DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER

April 5, 2016

MEMORANDUM FOR: U.S. Environmental Protection Agency – Region 2
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New York, NY 10007-1866

New York State Department of Environmental Conservation
Attn: Ms. Heather Bishop
Division of Environmental Remediation
625 Broadway 11th Floor
Albany, NY 12233-7015

FROM: AFCEC/CIBE – Plattsburgh
8 Colorado Street, Suite 121
Plattsburgh NY, 12903

SUBJECT: Final 2015 Third Five-Year Review
Former Griffiss Air Force Base Rome, New York
Contract Number FA8903-10-D-8595
Delivery Order 0014
February 2016

Accompanying this letter please find the signed "Final 2015 Third Five-Year Review for the former Griffiss Air Force Base", for your review and comment. This five-year review has been conducted pursuant to Section 121 (c) of the CERCLA of 1980, as amended, Section 300.430 (f) (4) (ii) of the NCP and OSWER Directive 9355.7-03B-P.

Should you have any questions or concerns please contact me at 518-563-2871.

David S. Farnsworth
Program Manager/BRAC Environment Coordinator
BRAC Program Execution Branch

cc: Ms. Kristen Kulow (NYSDOH)

2015
Third Five-Year Review

Former Griffiss Air Force Base

Prepared for:

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Prepared by:

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February 2016

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LIST OF ACRONYMS AND ABBREVIATIONS

acfm	actual cubic ft per minute
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFFF	aqueous film-forming foam
AFRL	Air Force Research Laboratory
AFRPA	Air Force Real Property Agency
AOC	Area of Concern
AOI	Area of Interest
ARARs	Applicable or Relevant and Appropriate Requirements
ATSDR	Agency for Toxic Substances and Disease Registry
BADP	Battery acid disposal pit
BADrP	Battery acid drainage pit
bgs	Below Ground Surface
BRAC	Base Realignment and Closure Act
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
Conti	Conti Environmental, Inc.
CR	carcinogenic risk
cy	Cubic Yards
CYSA	Coal Yard Storage Area
DCB	dichlorobenzene
DCE	dichloroethene
DOC	dissolved organic carbon
DOD	Department of Defense
DP	Drainage Pit
DRMO	Defense Reutilization Marketing Office
EA	EA Engineering
EC	emerging contaminant
E&E	Ecology and Environment, Inc.
EEEPC	Ecology and Environment Engineering, P.C.
EM	Electromagnetic
EOX	extractable organic halides
EPS	Electrical Power Substation
ESD	Explanation of Significant Differences
FDA	Fire Demonstration Area
FFA	Federal Facility Agreement
FPM	FPM group, Ltd.
FPTA	Fire Protection Training Area
FS	Feasibility Study
ft	feet
ft/ft	feet per foot

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

GLDC	Griffiss Local Development Corporation
GPM	gallon per minute
GPR	Ground Penetrating Radar
HI	hazard index
HHRA	Human Health Risk Assessment
IC	Institutional Control
in.	inches
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LAW	Law Engineering and Environmental Services, Inc.
LEL	lower explosive limit
LRA	Local Reuse Agency
LTM	Long-Term Monitoring
LUC	Land-Use Control
MAG	magnetometer
MHz	megahertz
mg/L	milligrams per liter
MNA	monitored natural attenuation
MSL	Mean Sea Level
MTBE	methyl tert-butyl ether
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NFA	No Further Action
NPL	National Priorities List
NYCRR	New York Code of Rules and Regulations
NYSBC	New York State Barge Canal
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
Ocuto	Ocuto Blacktop and Paving Environmental Services
ORC®	Oxygen Release Compound
ORP	Oxygen Reduction Potential
OU	Operable Unit
OWS	Oil/Water Separator
O&M	Operations and Maintenance
PAH	Polycyclic Aromatic Hydrocarbon
PALs	Project Action Limits
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PEER	PEER Consultants, P.C.
PFCs	Perfluorinated Compounds

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonic acid
PHAs	Provisional Health Advisories
PID	Photo Ionization Detector
PM	Performance Monitoring
POC	point-of-compliance
ppm	parts per million
RI	Remedial Investigation
RL	Reporting Limit
ROD	Record of Decision
RRS	Rome Research Site
RSL	Regional Screening Level
SAC	Strategic Air Command
SAR	Small Arms Range
SD	Surface Drainage
SI	Supplemental Investigation
SS	Spill Site
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TBC	To Be Considered
TCA	1,1,1-trichloroethane
TCE	Trichloroethylene
TCDD	Tetrachlorodibenzodioxin
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TKN	Total Kjehldahl Nitrogen
TOC	Total Organic Carbon
TR	Target Risk
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VC	Vinyl Chloride
VMP	Vapor Monitoring Points
VOC	Volatile Organic Compound
w.g.	water gauge
WSA	Weapons Storage Area

EