaneous Rubble Pile
ARW	airlift recirculation well
BART™	Biological Activity Reaction Test
BDAT	Best Demonstrated Available Technology
bls	below land surface
BRA	Baseline Risk Assessment
°C	degrees Celsius
CABF	Cochran's Approximation to the Behrens-Fisher t-test
CAP	Corrective Action Plan
CBA	Crouch Branch aquifer
CBCU	Crouch Branch confining unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
cfs	cubic feet per second
cm	centimeter
COC	constituent of concern
CUSUM	cumulative sums
DNAPL	dense non-aqueous phase liquid
DUS	Dynamic Underground Stripping
EES	Equipment Engineering Section
EP	extraction procedure
ESD	Explanation of Significant Difference
FFA	Federal Facility Agreement
FR	Federal Register
ft	foot
g	gram
gal	gallon
GC/MS	gas chromatography/mass spectrometry
GCCZ	“green clay” confining zone
GCS	Geologic Consulting Service
gpd	gallons per day
gpm	gallons per minute

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

GWPS	Groundwater Protection Standards
HCM	hydrogeologic conceptual model
HOC	halogenated organic carbon
HP	Health Protection
hp	horsepower
HWMF	Hazardous Waste Management Facility
in	inch
IROD	Interim Record of Decision
ITRC	Interstate Technology and Regulatory Council
kg	kilogram
L	liter
lb	pound
LDR	Land Disposal Restrictions
LETF	Liquid Effluent Treatment Facility
LLLAZ	Lower Lost Lake aquifer zone
LOQ	limit of quantitation
MAAZ	M-Area aquifer zone
MCB/MBP	Miscellaneous Chemical Basin/Metals Burning Pit
mCi	millicurie
MCL	maximum contaminant level
MCS	monitoring constituent standard
Met Lab	Metallurgical Laboratory
mg	milligram
MIA	Multi-Stage In-well Aerator
mi	mile
min	minute
mL	milliliter
MNA	monitored natural attenuation
MSAZ	Middle Sand aquifer zone
msl	mean sea level
MWW	Mann-Whitney/Wilcoxon
ng	nanogram
NOD	Notice of Deficiency
NPDES	National Pollutant Discharge Elimination System
NPWDS	National Primary Drinking Water Standards
NTU	nephelometric turbidity unit
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
pCi	picocurie

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

PDWS	Primary Drinking Water Standards
POC	point of compliance
ppb	parts per billion
ppm	parts per million
ppmv	parts per million by volume
PQL	practical quantitation limit
psi	pounds per square inch
PSVE	passive soil vapor extraction
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RMET	Raw Materials Engineering and Technology Department
SAS	Statistical Analysis System
SCDHEC	South Carolina Department of Health and Environmental Control
scfm	standard cubic feet per minute
SCHNS	South Carolina Hydrostratigraphic Nomenclature Subcommittee
SCHWMR	South Carolina Hazardous Waste Management Regulations
SREL	Savannah River Ecology Laboratory
SRL	Savannah River Laboratory
SRNL	Savannah River National Laboratory
SRS	Savannah River Site
SSTA	Solvent Storage Tank Area
SVE	soil vapor extraction
SVEU	soil vapor extraction unit
SWMU	solid waste management unit
TA	temporary authorization
TB	Tims Branch
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TEGD	Technical Enforcement Guidance Document
TOC	total organic carbon
TSCA	Toxic Substances Control Act
ULLAZ	Upper Lost Lake aquifer zone
US DOD	United States Department of Defense
US DOE	United States Department of Energy
US DOE-SR	United States Department of Energy Savannah River Operations Office
US EPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VOC	volatile organic compound
VOS™	Vadose Oil Substrate™

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

WSRC, LLC	Washington Savannah River Company, Limited Liability Company
yr	year
ZOCA	zone of capture analysis

LIST OF STAND-ALONE DOCUMENTS (continued)

Title	Document Number
SCDHEC Approval Letter RE: 2000 RCRA Part B Permit Renewal Application for M-Area and Metallurgical Laboratory HWMFs Post Closure (2000 RCRA Part B), Volume III, Rev. 5, Letter Hayford to Haynes dated Dec. 30, 2009 Savannah River Site (SRS) SC1 890 008 989, dated July 21, 2011	Not Applicable
SRNS Submittal of the 2000 RCRA Part B Permit Renewal Application: M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities (M-Area and Met Lab HWMFs) Post Closure (WSRC-IM-98-30, Volume III, Revision 5, October 2009)	SRNS-J2000-2009-00086, December 2009
Western Sector In-situ Chemical Oxidation Project: Initial Results Following Injection Activities (U), Revision 0, June 2019	SRNS-STI-2019-00166, Revision 0, June 2019
Western Sector In-situ Chemical Oxidation Project: Supplemental Results after Injection Activities (U), Revision 0, February 2020	SRNS-STI-2020-00046, Revision 0, February 2020
SRNS Submittal of the Temporary Authorization Request for Additional Field Scale Testing of In Situ Chemical Oxidation Process in Western Sector of M-Area Hazardous Waste Management Facility	SRNS-J2000-2020-00020, January 2020
SCDHEC Approval Letter Re: Savannah River Site (SRS) – SCI 890 008 989 Submittal of the Temporary Authorization (TA) Request for Additional Field Scale Testing of In Situ Chemical Oxidation Process in Western Sector of M-Area Hazardous Waste Management Facility, Dated January 13, 2020	SRNS-OS-2020-00126, March 2020
Western Sector In-situ Chemical Oxidation Project: Additional Injection Pilot Testing Supplemental Results (U), March 2021	SRNS-STI-2021-00048, Revision 0, March 2021
SCDHEC Comments on the Savannah River Site (SRS) – SCI 890 008 989 Submittal of the Western Sector In-situ Chemical Oxidation Project: Additional Injection Pilot Testing Supplemental Results (SRNS-STI-2021-00048, Revision 0, March 2021); Letter Dated April 5, 2021	SRNS-OS-2021-00147, June 2021

LIST OF STAND-ALONE DOCUMENTS (continued)

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation (ft msl)	Screen Zone Top (ft above msl)	Screen Zone Bottom (ft above msl)	Aquifer
ABP 3	i	3686223.41	431154.8	351.9	236.9	206.9	MAAZ
ABP 3C	i	3686219.0	431156.9	352.30	165.30	160.30	ULLAZ
ABP 8D	i	3686144.2	431014.5	368.80	228.20	208.10	MAAZ
ABP 9B	i	3685825.6	430884.7	350.00	146.00	141.00	LLLAZ
ABP 9C	i	3685821.7	430887.0	350.40	176.10	171.10	ULLAZ
ABP 10D	i	3686233.8	430731.5	351.40	226.85	206.95	MAAZ
AC 2A	a	3688499.6	430221.2	342.70	146.00	141.00	LLLAZ
AC 3A		3686582.0	429993.1	300.40	153.60	148.60	ULLAZ
AMB 4B	m	3689038.7	431733.7	378.30	157.30	152.30	LLLAZ
AMB 7	m	3689008.6	431809.2	368.10	242.10	222.10	MAAZ
AMB 7A	m	3689019.0	431788.8	371.60	125.60	115.60	MSAZ_CBCU
AMB 7B	m	3689015.2	431791.3	370.90	162.90	152.90	LLLAZ
AMB 11B	m	3688872.8	432019.1	362.50	184.50	174.50	ULLAZ
AMB 11D	m	3688869.7	432026.2	362.00	240.50	220.50	MAAZ
AMB 12D	m	3688980.0	431934.3	367.80	239.40	219.40	MAAZ
AMB 14D	m	3689049.6	431679.8	380.10	235.10	215.10	MAAZ
AMB 15D	m	3689108.4	431645.7	381.20	236.20	216.20	MAAZ
AOB 1		3688309.3	431888.9	338.50	248.50	218.50	MAAZ
ARP 1A	i	3686511.4	430872.8	353.00	223.00	193.00	MAAZ_GCCZ_ULLAZ
ARP 3DR	i	3686516.0	431100.5	337.09	206.84	201.90	MAAZ_GCCZ
ARP 4	i	3686389.9	430982.9	346.80	227.80	197.80	MAAZ_GCCZ
ARP 12B1	g, i	3686768.8	430884.9	347.05	134.95	124.85	LLLAZ
ARP 12C3	g, i	3686768.8	430884.9	347.05	175.05	164.95	ULLAZ
ARP 13B1	g, i	3686752.0	431050.6	336.10	139.00	129.00	LLLAZ
ARP 13C1	g, i	3686752.0	431050.6	336.10	184.10	179.10	ULLAZ
ARP 13C3	g, i	3686752.0	431050.6	336.10	169.10	159.00	ULLAZ
ARP 14B1	g, i	3686288.6	430972.5	352.67	102.57	92.57	MSAZ_CBCU
ARP 14C2	g, i	3686288.6	430972.5	352.67	197.67	187.67	ULLAZ
ARP 14C3	g, i	3686288.6	430972.5	352.67	167.67	157.67	ULLAZ
ARP 15B1	g, i	3686310.3	431085.0	349.26	122.06	112.06	MSAZ_CBCU
ARP 15C3	g, i	3686310.3	431085.0	349.26	162.16	152.16	ULLAZ
ARP 17B	i	3686001.7	430999.4	363.36	135.36	125.34	LLLAZ
ARP 17C	i	3686004.6	431003.1	363.23	169.23	159.19	ULLAZ
ARP 17TA1	g, i	3686006.1	431006.9	363.20	47.98	37.73	CBAU
ARP 17TB1	g, i	3686006.1	431006.9	363.20	-22.27	-32.52	CBAU
ARP 17TC1	g, i	3686006.1	431006.9	363.20	-117.54	-127.77	CBAU
ARP 18B		3686199.554	430827.55	359.35	149.35	139.32	LLLAZ
ARP 19DR	i	3686495.7	430778.8	357.46	210.46	200.42	MAAZ_GCCZ
ARP 20C	i	3686425.1	431021.3	343.19	178.01	167.99	ULLAZ
ARP 21C	i	3686454.3	430877.8	356.00	186.00	175.97	ULLAZ
ARP 21D	i	3686449.6	430879.1	356.52	206.52	201.57	MAAZ
ARP 22A	i	3685647.0	431100.7	357.26	117.26	107.24	MSAZ_CBAU
ASB 2AR	o	3689635.65	431826.4	353.1	240.1	220.2	GCCZ
ASB002B	o	3689642.6	431830.708	352.8	159.8	149.8	LLLAZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
ASB 2CR	p	3689629.7	431823.6	353.10	183.10	173.10	ULLAZ
ASB 3AR	p	3689690.9	431874.1	339.10	243.10	223.10	MAAZ
ASB 3CR	p	3689696.0	431876.2	339.00	184.00	174.00	ULLAZ

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Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

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Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
ASB 4	o	3689783.53	431830.12	333.1	256.1	226.1	MAAZ
ASB004AA	o	3689796.0	431829.4	335.00	82.22	72.23	MSAZ_CBCU
ASB004B	o	3689802.6	431828.9	334.40	129.84	119.84	LLLAZ
ASB004C	o	3689804.8	431827.7	334.70	180.02	170.02	ULLAZ
ASB 5AR	p	3689717.0	431756.9	344.50	243.80	223.80	MAAZ
ASB 5C	p	3689710.1	431755.6	344.80	175.10	165.10	ULLAZ
ASB 6AA	o, p	3689636.5	431736.2	351.80	82.80	78.10	MSAZ_CBCU
ASB 6C	p	3689641.1	431737.4	351.50	178.50	173.80	ULLAZ
ASB 6TA	o, p	3689646.9	431738.9	351.00	40.00	34.50	CBAU
ASB 8	p	3689886.1	431740.2	346.60	226.60	206.60	MAAZ
ASB 8A	p	3689879.7	431737.7	347.20	83.50	77.90	MSAZ_CBCU
ASB 8B		3689876.5	431737.0	347.60	128.40	122.80	MSAZ_CBCU
ASB 8C	p	3689873.0	431736.3	347.60	188.30	182.70	ULLAZ
ASB 8TA	o, p	3689882.5	431738.3	347.30	24.60	19.40	CBAU
ASB 9B		3689631.9	432331.7	306.60	164.40	158.80	LLLAZ
ASB 9C	p	3689630.2	432327.6	307.90	182.90	178.20	ULLAZ
ASB 10CR		3689677.3	431829.3	346.70	181.70	171.70	ULLAZ
ASB011B	o	3689808.892	432149.867	320.74	150.44	140.44	LLLAZ
ASB011C	o	3689805.377	432152.43	319.82	184.82	174.82	ULLAZ
BMW004D	a	3683093.7	432530.5	282.7	100.7	95.7	ULLAZ
IDP 3B	a	3681895.2	431771.2	283.1	169.1	164.1	LLLAZ
IDP 3C	a	3681899.5	431769.8	326.1	225.9	205.9	ULLAZ
MCB 2	a	3686142.0	431447.6	326.10	225.90	205.90	MAAZ
MCB 4	i	3686194.1	431249.9	348.20	229.60	208.60	MAAZ
MCB 5	i	3686174.1	431324.3	337.70	226.30	206.30	MAAZ
MCB 5C	i, j	3686168.8	431327.7	337.2	161.20	156.20	ULLAZ
MCB 6C	i, j	3686254.8	431395.1	330.00	170.00	165.00	ULLAZ
MCB 7C	i, j	3686127.0	431361.1	335.70	160.70	155.70	ULLAZ
MCB 11B	i	3686028.8	431629.1	300.10	110.10	105.10	MSAZ_CBCU
MCB 12B	i	3686486.6	431240.8	325.70	137.70	132.70	LLLAZ
MCB 12C	i	3686487.8	431236.4	326.00	162.00	157.00	ULLAZ
MCB 14B	i	3684775.5	431166.7	304.80	131.80	126.79	LLLAZ
MCB 14C	i	3684778.5	431170.2	305.20	148.20	143.19	ULLAZ
MCB 15B	i	3685536.1	430972.4	349.60	136.60	131.63	LLLAZ
MCB 15C	i	3685552.1	430968.3	348.90	165.90	160.90	ULLAZ
MCB 16B		3685611.666	430663.9069	360.4	137.4	132.4	LLLAZ
MCB 16C	i	3685606.4	430665.8	360.00	166.00	161.00	ULLAZ
MCB 17B	i	3684438.9	430965.1	280.60	112.60	107.60	LLLAZ
MCB 18B	i	3684418.3	431177.3	306.90	121.90	116.90	LLLAZ
MCB 19B	i	3684716.638	431539.8	323.5	125.5	120.5	LLLAZ
MCB 21B2	g, i	3685910.9	431092.2	363.16	172.66	167.66	ULLAZ
MCB 22B2	g, i	3685266.0	431119.6	318.55	135.55	135.55	LLLAZ
MCB 22C2	g, i	3685266.0	431119.6	318.55	170.55	160.55	ULLAZ
MCB 23B	i	3685361.8	430788.8	352.70	168.70	163.70	ULLAZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation (ft msl)	Screen Zone Top (ft above msl)	Screen Zone Bottom (ft above msl)	Aquifer
MCB 24B2	i	3684955.6	431182.9	310.02	135.02	125.02	LLLAZ
MCB 24C2	g, i	3684955.6	431182.8	318.55	170.55	160.55	ULLAZ
MCB 25B	i	3684146.3	430967.0	288.20	108.20	103.20	LLLAZ
MCB025C	i	3684148.9	430970.2	288.80	153.80	143.80	ULLAZ
MCB 26B2	i	3684912.1	430702.5	285.15	127.15	117.15	LLLAZ
MCB 26C2	g, i	3684912.1	430702.5	285.15	152.15	142.15	ULLAZ
MCB 27B	i	3684293.5	430709.0	249.90	108.90	103.90	LLLAZ
MCB 28B2	g, i	3684542.996	430635.6	246.75	143.75	133.75	LLLAZ
MCB 28C2	g, i	3684542.996	430635.6	246.75	118.75	108.75	ULLAZ
MCB025C		3684148.9	430970.2	288.80	143.80	133.80	ULLAZ
MCB029B	i	3683456.8	430675.6	222.54	102.54	92.54	LLLAZ
MCB029C		3683462.4	430673.0	222.60	137.60	127.60	ULLAZ
MCB030B		3683811.6	431171.4	279.00	89.00	79.00	LLLAZ
MCB030C		3683813.8	431173.3	279.70	139.70	129.70	ULLAZ
MCB031B		3683123.4	430918.2	223.30	83.30	73.30	LLLAZ
MCB031C		3683121.9	430921.5	223.60	138.60	128.60	ULLAZ
MCB032B	a, i	3683286.9	429302.9	172.84	102.14	92.14	LLLAZ
MCB032C	a, i	3683287.0	429308.6	172.69	130.09	120.09	ULLAZ
MCB033B	i	3683150.5	430232.3	172.24	107.24	97.24	LLLAZ
MCB033C	i	3683155.3	430234.0	172.54	137.24	127.24	ULLAZ
MCB034B	i	3682123.7	429877.3	157.69	92.89	82.89	LLLAZ
MCB034C	i	3682130.8	429877.6	157.53	127.13	117.13	ULLAZ
MCB035B	a, i	3681996.2	430708.1	174.99	108.89	98.89	LLLAZ
MCB035C	a, i	3681994.8	430711.7	175.30	146.70	141.70	ULLAZ
MCB036B	i	3683890.009	430505.0313	225.48	108.7	118.7	LLLAZ
MCB036C	i	3683890.288	430507.614	225.91	75.6	85.7	ULLAZ
MCB037B	i	3684835.717	430559.0959	274.83	155.4	165.4	LLLAZ
MCB037C	i	3684837.786	430555.2443	275.23	125.4	135.4	ULLAZ
MCB038B	i	3685387.775	430242.9842	334.71	207.6	217.6	LLLAZ
MCB038C	i	3685384.866	430242.9107	334.32	175.6	185.6	ULLAZ
MCB039B	i	3684586.121	429456.8267	192.64	105.5	115.5	LLLAZ
MCB039C	i	3684587.769	429454.7637	192.55	65.7	75.7	ULLAZ
MCB040A	i	3684768.769	430941.2671	281.86	224.2	234.2	MSAZ_CBCU
MCB040B	i	3684769.42	430938.8929	282.28	166.3	176.3	LLLAZ
MCB040C	i	3684770.129	430936.0914	282.25	136	146	ULLAZ
MOX 6	b	3688086.80	431427.03	355.52	222.72	217.72	MAAZ
MOX 8	b	3688023.99	431254.27	353.78	215.78	210.78	MAAZ
MSB 9AR		3688069.8	431296.5	361.95	163.95	153.95	LLLAZ
MSB 10A		3687988.7	431168.2	355.20	125.20	120.20	MSAZ_CBCU
MSB 10C	a, b	3687991.5	431164.9	355.10	211.00	206.20	MAAZ
MSB 11A	a, l	3688146.5	431288.2	363.40	135.80	130.80	LLLAZ
MSB 11C		3688151.7	431285.1	363.50	182.90	177.90	ULLAZ
MSB 11F		3688144.0	431289.8	363.60	243.10	223.10	MAAZ
MSB 12A		3687806.4	430994.3	347.10	122.10	117.10	LLLAZ
MSB 12B		3687798.9	431000.2	347.70	162.40	157.40	ULLAZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
MSB 12TA		3687800.5	430994.6	347.40	-102.60	-112.60	CBAU
MSB 12TB		3687797.0	430997.6	347.70	14.70	-5.30	CBAU
MSB 14A	b	3687887.85	431455.49	346.60	164.60	144.60	LLLAZ
MSB 14B	b	3687889.69	431453.09	346.90	193.90	188.90	ULLAZ
MSB 14C	b	3687891.73	431450.93	347.20	243.90	223.90	MAAZ
MSB 15A		3688276.1	431287.8	365.80	167.80	162.80	ULLAZ
MSB 15AA		3688267.1	431291.2	367.10	147.10	142.40	LLLAZ
MSB 15D		3688273.2	431290.2	366.40	241.40	221.90	MAAZ
MSB 16A		3688475.9	431194.5	365.50	166.80	161.80	LLLAZ
MSB 16C		3688481.9	431192.2	365.80	244.80	224.80	MAAZ

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Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
MSB 17B		3687577.9	430819.0	357.20	190.80	185.80	ULLAZ
MSB 17BB		3687582.0	430812.1	356.90	136.90	132.20	LLLAZ
MSB 18A		3687156.5	431079.0	339.90	163.90	158.90	ULLAZ
MSB 18B		3687159.4	431078.9	340.00	198.50	193.50	ULLAZ
MSB 19B		3688165.3	432162.9	298.50	147.70	142.70	LLLAZ
MSB 19C		3688164.9	432166.1	298.70	218.70	198.70	MAAZ
MSB 20A		3687918.4	430505.6	353.30	162.60	157.60	LLLAZ
MSB 20C		3687926.2	430510.6	352.70	232.70	212.70	MAAZ
MSB 21B		3688247.7	430722.4	353.20	147.20	142.50	LLLAZ
MSB 21C		3688234.3	430718.1	353.00	233.20	213.20	MAAZ
MSB 21TA	n	3688233.4	430712.6	352.6	22.6	17.3	CBAU
MSB021TB	g, n	3688220.7	430711.0	351.60	-56.40	-66.40	CBAU
MSB021TC	g, n	3688220.7	430711.0	351.60	-106.40	-116.40	CBAU
MSB 23BR		3688691.2	431154.6	370.90	177.90	172.90	ULLAZ
MSB 23R		3688690.3	431163.6	371.20	230.95	220.95	MAAZ
MSB 23TA		3688671.7	431150.2	370.40	65.40	60.40	CBAU
MSB 23TB1	g	3688627.6	431110.6	371.01	-11.56	-21.82	CBAU
MSB 23TB3	g	3688627.6	431110.6	371.01	-106.52	-116.78	CBAU
MSB 23TR		3688632.6	431107.1	370.80	40.80	35.90	CBAU
MSB 24		3688860.1	431245.7	378.90	243.90	223.90	MAAZ
MSB 24A	a	3688863.2	431244.3	379.90	178.80	168.80	ULLAZ
MSB 25	a	3688554.1	431402.8	364.70	244.70	224.70	MAAZ
MSB 25A		3688553.6	431399.1	364.70	169.70	159.70	LLLAZ
MSB 26		3688698.3	431024.0	359.50	240.50	220.50	MAAZ
MSB 26B		3688707.0	431018.5	360.40	136.60	131.80	LLLAZ
MSB 27		3688884.7	431093.9	374.00	244.00	234.00	MAAZ
MSB 27B		3688876.5	431099.4	374.70	169.90	164.40	ULLAZ
MSB 28		3688703.0	430860.4	352.60	230.60	210.60	MAAZ
MSB 28A		3688705.3	430860.4	352.80	157.80	152.80	ULLAZ
MSB 29A	p	3689778.2	431102.5	362.90	122.90	117.30	MSAZ_CBCU
MSB 29B	c, p	3689773.0	431099.2	362.70	151.70	145.10	LLLAZ
MSB 29C	c, p	3689770.0	431097.3	362.70	179.70	174.10	ULLAZ
MSB 29D	c, p	3689775.6	431100.8	362.60	227.60	207.00	MAAZ_GCCZ_ULLAZ
MSB 29TA		3689780.8	431104.2	362.90	63.90	58.60	CBAU
MSB 30AA		3688795.6	430586.9	351.30	96.30	90.70	MSAZ_CBCU
MSB 30B		3688798.7	430588.9	351.70	128.70	123.10	LLLAZ
MSB 30CC		3688801.8	430591.0	352.00	164.00	158.40	ULLAZ
MSB030TB	g, n	3688791.5	430584.3	350.30	-61.70	-71.70	CBAU
MSB030TC	g, n	3688791.5	430584.3	350.30	-131.70	-141.70	CBAU
MSB 31A	a, k	3688257.1	431781.6	346.00	22.00	12.00	CBAU
MSB 31B		3688253.7	431775.9	346.30	157.30	152.30	LLLAZ
MSB 31C		3688255.3	431779.0	346.10	236.10	216.10	MAAZ
MSB 31CC		3688252.2	431772.9	346.40	181.40	176.70	ULLAZ
MSB 32		3688156.9	432847.1	253.10	218.10	198.10	GCCZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
MSB112B	o	3689656.191	431570.7837	353.58	178.38	168.38	LLLAZ
MSB112C	o	3689653.347	431572.8311	353.81	208.61	198.61	ULLAZ
MSB113A	o	3689802.94	431570.057	348.13	123.13	113.13	MSAZ_CBCU
MSB113AA	o	3689799.93	431572.745	348.01	93.71	83.71	MSAZ_CBCU
MSB113B	o	3689806.18	431567.408	348.24	178.24	168.24	LLLAZ
PW 116G	n	3685413.98	429004.2	205	95	85	LLLAZ
RWM-009-M		3688833.222	431475.1731	377.6	142.3	132.3	LLLAZ
RWM-011-M		3689024.232	431336.208	380.3	152.3	142.3	LLLAZ
RWM-013-CM	o	3689811.72	431937.4	333.20	138.20	113.00	MSAZ_CBCU
RWM-013-BM	o	3689810.77	431932.8	333.40	173.40	153.30	ULLAZ_LLLAZ
SLW 7	a	3682736.2	431277.9	174.10	154.10	229.10	ULLAZ
SRW 2A		3687168.0	429383.7	319.10	98.40	88.60	MSAZ_CBCU
SRW 2B		3687169.7	429381.4	319.20	162.60	152.80	ULLAZ
SRW 13A	a	3686817.3	429274.7	295.70	103.60	93.80	MSAZ_CBCU
SRW 13B	a	3686816.9	429277.9	295.70	163.20	153.30	LLLAZ
SRW 14A		3686931.6	429519.6	324.90	123.70	113.90	LLLAZ
SRW 14B		3686934.5	429521.1	324.90	162.90	153.10	ULLAZ
SRW 16A		3687393.0	429670.8	344.50	144.10	119.40	LLLAZ
SRW 16B		3687394.2	429668.0	344.40	169.90	160.10	ULLAZ
SSL 13B	k	3686356.2	433531.9	192.98	176.48	174.48	ULLAZ
SSL 13C	k	3686356.2	433531.9	192.98	191.48	186.48	ULLAZ
SSL 20B	k	3685055.5	433593.5	180	97.5	87.5	LLLAZ_MSAZ_CBCU
SSL 20C	k	3685036.0	433587.8	176.98	163.18	158.18	ULLAZ
SSL 25B	k	3683769.9	434654.9	145.23	131.98	129.98	LLLAZ
SSL 25C	k	3683769.9	434654.9	145.23	141.98	136.98	LLLAZ
SSL 30B	k	3684847.3	433765.9	166	102.4	92.3	LLLAZ_MSAZ_CBCU
SSL 33B	k	3686400.0	433470.5	192.60	122.60	117.60	LLLAZ
SSL 33C	k	3686397.8	433468.7	192.60	167.60	162.60	ULLAZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
SSM 4B	k	3687588.4	432342.9	307.5	146.70	141.70	LLLAZ
SSM 5B	k	3687613.5	432354.8	312	148.00	143.00	LLLAZ
SSM 10B2	g, k	3687416.1	432189.6	290.54	155.54	145.54	LLLAZ
SSM 10C2	g, k	3687416.1	432189.6	290.54	180.54	170.54	ULLAZ
SSM 11A	k	3687657.7	432267.5	315.9	105.9	100.9	MSAZ_CBCU
SSM 11B2	g, k	3687655.7	432263.1	316.12	161.12	151.12	LLLAZ
SSM 11C2	g, k	3687655.7	432263.1	316.12	191.12	181.12	ULLAZ
SSM 12B2	g, k	3687604.3	432518.4	301.87	153.87	143.87	LLLAZ
SSM 12C2	g, k	3687604.3	432518.4	301.87	182.47	172.47	ULLAZ
SSM 13B2	g, k	3686758.9	432073.0	315.51	157.51	147.51	LLLAZ
SSM 13C2	g, k	3686758.9	432073.0	315.51	187.51	177.51	ULLAZ
SSM 14B2	g, k	3686690.1	432238.1	322.78	161.08	151.08	LLLAZ
SSM 14C2	g, k	3686690.1	432238.1	322.78	187.78	177.78	ULLAZ
SSM 15B2	g, k	3687011.3	432323.8	308.88	162.88	152.88	LLLAZ
SSM 15C2	g, k	3687011.3	432323.8	308.88	190.38	180.38	ULLAZ
SSM 16B2	g, k	3687224.5	432388.3	300.16	154.16	144.16	LLLAZ
SSM 16C2	g, k	3687224.5	432388.3	300.16	184.16	174.16	ULLAZ
SSM 17B2	g, k	3687395.2	432433.4	276.73	155.77	145.77	LLLAZ
SSM 17C2	g, k	3687395.2	432433.4	276.73	180.73	170.73	ULLAZ
SSM 19B	g, k	3688057.8	431868.8	342.8	176.8	166.8	LLLAZ
SSM 19C	g, k	3688057.8	431868.4	342.8	199.8	189.8	ULLAZ
SSM 19D	k	3688055.8	431866.4	343	220	210	MAAZ
SSM 20A	k	3687918.7	432112.1	337.2	105.2	100.2	MSAZ_CBCU
SSM 20B	g, k	3687923.5	432113.3	336.8	141.7	131.7	LLLAZ
SSM 20C	g, k	3687923.5	432113.3	336.8	181.8	171.8	ULLAZ
SSM 21A	k	3686281.8	432294.6	277.9	100.9	90.9	MSAZ_CBCU
SSM 21B	k	3686284.9	432293.4	278.3	138.3	128.2	LLLAZ
SSM 21TA	k	3686288.8	432292.8	281.51	29.51	19.51	CBAU
SSM 22A	k	3686707.9	432622.4	307.3	91.3	81.3	MSAZ_CBCU
SSM 22B	g, k	3686712.1	432625.4	306.8	125.7	115.7	LLLAZ
SSM 22C	g, k	3686712.1	432625.4	306.8	170.8	160.8	ULLAZ
SSM 23B	k	3687148.3	432205.3	318.96	168.96	158.96	LLLAZ
SSM 23C	k	3687150.1	432208.4	318.58	193.58	183.58	ULLAZ
SSM 24AL	k	3685837.4	433105.6	272.22	85.22	75.22	MSAZ_CBCU
SSM 24B	k	3685834.7	433103.2	272.44	145.44	135.44	LLLAZ
SSM 25AL	k	3685222.5	432832.7	256.28	74.28	64.28	MSAZ_CBCU
SSM 25B	k	3685219.8	432836.5	258.58	137.58	127.58	LLLAZ
SSM 25TA	k	3685215.0	432837.5	256.39	51.19	41.19	MSAZ_CBCU
SSM029B	k	3687681.5	432049.8	325.6	164.85	154.85	LLLAZ
SSM029C	k	3687683	432047	325.71	193.63	183.63	ULLAZ
SSM030B	k	3686579.56	432028.6	285.45	151.35	141.35	LLLAZ
SSM031A	k	3686914.426	432396.7041	293.27	111.77	106.17	MSAZ_CBCU
SSM031C	k	3686914.329	432394.8162	293.34	162.54	152.54	ULLAZ
SSM031TA	k	3686914.74	432398.9865	293.15	30.65	20.65	CBAU
SSM032A	k	3685953.1	432708.8	300.47	82.34	72.34	MSAZ_CBCU

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

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Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
SSM032B	k	3685954.4	432706.7	300.66	132.58	122.58	LLLAZ
SSM032C	k	3685955.3	432705.4	300.71	165.96	155.96	ULLAZ
SSM032TA	k	3685951.3	432710.8	300.27	-4.1	-14.09	CBAU
SSM033A	k	3684951.1	432255.2	297.76	96.06	86.06	MSAZ_CBCU
SSM033TA	k	3684953.5	432255.7	297.57	3.78	-6.4	CBAU
SSM034A	k	3684362.3	432869.5	252.01	96.79	86.79	MSAZ_CBCU
SSM034AA	k	3684361.1	432867.7	251.69	42.36	32.36	MSAZ_CBCU
SSM034B	k	3684363.5	432870.8	252.1	128.26	118.26	LLLAZ
SSM035A	k	3684253.0	433209.9	230.7	56.99	46.99	MSAZ_CBCU
SSM035TA	k	3684251.8	433209.1	230.71	-15.04	-25.04	CBAU
SSM036A	k	3684304.3	433729.8	212.41	78.56	68.56	MSAZ_CBCU
SSM036B	k	3684303.1	433725.9	212.29	144.29	134.29	LLLAZ
TIMS 01	f, k	3686582.2	433627.2	N/A	N/A	N/A	N/A
TIMS 03	f, k	3684882.0	433795.0	N/A	N/A	N/A	N/A
TIMS 04	f, k	3687347.4	433133.6	N/A	N/A	N/A	N/A

a Wells and piezometers for determining water levels only.
b These wells are used as alternate POC wells during DUS/WSTS operations at the M-Area Settling Basin.
c These wells are used as background wells for both the M-Area and Met Lab HWMFs.
d These wells are monitored as plume definition wells due to high concentrations.
f Stream monitoring location.
g Multi-level wells that are analyzed for VOCs only and are not used in synchronous water level events.
i These wells are associated with the ABRP/MCB OU and are sampled per Table E.7-3.
j These wells are associated with the M-Area HWMF (plume definition wells) and the ABRP/MCB OU.
k These wells are associated with Southern Sector and are sampled per Table E.7-4.
l This well is used as an alternate plume definition well during DUS/WSTS operations at the M-Area Settling Basin.
m These wells are associated with the Met Lab and are sampled per Table E.7-2.
n These wells are associated with Western Sector and are sampled per Table E.7-5.
o These wells are associated with Northern Sector and are sampled per Table E.7-6.
p These wells are associated with Northern Sector and are sampled per Table E.7-1.

Aquifer Designations:
CBAU – Crouch Branch Aquifer Unit
GCCZ – Green Clay Confining Zone
LLLAZ – Lower Lost Lake Aquifer Zone
MAAZ – M-Area Aquifer Zone
MSAZ_CBCU – Middle Sand Aquifer Zone of the Crouch Branch Confining Unit
ULLAZ – Upper Lost Lake Aquifer Zone

The following is a list of the deleted or abandoned wells:

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ABP1A	ASB9	MSB35A	MSB81B	RWM16PB	SSM3B
ABP1AR	MCB6	MSB35D	MSB83B	RWM17B	SSM3C
ABP2A	MCB8D	MSB37A	MSB83C	SRW1	SSM4C
ABP1DD	MCB9D	MSB37D	MSB83D	SRW1BB	SSM5C
ABP2DD	MCB11C	MSB38B	MSB83TA	SRW2	SSM6B
ABP4	MCB21C2	MSB38D	MSB84A	SRW3A	SSM6C
ABP4DD	MSB1A	MSB41A	MSB84C	SRW3BB	SSM7B
ABP6D	MSB1CC	MSB41C	MSB85B	SRW4	SSM7C
ABP7D	MSB2A	MSB41D	MSB85D	SRW4BB	SSM8B
ABP8C	MSB3A	MSB43DD	MSB85TA	SRW5	SSM8C
ABS2B	MSB4A	MSB44A	MSB86C	SRW6	SSM9B
ABW1	MSB9A	MSB44B	MSB86TA1	SRW7	SSM9C
AC1A	MSB9B	MSB44C	MSB86TA3	SRW8	
AC1B	MSB9C	MSB45C	MSB85TA5	SRW8BB	
AC2B	MSB10B	MSB46B	MSB87B	SRW9	
AC3B	MSB10D	MSB51D	MSB88D	SRW9A	
ACB1A	MSB11B	MSB51DD	MSB89C	SRW9B	
ACB2A	MSB11D	MSB52B	MSB93TA3	SRW10	
ACB3A	MSB14A	MSB52D	MSB93TA5	SRW10BB	
ACB4A	MSB14C	MSB54B	RWM1	SRW11	
AMB13AR	MSB15C	MSB54C	RWM2	SRW11BB	
AOB2	MSB17A	MSB54D	RWM3	SRW12A	
AOB3	MSB17C	MSB54TA	RWM4	SRW12B	
ARP2	MSB17D	MSB57D	RWM5	SRW12C	
ARP3C	MSB18C	MSB58D	RWM6	SRW13C	
ARP5D	MSB21A	MSB61C	RWM7	SRW14C	
ARP8D	MSB22	MSB61D	RWM8	SRW15A	
ARP9D	MSB26A	MSB64B	RWM10	SRW15B	
ARP10D	MSB27A	MSB67D	RWM9	SRW15C	
ARP11D	MSB27TA	MSB 68D	RWM11	SRW16C	
ARP12C1	MSB29DD	MSB69B	RWM12	SRW17BB	
ARP15C1	MSB30A	MSB69D	RWM13B	SRW17C	
ARP16D	MSB30C	MSB73B	RWM13C	SRW17D	
ARP20A	MSB32B	MSB73TB1	RWM14B	SSL30C	
ARP21D	MSB32C	MSB73TC1	RWM14C	SSM1B	
ASB1A	MSB33	MSB77TA	RWM15B	SSM1C	
ASB6A	MSB33TA	MSB78D	RWM16	SSM2B	
ASB7	MSB34TB	MSB78DR	RWM16PA	SSM2C	

uppermost aquifer. Furthermore, recovery well operations will continue to influence local hydrogeologic conditions.

POC well MSB-3D has been identified as a well containing DNAPLs. Additionally, polychlorinated biphenyl (PCB) contamination has been confirmed in groundwater samples collected from well MSB-3D. On September 22, 1993, SRS notified SCDHEC in writing of this contamination. It appears that the PCB contamination is associated with the DNAPLs present in the area of well MSB-3D. The following wells are those A/M-Area unit wells most likely to be located in or near a DNAPL or near known high volume solvent release sources such as the M-Area Settling Basin and old A-14 outfall: POC wells MSB-1D, MSB-2D, MSB-3D, MSB-4D, and MSB-59D; plume definition wells MSB-9C, MSB-10C, MSB-22, and MSB-31C; and recovery wells RWM-1, RWM-6, and RWM-10. Section E.7 discusses the monitoring program for DNAPL and PCB contaminated wells, and Section E.8 discusses the DNAPL Corrective Action Program Plan.

Plume Definition Wells

The A/M Area is surrounded by an extensive network of plume definition wells. The plume definition wells are listed in Table E.5-1. These wells have the prefix designation of ABP, AC, ACB, AMB, AOB, ARP, ASB, MCB, MSB, SRW, SSL, or SSM. The locations of these wells are shown on Map 5 in Appendix 1.

The plume definition wells have been installed to assess changes in the rate and extent of the plume of contamination (based on new information) or to assess the effectiveness and suitability of the corrective action program. These groundwater monitoring wells are installed in downgradient areas east, southeast, southwest, and west of the M-Area HWMF to identify where additional corrective action measures may be needed. Plume definition wells screen the upper and lower portions of the regulatory uppermost aquifer, the principal confining unit, and the regional confined aquifer in the A/M Area.

Background/Upgradient Wells

The groundwater underlying and surrounding the M-Area HWMF is contaminated with degreasing solvents, and a corrective action program has been implemented. The interim status monitoring data demonstrated that the groundwater quality had been affected by these solvents at the POC. Consequently, monitoring wells to determine background water quality were not installed in the immediate vicinity of the M-Area HWMF. Wells MSB-29B, MSB-29C, MSB-29D, MSB-43A, MSB-43B, and MSB-43D were installed outside the A/M-Area manufacturing area and approved by SCDHEC as the background/upgradient monitoring wells for the M-Area HWMF. The locations of these wells relative to the M-Area HWMF are shown on Figure E.1-1. To date, water quality data from these wells have indicated that they have not been affected by the M-Area HWMF.

Remediation Wells

Remediation wells include all wells currently part of a remediation system within the A/M Area. These systems include the recovery wells (RWM) of the pump and treat system (M-1), and the vadose zone extraction wells within the Central Sector. Each set of wells is discussed individually within its respective description detailed in Section E.8.

Each recovery well continues to be sampled quarterly for VOCs including TCE and PCE. The volumes of groundwater pumped from the recovery well system and average concentrations of TCE and PCE for each recovery well are presented in the Corrective Action Reports. These wells have the prefix designation of RWM. The locations of these wells are shown on Map 1 in Appendix 1.

Corrective action is being accomplished in M Area by pumping contaminated groundwater to an air stripper where VOCs are removed. The M-Area comprehensive remedial action system consisted of two full-scale production air strippers (M-1 and A-2) fed by 19 recovery wells. The recovery wells are screened as fully penetrating aquifer extraction wells; that is, the wells are screened almost the entire length of the ULLAZ and LLLAZ with some screens

Table E.7-1. M-Area HWMF Groundwater Protection Standard/Monitoring Contaminants (261 Appendix VIII / 264 Appendix IX Hazardous Contaminants)

I. Groundwater Protection Standard

Contaminant	Concentration Limit
Inorganics	
Barium[c]	2.0 mg/L[a]
Lead[c]	0.015 mg/L[a]
Mercury[o]	0.002 mg/L[a]
Nickel[d]	0.39 mg/L[b]
Organics	
Chlorobenzene	0.1 mg/L[a]
cis-1,2-Dichloroethene	0.07 mg/L[a]
1,1-Dichloroethene[k]	0.007 mg/L[a]
1,4-Dioxane[j]	6.1 µg/L
Polychlorinated Biphenyls	0.0005 mg/L[a]
1,1,1,2-Tetrachloroethane	0.57 µg/L[b]
1,1,2,2-Tetrachloroethane	0.076 µg/L[b]
Tetrachloroethene	0.005 mg/L[a]
Trans-1,2-Dichloroethene	0.1 mg/L[a]
1,1,1-Trichloroethane	0.2 mg/L[a]
Trichloroethene	0.005 mg/L[a]

II. Monitoring Contaminants

Inorganics	Aluminum[e], Beryllium[m], Cadmium[l], Chloride[f], Chromium[f], Cobalt[f], Copper[f], Manganese[f], Nitrate/Nitrite as Nitrogen[g], Sodium[e], Sulfate[h], Vanadium[n], Zinc[f]
Organics	Benzene, Chloroform, 1,2-Dichlorobenzene, Lindane[p], Toluene
Radionuclides[i]	Gross Alpha, Gross Beta, Total Radium
Field Parameters	pH, Specific Conductance, Temperature

a MCL – Maximum Contaminant Level as established in the US EPA Drinking Water Regulations and Health Advisories (updated 2018)
b Concentration based on May 2021 EPA Regional Screening Level (RSL) for tap water, Nickel as soluble salt.
c Barium and Lead analyses of groundwater from plume definition wells located along the sewer line and point of compliance (POC) wells
d Nickel analyses of groundwater from plume definition wells located along the sewer line and screened within the water table and water table POC wells
e Aluminum and Sodium analyses of groundwater from all POC and plume definition wells.
f Chloride, Chromium Cobalt, Copper, Manganese, and Zinc analyses of groundwater from background wells
g Nitrate/Nitrite as Nitrogen analyses of groundwater from all POC wells, plume definition wells within Western Sector, and Southern Sector wells west of Road D
h Sulfate analyses of groundwater from plume definition wells around SRL Seepage Basins and from plume definition wells in Northern Sector
i Radionuclide analyses of groundwater at all POC wells and plume definition wells located at MSB-17, MSB-18, and MSB-39 well clusters
j 1,4-Dioxane analyses of groundwater at POC and plume definition wells per Table E.7-3, Table E.7-5, and Table E.7-7.
k 1,1-Dichloroethene analyses of groundwater for all POC wells.
l Cadmium analysis in wells MSB 29A, MSB 39A, MSB 39B, MSB 39C, MSB 40A, and MSB 49B.
m Beryllium analysis in wells MSB 6C, MSB 7C, MSB 8C, MSB 18A, and MSB 63C.
n Vanadium analysis in wells MSB 13D, MSB 60D, MSB 62D, MSB 63D, and MSB 64DR.
o Mercury analysis in wells MSB 1B, MSB002BR, MSB004BR, MSB 7B, MSB 8B, MSB009AR, MSB 10A, MSB 13A, MSB 14A, MSB 23R, MSB 62B, MSB 63B, and RWM 10.
p Lindane analysis at all POC wells

Table E.7-2. Met Lab HWMF Groundwater Protection Standard/Monitoring Contaminants (261 Appendix VIII / 264 Appendix IX Hazardous Contaminants)

I. Groundwater Protection Standard[e]

Contaminant	**Concentration Limit**
Inorganics	
Aluminum	20 mg/L[c]
Barium	2.0 mg/L[a]
Chromium	0.1 mg/L[a]
Copper	1.3 mg/L[b]
Lead	0.015 mg/L[b]
Nickel	0.39 mg/L[c]
Mercury	0.002 mg/L[a]
Zinc	6 mg/L[c]
Organics	
Acetone	14 mg/L[c]
Carbon Tetrachloride	0.005 mg/L[a]
1,1-Dichloroethane	0.0028 mg/L[c]
1,1-Dichloroethene	0.007 mg/L[a]
Tetrachloroethene	0.005 mg/L[a]
Trans-1,2-Dichloroethene	0.1 mg/L[a]
1,1,1-Trichloroethane	0.2 mg/L[a]
Trichloroethene[d]	0.005 mg/L[a]
Vinyl Chloride	0.002 mg/L[a]

II. Monitoring Contaminants[e]

Inorganics	Chloride, Cobalt, Iron[d], Manganese, Nitrate/Nitrite as Nitrogen, Selenium, Sodium, Sulfate, Total Organic Carbon, Total Organic Halogens
Radionuclides	Gross Alpha, Gross Beta, Total Radium[d]
Field Parameters	pH, Specific Conductance, Temperature

a MCL – Maximum Contaminant Level as established in the US EPA Drinking Water Regulations and Health Advisories (updated 2018)

b Action Level as established in the US EPA Drinking Water Regulations and Health Advisories (updated 2018)

c Concentration based on May 2021 EPA Regional Screening Level (RSL) for tap water, Nickel as soluble salt.

d Trichloroethene, iron, and total radium analysis at all point of compliance, plume definition, and background wells.

e All constituents listed in Table E.7-2 will be sampled annually at a minimum of 40% of the POC wells selected for the Appendix IX suite of constituents.

all PCB contaminated groundwater and vapor condensate to be filtered before it is sent to the M-1 Air Stripper. Although the DUS project was completed in 2009, the Mycelex filtrations system remains in operation to filter PCBs before being sent to the M-1 Air Stripper. The SVE and the groundwater remediation portions of the DUS system, including the Mycelex filtration system, are now designated as the WSTS to reflect the fact that steaming operations have ceased. This is described in the *Western Sector Treatment System (WSTS) Project Description (U)* (SRNS-RP-2012-00230).

<u>Met Lab HWMF</u>

Table E.7-2 provides the Met Lab HWMF GWPS/Monitoring Contaminants list. Groundwater Protection Standard and Monitoring Contaminant analytes from Table E.7-2 have been less than their respective concentration limits for three consecutive years or longer, except for iron, TCE, and total radium, and are no longer required to be sampled at the Met Lab HWMF. Details about long term monitoring at the Met Lab HWMF are provided in Section E.8.3.3.4.

All POC, plume definition, and background wells are sampled semi-annually for iron, TCE, total radium, and field parameters (i.e., pH, specific conductance, temperature). SRS provides groundwater monitoring data for radionuclides on a voluntary basis. Without relinquishing sovereign authority for regulation of radionuclides under the Atomic Energy Act, DOE-SR agrees, as a matter of comity, with the State of South Carolina, to perform the radionuclide analyses requested and to report the results in the Annual Corrective Action Report.

Sampling for the Appendix IX suite of constituents is conducted at a minimum of 40 percent of the POC wells. The selected POC wells will also be sampled for the full list of constituents on Table E.7-2. Well selection is based on previous sampling results, so that samples obtained will be representative of groundwater conditions. At least forty-five (45) days prior to the sampling period, SRS will submit to SCDHEC for review and comment a rationale and a specific proposal detailing which POC wells have been selected for the annual analysis of Appendix IX contaminants.

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Synchronous water levels (within 60 days) are collected semi-annually at all POC, plume definition, and background wells. Evaluation of up to 20 years of quarterly synchronous water level data indicates that changes in water levels occur gradually over time rather than quickly in response to rainfall events. This is consistent with the significant depth to the water table. Similar behavior is observed in all aquifers. Semi-annual water level monitoring is adequate to track any long-term trends.

E.7.3.3 A-Area Burning/Rubble Pits and Rubble Pit and Miscellaneous Chemical Basin Groundwater Monitoring Program

Groundwater monitoring for the ABRP/MCB groundwater unit includes monitoring of groundwater contamination in the MAAZ, LLAZ, MS_CBCU, and CBAU. Table E.7-3 identifies the groundwater monitoring details for the ABRP/MCB/MBP OU plume definition wells. Water level measurements are taken at the same frequency as the sampling frequency designated for the contaminants. Section E.8.3.3.8 provides details on the investigation and remediation of the ABRP/MCB/MBP OU.

E.7.3.4 Southern Sector Groundwater Monitoring Program

Groundwater monitoring for Southern Sector groundwater includes monitoring of groundwater contamination in the MAAZ, LLAZ, MS_CBCU, and CBAU. Table E.7-4 identifies the groundwater monitoring details for the Southern Sector plume definition wells. Water level measurements are taken at the same frequency as the sampling frequency designated for the contaminants.

Table E.7-3. Summary of the ABRP/MCB Groundwater Monitoring Strategy

Aquifer	Well Name	Proposed Sample Frequency	Well Location	Field Parameter	Chloro-benzene	Chloroethene (Vinyl Chloride)	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	1,4-Dioxane	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)	Water Elevation (ONLY)
MAAZ	ABP 3	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	ABP 8D	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	ABP 10D	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ_GCCZ_ULLAZ	ARP 1A	Annual	ABRP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ_GCCZ	ARP 3DR	Semi-annual	ABRP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ_GCCZ	ARP 4	Annual	ABRP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ_GCCZ	ARP 19DR	Annual	ABRP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	ARP 21D	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	MCB 4	Annual	MCB/MBP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	MCB 5	Annual	MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ABP 3C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ABP 9C	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 12C3	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 13C1	Annual	ABRP Upgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	ARP 13C3	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 14C2	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 14C3	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 15C3	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 17C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 20C	Annual	ABRP Plume Edge/MCB Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 21C	Annual	MCB Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	BMW004D	Annual	East of ABRP Plume													X
ULLAZ	IDP 3C	Annual	East of ABRP Plume													X
ULLAZ	MCB 5C	Annual	MCB Upgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	MCB 6C	Annual	MCB Upgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	MCB 7C	Annual	MCB Upgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	MCB 12C	Annual	MCB Downgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	MCB 14C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 15C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 16C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 21B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	

Table E.7-3. Summary of the ABRP/MCB Groundwater Monitoring Strategy *(Continued)*

Aquifer	Well Name	Proposed Sample Frequency	Well Location	Field Parameter	Chloro-benzene	Chloroethene (Vinyl Chloride)	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	1,4-Dioxane	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)	Water Elevation (ONLY)
ULLAZ	MCB 22C2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 23B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 24C2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB025C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 26C2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 28C2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB029C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB030C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB031C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB032C	Annual	ABRP/MCB/MBP Plume Downgradient													X
ULLAZ	MCB033C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB034C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB035C	Annual	ABRP/MCB/MBP Plume Downgradient													X
ULLAZ	MCB036C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB037C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB038C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB039C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB040C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	SLW 7	Annual	East of ABRP Plume													X
LLLAZ	ABP 9B	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	ARP 12B1	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	ARP 13B1	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	ARP 17B	Annual	ABRP/MCB/MBP Downgradient Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	ARP 18B	Annual	ABRP/MCB/MBP Downgradient Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	IDP 3B	Annual	East of ABRP Plume													X
LLLAZ	MCB 12B	Annual	MCB Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 14B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 15B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 16B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 17B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	

Table E.7-3. Summary of the ABRP/MCB Groundwater Monitoring Strategy *(Continued/End)*

Aquifer	Well Name	Proposed Sample Frequency	Well Location	Field Parameter	Chloro-benzene	Chloroethene (Vinyl Chloride)	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	1,4-Dioxane	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)	Water Elevation (ONLY)
LLLAZ	MCB 18B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 19B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X		X	X	X	X	
LLLAZ	MCB 22B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 24B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X		X	X	X	X	
LLLAZ	MCB 25B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 26B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X		X	X	X	X	
LLLAZ	MCB 27B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X		X	X	X	X	
LLLAZ	MCB 28B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB029B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB030B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB031B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB032B	Annual	ABRP/MCB/MBP Plume Downgradient													X
LLLAZ	MCB033B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB034B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB035B	Annual	ABRP/MCB/MBP Plume Downgradient													X
LLLAZ	MCB036B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB037B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB038B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB039B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB040B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	ARP 14B1	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	ARP 15B1	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	ARP 22A	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	MCB 11B	Annual	ABRP/MCB/MBP Sidegradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	MCB040A	Annual	ABRP/MCB/MBP Sidegradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	ARP 17TA1	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	ARP 17TB1	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	ARP 17TC1	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	MSB 73TA1	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	MSB 93TA1	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	

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Table E.7-6. Northern Sector A-2 Air Stripper Shutdown Groundwater Monitoring Program

Well Name	Aquifer	Sampling Frequency	Field Parameter	Monitoring Constituents								
				Chloro-benzene	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)
ASB 6TA	CBAU	Quarterly	x	x	x	x	x	x	x	x	x	x
ASB 8TA	CBAU	Quarterly	x	x	x	x	x	x	x	x	x	x
MSB 47TA	CBAU	Quarterly	x	x	x	x	x	x	x	x	x	x
ASB 2AR	MAAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB 4	MAAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB 82D	MAAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB004C	ULLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB011C	ULLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB111C	ULLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB112C	ULLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
RWM-013-CM	ULLAZ_LLLAZ	Quarterly	x	x	x	x	x	x	x	x	x	x
ASB002B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB004B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB011B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB 67C	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB111B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB112B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB113B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB004AA	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB 6AA	MSAZ_CBCU	Quarterly	x	x	x	x	x	x	x	x	x	x
MSB 47BB	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB 67B	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB 82A	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB111A	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB111AA	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x

Table E.7-6. Northern Sector A-2 Air Stripper Shutdown Groundwater Monitoring Program (*continued/end*)

Well Name	Aquifer	Sampling Frequency	Field Parameter	Monitoring Constituents								
				Chloro-benzene	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)
MSB112A	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB113A	MSAZ_CBCU	Quarterly	x	x	x	x	x	x	x	x	x	x
MSB113AA	MSAZ_CBCU	Quarterly	x	x	x	x	x	x	x	x	x	x
RWM-013-BM	MSAZ_CBCU	Quarterly	x	x	x	x	x	x	x	x	x	x

replaced with 2-in cascade Mini Ring packing in 1990. Liquid distribution trays are provided for each bed. A tails pump is located at the discharge of the column to transport treated water to a National Pollutant Discharge Elimination System (NPDES) permitted outfall. A variable-speed blower provides the air supply to the column with a maximum capacity of approximately 5,000 cubic feet per minute (cfm).

Two recovery wells RWM 17B and RWM 17D were installed within the Met Lab HWMF area in May 1996. Installation details for the recovery wells are listed in Table E.8-1, and well construction records are provided in *Well Construction Records and Geologic Data for the M-Area Hazardous Waste Management Facility* (WSRC-RP-98-4090). All the M-1 Air Stripper recovery wells (i.e., RWM 1 through RWM 11, RWM 17D, and RWM-17B) and the location of the air stripper are illustrated on Figure E.8-1.

RWM 16 was installed in Southern Sector in 1990. This recovery well was never connected to the M-1 Air Stripper and has never operated as a recovery well.

Since full scale operation started in 1985, the M-1 Air Stripper has treated approximately 7 billion gallons of groundwater removing over 500,000 pounds of solvent. The annual mass of solvent removed by the M-1 Air Stripper has declined with time (Figure E.8-3); however, recent modifications to the system have increased mass removal since 2014. The modifications have included replacing pumps, maximizing pumping rates, and optimizing the recovery well network. The screen interval for RWM 17D is located in the water table aquifer or M-Area Aquifer Zone (MAAZ). Drought conditions present from 2000 to 2012, lowered the water table elevation throughout the region causing the screen interval at RWM 17D to be dry in 2004 preventing its operation. Water elevations continue to be low and TCE concentrations are less than the groundwater protection standard (GWPS) eliminating the need to operate RWM 17D. RWM 17D was abandoned in 2016. Recovery wells RWM 9, RWM 11, and RWM 17B were removed from operation in 2018. These three recovery wells had been experiencing decreasing PCE and TCE concentrations (Figure E.8-4, Figure E.8-5, and Figure E.8-6). Table E.8-4 shows the average PCE and TCE concentration for 2021 of the 14 recovery wells plumbed to the M-1 Air Stripper, of which RWM 9, RWM 11, and RWM 17B are the three lowest. More detailed discussion on the permanent shutdown and future abandonment of RWM 17B is provided in Section E.8.3.3.4 of this document.

In addition to low PCE and TCE concentrations, RWM 9 and RWM 11 were taken offline to free up treatment capacity at the M-1 Air Stripper for two new recovery wells. RWM 9 and RWM 11 were converted to monitoring wells in July 2022. The conversion installed a 2 inch PVC well inside the existing 8 inch carbon steel well casing. The screen interval of the new 2 inch wells mimics the deepest screen interval at each well and isolated the shallower screen intervals by filling the 8 inch annulus space with bentonite pellets. The new monitoring wells will be named RWM-009-M and RWM-011-M, respectively.

The M-1 Air Stripper has a maximum treatment capacity of 600 gallons of groundwater per minute (gpm) and typically operates between 400 and 500 gpm. New recovery well, RWM018, was installed in Western Sector to contain a high concentration contaminant plume located outside of the original hydraulic capture zone of the M-1 Air Stripper. RWM 018 was installed in 2017 and connected to the M-1 Air Stripper in 2018. Another new recovery well, RWM019, was installed in 2019 between RWM 7 and RWM 10 to contain a high concentration contaminant plume located east of the MASB. RWM019 was connected to the M-1 Air Stripper in 2020.

The M-1 Air Stripper is permitted as a Clean Water Act wastewater treatment plant (SCDHEC Wastewater Construction/Operation Permit #10,253). Discharge of the effluent or treated wastewater from this system is regulated through the National Pollutant Discharge Elimination System (NPDES) (SCDHEC Permit #SC0000175). The influent groundwater to the air stripper contains mercury on the order of 250 ng/L. This level exceeds the NPDES limit of 51 ng/L (monthly average) and 140 ng/L (daily maximum) for the receiving outfall. Air stripping alone is ineffective in removing mercury from the treated effluent. In 2003 the use of a chemical reducing agent for mercury removal was evaluated on a laboratory scale. During 2007, full-scale testing was performed to evaluate mercury removal using chemical reduction followed by volatilization. The full-scale testing demonstrated that mercury in the influent wastewater could be removed with the addition of a reducing agent (stannous chloride). The M-1 Air Stripper was modified to include a small reagent storage tank, an injection pump(s), flow indication, and an injection quill that added the reducing reagent to the influent wastewater of the M-1 air stripper. The modifications were needed to comply with NPDES permit limits that became effective in December of 2007. Mercury exceeded the maximum contaminant level (MCL) or 2 µg/L at POC well MSB002BR during the 2015 Appendix IX sampling event. Mercury was added as a corrective action constituent in August 2016 after resampling attempts confirmed mercury concentrations at MSB002BR. The monitoring wells with mercury concentrations exceeding the MCL are located near the MASB and are within the zone of capture of RWM 1, RWM 10, and RWM019 (once operational). With the stannous chloride system already operational, no additional corrective action is recommended for mercury.

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Table E.8-2. A/M-Area Recovery Well Installation Details

Page 1 of 4

Well Number	Total Depth	Base of Sump	Screened Intervals	Top of Gravel Pack	Top of Sand Pack	Screen Type	Casing Type
	(ft bls)						
RWM-1	190.5	N/A	130.50-190.50	128.0	125.0	8" Diameter Stainless Steel #15 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-2	240.0	235	160.00-170.00 180.00-190.00 200.00-210.00 220.00-230.00	129.0	120.0	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-3	240.0	235	160.00-170.00 180.00-190.00 200.00-210.00 220.00-230.00	130.0	125.0	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-4	243.0	239.42	151.67-161.98 172.23-182.56 192.83-203.14 223.68-234.00	120.5	115.8	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-5	260.0	235.55	147.17-157.54 167.88-178.24 198.89-209.26 219.63-230.00	120.5	115.3	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-6	216.0	210.55	127.40-137.74 158.37-168.71 179.02-189.36 194.66-205.00	95.5	90.2	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-7	212.0	207.5	129.75-140.08 150.39-160.72 171.02-181.35 191.86-202.00	100.6	95.1	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-8	251.0	241	148.12-158.47 168.76-179.10 205.02-215.35 225.66-236.00	94.4	89.1	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-9*	255.0	250.56	157.05-167.40 177.69-188.05 208.69-219.03 234.65-245.00	132.2	127.7	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40

Table E.8-2. A/M-Area Recovery Well Installation Details

Page 2 of 4

Well Number	Total Depth	Base of Sump	Screened Intervals	Top of Gravel Pack	Top of Sand Pack	Screen Type	Casing Type
	(ft bls)						
RWM-10	239.0	230.56	137.08-147.43 157.74-168.09 194.01-204.34 214.64-225.00	106.7	101.2	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-11*	257.0	244.07	165.77-176.13 181.44-191.80 197.12-207.47 226.12-238.48	135.3	130.2	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-12**	211.0	205.0	148.6-169.1 179.3-198.3	144.5	142.6	6" Diameter Stainless Steel #18 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-13B*	227.5	225.4	195-220	191.9	190.7	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-13C*	185.5	185.3	160-180	158	None	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-14B**	231.9	230.5	200-225.2	196.5	195.6	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-14C**	180.5	180.4	155-175	151.8	150.9	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-15B**	248	245.3	21 -240	212.4	211.5	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-16***	180.0	176.4	130.0-150.4 155.8-171.2	125.5	123.0	6" Diameter Stainless Steel #18 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40

Table E.8-2. A/M-Area Recovery Well Installation Details

Well Number	Total Depth	Base of Sump	Screened Intervals (ft bls)	Top of Gravel Pack	Top of Sand Pack	Screen Type	Casing Type
RWM-17B***	267	265.2	245-260.03	242.5	240.5	6" Diameter Stainless Steel #16 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-17D**	168	166.3	146-161.1	144	142.5	6" Diameter Stainless Steel #16 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM018	225.66	226.04	170.59-220.59	165.5	165.5	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM019	216	206	149.8-200.8	145.8	145.8	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40

Table E.8-2. A/M-Area Recovery Well Installation Details

	SRS Grid Coordinates		
Well Number	Northing	Easting	Year of Construction
RWM-1	102607.9	48580.6	1981
RWM-2	104433.8	49205.5	1983
RWM-3	104730.2	49680.0	1983
RWM-4	103719.3	48948.2	1984
RWM-5	103502.2	49628.0	1984
RWM-6	102001.5	50107.4	1984
RWM-7	101904.6	49449.5	1984
RWM-8	101948.2	47353.3	1984
RWM-9*	104099.8	50400.0	1984
RWM-10	102000.9	48244.1	1984
RWM-11*	104875.0	50400.2	1985
RWM-12**	106879.2	52500.1	1990
RWM-13B*	105803.3	53516.3	1993
RWM-13C*	105809.7	53502.2	1993
RWM-14B**	106362.1	53044.7	1993
RWM-14C**	106380.8	53051.5	1993
RWM-15B**	107444.7	53848.9	1993
RWM-16***	97647.2	48244.8	1990
RWM-17B***	104180.0	51490.0	1996
RWM-17D**	104197.0	51502.0	1996
RWM018	102538.7	46551.0	2017
RWM019	101633.6	48785.1	2019

* Recovery well has been converted to a monitoring well.
** Recovery well has been abandoned.
*** Recovery well is not operational.

Table E.8-3. A/M-Area Recovery Well Specific Capacity Testing Summary

Well Number	Maximum Test Flow	Specific Capacity at Maximum Flow	Maximum Drawdown	Depth to Water	Maximum Pumping Rate	Drawdown	Specific Capacity
	(gpm)	*(gpm/ft)*	*(ft)*	*(ft bls)*	*(gpm, calc)*	*(ft)*	*(gpm/ft)*
RWM-1	30.0	0.85 72 hr	35.50	126.0	30.0	30	1.0
RWM-2	33.0	0.61 195 min	54.70	139.0	20.0	30	0.7
RWM-3	33	4.18 210 min	7.90	131	120	30	4
RWM-4	114	2.8 380 min	40.15	131	85	30	2.8
RWM-5	117	2.4 380 min	49.30	127	100	30	3.3
RWM-6	30	2.8 300 min	10.17	101	50	30	1.6
RWM-7	109	1.3 100 min	80.40	110	50	30	1.7
RWM-8	119	4.3 200 min	27.40	121	125	30	4.2
RWM-9*	120	4.6 370 min	25.76	136	130	30	4.2
RWM-10	111	3.4 130 min	32.57	110	105	30	3.4
RWM-11*	111	3.8 360 min	29.00	140	115	30	3.8
RWM-12**	55	3.4 1000 min	16	146.2	55	16	3.4
RWM-16***	39	0.98 96 hr	40	115.7	39	40	0.98
RWM018	55	3.2 2 hr	17.75	145.1	54.8	16.2	3.2
RWM019	79	2.6 120 min	34.9	139.9	79	30.4	2.6

* Recovery well has been converted to a monitoring well.
** Recovery well has been abandoned.
*** Recovery well is not operational.

Table E.8-4. Annual Average Solvent Concentrations in M-1 Air Stripper System Recovery Wells for 2021

Well	Average TCE Concentration *(μg/L)*	Average PCE Concentration *(μg/L)*
RWM 1	596.0	4075.0
RWM 2	230.3	974.5
RWM 3	238.5	112.4
RWM 4	1300.0	734.0
RWM 5	514.7	180.7
RWM 6	383.8	1134.5
RWM 7	1929.3	3110.0
RWM 8	1584.3	813.9
RWM 9*	11.6	1.3
RWM 10	6750.0	12727.5
RWM 11*	74.0	6.3
RWM 17B**	2.5	1.8
RWM018	0.0	0.0
RWM019	14357.1	27657.1

* Recovery well has been converted to a monitoring well.
** Recovery well is not operational.

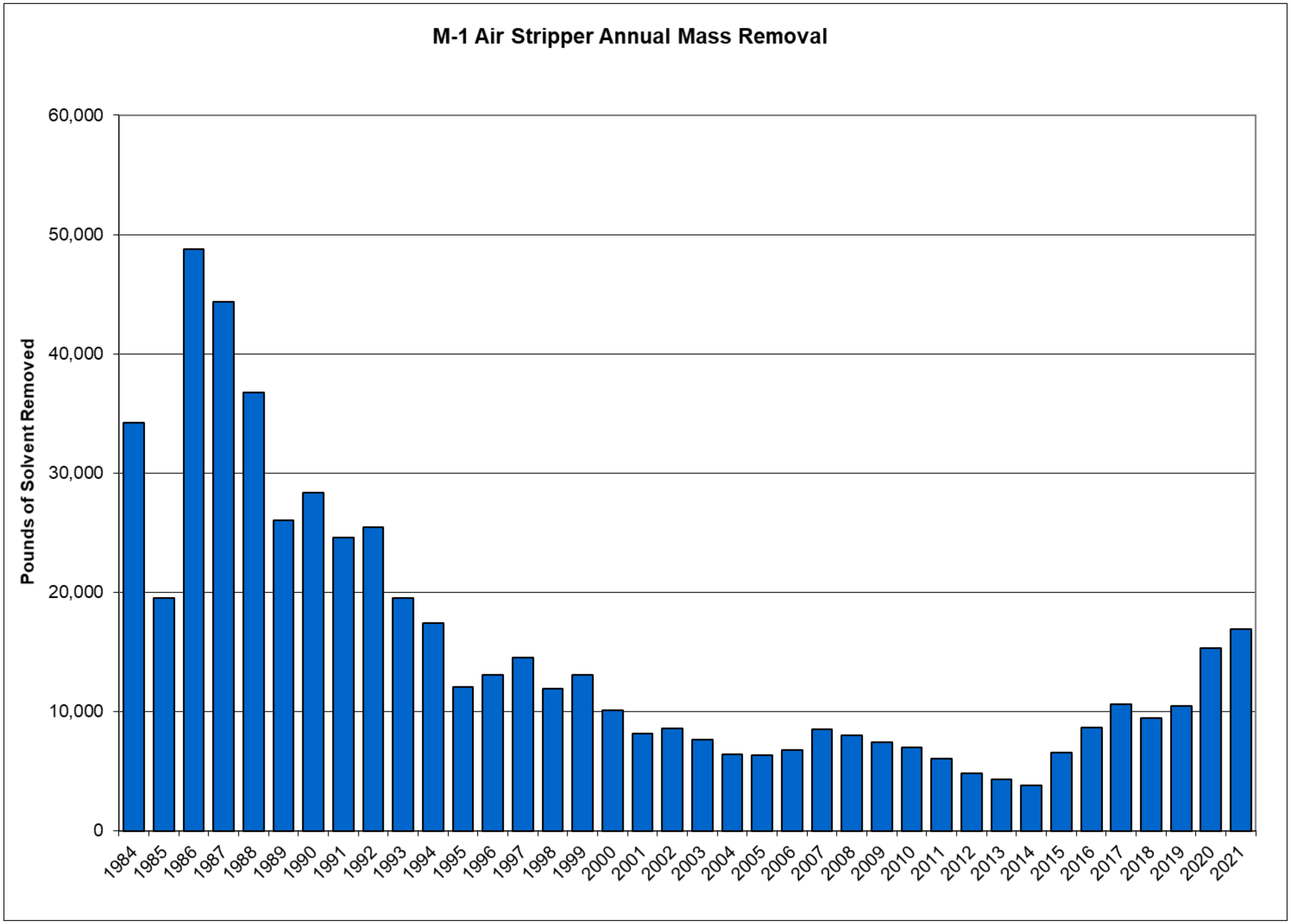

Figure E.8-3. Annual Mass Removed from the M-1 Air Stripper

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321-M Solvent Storage Tank Area (SVEU 782-6M)

Building 321-M had three vertical extraction wells (MVE-1, MVE-2, and MVE-3) and one pressure monitoring cluster (MVC-1). In 1995, SVEU 782-6M was placed into operation at the 321-M Solvent Storage Tank Area (SSTA). In 2001, the 782-6M SVEU was placed in shutdown mode in accordance with the 321-M SSTA Dynamic Underground Stripping (DUS) post-characterization plan. The 782-6M SVEU was relocated to the DUS site near the MASB in 2005.

The SSTA was an area of documented DNAPL in the subsurface. A remediation project for DNAPL using the DUS technology commenced in 2000. The DUS technology injected steam into the subsurface through a series of injection wells within the treatment zone of interest. The steam injection heated the subsurface causing the DNAPL in that zone to volatilize. A vacuum was applied at extraction points within the target area and the volatilized DNAPL was pulled through the subsurface to an extraction point where it was removed. The steam injection began in June 2000, and once the entire treatment zone was heated, the project completed extraction treatment in September 2001. A total of 70,000 pounds of DNAPL was removed.

SRS conducted post-DUS characterization at the 321-M SSTA in accordance with the *Dynamic Underground Stripping Post-Treatment Characterization Plan* (WSRC-RP-2001-00380, Revision 0, March 2001). This effort was initiated in late 2002 and included the collection of depth-discrete soil samples to a depth of 118 feet. Results indicate that high vapor concentrations of PCE (~500 ppmv) are present in the shallow vadose zone (upper 30 feet) near extraction well DUS-003 and lower concentrations (~30ppmv) are present at extraction wells DUS-001 and DUS-002. The high concentrations at DUS-003 are considered to be associated with a shallow clay layer (above the target zone of the DUS deployment) and appear to be localized in the vicinity of DUS-003. Contamination at the other locations appears to be residual, likely associated with the elevated temperatures of the subsurface.

A SVE program was implemented in November 2003 to address contamination in the upper 30-foot zone. A new SVE well (DUS-17) was installed with a screen zone between 20 and 40 feet near DUS-003. A SRNL mobile SVEU was utilized to assess the mass transfer rate of the contaminants from this localized source. The system was assessed by cycling the mobile SVEU on and off periodically between November 2003 and July 2006. In July 2006, the SRNL mobile SVEU was replaced with the mobile #2 SVEU. The mobile #2 SVEU was assessed again at the end of 2009. After the first shut down cycle, VOC concentrations did not rebound above the greater than 40 pounds of solvent per week. During the second shut down cycle, SRS proposed to keep the mobile SVEU shutdown and convert to a MicroBlower™. A MicroBlower™ was installed at SVE well DUS-17 in November 2010. The MicroBlower™ installed on DUS-17 was named DUS1-HEAD (321-M AT SSTA) and is now referred to as DUS-1. In October 2017, the MicroBlower™ at DUS-1 was switched from being energized by photovoltaic panels to a continuous electric source to allow for 24 hour, seven days a week operation.

An evaluation of all SVE systems across the M-Area HWMF, including recommendations for future operations, was submitted to SCDHEC in August 2022 (i.e., *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* [SRNS-RP-2022-00514]). As part of the SVE evaluation report the annual mass removal rates for DUS-1 were graphed from 2011 to 2021 (Table E.8-12a). The MicroBlower™ at DUS-1 has removed approximately 3,061 pounds of chlorinated solvent total since 2011. From 2017 to 2020, DUS-1 had an increase in mass removal rates due to the change from 12 to 24 hours of operation. The relatively steady mass removal from DUS-1 is a good indication that residual mass is present near the well. Operation of the MicroBlower™ at DUS-1 is recommended to continue since a significant amount of mass continues to be removed from the subsurface.

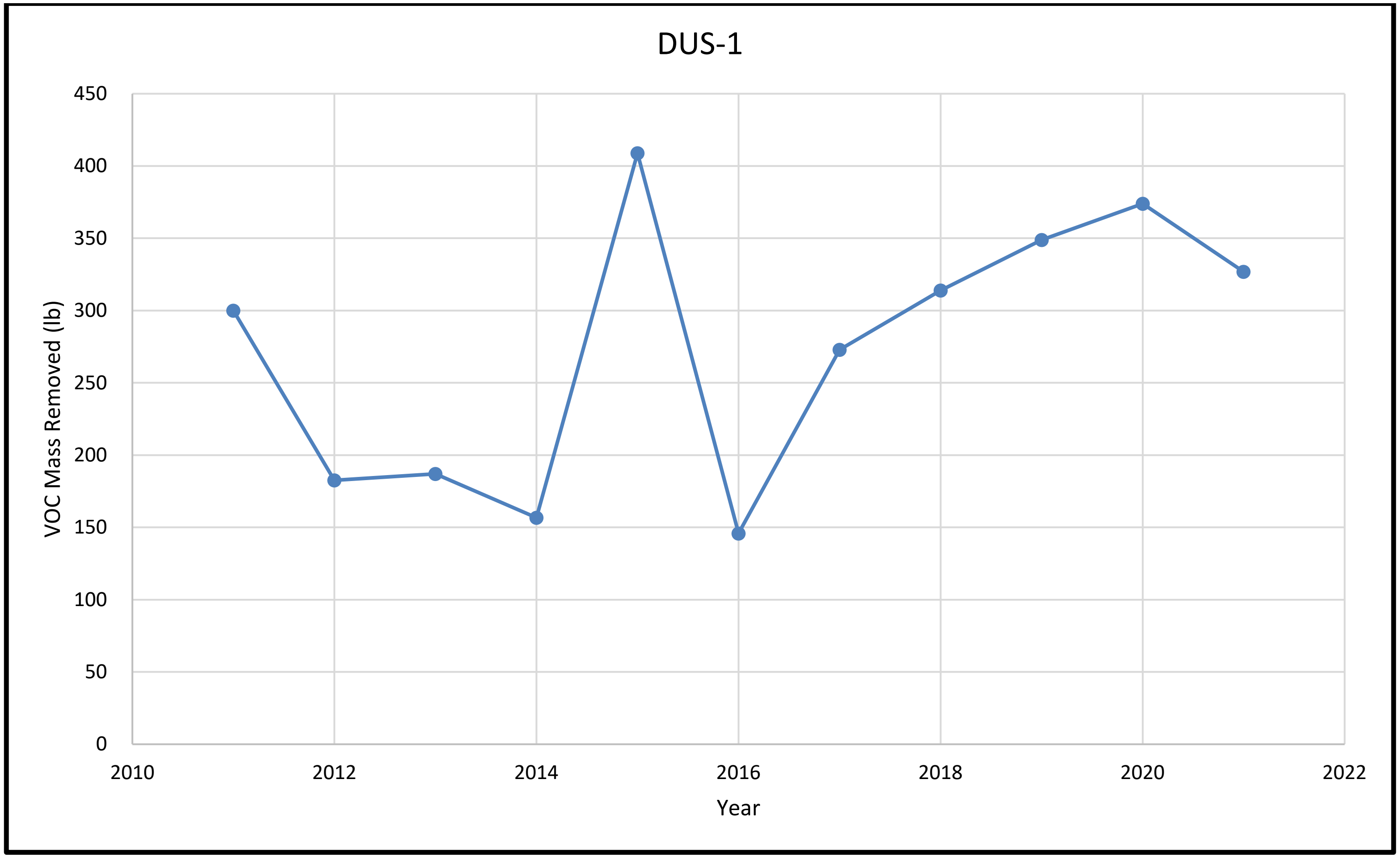

Figure E.8-12a. Annual Mass Removal of VOCs at DUS-1

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M-Area HWMF (SVEU 782-4M)

Two horizontal extraction wells (AMH-6 and AMH-7) were drilled beneath the MASB and connected to the SVEU 782-4M. In 1995, SVEU 782-4M was placed into operation and averaged a VOC removal rate of 200 lbs per week. In 2003, the SVEU 782-4M was temporarily removed from operation. In 2004, the two horizontal wells were abandoned and replaced by horizontal well VEW-22, an integral extraction well of the DUS project at the MASB. The SVEU 782-4M operated from 2005 to 2012 as part of the DUS remediation project near the MASB. This unit was dismantled in 2013.

M-Area Abandoned Process Sewer Line (SVEU 782-5M)

At the northern end of the process sewer line, there were four vertical extraction wells (MVE-5, MVE-6, MVE-7, and MVE-8) connected to the 782-5M and two vadose zone monitoring wells (MVC-4 and MVC-5). In 1995, SVEU 782-5M was placed into operation at the M-Area process sewer line. The 782-5M unit was shut down in the fall of 1999 when contaminant removal rates fell below 40 lbs per week (see Remediation Goals as described in Section E.8.3.3.3.3). Passive

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the low energy SVE wells along the MAPSL, and characterizing an area of high VOC concentration east of the MASB. The SVEUs at the A-14 Outfall are discussed under Section E.8.3.3.3.2.6. The low energy SVE wells associated with the MAPSL are discussed in Section E.8.3.3.3.2.5. The details of the vadose zone characterization east of the MASB have not yet been proposed to the SCDHEC, but will be included in a future revision of this Permit Renewal Application. The shutdown of the 782-6M SVEU is now associated with Western Sector and the Western Sector Treatment System and is discussed further in Section E.8.3.3.3.7.

Upon active SVEU shutdown (see Section E.8.3.3.3.2.3 for Remediation Goals), vadose zone remediation will continue using a low energy technology. The low energy SVE technology will be installed on existing or new extraction wells and includes (but may not be limited to) MicroBlowers™ and BaroBalls™. MicroBlowers™ use a photovoltaic panel to power a small, low power vacuum blower to extract soil gas from the subsurface. The BaroBalls™ extract soil gas to the surface by the natural pressure differential between the surface and the vadose zone whenever the surface barometric pressure naturally drops (i.e., barometric pumping). The lower energy SVE wells will be evaluated for shutdown as data indicate that the residual source no longer presents a potential threat to groundwater.

A complete SVE evaluation report, *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* (SRNS-RP-2022-00514), was submitted to SCDHEC in August 2022. The report evaluates SVE activities at the M-Area HWMF (A-14 Outfall, SSTA, MASB, MAPSL, and Northern Sector) and provides recommendations for future operations of SVEUs, MicroBlowers™, and BaroBalls™. Conclusions were made based on annual mass removal rates, cumulative mass removed, and/or vapor concentrations for all SVEUs and SVE wells. The results were used to determine the effectiveness of the SVEUs and SVE wells and recommendations for future operations are provided in the appropriate sections of this application. The requirement to submit the evaluation was defined in the corrective action schedule for the vadose zone (Table E.8-5).

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Table E.8-5. Schedule of Events Detailing the Vadose Zone Corrective Action Plan

CAP Schedule for the Vadose Zone			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
Yes	April 2014 (A)	March 2015 (A)	MAPSL PSVE Testing and Evaluation Report (Data Reported in Annual Groundwater Monitoring and CARs)
Yes	October 2014 (A)	July 2015 (A)	782-3M SVEU Testing and Evaluation Report
Yes	October 2015 (A)	May 2016 (A)	MAPSL and 782-3M (A-14) SVEU recommendations (Revision to the RCRA Permit Renewal Application)
Yes	December 2019 (A)	July 2020 (A)	A-14 MicroBlower™ Installation at MRS 34
Yes	December 2019 (A)	July 2020 (A)	MAPSL MicroBlower™ and BaroBall™ Installation at new SVE wells
Yes	October 2021	August 2022 (A)	Status Report on all SVEU/SVE Systems
No	October 2022	September 2023	Characterization of vadose zone east of the MASB
No	October 2023	March 2024	782-3M SVEU Testing and Evaluation Report (Data Reported in Annual Groundwater Monitoring and CARs)

CY = Calendar year
A = Actual dates

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E.8.3.3.3.2.5 Phase II Corrective Action Activities at the MAPSL

In 2014, eleven borings were completed to evaluate the VOC concentrations along the 1,600 ft of the MAPSL (Figure E.8-13). The borings were drilled using cone penetration technology (CPT) collecting soil and accompanying soil-gas samples from the surface down to refusal, approximately 60 to 120 ft bgs. A review of the sampling results indicates PCE and TCE are the primary VOCs with elevated concentrations, while 1,1,1–trichloroethane, cis-1,2-dichloroethylene, and vinyl chloride had variable detections. PCE and TCE were detected along the entire length of the MAPSL; however, the highest concentrations were observed at the northern portion of the MAPSL (i.e., MVB200SB) and near the vadose oil substrate (VOS™) site (i.e., MVB204SB to MVB207SB). Degradation breakdown products (cis-1,2-dichloroethylene and vinyl chloride) were associated with an ongoing bio-remediation study (i.e., VOS™ site) along a small section of the MAPSL. All of the results from this sampling effort can be found in the *Field Summary and Data Report of Characterization Activities Performed at the M-Area Abandoned Process Sewer Lines, M Area, Savannah River Site (U)* (SRNL-RP-2014-01218), which was submitted to the SCDHEC in March 2015.

Along with the soil and soil gas sampling, vapor samples were collected from the existing wells along the MAPSL (Figure E.8-14). There were two types of wells sampled, passive soil vapor extraction (PSVE) wells and monitoring points. The PSVE wells have a 60 to 80 ft screen interval that spans the upper to middle vadose zone. The monitoring points have three isolated sampling intervals targeting the upper, middle, and lower vadose zone. Soil vapor collected from the PSVE wells represent a homogeneous sample and the monitoring points provide a depth discrete sample. These wells were sampled for three quarters during 2014. The results from the vapor sampling indicate high concentrations of PCE and TCE in the shallow vadose zone south of the VOS™ site. Similar to the soil sampling all degradation breakdown products observed were associated with the VOS™ site.

The lithology of the upper 20 to 40 ft of sediment (i.e., upland unit) varies along the 1,600 ft of MAPSL (Figure E.8-15). In the north, the upland unit is a 20 ft thick sandy/silty clay. Moving south toward the VOS™ site, the upland unit thickens to approximately 40 ft. Near the VOS™ site, a five-foot thick sand layer bisects the 40 ft upland unit at about 30 ft bgs. South of the VOS™ site, the upland transitions from two clay units to an approximately 10 ft thick upper clay while the lower clay coarsens to sandy silt. The middle sand layer however remains continuous south of the VOS™ site. The soil and soil-gas sampling revealed persistent PCE mass in the upland unit with the most significant concentrations occurring between 10 to 20 ft bgs with concentrations decreasing with depth (Figure E.8-16 and Figure E.8-17). The highest PCE concentrations were collected from clay rich sediments, which prevented vapor samples from being collected. The sand layer in the upland unit, or just below the upland unit, exhibited slightly lower PCE concentrations signifying some diffusion from the upland unit creating a long-term source of PCE to the vadose zone with potential impacts to the groundwater. The diffusion process appears to be slow attesting to the persistence of VOC concentrations observed in the upland unit. To prevent future impact to the groundwater, SRS is proposing to add additional PSVE wells to target the sand layers in and below the upland unit to remove mass as it diffuses from the upland unit.

Eight MicroBlowers™ and two BaroBalls™ were installed to target the areas of elevated VOC concentrations in the northern portion of the MAPSL and north and south of the VOS™ site (Figure E.8-18). Table E.8-6 provides the construction details for the new SVE wells. One MicroBlower™, MVE037, was installed on the northern portion of MAPSL to target the soil concentrations observed at MVB200SB. SVE well MVE037 straddles the upland unit and the underlying sandy zone to maximize mass removal and flow rate. Five MicroBlowers™ (i.e., MVE030, MVE031, MVE032, MVE033, and MVE035) were installed north and south of the VOS™ site into the middle sand layer. Existing SVE wells (i.e., MVE028 and MVE029) were retrofitted with a MicroBlower™. The MicroBlower™ at MVE028 was old and needed to be replaced. MVE029 was previously outfitted with a MicroBlower™, but was dismantled to prevent interference during execution of the VOS™ project. Two BaroBalls™ (MVE034 and MVE036) were placed directly north and south of the MVB204SB. These BaroBalls™ will target 20 to 30 ft bgs to contact the highest concentration of VOCs at the 20 ft depth and the slightly more permeable sediment near the 30 ft depth to create better flow. The BaroBalls™ will allow some mass removal based on barometric pumping. The lower permeability sediments in this zone prevent use of MicroBlowers™ due to the higher vacuum pressures produced.

The corrective action at MAPSL will continue to operate until vapor concentration data indicate vadose zone contamination is not impacting the groundwater above MCLs. To quantify this, vapor samples will be collected quarterly from the MicroBlowers™ and semi-annually from the BaroBalls™. This data will be used to calculate mass removal from each of the MicroBlowers™ which will be reported in the Annual M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities Groundwater Monitoring and Corrective Action Report. Once vapor concentrations decline significantly, contaminant migration analysis will be conducted to determine if the potential to impact groundwater has been eliminated and corrective action can be considered complete.

An evaluation of all SVEUs and SVE wells associated with the M-Area HWMF was submitted to SCDHEC in August 2022 (i.e., *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* [SRNS-RP-2022-00514]). As part of the evaluation, all the SVE wells at MAPSL were evaluated by calculating mass removal rates for a period of time. The results were used to determine the effectiveness of the SVE wells and provide recommendations for future operations. A summary of the conclusions are provided in the paragraphs below.

In total, the eight MicroBlowers™ at MAPSL have removed a total of 595 lb of chlorinated solvent since operations began in 2020. MVE028, MVE029, MVE030, MVE031, MVE035, and MVE037 have removed 481 lb of PCE and 105 lb of TCE since 2020. MVE032 and MVE033 have removed 8 lb of PCE and 1 lb of TCE since 2020. MVE028, MVE029, MVE030, MVE031, MVE035, and MVE037 have steadily increased in cumulative PCE and TCE mass removal since 2020, are performing as expected, and are expected to continue to remove significant mass from the subsurface (Figure E.8-18a). MVE032 and MVE033 have had lower flow rates compared to the other six MicroBlowers™. Currently, MVE032 and MVE033 have dilution valves opened to allow for a better flow rate. Development of MVE032 and MVE033 will be conducted to see if more productive flow rates can be achieved, thus increasing mass removal rates. At this time, it is recommended that MVE028, MVE029, MVE030, MVE031, MVE035, and MVE037 continue operations and MVE032 and MVE033 be developed.

The nine BaroBalls™ (AMH 2, MHV 6, MHV 7, MHV 8, MVE005, MVE006, MVE007, MVE008, and MVE023) originally installed at MAPSL have removed a total of 145 lb of PCE and 36 lb of TCE since 2014. The two new BaroBalls™ (MVE034 and MVE036) installed in 2020 have removed a total of 6 lb of PCE and 0.4 lb of TCE. AMH 2, MVE005, MVE007, MVE008, MVE034 and MVE036 have increasing VOC cumulative mass removal rates; therefore, these six SVE wells are recommended to continue operation (Figure E.8-18b). MHV 6, MHV 7, MHV 8, MVE006, and MVE023 have diminished VOC mass removal rates. Since these five SVE wells are no longer contributing significant mass removal of VOCs in the vadose zone, they are recommended for abandonment.

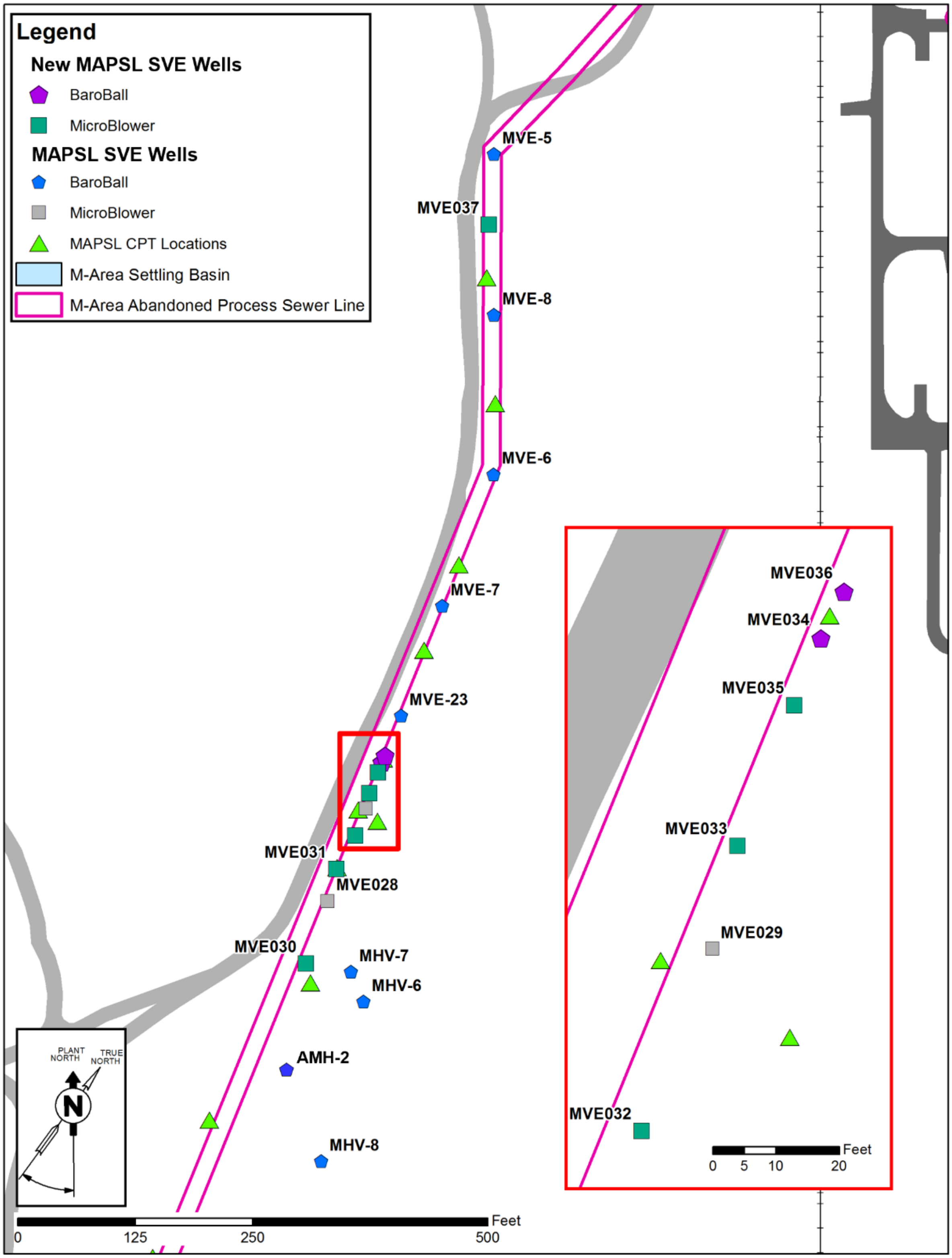

Figure E.8-18. Location of the New SVE Wells at MAPSL

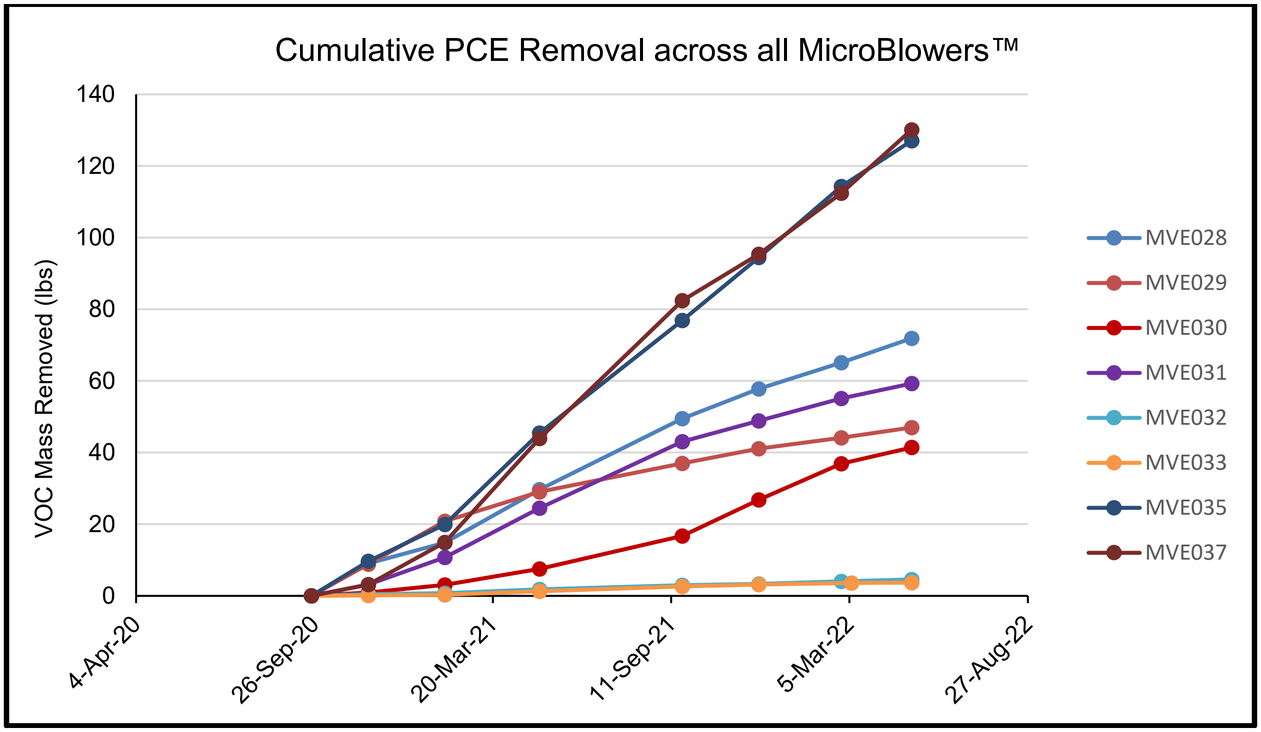

Figure E.8-18a. Cumulative PCE Mass Removed from all MAPSL MicroBlowers™

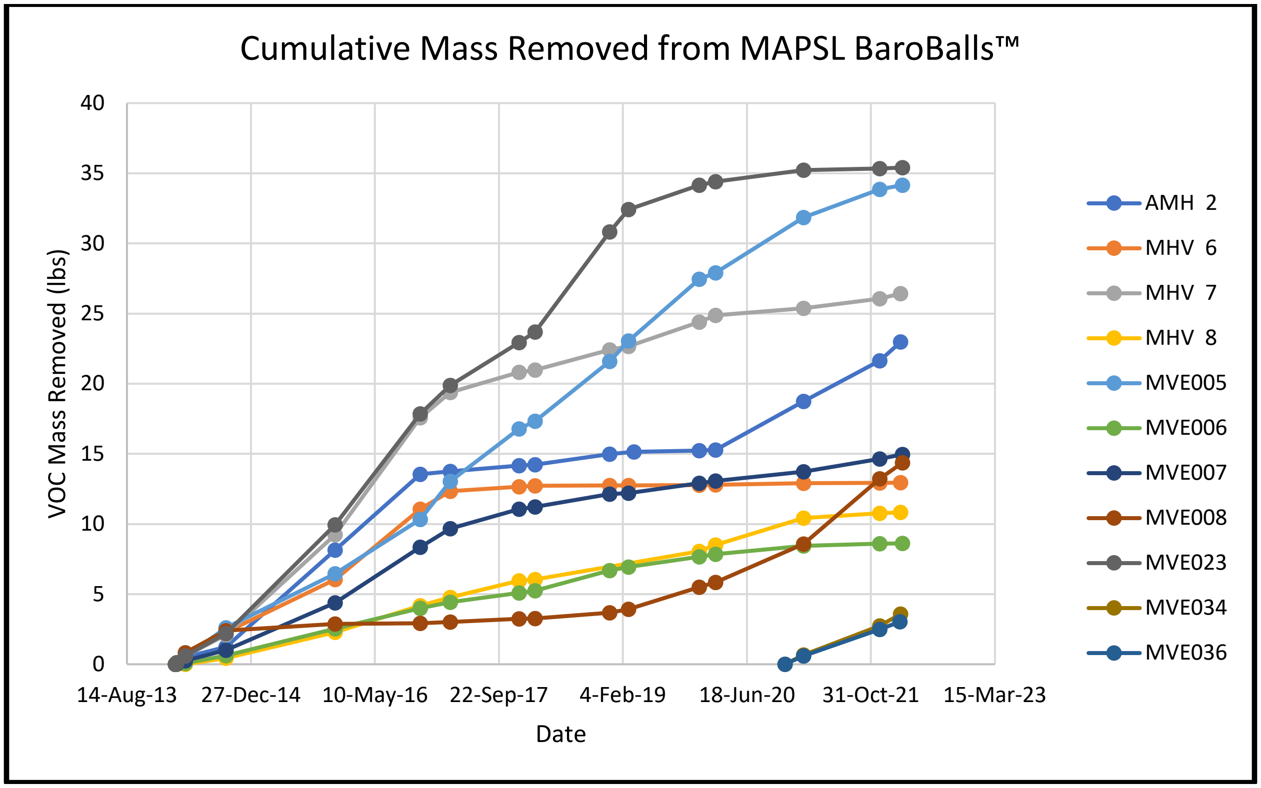

Figure E.8-18b. Cumulative VOC Mass Removed from all MAPSL BaroBalls™

Table E.8-6. Construction Details for the New Soil Vapor Extraction Wells at the MAPSL

Well	Screen Interval (ft bgs)	Type of Soil Vapor Extraction Well
MVE028*	30 – 40	MicroBlower™
MVE029*	30 – 40	MicroBlower™
MVE030	25 - 35	MicroBlower™
MVE031	25 - 35	MicroBlower™
MVE032	25 - 35	MicroBlower™
MVE033	25 - 35	MicroBlower™
MVE034	20 - 30	BaroBall™
MVE035	25 - 35	MicroBlower™
MVE036	20 - 30	BaroBall™
MVE037	20 - 40	MicroBlower™

*Existing SVE wells that had new MicroBlowers™ installed

E.8.3.3.3.2.6 Phase II Corrective Action Activities at the A-14 Outfall

During 2014 and 2015, SVE wells associated with the 782-3M and Mobile #3 (high vacuum unit) SVEUs were sampled and the extraction performances were evaluated and ranked to provide recommendations on the viability, operational scheme, and applicability of PSVE. The results are documented in the report *Vapor Extraction Well Performance and Recommendations for Future Soil Vapor Extraction Activities at the A-014 Outfall* (SRNL-STI-2015-00235), which was submitted to the SCDHEC in July 2015.

The evaluation process collected a series of samples from individual SVE wells after 24 hours of purge using the respective SVEU. The samples were analyzed for VOC concentration, temperature, and flow to determine the mass extraction rate. For the 782-3M SVEU, 13 wells were sampled (Figure E.8-19). The analysis of mass extraction rates resulted in the following recommendations related to future SVE activities at the A-14 Outfall:

- The 782-3M SVEU should continue to operate using three SVE wells (i.e., MVE 4, MVE 9, and MVE 10),
- The nine direct push wells (i.e., MVE 13 through MVE 19, MVE 21, and MVE 22) should be abandoned,
- The capillary fringe extraction well (i.e., MRS 34) should be equipped with a MicroBlower™,
- The Mobile #3 SVEU should continue to operate four of the five fracture enhanced SVE wells (i.e., AF 2, AF 4, AF 5, and AF 7).

Permit conditions allowing for the shutdown of the SVEUs (i.e., less than 40 lbs/week of VOCs) have been achieved at both systems; however, individual SVE testing indicates significant residual mass remains in the subsurface that can most efficiently be reduced through continued active SVE.

To further evaluate the 782-3M SVEU, a rebound test was conducted from March 2015 to January 2016. The rebound test consisted of cycling the SVEU off and on while collecting monthly vapor samples from the 782-3M SVEU to observe changes in vapor concentration. The 782-3M SVEU was off during the months of March to June and again from September to January. The 782-3M SVEU was on from June to September and resumed normal operation (i.e., all wells with valves open) in January 2016. After 90 days of shutdown, vapor concentrations experienced a sharp increase immediately after the 782-3M SVEU was turned on, but quickly declined to concentrations observed during normal operations. The temporary increase in vapor concentrations indicates that residual mass is still present, likely in the upper 40 ft of low permeability sediments. It should be noted that during the rebound test, the 782-3M SVEU was never actually turned off due to a series of SVE wells associated with the A-Area Miscellaneous Rubble Pile Operable Unit, which is governed by the Federal Facility Agreement (FFA).

Based on the results from the individual SVE well sampling and the rebound test at 782-3M, significant residual mass remains in the subsurface near the A-14 Outfall. The residual mass would most efficiently be reduced through continued active SVE at the 782-3M and Mobile #3 SVEUs. This will take advantage of the existing infrastructure at the A-14 Outfall, which is still removing more mass than the local groundwater recovery well (i.e., RWM 6) and thus reducing further impacts to the groundwater. In the *Vapor Extraction Well Performance and Recommendations for Future Soil Vapor Extraction Activities at the A-014 Outfall* (SRNL-STI-2015-00235), SRS recommended the abandonment of the shallow SVE wells and to equip MRS 34 with a MicroBlower™. The report also recommended that AF-8 be converted to a vent well with an isolation valve. On October 14, 2016, the SCDHEC concurred with the recommendations from the report (SRNS-OS-2016-00076). The SRS will proceed with the recommendations from the report, except the conversion of AF-8. Upon further investigation, it was determined that AF-8 cannot be converted to a vent well. If AF-8 was converted to a vent well, then the Mobile #3 SVEU would not operate properly based on low flow rates at the remaining SVE wells. The status of the SVEUs at the A-14 Outfall was reported in the *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* (SRNS-RP-2022-00514) that was submitted to SCDHEC in August 2022.

The report evaluated SVE activities at the M-Area HWMF including the two SVEUs at the A-14 Outfall (i.e., 782-3M and Mobile #3) and the MicroBlower™ at MRS034. The results were used to determine the effectiveness of these units and provide recommendations for future operations. A summary of the conclusions are provided in the paragraphs below.

The 782-3M SVEU has removed a total of 188,917 lb from 1996 through 2021. Figures E.8-19a and E.8-19b show the annual mass removal rate and the cumulative mass removed from the 782-3M SVEU. Both figures have an inverse relationship but show declining mass removal with time. The figures indicate that mass is still present in the vadose zone near the A-14 Outfall but is residing in lower permeability sediments of the vadose zone and is reaching a diffusion limit indicating that future operation of the 782-3M SVEU is limited.

In 2021, a new evaluation of the 782-3M SVEU was initiated to determine the contribution of each SVE well (i.e., MVE004, MVE009, and MVE010) to the total mass removal rate. Each SVE well will be isolated and operated for six months. The evaluation started in August 2021 with the isolation of MVE004 and will be completed by June 2023. Results of the evaluation will be reported in subsequent annual M-Area and Metallurgical Laboratory HWMFs groundwater monitoring and corrective action reports. It is recommended that the 782-3M SVEU continue operation until the current evaluation has been completed. After completion, a recommendation will be made that will include the future operational status of the 782-3M SVEU, potential characterization to help identify residual mass in the vadose zone, and future corrective action that might be needed to remove any residual mass identified. This item has been included in Table E.8-5.

Since start up in 2007 through 2021, the Mobile #3 SVEU has removed a total of 11,109 lb of solvent. Annual mass removal totals declined steadily after starting up in 2007 and leveled off after 2012 averaging 382 lb/yr (Figure E.8-19c). Figure E.8-19d shows that cumulative mass has an increasing trend. Although annual mass removal rates have declined, the cumulative mass has not leveled off indicating mass is present in the vadose zone. The Mobile #3 SVEU is recommended to continue operations until mass removal rates are reduced. MRS034 was equipped with a MicroBlower™ in 2020, and VOC concentrations, specifically PCE, have increased with time from less than 1 ppmv to 19.5 ppmv (Figure E.8-19e). The increasing trend in VOC concentrations at MRS034 could be an indication that residual mass may not be present locally, but elevated vapor concentrations are being pulled into the zone of influence as the well continues to operate. The increasing concentration at MRS034 does not seem to be connected to the evaluation currently being conducted at the 782-3M SVEU. Because of the short operational time and the elevated VOC concentrations observed at MRS034, it is recommended to continue operation of the MicroBlower™ at this SVE well.

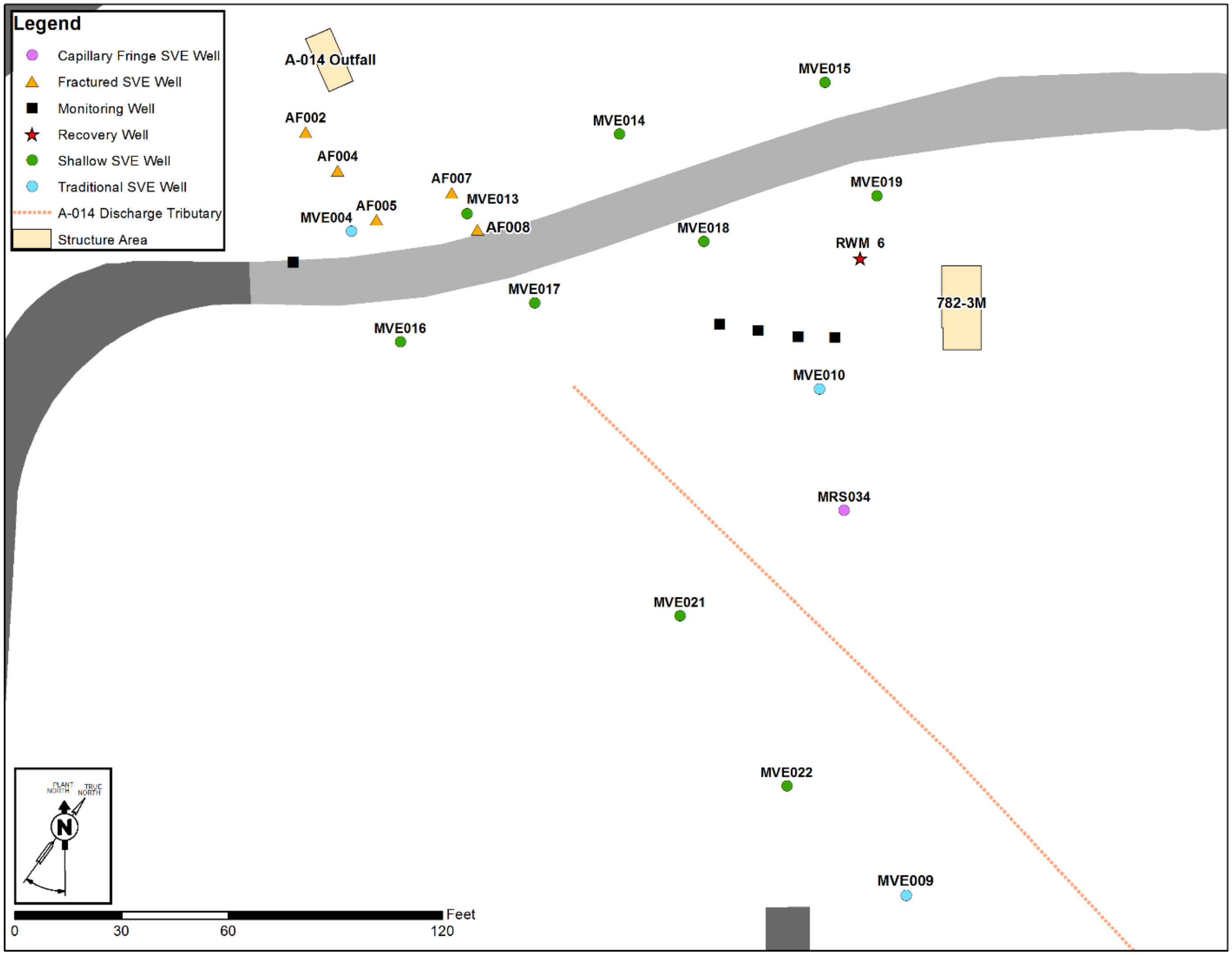

Figure E.8-19. Location of the SVE Wells Associated with the 782-3M and Mobile #3 SVEUs

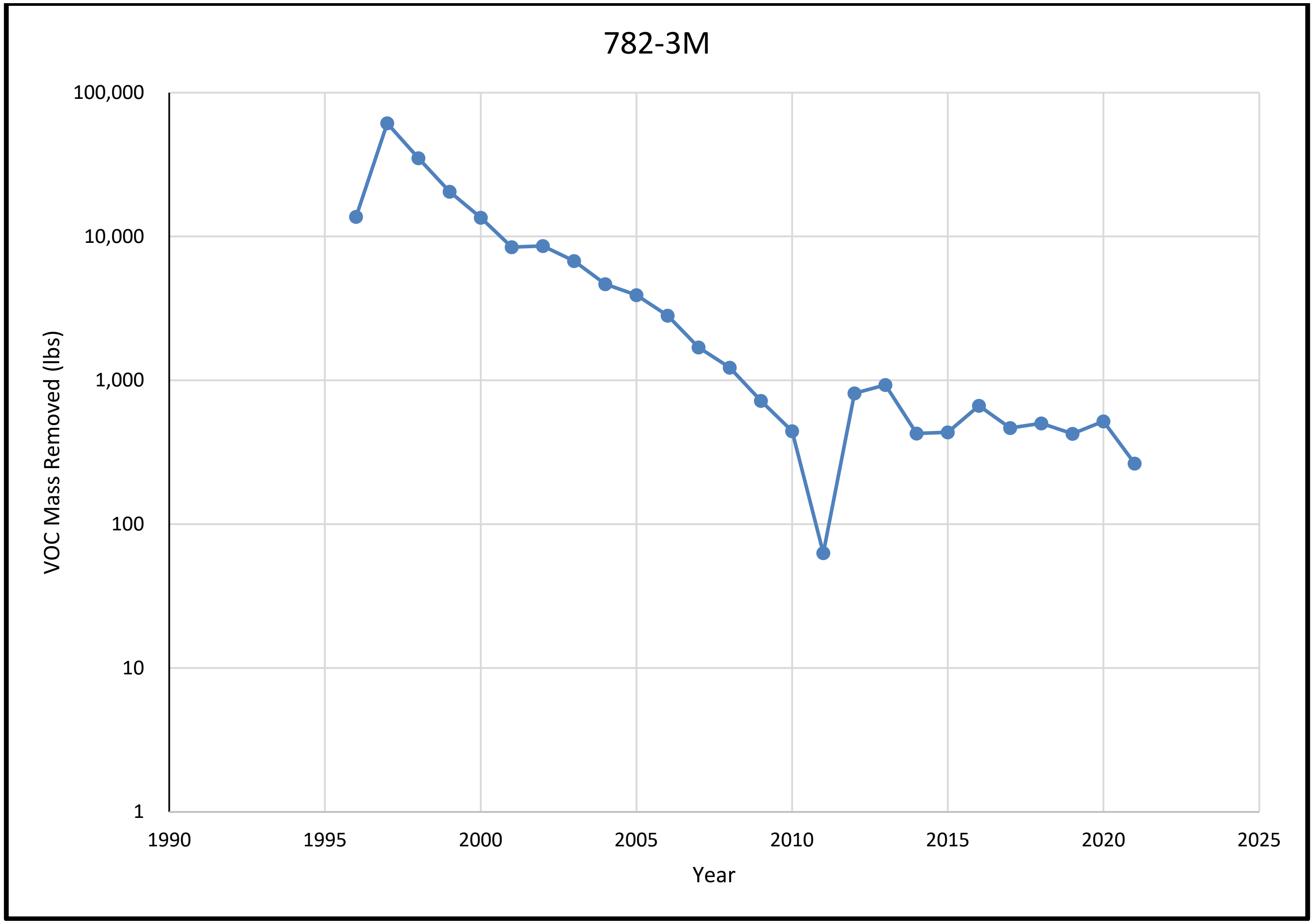

Figure E.8-19a. Annual Mass Removal of VOCs at 782-3M SVEU

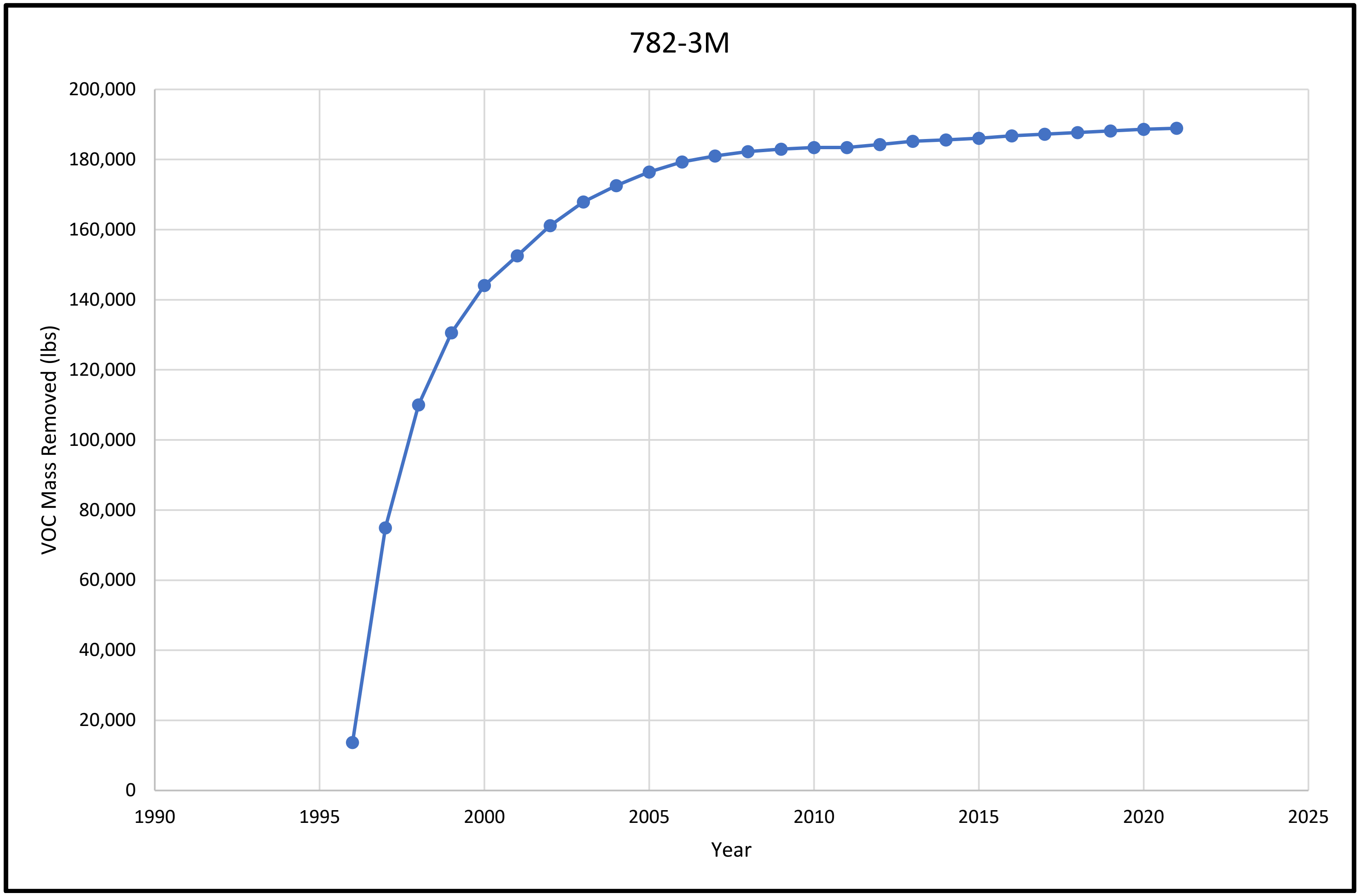

Figure E.8-19b. Cumulative Mass Removal of VOCs at 782-3M SVEU

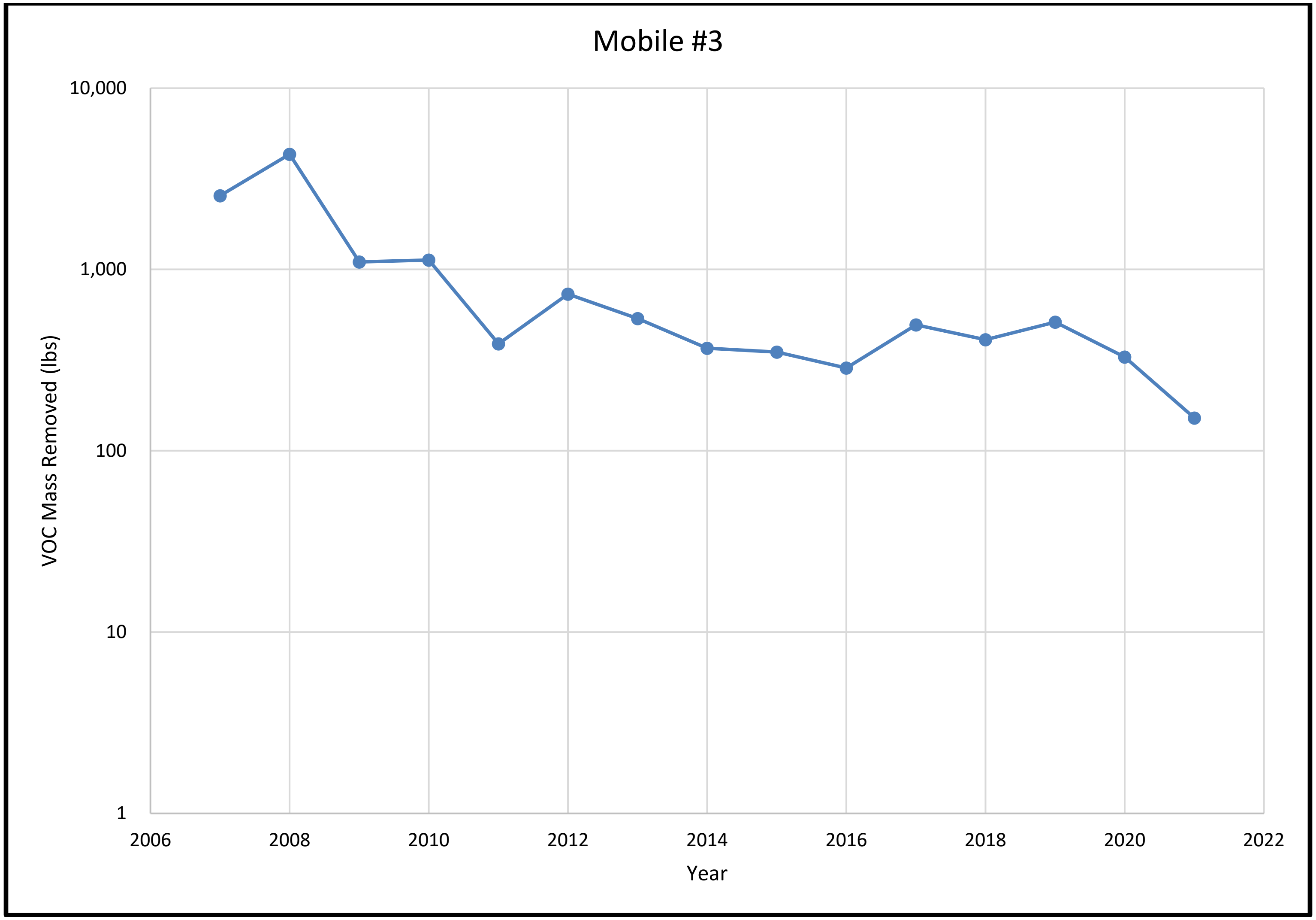

Figure E.8-19c. Annual Mass Removal of VOCs at Mobile #3 SVEU

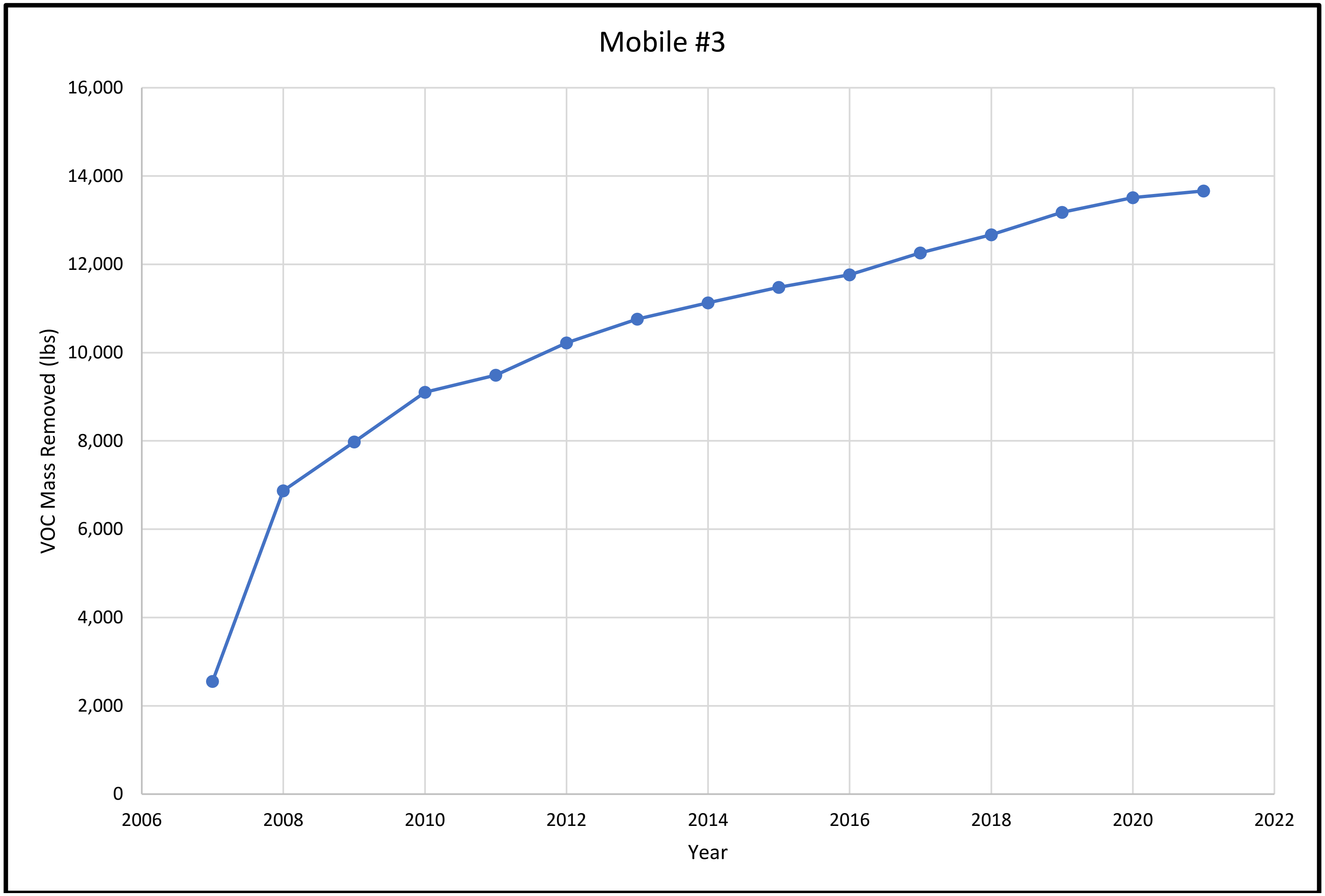

Figure E.8-19d. Cumulative Mass Removal of VOCs at Mobile #3 SVEU

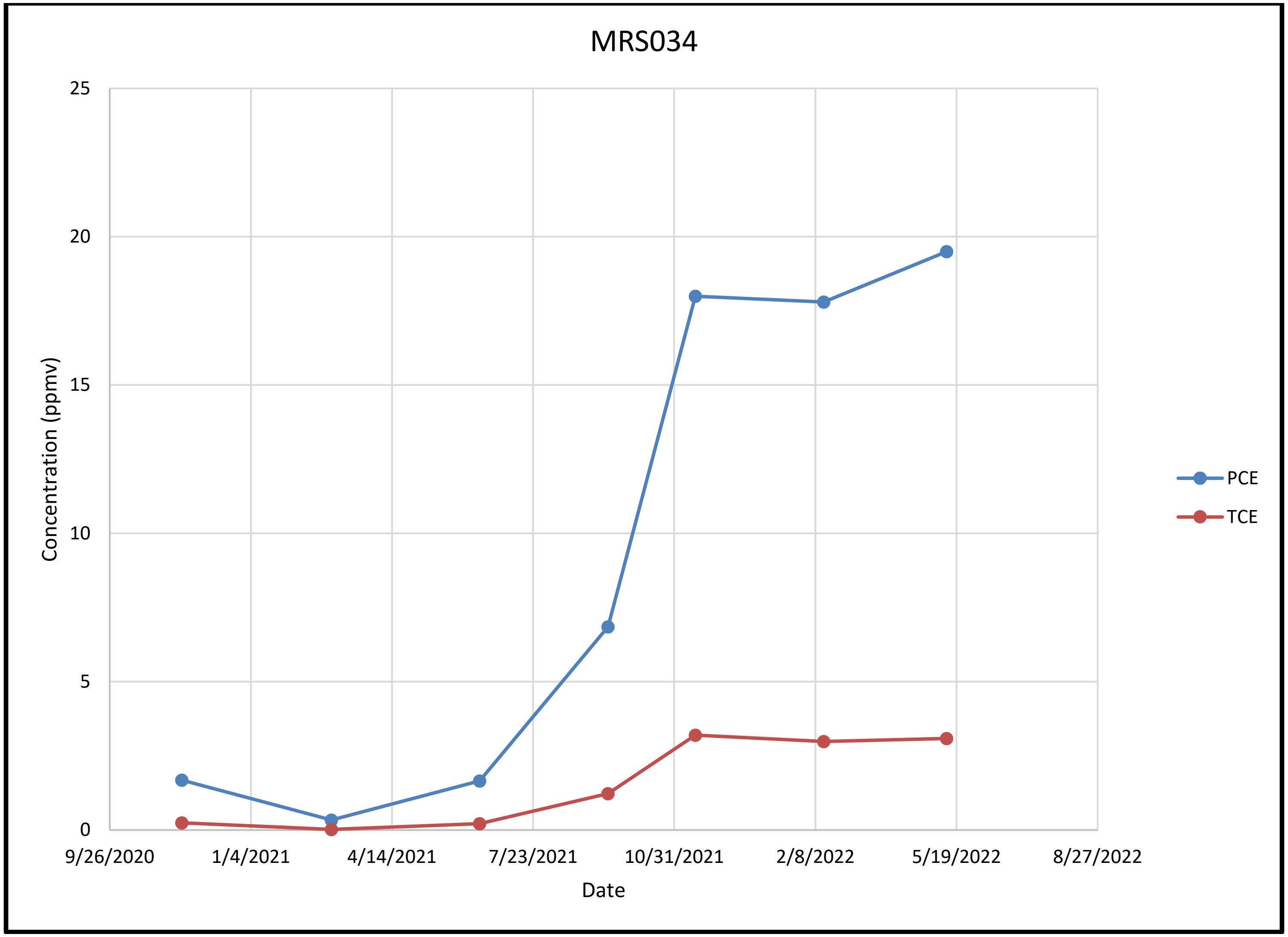

Figure E.8-19e. PCE and TCE Concentrations Over Time at MRS034 (MicroBlower™)

Report. The monitoring well network will be assessed after the effects of shutting down RWM 17B have been established. RWM 17D was abandoned on September 7, 2016 based on its historic data trends being less than the GWPS (5 µg/L) and dry conditions preventing operation.

With respect to lead, concentrations have not been consistent at the Met Lab monitoring well network. From 2015 to 2018, three monitoring wells exceeded the GWPS (15 µg/L). The three exceedances occurred at three monitoring wells (i.e., AMB 10B and AMB 18C), which are screened in three separate aquifers (i.e., Middle Sand Aquifer Zone of the Crouch Branch Confining Unit, Lower Lost Lake Aquifer Zone, and M-Area Aquifer Zone, respectively). In 2018, only AMB 18C exceeded the GWPS for lead with a concentration of 15 µg/L. Lead has also previously exceeded the GWPS at the background wells (i.e., MSB 43A and MSB 43D) suggesting that lead might be present naturally in the aquifer sediments.

The low frequency of lead concentrations exceeding the GWPS during the last three years (i.e., 2015 to 2018) and the sporadic occurrence of these exceedances at multiple monitoring wells in multiple aquifers indicates there is currently not a lead plume associated with the Met Lab HWMF. SRS does not believe a corrective action for lead is applicable at this time. SRS will continue monitoring for lead at the expanded monitoring well network (Table E.8-10) for three consecutive years (i.e., 2017 to 2020), then SRS will meet with SCDHEC to discuss the data and potential corrective action options.

The vadose zone corrective action has been ongoing with the operation of the 19 PSVE wells. The 19 extraction wells were sampled three times under different seasonal conditions during 2014 to establish current concentrations. Concurrently, soil and soil-gas sampling was conducted near the 19 PSVE wells at seven locations. The results from the soil and soil-gas sampling were submitted in a report, *Field Summary and Data Analysis Report of Characterization Activities Performed at the Met Lab, A Area, Savannah River Site (U)* (SRNL-

RP-2014-01222, November 2014), to SCDHEC in March 2015. The report also discussed contaminant migration analyses and recommendations on the future operation of the 19 PSVE wells.

The sampling at the Met Lab HWMF was conducted to assess the amount of contamination residing in the vadose zone near Building 717-A by collecting vapor samples from the 19 PSVE wells. Three vapor samples were collected from each PSVE well over three quarters. Results from the first vapor sampling were used to identify seven CPT locations. Soil and soil-gas samples were collected from these CPT locations. The north-side, south-side, and southeast corner of Building 717-A had elevated VOC concentrations. The seven CPT locations targeted these three sides of the building.

The soil sampling results from the seven CPT locations (Figure E.8-22) indicated low residual concentrations with a maximum observed concentration of 25.4 µg/kg. The elevated VOC concentrations were found on the south-side of Building 717-A at MLBB028SB and to a lesser degree at MLBB027SB. The elevated VOC concentrations from the soil data were found between 15 and 95 ft in depth, with the highest levels exhibited in low permeability layers approximately 50 to 60 ft deep.

The soil-gas results from the seven CPT locations also revealed the highest VOC concentrations on the south-side of the building at MLBB028SB and MLBB027SB. The highest concentrations were observed around the 20 to 30 ft depth. Vapor sampling conducted at the 19 PSVE wells confirmed low levels of VOC contamination present on the south side of Building 717-A and identified two other locations of elevated concentrations (i.e., north and southeast corners).

These results suggest that the vapor plume extends under the building, but it is unknown if contaminant releases have occurred under the building slab.

The vapor data collected in 2014 at the PSVE wells were part of on-going sampling since 1998 that indicate the vapor plume is decreasing exponentially (Figure E.8-23). Based on the exponential decline and concentration decay constants, half-lives were determined for each PSVE well (see SRNL-RP-2014-

01222, November 2014). The average half-life for PCE and TCE vapor concentrations are 2.8 and 3.5 years, respectively.

A contaminant migration analysis was used to assess the potential for VOCs in the vadose zone at Building 717-A to migrate into and impact groundwater at concentrations exceeding USEPA MCLs. The analysis was performed with VZCOMML© V4.0, a one-dimensional vadose zone spreadsheet model that is based on USEPA soil screening guidance. The VZCOMML© V4.0 model accounts for degradation processes, infiltration rates, soil properties, vadose zone thickness, and chemical behavior. The model output for a particular scenario is a Soil Screening Limit, which is a threshold soil contaminant concentration. If the Soil Screening Limit is exceeded, it may result in future contamination of groundwater at concentrations exceeding MCLs. Soil results from the MLBB028SB CPT location were used as input parameters during the contaminant migration analysis. The model results indicated that soil concentrations of TCE and PCE were very close to their respective Soil Screening Limits, which given the conservation nature of the model, suggests groundwater may not be impacted in the future. However, based on the uncertainty in parameter values, it is not possible to determine with confidence that TCE and PCE concentrations are low enough to be protective of future groundwater quality.

Based on the sampling data and the contaminant migration analysis, SRS recommended continued operation of the PSVE wells for four years (2015 to 2019), which is based on the average PCE and TCE half-lives resulting in over 50% of the residual mass being removed. Subsequently, the corrective action could be ceased and considered complete for the vadose zone. Since this recommendation is based on a calculated half-life, vapor samples from the PSVE wells will continue to be collected semi-annually to validate the decay constants and half-life of the vapor plume. On September 21, 2016, the SCDHEC concurred with the continuation of the corrective action for at least another four years (SRNS-OS-2016-00072). However, at that time, the SCDHEC requested that the area be re-evaluated to ensure that the corrective action goals have been achieved. DHEC approved Revision 1 of the Met Lab HWMF CAP (SRNS-RP-2013-00748, November 2017) on May 23, 2018.

A schedule of the events detailing the Met Lab HWMF corrective action plan is provided in Table E.8-11. Based on the schedule, recommendations for the operation or RWM 17B, long-term monitoring at the Met Lab monitoring well network, and on operation of the BaroBalls™ at the 19 SVE wells were submitted to SCDHEC in March 2022 as Appendices I, J, and K in the *Annual 2021 M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities Groundwater Monitoring and Corrective Action Report* (SRNS-RP-2021-05328). The recommendations are summarized in the paragraphs below.

Before 2018, TCE concentrations at RWM 17B were slowly declining to the GWPS (5 µg/L). In 2018, SRS shut down RWM 17B to evaluate the impacts on the monitoring well network. Immediately after shutdown, TCE concentrations at RWM 17B declined to less than the GWPS and have remained at or below the GWPS through 2021. The elevated TCE concentrations observed before 2018 were likely a result of RWM 17B pulling in groundwater from the M-Area HWMF contaminant groundwater plume. TCE concentrations in the MSAZ_CBCU, associated with the Met Lab HWMF, are less than the GWPS as observed at RWM 17B and surrounding monitoring wells. TCE concentrations in the shallow aquifers were minimally impacted by the operation or shutdown of RWM 17B. Changes in water elevation associated with the shutdown of RWM 17B were largely observed in the MSAZ_CBAU with minimal impacts to the shallow aquifers.

The results collected during the shutdown of RWM 17B indicate that TCE concentrations at the Met Lab HWMF, within the MSAZ_CBCU, are equal to or less than the GWPS; therefore, future operation of RWM 17B is not warranted as corrective action objectives have been achieved. The Met Lab HWMF monitoring well network has a sufficient number of monitoring wells screened in the MSAZ_CBCU to continue monitoring the groundwater contaminant plume. There are no recommended changes to the monitoring well network at this time. SRS recommends that RWM 17B be permanently shut down and abandoned.

Long-term monitoring at the Met Lab HWMF has been conducted using an expanded monitoring well network since 2017. TCE and lead were previously identified as the only constituents exceeding a GWPS; however, all permitted constituents were evaluated from 2017 to 2021. In the last three years (i.e., 2019 to 2021), GWPSs or Monitoring Constituent Standards (MCSs) were exceeded for TCE, combined radium, and iron.

TCE concentrations have been greater than the GWPS in two monitoring wells (i.e., AMB 14D and AMB 18A) during the last three years of monitoring (2019 to 2021). AMB 14D is screened in the MAAZ and AMB 18A is screened in the MSAZ_CBCU. These two wells do not define a groundwater plume but indicate that a small amount of residual mass is present in the groundwater beneath the Met Lab HWMF. Groundwater monitoring will continue at the expanded Met Lab monitoring well network until the GWPS for TCE has not been exceeded for three consecutive years.

The MCS for combined radium and iron were exceeded during 2019 to 2021. These exceedances are sporadic and do not represent long-term trends. These constituents will continue to be monitored at the expanded Met Lab HWMF monitoring well network until the respective MCSs have not been exceeded for three consecutive years.

Lead results indicate that the constituent has not been present at concentrations above the GWPS during the last three years (2019 to 2021). The average concentration of detections and estimated lead results during the last three years was 5.4 µg/L which is three times lower than the GWPS (15 µg/L). This is a positive indication that lead is no longer a significant concern at the Met Lab HWMF.

Lead and the remaining GWPS constituents and monitoring constituents did not exceed a GWPS or MCS during 2019 to 2021. This is an indication that these constituents are no longer at significant concentrations at the Met Lab HWMF. SRS recommends the sampling of these constituents be discontinued at all POC wells, plume definition wells, and additional plume definition wells. However, all the GWPS constituents will be add to the annual Appendix IX sampling event. Forty percent of the POC wells are sampled during the third quarter of the year for the approved list of Appendix IX constituents. This additional sampling of all GWPS constituents will help verify they remain at concentrations less than their respective GWPSs.

Since 1998, the Met Lab HWMF has been applying SVE as the corrective action to remove VOC mass of the vadose zone near Building 717-A. Characterization of the vadose zone in 2014 only found elevated VOC concentrations in the soil and soil vapor on the southern side of Building 717-A (i.e., MLBB027SB and MLBB028SB). Quarterly soil vapor results at the SVE wells near Building 717-A indicate elevated VOC vapor concentrations are present on the south (i.e., MLBB008, MLBB009, MLBB010), north (i.e., MLBB004), and east (i.e., MLBB012 and MLBB015) side of the building. Vertical soil borings collected in 2014 did not detect VOCs at significant concentrations on the north and east side of the building. The observed soil vapor at the SVE wells on the north and east side of the building could potentially have been sourced from residual VOC mass located underneath the building or from the known mass identified on the southern side of the building. In 2022, two angled soil borings (MLBB0033SB and MLBB0034SB) were drilled under Building 717-A to further characterize the subsurface near Building 717-A (Figure E.8-23a). The results from the two angled borings indicated there are no elevated soil concentrations beneath Building 717-A, verifying the only residual source is located on the southern side of Building 717-A (Figure E.8-23b). Future operation of SVE at the Met Lab HWMF should continue under an optimized scheme where only six BaroBalls™ (i.e., MLBB006, MLBB007, MLBB008, MLBB009, MLBB010, and MLBB012) located on the south side of the building are operational. The remaining SVE wells are proposed for abandonment (i.e., MLBB001, MLBB002, MLBB003, MLBB004, MLBB011, MLBB013, MLBB014, MLBB015, MLBB016, MLBB017, MLBB018, MLBB019, MLBB020, and MLBB021).

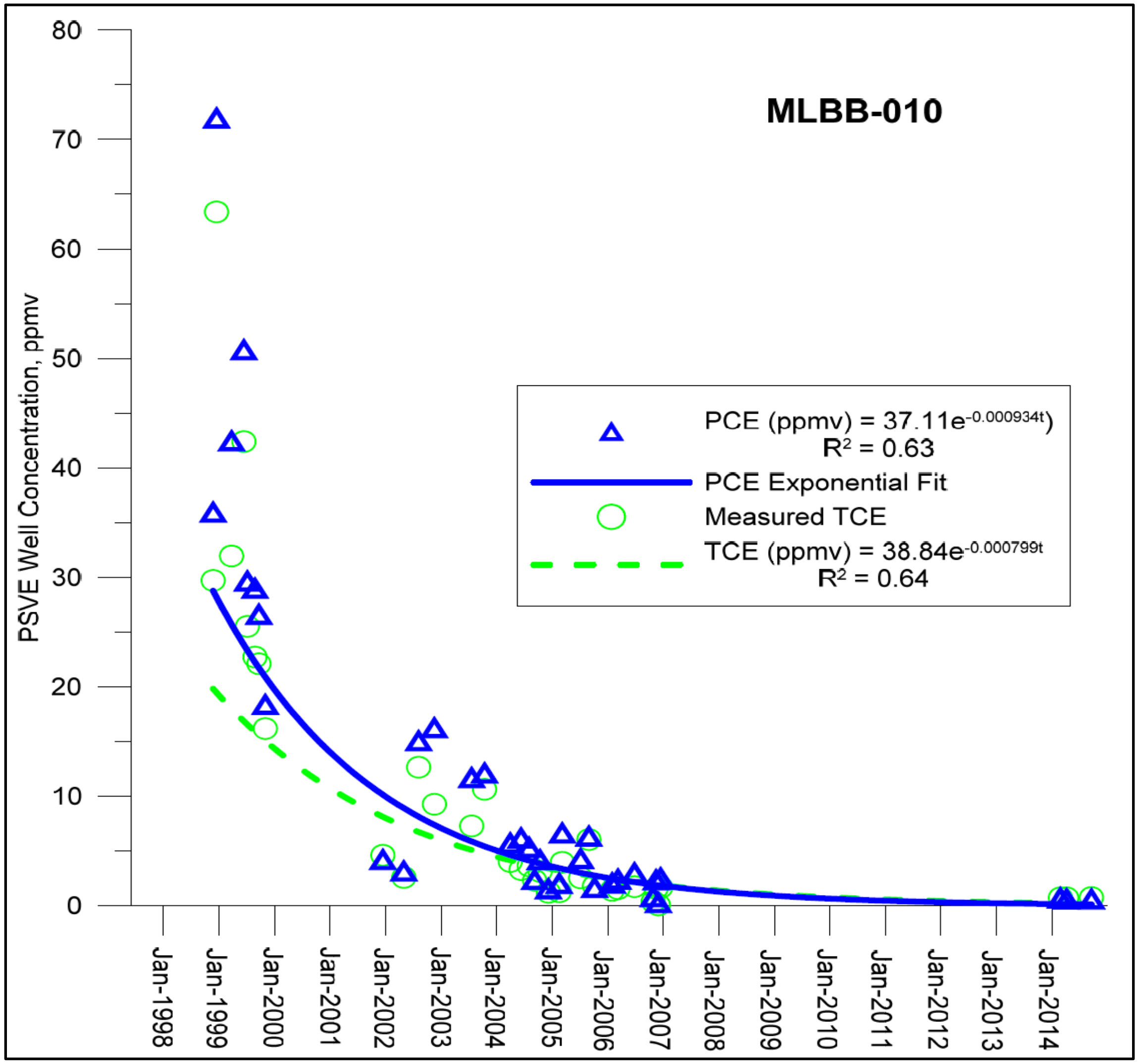

Figure E.8-23. Representative Exponential Decline of PCE and TCE Vapor Concentrations at PSVE Wells at the Met Lab

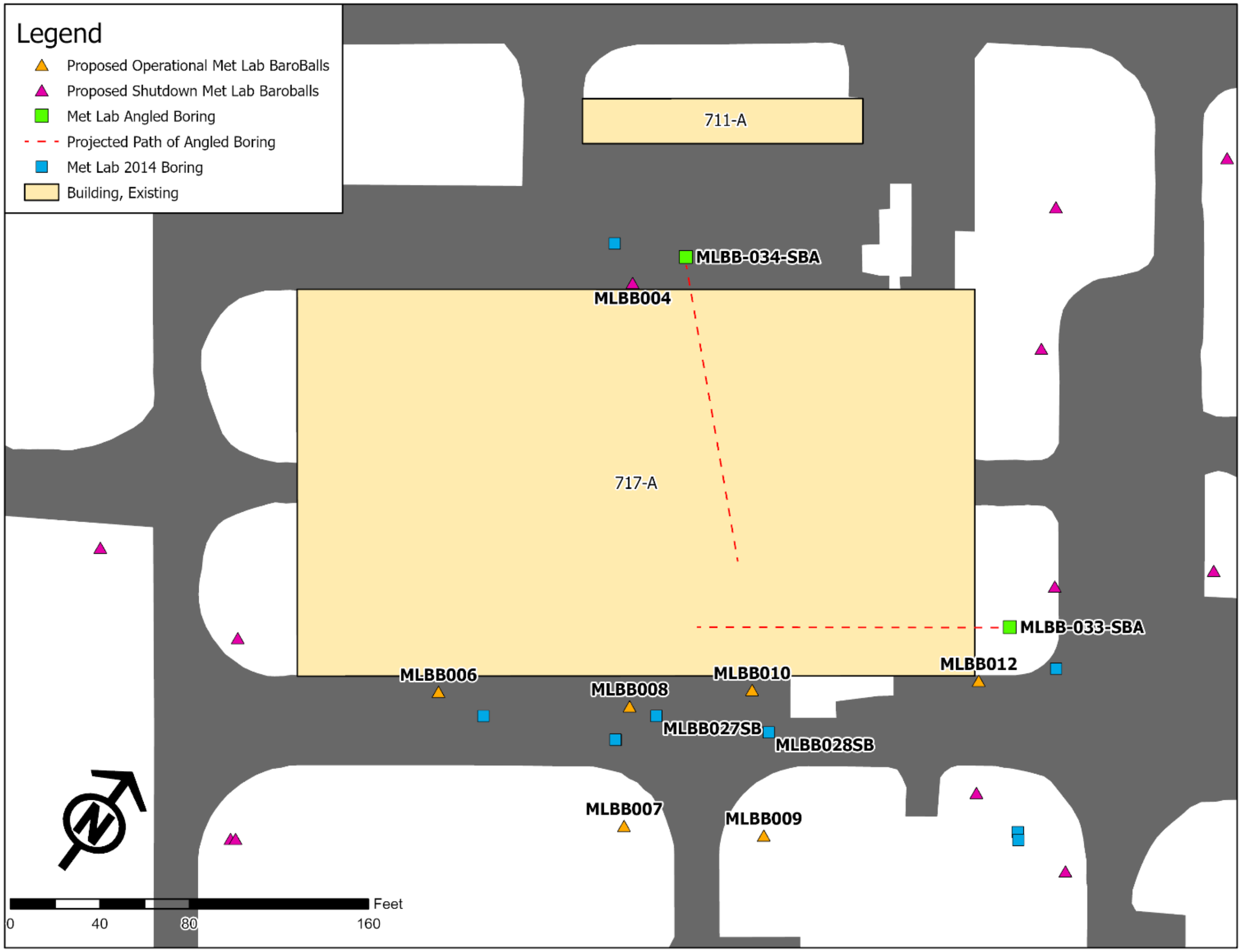

Figure E.8-23a. Location of Two Angled Soil Borings and Optimized SVE Well Network

Figure E.8-23b. TCE and PCE Soil Profiles at Vertical and Angled Soil Borings near Building 717-A

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Table E.8-11. Schedule of Events Detailing the Met Lab HWMF Corrective Action Plan

CAP Schedule for the Metallurgical Laboratory			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
Yes	October 2013 (A)	April 2014 (A)	Submittal of Met Lab CAP (Revision to the RCRA Permit Renewal Application)
Yes	February 2014 (A)	September 2014 (A)	Vapor sampling at 19 passive SVE wells near Building 717-A
Yes	September 2014 (A)	March 2015 (A)	Vadose zone data evaluation and report submittal
Yes	April 2015 (A)	August 2022 (A)	Passive SVE Monitoring (Data Reported in Annual Groundwater Monitoring and CARs)
Yes	February 2018 (A)	August 2022 (A)	RWM 17 Shutdown and Monitoring (Data Reported in Annual Groundwater Monitoring and CARs)
Yes	November 2017 (A)	August 2022 (A)	Lead Monitoring (Data Reported in Annual Groundwater Monitoring and CARs)
Yes	March 2022	September 2022 (A)	Submittal of recommendations on RWM 17B shutdown, lead corrective action, and status of passive SVE (Revision to the RCRA Permit Renewal Application)

CY = Calendar year
A = Actual dates

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- Continue shutdown of the A-2 Air Stripper,
- Establish trigger concentrations for TCE at monitoring wells in the CBAU, and
- Optimize the sentinel well network.

The proposed trigger concentrations at the monitoring wells screened in the CBAU (i.e., ASB 8TA, ASB 6TA, and MSB 47TA), if exceeded, would prompt a meeting between SRS and SCDHEC to discuss the best approach for further corrective action in Northern Sector. These wells were chosen because the original intent of the A-2 Air Stripper system was to prevent the high concentration plume in the LLAZ from migrating vertically into underlying aquifers.

SRS received comments from the SCDHEC on the final quarterly report on December 11, 2014 (SRNS-OS-2014-00086). SRS responded to SCDHEC's comments on May 22, 2015 (SRNS-J2000-2015-00340). Based on these comments, the SRS proposed adding trigger concentrations to three wells screened in the MSAZ_CBCU (i.e., ASB 6AA, MSB113A, and MSB113AA). These wells were chosen to provide a preliminary indication of contamination migrating vertically from the LLAZ, through the MSAZ_CBAU, and into the CBAU. The trigger concentration for each well is presented in Table E.8-13 and their proximity to the recovery wells is presented in Figure E.8-30. The trigger concentrations were also provided in the Annual 2016 M-Area and Met Lab HWMFs Groundwater Monitoring and Corrective Action Report (SRNS-RP-2017-00072), which was submitted to the SCDHEC on March 29, 2017.

The sentinel well network was optimized to remove some redundant wells while adding new wells to provide adequate monitoring of the continued shutdown of the A-2 Air Stripper. The sentinel well network is composed of plume definition wells identified in Table E.5-1 and monitoring and recovery wells identified in Table E.7-6. Figure E.8-26 provides the locations of the optimized sentinel well network. Thirteen new well locations (i.e., ASB002B, ASB004A, ASB004B, ASB004C, MSB111A, MSB111AA, MSB111B, MSB111C, MSB112A, MSB112B, MSB112C, MSB113A, MSB113AA, and MSB113B) were installed between 2015 and 2017.

SRS recommended permanently shutting down the A-2 Air Stripper in a meeting with SCDHEC on June 17, 2020 (Appendix 3). The presentation recommended shutting down the A-2 Air Stripper based on the following conclusions observed from the monitoring well network:

- There is a high concentration (>1,000 µg/L) dissolved TCE plume, located to the southwest of the A-2 Air Stripper, that is outside of the zone of capture of most of the recovery wells,
- There has been no observation of the vertical migration of the VOC contaminant plume at the trigger wells,
- There is currently no northernly groundwater flow toward the site boundary, and
- A portion of groundwater flow in the LLAZ has a southeastern flow direction toward Tims Branch Creek.

On June 18, 2020, SCDHEC provided a comment to incorporate the details of the permanent shutdown of the A-2 Air Stripper in this application. The permanent shutdown of the A-2 Air Stripper will include:

- Dismantlement and removal of the A-2 Air Stripper,
- Abandonment of RWM 12, RWM 14B, RWM 14C, and RWM 15B,
- Conversion of RWM 13B and RWM 13C into monitoring wells,
- Installation four new monitoring wells (i.e., MSB125B, MSB 125C, MSB 126B, and MSB126C),
- Continued semi-annual sampling of the monitoring well network, and
- Removal of all trigger concentrations from monitoring wells.

The four new monitoring wells will be installed at two locations to better define the high concentration TCE plume and provide hydraulic control to monitor the southeastern migration of the high concentration TCE plume (Figure E.8-30a).

RWM 12, RWM 13B, RWM 13C, RWM 14B, RWM 14C, RWM 15B were all isolated from the A-2 Air Stripper in 2022. RWM 13B and RWM 13C were converted to monitoring wells and renamed RWM-013-BM and

RWM-013-CM. RWM 12, RWM 14B, RWM 14C, and RWM 15B were abandoned in 2022. The dismantlement and removal of the A-2 Air Stripper will be scheduled as funding becomes available.

E.8.3.3.5.4 Vadose Zone Remediation

SCDHEC also requested that SRS convert two dry MAAZ wells (i.e., MSB 67D and MSB 68D) into SVE or MicroBlower™ wells. These two wells were previously evaluated for SVE using an active SVEU (WSRC-TR-99-00390), but vapor concentrations were not high enough to warrant an active SVEU. Upon further review of the vapor concentrations, MicroBlowers™ would be a viable option, so the wells were equipped with MicroBlowers™ in March 2016. The wells are sampled quarterly with the data reported in the annual groundwater monitoring and corrective action report.

A complete SVE evaluation report (*2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* [SRNS-RP-2022-00514]) was submitted to SCDHEC in August 2022. The report evaluated the two MicroBlowers™ installed on SVE wells MSB 67D and MSB 68D. The results from the evaluation are provided in the paragraph below.

Since 2016, MSB 67D has removed a total of 8.8 lb of VOC mass, while MSB 68D has removed 119.9 lb (Figures E.8-30b and E.8-30c, respectively). In 2021, it is estimated that MSB 67D removed 0.4 lb of solvent while MSB 68D removed 3.7 lb. Although concentrations for both PCE and TCE have slightly increased in both MSB 67D and MSB 68D, MSB 68D continues to be the major contributor for SVE in Northern Sector. It is recommended that MSB 67D and MSB 68D continue operations.

E.8.3.3.5.5 Northern Sector Corrective Action Program

On June 27, 2013 (effective date: July 12, 2013), SCDHEC issued an update to the 2003 RCRA Permit Renewal for the SRS (Module IV – Groundwater, Section

A – M-Area and Met Lab HWMFs). In the renewal, SCDHEC requested that a third phase of corrective action be developed for the Northern Sector. The first phase of corrective action in Northern started with the operation of the A-1 Air Stripper and one recovery well (RWM 12). The A-1 Air Stripper operated from 1993 to 1995 and removed approximately 1,500 lbs of solvent.

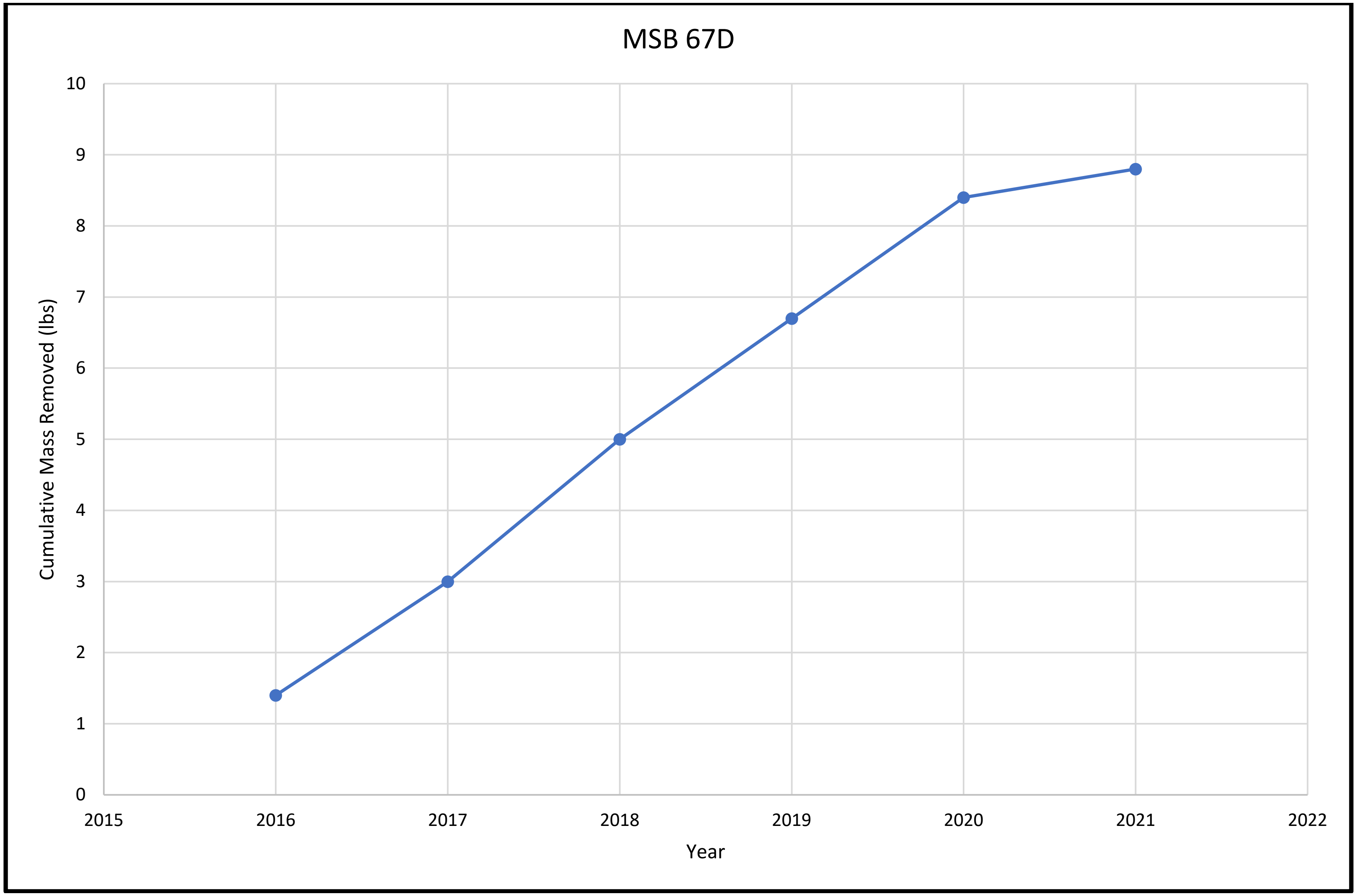

Figure E.8-30b. Cumulative Mass Removal of VOCs at MSB 67D

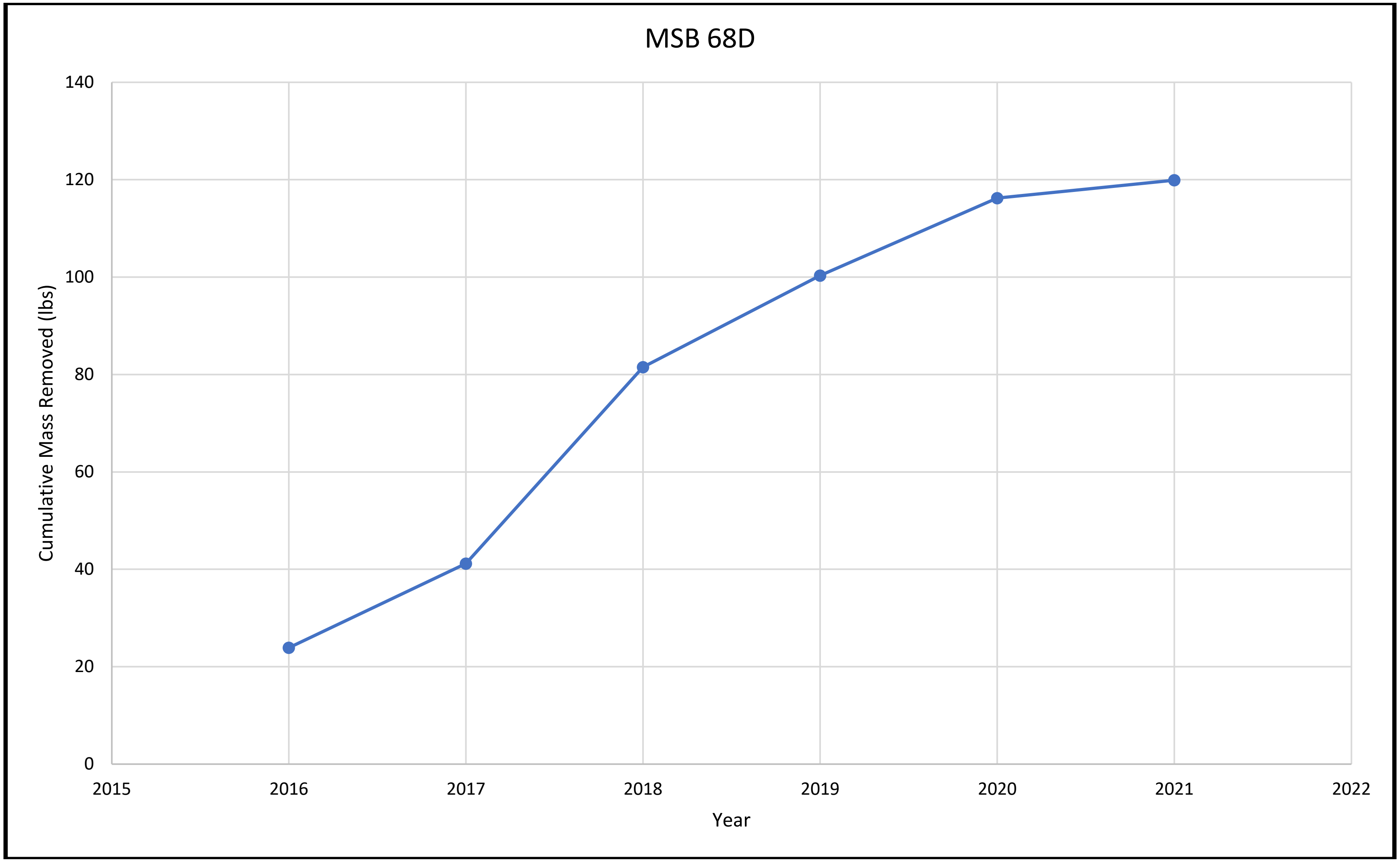

Figure E.8-30c. Cumulative Mass Removal of VOCs at MSB 68D

Table E.8-14. Schedule of Events Detailing the Corrective Action Plan for Northern Sector

CAP Schedule for the Northern Sector			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
Yes	October 2012 (A)	July 2014 (A)	Evaluation of the A-2 Air Stripper and Six Recovery Wells
Yes	Mar 2013 (A)	August 2017 (A)	Installation of Wells to Monitor the Shutdown of the A-2 Air Stripper
Yes	July 2014 (A)	June 2016 (A)	Characterization of Western Sector high concentration VOC plume (includes CBAU)
No	January 2015 (A)	September 2029	Monitor the Production Data from the Two Production Wells (PW 20A and PW 53A)
Yes	October 2016 (A)	January 2017 (A)	Characterization of Southern Sector Distal Plume (includes CBAU)
Yes	October 2020 (A)	March 2021 (A)	Part 1 Characterization Plan for CBAU/MQBAU
No	October 2021 (A)	September 2023	Implement Part 1 Characterization Plan for CBAU/MQBAU
No	October 2024	March 2025	Part 2 Characterization Plan for CBAU/MQBAU
No	October 2025	February 2026	Implement Part 2 Characterization Plan for CBAU/MQBAU
No	October 2026	September 2027	Installation of Wells to Monitor the Permanent Shutdown of the A-2 Air Stripper
No	October 2027	September 2029	Flow and Transport Model and Corrective Measures Study w/ Recommendation for Final Corrective Action

CY = Calendar year
A = Actual date

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only operate SSR008, SSR009, SSR011, and SSR012 without additional monitoring at the sentinel wells. The four active ARWs were removing about 200 lbs of solvent per year. Assuming 90% operating uptime, a pumping rate of 32.5 gpm, and a stripping efficiency range of 70-90%, the VOC mass removed from an individual ARW for a plume concentration of 500 µg/L is between 48 and 62 lbs of solvent per year. Based on these assumptions, SRS proposed permanent shutdown criteria for the four operating ARWs of less than 20 lbs of solvent per year, for two consecutive years at an individual ARW. The proposal was approved in the 2014 RCRA Permit Renewal Application Volume III for M-Area and Met Lab HWMFs Postclosure (SRNS 2017), effective September 2, 2017. In September 2017, SSR011 and SSR012 had met the shutdown criteria and were shutdown. SSR008 and SSR009 achieved the shutdown criteria in 2019 and were shut down in February 2020.

SRS no longer plans on using the twelve shutdown ARWs as monitoring wells and does not intend on restarting them for their originally designed purpose. SRS understands that concentrations in the VOC plume north and west of the ARWs might need further remediation, but SRS does not believe the existing ARWs are appropriate to remediate that portion of the plume. Approval for the dismantling and removing (D&R) of the above ground equipment used to operate the ARWs was requested in October 2017 and provided by SCDHEC in May 2018 (SRNS-OS-2018-00052). The D&R activities will be conducted once all ARWs have met the shutdown criteria. Eleven of the ARWs (i.e., SSR002 through SSR012) were abandoned in August 2022. SSR001 was not included in the abandonment since it is still being utilized in the humate amendment project.

Phase III Corrective Action Program

On June 27, 2013 (effective date: July 12, 2013), SCDHEC issued an update to the 2003 RCRA Permit Renewal for the SRS (Module IV – Groundwater, Section A – M-Area and Metallurgical Laboratory HWMFs), which states that a third phase of corrective action is needed in Southern Sector to remediate the VOC plume located between the A-14 Outfall and the line of ARWs (i.e., source plume), and the distal plume located between the line of ARWs and Tims Branch.

Phase III Corrective Action Plan – Source Plume

This portion of the plume is sourced from the A-14 Outfall and its un-named discharge tributary. Corrective action at the A-14 Outfall source area is currently ongoing with two SVEUs (i.e., 782-3M and Mobile #3) removing solvent mass from the vadose zone and a recovery well (i.e., RWM 6) removing mass from the groundwater. These remedial systems are managed under the RCRA Permit Renewal for SRS (Module IV – Groundwater, Section A – M-Area and Met Lab HWMFs) and are associated with vadose zone and Central Sector corrective actions, respectively.

The un-named tributary is a losing stream that received M-Area wastewater from 1952 to 1979. Solvent flowing down the tributary would have infiltrated the stream bed and entered the subsurface along the length of the tributary with the assumption that more solvent infiltrated the first half of the stream than the second half of the stream bed, based on attrition. A soil gas characterization project, *A/M-Area Vadose Zone Characterization Project Report (U)* (WSRC-RP-90-1335), found vapor concentrations decreased with distance from the A-14 Outfall. Later characterization efforts confirmed VOC contamination in the groundwater along the length of the tributary with little residual contamination in the unsaturated zone. The tributary is no longer considered a source as clean effluent water from the M-1 Air Stripper is thought to have flushed any residual contamination into the groundwater.

The majority of the source plume mass is composed of TCE and is mainly distributed in the LLLAZ, with concentrations exceeding 8,000 μg/L at MSB 75B in 2016. The leading edge of the source plume is orientated from the northeast to southwest in the direction of groundwater flow, which is approximately parallel to the line of ARWs (Figure E.8-33). The monitoring well network partially defines the portion of the plume extending towards SSM 13. In order to support a third phase of corrective action on the source plume, additional characterization will be needed to define the lateral and vertical width of the greater than 1,000 μg/L TCE plume and to support evaluation of appropriate corrective action technologies.

The DUS system was in full scale operation from 2005 through 2008. Target temperatures, temperatures high enough to vaporize groundwater and DNAPL, were reached throughout the target zone by the summer of 2006. Multiple heating strategies were conducted between 2006 and 2009 which included steady steam injection rates, bake-ins (no steam injection or vapor extraction for seven or more days), and short bursts of high pressure steam injection. Alternating the steaming strategy was effective at removing vapor, but overall mass removal rates started diminishing (Figure E.8-40). Steaming ceased on September 17, 2009. Although steaming has ended, SRS continued to operate the SVEU and groundwater remediation portions of this system. Since 2005, DUS II has removed over 450,000 pounds of solvent.

In June 2012, vapor samples from 31 of the 34 extraction wells were collected to assess the VOC concentrations present at each individual extraction well. The results of this sampling are reported in *Vapor Extraction Well Performance and Recommendations for Transitioning to Passive Extraction at the former DUS-II Site* (SRNL-STI-2013-00039). The vapor concentrations from each extraction well were used to categorize the SVE wells into groups which include 1) continued active SVE operation, 2) passive operation, and 3) abandonment. The extraction wells with elevated VOC concentrations will continue to operate under the active SVEU. The second group of wells had detectable, but low concentrations of VOCs and was disconnected from the active SVEU and equipped with MicroBlowers™ in September 2013. The third group of wells was abandoned in place since they exhibited the lowest VOC concentrations. Abandonments were completed in August 2013. See Figure E.8-41 for the location of the active, MicroBlower™, and abandoned wells.

In 2018, the individual SVE wells attached to the 782-6M SVEU and two dual phase extraction wells were re-evaluated. The 782-6M SVEU was shutdown from October 2017 to January 2018 and the well evaluation was conducted from January 2018 to July 2018. Similar to the 2012 evaluation, the wells were categorized into three groups. Four wells (i.e.,VEW-11F, VEW-24A, VEW-28F, and VEW-31F) were identified to remain attached to the SVEU, seven were identified as SVE wells to be equipped with MicroBlowers™, and one well should be abandoned. The report *Soil Vapor Extraction Well Testing Western*

Sector Treatment System (SRNL-STI-2018-00504) summarizes sampling results collected during the initial evaluation at the 782-3M SVE wells. To further evaluate the 782-3M SVEU, it was shut down again from July 2018 to October 2018. In October 2018, the 782-6M SVEU was returned to service for one month with only the optimized set of four SVE wells (i.e., VEW-11F, VEW-24A, VEW-28F, and VEW-31F) connected to the unit. After one week of operation, the SVEU was removing 5.9 pounds of solvent which is less than the 40 lbs/week identified as the baseline for operation of an active SVEU. The correspondence from SRNL *Re: 30-day Test of M-Area Western Sector Remediation System – Soil Vapor Extraction Unit* (SRNL-L3200-2019-00026) summarized the second evaluation of the optimized 782-6M SVEU.

In a meeting with SCDHEC on March 12, 2019 SRS summarized the results of both evaluations and proposed the permanent shutdown of the 782-6M SVEU, SVE wells to be equipped with MicroBlowers™, and wells to be abandoned. There were ten wells (i.e., VEW-07F, VEW-11F, VEW-21F, VEW-24A, VEW-25A, VEW-26F, VEW-28F, VEW-29F, VEW-30F, and VEW-31F) identified to be converted to MicroBlowers™ and seven wells identified to be abandoned. The list of wells to be abandoned includes the horizontal well (i.e., VEW-22A) which has 300 ft of screen and is not compatible with the low vacuum created by a MicroBlower™, VEW-33F, and five existing MicroBlowers™ (i.e., VEW-04A, VEW-06A, VEW-08A, VEW-10A, and VEW-15A) that were previously transitioned in 2013. See Figure E.8-42 for the location of the MicroBlower™ and abandoned wells. SCDHEC approved the proposed shutdown of the 782-6M SVEU, transition to MicroBlowers™, and abandonment of SVE wells on May 6, 2019 (SRNS-OS-2019-00125). The 782-6M SVEU was shut down in August 2019, MicroBlowers™ were installed on the ten SVE wells in September 2019, and the seven SVE wells proposed for abandonment were abandoned in September 2020.

The *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* (SRNS-RP-2022-00514) was submitted to SCDHEC in August 2022. The 16 MicroBlowers™ at the WSTS were included in the evaluation. The evaluation used a modified version of the SVE well grouping established in the 2013 SVE evaluation report

(SRNL-STI-2013-00039). The 2013 groupings were based on active SVE which had flow rates ten times greater than a MicroBlower™, so the values defining the groups were divided by ten to adapt the groupings to lower flow rates. VEW-01F, VEW-23F, VEW-24A, VEW-28F, VEW-30F, VEW-31F, and VEW-34F have the highest mass removal rates from the subsurface (between 0.01 and 0.1 lb/day) and are recommended to continue operations as MicroBlowers™. VEW-03A, VEW-07F, VEW-11F, and VEW-25A are still contributing to mass removal but at lower rates (between 0.005 and 0.01 lb/day) and are recommended to transition to BaroBalls™. VEW-02A, VEW-05A, VEW-21F, VEW-26F, and VEW-29F are no longer contributing to significant mass removal (less than 0.005 lb/day) and are recommended to be abandoned.

Because of PCB contamination associated with the MASB and other portions of M-Area, SRS will keep the Mycelx filter system at the DUS II site operational. This will allow all PCB contaminated groundwater and vapor condensate to be treated before it is sent to the M-1 Air Stripper. This facility will no longer be named DUS II since steaming has ceased; therefore, it has been renamed to the Western Sector Treatment System (WSTS). The document *Western Sector Treatment System (WSTS) Project Description (U)* (SRNS-RP-2012-00230), which was submitted separately, defines the full responsibilities of the WSTS.

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- PCE concentrations in the LLAZ are present at higher concentrations (> 10,000 µg/L) than previously observed.
- VOC concentrations in the LLAZ are less than 5,000 µg/L near the MSB108 well cluster.
- The ULLAZ was less permeable in a series of soil borings oriented from the southwest to the northeast (i.e., MW22SB, MW19SB, MW20SB, MW17SB, MW 28SB, and MW16SB)
- The LLAZ, between MSB106 and MW23SB, had three permeable zones separated by lower permeability sediments.
- The CBCU was discontinuous near the MSB108 well cluster and MW25SB with a higher percentage of sand throughout the normally thick clay rich aquitard. Soil results from these two locations indicate that the more permeable sediments are allowing the vertical migration of VOCs from the LLAZ to the CBAU.

During a meeting with SCDHEC on January 14, 2016, SRS proposed a TA to install a recovery well (i.e., RWM018) to provide hydraulic capture while also applying in situ chemical oxidation (ISCO) to address the high concentration plume near the MSB101 well cluster. The new recovery well will help remove mass as well as create a hydraulic gradient that can be used during the planning and implementation of the ISCO application. The TA request was submitted to SCDHEC on February 23, 2016 (SRNS-J2000-2016-00097). The SCDHEC approved the TA on March 9, 2016 (SRNS-OS-2016-00013). RWM018 was installed in 2017 and became operational to the M-1 Air Stripper system in May 2018. During 2018, PCE and TCE concentrations averaged 5,400 µg/L and 16,900 µg/L, respectively. By May 2018, twelve monitoring wells and eight injection wells were installed to support the ISCO project (Figure E.8-43). When RWM018 started pumping, transducers were deployed in some of the ISCO wells (i.e., WSM003 cluster and WSI001B) to observe drawdown. At the injection well, WSI001B, 2.5ft of draw down was observed indicating RWM018 is imposing a hydraulic gradient on the project area as designed. The ISCO project successfully injected 40,000 gallons of both potassium permanganate and sodium persulfate equally into eight injection wells, screened in the ULLAZ and LLLAZ, from August 30, 2018 through October 1, 2018. Monitoring for the ISCO project is ongoing and results were reported to SCDHEC in the first and second stand-alone reports on June 20, 2019 (SRNS-STI-2019-00166, Revision 0, June 2019) and March 11, 2020 (SRNS-STI-2020-00046, Revision 0, February 2020). The first two reports concluded that chemical oxidant was able to successfully destroy PCE and TCE, but distribution of the chemical oxidant was limited to two of four permeable zones of the LLAZ (i.e., the BB and CC horizons). The presence and effects of the chemical oxidant were also limited to the proximal monitoring wells (i.e., WSM001 and WSM002 clusters) and have not been observed at the distal monitoring wells (i.e., WSM003 and MSB107 clusters).

A proposal to conduct a second round of ISCO (ISCO-II) injections, targeting the two zones not impacted during the first injections (i.e., B and C horizons), was submitted to SCDHEC as a TA on January 13, 2020 (SRNS-J2000-2020-00020). The SCDHEC approved the ISCO-II TA on March 5, 2020 (SRNS-OS-2020-00126). Four new injection wells were installed at two locations, using a nested design to set two individual injection wells targeting the B and C horizons within one borehole (Figure E.8-43). The nested well design was utilized to target individual permeable horizons while reducing the overall footprint of a well cluster at the surface. If effective, the nested well design will allow for optimal placement of future injection wells if this corrective action is applied over a larger area. A total of 20,000 gallons of potassium permanganate and 25,000 gallons of sodium persulfate were injected equally into the four new injection wells from August through September 2020. Monitoring for the ISCO-II project is ongoing and results were reported to SCDHEC in the third stand-alone report on April 5, 2021 (SRNS-STI-2021-00048, Revision 0, March 2021). SCDHEC provided comments on that report on June 3, 2021 (SRNS-OS-2021-00147). SRS provided responses to SCDHEC’s comments on July 19, 2021 (SRNS-J2000-2021-00585) and SCDHEC approved the responses on August, 9, 2021 (SRNS-OS-2021-00222). Initial interpretation after the ISCO-II injections are that oxidant was introduced into the targeted B and C horizons as well as into the BB and CC horizons. Similar to the first round of ISCO injections, results from the ISCO-II injections observed PCE and TCE destruction where oxidant was present. The ISCO monitoring well network will continue to be monitored through 2022 and the results will be presented in a final report submitted in 2023.

To help understand the extent and distribution of oxidant into the aquifer, three soil borings (i.e., WSM004SB, WSM005SB, and WSM006SB) were drilled, cored, and sampled in the first quarter of 2022. Two borings were located downgradient of the injection site and one was located sidegradient of the ISCO-I injection wells. The borings were drilled to observe the effects of ISCO in the treatment zone and observe the extent of oxidant migration in the downgradient direction. The sidegradient boring (i.e., WSM004SB) was the only boring that had a physical presence of oxidant (purple stained sediment) in the core and corresponding low soil concentrations in the same horizons. This is an indication that oxidant has had a prolonged effect on VOC concentrations within the higher permeability sediments and rebound has not occurred significantly. WSM005SB, located just downgradient of the treatment zone, observed no purple staining in the cored sediments and minimal affects to VOC soil concentrations. This is an indication that oxidant has not migrated in the direction of WSM005SB from the treatment zone. No evidence of oxidant was observed at the most distal soil boring (i.e., WSM006SB) which was co-located with the WSM003 monitoring well cluster. Results from WSM006SB correlate to results collected from the WSM003 well cluster that oxidant has not had an effect on the aquifer at this distance from the treatment zone.

Corrective action of the groundwater near the MASB was separated into two pieces based on results observed during the Post-DUS characterization which identified areas of elevated groundwater concentrations to the northwest and southeast of the MASB. A recovery well (i.e., RWM019) was installed south of the MSB002 well cluster to remove high VOC concentrations from the LLLAZ. RWM019 was installed in January 2019 and was connected to the M-1 Air Stripper system in September 2020. Since operation began, RWM019 has pumped approximately 70 gpm and averaged a PCE concentration of 29,591 µg/L and a TCE concentration of 14,873 µg/L making it the largest contributor to mass removal for the M-1 Air Stripper.

The second part of the corrective action will target the path of DNAPL migration from the MASB out to Western Sector and will be located northwest of the MASB and the MSB106 well cluster. The corrective action will deploy emulsified zero valent iron (EZVI) in the GCCZ and ULLAZ. The EZVI will be injected from 150 to 175 ft bgs at high pressure to induce a series of hydraulic fractures and increase the horizontal distribution within the targeted interval. Figure E-8.43a provides the proposed location of the six injection points and four monitoring wells. A TA presentation proposing the EZVI deployment was presented to SCDHEC in December 2020. During the meeting, SCDHEC requested that the submittal of the EZVI TA be delayed until they could complete their review of the third stand-alone ISCO report. SCDHEC provided comments on the ISCO report in June 2021 and emphasized that future corrective actions should ensure the potential impacts to the M-1 Air Stripper are understood and precautions are taken to mitigate those impacts. The impacts of the EZVI project to the M-1 Air Stripper were further evaluated and are not expected. However, out of an abundance of caution, purge water management systems will be installed on the four monitoring wells and additional monitoring at RWM 8 and RWM 10 will be conducted if elevated iron, pH, or metal concentrations are observed at the four monitoring wells. A revision to the TA presentation was made to summarize the evaluation and incorporate the changes to the monitoring program, and it was submitted to SCDHEC on August 17, 2021 for approval (SRNS-J2000-2021-00676). SCDHEC approved the TA on October 25, 2021 (SRNS-OS-2021-00307). The installation of monitoring wells was completed by February 2022 and a set of baseline samples were collected in March 2022. The drilling of six injection points and injection of EZVI was conducted from March to May 2022. Figure E.8-43b provides the location of the four monitoring wells and six injection points associated with the EZVI project. Each injection point had five injection intervals, targeting 150 to 175 ft bgs, where 1,333 gallons of EZVI was hydraulically fractured into each interval for a total of 6,665 gallons per injection point. After injections were completed, each injection point was abandoned in place before moving to the next injection point. Approximately 40,000 gallons of EZVI were successfully injected into the targeted zone of the ULLAZ. After completion of the EZVI injections, purge water management stations were installed on all four monitoring wells to prevent excess well sampling purge water from exceeding waste acceptance criteria, specifically for iron, at the M-1 Air Stripper. Sampling of the four

EZVI monitoring wells (i.e., WEM-001-C, WEM-002-C, WEM-003-C, and WEM-004-C) started in July 2022 and will be conducted for one year.

The third area requiring corrective action is in the vadose zone east of the MASB. Additional characterization of this area is needed to fully define the area with high VOC concentrations. Once defined, it is anticipated that an in-situ corrective action will be applied. The characterization and corrective action will be associated with the vadose zone corrective action plan (Section E.8.3.3.3.2.4 and Table E.8-5).

A modeling effort is also being planned that would look at the long term impacts each technology or combination of technologies would have on reducing mass and, therefore, effect the amount of time to reach the groundwater protection standard. SRS will include the SCDHEC early in the execution of the Western Sector modeling effort. This will be used in conjunction with the empirical data collected from new and existing wells and TA monitoring to support an alternative evaluation. This evaluation will culminate in a Corrective Measures Study and recommended final corrective action to be submitted as part of an application revision. A schedule of corrective action activities is presented in Table E.8-17.

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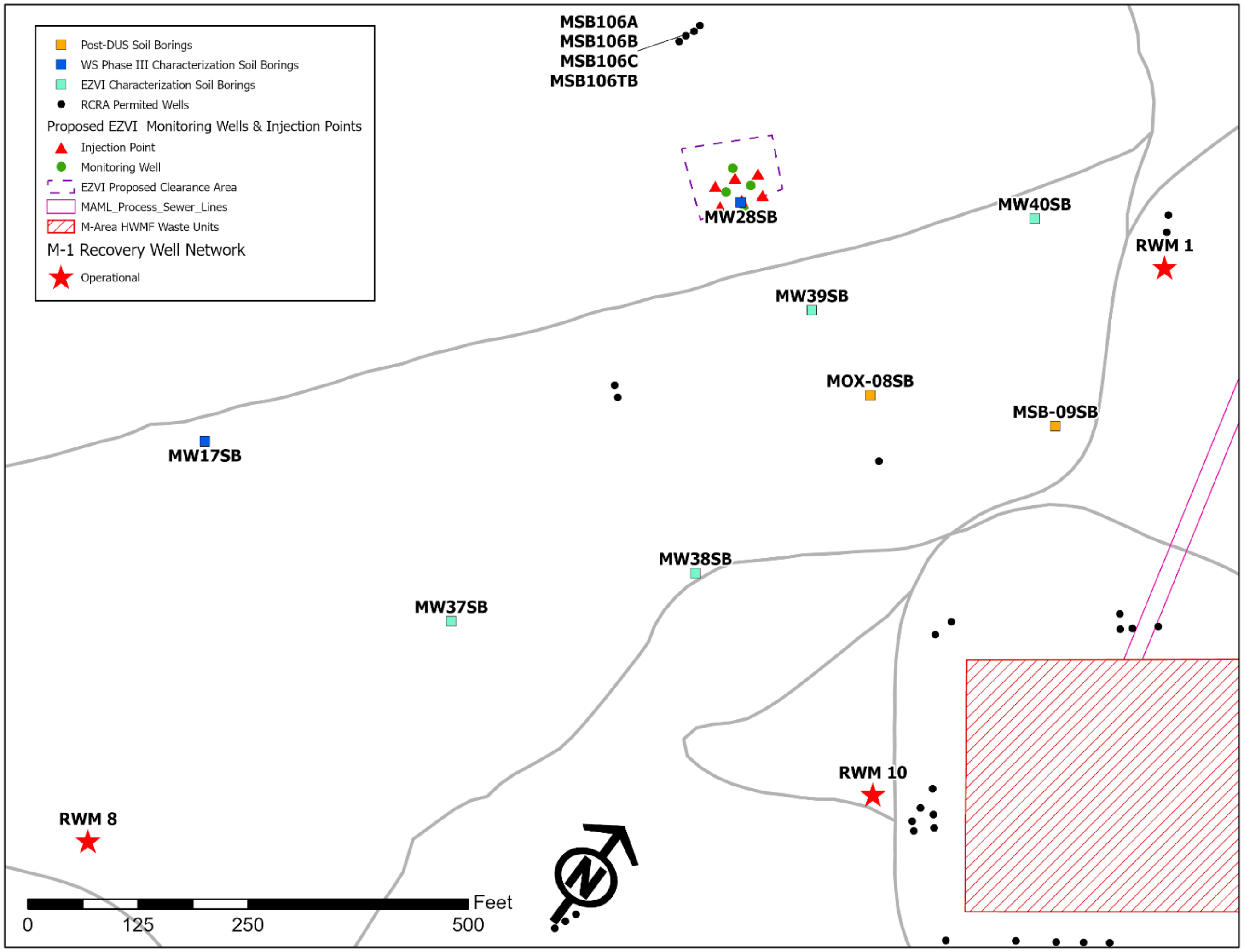

Figure E.8-43a. Western Sector EZVI Well Network with Supporting Characterization Soil Borings

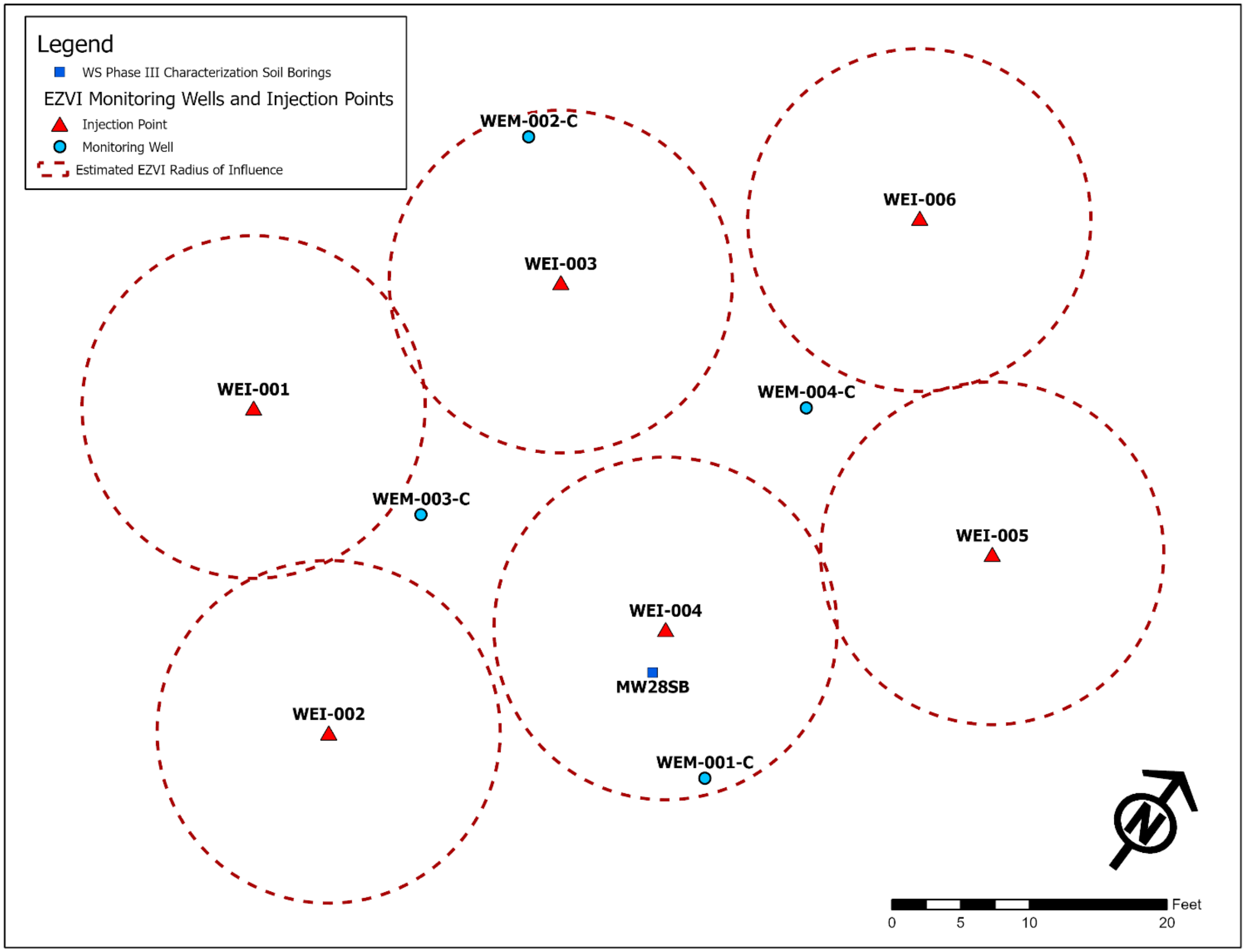

Figure E.8-43b. Location of the Western Sector EZVI Monitoring Wells and Injection Points

Table E.8-17. Schedule of Events Leading to the Submittal of the Corrective Action Plan for the Western Sector

CAP Schedule for the Western Sector			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
Yes	January 2014 (A)	April 2014 (A)	Post Remediation Characterization Report for the DUS Project at MASB
Yes	July 2014 (A)	June 2016 (A)	Characterization of high concentration VOC plume
Yes	October 2015 (A)	February 2021 (A)	(1) Temporary Authorization (TA) RWM018 installation and ISCO deployed near the MSB101 well cluster
Yes	October 2015 (A)	March 2016 (A)	*1.1 Development, submittal, and approval of TA*
Yes	August 2017 (A)	February 2021 (A)	*1.2 UIC permit, well installation, implementation, and monitoring*
Yes	October 2018 (A)	January 2020 (A)	*1.3 Develop and submit Permit Renewal Application Revision*
Yes	October 2017 (A)	September 2020 (A)	(2) TA RWM019 installation southeast of MASB
Yes	October 2017 (A)	March 2018 (A)	*2.1 Development, submittal, and approval of TA*
Yes	June 2019 (A)	September 2020 (A)	*2.2 Well installation, implementation, and monitoring*
Yes	July 2019 (A)	January 2020 (A)	*2.3 Develop and submit Permit Renewal Application Revision*
No	January 2020 (A)	September 2023	(3) TA In situ remedial technology deployed northwest of the MASB near the MSB106 well cluster
Yes	January 2020 (A)	October 2021 (A)	*3.1 Development, submittal, and approval of TA*
No	October2021 (A)	July 2023	*3.2 UIC permit, well installation, implementation, and monitoring*
Yes	December 2021 (A)	February 2022 (A)	*3.3 Develop and submit Permit Renewal Application Revision*
No	October 2017 (A)	February 2024	Monitor results of TA deployments

Table E.8-17. Schedule of Events Leading to the Submittal of the Corrective Action Plan for the Western Sector (continued)

CAP Schedule for the Western Sector			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
No	October 2024	September 2026	Develop flow and transport model and Corrective Measures Study w/ Recommendation for Final Corrective Action

CY = Calendar year
A = Actual date
White Cells represent general Western Sector activities

1	2	3	Each color represents a separate TA and the subtasks associated with that TA. Each TA addresses contamination in a different part of Western Sector

Phase I Characterization

TCE concentrations greater than 100 µg/L are present in the LLLAZ in the southernmost plume definition well (MCB 25B). In August 2012, a pre-Phase I characterization effort collected soil plug data in the MAAZ down to the CBCU at three soil borings located downgradient (south, southwest) of the 2012 TCE plume foot print (Figure E.8-48). A monitoring well, MCB029B, was installed at the only soil boring that had detectable VOC concentrations in the soil. MCB029B was installed in August 2012 and subsequent groundwater data from MCB029B has confirmed the presence of TCE, although the maximum concentration has been 2.1 µg/L which is less than the GWPS (5 µg/L). Phase I built on the initial characterization effort and was completed in June 2013. Six wells were installed at four locations to further define the southern extent of the TCE plume (Figure E.8-48).

Two of the new locations bound the southern (i.e., MSCB031) and eastern (i.e., MCB030) edges of the plume and have a screen in the ULLAZ and the LLLAZ. The third and fourth locations add an ULLAZ screen at existing monitoring wells MCB 25B and MCB029B.

Initial groundwater results indicate low concentrations of TCE (i.e., less than the GWPS) are present downgradient of MCB 25 in the LLLAZ while TCE concentrations in the ULLAZ have exceeded the GWPS at MCB025C and MCB029C. These wells have been added to Table E.7-3. SRS proposed the addition of surface water sampling points or shallow water table wells in Revision 7 of this permit renewal application if GWPS for TCE were exceeded at MCB029C or MCB031C. In the third quarter of 2016, the TCE concentration at MCB029C was 5.3 µg/L. SRS proposes to evaluate the trend of TCE detections and add additional sampling points accordingly after Phase III characterization at ABRP/MCB/MBP OU.

Phase II Characterization

Phase II characterization focused on installing wells on a more regional scale and using some existing wells to develop the potentiometric surface. There was uncertainty as to the direction of groundwater flow and likely discharge points (wetland areas to the southwest or Upper Three Runs Creek to the south). Phase II was completed in January 2016 and installed eight wells at four locations (Figure E.8-48). Although these wells were initially proposed as piezometers, four of the new wells (i.e., MCB033B, MCB033C, MCB034B, and MCB034C) were converted to plume definition wells based on the orientation of the TCE and 1,4-dioxane plumes. The other four wells (i.e., MCB032B, MCB032C, MCB035B, and MCB035C) will remain piezometers. In addition to the new wells, four (4) existing piezometers will be sampled for water elevation (Figure E.8-48). All twelve wells have been added to Table E.7-3.

Phase III Characterization

Phase III characterization began in April 2021 and installed eleven new monitoring wells, nine soil borings, and started monitoring two existing nonpermitted monitoring wells (Figure E.8-49) to further the definition of the 1,4-dioxane groundwater plume while also providing some additional definition of the TCE plume. The new and existing nonpermitted monitoring wells are screened in the ULLAZ and LLLAZ to provide long term monitoring, define plume boundaries, and further define areas of high concentration within the 1,4-dioxane and TCE groundwater plumes. The soil borings were installed perpendicular to the plumes to determine the vertical and lateral distribution of contamination in the LLAZ. The soil borings collected depth discrete soil samples that were analyzed for VOCs and three depth discrete groundwater samples in the upper, middle, and lower LLAZ that were analyzed for 1,4-dioxane and VOCs. The VOC results helped refine a narrower >100 µg/L TCE plume. The 1,4-dioxane results indicated high concentrations on the west end of the soil boring transect at MCB107SB, MCB037B, MCB037C, and MCB109SB. The high concentration 1,4-dioxane results were not anticipated. Additional characterization will be needed to bound this section of the plume in the upgradient, lateral, and downgradient directions.

Phase IV Characterization

Phase IV characterization will be used to further define the high concentration 1,4-dioxane results observed during Phase III characterization activities (Figure E.8-49a). Phase IV characterization will be divided into two phases. The first phase (i.e., Phase IVa) will drill a series of soil borings to bound the 1,4-dioxane plume. The second phase (i.e., Phase IVb) will install monitoring wells based on the results observed from Phase IVa.

Phase IVa characterization is planned to begin in 2027. Eleven new soil borings will be drilled to further define the 1,4-dioxane plume between the high concentrations at MCB037C and the upgradient source, and further define the lateral and downgradient extents of the 1,4-dioxane plume. The soil borings will be drilled perpendicular to the plumes to determine the vertical and lateral distribution of contamination in the LLAZ. Depth discrete groundwater samples will be collected at the soil borings and analyzed for 1,4-dioxane and VOCs. To help identify 1,4-dioxane concentrations near the 1,4-dioxane source area two existing nonpermitted (i.e., ABP 10D and ARP 21D) and four existing permitted monitoring wells (i.e., ARP 14C2, ARP 18B, MCB 16B, and MCB 16C) will start being sampled in 2022. The existing nonpermitted and permitted monitoring wells are screened in the MAAZ, ULLAZ, and LLLAZ. Sampling these wells in advance of Phase IVa characterization activities will help provide a better understanding of 1,4-dioxane concentrations near the source area. Figure E.8-49b illustrates the proposed locations of the Phase IVa soil borings and the additional six existing monitoring wells to be sampled for 1,4-dioxane.

Phase IVb characterization is planned to begin in 2028. Eleven new monitoring wells screened in the ULLAZ and LLLAZ will be installed to provide long-term monitoring of the 1,4-dioxane groundwater plume. The well locations will be dependent on the Phase IVa soil boring results. Figure E.8-49c illustrates the proposed locations of the Phase IVb monitoring wells.

Monitoring Well Network

The monitoring well network at ABRP/MCB/MBP OU is defined in Table E.7-3. The monitoring well network was expanded in three phases (i.e., Phase I, Phase II, and Phase III) to help to define the southern portion of the VOC plume and determine the direction of groundwater flow in the ULLAZ and LLLAZ. The monitoring well network will be expanded during Phase IV to further define the 1,4-dioxane and VOC groundwater plumes. These wells will be sampled annually and the respective analytical suite for each well is defined in Table E.7-3.

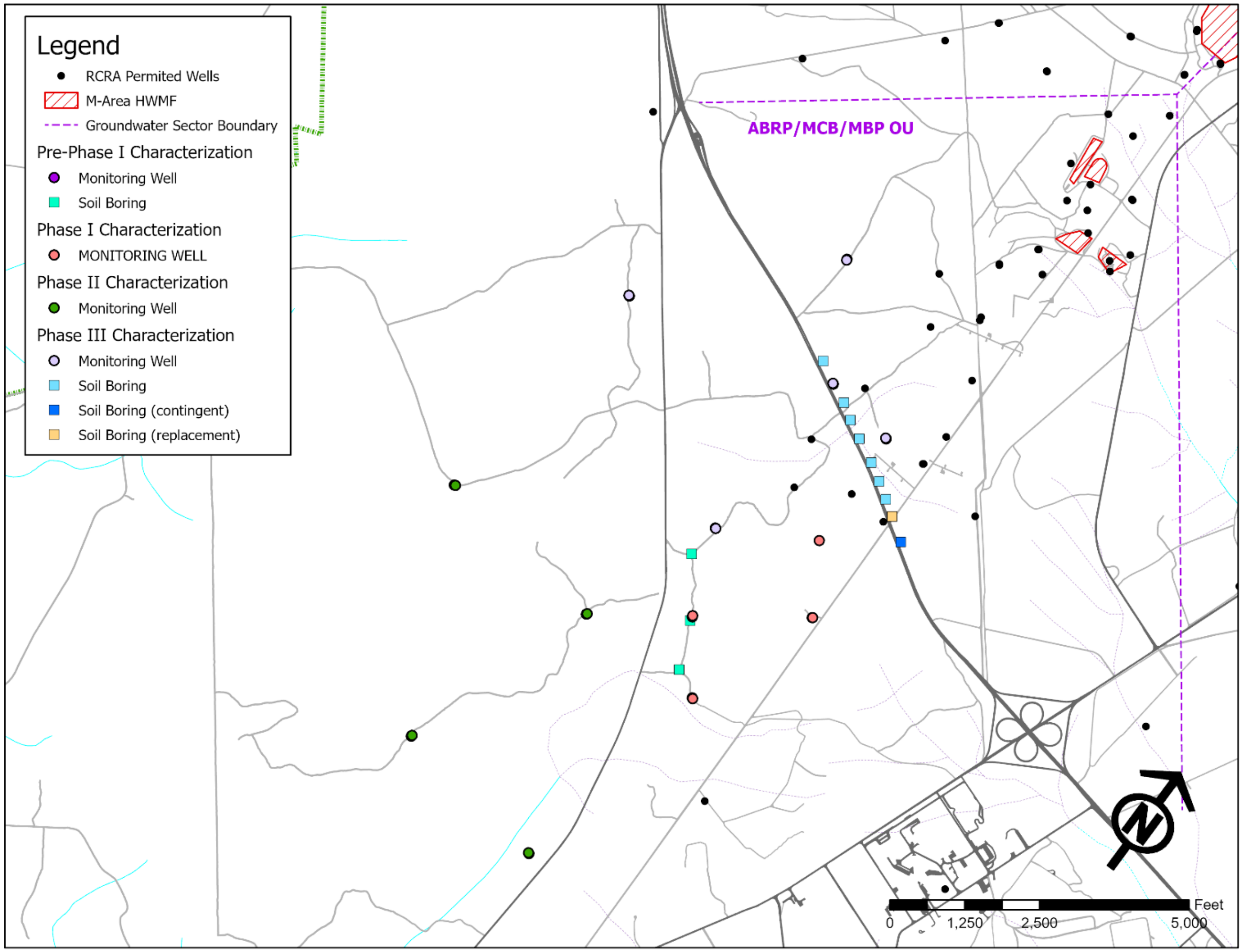

Figure E.8-48. Location of Soil Borings and the Monitoring Wells at the ABRP/MCB/MBP OU

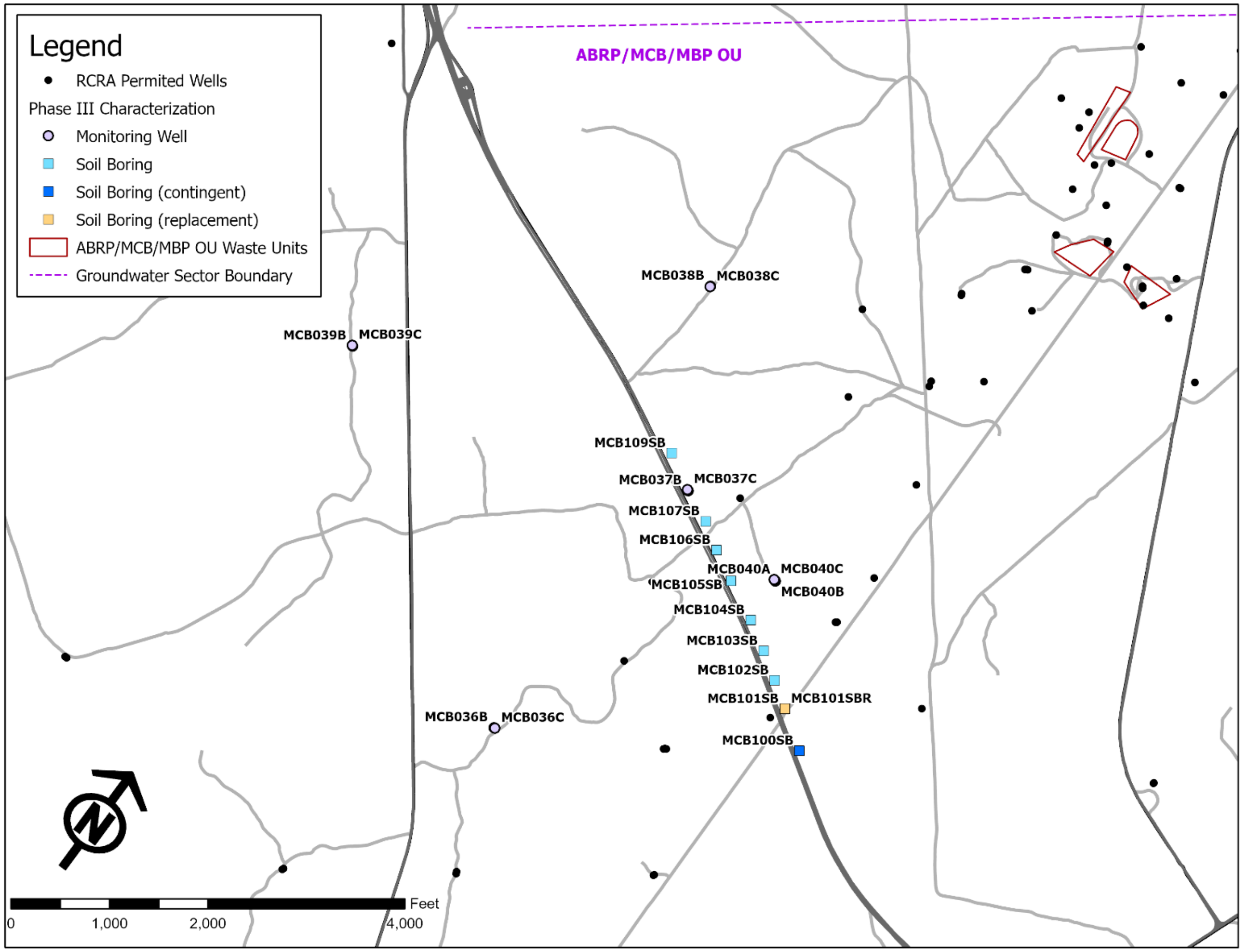

Figure E.8-49. Location of Phase III Soil Borings and the New Monitoring Wells at the ABRP/MCB/MBP OU

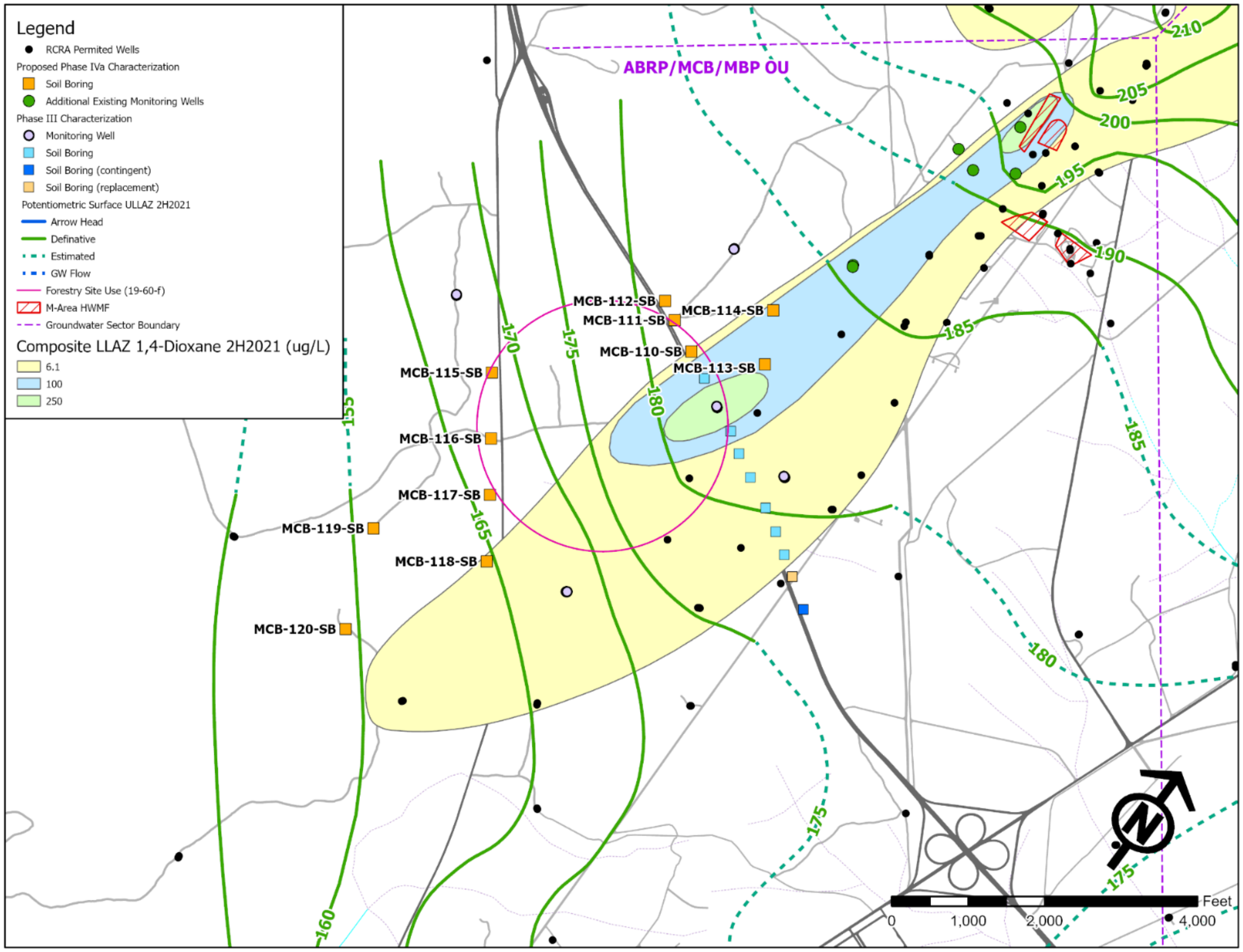

Figure E.8-49a. Location of Phase IVa Proposed Soil Borings and the Additional Existing Monitoring Wells at the ABRP/MCB/MBP OU

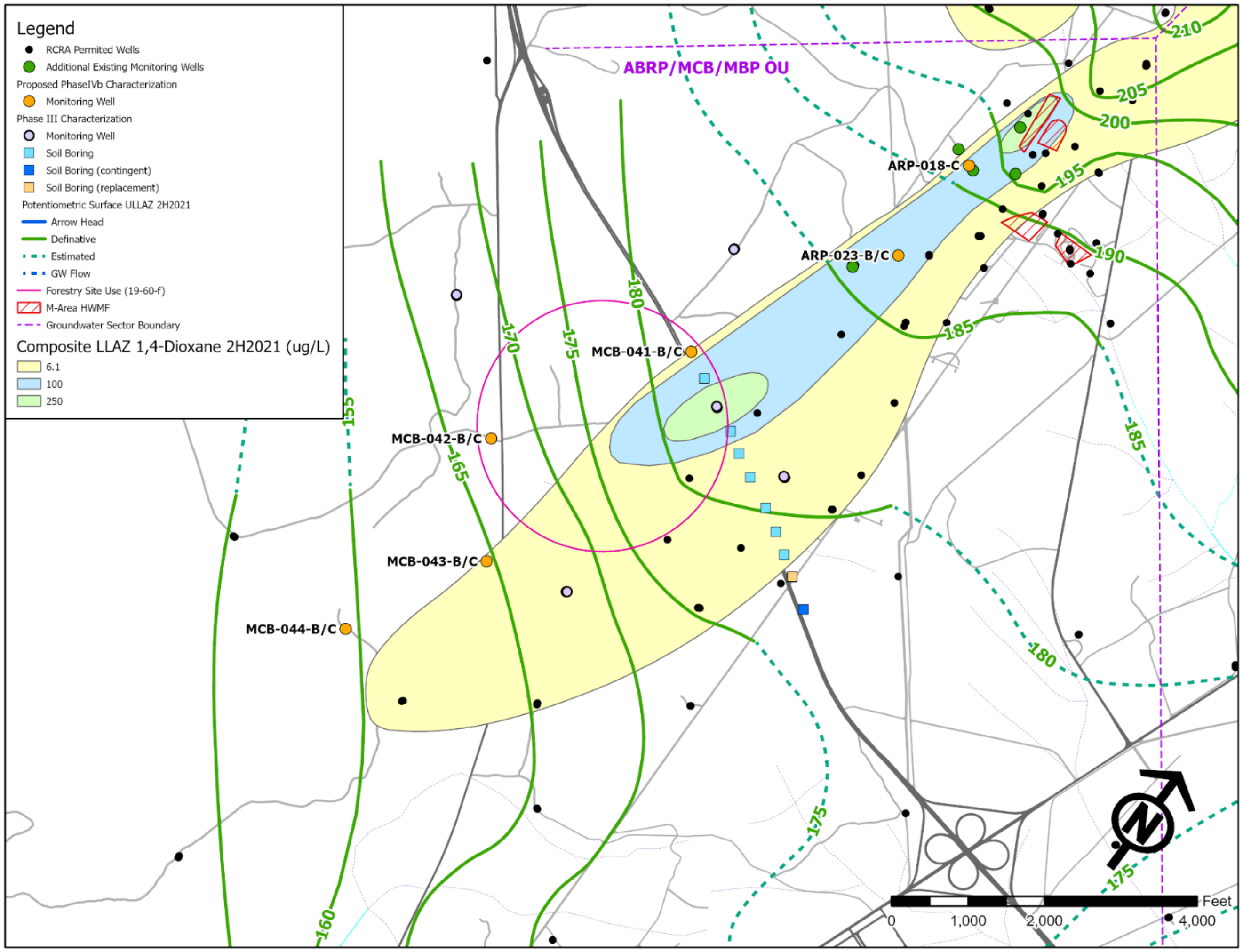

Figure E.8-49b. Location of Phase IVb Proposed New Monitoring Wells at the ABRP/MCB/MBP OU

E.8.3.3.8.3 ABRP/MCB/MBP OU Groundwater Plume Corrective Action Plan

Once the proposed Phase III monitoring well network has been sampled quarterly for the first year, SRS will evaluate the data to determine plume extent and flow direction. Based on the data, a site conceptual model will be developed and corrective action alternatives will be assessed to address the distal portion of the VOC plume. Active and passive corrective action technologies will be assessed in a Corrective Measures Study, and the most effective and efficient technology will be recommended as the final corrective action. The Corrective Measures Study and the CAP for the ABRP/MCB/MBP OU will be submitted in 2032 as a revision to the RCRA Part B Permit Renewal Application for the M-Area and Metallurgical Laboratory HWMFs. Table E.8-19 shows a schedule of the events leading up to the submittal of the CAP for the ABRP/MCB/MBP OU groundwater plume.

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Table E.8-19. Schedule of Events Leading to the Submittal of a Corrective Action Plan for ABRP/MCB/MBP OU

CAP Schedule for the ABRP/MCB/MBP OU			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
No	July 2013 (A)	December 2022	Sampling of Phase I wells
No	July 2014 (A)	December 2022	Sampling extended monitoring well network
Yes	October 2015 (A)	February 2016 (A)	Phase II Characterization - Installation of 8 wells at four locations
No	March 2016 (A)	December 2022	Sampling of Phase II wells
Yes	February 2020 (A)	August 2021 (A)	Phase III Characterization - Extent of 1,4-dioxane groundwater plume
No	November 2021 (A)	December 2022	Sampling of new 1,4-dioxane monitoring wells
No	September 2022	September 2030	Sampling of Existing Monitoring Wells for 1,4-dioxane
No	March 2027	September 2027	Phase IVa Characterization – Further characterization of 1,4-dioxane groundwater plume
No	March 2028	September 2028	Phase IVb Characterization – Long term monitoring of 1,4-dioxane groundwater plume
No	September 2028	September 2030	Sampling of new monitoring wells
No	December 2030	September 2032	Submittal of a Corrective Measures Study and Corrective Action Plan (Revision to the RCRA Permit Renewal Application)

CY = Calendar year
A = Actual date
Phase I wells MCB025C, MCB029C, MCB030B, MCB030C, MCB031B, and MCB031C
Phase II wells MCB032B, MCB032C, MCB033B, MCB033C, MCB034B, MCB034C, MCB035B, and MCB035C
Phase III wells MCB036B, MCB036C, MCB037B, MCB037C, MCB038B, MCB038C, MCB039A, MCB039B, and MCB039C
Phase IVb wells ARP-018-C, ARP-023-B, ARP-023-C, MCB-041-B, MCB-041-C, MCB-042-B, MCB-042-C, MCB-043-B, MCB-043-C, MCB-044-B, and MCB-044-C

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K. CERTIFICATION

[REF: R.61-79.270.11(d)(1)]

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Stuart A. MacVean
President and CEO
Savannah River Nuclear Solutions, LLC
as the Co-Operator with the U.S. Department of Energy
Savannah River Operations Office

9/7/22
Date Signed

Michael D. Budney
Savannah River Site Manager
U.S. Department of Energy
Savannah River Operations Office
Co-Operator and Owner

9/14/22
Date Signed

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LIST OF REVISIONS

REVISION #	REVISION DATE	BOOK	PAGES AFFECTED
0	01/14/2020	1	All
0	01/14/2020	2	All
1		1	1 through 2, x through xb, xvi, A-4, A-7, A-10, B-5a through B-7, B-12, B-14 through B-19, E.1-49, E.1-78 through E.1-78b, E.2-3, E.2-18, E.2-26 through E.2-26b, E.2-29 through E.2-31, E.2-33 through E.2-34, E.2-40, E.2-44, E.2-47, E.3-1, E.4-1 through E.4-6, E.5-2 through E.5-4, E.5-12 E.5-17 through E.5-20, E.8-2 through E.8-3, E.8-5, E.8-8, E.8-17 through E.8-18, E.8-36, E.8-38, E.8-40, E.8-43 through E.8-44, E.8-47 through E.8-49, E.8-52 through E.8-53, E.8-56 through E.8-57, E8-59, E.8-75 through E.8-76, E.8-83, E.8-103, E.8-106, E.8-112, E.8-116 through E.8-117, E.8-128 through E.8-129, E.8-136 through E.8-137, E.8-139 through E.8-141, E.8-145 through E.8-146, E.8-151 through E.8-152, E.8-154 through E.8-156b,

LIST OF REVISIONS (continued)

REVISION #	REVISION DATE	BOOK	PAGES AFFECTED
1	08/27/2020	1	E.8-160, E.8-175, E.8-177, E.8-181 through E.8-182, E.8-197 through E.8-198, E.8-212, E.8-215, E.8-223, E.8-229 through E.8-232, I-20, and K-1 through K-2
1	08/27/2020	2	Appendix 1 and Appendix 3
2	01/12/2022	1	2, xvii through xviii, xxxiii through xxxiv, E.5-4, E.5-6, E.5-8 through E.5-9, E.5-11, E.5-14, E.7-3 through E.7-4, E.7-21, E.7-25, E.7-27 through E.7-27a, E.7-28a, E.8-59, E.8-137, E.8-175, E.8-180 through E.8-180b, E.8-186 through E.8-186b, E.8-196 through E.8-197, E.8-223, E.8-229 through E.8-230, I-2, and K-1 through K-2
3	**09/29/2022**	**1**	**2, 3, 4, xiii, xvi through xxii, xxxiv, E.5-3 through E.5-3b, E.5-5 through E.5-5b, E.5-11 through E.5-14, E.5-20 E.7-4, E.7-13 through E.7-14 E.7-17 through E.7-19, E.7-27 through E.7-27a, E.8-20 through E.8-21, E.8-23 through E.8--29,**

LIST OF REVISIONS (continued)

REVISION #	REVISION DATE	BOOK	PAGES AFFECTED
3	09/29/2022	1	E.8-52 through E.8-52d, E.8-57, E.8-59, E.8-62 through E.8-64, E.8-73 through E.7-74, E.8-76 through E.8-76b, E.8-77a through E.8-78, E.8-89, E.8-92 through E.8-92b, E.8-101a through E.8-101b, E.8-103, E.8-128 through E.8-128b, E.8-136a through E.8-137, E.8-155, E.8-182 through E.8-182b, E.8-186 through E.8-186d, E.8-196b through E.8-197, E.8-214 through E.8-216, E.8-219 through E.8-221, E.8-223, and K-1 through K-2

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LIST OF TABLES (continued)

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LIST OF FIGURES

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LIST OF ACRONYMS AND ABBREVIATIONS

µg	microgram
ABRP	A-Area Burning/Rubble Pits
ac	acre
ACL	alternate concentration limit
ANOVA	analysis of variance
AQC	air quality control
ARL	average run length
ARP	A-Area Miscellaneous Rubble Pile
ARW	airlift recirculation well
BART™	Biological Activity Reaction Test
BDAT	Best Demonstrated Available Technology
bls	below land surface
BRA	Baseline Risk Assessment
°C	degrees Celsius
CABF	Cochran's Approximation to the Behrens-Fisher t-test
CAP	Corrective Action Plan
CBA	Crouch Branch aquifer
CBCU	Crouch Branch confining unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
cfs	cubic feet per second
cm	centimeter
COC	constituent of concern
CUSUM	cumulative sums
DNAPL	dense non-aqueous phase liquid
DUS	Dynamic Underground Stripping
EES	Equipment Engineering Section
EP	extraction procedure
ESD	Explanation of Significant Difference
FFA	Federal Facility Agreement
FR	Federal Register
ft	foot
g	gram
gal	gallon
GC/MS	gas chromatography/mass spectrometry
GCCZ	“green clay” confining zone
GCS	Geologic Consulting Service
gpd	gallons per day
gpm	gallons per minute

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

GWPS	Groundwater Protection Standards
HCM	hydrogeologic conceptual model
HOC	halogenated organic carbon
HP	Health Protection
hp	horsepower
HWMF	Hazardous Waste Management Facility
in	inch
IROD	Interim Record of Decision
ITRC	Interstate Technology and Regulatory Council
kg	kilogram
L	liter
lb	pound
LDR	Land Disposal Restrictions
LETF	Liquid Effluent Treatment Facility
LLLAZ	Lower Lost Lake aquifer zone
LOQ	limit of quantitation
MAAZ	M-Area aquifer zone
MCB/MBP	Miscellaneous Chemical Basin/Metals Burning Pit
mCi	millicurie
MCL	maximum contaminant level
MCS	**monitoring constituent standard**
Met Lab	Metallurgical Laboratory
mg	milligram
MIA	Multi-Stage In-well Aerator
mi	mile
min	minute
mL	milliliter
MNA	monitored natural attenuation
MSAZ	Middle Sand aquifer zone
msl	mean sea level
MWW	Mann-Whitney/Wilcoxon
ng	nanogram
NOD	Notice of Deficiency
NPDES	National Pollutant Discharge Elimination System
NPWDS	National Primary Drinking Water Standards
NTU	nephelometric turbidity unit
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
pCi	picocurie

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

PDWS	Primary Drinking Water Standards
POC	point of compliance
ppb	parts per billion
ppm	parts per million
ppmv	parts per million by volume
PQL	practical quantitation limit
psi	pounds per square inch
PSVE	passive soil vapor extraction
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RMET	Raw Materials Engineering and Technology Department
SAS	Statistical Analysis System
SCDHEC	South Carolina Department of Health and Environmental Control
scfm	standard cubic feet per minute
SCHNS	South Carolina Hydrostratigraphic Nomenclature Subcommittee
SCHWMR	South Carolina Hazardous Waste Management Regulations
SREL	Savannah River Ecology Laboratory
SRL	Savannah River Laboratory
SRNL	Savannah River National Laboratory
SRS	Savannah River Site
SSTA	Solvent Storage Tank Area
SVE	soil vapor extraction
SVEU	soil vapor extraction unit
SWMU	solid waste management unit
TA	temporary authorization
TB	Tims Branch
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TEGD	Technical Enforcement Guidance Document
TOC	total organic carbon
TSCA	Toxic Substances Control Act
ULLAZ	Upper Lost Lake aquifer zone
US DOD	United States Department of Defense
US DOE	United States Department of Energy
US DOE-SR	United States Department of Energy Savannah River Operations Office
US EPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VOC	volatile organic compound
VOS™	Vadose Oil Substrate™

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

WSRC, LLC	Washington Savannah River Company, Limited Liability Company
yr	year
ZOCA	zone of capture analysis

LIST OF STAND-ALONE DOCUMENTS (continued)

Title	Document Number
SCDHEC Approval Letter RE: 2000 RCRA Part B Permit Renewal Application for M-Area and Metallurgical Laboratory HWMFs Post Closure (2000 RCRA Part B), Volume III, Rev. 5, Letter Hayford to Haynes dated Dec. 30, 2009 Savannah River Site (SRS) SC1 890 008 989, dated July 21, 2011	Not Applicable
SRNS Submittal of the 2000 RCRA Part B Permit Renewal Application: M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities (M-Area and Met Lab HWMFs) Post Closure (WSRC-IM-98-30, Volume III, Revision 5, October 2009)	SRNS-J2000-2009-00086, December 2009
Western Sector In-situ Chemical Oxidation Project: Initial Results Following Injection Activities (U), Revision 0, June 2019	SRNS-STI-2019-00166, Revision 0, June 2019
Western Sector In-situ Chemical Oxidation Project: Supplemental Results after Injection Activities (U), Revision 0, February 2020	SRNS-STI-2020-00046, Revision 0, February 2020
SRNS Submittal of the Temporary Authorization Request for Additional Field Scale Testing of In Situ Chemical Oxidation Process in Western Sector of M-Area Hazardous Waste Management Facility	SRNS-J2000-2020-00020, January 2020
SCDHEC Approval Letter Re: Savannah River Site (SRS) – SCI 890 008 989 Submittal of the Temporary Authorization (TA) Request for Additional Field Scale Testing of In Situ Chemical Oxidation Process in Western Sector of M-Area Hazardous Waste Management Facility, Dated January 13, 2020	SRNS-OS-2020-00126, March 2020
Western Sector In-situ Chemical Oxidation Project: Additional Injection Pilot Testing Supplemental Results (U), March 2021	SRNS-STI-2021-00048, Revision 0, March 2021
SCDHEC Comments on the Savannah River Site (SRS) – SCI 890 008 989 Submittal of the Western Sector In-situ Chemical Oxidation Project: Additional Injection Pilot Testing Supplemental Results (SRNS-STI-2021-00048, Revision 0, March 2021); Letter Dated April 5, 2021	SRNS-OS-2021-00147, June 2021

LIST OF STAND-ALONE DOCUMENTS (continued)

Title	Document Number
SRNS Submittal of the Savannah River Site's Responses to the South Carolina Department of Health and Environmental Control's Comments on the Western Sector In-situ Chemical Oxidation Project: Additional Injection Pilot Testing Supplemental Results (U) (SRNS-STI-2021-00048, Revision 0, March 2021)	SRNS-J2000-2021-00585, July 2021
SCDHEC Approval of the Savannah River Site's Responses to the South Carolina Department of Health and Environmental Control's Comments on the Western Sector In-situ Chemical Oxidation Project: Additional Injection Pilot Testing Supplemental Results (U) (SRNS-STI-2021-00048, Revision 0, March 2021)	SRNS-OS-2021-00222, August 2021
SRNS Submittal of the Temporary Authorization Request for In-situ Remediation of Volatile Organic Compound Contamination in the Western Sector of the A/M Area at the Savannah River Site	SRNS-J2000-2021-00676, August 2021
SCDHEC Approval of Savannah River Site (SRS) – SCI 890 008 989 Submittal of the Temporary Authorization Request for In-situ Remediation of Volatile Organic Compound Contamination in the Western Sector of the A/M Area at the SRS, Meyer to French; Dated August 17, 2021	SRNS-OS-2021-00307, October 2021
Annual 2021 M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities Groundwater Monitoring and Corrective Action Report (U)	**SRNS-RP-2021-05328, March 2022**
2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)	**SRNS-RP-2022-00514, August 2022**

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
ABP 3	i	3686223.41	431154.8	351.9	236.9	206.9	MAAZ
ABP 3C	i	3686219.0	431156.9	352.30	165.30	160.30	ULLAZ
ABP 8D	i	3686144.2	431014.5	368.80	228.20	208.10	MAAZ
ABP 9B	i	3685825.6	430884.7	350.00	146.00	141.00	LLLAZ
ABP 9C	i	3685821.7	430887.0	350.40	176.10	171.10	ULLAZ
ABP 10D	**i**	**3686233.8**	**430731.5**	**351.40**	**226.85**	**206.95**	**MAAZ**
AC 2A	a	3688499.6	430221.2	342.70	146.00	141.00	LLLAZ
AC 3A		3686582.0	429993.1	300.40	153.60	148.60	ULLAZ
AMB 4B	m	3689038.7	431733.7	378.30	157.30	152.30	LLLAZ
AMB 7	m	3689008.6	431809.2	368.10	242.10	222.10	MAAZ
AMB 7A	m	3689019.0	431788.8	371.60	125.60	115.60	MSAZ_CBCU
AMB 7B	m	3689015.2	431791.3	370.90	162.90	152.90	LLLAZ
AMB 11B	m	3688872.8	432019.1	362.50	184.50	174.50	ULLAZ
AMB 11D	m	3688869.7	432026.2	362.00	240.50	220.50	MAAZ
AMB 12D	m	3688980.0	431934.3	367.80	239.40	219.40	MAAZ
AMB 14D	m	3689049.6	431679.8	380.10	235.10	215.10	MAAZ
AMB 15D	m	3689108.4	431645.7	381.20	236.20	216.20	MAAZ
AOB 1		3688309.3	431888.9	338.50	248.50	218.50	MAAZ
ARP 1A	i	3686511.4	430872.8	353.00	223.00	193.00	MAAZ_GCCZ_ULLAZ
ARP 3DR	i	3686516.0	431100.5	337.09	206.84	201.90	MAAZ_GCCZ
ARP 4	i	3686389.9	430982.9	346.80	227.80	197.80	MAAZ_GCCZ
ARP 12B1	g, i	3686768.8	430884.9	347.05	134.95	124.85	LLLAZ
ARP 12C3	g, i	3686768.8	430884.9	347.05	175.05	164.95	ULLAZ
ARP 13B1	g, i	3686752.0	431050.6	336.10	139.00	129.00	LLLAZ
ARP 13C1	g, i	3686752.0	431050.6	336.10	184.10	179.10	ULLAZ
ARP 13C3	g, i	3686752.0	431050.6	336.10	169.10	159.00	ULLAZ
ARP 14B1	g, i	3686288.6	430972.5	352.67	102.57	92.57	MSAZ_CBCU
ARP 14C2	g, i	3686288.6	430972.5	352.67	197.67	187.67	ULLAZ
ARP 14C3	g, i	3686288.6	430972.5	352.67	167.67	157.67	ULLAZ
ARP 15B1	g, i	3686310.3	431085.0	349.26	122.06	112.06	MSAZ_CBCU
ARP 15C3	g, i	3686310.3	431085.0	349.26	162.16	152.16	ULLAZ
ARP 17B	i	3686001.7	430999.4	363.36	135.36	125.34	LLLAZ
ARP 17C	i	3686004.6	431003.1	363.23	169.23	159.19	ULLAZ
ARP 17TA1	g, i	3686006.1	431006.9	363.20	47.98	37.73	CBAU
ARP 17TB1	g, i	3686006.1	431006.9	363.20	-22.27	-32.52	CBAU
ARP 17TC1	g, i	3686006.1	431006.9	363.20	-117.54	-127.77	CBAU
ARP 18B		3686199.554	430827.55	359.35	149.35	139.32	LLLAZ
ARP 19DR	i	3686495.7	430778.8	357.46	210.46	200.42	MAAZ_GCCZ
ARP 20C	i	3686425.1	431021.3	343.19	178.01	167.99	ULLAZ
ARP 21C	i	3686454.3	430877.8	356.00	186.00	175.97	ULLAZ
ARP 21D	**i**	**3686449.6**	**430879.1**	**356.52**	**206.52**	**201.57**	**MAAZ**
ARP 22A	i	3685647.0	431100.7	357.26	117.26	107.24	MSAZ_CBAU
ASB 2AR	o	3689635.65	431826.4	353.1	240.1	220.2	GCCZ
ASB002B	o	3689642.6	431830.708	352.8	159.8	149.8	LLLAZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
ASB 2CR	p	3689629.7	431823.6	353.10	183.10	173.10	ULLAZ
ASB 3AR	p	3689690.9	431874.1	339.10	243.10	223.10	MAAZ
ASB 3CR	p	3689696.0	431876.2	339.00	184.00	174.00	ULLAZ

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Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
ASB 4	o	3689783.53	431830.12	333.1	256.1	226.1	MAAZ
ASB004AA	o	3689796.0	431829.4	335.00	82.22	72.23	MSAZ_CBCU
ASB004B	o	3689802.6	431828.9	334.40	129.84	119.84	LLLAZ
ASB004C	o	3689804.8	431827.7	334.70	180.02	170.02	ULLAZ
ASB 5AR	p	3689717.0	431756.9	344.50	243.80	223.80	MAAZ
ASB 5C	p	3689710.1	431755.6	344.80	175.10	165.10	ULLAZ
ASB 6AA	o, p	3689636.5	431736.2	351.80	82.80	78.10	MSAZ_CBCU
ASB 6C	p	3689641.1	431737.4	351.50	178.50	173.80	ULLAZ
ASB 6TA	o, p	3689646.9	431738.9	351.00	40.00	34.50	CBAU
ASB 8	p	3689886.1	431740.2	346.60	226.60	206.60	MAAZ
ASB 8A	p	3689879.7	431737.7	347.20	83.50	77.90	MSAZ_CBCU
ASB 8B		3689876.5	431737.0	347.60	128.40	122.80	MSAZ_CBCU
ASB 8C	p	3689873.0	431736.3	347.60	188.30	182.70	ULLAZ
ASB 8TA	o, p	3689882.5	431738.3	347.30	24.60	19.40	CBAU
ASB 9B		3689631.9	432331.7	306.60	164.40	158.80	LLLAZ
ASB 9C	p	3689630.2	432327.6	307.90	182.90	178.20	ULLAZ
ASB 10CR		3689677.3	431829.3	346.70	181.70	171.70	ULLAZ
ASB011B	o	3689808.892	432149.867	320.74	150.44	140.44	LLLAZ
ASB011C	o	3689805.377	432152.43	319.82	184.82	174.82	ULLAZ
BMW004D	a	3683093.7	432530.5	282.7	100.7	95.7	ULLAZ
IDP 3B	a	3681895.2	431771.2	283.1	169.1	164.1	LLLAZ
IDP 3C	a	3681899.5	431769.8	326.1	225.9	205.9	ULLAZ
MCB 2	a	3686142.0	431447.6	326.10	225.90	205.90	MAAZ
MCB 4	i	3686194.1	431249.9	348.20	229.60	208.60	MAAZ
MCB 5	i	3686174.1	431324.3	337.70	226.30	206.30	MAAZ
MCB 5C	i, j	3686168.8	431327.7	337.2	161.20	156.20	ULLAZ
MCB 6C	i, j	3686254.8	431395.1	330.00	170.00	165.00	ULLAZ
MCB 7C	i, j	3686127.0	431361.1	335.70	160.70	155.70	ULLAZ
MCB 11B	i	3686028.8	431629.1	300.10	110.10	105.10	MSAZ_CBCU
MCB 12B	i	3686486.6	431240.8	325.70	137.70	132.70	LLLAZ
MCB 12C	i	3686487.8	431236.4	326.00	162.00	157.00	ULLAZ
MCB 14B	i	3684775.5	431166.7	304.80	131.80	126.79	LLLAZ
MCB 14C	i	3684778.5	431170.2	305.20	148.20	143.19	ULLAZ
MCB 15B	i	3685536.1	430972.4	349.60	136.60	131.63	LLLAZ
MCB 15C	i	3685552.1	430968.3	348.90	165.90	160.90	ULLAZ
MCB 16B		3685611.666	430663.9069	360.4	137.4	132.4	LLLAZ
MCB 16C	i	3685606.4	430665.8	360.00	166.00	161.00	ULLAZ
MCB 17B	i	3684438.9	430965.1	280.60	112.60	107.60	LLLAZ
MCB 18B	i	3684418.3	431177.3	306.90	121.90	116.90	LLLAZ
MCB 19B	i	3684716.638	431539.8	323.5	125.5	120.5	LLLAZ
MCB 21B2	g, i	3685910.9	431092.2	363.16	172.66	167.66	ULLAZ
MCB 22B2	g, i	3685266.0	431119.6	318.55	135.55	135.55	LLLAZ
MCB 22C2	g, i	3685266.0	431119.6	318.55	170.55	160.55	ULLAZ
MCB 23B	i	3685361.8	430788.8	352.70	168.70	163.70	ULLAZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

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Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
MCB 24B2	i	3684955.6	431182.9	310.02	135.02	125.02	LLLAZ
MCB 24C2	g, i	3684955.6	431182.8	318.55	170.55	160.55	ULLAZ
MCB 25B	i	3684146.3	430967.0	288.20	108.20	103.20	LLLAZ
MCB025C	i	3684148.9	430970.2	288.80	153.80	143.80	ULLAZ
MCB 26B2	i	3684912.1	430702.5	285.15	127.15	117.15	LLLAZ
MCB 26C2	g, i	3684912.1	430702.5	285.15	152.15	142.15	ULLAZ
MCB 27B	i	3684293.5	430709.0	249.90	108.90	103.90	LLLAZ
MCB 28B2	g, i	3684542.996	430635.6	246.75	143.75	133.75	LLLAZ
MCB 28C2	g, i	3684542.996	430635.6	246.75	118.75	108.75	ULLAZ
MCB025C		3684148.9	430970.2	288.80	143.80	133.80	ULLAZ
MCB029B	i	3683456.8	430675.6	222.54	102.54	92.54	LLLAZ
MCB029C		3683462.4	430673.0	222.60	137.60	127.60	ULLAZ
MCB030B		3683811.6	431171.4	279.00	89.00	79.00	LLLAZ
MCB030C		3683813.8	431173.3	279.70	139.70	129.70	ULLAZ
MCB031B		3683123.4	430918.2	223.30	83.30	73.30	LLLAZ
MCB031C		3683121.9	430921.5	223.60	138.60	128.60	ULLAZ
MCB032B	a, i	3683286.9	429302.9	172.84	102.14	92.14	LLLAZ
MCB032C	a, i	3683287.0	429308.6	172.69	130.09	120.09	ULLAZ
MCB033B	i	3683150.5	430232.3	172.24	107.24	97.24	LLLAZ
MCB033C	i	3683155.3	430234.0	172.54	137.24	127.24	ULLAZ
MCB034B	i	3682123.7	429877.3	157.69	92.89	82.89	LLLAZ
MCB034C	i	3682130.8	429877.6	157.53	127.13	117.13	ULLAZ
MCB035B	a, i	3681996.2	430708.1	174.99	108.89	98.89	LLLAZ
MCB035C	a, i	3681994.8	430711.7	175.30	146.70	141.70	ULLAZ
MCB036B	i	**3683890.009**	**430505.0313**	**225.48**	**108.7**	**118.7**	**LLLAZ**
MCB036C	i	**3683890.288**	**430507.614**	**225.91**	**75.6**	**85.7**	**ULLAZ**
MCB037B	i	**3684835.717**	**430559.0959**	**274.83**	**155.4**	**165.4**	**LLLAZ**
MCB037C	i	**3684837.786**	**430555.2443**	**275.23**	**125.4**	**135.4**	**ULLAZ**
MCB038B	i	**3685387.775**	**430242.9842**	**334.71**	**207.6**	**217.6**	**LLLAZ**
MCB038C	i	**3685384.866**	**430242.9107**	**334.32**	**175.6**	**185.6**	**ULLAZ**
MCB039B	i	**3684586.121**	**429456.8267**	**192.64**	**105.5**	**115.5**	**LLLAZ**
MCB039C	i	**3684587.769**	**429454.7637**	**192.55**	**65.7**	**75.7**	**ULLAZ**
MCB040A	i	**3684768.769**	**430941.2671**	**281.86**	**224.2**	**234.2**	**MSAZ_CBCU**
MCB040B	i	**3684769.42**	**430938.8929**	**282.28**	**166.3**	**176.3**	**LLLAZ**
MCB040C	i	**3684770.129**	**430936.0914**	**282.25**	**136**	**146**	**ULLAZ**
MOX 6	b	3688086.80	431427.03	355.52	222.72	217.72	MAAZ
MOX 8	b	3688023.99	431254.27	353.78	215.78	210.78	MAAZ
MSB 9AR		3688069.8	431296.5	361.95	163.95	153.95	LLLAZ
MSB 10A		3687988.7	431168.2	355.20	125.20	120.20	MSAZ_CBCU
MSB 10C	a, b	3687991.5	431164.9	355.10	211.00	206.20	MAAZ
MSB 11A	a, l	3688146.5	431288.2	363.40	135.80	130.80	LLLAZ
MSB 11C		3688151.7	431285.1	363.50	182.90	177.90	ULLAZ
MSB 11F		3688144.0	431289.8	363.60	243.10	223.10	MAAZ
MSB 12A		3687806.4	430994.3	347.10	122.10	117.10	LLLAZ
MSB 12B		3687798.9	431000.2	347.70	162.40	157.40	ULLAZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

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Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
MSB 12TA		3687800.5	430994.6	347.40	-102.60	-112.60	CBAU
MSB 12TB		3687797.0	430997.6	347.70	14.70	-5.30	CBAU
MSB 14A	b	3687887.85	431455.49	346.60	164.60	144.60	LLLAZ
MSB 14B	b	3687889.69	431453.09	346.90	193.90	188.90	ULLAZ
MSB 14C	b	3687891.73	431450.93	347.20	243.90	223.90	MAAZ
MSB 15A		3688276.1	431287.8	365.80	167.80	162.80	ULLAZ
MSB 15AA		3688267.1	431291.2	367.10	147.10	142.40	LLLAZ
MSB 15D		3688273.2	431290.2	366.40	241.40	221.90	MAAZ
MSB 16A		3688475.9	431194.5	365.50	166.80	161.80	LLLAZ
MSB 16C		3688481.9	431192.2	365.80	244.80	224.80	MAAZ

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Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
MSB 17B		3687577.9	430819.0	357.20	190.80	185.80	ULLAZ
MSB 17BB		3687582.0	430812.1	356.90	136.90	132.20	LLLAZ
MSB 18A		3687156.5	431079.0	339.90	163.90	158.90	ULLAZ
MSB 18B		3687159.4	431078.9	340.00	198.50	193.50	ULLAZ
MSB 19B		3688165.3	432162.9	298.50	147.70	142.70	LLLAZ
MSB 19C		3688164.9	432166.1	298.70	218.70	198.70	MAAZ
MSB 20A		3687918.4	430505.6	353.30	162.60	157.60	LLLAZ
MSB 20C		3687926.2	430510.6	352.70	232.70	212.70	MAAZ
MSB 21B		3688247.7	430722.4	353.20	147.20	142.50	LLLAZ
MSB 21C		3688234.3	430718.1	353.00	233.20	213.20	MAAZ
MSB 21TA	n	3688233.4	430712.6	352.6	22.6	17.3	CBAU
MSB021TB	g, n	3688220.7	430711.0	351.60	-56.40	-66.40	CBAU
MSB021TC	g, n	3688220.7	430711.0	351.60	-106.40	-116.40	CBAU
MSB 23BR		3688691.2	431154.6	370.90	177.90	172.90	ULLAZ
MSB 23R		3688690.3	431163.6	371.20	230.95	220.95	MAAZ
MSB 23TA		3688671.7	431150.2	370.40	65.40	60.40	CBAU
MSB 23TB1	g	3688627.6	431110.6	371.01	-11.56	-21.82	CBAU
MSB 23TB3	g	3688627.6	431110.6	371.01	-106.52	-116.78	CBAU
MSB 23TR		3688632.6	431107.1	370.80	40.80	35.90	CBAU
MSB 24		3688860.1	431245.7	378.90	243.90	223.90	MAAZ
MSB 24A	a	3688863.2	431244.3	379.90	178.80	168.80	ULLAZ
MSB 25	a	3688554.1	431402.8	364.70	244.70	224.70	MAAZ
MSB 25A		3688553.6	431399.1	364.70	169.70	159.70	LLLAZ
MSB 26		3688698.3	431024.0	359.50	240.50	220.50	MAAZ
MSB 26B		3688707.0	431018.5	360.40	136.60	131.80	LLLAZ
MSB 27		3688884.7	431093.9	374.00	244.00	234.00	MAAZ
MSB 27B		3688876.5	431099.4	374.70	169.90	164.40	ULLAZ
MSB 28		3688703.0	430860.4	352.60	230.60	210.60	MAAZ
MSB 28A		3688705.3	430860.4	352.80	157.80	152.80	ULLAZ
MSB 29A	p	3689778.2	431102.5	362.90	122.90	117.30	MSAZ_CBCU
MSB 29B	c, p	3689773.0	431099.2	362.70	151.70	145.10	LLLAZ
MSB 29C	c, p	3689770.0	431097.3	362.70	179.70	174.10	ULLAZ
MSB 29D	c, p	3689775.6	431100.8	362.60	227.60	207.00	MAAZ_GCCZ_ULLAZ
MSB 29TA		3689780.8	431104.2	362.90	63.90	58.60	CBAU
MSB 30AA		3688795.6	430586.9	351.30	96.30	90.70	MSAZ_CBCU
MSB 30B		3688798.7	430588.9	351.70	128.70	123.10	LLLAZ
MSB 30CC		3688801.8	430591.0	352.00	164.00	158.40	ULLAZ
MSB030TB	g, n	3688791.5	430584.3	350.30	-61.70	-71.70	CBAU
MSB030TC	g, n	3688791.5	430584.3	350.30	-131.70	-141.70	CBAU
MSB 31A	a, k	3688257.1	431781.6	346.00	22.00	12.00	CBAU
MSB 31B		3688253.7	431775.9	346.30	157.30	152.30	LLLAZ
MSB 31C		3688255.3	431779.0	346.10	236.10	216.10	MAAZ
MSB 31CC		3688252.2	431772.9	346.40	181.40	176.70	ULLAZ
MSB 32		3688156.9	432847.1	253.10	218.10	198.10	GCCZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
MSB112B	o	3689656.191	431570.7837	353.58	178.38	168.38	LLLAZ
MSB112C	o	3689653.347	431572.8311	353.81	208.61	198.61	ULLAZ
MSB113A	o	3689802.94	431570.057	348.13	123.13	113.13	MSAZ_CBCU
MSB113AA	o	3689799.93	431572.745	348.01	93.71	83.71	MSAZ_CBCU
MSB113B	o	3689806.18	431567.408	348.24	178.24	168.24	LLLAZ
PW 116G	n	3685413.98	429004.2	205	95	85	LLLAZ
RWM**-009-M** ~~9~~		3688833.222	431475.1731	377.6	~~220.6~~**142.3**	~~210.2~~**132.3**	LLLAZ
~~RWM 9~~		~~3688833.222~~	~~431475.1731~~	~~377.6~~	~~200~~	~~189.6~~	~~LLLAZ~~
~~RWM 9~~		~~3688833.222~~	~~431475.1731~~	~~377.6~~	~~169~~	~~158.6~~	~~LLLAZ~~
~~RWM 9~~		~~3688833.222~~	~~431475.1731~~	~~377.6~~	~~143~~	~~132.6~~	~~LLLAZ~~
RWM**-011-M** ~~11~~		3689024.232	431336.208	380.3	~~214.6~~**152.3**	~~204.2~~**142.3**	~~MAAZ_GCCZ_ULLAZ_~~ LLLAZ
~~RWM 11~~		~~3689024.232~~	~~431336.208~~	~~380.3~~	~~198.9~~	~~188.5~~	~~MAAZ_GCCZ_ULLAZ_LLLAZ~~
~~RWM 11~~		~~3689024.232~~	~~431336.208~~	~~380.3~~	~~183.2~~	~~172.9~~	~~MAAZ_GCCZ_ULLAZ_LLLAZ~~
~~RWM 11~~		~~3689024.232~~	~~431336.208~~	~~380.3~~	~~152.2~~	~~141.9~~	~~MAAZ_GCCZ_ULLAZ_LLLAZ~~
~~RWM 12~~	~~o~~	~~3689894.55~~	~~431494.1~~	~~359.00~~	~~210.40~~	~~189.90~~	~~ULLAZ_LLLAZ~~
~~RWM 12~~	~~o~~	~~3689894.55~~	~~431494.1~~	~~359.00~~	~~179.70~~	~~159.20~~	~~ULLAZ_LLAZ~~
RWM**-013-CM** ~~13B~~	o	3689811.72	431937.4	333.20	138.20	113.00	MSAZ_CBCU
RWM**-013-BM** ~~13C~~	o	3689810.77	431932.8	333.40	173.40	153.30	ULLAZ_LLLAZ
~~RWM 14B~~	~~o~~	~~3689864.82~~	~~431721.0~~	~~348.50~~	~~148.50~~	~~123.20~~	~~LLLAZ_MSAZ_CBCU~~
~~RWM 14C~~	~~o~~	~~3689870.64~~	~~431719.3~~	~~348.50~~	~~193.50~~	~~173.40~~	~~ULLAZ~~
~~RWM 17B~~		~~3689048.38~~	~~431729.3629~~	~~378.2~~	~~133.2~~	~~118.2~~	~~MSAZ_CBCU~~
SLW 7	a	3682736.2	431277.9	174.10	154.10	229.10	ULLAZ
SRW 2A		3687168.0	429383.7	319.10	98.40	88.60	MSAZ_CBCU
SRW 2B		3687169.7	429381.4	319.20	162.60	152.80	ULLAZ
SRW 13A	a	3686817.3	429274.7	295.70	103.60	93.80	MSAZ_CBCU
SRW 13B	a	3686816.9	429277.9	295.70	163.20	153.30	LLLAZ
SRW 14A		3686931.6	429519.6	324.90	123.70	113.90	LLLAZ
SRW 14B		3686934.5	429521.1	324.90	162.90	153.10	ULLAZ
SRW 16A		3687393.0	429670.8	344.50	144.10	119.40	LLLAZ
SRW 16B		3687394.2	429668.0	344.40	169.90	160.10	ULLAZ
SSL 13B	k	3686356.2	433531.9	192.98	176.48	174.48	ULLAZ
SSL 13C	k	3686356.2	433531.9	192.98	191.48	186.48	ULLAZ
SSL 20B	k	3685055.5	433593.5	180	97.5	87.5	LLLAZ_MSAZ_CBCU
SSL 20C	k	3685036.0	433587.8	176.98	163.18	158.18	ULLAZ
SSL 25B	k	3683769.9	434654.9	145.23	131.98	129.98	LLLAZ
SSL 25C	k	3683769.9	434654.9	145.23	141.98	136.98	LLLAZ
SSL 30B	k	3684847.3	433765.9	166	102.4	92.3	LLLAZ_MSAZ_CBCU
SSL 33B	k	3686400.0	433470.5	192.60	122.60	117.60	LLLAZ
SSL 33C	k	3686397.8	433468.7	192.60	167.60	162.60	ULLAZ

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
SSM 4B	k	3687588.4	432342.9	307.5	146.70	141.70	LLLAZ
SSM 5B	k	3687613.5	432354.8	312	148.00	143.00	LLLAZ
SSM 10B2	g, k	3687416.1	432189.6	290.54	155.54	145.54	LLLAZ
SSM 10C2	g, k	3687416.1	432189.6	290.54	180.54	170.54	ULLAZ
SSM 11A	k	3687657.7	432267.5	315.9	105.9	100.9	MSAZ_CBCU
SSM 11B2	g, k	3687655.7	432263.1	316.12	161.12	151.12	LLLAZ
SSM 11C2	g, k	3687655.7	432263.1	316.12	191.12	181.12	ULLAZ
SSM 12B2	g, k	3687604.3	432518.4	301.87	153.87	143.87	LLLAZ
SSM 12C2	g, k	3687604.3	432518.4	301.87	182.47	172.47	ULLAZ
SSM 13B2	g, k	3686758.9	432073.0	315.51	157.51	147.51	LLLAZ
SSM 13C2	g, k	3686758.9	432073.0	315.51	187.51	177.51	ULLAZ
SSM 14B2	g, k	3686690.1	432238.1	322.78	161.08	151.08	LLLAZ
SSM 14C2	g, k	3686690.1	432238.1	322.78	187.78	177.78	ULLAZ
SSM 15B2	g, k	3687011.3	432323.8	308.88	162.88	152.88	LLLAZ
SSM 15C2	g, k	3687011.3	432323.8	308.88	190.38	180.38	ULLAZ
SSM 16B2	g, k	3687224.5	432388.3	300.16	154.16	144.16	LLLAZ
SSM 16C2	g, k	3687224.5	432388.3	300.16	184.16	174.16	ULLAZ
SSM 17B2	g, k	3687395.2	432433.4	276.73	155.77	145.77	LLLAZ
SSM 17C2	g, k	3687395.2	432433.4	276.73	180.73	170.73	ULLAZ
SSM 19B	g, k	3688057.8	431868.8	342.8	176.8	166.8	LLLAZ
SSM 19C	g, k	3688057.8	431868.4	342.8	199.8	189.8	ULLAZ
SSM 19D	k	3688055.8	431866.4	343	220	210	MAAZ
SSM 20A	k	3687918.7	432112.1	337.2	105.2	100.2	MSAZ_CBCU
SSM 20B	g, k	3687923.5	432113.3	336.8	141.7	131.7	LLLAZ
SSM 20C	g, k	3687923.5	432113.3	336.8	181.8	171.8	ULLAZ
SSM 21A	k	3686281.8	432294.6	277.9	100.9	90.9	MSAZ_CBCU
SSM 21B	k	3686284.9	432293.4	278.3	138.3	128.2	LLLAZ
SSM 21TA	k	3686288.8	432292.8	281.51	29.51	19.51	CBAU
SSM 22A	k	3686707.9	432622.4	307.3	91.3	81.3	MSAZ_CBCU
SSM 22B	g, k	3686712.1	432625.4	306.8	125.7	115.7	LLLAZ
SSM 22C	g, k	3686712.1	432625.4	306.8	170.8	160.8	ULLAZ
SSM 23B	k	3687148.3	432205.3	318.96	168.96	158.96	LLLAZ
SSM 23C	k	3687150.1	432208.4	318.58	193.58	183.58	ULLAZ
SSM 24AL	k	3685837.4	433105.6	272.22	85.22	75.22	MSAZ_CBCU
SSM 24B	k	3685834.7	433103.2	272.44	145.44	135.44	LLLAZ
SSM 25AL	k	3685222.5	432832.7	256.28	74.28	64.28	MSAZ_CBCU
SSM 25B	k	3685219.8	432836.5	258.58	137.58	127.58	LLLAZ
SSM 25TA	k	3685215.0	432837.5	256.39	51.19	41.19	MSAZ_CBCU
SSM029B	k	3687681.5	432049.8	325.6	164.85	154.85	LLLAZ
SSM029C	k	3687683	432047	325.71	193.63	183.63	ULLAZ
SSM030B	k	3686579.56	432028.6	285.45	151.35	141.35	LLLAZ
SSM031A	k	3686914.426	432396.7041	293.27	111.77	106.17	MSAZ_CBCU
SSM031C	k	3686914.329	432394.8162	293.34	162.54	152.54	ULLAZ
SSM031TA	k	3686914.74	432398.9865	293.15	30.65	20.65	CBAU
SSM032A	k	3685953.1	432708.8	300.47	82.34	72.34	MSAZ_CBCU

Table E.5-1. A/M-Area Background, Plume Definition, and Piezometer Wells

Well Number		Northing UTM	Easting UTM	Ground Elevation *(ft msl)*	Screen Zone Top *(ft above msl)*	Screen Zone Bottom *(ft above msl)*	Aquifer
SSM032B	k	3685954.4	432706.7	300.66	132.58	122.58	LLLAZ
SSM032C	k	3685955.3	432705.4	300.71	165.96	155.96	ULLAZ
SSM032TA	k	3685951.3	432710.8	300.27	-4.1	-14.09	CBAU
SSM033A	k	3684951.1	432255.2	297.76	96.06	86.06	MSAZ_CBCU
SSM033TA	k	3684953.5	432255.7	297.57	3.78	-6.4	CBAU
SSM034A	k	3684362.3	432869.5	252.01	96.79	86.79	MSAZ_CBCU
SSM034AA	k	3684361.1	432867.7	251.69	42.36	32.36	MSAZ_CBCU
SSM034B	k	3684363.5	432870.8	252.1	128.26	118.26	LLLAZ
SSM035A	k	3684253.0	433209.9	230.7	56.99	46.99	MSAZ_CBCU
SSM035TA	k	3684251.8	433209.1	230.71	-15.04	-25.04	CBAU
SSM036A	k	3684304.3	433729.8	212.41	78.56	68.56	MSAZ_CBCU
SSM036B	k	3684303.1	433725.9	212.29	144.29	134.29	LLLAZ
TIMS 01	f, k	3686582.2	433627.2	N/A	N/A	N/A	N/A
TIMS 03	f, k	3684882.0	433795.0	N/A	N/A	N/A	N/A
TIMS 04	f, k	3687347.4	433133.6	N/A	N/A	N/A	N/A

a Wells and piezometers for determining water levels only.
b These wells are used as alternate POC wells during DUS/WSTS operations at the M-Area Settling Basin.
c These wells are used as background wells for both the M-Area and Met Lab HWMFs.
d These wells are monitored as plume definition wells due to high concentrations.
f Stream monitoring location.
g Multi-level wells that are analyzed for VOCs only and are not used in synchronous water level events.
i These wells are associated with the ABRP/MCB OU and are sampled per Table E.7-3.
j These wells are associated with the M-Area HWMF (plume definition wells) and the ABRP/MCB OU.
k These wells are associated with Southern Sector and are sampled per Table E.7-4.
l This well is used as an alternate plume definition well during DUS/WSTS operations at the M-Area Settling Basin.
m These wells are associated with the Met Lab and are sampled per Table E.7-2.
n These wells are associated with Western Sector and are sampled per Table E.7-5.
o These wells are associated with Northern Sector and are sampled per Table E.7-6.
p These wells are associated with Northern Sector and are sampled per Table E.7-1.

Aquifer Designations:

CBAU – Crouch Branch Aquifer Unit
GCCZ – Green Clay Confining Zone
~~LLAZ – Lost Lake Aquifer Zone~~
LLLAZ – Lower Lost Lake Aquifer Zone
MAAZ – M-Area Aquifer Zone
MSAZ_CBCU – Middle Sand Aquifer Zone of the Crouch Branch Confining Unit
ULLAZ – Upper Lost Lake Aquifer Zone

The following is a list of the deleted or abandoned wells:

ABP1A	ASB9	MSB35A	MSB81B	RWM16PB	SSM3B
ABP1AR	MCB6	MSB35D	MSB83B	**RWM17B**	SSM3C
ABP2A	MCB8D	MSB37A	MSB83C	SRW1	SSM4C
ABP1DD	MCB9D	MSB37D	MSB83D	SRW1BB	SSM5C
ABP2DD	MCB11C	MSB38B	MSB83TA	SRW2	SSM6B
ABP4	MCB21C2	MSB38D	MSB84A	SRW3A	SSM6C
ABP4DD	MSB1A	MSB41A	MSB84C	SRW3BB	SSM7B
ABP6D	MSB1CC	MSB41C	MSB85B	SRW4	SSM7C
ABP7D	MSB2A	MSB41D	MSB85D	SRW4BB	SSM8B
ABP8C	MSB3A	MSB43DD	MSB85TA	SRW5	SSM8C
ABS2B	MSB4A	MSB44A	MSB86C	SRW6	SSM9B
ABW1	MSB9A	MSB44B	MSB86TA1	SRW7	SSM9C
AC1A	MSB9B	MSB44C	MSB86TA3	SRW8	
AC1B	MSB9C	MSB45C	MSB85TA5	SRW8BB	
AC2B	MSB10B	MSB46B	MSB87B	SRW9	
AC3B	MSB10D	MSB51D	MSB88D	SRW9A	
ACB1A	MSB11B	MSB51DD	MSB89C	SRW9B	
ACB2A	MSB11D	MSB52B	MSB93TA3	SRW10	
ACB3A	MSB14A	MSB52D	MSB93TA5	SRW10BB	
ACB4A	MSB14C	MSB54B	RWM1	SRW11	
AMB13AR	MSB15C	MSB54C	RWM2	SRW11BB	
AOB2	MSB17A	MSB54D	RWM3	SRW12A	
AOB3	MSB17C	MSB54TA	RWM4	SRW12B	
ARP2	MSB17D	MSB57D	RWM5	SRW12C	
ARP3C	MSB18C	MSB58D	RWM6	SRW13C	
ARP5D	MSB21A	MSB61C	RWM7	SRW14C	
ARP8D	MSB22	MSB61D	RWM8	SRW15A	
ARP9D	MSB26A	MSB64B	RWM10	SRW15B	
ARP10D	MSB27A	MSB67D	**RWM9**	SRW15C	
ARP11D	MSB27TA	MSB 68D	**RWM11**	SRW16C	
ARP12C1	MSB29DD	MSB69B	**RWM12**	SRW17BB	
ARP15C1	MSB30A	MSB69D	**RWM13B**	SRW17C	
ARP16D	MSB30C	MSB73B	**RWM13C**	SRW17D	
ARP20A	MSB32B	MSB73TB1	**RWM14B**	SSL30C	
ARP21D	MSB32C	MSB73TC1	**RWM14C**	SSM1B	
ASB1A	MSB33	MSB77TA	RWM15B	SSM1C	
ASB6A	MSB33TA	MSB78D	RWM16	SSM2B	
ASB7	MSB34TB	MSB78DR	RWM16PA	SSM2C	

uppermost aquifer. Furthermore, recovery well operations will continue to influence local hydrogeologic conditions.

POC well MSB-3D has been identified as a well containing DNAPLs. Additionally, polychlorinated biphenyl (PCB) contamination has been confirmed in groundwater samples collected from well MSB-3D. On September 22, 1993, SRS notified SCDHEC in writing of this contamination. It appears that the PCB contamination is associated with the DNAPLs present in the area of well MSB-3D. The following wells are those A/M-Area unit wells most likely to be located in or near a DNAPL or near known high volume solvent release sources such as the M-Area Settling Basin and old A-14 outfall: POC wells MSB-1D, MSB-2D, MSB-3D, MSB-4D, and MSB-59D; plume definition wells MSB-9C, MSB-10C, MSB-22, and MSB-31C; and recovery wells RWM-1, RWM-6, and RWM-10. Section E.7 discusses the monitoring program for DNAPL and PCB contaminated wells, and Section E.8 discusses the DNAPL Corrective Action Program Plan.

Plume Definition Wells

The A/M Area is surrounded by an extensive network of plume definition wells. The plume definition wells are listed in Table E.5-1. These wells have the prefix designation of ABP, AC, ACB, AMB, AOB, ARP, ASB, MCB, MSB, SRW, SSL, or SSM. The locations of these wells are shown on Map 5 in Appendix 1.

The plume definition wells have been installed to assess changes in the rate and extent of the plume of contamination (based on new information) or to assess the effectiveness and suitability of the corrective action program. These groundwater monitoring wells are installed in downgradient areas east, southeast, southwest, and west of the M-Area HWMF to identify where additional corrective action measures may be needed. Plume definition wells screen the upper and lower portions of the regulatory uppermost aquifer, the principal confining unit, and the regional confined aquifer in the A/M Area.

Background/Upgradient Wells

The groundwater underlying and surrounding the M-Area HWMF is contaminated with degreasing solvents, and a corrective action program has been implemented. The interim status monitoring data demonstrated that the groundwater quality had been affected by these solvents at the POC. Consequently, monitoring wells to determine background water quality were not installed in the immediate vicinity of the M-Area HWMF. Wells MSB-29B, MSB-29C, MSB-29D, MSB-43A, MSB-43B, and MSB-43D were installed outside the A/M-Area manufacturing area and approved by SCDHEC as the background/upgradient monitoring wells for the M-Area HWMF. The locations of these wells relative to the M-Area HWMF are shown on Figure E.1-1. To date, water quality data from these wells have indicated that they have not been affected by the M-Area HWMF.

Remediation Wells

Remediation wells include all wells currently part of a remediation system within the A/M Area. These systems include the recovery wells (RWM) of the pump and treat system (M-1), ~~the recirculation wells (SSR) of the Southern Sector,~~ and the vadose zone extraction wells within the Central Sector. Each set of wells is discussed individually within its respective description detailed in Section E.8.

Each recovery well continues to be sampled quarterly for VOCs including TCE and PCE. The volumes of groundwater pumped from the recovery well system and average concentrations of TCE and PCE for each recovery well are presented in the Corrective Action Reports. These wells have the prefix designation of RWM. The locations of these wells are shown on Map 1 in Appendix 1.

Corrective action is being accomplished in M Area by pumping contaminated groundwater to an air stripper where VOCs are removed. The M-Area comprehensive remedial action system consisted of two full-scale production air strippers (M-1 and A-2) fed by 19 recovery wells. The recovery wells are screened as fully penetrating aquifer extraction wells; that is, the wells are screened almost the entire length of the ULLAZ and LLLAZ with some screens

Table E.7-1. M-Area HWMF Groundwater Protection Standard/Monitoring Contaminants (261 Appendix VIII / 264 Appendix IX Hazardous Contaminants)

I. Groundwater Protection Standard

Contaminant	Concentration Limit
Inorganics	
Barium[c]	2.0 mg/L[a]
Lead[c]	0.015 mg/L[a]
Mercury[o]	0.002 mg/L[a]
Nickel[d]	0.39 mg/L[b]
Organics	
Chlorobenzene	0.1 mg/L[a]
cis-1,2-Dichloroethene	0.07 mg/L[a]
1,1-Dichloroethene[k]	0.007 mg/L[a]
1,4-Dioxane[j]	6.1 µg/L
Polychlorinated Biphenyls	0.0005 mg/L[a]
1,1,1,2-Tetrachloroethane	0.57 µg/L[b]
1,1,2,2-Tetrachloroethane	0.076 µg/L[b]
Tetrachloroethene	0.005 mg/L[a]
Trans-1,2-Dichloroethene	0.1 mg/L[a]
1,1,1-Trichloroethane	0.2 mg/L[a]
Trichloroethene	0.005 mg/L[a]

II. Monitoring Contaminants

Inorganics	Aluminum[e], Beryllium[m], Cadmium[l], Chloride[f], Chromium[f], Cobalt[f], Copper[f], Manganese[f], Nitrate/Nitrite as Nitrogen[g], Sodium[e], Sulfate[h], Vanadium[n], Zinc[f]
Organics	Benzene, Chloroform, 1,2-Dichlorobenzene, Lindane[p], Toluene
Radionuclides[i]	Gross Alpha, Gross Beta, Total Radium
Field Parameters	pH, Specific Conductance, Temperature

a MCL – Maximum Contaminant Level as established in the US EPA Drinking Water Regulations and Health Advisories (updated 2018)
b Concentration based on May 2021 EPA Regional Screening Level (RSL) for tap water, Nickel as soluble salt.
c Barium and Lead analyses of groundwater from plume definition wells located along the sewer line and point of compliance (POC) wells
d Nickel analyses of groundwater from plume definition wells located along the sewer line and screened within the water table and water table POC wells
e Aluminum and Sodium analyses of groundwater from all POC and plume definition wells.
f Chloride, Chromium Cobalt, Copper, Manganese, and Zinc analyses of groundwater from background wells
g Nitrate/Nitrite as Nitrogen analyses of groundwater from all POC wells, plume definition wells within Western Sector, and Southern Sector wells west of Road D
h Sulfate analyses of groundwater from plume definition wells around SRL Seepage Basins and from plume definition wells in Northern Sector
i Radionuclide analyses of groundwater at all POC wells and plume definition wells located at MSB-17, MSB-18, and MSB-39 well clusters
j 1,4-Dioxane analyses of groundwater at POC and plume definition wells per Table E.7-3, Table E.7-5, and Table E.7-7.
k 1,1-Dichloroethene analyses of groundwater for all POC wells.
l Cadmium analysis in wells MSB 29A, MSB 39A, MSB 39B, MSB 39C, MSB 40A, and MSB 49B.
m Beryllium analysis in wells MSB 6C, MSB 7C, MSB 8C, MSB 18A, and MSB 63C.
n Vanadium analysis in wells MSB 13D, MSB 60D, MSB 62D, MSB 63D, and MSB 64DR.
o Mercury analysis in wells MSB 1B, MSB002BR, MSB004BR, MSB 7B, MSB 8B, MSB009AR, MSB 10A, MSB 13A, MSB 14A, MSB 23R, MSB 62B, MSB 63B, and RWM 10.
p Lindane analysis at all POC wells

Table E.7-2. Met Lab HWMF Groundwater Protection Standard/Monitoring Contaminants (261 Appendix VIII / 264 Appendix IX Hazardous Contaminants)

I. Groundwater Protection Standard[e]

Contaminant	**Concentration Limit**
Inorganics	
Aluminum	20 mg/L[c]
Barium	2.0 mg/L[a]
Chromium	0.1 mg/L[a]
Copper	1.3 mg/L[b]
Lead[e]	0.015 mg/L[b]
Nickel	0.39 mg/L[c]
Mercury	0.002 mg/L[a]
Zinc	6 mg/L[c]
Organics	
Acetone	14 mg/L[c]
Carbon Tetrachloride[d]	0.005 mg/L[a]
1,1-Dichloroethane	0.0028 mg/L[c]
1,1-Dichloroethene	0.007 mg/L[a]
Tetrachloroethene	0.005 mg/L[a]
Trans-1,2-Dichloroethene	0.1 mg/L[a]
1,1,1-Trichloroethane	0.2 mg/L[a]
Trichloroethene[de]	0.005 mg/L[a]
Vinyl Chloride	0.002 mg/L[a]

II. Monitoring Contaminants[e]

Inorganics	Chloride, Cobalt, Iron[d], Manganese, Nitrate/Nitrite as Nitrogen, Selenium, Sodium, Sulfate, Total Organic Carbon, Total Organic Halogens
Radionuclides	Gross Alpha, Gross Beta, Total Radium[d]
Field Parameters	pH, Specific Conductance, Temperature

a MCL – Maximum Contaminant Level as established in the US EPA Drinking Water Regulations and Health Advisories (updated 2018)

b Action Level as established in the US EPA Drinking Water Regulations and Health Advisories (updated 2018)

c Concentration based on May 2021 EPA Regional Screening Level (RSL) for tap water, Nickel as soluble salt~~r~~.

d **Trichloroethene, iron, and total radium analysis at all point of compliance, plume definition, and background wells.**~~Carbon tetrachloride analyses of groundwater at all POC wells screened in the MSAZ_CBCU.~~

e **All constituents listed in Table E.7-2 will be sampled annually at a minimum of 40% of the POC wells selected for the Appendix IX suite of constituents.**~~Trichloroethene and Lead analyses at all point of compliance and plume definition wells; however, plume definition wells AMB 7A, AMB 11B, AMB 11D, AMB 12D, AMB 14D, and AMB 15D only receive Trichloroethene and Lead analyses.~~

all PCB contaminated groundwater and vapor condensate to be filtered before it is sent to the M-1 Air Stripper. Although the DUS project was completed in 2009, the Mycelex filtrations system remains in operation to filter PCBs before being sent to the M-1 Air Stripper. The SVE and the groundwater remediation portions of the DUS system, including the Mycelex filtration system, are now designated as the WSTS to reflect the fact that steaming operations have ceased. This is described in the *Western Sector Treatment System (WSTS) Project Description (U)* (SRNS-RP-2012-00230).

Met Lab HWMF

Table E.7-2 provides the Met Lab HWMF GWPS/Monitoring Contaminants list. **Groundwater Protection Standard and Monitoring Contaminant analytes from Table E.7-2 have been less than their respective concentration limits for three consecutive years or longer, except for iron, TCE, and total radium, and are no longer required to be sampled at the Met Lab HWMF. Details about long term monitoring at the Met Lab HWMF are provided in Section E.8.3.3.4.**

All POC**, plume definition, and background** wells are sampled semi-annually for ~~constituents on the Met Lab HWMF GWPS list, inorganic Monitoring Contaminants list~~**iron, TCE, total radium**, and field parameters (i.e., pH, specific conductance, temperature). ~~The POC wells are monitored annually for gross alpha, gross beta, and total radium.~~ SRS provides groundwater monitoring data for radionuclides on a voluntary basis. Without relinquishing sovereign authority for regulation of radionuclides under the Atomic Energy Act, DOE-SR agrees, as a matter of comity, with the State of South Carolina, to perform the radionuclide analyses requested and to report the results in the Annual Corrective Action Report.

Sampling for the Appendix IX suite of constituents is conducted at a minimum of 40 percent of the POC wells. **The selected POC wells will also be sampled for the full list of constituents on Table E.7-2.** Well selection is based on previous sampling results, so that samples obtained will be representative of groundwater conditions. At least forty-five (45) days prior to the sampling period, SRS will submit to SCDHEC for review and comment a rationale and a specific proposal detailing which POC wells have been selected for the annual analysis of Appendix IX contaminants.

~~Some plume definition wells are sampled semi-annually for constituents on the Met Lab HWMF GWPS list, inorganic Monitoring Contaminants list, and field parameters (i.e., pH, specific conductance, temperature). The plume definition wells are monitored annually for gross alpha, gross beta, and total radium. Selected plume definition wells are sampled semi-annually for trichlororethylene~~

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~~and lead, only. These plume definition wells were added to the permit to help monitor the shutdown of recovery well RWM 17B.~~

~~Background wells (i.e., AMB-11D, AMB-12D, MSB-29B, MSB-29C, MSB-29D. MSB-43A, MSB-43B, and MSB-43D) are sampled semi-annually for constituents on the Met Lab HWMF GWPS list, inorganic Monitoring Contaminants list, and field parameters (i.e., pH, specific conductance, temperature). The background wells are monitored annually for gross alpha, gross beta, and total radium.~~

Synchronous water levels (within 60 days) are collected semi-annually at all POC, plume definition, and background wells. Evaluation of up to 20 years of quarterly synchronous water level data indicates that changes in water levels occur gradually over time rather than quickly in response to rainfall events. This is consistent with the significant depth to the water table. Similar behavior is observed in all aquifers. Semi-annual water level monitoring is adequate to track any long-term trends.

E.7.3.3 A-Area Burning/Rubble Pits and Rubble Pit and Miscellaneous Chemical Basin Groundwater Monitoring Program

Groundwater monitoring for the ABRP/MCB groundwater unit includes monitoring of groundwater contamination in the MAAZ, LLAZ, MS_CBCU, and CBAU. Table E.7-3 identifies the groundwater monitoring details for the ABRP/MCB/MBP OU plume definition wells. Water level measurements are taken at the same frequency as the sampling frequency designated for the contaminants. Section E.8.3.3.8 provides details on the investigation and remediation of the ABRP/MCB/MBP OU.

E.7.3.4 Southern Sector Groundwater Monitoring Program

Groundwater monitoring for Southern Sector groundwater includes monitoring of groundwater contamination in the MAAZ, LLAZ, MS_CBCU, and CBAU. Table E.7-4 identifies the groundwater monitoring details for the Southern Sector plume definition wells. Water level measurements are taken at the same frequency as the sampling frequency designated for the contaminants.

Table E.7-3. Summary of the ABRP/MCB Groundwater Monitoring Strategy

Aquifer	Well Name	Proposed Sample Frequency	Well Location	Field Parameter	Chloro-benzene	Chloroethene (Vinyl Chloride)	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	1,4-Dioxane	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)	Water Elevation (ONLY)
MAAZ	ABP 3	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	ABP 8D	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	**ABP 10D**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
MAAZ_GCCZ_ULLAZ	ARP 1A	Annual	ABRP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ_GCCZ	ARP 3DR	Semi-annual	ABRP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ_GCCZ	ARP 4	Annual	ABRP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ_GCCZ	ARP 19DR	Annual	ABRP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	**ARP 21D**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
MAAZ	MCB 4	Annual	MCB/MBP Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
MAAZ	MCB 5	Annual	MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ABP 3C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ABP 9C	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 12C3	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 13C1	Annual	ABRP Upgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	ARP 13C3	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 14C2	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	**X**	X	X	X	X	
ULLAZ	ARP 14C3	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 15C3	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 17C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 20C	Annual	ABRP Plume Edge/MCB Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	ARP 21C	Annual	MCB Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	BMW004D	Annual	East of ABRP Plume													X
ULLAZ	IDP 3C	Annual	East of ABRP Plume													X
ULLAZ	MCB 5C	Annual	MCB Upgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	MCB 6C	Annual	MCB Upgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	MCB 7C	Annual	MCB Upgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	MCB 12C	Annual	MCB Downgradient	X	X	X	X	X	X	X		X	X	X	X	
ULLAZ	MCB 14C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 15C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 16C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	**X**	X	X	X	X	
ULLAZ	MCB 21B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	

Table E.7-3. Summary of the ABRP/MCB Groundwater Monitoring Strategy *(Continued)*

Aquifer	Well Name	Proposed Sample Frequency	Well Location	Field Parameter	Chloro-benzene	Chloroethene (Vinyl Chloride)	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	1,4-Dioxane	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)	Water Elevation (ONLY)
ULLAZ	MCB 22C2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 23B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 24C2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB025C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 26C2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB 28C2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB029C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB030C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB031C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB032C	Annual	ABRP/MCB/MBP Plume Downgradient													X
ULLAZ	MCB033C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB034C	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
ULLAZ	MCB035C	Annual	ABRP/MCB/MBP Plume Downgradient													X
ULLAZ	**MCB036C**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
ULLAZ	**MCB037C**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
ULLAZ	**MCB038C**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
ULLAZ	**MCB039C**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
ULLAZ	**MCB040C**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
ULLAZ	SLW 7	Annual	East of ABRP Plume													X
LLLAZ	ABP 9B	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	ARP 12B1	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	ARP 13B1	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	ARP 17B	Annual	ABRP/MCB/MBP Downgradient Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	ARP 18B	Annual	ABRP/MCB/MBP Downgradient Plume Center	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	IDP 3B	Annual	East of ABRP Plume													X
LLLAZ	MCB 12B	Annual	MCB Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 14B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 15B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 16B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 17B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	

Table E.7-3. Summary of the ABRP/MCB Groundwater Monitoring Strategy *(Continued/End)*

Aquifer	Well Name	Proposed Sample Frequency	Well Location	Field Parameter	Chloro-benzene	Chloroethene (Vinyl Chloride)	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	1,4-Dioxane	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)	Water Elevation (ONLY)
LLLAZ	MCB 18B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 19B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X		X	X	X	X	
LLLAZ	MCB 22B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 24B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X		X	X	X	X	
LLLAZ	MCB 25B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB 26B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X		X	X	X	X	
LLLAZ	MCB 27B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X		X	X	X	X	
LLLAZ	MCB 28B2	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB029B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB030B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB031B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB032B	Annual	ABRP/MCB/MBP Plume Downgradient													X
LLLAZ	MCB033B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB034B	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
LLLAZ	MCB035B	Annual	ABRP/MCB/MBP Plume Downgradient													X
LLLAZ	**MCB036B**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
LLLAZ	**MCB037B**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
LLLAZ	**MCB038B**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
LLLAZ	**MCB039B**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
LLLAZ	**MCB040B**	**Annual**	**ABRP/MCB/MBP Plume Downgradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
MSAZ_CBCU	ARP 14B1	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	ARP 15B1	Annual	ABRP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	ARP 22A	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	MCB 11B	Annual	ABRP/MCB/MBP Sidegradient	X	X	X	X	X	X	X	X	X	X	X	X	
MSAZ_CBCU	**MCB040A**	**Annual**	**ABRP/MCB/MBP Sidegradient**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
CBAU	ARP 17TA1	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	ARP 17TB1	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	ARP 17TC1	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	MSB 73TA1	Annual	ABRP Upgradient	X	X	X	X	X	X	X	X	X	X	X	X	
CBAU	MSB 93TA1	Annual	ABRP/MCB/MBP Plume Downgradient	X	X	X	X	X	X	X	X	X	X	X	X	

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Table E.7-6. Northern Sector A-2 Air Stripper Shutdown Groundwater Monitoring Program

Well Name	Aquifer	Sampling Frequency	Field Parameter	Monitoring Constituents								
				Chloro-benzene	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)
ASB 6TA~~*~~	CBAU	Quarterly	x	x	x	x	x	x	x	x	x	x
ASB 8TA~~*~~	CBAU	Quarterly	x	x	x	x	x	x	x	x	x	x
MSB 47TA~~*~~	CBAU	Quarterly	x	x	x	x	x	x	x	x	x	x
ASB 2AR	MAAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB 4	MAAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB 82D	MAAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB004C	ULLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB011C	ULLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB111C	ULLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB112C	ULLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
~~RWM 12**~~	~~ULLAZ_LLLAZ~~	~~Quarterly~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
RWM**-013-CM** ~~13C**~~	ULLAZ_LLLAZ	Quarterly	x	x	x	x	x	x	x	x	x	x
~~RWM 14C**~~	~~ULLAZ~~	~~Quarterly~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
ASB002B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB004B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB011B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB 67C	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB111B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB112B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB113B	LLLAZ	Semi-Annual	x	x	x	x	x	x	x	x	x	x
~~RWM 14B**~~	~~LLLAZ_MSAZ_CBCU~~	~~Quarterly~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
ASB004AA	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
ASB 6AA~~*~~	MSAZ_CBCU	Quarterly	x	x	x	x	x	x	x	x	x	x
MSB 47BB	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB 67B	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB 82A	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB111A	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB111AA	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x

Table E.7-6. Northern Sector A-2 Air Stripper Shutdown Groundwater Monitoring Program (*continued/end*)

Well Name	Aquifer	Sampling Frequency	Field Parameter	Monitoring Constituents								
				Chloro-benzene	cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,1-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloroethylene (PCE)	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	Trichloroethylene (TCE)
MSB112A	MSAZ_CBCU	Semi-Annual	x	x	x	x	x	x	x	x	x	x
MSB113A	MSAZ_CBCU	Quarterly	x	x	x	x	x	x	x	x	x	x
MSB113AA	MSAZ_CBCU	Quarterly	x	x	x	x	x	x	x	x	x	x
RWM**-013-BM** ~~13B**~~	MSAZ_CBCU	Quarterly	x	x	x	x	x	x	x	x	x	x

~~* Second and fourth quarters monitoring per Table E.7-6; first and third quarters monitoring per Table E.7-1.~~

~~** Quarterly monitoring per Table E.7-6 only.~~

replaced with 2-in cascade Mini Ring packing in 1990. Liquid distribution trays are provided for each bed. A tails pump is located at the discharge of the column to transport treated water to a National Pollutant Discharge Elimination System (NPDES) permitted outfall. A variable-speed blower provides the air supply to the column with a maximum capacity of approximately 5,000 cubic feet per minute (cfm).

Two recovery wells RWM 17B and RWM 17D were installed within the Met Lab HWMF area in May 1996. Installation details for the recovery wells are listed in Table E.8-1, and well construction records are provided in *Well Construction Records and Geologic Data for the M-Area Hazardous Waste Management Facility* (WSRC-RP-98-4090). All the M-1 Air Stripper recovery wells (i.e., RWM 1 through RWM 11, RWM 17D, and RWM-17B) and the location of the air stripper are illustrated on Figure E.8-1.

RWM 16 was installed in Southern Sector in 1990. This recovery well was never connected to the M-1 Air Stripper and has never operated as a recovery well.

Since full scale operation started in 1985, the M-1 Air Stripper has treated approximately 7 billion gallons of groundwater removing over 500,000 pounds of solvent. The annual mass of solvent removed by the M-1 Air Stripper has declined with time (Figure E.8-3); however, recent modifications to the system have increased mass removal since 2014. The modifications have included replacing pumps, maximizing pumping rates, and optimizing the recovery well network. The screen interval for RWM 17D is located in the water table aquifer or M-Area Aquifer Zone (MAAZ). Drought conditions present from 2000 to 2012, lowered the water table elevation throughout the region causing the screen interval at RWM 17D to be dry in 2004 preventing its operation. Water elevations continue to be low and TCE concentrations are less than the groundwater protection standard (GWPS) eliminating the need to operate RWM 17D. RWM 17D was abandoned in 2016. Recovery wells RWM 9, RWM 11, and RWM 17B were removed from operation in 2018. These three recovery wells had been experiencing decreasing PCE and TCE concentrations (Figure E.8-4, Figure E.8-5, and Figure E.8-6). Table E.8-4 shows the average PCE and TCE concentration for 20**21**~~18~~ of the 1**4**~~3~~ recovery wells plumbed to the M-1 Air Stripper, of which RWM 9, RWM 11, and RWM 17B are the three lowest. More detailed discussion on the permanent shutdown and future abandonment of RWM 17B is provided in Section E.8.3.3.4 of this document.

In addition to low PCE and TCE concentrations, RWM 9 and RWM 11 were taken offline to free up treatment capacity at the M-1 Air Stripper for two new recovery wells. **RWM 9 and RWM 11 were converted to monitoring wells in July 2022. The conversion installed a 2 inch PVC well inside the existing 8 inch carbon steel well casing. The screen interval of the new 2 inch wells mimics the deepest screen interval at each well and isolated the shallower screen intervals by filling the 8 inch annulus space with bentonite pellets. The new monitoring wells will be named RWM-009-M and RWM-011-M, respectively.**

The M-1 Air Stripper has a maximum treatment capacity of 600 gallons of groundwater per minute (gpm) and typically operates between 400 and 500 gpm. New recovery well, RWM018, was installed in Western Sector to contain a high concentration contaminant plume located outside of the original hydraulic capture zone of the M-1 Air Stripper. RWM 018 was installed in 2017 and connected to the M-1 Air Stripper in 2018. Another new recovery well, RWM019, was installed in 2019 between RWM 7 and RWM 10 to contain a high concentration contaminant plume located east of the MASB. RWM019 ~~is planned to be~~**was** connected to the M-1 Air Stripper in 2020.

The M-1 Air Stripper is permitted as a Clean Water Act wastewater treatment plant (SCDHEC Wastewater Construction/Operation Permit #10,253). Discharge of the effluent or treated wastewater from this system is regulated through the National Pollutant Discharge Elimination System (NPDES) (SCDHEC Permit #SC0000175). The influent groundwater to the air stripper contains mercury on the order of 250 ng/L. This level exceeds the NPDES limit of 51 ng/L (monthly average) and 140 ng/L (daily maximum) for the receiving outfall. Air stripping alone is ineffective in removing mercury from the treated effluent. In 2003 the use of a chemical reducing agent for mercury removal was evaluated on a laboratory scale. During 2007, full-scale testing was performed to evaluate mercury removal using chemical reduction followed by volatilization. The full-scale testing demonstrated that mercury in the influent wastewater could be removed with the addition of a reducing agent (stannous chloride). The M-1 Air Stripper was modified to include a small reagent storage tank, an injection pump(s), flow indication, and an injection quill that added the reducing reagent to the influent wastewater of the M-1 air stripper. The modifications were needed to comply with NPDES permit limits that became effective in December of 2007. Mercury exceeded the maximum contaminant level (MCL) or 2 µg/L at POC well MSB002BR during the 2015 Appendix IX sampling event. Mercury was added as a corrective action constituent in August 2016 after resampling attempts confirmed mercury concentrations at MSB002BR. The monitoring wells with mercury concentrations exceeding the MCL are located near the MASB and are within the zone of capture of RWM 1, RWM 10, and RWM019 (once operational). With the stannous chloride system already operational, no additional corrective action is recommended for mercury.

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Table E.8-2. A/M-Area Recovery Well Installation Details

Page 1 of 4

Well Number	Total Depth (ft bls)	Base of Sump (ft bls)	Screened Intervals (ft bls)	Top of Gravel Pack (ft bls)	Top of Sand Pack (ft bls)	Screen Type	Casing Type
RWM-1	190.5	N/A	130.50-190.50	128.0	125.0	8" Diameter Stainless Steel #15 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-2	240.0	235	160.00-170.00 180.00-190.00 200.00-210.00 220.00-230.00	129.0	120.0	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-3	240.0	235	160.00-170.00 180.00-190.00 200.00-210.00 220.00-230.00	130.0	125.0	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-4	243.0	239.42	151.67-161.98 172.23-182.56 192.83-203.14 223.68-234.00	120.5	115.8	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-5	260.0	235.55	147.17-157.54 167.88-178.24 198.89-209.26 219.63-230.00	120.5	115.3	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-6	216.0	210.55	127.40-137.74 158.37-168.71 179.02-189.36 194.66-205.00	95.5	90.2	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-7	212.0	207.5	129.75-140.08 150.39-160.72 171.02-181.35 191.86-202.00	100.6	95.1	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-8	251.0	241	148.12-158.47 168.76-179.10 205.02-215.35 225.66-236.00	94.4	89.1	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-9*	255.0	250.56	157.05-167.40 177.69-188.05 208.69-219.03 234.65-245.00	132.2	127.7	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40

Table E.8-2. A/M-Area Recovery Well Installation Details

Well Number	Total Depth (ft bls)	Base of Sump (ft bls)	Screened Intervals (ft bls)	Top of Gravel Pack (ft bls)	Top of Sand Pack (ft bls)	Screen Type	Casing Type
RWM-10	239.0	230.56	137.08-147.43 157.74-168.09 194.01-204.34 214.64-225.00	106.7	101.2	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-11*	257.0	244.07	165.77-176.13 181.44-191.80 197.12-207.47 226.12-238.48	135.3	130.2	8" Diameter Stainless Steel #30 Slot Wire Wound	8" Diameter Carbon Steel Threaded Schedule 40
RWM-12**	211.0	205.0	148.6-169.1 179.3-198.3	144.5	142.6	6" Diameter Stainless Steel #18 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-13B*	227.5	225.4	195-220	191.9	190.7	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-13C*	185.5	185.3	160-180	158	None	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-14B**	231.9	230.5	200-225.2	196.5	195.6	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-14C**	180.5	180.4	155-175	151.8	150.9	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-15B**	248	245.3	21 -240	212.4	211.5	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-16***	180.0	176.4	130.0-150.4 155.8-171.2	125.5	123.0	6" Diameter Stainless Steel #18 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40

Table E.8-2. A/M-Area Recovery Well Installation Details

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Well Number	Total Depth	Base of Sump	Screened Intervals	Top of Gravel Pack	Top of Sand Pack	Screen Type	Casing Type
			(ft bls)				
RWM-17B***	267	265.2	245-260.03	242.5	240.5	6" Diameter Stainless Steel #16 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM-17D**	168	166.3	146-161.1	144	142.5	6" Diameter Stainless Steel #16 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM018	225.66	226.04	170.59-220.59	165.5	165.5	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40
RWM019	216	206	149.8-200.8	145.8	145.8	6" Diameter Stainless Steel #20 Slot Wire Wound	6" Diameter Carbon Steel Threaded Schedule 40

Table E.8-2. A/M-Area Recovery Well Installation Details

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Well Number	SRS Grid Coordinates Northing	Easting	Year of Construction
RWM-1	102607.9	48580.6	1981
RWM-2	104433.8	49205.5	1983
RWM-3	104730.2	49680.0	1983
RWM-4	103719.3	48948.2	1984
RWM-5	103502.2	49628.0	1984
RWM-6	102001.5	50107.4	1984
RWM-7	101904.6	49449.5	1984
RWM-8	101948.2	47353.3	1984
RWM-9*	104099.8	50400.0	1984
RWM-10	102000.9	48244.1	1984
RWM-11*	104875.0	50400.2	1985
RWM-12**	106879.2	52500.1	1990
RWM-13B*	105803.3	53516.3	1993
RWM-13C*	105809.7	53502.2	1993
RWM-14B**	106362.1	53044.7	1993
RWM-14C**	106380.8	53051.5	1993
RWM-15B**	107444.7	53848.9	1993
RWM-16***	97647.2	48244.8	1990
RWM-17B***	104180.0	51490.0	1996
RWM-17D**	104197.0	51502.0	1996
RWM018	102538.7	46551.0	2017
RWM019	101633.6	48785.1	2019

* **Recovery well has been converted to a monitoring well.**
** **Recovery well has been abandoned.**
*** **Recovery well is not operational.**~~N/A not applicable~~

Table E.8-3. A/M-Area Recovery Well Specific Capacity Testing Summary

Well Number	Maximum Test Flow	Specific Capacity at Maximum Flow	Maximum Drawdown	Depth to Water	Maximum Pumping Rate	Drawdown	Specific Capacity
	(gpm)	*(gpm/ft)*	*(ft)*	*(ft bls)*	*(gpm, calc)*	*(ft)*	*(gpm/ft)*
RWM-1	30.0	0.85 72 hr	35.50	126.0	30.0	30	1.0
RWM-2	33.0	0.61 195 min	54.70	139.0	20.0	30	0.7
RWM-3	33	4.18 210 min	7.90	131	120	30	4
RWM-4	114	2.8 380 min	40.15	131	85	30	2.8
RWM-5	117	2.4 380 min	49.30	127	100	30	3.3
RWM-6	30	2.8 300 min	10.17	101	50	30	1.6
RWM-7	109	1.3 100 min	80.40	110	50	30	1.7
RWM-8	119	4.3 200 min	27.40	121	125	30	4.2
RWM-9*	120	4.6 370 min	25.76	136	130	30	4.2
RWM-10	111	3.4 130 min	32.57	110	105	30	3.4
RWM-11*	111	3.8 360 min	29.00	140	115	30	3.8
RWM-12**	55	3.4 1000 min	16	146.2	55	16	3.4
RWM-16***	39	0.98 96 hr	40	115.7	39	40	0.98
RWM018	55	3.2 2 hr	17.75	145.1	54.8	16.2	3.2
RWM019	**79**	**2.6 120 min**	**34.9**	**139.9**	**79**	**30.4**	**2.6**

* **Recovery well has been converted to a monitoring well.**
** **Recovery well has been abandoned.**
*** **Recovery well is not operational.**

Table E.8-4. Annual Average Solvent Concentrations in M-1 Air Stripper System Recovery Wells for 2021~~18~~

Well	Average TCE Concentration (µg/L)	Average PCE Concentration (µg/L)
RWM 1	**596.0**~~1165.80~~	**4075.0**~~9536.00~~
RWM 2	**230.3**~~268.00~~	**974.5**~~1338.00~~
RWM 3	**238.5**~~382.80~~	**112.4**~~257.20~~
RWM 4	**1300.0**~~1434.00~~	**734.0**~~945.00~~
RWM 5	**514.7**~~679.40~~	**180.7**~~401.40~~
RWM 6	**383.8**~~403.60~~	**1134.5**~~2490.00~~
RWM 7	**1929.3**~~3790.00~~	**3110.0**~~4680.00~~
RWM 8	**1584.3**~~1679.20~~	**813.9**~~878.20~~
RWM 9*	**11.6**~~61.75~~	**1.3**~~18.15~~
RWM 10	**6750.0**~~8416.00~~	**12727.5**~~19300.00~~
RWM 11*	**74.0**~~121.50~~	**6.3**~~11.00~~
RWM 17B**	**2.5**~~4.62~~	**1.8**~~2.32~~
RWM018	**0.0**~~16880.00~~	**0.0**~~5242.40~~
RWM019	**14357.1**	**27657.1**

*** Recovery well has been converted to a monitoring well.**
**** Recovery well is not operational.**

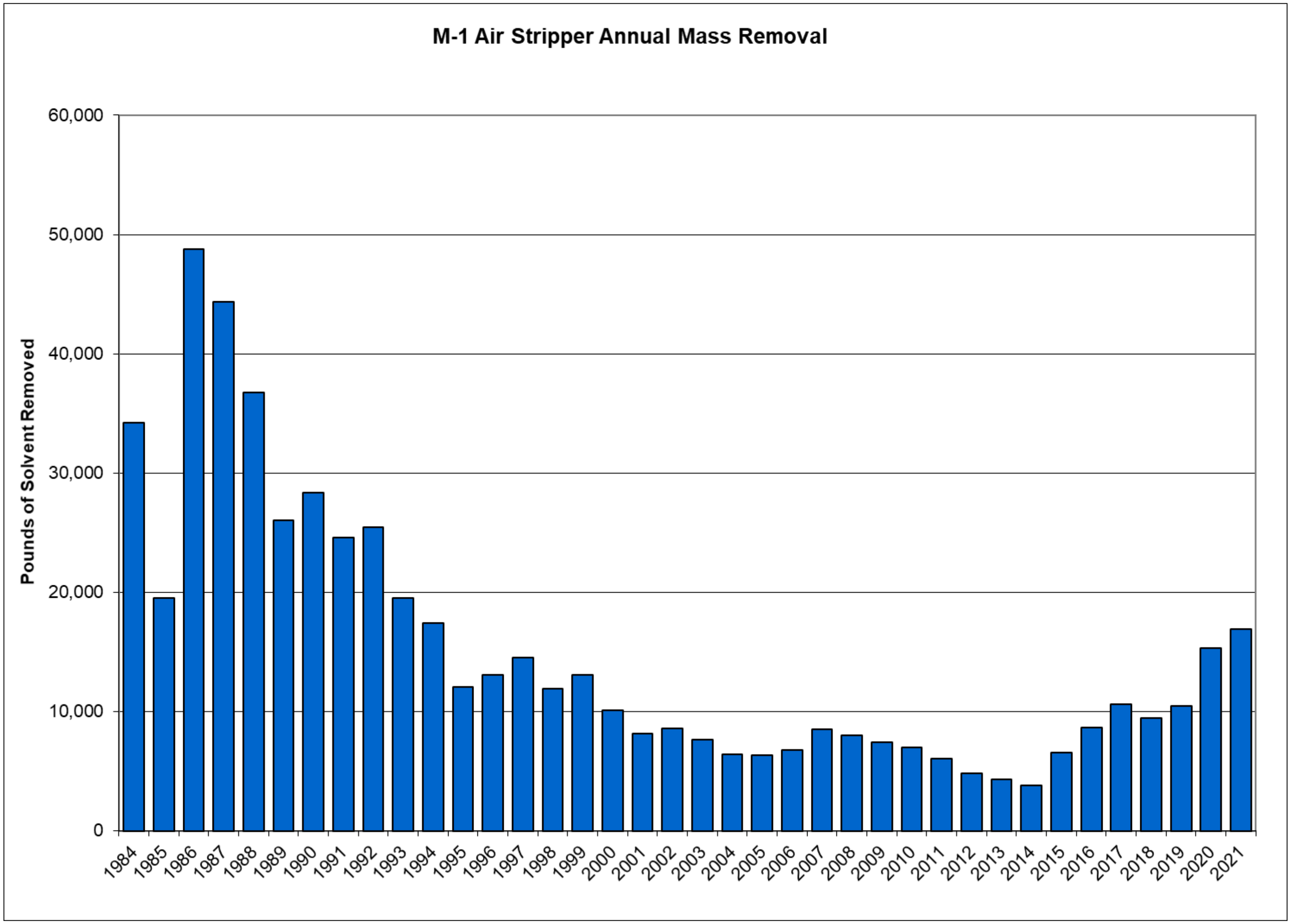

Figure E.8-3. Annual Mass Removed from the M-1 Air Stripper

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321-M Solvent Storage Tank Area (SVEU 782-6M)

Building 321-M had three vertical extraction wells (MVE-1, MVE-2, and MVE-3) and one pressure monitoring cluster (MVC-1). In 1995, SVEU 782-6M was placed into operation at the 321-M Solvent Storage Tank Area (SSTA). In 2001, the 782-6M SVEU was placed in shutdown mode in accordance with the 321-M SSTA Dynamic Underground Stripping (DUS) post-characterization plan. The 782-6M SVEU was relocated to the DUS site near the MASB in 2005.

The SSTA was an area of documented DNAPL in the subsurface. A remediation project for DNAPL using the DUS technology commenced in 2000. The DUS technology injected steam into the subsurface through a series of injection wells within the treatment zone of interest. The steam injection heated the subsurface causing the DNAPL in that zone to volatilize. A vacuum was applied at extraction points within the target area and the volatilized DNAPL was pulled through the subsurface to an extraction point where it was removed. The steam injection began in June 2000, and once the entire treatment zone was heated, the project completed extraction treatment in September 2001. A total of 70,000 pounds of DNAPL was removed.

SRS conducted post-DUS characterization at the 321-M SSTA in accordance with the *Dynamic Underground Stripping Post-Treatment Characterization Plan* (WSRC-RP-2001-00380, Revision 0, March 2001). This effort was initiated in late 2002 and included the collection of depth-discrete soil samples to a depth of 118 feet. Results indicate that high vapor concentrations of PCE (~500 ppmv) are present in the shallow vadose zone (upper 30 feet) near extraction well DUS-003 and lower concentrations (~30ppmv) are present at extraction wells DUS-001 and DUS-002. The high concentrations at DUS-003 are considered to be associated with a shallow clay layer (above the target zone of the DUS deployment) and appear to be localized in the vicinity of DUS-003. Contamination at the other locations appears to be residual, likely associated with the elevated temperatures of the subsurface.

A SVE program was implemented in November 2003 to address contamination in the upper 30-foot zone. A new SVE well (DUS-17) was installed with a screen zone between 20 and 40 feet near DUS-003. A SRNL mobile SVEU was utilized to assess the mass transfer rate of the contaminants from this localized source. The system was assessed by cycling the mobile SVEU on and off periodically between November 2003 and July 2006. In July 2006, the SRNL mobile SVEU was replaced with the mobile #2 SVEU. The mobile #2 SVEU was assessed again at the end of 2009. After the first shut down cycle, VOC concentrations did not rebound above the greater than 40 pounds of solvent per week. During the second shut down cycle, SRS proposed to keep the mobile SVEU shutdown and convert to a MicroBlower™. A MicroBlower™ was installed at SVE well DUS-17 in November 2010. **The MicroBlower™ installed on DUS-17 was named DUS1-HEAD (321-M AT SSTA) and is now referred to as DUS-1.** ~~From 2011 to 2018, the MicroBlower™ at DUS-17 has removed 1,968 pounds of solvent from the shallow vadose zone.~~ In October 2017, the MicroBlower™ **at DUS-1** was switched from being energized by photovoltaic panels to a continuous electric source to allow for 24 hour, seven days a week operation.

An evaluation of all SVE systems across the M-Area HWMF, including recommendations for future operations, was submitted to SCDHEC in August 2022 (i.e., *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* [SRNS-RP-2022-00514]). As part of the SVE evaluation report the annual mass removal rates for DUS-1 were graphed from 2011 to 2021 (Table E.8-12a). The MicroBlower™ at DUS-1 has removed approximately 3,061 pounds of chlorinated solvent total since 2011. From 2017 to 2020, DUS-1 had an increase in mass removal rates due to the change from 12 to 24 hours of operation. The relatively steady mass removal from DUS-1 is a good indication that residual mass is present near the well. Operation of the MicroBlower™ at DUS-1 is recommended to continue since a significant amount of mass continues to be removed from the subsurface.

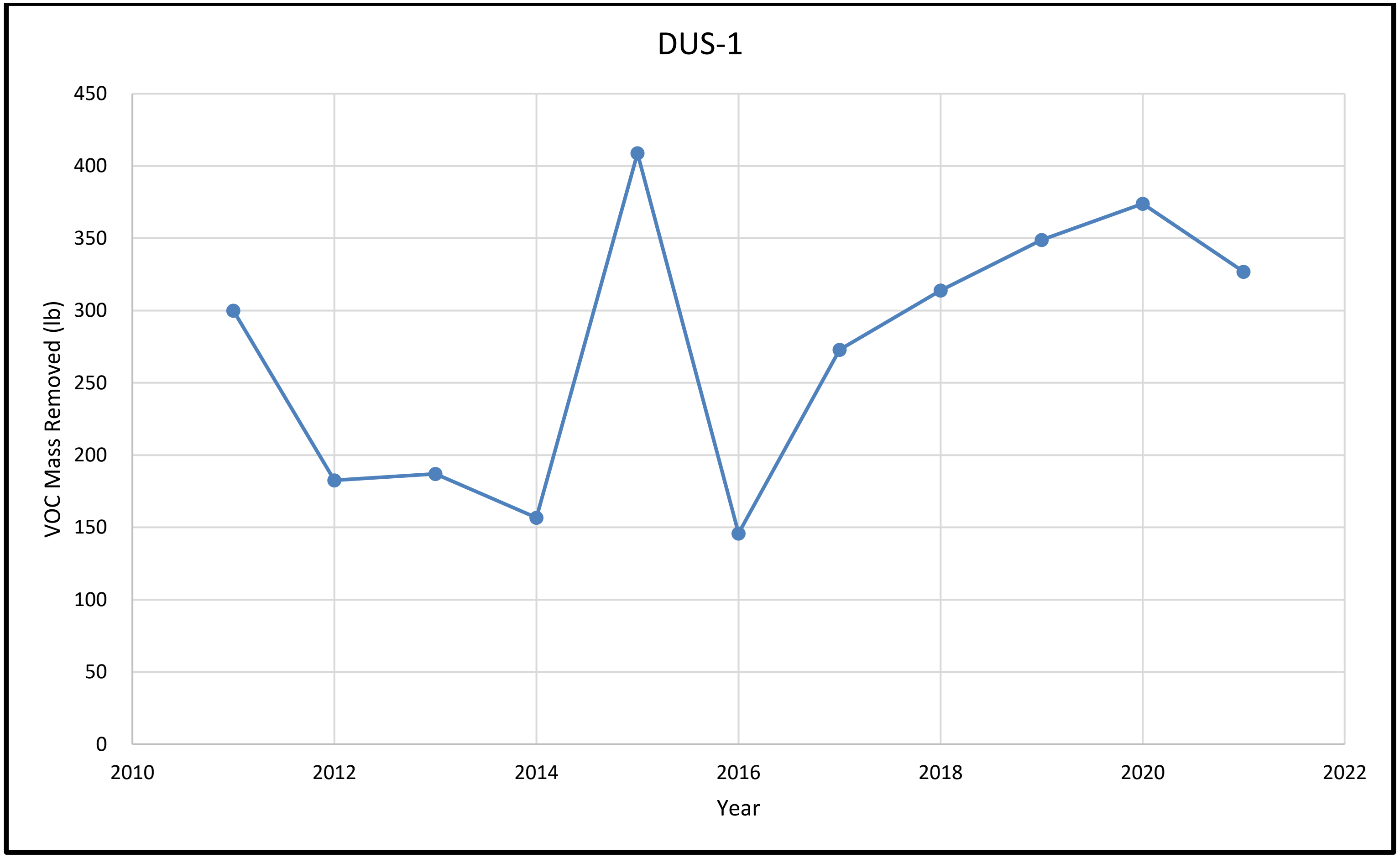

Figure E.8-12a. Annual Mass Removal of VOCs at DUS-1

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M-Area HWMF (SVEU 782-4M)

Two horizontal extraction wells (AMH-6 and AMH-7) were drilled beneath the MASB and connected to the SVEU 782-4M. In 1995, SVEU 782-4M was placed into operation and averaged a VOC removal rate of 200 lbs per week. In 2003, the SVEU 782-4M was temporarily removed from operation. In 2004, the two horizontal wells were abandoned and replaced by horizontal well VEW-22, an integral extraction well of the DUS project at the MASB. The SVEU 782-4M operated from 2005 to 2012 as part of the DUS remediation project near the MASB. This unit was dismantled in 2013.

M-Area Abandoned Process Sewer Line (SVEU 782-5M)

At the northern end of the process sewer line, there were four vertical extraction wells (MVE-5, MVE-6, MVE-7, and MVE-8) connected to the 782-5M and two vadose zone monitoring wells (MVC-4 and MVC-5). In 1995, SVEU 782-5M was placed into operation at the M-Area process sewer line. The 782-5M unit was shut down in the fall of 1999 when contaminant removal rates fell below 40 lbs per week (see Remediation Goals as described in Section E.8.3.3.3.3). Passive

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the low energy SVE wells along the MAPSL, and characterizing an area of high VOC concentration east of the MASB. The SVEUs at the A-14 Outfall are discussed under Section E.8.3.3.3.2.6. The low energy SVE wells associated with the MAPSL are discussed in Section E.8.3.3.3.2.5. The details of the vadose zone characterization east of the MASB have not yet been proposed to the SCDHEC, but will be included in a future revision of this Permit Renewal Application. The shutdown of the 782-6M SVEU is now associated with Western Sector and the Western Sector Treatment System and is discussed further in Section E.8.3.3.3.7.

Upon active SVEU shutdown (see Section E.8.3.3.3.2.3 for Remediation Goals), vadose zone remediation will continue using a low energy technology. The low energy SVE technology will be installed on existing or new extraction wells and includes (but may not be limited to) MicroBlowers™ and BaroBalls™. MicroBlowers™ use a photovoltaic panel to power a small, low power vacuum blower to extract soil gas from the subsurface. The BaroBalls™ extract soil gas to the surface by the natural pressure differential between the surface and the vadose zone whenever the surface barometric pressure naturally drops (i.e., barometric pumping). The lower energy SVE wells will be evaluated for shutdown as data indicate that the residual source no longer presents a potential threat to groundwater.

A complete SVE evaluation report, *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* (SRNS-RP-2022-00514), was submitted to SCDHEC in August 2022. The report evaluates SVE activities at the M-Area HWMF (A-14 Outfall, SSTA, MASB, MAPSL, and Northern Sector) and provides recommendations for future operations of SVEUs, MicroBlowers™, and BaroBalls™. Conclusions were made based on annual mass removal rates, cumulative mass removed, and/or vapor concentrations for all SVEUs and SVE wells. The results were used to determine the effectiveness of the SVEUs and SVE wells and recommendations for future operations are provided in the appropriate sections of this application. The requirement to submit the evaluation was defined in the corrective action schedule for the vadose zone (Table E.8-5).

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Table E.8-5. Schedule of Events Detailing the Vadose Zone Corrective Action Plan

CAP Schedule for the Vadose Zone			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
Yes	April 2014 (A)	March 2015 (A)	MAPSL PSVE Testing and Evaluation Report (Data Reported in Annual Groundwater Monitoring and CARs)
Yes	October 2014 (A)	July 2015 (A)	782-3M SVEU Testing and Evaluation Report
Yes	October 2015 (A)	May 2016 (A)	MAPSL and 782-3M (A-14) SVEU recommendations (Revision to the RCRA Permit Renewal Application)
Yes	December 2019 (A)	July 2020 (A)	A-14 MicroBlower™ Installation at MRS 34
Yes	December 2019 (A)	July 2020 (A)	MAPSL MicroBlower™ and BaroBall™ Installation at new SVE wells
~~No~~**Yes**	October 2021	~~March~~ **August** 2022 **(A)**	Status Report on all SVEU/~~P~~SVE Systems
No	October 2022	September 2023	Characterization of vadose zone east of the MASB
No	**October 2023**	**March 2024**	**782-3M SVEU Testing and Evaluation Report (Data Reported in Annual Groundwater Monitoring and CARs)**

CY = Calendar year
A = Actual dates

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E.8.3.3.3.2.5 Phase II Corrective Action Activities at the MAPSL

In 2014, eleven borings were completed to evaluate the VOC concentrations along the 1,600 ft of the MAPSL (Figure E.8-13). The borings were drilled using cone penetration technology (CPT) collecting soil and accompanying soil-gas samples from the surface down to refusal, approximately 60 to 120 ft bgs. A review of the sampling results indicates PCE and TCE are the primary VOCs with elevated concentrations, while 1,1,1–trichloroethane, cis-1,2-dichloroethylene, and vinyl chloride had variable detections. PCE and TCE were detected along the entire length of the MAPSL; however, the highest concentrations were observed at the northern portion of the MAPSL (i.e., MVB200SB) and near the vadose oil substrate (VOS™) site (i.e., MVB204SB to MVB207SB). Degradation breakdown products (cis-1,2-dichloroethylene and vinyl chloride) were associated with an ongoing bio-remediation study (i.e., VOS™ site) along a small section of the MAPSL. All of the results from this sampling effort can be found in the *Field Summary and Data Report of Characterization Activities Performed at the M-Area Abandoned Process Sewer Lines, M Area, Savannah River Site (U)* (SRNL-RP-2014-01218), which was submitted to the SCDHEC in March 2015.

Along with the soil and soil gas sampling, vapor samples were collected from the existing wells along the MAPSL (Figure E.8-14). There were two types of wells sampled, passive soil vapor extraction (PSVE) wells and monitoring points. The PSVE wells have a 60 to 80 ft screen interval that spans the upper to middle vadose zone. The monitoring points have three isolated sampling intervals targeting the upper, middle, and lower vadose zone. Soil vapor collected from the PSVE wells represent a homogeneous sample and the monitoring points provide a depth discrete sample. These wells were sampled for three quarters during 2014. The results from the vapor sampling indicate high concentrations of PCE and TCE in the shallow vadose zone south of the VOS™ site. Similar to the soil sampling all degradation breakdown products observed were associated with the VOS™ site.

The lithology of the upper 20 to 40 ft of sediment (i.e., upland unit) varies along the 1,600 ft of MAPSL (Figure E.8-15). In the north, the upland unit is a 20 ft thick sandy/silty clay. Moving south toward the VOS™ site, the upland unit thickens to approximately 40 ft. Near the VOS™ site, a five-foot thick sand layer bisects the 40 ft upland unit at about 30 ft bgs. South of the VOS™ site, the upland transitions from two clay units to an approximately 10 ft thick upper clay while the lower clay coarsens to sandy silt. The middle sand layer however remains continuous south of the VOS™ site. The soil and soil-gas sampling revealed persistent PCE mass in the upland unit with the most significant concentrations occurring between 10 to 20 ft bgs with concentrations decreasing with depth (Figure E.8-16 and Figure E.8-17). The highest PCE concentrations were collected from clay rich sediments, which prevented vapor samples from being collected. The sand layer in the upland unit, or just below the upland unit, exhibited slightly lower PCE concentrations signifying some diffusion from the upland unit creating a long-term source of PCE to the vadose zone with potential impacts to the groundwater. The diffusion process appears to be slow attesting to the persistence of VOC concentrations observed in the upland unit. To prevent future impact to the groundwater, SRS is proposing to add additional PSVE wells to target the sand layers in and below the upland unit to remove mass as it diffuses from the upland unit.

Eight MicroBlowers™ and two BaroBalls™ **were**~~will be~~ installed to target the areas of elevated VOC concentrations in the northern portion of the MAPSL and north and south of the VOS™ site (Figure E.8-18). Table E.8-6 provides the construction details for the **new**~~future~~ ~~P~~SVE wells. One MicroBlower™**, MVE037, was**~~will be~~ installed on the northern portion of MAPSL to target the soil concentrations observed at MVB200SB. ~~This P~~SVE well **MVE037**~~will~~ straddle**s** the upland unit and the underlying sandy zone to maximize mass removal and flow rate. Five MicroBlowers™ **(i.e., MVE030, MVE031, MVE032, MVE033, and MVE035) were**~~will be~~ installed north and south of the VOS™ site into the middle sand layer. Existing ~~P~~SVE wells (i.e., MVE028 and MVE029) **were**~~will be~~ retrofitted with a MicroBlower™. **The MicroBlower™ at** MVE028 ~~currently has an~~**was** old~~ MicroBlower™ that is not operational~~ and need**ed**~~s~~ to be replaced. MVE029 was previously outfitted with a MicroBlower™, but was dismantled to prevent interference during execution of the VOS™ project. Two BaroBalls™ **(MVE034 and MVE036) were**~~will be~~

placed directly north and south of the MVB204SB. These BaroBalls™ will target 20 to 30 ft bgs to contact the highest concentration of VOCs at the 20 ft depth and the slightly more permeable sediment near the 30 ft depth to create better flow. The BaroBalls™ will allow some mass removal based on barometric pumping. The lower permeability sediments in this zone prevent use of MicroBlowers™ due to the high**er** vacuum pressures produced.

The corrective action at MAPSL will continue to operate until vapor concentration data indicate vadose zone contamination is not impacting the groundwater above MCLs. To quantify this, vapor samples will be collected quarterly from the MicroBlowers™ and semi-annually from the BaroBalls™. This data will be used to calculate mass removal from each of the MicroBlowers™ which will be reported in the Annual M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities Groundwater Monitoring and Corrective Action Report. Once vapor concentrations decline significantly, contaminant migration analysis will be conducted to determine if the potential to impact groundwater has been eliminated and corrective action can be considered complete.

An evaluation of all SVEUs and SVE wells associated with the M-Area HWMF was submitted to SCDHEC in August 2022 (i.e., *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* [SRNS-RP-2022-00514]). As part of the evaluation, all the SVE wells at MAPSL were evaluated by calculating mass removal rates for a period of time. The results were used to determine the effectiveness of the SVE wells and provide recommendations for future operations. A summary of the conclusions are provided in the paragraphs below.

In total, the eight MicroBlowers™ at MAPSL have removed a total of 595 lb of chlorinated solvent since operations began in 2020. MVE028, MVE029, MVE030, MVE031, MVE035, and MVE037 have removed 481 lb of PCE and 105 lb of TCE since 2020. MVE032 and MVE033 have removed 8 lb of PCE and 1 lb of TCE since 2020. MVE028, MVE029, MVE030, MVE031, MVE035, and MVE037 have steadily increased in cumulative PCE and TCE mass removal since 2020, are performing as expected, and are expected to

continue to remove significant mass from the subsurface (Figure E.8-18a). MVE032 and MVE033 have had lower flow rates compared to the other six MicroBlowers™. Currently, MVE032 and MVE033 have dilution valves opened to allow for a better flow rate. Development of MVE032 and MVE033 will be conducted to see if more productive flow rates can be achieved, thus increasing mass removal rates. At this time, it is recommended that MVE028, MVE029, MVE030, MVE031, MVE035, and MVE037 continue operations and MVE032 and MVE033 be developed.

The nine BaroBalls™ (AMH 2, MHV 6, MHV 7, MHV 8, MVE005, MVE006, MVE007, MVE008, and MVE023) originally installed at MAPSL have removed a total of 145 lb of PCE and 36 lb of TCE since 2014. The two new BaroBalls™ (MVE034 and MVE036) installed in 2020 have removed a total of 6 lb of PCE and 0.4 lb of TCE. AMH 2, MVE005, MVE007, MVE008, MVE034 and MVE036 have increasing VOC cumulative mass removal rates; therefore, these six SVE wells are recommended to continue operation (Figure E.8-18b). MHV 6, MHV 7, MHV 8, MVE006, and MVE023 have diminished VOC mass removal rates. Since these five SVE wells are no longer contributing significant mass removal of VOCs in the vadose zone, they are recommended for abandonment.

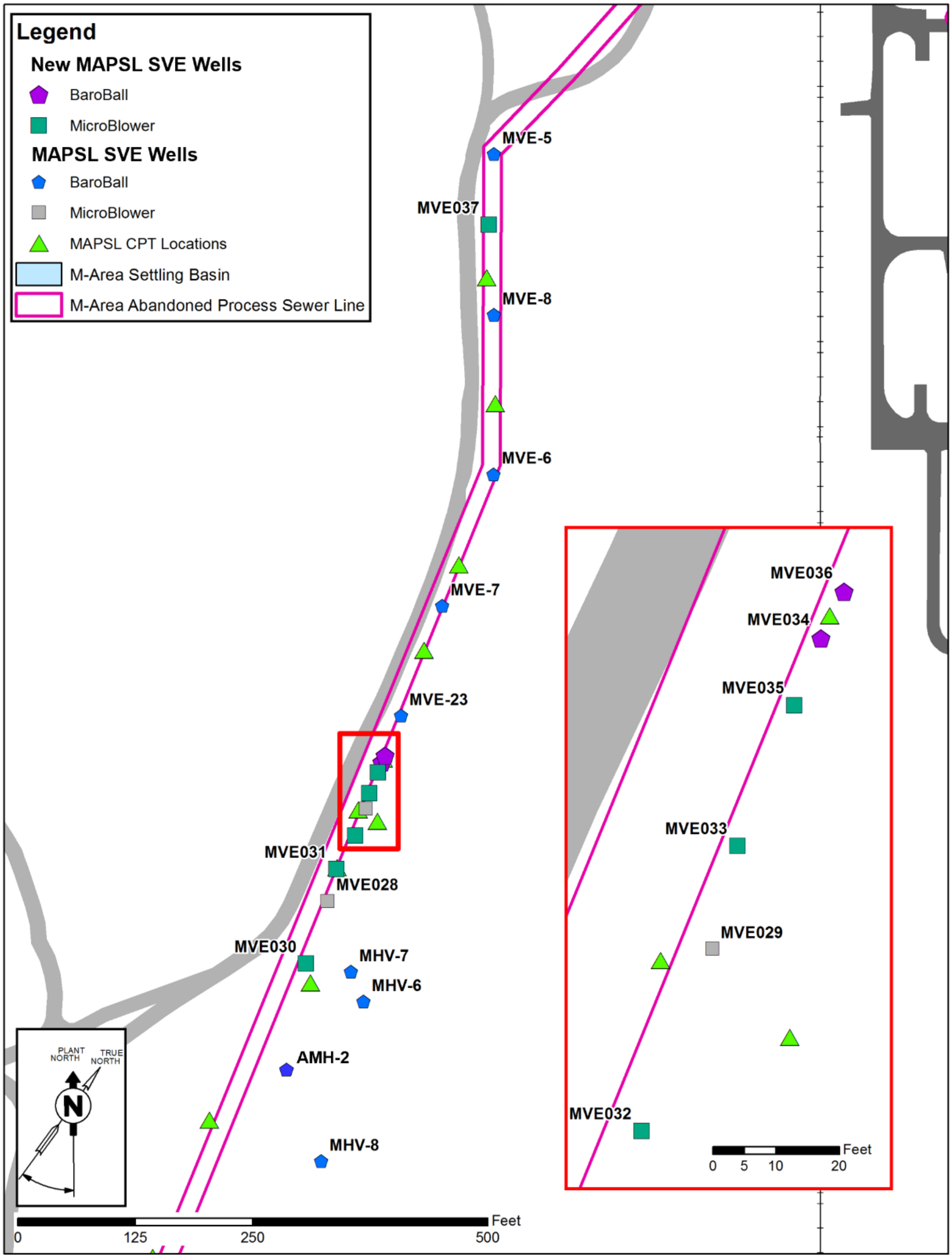

Figure E.8-18. Location of the New~~Future~~ ~~P~~SVE Wells at MAPSL

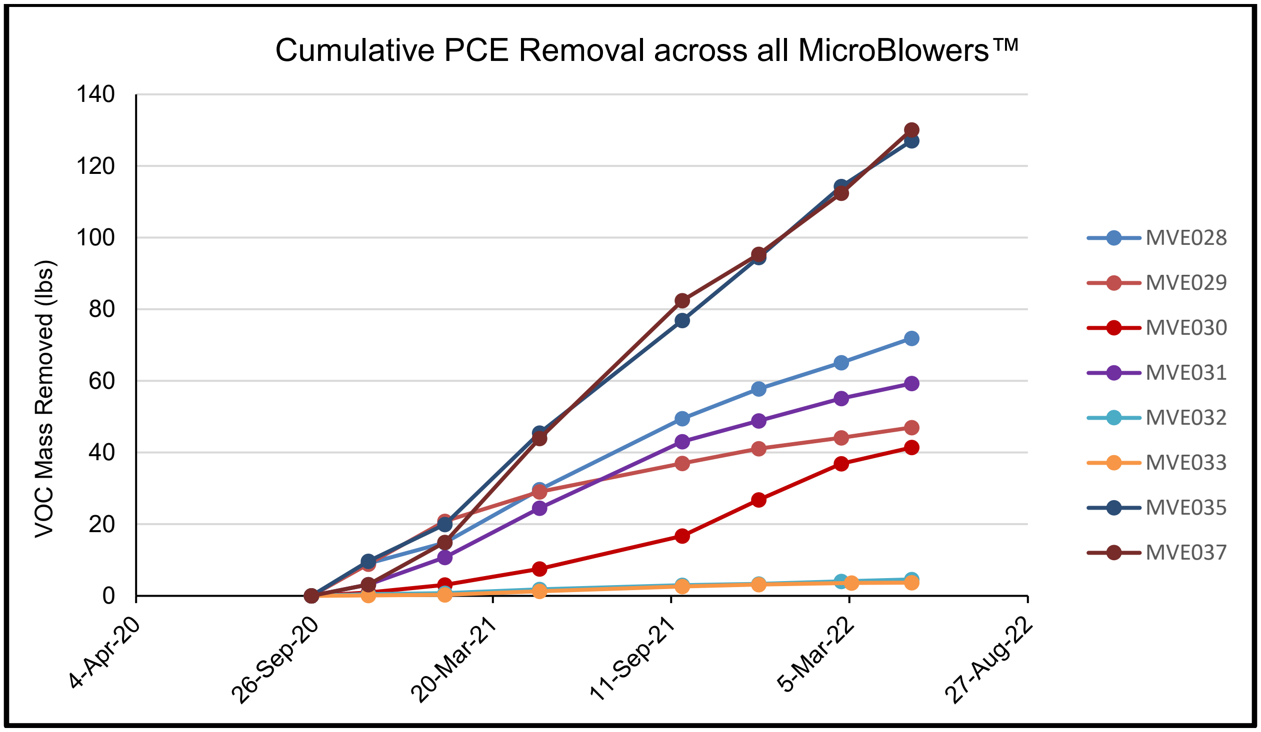

Figure E.8-18a. Cumulative PCE Mass Removed from all MAPSL MicroBlowers™

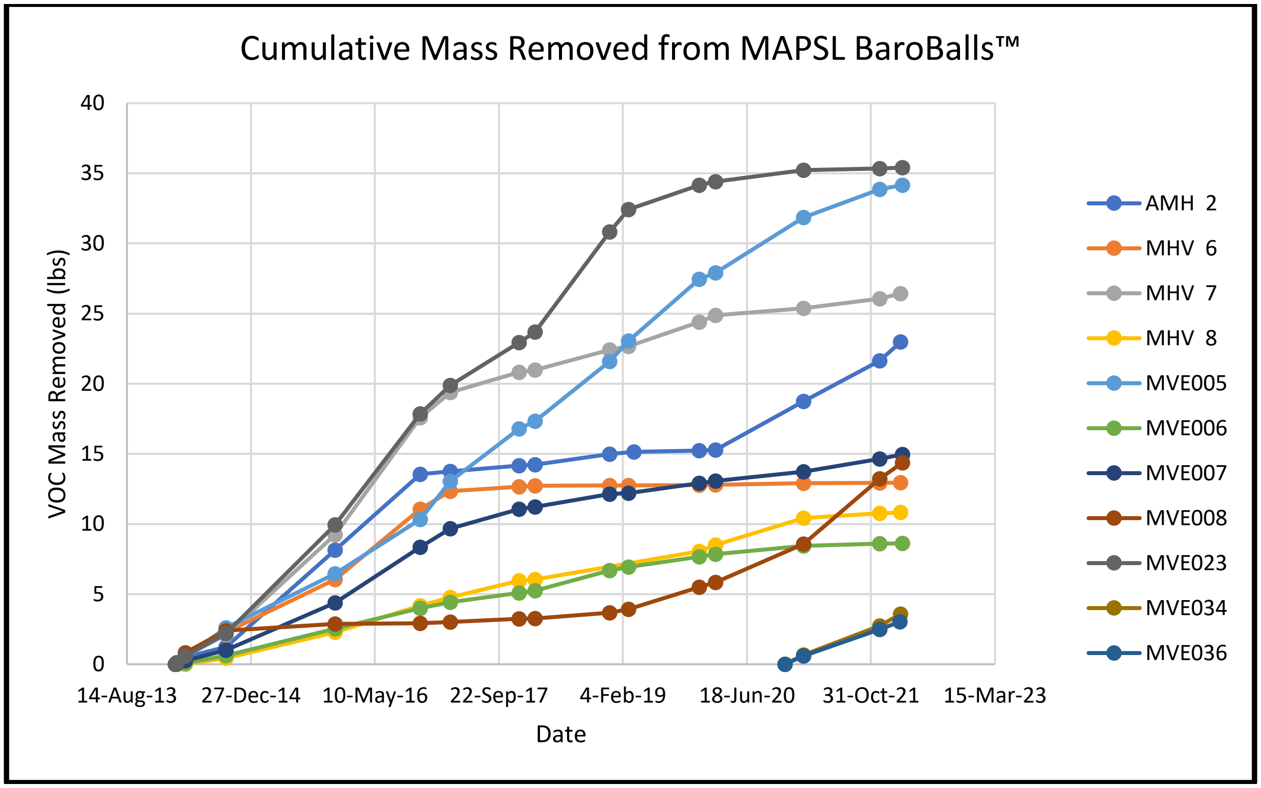

Figure E.8-18b. Cumulative VOC Mass Removed from all MAPSL BaroBalls™

Table E.8-6. Construction Details for the New ~~Passive~~ Soil Vapor Extraction Wells at the MAPSL

Well	~~Proposed~~ Screen Interval (ft bgs)	Type of Soil Vapor Extraction Well
MVE028*	30 – 40	MicroBlower™
MVE029*	30 – 40	MicroBlower™
MVE030	25 - 35	MicroBlower™
MVE031	25 - 35	MicroBlower™
MVE032	25 - 35	MicroBlower™
MVE033	25 - 35	MicroBlower™
MVE034	20 - 30	BaroBall™
MVE035	25 - 35	MicroBlower™
MVE036	20 - 30	BaroBall™
MVE037	20 - 40	MicroBlower™

*Existing SVE wells that **had new**~~will have~~ MicroBlowers™ installed

E.8.3.3.3.2.6 Phase II Corrective Action Activities at the A-14 Outfall

During 2014 and 2015, SVE wells associated with the 782-3M and Mobile #3 (high vacuum unit) SVEUs were sampled and the extraction performances were evaluated and ranked to provide recommendations on the viability, operational scheme, and applicability of PSVE. The results are documented in the report *Vapor Extraction Well Performance and Recommendations for Future Soil Vapor Extraction Activities at the A-014 Outfall* (SRNL-STI-2015-00235), which was submitted to the SCDHEC in July 2015.

The evaluation process collected a series of samples from individual SVE wells after 24 hours of purge using the respective SVEU. The samples were analyzed for VOC concentration, temperature, and flow to determine the mass extraction rate. For the 782-3M SVEU, 13 wells were sampled (Figure E.8-19). The analysis of mass extraction rates resulted in the following recommendations related to future SVE activities at the A-14 Outfall:

- The 782-3M SVEU should continue to operate using three SVE wells (i.e., MVE 4, MVE 9, and MVE 10),
- The nine direct push wells (i.e., MVE 13 through MVE 19, MVE 21, and MVE 22) should be abandoned,
- The capillary fringe extraction well (i.e., MRS 34) should be equipped with a MicroBlower™,
- The Mobile #3 SVEU should continue to operate four of the five fracture enhanced SVE wells (i.e., AF 2, AF 4, AF 5, and AF 7).

Permit conditions allowing for the shutdown of the SVEUs (i.e., less than 40 lbs/week of VOCs) have been achieved at both systems; however, individual SVE testing indicates significant residual mass remains in the subsurface that can most efficiently be reduced through continued active SVE.

To further evaluate the 782-3M SVEU, a rebound test was conducted from March 2015 to January 2016. The rebound test consisted of cycling the SVEU off and on while collecting monthly vapor samples from the 782-3M SVEU to observe changes in vapor concentration. The 782-3M SVEU was off during the months of March to June and again from September to January. The 782-3M SVEU was on from June to September and resumed normal operation (i.e., all wells with valves open) in January 2016. After 90 days of shutdown, vapor concentrations experienced a sharp increase immediately after the 782-3M SVEU was turned on, but quickly declined to concentrations observed during normal operations. The temporary increase in vapor concentrations indicates that residual mass is still present, likely in the upper 40 ft of low permeability sediments. It should be noted that during the rebound test, the 782-3M SVEU was never actually turned off due to a series of SVE wells associated with the A-Area Miscellaneous Rubble Pile Operable Unit, which is governed by the Federal Facility Agreement (FFA).

Based on the results from the individual SVE well sampling and the rebound test at 782-3M, significant residual mass remains in the subsurface near the A-14 Outfall. The residual mass would most efficiently be reduced through continued active SVE at the 782-3M and Mobile #3 SVEUs. This will take advantage of the existing infrastructure at the A-14 Outfall, which is still removing more mass than the local groundwater recovery well (i.e., RWM 6) and thus reducing further impacts to the groundwater. In the *Vapor Extraction Well Performance and Recommendations for Future Soil Vapor Extraction Activities at the A-014 Outfall* (SRNL-STI-2015-00235), SRS recommended the abandonment of the shallow SVE wells and to equip MRS 34 with a MicroBlower™. The report also recommended that AF-8 be converted to a vent well with an isolation valve. On October 14, 2016, the SCDHEC concurred with the recommendations from the report (SRNS-OS-2016-00076). The SRS will proceed with the recommendations from the report, except the conversion of AF-8. Upon further investigation, it was determined that AF-8 cannot be converted to a vent well. If AF-8 was converted to a vent well, then the Mobile #3 SVEU would not operate properly based on low flow rates at the remaining SVE wells. The status of the SVEUs at the A-14 Outfall **was** reported in **the *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* (SRNS-RP-2022-00514) that was** submitted **to SCDHEC** in ~~March~~**August** 2022.

The report evaluated SVE activities at the M-Area HWMF including the two SVEUs at the A-14 Outfall (i.e., 782-3M and Mobile #3) and the MicroBlower™ at MRS034. The results were used to determine the effectiveness of these units and provide recommendations for future operations. A summary of the conclusions are provided in the paragraphs below.

The 782-3M SVEU has removed a total of 188,917 lb from 1996 through 2021. Figures E.8-19a and E.8-19b show the annual mass removal rate and the cumulative mass removed from the 782-3M SVEU. Both figures have an inverse relationship but show declining mass removal with time. The figures indicate that mass is still present in the vadose zone near the A-14 Outfall but is residing in lower permeability sediments of the vadose zone and is reaching a diffusion limit indicating that future operation of the 782-3M SVEU is limited.

In 2021, a new evaluation of the 782-3M SVEU was initiated to determine the contribution of each SVE well (i.e., MVE004, MVE009, and MVE010) to the total mass removal rate. Each SVE well will be isolated and operated for six months. The evaluation started in August 2021 with the isolation of MVE004 and will be completed by June 2023. Results of the evaluation will be reported in subsequent annual M-Area and Metallurgical Laboratory HWMFs groundwater monitoring and corrective action reports. It is recommended that the 782-3M SVEU continue operation until the current evaluation has been completed. After completion, a recommendation will be made that will include the future operational status of the 782-3M SVEU, potential characterization to help identify residual mass in the vadose zone, and future corrective action that might be needed to remove any residual mass identified. This item has been included in Table E.8-5.

Since start up in 2007 through 2021, the Mobile #3 SVEU has removed a total of 11,109 lb of solvent. Annual mass removal totals declined steadily after starting up in 2007 and leveled off after 2012 averaging 382 lb/yr (Figure E.8-19c). Figure E.8-19d shows that cumulative mass has an increasing trend. Although annual mass removal rates have declined, the

cumulative mass has not leveled off indicating mass is present in the vadose zone. The Mobile #3 SVEU is recommended to continue operations until mass removal rates are reduced. MRS034 was equipped with a MicroBlower™ in 2020, and VOC concentrations, specifically PCE, have increased with time from less than 1 ppmv to 19.5 ppmv (Figure E.8-19e). The increasing trend in VOC concentrations at MRS034 could be an indication that residual mass may not be present locally, but elevated vapor concentrations are being pulled into the zone of influence as the well continues to operate. The increasing concentration at MRS034 does not seem to be connected to the evaluation currently being conducted at the 782-3M SVEU. Because of the short operational time and the elevated VOC concentrations observed at MRS034, it is recommended to continue operation of the MicroBlower™ at this SVE well.

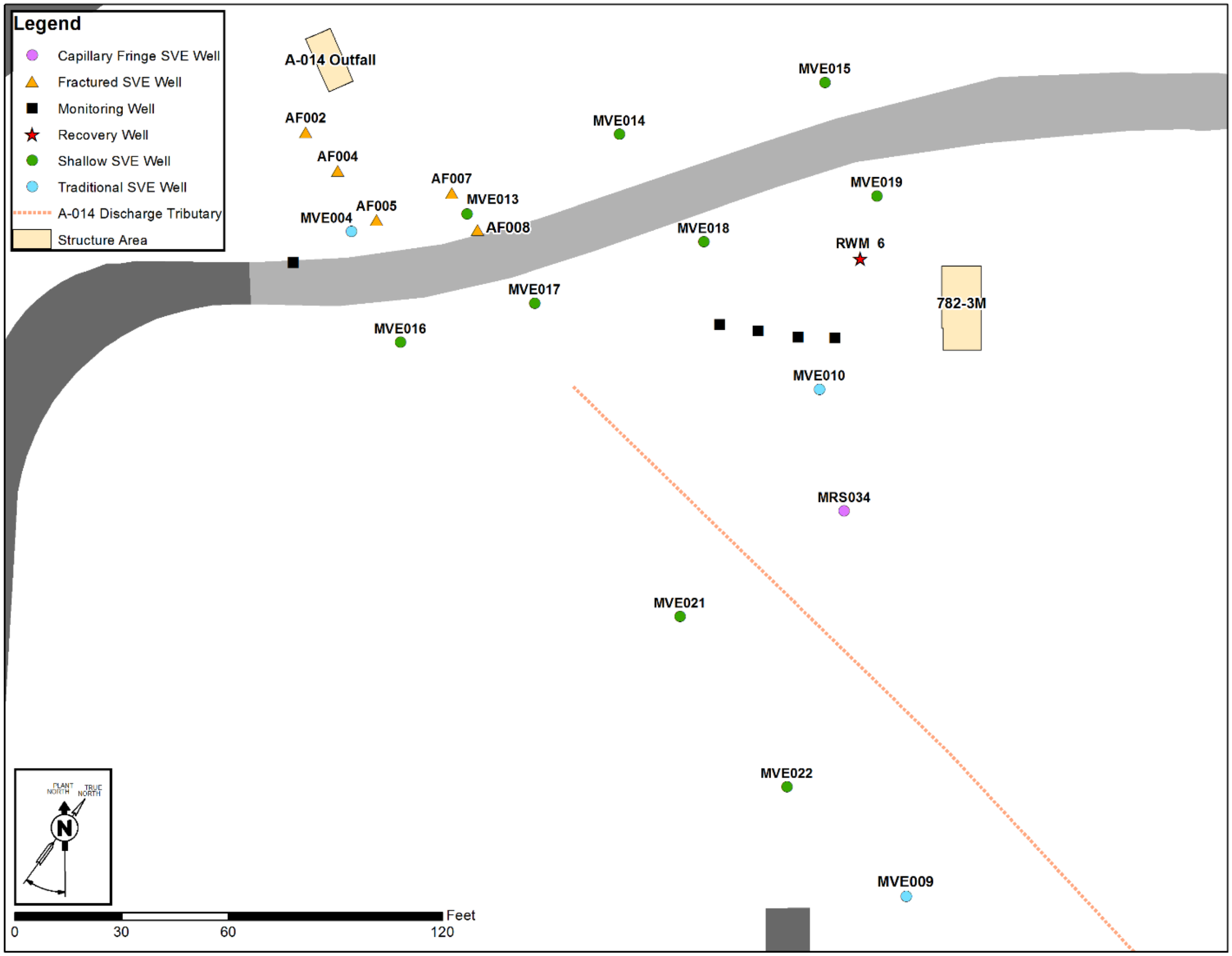

Figure E.8-19. Location of the SVE Wells Associated with the 782-3M and Mobile #3 SVEUs

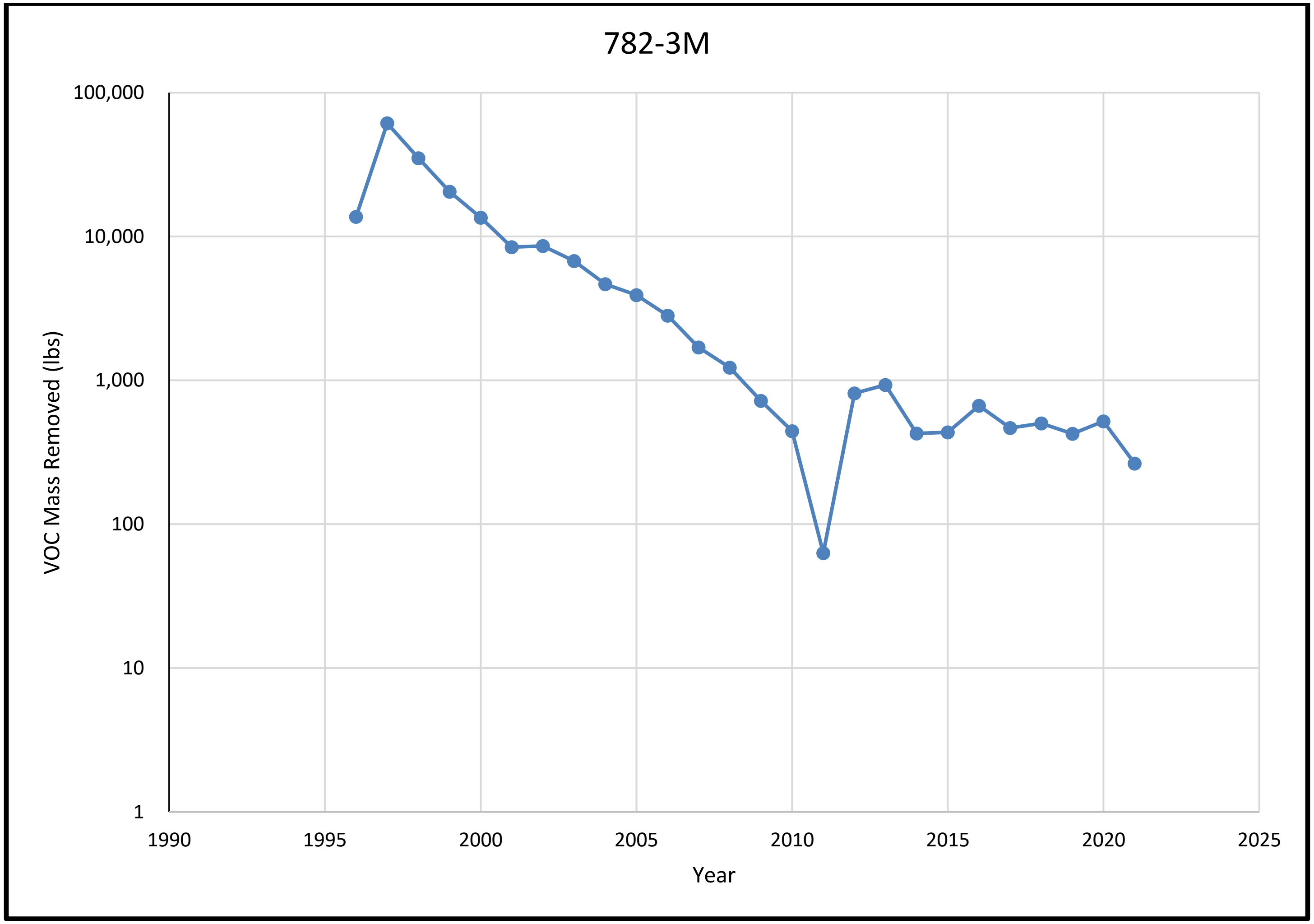

Figure E.8-19a. Annual Mass Removal of VOCs at 782-3M SVEU

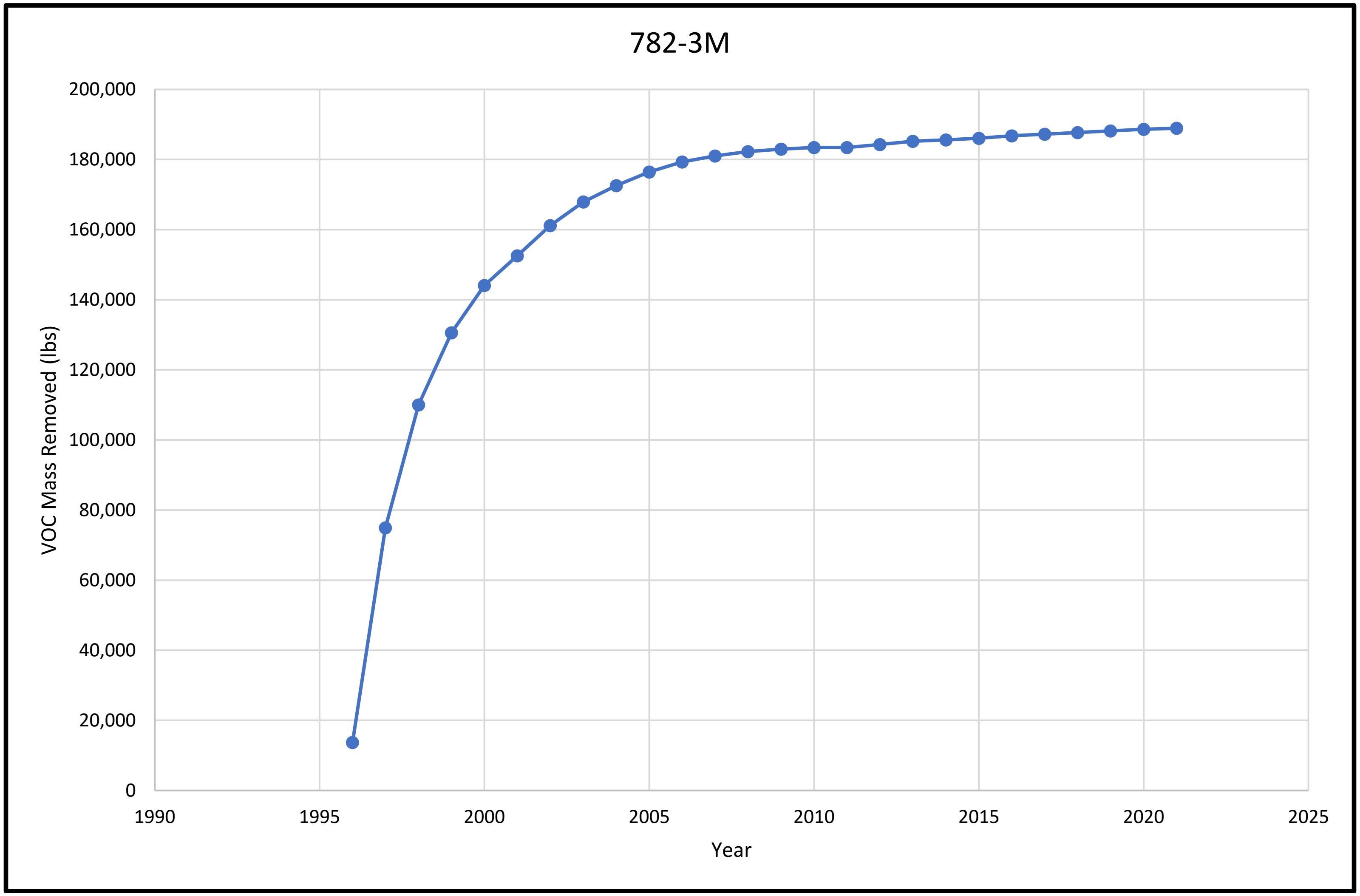

Figure E.8-19b. Cumulative Mass Removal of VOCs at 782-3M SVEU

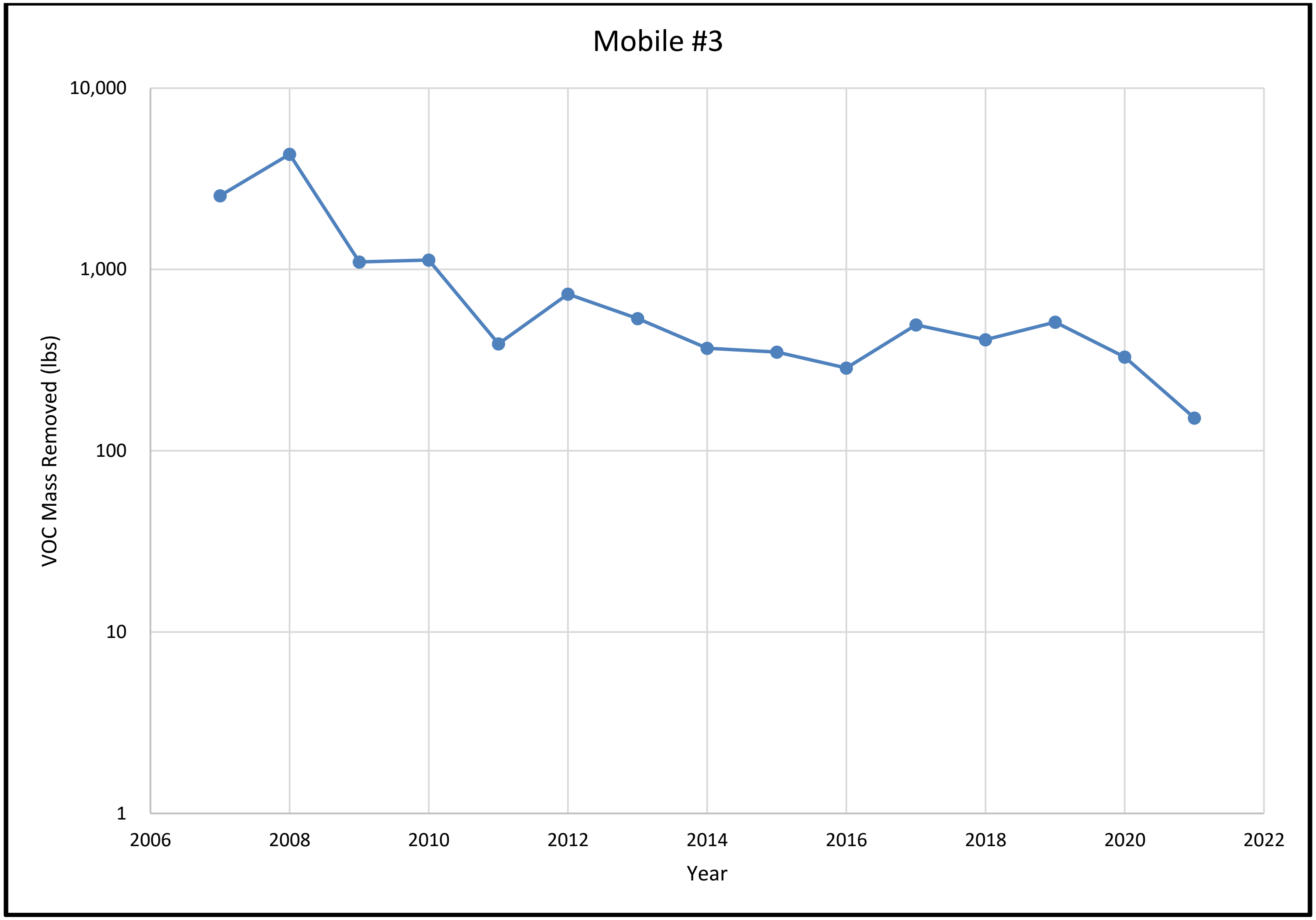

Figure E.8-19c. Annual Mass Removal of VOCs at Mobile #3 SVEU

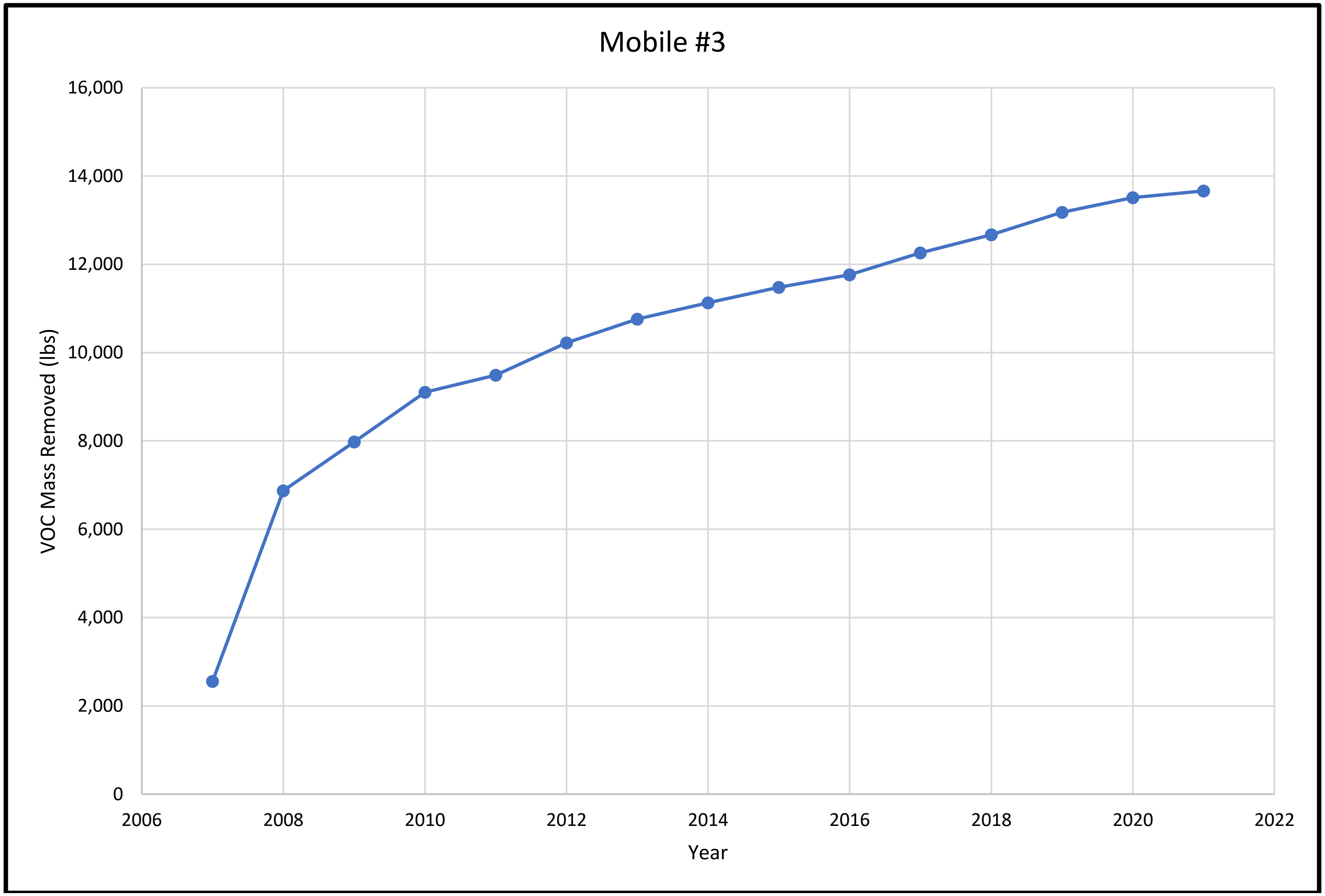

Figure E.8-19d. Cumulative Mass Removal of VOCs at Mobile #3 SVEU

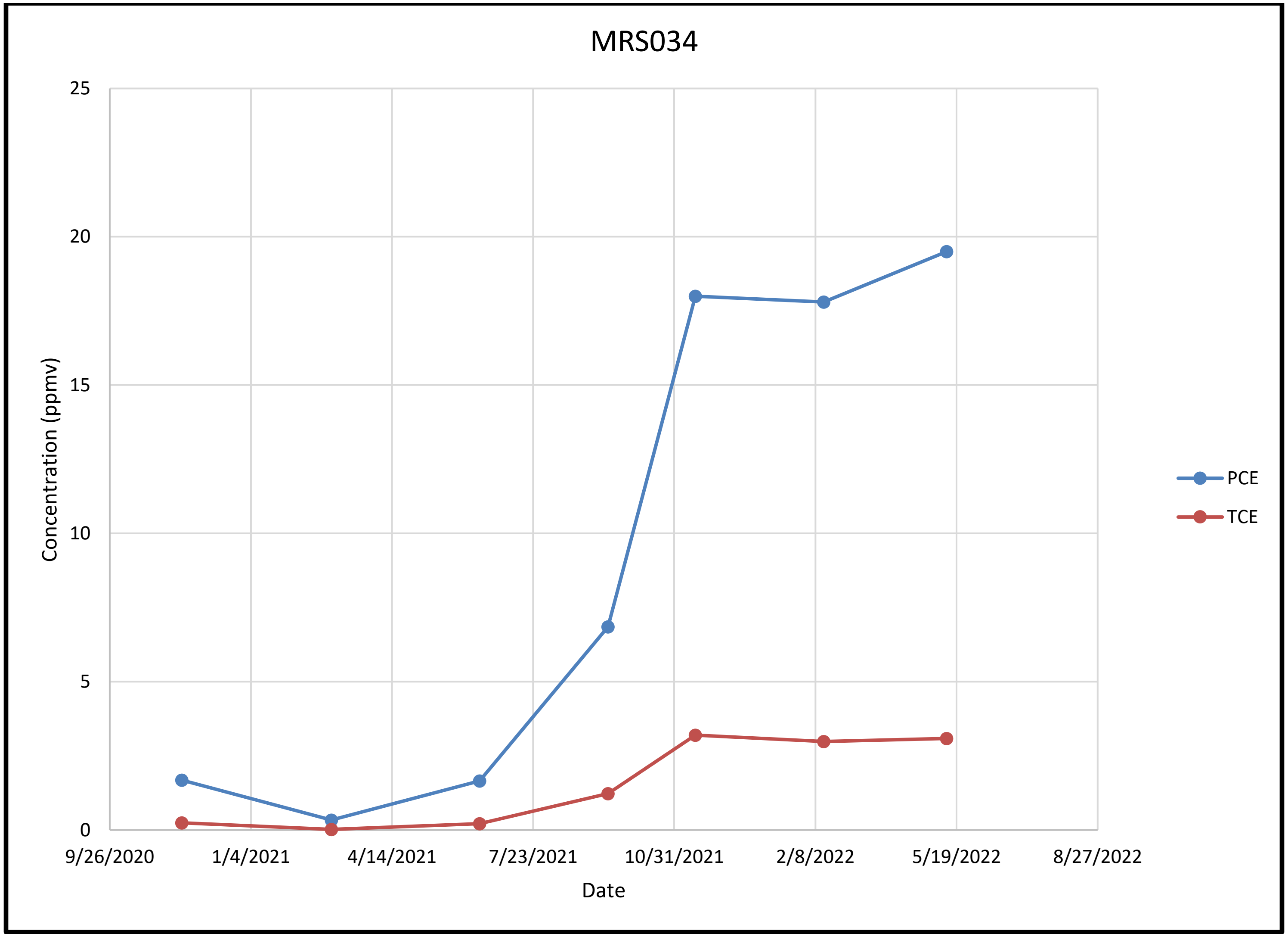

Figure E.8-19e. PCE and TCE Concentrations Over Time at MRS034 (MicroBlower™)

Report. The monitoring well network will be assessed after the effects of shutting down RWM 17B have been established. ~~At that time, a meeting with SCDHEC will be scheduled to discuss any proposed modifications to the monitoring well network and abandonment of RWM 17B.~~

RWM 17D was abandoned on September 7, 2016 based on its historic data trends being less than the GWPS (5 μg/L) and dry conditions preventing operation.

With respect to lead, concentrations have not been consistent at the Met Lab monitoring well network. From 2015 to 2018, three monitoring wells exceeded the GWPS (15 μg/L). The three exceedances occurred at three monitoring wells (i.e., AMB 10B and AMB 18C), which are screened in three separate aquifers (i.e., Middle Sand Aquifer Zone of the Crouch Branch Confining Unit, Lower Lost Lake Aquifer Zone, and M-Area Aquifer Zone, respectively). In 2018, only AMB 18C exceeded the GWPS for lead with a concentration of 15 μg/L. Lead has also previously exceeded the GWPS at the background wells (i.e., MSB 43A and MSB 43D) suggesting that lead might be present naturally in the aquifer sediments.

The low frequency of lead concentrations exceeding the GWPS during the last three years (i.e., 2015 to 2018) and the sporadic occurrence of these exceedances at multiple monitoring wells in multiple aquifers indicates there is currently not a lead plume associated with the Met Lab HWMF. SRS does not believe a corrective action for lead is applicable at this time. SRS will continue monitoring for lead at the expanded monitoring well network (Table E.8-10) for three consecutive years (i.e., 2017 to 2020), then SRS will meet with SCDHEC to discuss the data and potential corrective action options.

The vadose zone corrective action has been ongoing with the operation of the 19 PSVE wells. The 19 extraction wells were sampled three times under different seasonal conditions during 2014 to establish current concentrations. Concurrently, soil and soil-gas sampling was conducted near the 19 PSVE wells at seven locations. The results from the soil and soil-gas sampling were submitted in a report, *Field Summary and Data Analysis Report of Characterization Activities Performed at the Met Lab, A Area, Savannah River Site (U)* (SRNL-

RP-2014-01222, November 2014), to SCDHEC in March 2015. The report also discussed contaminant migration analyses and recommendations on the future operation of the 19 PSVE wells.

The sampling at the Met Lab HWMF was conducted to assess the amount of contamination residing in the vadose zone near Building 717-A by collecting vapor samples from the 19 PSVE wells. Three vapor samples were collected from each PSVE well over three quarters. Results from the first vapor sampling were used to identify seven CPT locations. Soil and soil-gas samples were collected from these CPT locations. The north-side, south-side, and southeast corner of Building 717-A had elevated VOC concentrations. The seven CPT locations targeted these three sides of the building.

The soil sampling results from the seven CPT locations (Figure E.8-22) indicated low residual concentrations with a maximum observed concentration of 25.4 µg/kg. The elevated VOC concentrations were found on the south-side of Building 717-A at MLBB028SB and to a lesser degree at MLBB027SB. The elevated VOC concentrations from the soil data were found between 15 and 95 ft in depth, with the highest levels exhibited in low permeability layers approximately 50 to 60 ft deep.

The soil-gas results from the seven CPT locations also revealed the highest VOC concentrations on the south-side of the building at MLBB028SB and MLBB027SB. The highest concentrations were observed around the 20 to 30 ft depth. Vapor sampling conducted at the 19 PSVE wells confirmed low levels of VOC contamination present on the south side of Building 717-A and identified two other locations of elevated concentrations (i.e., north and southeast corners).

These results suggest that the vapor plume extends under the building, but it is unknown if contaminant releases have occurred under the building slab.

The vapor data collected in 2014 at the PSVE wells were part of on-going sampling since 1998 that indicate the vapor plume is decreasing exponentially (Figure E.8-23). Based on the exponential decline and concentration decay constants, half-lives were determined for each PSVE well (see SRNL-RP-2014-

01222, November 2014). The average half-life for PCE and TCE vapor concentrations are 2.8 and 3.5 years, respectively.

A contaminant migration analysis was used to assess the potential for VOCs in the vadose zone at Building 717-A to migrate into and impact groundwater at concentrations exceeding USEPA MCLs. The analysis was performed with VZCOMML© V4.0, a one-dimensional vadose zone spreadsheet model that is based on USEPA soil screening guidance. The VZCOMML© V4.0 model accounts for degradation processes, infiltration rates, soil properties, vadose zone thickness, and chemical behavior. The model output for a particular scenario is a Soil Screening Limit, which is a threshold soil contaminant concentration. If the Soil Screening Limit is exceeded, it may result in future contamination of groundwater at concentrations exceeding MCLs. Soil results from the MLBB028SB CPT location were used as input parameters during the contaminant migration analysis. The model results indicated that soil concentrations of TCE and PCE were very close to their respective Soil Screening Limits, which given the conservation nature of the model, suggests groundwater may not be impacted in the future. However, based on the uncertainty in parameter values, it is not possible to determine with confidence that TCE and PCE concentrations are low enough to be protective of future groundwater quality.

Based on the sampling data and the contaminant migration analysis, SRS recommended continued operation of the PSVE wells for four years (2015 to 2019), which is based on the average PCE and TCE half-lives resulting in over 50% of the residual mass being removed. Subsequently, the corrective action could be ceased and considered complete for the vadose zone. Since this recommendation is based on a calculated half-life, vapor samples from the PSVE wells will continue to be collected semi-annually to validate the decay constants and half-life of the vapor plume. On September 21, 2016, the SCDHEC concurred with the continuation of the corrective action for at least another four years (SRNS-OS-2016-00072). However, at that time, the SCDHEC requested that the area be re-evaluated to ensure that the corrective action goals have been achieved. DHEC approved Revision 1 of the Met Lab HWMF CAP (SRNS-RP-2013-00748, November 2017) on May 23, 2018.

A schedule of the events detailing the Met Lab HWMF corrective action plan is provided in Table E.8-11. **Based on the schedule, recommendations for the operation or RWM 17B, long-term monitoring at the Met Lab monitoring well network, and on operation of the BaroBalls™ at the 19 SVE wells were submitted to SCDHEC in March 2022 as Appendices I, J, and K in the *Annual 2021 M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities Groundwater Monitoring and Corrective Action Report* (SRNS-RP-2021-05328). The recommendations are summarized in the paragraphs below.**

Before 2018, TCE concentrations at RWM 17B were slowly declining to the GWPS (5 µg/L). In 2018, SRS shut down RWM 17B to evaluate the impacts on the monitoring well network. Immediately after shutdown, TCE concentrations at RWM 17B declined to less than the GWPS and have remained at or below the GWPS through 2021. The elevated TCE concentrations observed before 2018 were likely a result of RWM 17B pulling in groundwater from the M-Area HWMF contaminant groundwater plume. TCE concentrations in the MSAZ_CBCU, associated with the Met Lab HWMF, are less than the GWPS as observed at RWM 17B and surrounding monitoring wells. TCE concentrations in the shallow aquifers were minimally impacted by the operation or shutdown of RWM 17B. Changes in water elevation associated with the shutdown of RWM 17B were largely observed in the MSAZ_CBAU with minimal impacts to the shallow aquifers.

The results collected during the shutdown of RWM 17B indicate that TCE concentrations at the Met Lab HWMF, within the MSAZ_CBCU, are equal to or less than the GWPS; therefore, future operation of RWM 17B is not warranted as corrective action objectives have been achieved. The Met Lab HWMF monitoring well network has a sufficient number of monitoring wells screened in the MSAZ_CBCU to continue monitoring the groundwater contaminant plume. There are no recommended changes to the monitoring well network at this time. SRS recommends that RWM 17B be permanently shut down and abandoned.

Long-term monitoring at the Met Lab HWMF has been conducted using an expanded monitoring well network since 2017. TCE and lead were previously identified as the only constituents exceeding a GWPS; however, all permitted constituents were evaluated from 2017 to 2021. In the last three years (i.e., 2019 to 2021), GWPSs or Monitoring Constituent Standards (MCSs) were exceeded for TCE, combined radium, and iron.

TCE concentrations have been greater than the GWPS in two monitoring wells (i.e., AMB 14D and AMB 18A) during the last three years of monitoring (2019 to 2021). AMB 14D is screened in the MAAZ and AMB 18A is screened in the MSAZ_CBCU. These two wells do not define a groundwater plume but indicate that a small amount of residual mass is present in the groundwater beneath the Met Lab HWMF. Groundwater monitoring will continue at the expanded Met Lab monitoring well network until the GWPS for TCE has not been exceeded for three consecutive years.

The MCS for combined radium and iron were exceeded during 2019 to 2021. These exceedances are sporadic and do not represent long-term trends. These constituents will continue to be monitored at the expanded Met Lab HWMF monitoring well network until the respective MCSs have not been exceeded for three consecutive years.

Lead results indicate that the constituent has not been present at concentrations above the GWPS during the last three years (2019 to 2021). The average concentration of detections and estimated lead results during the last three years was 5.4 µg/L which is three times lower than the GWPS (15 µg/L). This is a positive indication that lead is no longer a significant concern at the Met Lab HWMF.

Lead and the remaining GWPS constituents and monitoring constituents did not exceed a GWPS or MCS during 2019 to 2021. This is an indication that these constituents are no longer at significant concentrations at the Met Lab HWMF. SRS recommends the sampling of these constituents be

discontinued at all POC wells, plume definition wells, and additional plume definition wells. However, all the GWPS constituents will be add to the annual Appendix IX sampling event. Forty percent of the POC wells are sampled during the third quarter of the year for the approved list of Appendix IX constituents. This additional sampling of all GWPS constituents will help verify they remain at concentrations less than their respective GWPSs.

Since 1998, the Met Lab HWMF has been applying SVE as the corrective action to remove VOC mass of the vadose zone near Building 717-A. Characterization of the vadose zone in 2014 only found elevated VOC concentrations in the soil and soil vapor on the southern side of Building 717-A (i.e., MLBB027SB and MLBB028SB). Quarterly soil vapor results at the SVE wells near Building 717-A indicate elevated VOC vapor concentrations are present on the south (i.e., MLBB008, MLBB009, MLBB010), north (i.e., MLBB004), and east (i.e., MLBB012 and MLBB015) side of the building. Vertical soil borings collected in 2014 did not detect VOCs at significant concentrations on the north and east side of the building. The observed soil vapor at the SVE wells on the north and east side of the building could potentially have been sourced from residual VOC mass located underneath the building or from the known mass identified on the southern side of the building. In 2022, two angled soil borings (MLBB0033SB and MLBB0034SB) were drilled under Building 717-A to further characterize the subsurface near Building 717-A (Figure E.8-23a). The results from the two angled borings indicated there are no elevated soil concentrations beneath Building 717-A, verifying the only residual source is located on the southern side of Building 717-A (Figure E.8-23b). Future operation of SVE at the Met Lab HWMF should continue under an optimized scheme where only six BaroBalls™ (i.e., MLBB006, MLBB007, MLBB008, MLBB009, MLBB010, and MLBB012) located on the south side of the building are operational. The remaining SVE wells are proposed for abandonment (i.e., MLBB001, MLBB002, MLBB003, MLBB004, MLBB011, MLBB013, MLBB014, MLBB015, MLBB016, MLBB017, MLBB018, MLBB019, MLBB020, and MLBB021).

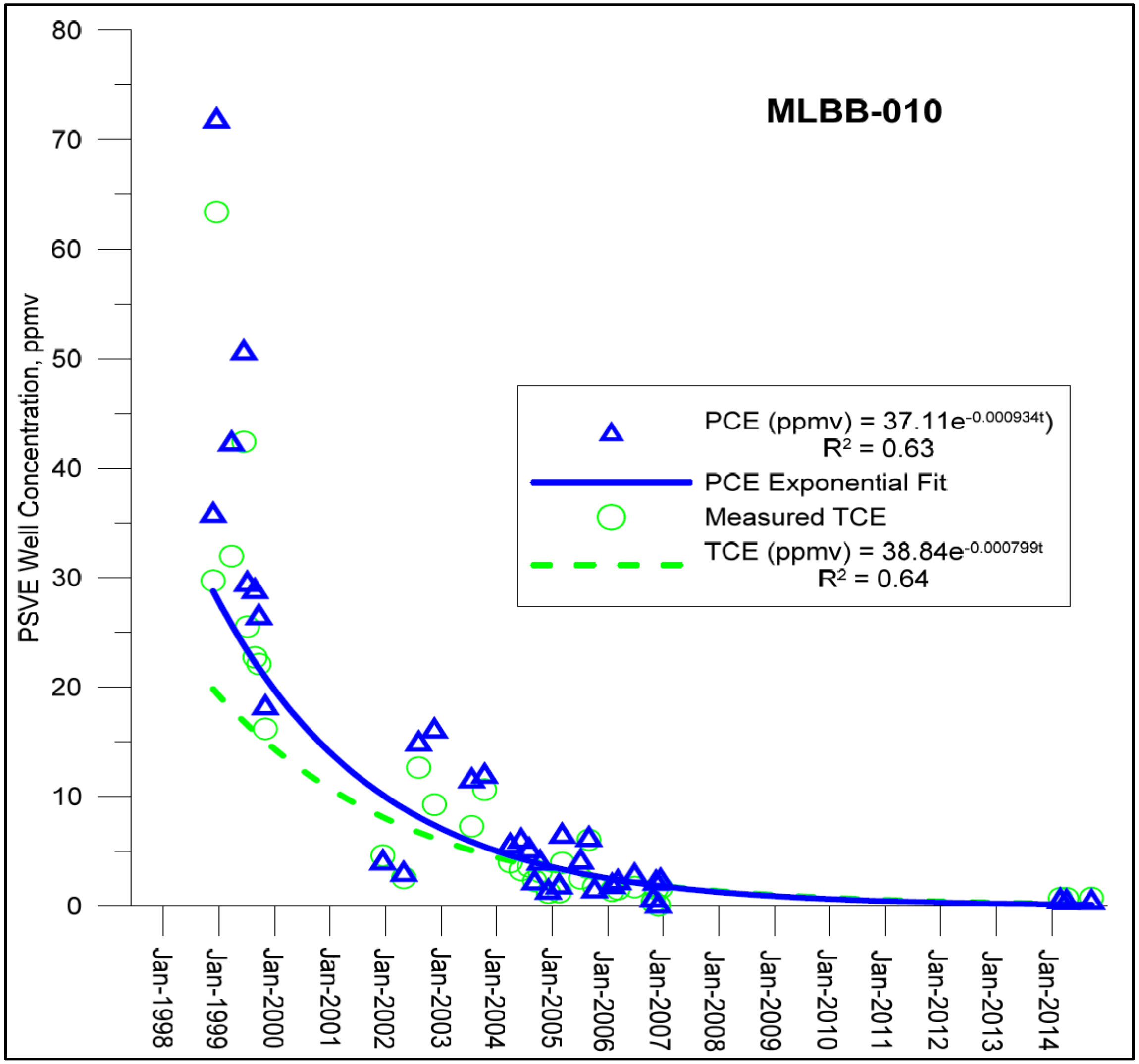

Figure E.8-23. Representative Exponential Decline of PCE and TCE Vapor Concentrations at PSVE Wells at the Met Lab

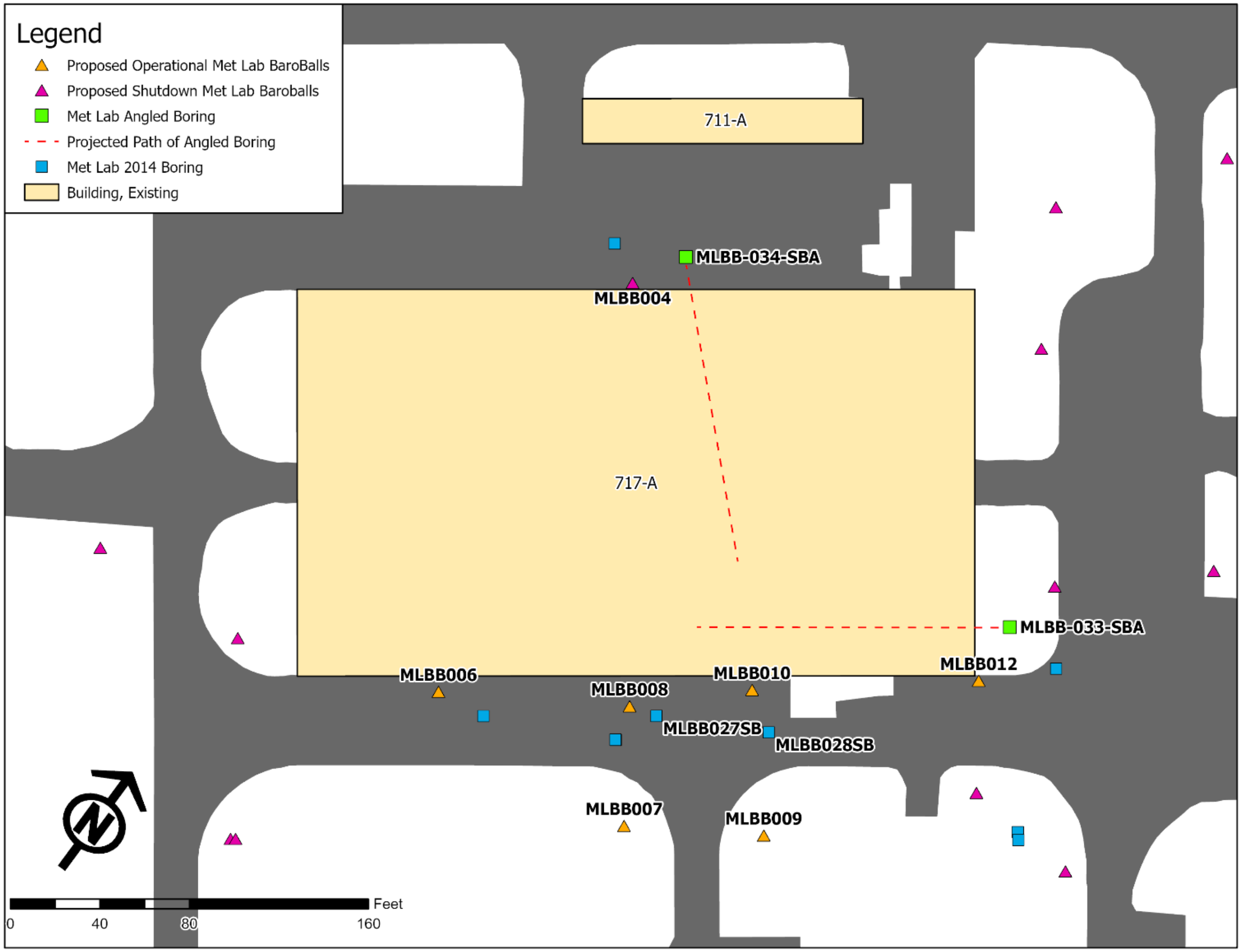

Figure E.8-23a. Location of Two Angled Soil Borings and Optimized SVE Well Network

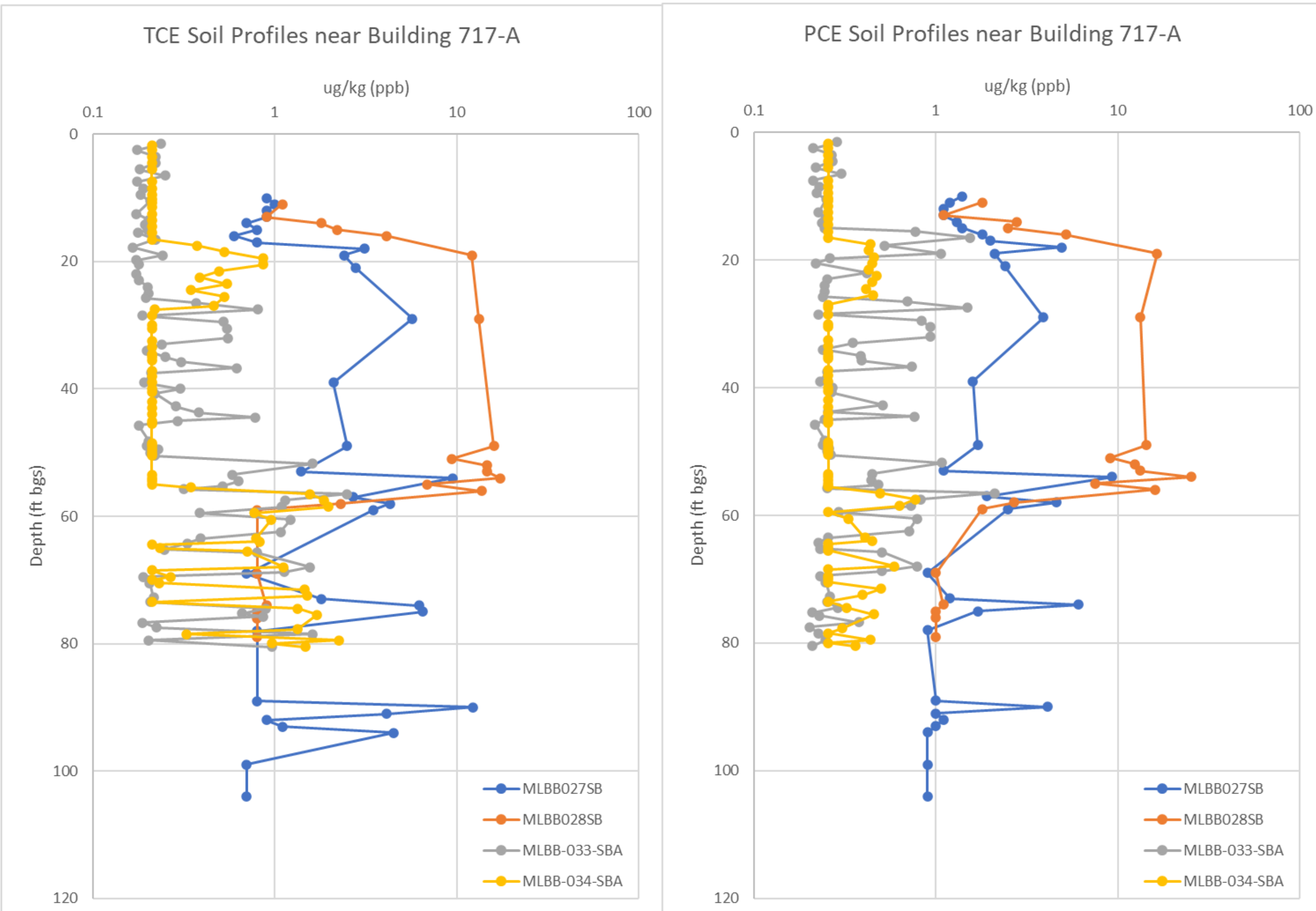

Figure E.8-23b. TCE and PCE Soil Profiles at Vertical and Angled Soil Borings near Building 717-A

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Table E.8-11. Schedule of Events Detailing the Met Lab HWMF Corrective Action Plan

CAP Schedule for the Metallurgical Laboratory			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
Yes	October 2013 (A)	April 2014 (A)	Submittal of Met Lab CAP (Revision to the RCRA Permit Renewal Application)
Yes	February 2014 (A)	September 2014 (A)	Vapor sampling at 19 passive SVE wells near Building 717-A
Yes	September 2014 (A)	March 2015 (A)	Vadose zone data evaluation and report submittal
~~No~~**Yes**	April 2015 (A)	~~March~~**August** 2022 **(A)**	Passive SVE Monitoring (Data Reported in Annual Groundwater Monitoring and CARs)
~~No~~**Yes**	February 2018 (A)	~~March~~**August** 2022 **(A)**	RWM 17 Shutdown and Monitoring (Data Reported in Annual Groundwater Monitoring and CARs)
~~No~~**Yes**	November 2017 (A)	~~March~~**August** 2022 **(A)**	Lead Monitoring (Data Reported in Annual Groundwater Monitoring and CARs)
~~No~~**Yes**	March 2022	September 2022 **(A)**	Submittal of recommendations on RWM 17B shutdown, lead corrective action, and status of passive SVE (Revision to the RCRA Permit Renewal Application)

CY = Calendar year
A = Actual dates

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- Continue shutdown of the A-2 Air Stripper,
- Establish trigger concentrations for TCE at monitoring wells in the CBAU, and
- Optimize the sentinel well network.

The proposed trigger concentrations at the monitoring wells screened in the CBAU (i.e., ASB 8TA, ASB 6TA, and MSB 47TA), if exceeded, would prompt a meeting between SRS and SCDHEC to discuss the best approach for further corrective action in Northern Sector. These wells were chosen because the original intent of the A-2 Air Stripper system was to prevent the high concentration plume in the LLAZ from migrating vertically into underlying aquifers.

SRS received comments from the SCDHEC on the final quarterly report on December 11, 2014 (SRNS-OS-2014-00086). SRS responded to SCDHEC's comments on May 22, 2015 (SRNS-J2000-2015-00340). Based on these comments, the SRS proposed adding trigger concentrations to three wells screened in the MSAZ_CBCU (i.e., ASB 6AA, MSB113A, and MSB113AA). These wells were chosen to provide a preliminary indication of contamination migrating vertically from the LLAZ, through the MSAZ_CBAU, and into the CBAU. The trigger concentration for each well is presented in Table E.8-13 and their proximity to the recovery wells is presented in Figure E.8-30. The trigger concentrations were also provided in the Annual 2016 M-Area and Met Lab HWMFs Groundwater Monitoring and Corrective Action Report (SRNS-RP-2017-00072), which was submitted to the SCDHEC on March 29, 2017.

The sentinel well network was optimized to remove some redundant wells while adding new wells to provide adequate monitoring of the continued shutdown of the A-2 Air Stripper. The sentinel well network is composed of plume definition wells identified in Table E.5-1 and monitoring and recovery wells identified in Table E.7-6. Figure E.8-26 provides the locations of the optimized sentinel well network. Thirteen new well locations (i.e., ASB002B, ASB004A, ASB004B, ASB004C, MSB111A, MSB111AA, MSB111B, MSB111C, MSB112A, MSB112B, MSB112C, MSB113A, MSB113AA, and MSB113B) were installed between 2015 and 2017.

SRS recommended permanently shutting down the A-2 Air Stripper in a meeting with SCDHEC on June 17, 2020 (Appendix 3). The presentation recommended shutting down the A-2 Air Stripper based on the following conclusions observed from the monitoring well network:

- There is a high concentration (>1,000 µg/L) dissolved TCE plume, located to the southwest of the A-2 Air Stripper, that is outside of the zone of capture of most of the recovery wells,
- There has been no observation of the vertical migration of the VOC contaminant plume at the trigger wells,
- There is currently no northernly groundwater flow toward the site boundary, and
- A portion of groundwater flow in the LLAZ has a southeastern flow direction toward Tims Branch Creek.

On June 18, 2020, SCDHEC provided a comment to incorporate the details of the permanent shutdown of the A-2 Air Stripper in this application. The permanent shutdown of the A-2 Air Stripper will include:

- Dismantlement and removal of the A-2 Air Stripper,
- Abandonment of RWM 12, RWM 14B, RWM 14C, and RWM 15B,
- Conversion of RWM 13B and RWM 13C into monitoring wells,
- Installation four new monitoring wells (i.e., MSB125B, MSB 125C, MSB 126B, and MSB126C),
- Continued semi-annual sampling of the monitoring well network, and
- Removal of all trigger concentrations from monitoring wells.

The four new monitoring wells will be installed at two locations to better define the high concentration TCE plume and provide hydraulic control to monitor the southeastern migration of the high concentration TCE plume (Figure E.8-30a).

RWM 12, RWM 13B, RWM 13C, RWM 14B, RWM 14C, RWM 15B were all isolated from the A-2 Air Stripper in 2022. RWM 13B and RWM 13C were converted to monitoring wells and renamed RWM-013-BM and

RWM-013-CM. RWM 12, RWM 14B, RWM 14C, and RWM 15B were abandoned in 2022. The dismantlement and removal of the A-2 Air Stripper will be scheduled as funding becomes available.

E.8.3.3.5.4 Vadose Zone Remediation

SCDHEC also requested that SRS convert two dry MAAZ wells (i.e., MSB 67D and MSB 68D) into SVE or MicroBlower™ wells. These two wells were previously evaluated for SVE using an active SVEU (WSRC-TR-99-00390), but vapor concentrations were not high enough to warrant an active SVEU. Upon further review of the vapor concentrations, MicroBlowers™ would be a viable option, so the wells were equipped with MicroBlowers™ in March 2016. The wells are sampled quarterly with the data reported in the annual groundwater monitoring and corrective action report.

A complete SVE evaluation report (*2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* [SRNS-RP-2022-00514]) was submitted to SCDHEC in August 2022. The report evaluated the two MicroBlowers™ installed on SVE wells MSB 67D and MSB 68D. The results from the evaluation are provided in the paragraph below.

Since 2016, MSB 67D has removed a total of 8.8 lb of VOC mass, while MSB 68D has removed 119.9 lb (Figures E.8-30b and E.8-30c, respectively). In 2021, it is estimated that MSB 67D removed 0.4 lb of solvent while MSB 68D removed 3.7 lb. Although concentrations for both PCE and TCE have slightly increased in both MSB 67D and MSB 68D, MSB 68D continues to be the major contributor for SVE in Northern Sector. It is recommended that MSB 67D and MSB 68D continue operations.

E.8.3.3.5.5 Northern Sector Corrective Action Program

On June 27, 2013 (effective date: July 12, 2013), SCDHEC issued an update to the 2003 RCRA Permit Renewal for the SRS (Module IV – Groundwater, Section

A – M-Area and Met Lab HWMFs). In the renewal, SCDHEC requested that a third phase of corrective action be developed for the Northern Sector. The first phase of corrective action in Northern started with the operation of the A-1 Air Stripper and one recovery well (RWM 12). The A-1 Air Stripper operated from 1993 to 1995 and removed approximately 1,500 lbs of solvent.

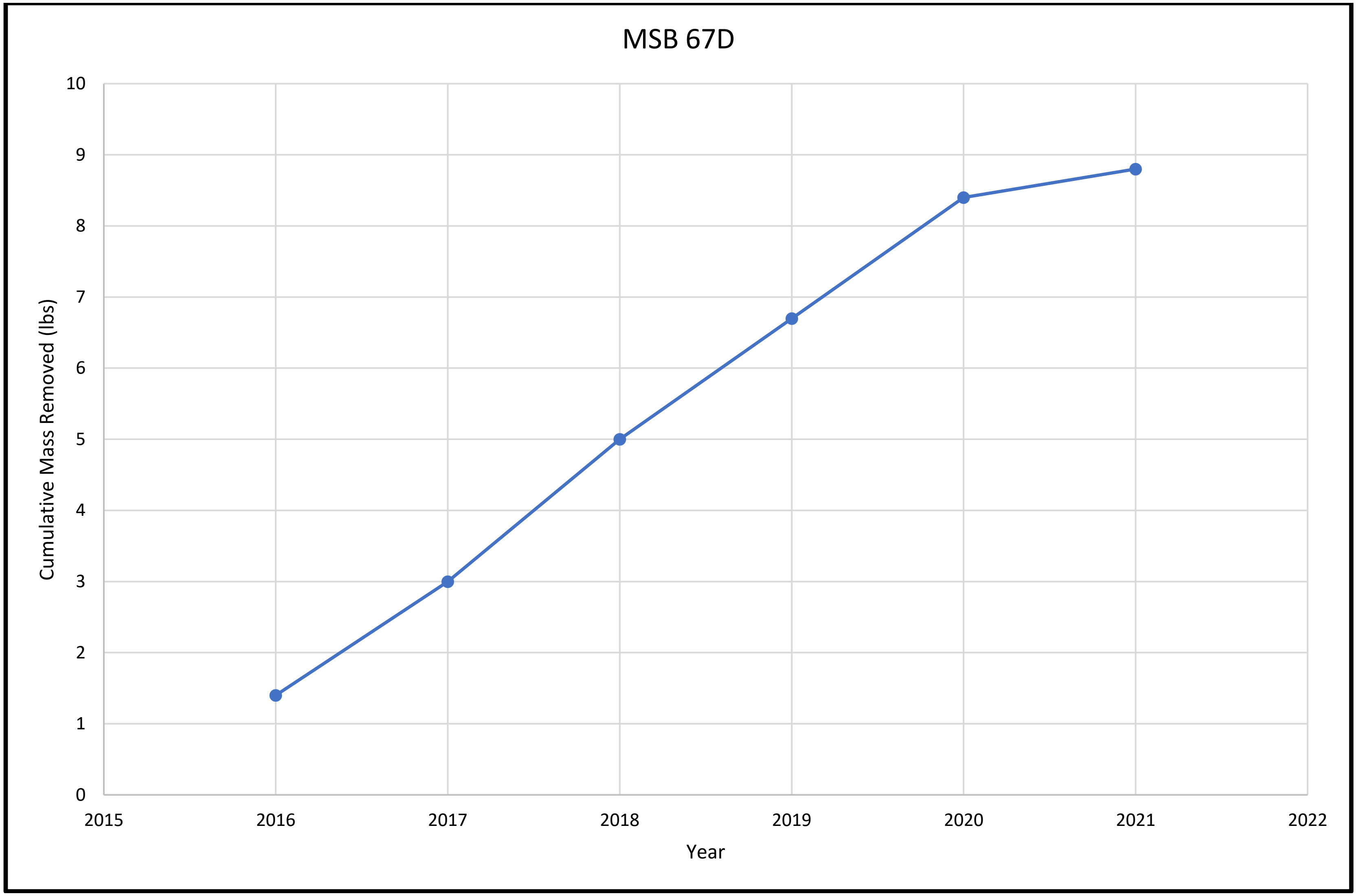

Figure E.8-30b. Cumulative Mass Removal of VOCs at MSB 67D

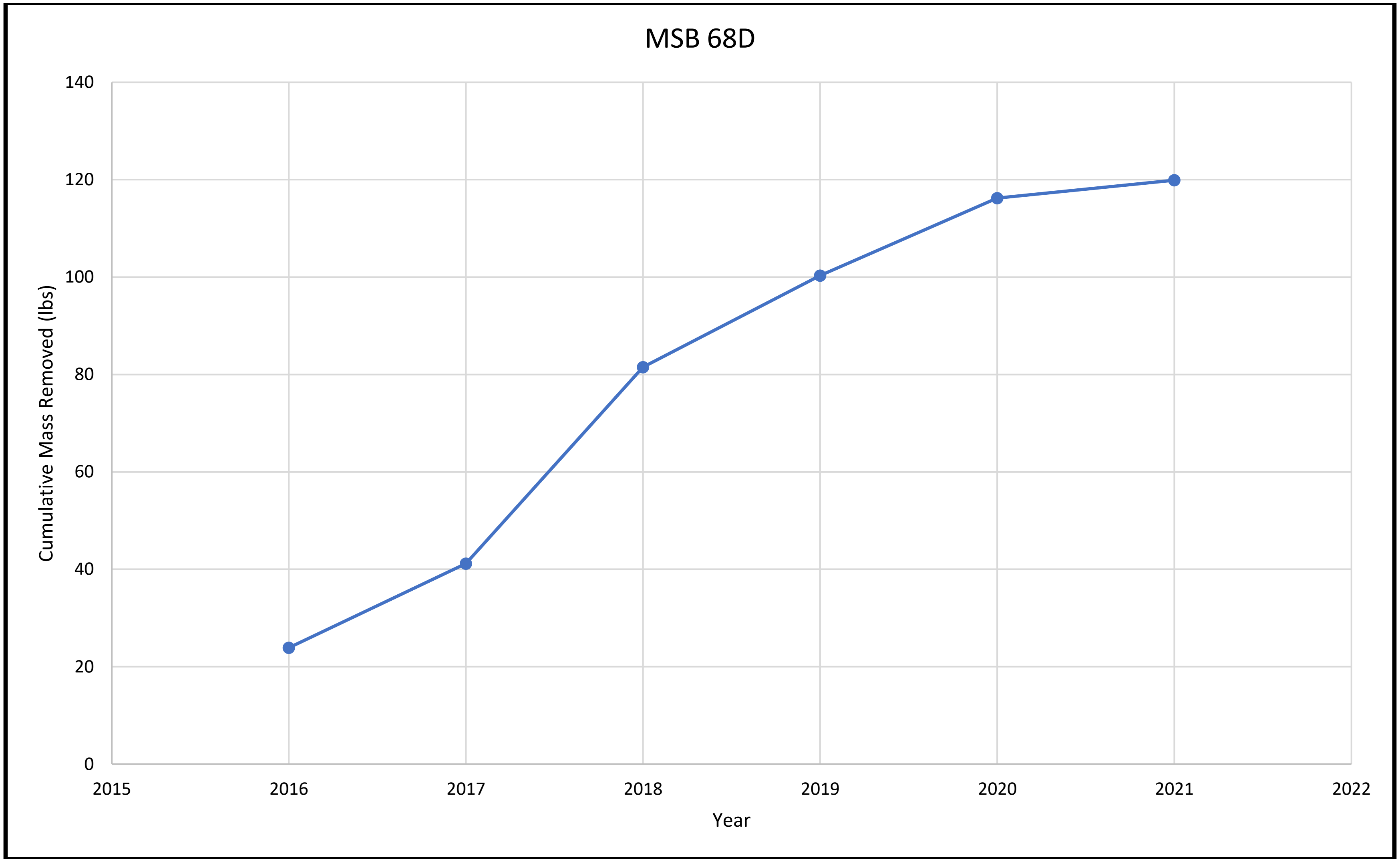

Figure E.8-30c. Cumulative Mass Removal of VOCs at MSB 68D

Table E.8-14. Schedule of Events Detailing the Corrective Action Plan for Northern Sector

CAP Schedule for the Northern Sector			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
Yes	October 2012 (A)	July 2014 (A)	Evaluation of the A-2 Air Stripper and Six Recovery Wells
Yes	Mar 2013 (A)	August 2017 (A)	Installation of Wells to Monitor the Shutdown of the A-2 Air Stripper
Yes	July 2014 (A)	June 2016 (A)	Characterization of Western Sector high concentration VOC plume (includes CBAU)
No	January 2015 (A)	September 2029	Monitor the Production Data from the Two Production Wells (PW 20A and PW 53A)
Yes	October 2016 (A)	January 2017 (A)	Characterization of Southern Sector Distal Plume (includes CBAU)
Yes	October 2020 (A)	March 2021 (A)	Part 1 Characterization Plan for CBAU/MQBAU
No	October 2021 **(A)**	September 2023	Implement Part 1 Characterization Plan for CBAU/MQBAU
No	October 2024	March 2025	Part 2 Characterization Plan for CBAU/MQBAU
No	October 2025	February 2026	Implement Part 2 Characterization Plan for CBAU/MQBAU
No	**October 2026**	**September 2027**	**Installation of Wells to Monitor the Permanent Shutdown of the A-2 Air Stripper**
No	October 2027	September 2029	Flow and Transport Model and Corrective Measures Study w/ Recommendation for Final Corrective Action

CY = Calendar year
A = Actual date

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only operate SSR008, SSR009, SSR011, and SSR012 without additional monitoring at the sentinel wells. The four active ARWs were removing about 200 lbs of solvent per year. Assuming 90% operating uptime, a pumping rate of 32.5 gpm, and a stripping efficiency range of 70-90%, the VOC mass removed from an individual ARW for a plume concentration of 500 µg/L is between 48 and 62 lbs of solvent per year. Based on these assumptions, SRS proposed permanent shutdown criteria for the four operating ARWs of less than 20 lbs of solvent per year, for two consecutive years at an individual ARW. The proposal was approved in the 2014 RCRA Permit Renewal Application Volume III for M-Area and Met Lab HWMFs Postclosure (SRNS 2017), effective September 2, 2017. In September 2017, SSR011 and SSR012 had met the shutdown criteria and were shutdown. **SSR008 and SSR009 achieved the shutdown criteria in 2019 and were shut down in February 2020.**

SRS no longer plans on using the ~~ten~~**twelve** shutdown ARWs as monitoring wells and does not intend on restarting them for their originally designed purpose. SRS understands that concentrations in the VOC plume north and west of the ARWs might need further remediation, but SRS does not believe the existing ARWs are appropriate to remediate that portion of the plume. Approval for the dismantling and removing (D&R) of the above ground equipment used to operate the ARWs was requested in October 2017 and provided by SCDHEC in May 2018 (SRNS-OS-2018-00052). The D&R activities will be conducted once all ARWs have met the shutdown criteria. **Eleven of the ARWs (i.e., SSR002 through SSR012) were abandoned in August 2022. SSR001 was not included in the abandonment since it is still being utilized in the humate amendment project.**

<u>Phase III Corrective Action Program</u>

On June 27, 2013 (effective date: July 12, 2013), SCDHEC issued an update to the 2003 RCRA Permit Renewal for the SRS (Module IV – Groundwater, Section A – M-Area and Metallurgical Laboratory HWMFs), which states that a third phase of corrective action is needed in Southern Sector to remediate the VOC plume located between the A-14 Outfall and the line of ARWs (i.e., source plume), and the distal plume located between the line of ARWs and Tims Branch.

Phase III Corrective Action Plan – Source Plume

This portion of the plume is sourced from the A-14 Outfall and its un-named discharge tributary. Corrective action at the A-14 Outfall source area is currently ongoing with two SVEUs (i.e., 782-3M and Mobile #3) removing solvent mass from the vadose zone and a recovery well (i.e., RWM 6) removing mass from the groundwater. These remedial systems are managed under the RCRA Permit Renewal for SRS (Module IV – Groundwater, Section A – M-Area and Met Lab HWMFs) and are associated with vadose zone and Central Sector corrective actions, respectively.

The un-named tributary is a losing stream that received M-Area wastewater from 1952 to 1979. Solvent flowing down the tributary would have infiltrated the stream bed and entered the subsurface along the length of the tributary with the assumption that more solvent infiltrated the first half of the stream than the second half of the stream bed, based on attrition. A soil gas characterization project, *A/M-Area Vadose Zone Characterization Project Report (U)* (WSRC-RP-90-1335), found vapor concentrations decreased with distance from the A-14 Outfall. Later characterization efforts confirmed VOC contamination in the groundwater along the length of the tributary with little residual contamination in the unsaturated zone. The tributary is no longer considered a source as clean effluent water from the M-1 Air Stripper is thought to have flushed any residual contamination into the groundwater.

The majority of the source plume mass is composed of TCE and is mainly distributed in the LLLAZ, with concentrations exceeding 8,000 µg/L at MSB 75B in 2016. The leading edge of the source plume is orientated from the northeast to southwest in the direction of groundwater flow, which is approximately parallel to the line of ARWs (Figure E.8-33). The monitoring well network partially defines the portion of the plume extending towards SSM 13. In order to support a third phase of corrective action on the source plume, additional characterization will be needed to define the lateral and vertical width of the greater than 1,000 µg/L TCE plume and to support evaluation of appropriate corrective action technologies.

The DUS system was in full scale operation from 2005 through 2008. Target temperatures, temperatures high enough to vaporize groundwater and DNAPL, were reached throughout the target zone by the summer of 2006. Multiple heating strategies were conducted between 2006 and 2009 which included steady steam injection rates, bake-ins (no steam injection or vapor extraction for seven or more days), and short bursts of high pressure steam injection. Alternating the steaming strategy was effective at removing vapor, but overall mass removal rates started diminishing (Figure E.8-40). Steaming ceased on September 17, 2009. Although steaming has ended, SRS continued to operate the SVEU and groundwater remediation portions of this system. Since 2005, DUS II has removed over 450,000 pounds of solvent.

In June 2012, vapor samples from 31 of the 34 extraction wells were collected to assess the VOC concentrations present at each individual extraction well. The results of this sampling are reported in *Vapor Extraction Well Performance and Recommendations for Transitioning to Passive Extraction at the former DUS-II Site* (SRNL-STI-2013-00039). The vapor concentrations from each extraction well were used to categorize the SVE wells into groups which include 1) continued active SVE operation, 2) passive operation, and 3) abandonment. The extraction wells with elevated VOC concentrations will continue to operate under the active SVEU. The second group of wells had detectable, but low concentrations of VOCs and was disconnected from the active SVEU and equipped with MicroBlowers™ in September 2013. The third group of wells was abandoned in place since they exhibited the lowest VOC concentrations. Abandonments were completed in August 2013. See Figure E.8-41 for the location of the active, MicroBlower™, and abandoned wells.

In 2018, the individual SVE wells attached to the 782-6M SVEU and two dual phase extraction wells were re-evaluated. The 782-6M SVEU was shutdown from October 2017 to January 2018 and the well evaluation was conducted from January 2018 to July 2018. Similar to the 2012 evaluation, the wells were categorized into three groups. Four wells (i.e.,VEW-11F, VEW-24A, VEW-28F, and VEW-31F) were identified to remain attached to the SVEU, seven were identified as SVE wells to be equipped with MicroBlowers™, and one well should be abandoned. The report *Soil Vapor Extraction Well Testing Western*

Sector Treatment System (SRNL-STI-2018-00504) summarizes sampling results collected during the initial evaluation at the 782-3M SVE wells. To further evaluate the 782-3M SVEU, it was shut down again from July 2018 to October 2018. In October 2018, the 782-6M SVEU was returned to service for one month with only the optimized set of four SVE wells (i.e., VEW-11F, VEW-24A, VEW-28F, and VEW-31F) connected to the unit. After one week of operation, the SVEU was removing 5.9 pounds of solvent which is less than the 40 lbs/week identified as the baseline for operation of an active SVEU. The correspondence from SRNL *Re: 30-day Test of M-Area Western Sector Remediation System – Soil Vapor Extraction Unit* (SRNL-L3200-2019-00026) summarized the second evaluation of the optimized 782-6M SVEU.

In a meeting with SCDHEC on March 12, 2019 SRS summarized the results of both evaluations and proposed the permanent shutdown of the 782-6M SVEU, SVE wells to be equipped with MicroBlowers™, and wells to be abandoned. There were ten wells (i.e., VEW-07F, VEW-11F, VEW-21F, VEW-24A, VEW-25A, VEW-26F, VEW-28F, VEW-29F, VEW-30F, and VEW-31F) identified to be converted to MicroBlowers™ and seven wells identified to be abandoned. The list of wells to be abandoned includes the horizontal well (i.e., VEW-22A) which has 300 ft of screen and is not compatible with the low vacuum created by a MicroBlower™, VEW-33F, and five existing MicroBlowers™ (i.e., VEW-04A, VEW-06A, VEW-08A, VEW-10A, and VEW-15A) that were previously transitioned in 2013. See Figure E.8-42 for the location of the MicroBlower™ and abandoned wells. SCDHEC approved the proposed shutdown of the 782-6M SVEU, transition to MicroBlowers™, and abandonment of SVE wells on May 6, 2019 (SRNS-OS-2019-00125). **The 782-6M SVEU was shut down in August 2019, MicroBlowers™ were installed on the ten SVE wells in September 2019, and the seven SVE wells proposed for abandonment were abandoned in September 2020.**

The *2022 M-Area Hazardous Waste Management Facility Soil Vapor Extraction Evaluation Report (U)* (SRNS-RP-2022-00514) was submitted to SCDHEC in August 2022. The 16 MicroBlowers™ at the WSTS were included in the evaluation. The evaluation used a modified version of the SVE well grouping established in the 2013 SVE evaluation report

(SRNL-STI-2013-00039). The 2013 groupings were based on active SVE which had flow rates ten times greater than a MicroBlower™, so the values defining the groups were divided by ten to adapt the groupings to lower flow rates. VEW-01F, VEW-23F, VEW-24A, VEW-28F, VEW-30F, VEW-31F, and VEW-34F have the highest mass removal rates from the subsurface (between 0.01 and 0.1 lb/day) and are recommended to continue operations as MicroBlowers™. VEW-03A, VEW-07F, VEW-11F, and VEW-25A are still contributing to mass removal but at lower rates (between 0.005 and 0.01 lb/day) and are recommended to transition to BaroBalls™. VEW-02A, VEW-05A, VEW-21F, VEW-26F, and VEW-29F are no longer contributing to significant mass removal (less than 0.005 lb/day) and are recommended to be abandoned.

Because of PCB contamination associated with the MASB and other portions of M-Area, SRS will keep the Mycelx filter system at the DUS II site operational. This will allow all PCB contaminated groundwater and vapor condensate to be treated before it is sent to the M-1 Air Stripper. This facility will no longer be named DUS II since steaming has ceased; therefore, it has been renamed to the Western Sector Treatment System (WSTS). The document *Western Sector Treatment System (WSTS) Project Description (U)* (SRNS-RP-2012-00230), which was submitted separately, defines the full responsibilities of the WSTS.

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- PCE concentrations in the LLAZ are present at higher concentrations (> 10,000 µg/L) than previously observed.
- VOC concentrations in the LLAZ are less than 5,000 µg/L near the MSB108 well cluster.
- The ULLAZ was less permeable in a series of soil borings oriented from the southwest to the northeast (i.e., MW22SB, MW19SB, MW20SB, MW17SB, MW 28SB, and MW16SB)
- The LLAZ, between MSB106 and MW23SB, had three permeable zones separated by lower permeability sediments.
- The CBCU was discontinuous near the MSB108 well cluster and MW25SB with a higher percentage of sand throughout the normally thick clay rich aquitard. Soil results from these two locations indicate that the more permeable sediments are allowing the vertical migration of VOCs from the LLAZ to the CBAU.

During a meeting with SCDHEC on January 14, 2016, SRS proposed a TA to install a recovery well (i.e., RWM018) to provide hydraulic capture while also applying in situ chemical oxidation (ISCO) to address the high concentration plume near the MSB101 well cluster. The new recovery well will help remove mass as well as create a hydraulic gradient that can be used during the planning and implementation of the ISCO application. The TA request was submitted to SCDHEC on February 23, 2016 (SRNS-J2000-2016-00097). The SCDHEC approved the TA on March 9, 2016 (SRNS-OS-2016-00013). RWM018 was installed in 2017 and became operational to the M-1 Air Stripper system in May 2018. During 2018, PCE and TCE concentrations averaged 5,400 µg/L and 16,900 µg/L, respectively. By May 2018, twelve monitoring wells and eight injection wells were installed to support the ISCO project (Figure E.8-43). When RWM018 started pumping, transducers were deployed in some of the ISCO wells (i.e., WSM003 cluster and WSI001B) to observe drawdown. At the injection well, WSI001B, 2.5ft of draw down was observed indicating RWM018 is imposing a hydraulic gradient on the project area as designed. The ISCO project successfully injected 40,000 gallons of both potassium permanganate and sodium persulfate equally into eight injection wells, screened in the ULLAZ and LLLAZ, from August 30, 2018 through October 1, 2018. Monitoring for the ISCO project is ongoing and results were reported to SCDHEC in the first and second stand-alone reports on June 20, 2019 (SRNS-STI-2019-00166, Revision 0, June 2019) and March 11, 2020 (SRNS-STI-2020-00046, Revision 0, February 2020). The first two reports concluded that chemical oxidant was able to successfully destroy PCE and TCE, but distribution of the chemical oxidant was limited to two of four permeable zones of the LLAZ (i.e., the BB and CC horizons). The presence and effects of the chemical oxidant were also limited to the proximal monitoring wells (i.e., WSM001 and WSM002 clusters) and have not been observed at the distal monitoring wells (i.e., WSM003 and MSB107 clusters).

A proposal to conduct a second round of ISCO (ISCO-II) injections, targeting the two zones not impacted during the first injections (i.e., B and C horizons), was submitted to SCDHEC as a TA on January 13, 2020 (SRNS-J2000-2020-00020). The SCDHEC approved the ISCO-II TA on March 5, 2020 (SRNS-OS-2020-00126). Four new injection wells were installed at two locations, using a nested design to set two individual injection wells targeting the B and C horizons within one borehole (Figure E.8-43). The nested well design was utilized to target individual permeable horizons while reducing the overall footprint of a well cluster at the surface. If effective, the nested well design will allow for optimal placement of future injection wells if this corrective action is applied over a larger area. A total of 20,000 gallons of potassium permanganate and 25,000 gallons of sodium persulfate were injected equally into the four new injection wells from August through September 2020. Monitoring for the ISCO-II project is ongoing and results were reported to SCDHEC in the third stand-alone report on April 5, 2021 (SRNS-STI-2021-00048, Revision 0, March 2021). SCDHEC provided comments on that report on June 3, 2021 (SRNS-OS-2021-00147). SRS provided responses to SCDHEC's comments on July 19, 2021 (SRNS-J2000-2021-00585) and SCDHEC approved the responses on August, 9, 2021 (SRNS-OS-2021-00222). Initial interpretation after the ISCO-II injections are that oxidant was introduced into the targeted B and C horizons as well as into the BB and CC horizons. Similar to the first round of ISCO injections, results from the ISCO-II injections observed PCE and TCE destruction where oxidant was present. The ISCO monitoring well network will continue to be monitored through 202**2**~~3~~ and the results will be presented in a final report **submitted in 2023**.

To help understand the extent and distribution of oxidant into the aquifer, three soil borings (i.e., WSM004SB, WSM005SB, and WSM006SB) were drilled, cored, and sampled in the first quarter of 2022. Two borings were located downgradient of the injection site and one was located sidegradient of the ISCO-I injection wells. The borings were drilled to observe the effects of ISCO in the treatment zone and observe the extent of oxidant migration in the downgradient direction. The sidegradient boring (i.e., WSM004SB) was the only boring that had a physical presence of oxidant (purple stained sediment) in the core and corresponding low soil concentrations in the same horizons. This is an indication that oxidant has had a prolonged effect on VOC concentrations within the higher permeability sediments and rebound has not occurred significantly. WSM005SB, located just downgradient of the treatment zone, observed no purple staining in the cored sediments and minimal affects to VOC soil concentrations. This is an indication that oxidant has not migrated in the direction of WSM005SB from the treatment zone. No evidence of oxidant was observed at the most distal soil boring (i.e., WSM006SB) which was co-located with the WSM003 monitoring well cluster. Results from WSM006SB correlate to results collected from the WSM003 well cluster that oxidant has not had an effect on the aquifer at this distance from the treatment zone.

Corrective action of the groundwater near the MASB was separated into two pieces based on results observed during the Post-DUS characterization which identified areas of elevated groundwater concentrations to the northwest and southeast of the MASB. A recovery well (i.e., RWM019) was installed south of the MSB002 well cluster to remove high VOC concentrations from the LLLAZ. RWM019 was installed in January 2019 and was connected to the M-1 Air Stripper system in September 2020. Since operation began, RWM019 has pumped approximately 70 gpm and averaged a PCE concentration of 29,591 µg/L and a TCE concentration of 14,873 µg/L making it the largest contributor to mass removal for the M-1 Air Stripper.

The second part of the corrective action will target the path of DNAPL migration from the MASB out to Western Sector and will be located northwest of the MASB and the MSB106 well cluster. The corrective action will deploy emulsified zero valent iron (EZVI) in the GCCZ and ULLAZ. The EZVI will be injected from 150 to 175 ft bgs at high pressure to induce a series of hydraulic fractures and increase the horizontal distribution within the targeted interval. Figure E-8.43a provides the proposed location of the six injection points and four monitoring wells. A TA presentation proposing the EZVI deployment was presented to SCDHEC in December 2020. During the meeting, SCDHEC requested that the submittal of the EZVI TA be delayed until they could complete their review of the third stand-alone ISCO report. SCDHEC provided comments on the ISCO report in June 2021 and emphasized that future corrective actions should ensure the potential impacts to the M-1 Air Stripper are understood and precautions are taken to mitigate those impacts. The impacts of the EZVI project to the M-1 Air Stripper were further evaluated and are not expected. However, out of an abundance of caution, purge water management systems will be installed on the four monitoring wells and additional monitoring at RWM 8 and RWM 10 will be conducted if elevated iron, pH, or metal concentrations are observed at the four monitoring wells. A revision to the TA presentation was made to summarize the evaluation and incorporate the changes to the monitoring program, and it was submitted to SCDHEC on August 17, 2021 for approval (SRNS-J2000-2021-00676). SCDHEC approved the TA on October 25, 2021 (SRNS-OS-2021-00307). The installation of monitoring wells **was completed by February 2022 and a set of baseline samples were collected in March 2022. The drilling of six injection points and injection of EZVI was conducted from March to May 2022. Figure E.8-43b provides the location of the four monitoring wells and six injection points associated with the EZVI project. Each injection point had five injection intervals, targeting 150 to 175 ft bgs, where 1,333 gallons of EZVI was hydraulically fractured into each interval for a total of 6,665 gallons per injection point. After injections were completed, each injection point was abandoned in place before moving to the next injection point. Approximately 40,000 gallons of EZVI were successfully injected into the targeted zone of the ULLAZ. After completion of the EZVI injections, purge water management stations were installed on all four monitoring wells to prevent excess well sampling purge water from exceeding waste acceptance criteria, specifically for iron, at the M-1 Air Stripper. Sampling of the four**

EZVI monitoring wells (i.e., WEM-001-C, WEM-002-C, WEM-003-C, and WEM-004-C) started in July 2022 and will be conducted for one year. ~~and injection of EZVI will be conducted in the first quarter of 2022.~~

The third area requiring corrective action is in the vadose zone east of the MASB. Additional characterization of this area is needed to fully define the area with high VOC concentrations. Once defined, it is anticipated that an in-situ corrective action will be applied. The characterization and corrective action will be associated with the vadose zone corrective action plan (Section E.8.3.3.3.2.4 and Table E.8-5).

A modeling effort is also being planned that would look at the long term impacts each technology or combination of technologies would have on reducing mass and, therefore, effect the amount of time to reach the groundwater protection standard. SRS will include the SCDHEC early in the execution of the Western Sector modeling effort. This will be used in conjunction with the empirical data collected from new and existing wells and TA monitoring to support an alternative evaluation. This evaluation will culminate in a Corrective Measures Study and recommended final corrective action to be submitted as part of an application revision. A schedule of corrective action activities is presented in Table E.8-17.

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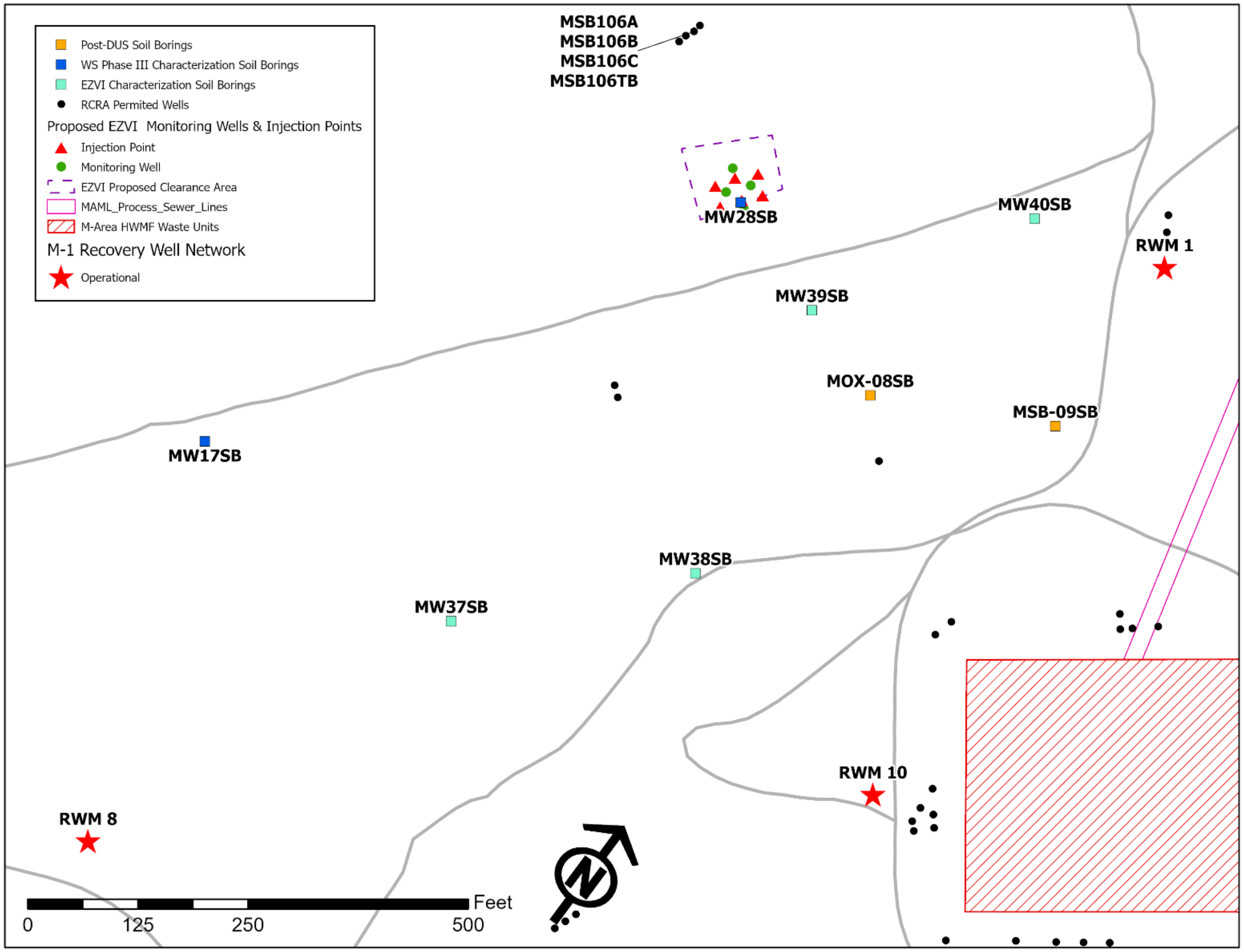

Figure E.8-43a. Western Sector EZVI Well Network with Supporting Characterization Soil Borings

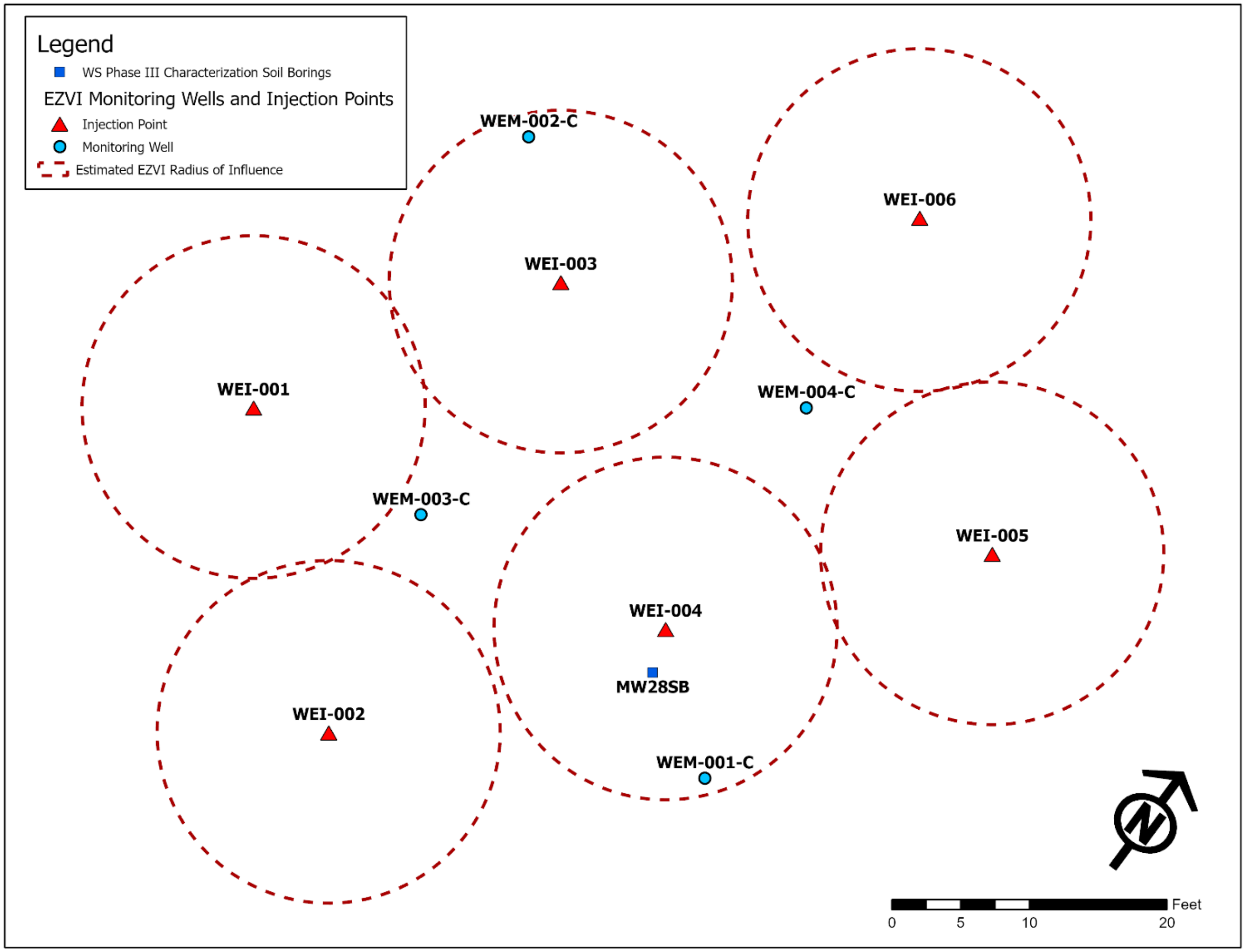

Figure E.8-43b. Location of the Western Sector EZVI Monitoring Wells and Injection Points

Table E.8-17. Schedule of Events Leading to the Submittal of the Corrective Action Plan for the Western Sector

CAP Schedule for the Western Sector			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
Yes	January 2014 (A)	April 2014 (A)	Post Remediation Characterization Report for the DUS Project at MASB
Yes	July 2014 (A)	June 2016 (A)	Characterization of high concentration VOC plume
~~No~~**Yes**	October 2015 (A)	February 2021 **(A)**	(1) Temporary Authorization (TA) RWM018 installation and ISCO deployed near the MSB101 well cluster
Yes	October 2015 (A)	March 2016 (A)	*1.1 Development, submittal, and approval of TA*
~~No~~**Yes**	August 2017 (A)	February 2021 **(A)**	*1.2 UIC permit, well installation, implementation, and monitoring*
Yes	October 2018 (A)	January 2020 (A)	*1.3 Develop and submit Permit Renewal Application Revision*
Yes	October 2017 (A)	September 2020 (A)	(2) TA RWM019 installation southeast of MASB
Yes	October 2017 (A)	March 2018 (A)	*2.1 Development, submittal, and approval of TA*
Yes	June 2019 (A)	September 2020 (A)	*2.2 Well installation, implementation, and monitoring*
Yes	July 2019 (A)	January 2020 (A)	*2.3 Develop and submit Permit Renewal Application Revision*
No	January 2020 (A)	September 2023	(3) TA In situ remedial technology deployed northwest of the MASB near the MSB106 well cluster
Yes	January 2020 (A)	October 2021 (A)	*3.1 Development, submittal, and approval of TA*
No	October2021 (A)	**July**~~February~~ 2023	*3.2 UIC permit, well installation, implementation, and monitoring*
Yes	December 2021 (A)	February 2022 (A)	*3.3 Develop and submit Permit Renewal Application Revision*
No	October 2017 (A)	February 2024	Monitor results of TA deployments

Table E.8-17. Schedule of Events Leading to the Submittal of the Corrective Action Plan for the Western Sector (continued)

CAP Schedule for the Western Sector			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
No	October 2024	September 2026	Develop flow and transport model and Corrective Measures Study w/ Recommendation for Final Corrective Action

CY = Calendar year
A = Actual date
White Cells represent general Western Sector activities

1	2	3	Each color represents a separate TA and the subtasks associated with that TA. Each TA addresses contamination in a different part of Western Sector

Phase I Characterization

TCE concentrations greater than 100 µg/L are present in the LLLAZ in the southernmost plume definition well (MCB 25B). In August 2012, a pre-Phase I characterization effort collected soil plug data in the MAAZ down to the CBCU at three soil borings located downgradient (south, southwest) of the 2012 TCE plume foot print (Figure E.8-48). A monitoring well, MCB029B, was installed at the only soil boring that had detectable VOC concentrations in the soil. MCB029B was installed in August 2012 and subsequent groundwater data from MCB029B has confirmed the presence of TCE, although the maximum concentration has been 2.1 µg/L which is less than the GWPS (5 µg/L). Phase I built on the initial characterization effort and was completed in June 2013. Six wells were installed at four locations to further define the southern extent of the TCE plume (Figure E.8-48).

Two of the new locations bound the southern (i.e., MSCB031) and eastern (i.e., MCB030) edges of the plume and have a screen in the ULLAZ and the LLLAZ. The third and fourth locations add an ULLAZ screen at existing monitoring wells MCB 25B and MCB029B.

Initial groundwater results indicate low concentrations of TCE (i.e., less than the GWPS) are present downgradient of MCB 25 in the LLLAZ while TCE concentrations in the ULLAZ have exceeded the GWPS at MCB025C and MCB029C. These wells have been added to Table E.7-3. SRS proposed the addition of surface water sampling points or shallow water table wells in Revision 7 of this permit renewal application if GWPS for TCE were exceeded at MCB029C or MCB031C. In the third quarter of 2016, the TCE concentration at MCB029C was 5.3 µg/L. SRS proposes to evaluate the trend of TCE detections and add additional sampling points accordingly after Phase III characterization at ABRP/MCB/MBP OU.

Phase II Characterization

Phase II characterization focused on installing wells on a more regional scale and using some existing wells to develop the potentiometric surface. There was uncertainty as to the direction of groundwater flow and likely discharge points (wetland areas to the southwest or Upper Three Runs Creek to the south). Phase II was completed in January 2016 and installed eight wells at four locations (Figure E.8-48). Although these wells were initially proposed as piezometers, four of the new wells (i.e., MCB033B, MCB033C, MCB034B, and MCB034C) were converted to plume definition wells based on the orientation of the TCE and 1,4-dioxane plumes. The other four wells (i.e., MCB032B, MCB032C, MCB035B, and MCB035C) will remain piezometers. In addition to the new wells, four (4) existing piezometers will be sampled for water elevation (Figure E.8-48). All twelve wells have been added to Table E.7-3.

Phase III Characterization

Phase III characterization **began in April 2021 and** ~~will~~ install**ed** eleven new monitoring wells**,** ~~and ten~~**nine** soil borings**,** and start**ed** monitoring two existing nonpermitted monitoring wells (Figure E.8-49) to further **the** definition of the 1,4-dioxane groundwater plume while also providing some additional definition of the TCE plume. The new and existing nonpermitted monitoring wells **are**~~will be~~ screened in the ULLAZ and LLLAZ to provide long term monitoring, define plume boundaries, and further define areas of high concentration within the 1,4-dioxane and TCE groundwater plumes. The soil borings ~~will be~~**were** installed perpendicular to the plumes to determine the vertical and lateral distribution of contamination in the LLAZ. The soil borings ~~will~~ collect**ed** depth discrete soil samples ~~to be~~**that were** analyzed for ~~1,4-dioxane and~~ VOCs **and three depth discrete groundwater samples in the upper, middle, and lower LLAZ that were analyzed for 1,4-dioxane and VOCs**. **The VOC results helped refine a narrower >100 µg/L TCE plume. The 1,4-dioxane results indicated high concentrations on the west end of the soil boring transect at MCB107SB, MCB037B, MCB037C, and MCB109SB. The high concentration 1,4-dioxane results were not anticipated. Additional characterization will be needed to bound this section of the plume in the upgradient, lateral, and downgradient directions.**~~Phase III characterization is proposed to start in February 2020 (Table E.8.19).~~

Phase IV Characterization

Phase IV characterization will be used to further define the high concentration 1,4-dioxane results observed during Phase III characterization activities (Figure E.8-49a). Phase IV characterization will be divided into two phases. The first phase (i.e., Phase IVa) will drill a series of soil borings to bound the 1,4-dioxane plume. The second phase (i.e., Phase IVb) will install monitoring wells based on the results observed from Phase IVa.

Phase IVa characterization is planned to begin in 2027. Eleven new soil borings will be drilled to further define the 1,4-dioxane plume between the high concentrations at MCB037C and the upgradient source, and further define the lateral and downgradient extents of the 1,4-dioxane plume. The soil borings will be drilled perpendicular to the plumes to determine the vertical and lateral distribution of contamination in the LLAZ. Depth discrete groundwater samples will be collected at the soil borings and analyzed for 1,4-dioxane and VOCs. To help identify 1,4-dioxane concentrations near the 1,4-dioxane source area two existing nonpermitted (i.e., ABP 10D and ARP 21D) and four existing permitted monitoring wells (i.e., ARP 14C2, ARP 18B, MCB 16B, and MCB 16C) will start being sampled in 2022. The existing nonpermitted and permitted monitoring wells are screened in the MAAZ, ULLAZ, and LLLAZ. Sampling these wells in advance of Phase IVa characterization activities will help provide a better understanding of 1,4-dioxane concentrations near the source area. Figure E.8-49b illustrates the proposed locations of the Phase IVa soil borings and the additional six existing monitoring wells to be sampled for 1,4-dioxane.

Phase IVb characterization is planned to begin in 2028. Eleven new monitoring wells screened in the ULLAZ and LLLAZ will be installed to provide long--term monitoring of the 1,4-dioxane groundwater plume. The well locations will be dependent on the Phase IVa soil boring results. Figure E.8-49c illustrates the proposed locations of the Phase IVb monitoring wells.

Monitoring Well Network

The monitoring well network at ABRP/MCB/MBP OU is defined in Table E.7-3. The monitoring well network was expanded in **three**~~two~~ phases (i.e., Phase I**, Phase II,** and Phase II**I**) to help to define the southern portion of the VOC plume and determine the direction of groundwater flow in the ULLAZ and LLLAZ. The monitoring well network will be expanded ~~further~~ during Phase **IV**~~III~~ to further define the **1,4-dioxane and** VOC **groundwater** plume**s.** ~~while also defining the 1,4-dioxane plume. Figure E.8-48 illustrates the location of the monitoring well network.~~ These wells will be **sampled annually and the respective analytical suite for each well is defined in Table E.7-3.**

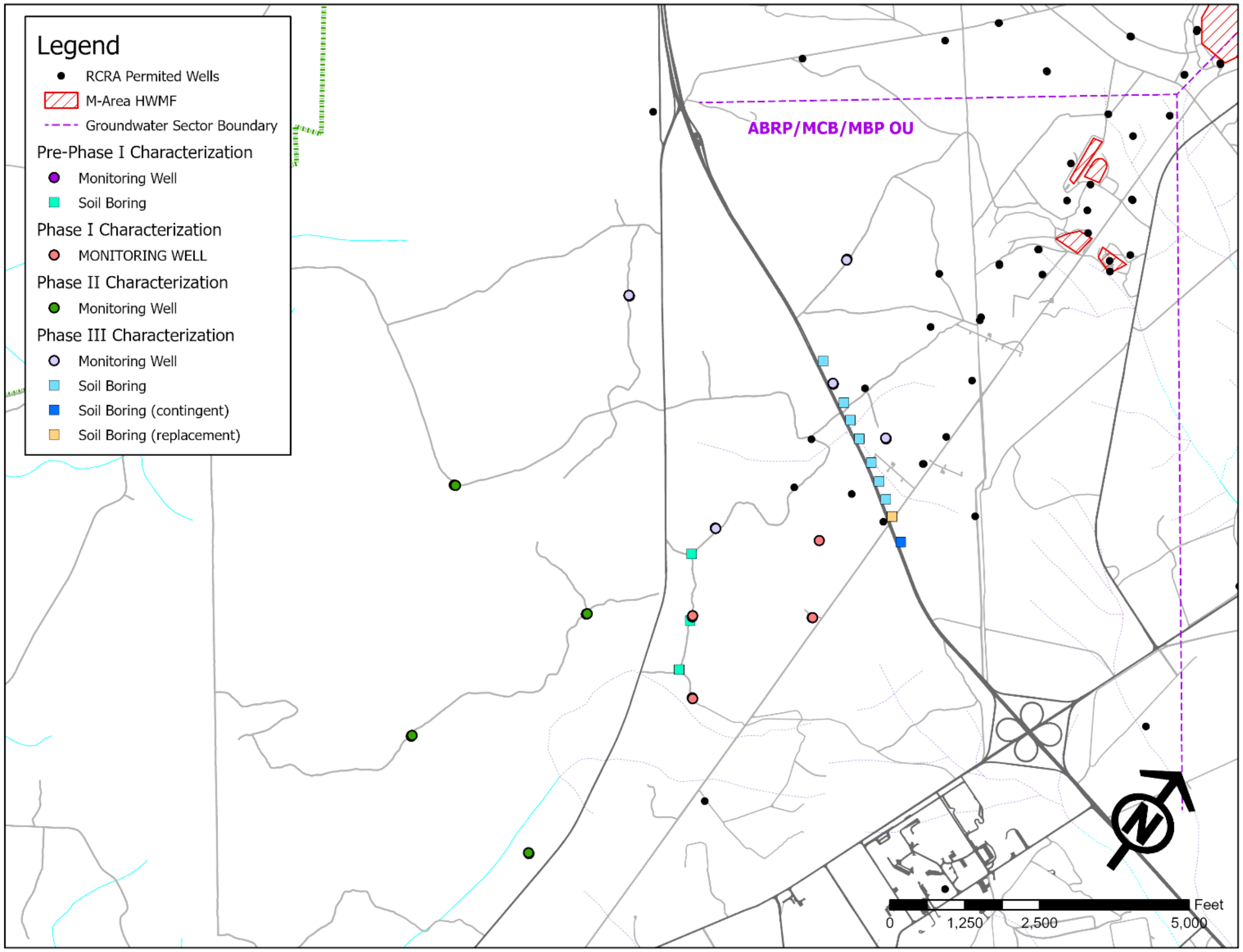

Figure E.8-48. Location of Soil Borings and the Monitoring Wells at the ABRP/MCB/MBP OU

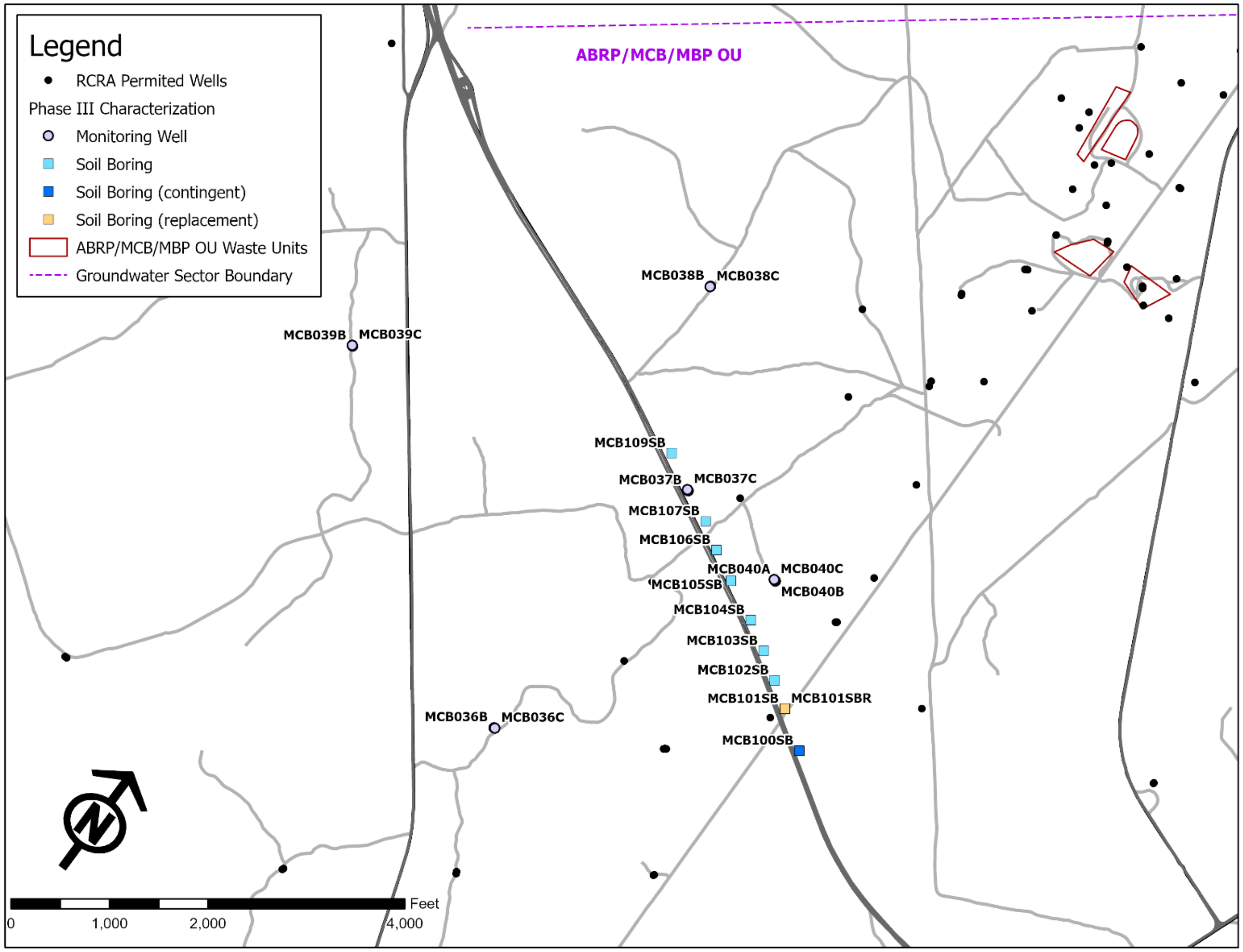

Figure E.8-49. Location of Phase III Soil Borings and the New Monitoring Wells at the ABRP/MCB/MBP OU

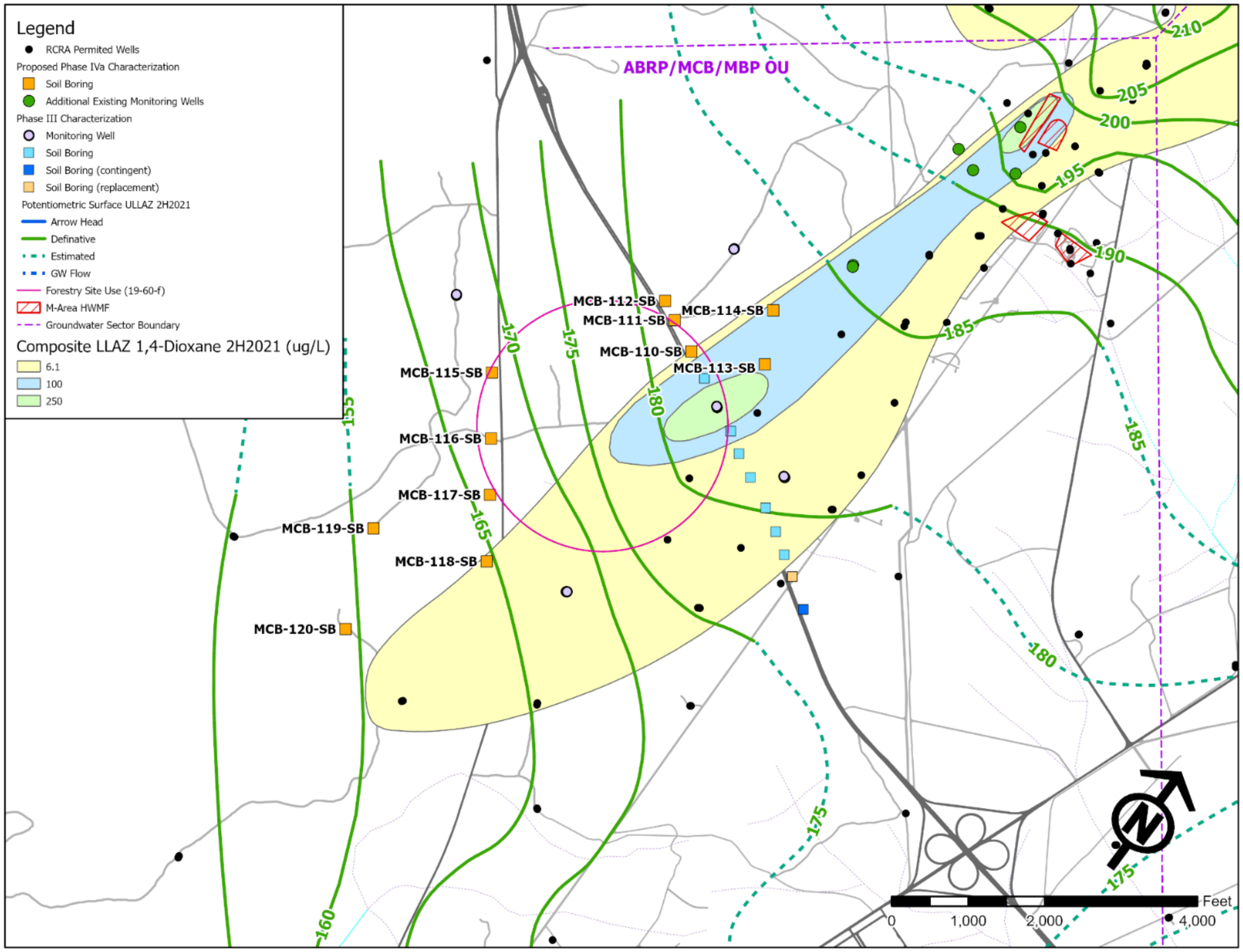

Figure E.8-49a. Location of Phase IVa Proposed Soil Borings and the Additional Existing Monitoring Wells at the ABRP/MCB/MBP OU

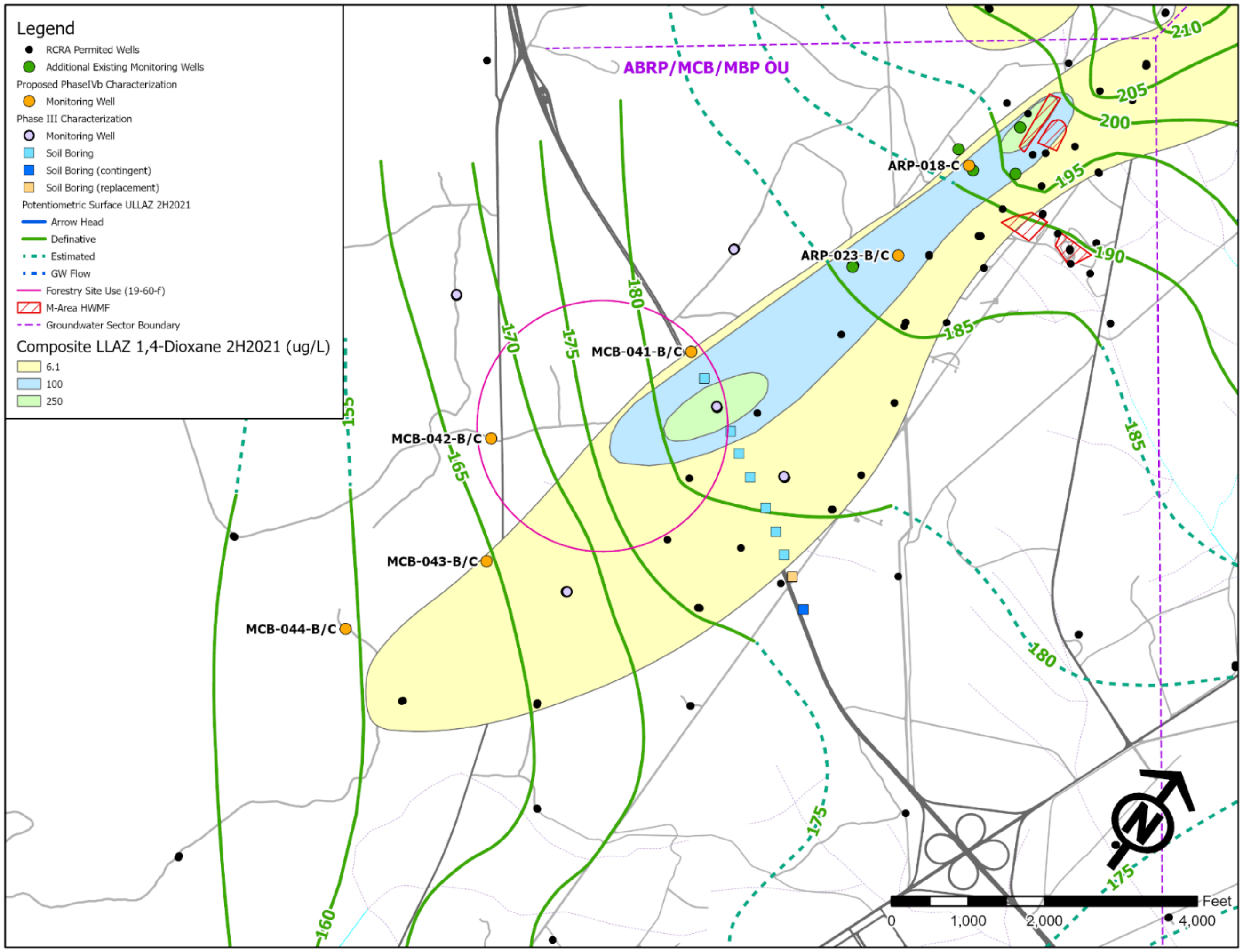

Figure E.8-49b. Location of Phase IVb Proposed New Monitoring Wells at the ABRP/MCB/MBP OU

E.8.3.3.8.3 ABRP/MCB/MBP OU Groundwater Plume Corrective Action Plan

Once the proposed Phase III monitoring well network has been sampled quarterly for the first year, SRS will evaluate the data to determine plume extent and flow direction. Based on the data, a site conceptual model will be developed and corrective action alternatives will be assessed to address the distal portion of the VOC plume. Active and passive corrective action technologies will be assessed in a Corrective Measures Study, and the most effective and efficient technology will be recommended as the final corrective action. The Corrective Measures Study and the CAP for the ABRP/MCB/MBP OU will be submitted in 20**32**~~23~~ as a revision to the RCRA Part B Permit Renewal Application for the M-Area and Metallurgical Laboratory HWMFs. Table E.8-19 shows a schedule of the events leading up to the submittal of the CAP for the ABRP/MCB/MBP OU groundwater plume.

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Table E.8-19. Schedule of Events Leading to the Submittal of a Corrective Action Plan for ABRP/MCB/MBP OU

CAP Schedule for the ABRP/MCB/MBP OU			
Complete (Yes/No)	**Start Date (CY)**	**Completion Date (CY)**	**Item Description**
No	July 2013 (A)	December 2022	Sampling of Phase I wells
No	July 2014 (A)	December 2022	Sampling extended monitoring well network
Yes	October 2015 (A)	February 2016 (A)	Phase II Characterization - Installation of 8 wells at four locations
No	March 2016 (A)	December 2022	Sampling of Phase II wells
Yes	February 2020 (A)	August 2021 (A)	Phase III Characterization - Extent of 1,4-dioxane groundwater plume
No	November 2021 (A)	December 2022	Sampling of new 1,4-dioxane monitoring wells
No	**September 2022**	**September 2030**	**Sampling of Existing Monitoring Wells for 1,4-dioxane**
No	**March 2027**	**September 2027**	**Phase IVa Characterization – Further characterization of 1,4-dioxane groundwater plume**
No	**March 2028**	**September 2028**	**Phase IVb Characterization – Long term monitoring of 1,4-dioxane groundwater plume**
No	**September 2028**	**September 2030**	**Sampling of new monitoring wells**
No	December 20**30**~~22~~	September 20**32**~~24~~	Submittal of a Corrective Measures Study and Corrective Action Plan (Revision to the RCRA Permit Renewal Application)

CY = Calendar year
A = Actual date

Phase I wells	MCB025C, MCB029C, MCB030B, MCB030C, MCB031B, and MCB031C
Phase II wells	MCB032B, MCB032C, MCB033B, MCB033C, MCB034B, MCB034C, MCB035B, and MCB035C
Phase III wells	MCB036B, MCB036C, MCB037B, MCB037C, MCB038B, MCB038C, MCB039A, MCB039B, and MCB039C
Phase IVb wells	**ARP-018-C, ARP-023-B, ARP-023-C, MCB-041-B, MCB-041-C, MCB-042-B, MCB-042-C, MCB-043-B, MCB-043-C, MCB-044-B, and MCB-044-C**

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K. CERTIFICATION

[REF: R.61-79.270.11(d)(1)]

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Stuart A. MacVean President and CEO Savannah River Nuclear Solutions, LLC as the Co-Operator with the U.S. Department of Energy Savannah River Operations Office	Date Signed

Michael D. Budney Savannah River Site Manager U.S. Department of Energy Savannah River Operations Office Co-Operator and Owner	Date Signed

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SR 224 (Rev 10-31-2013)

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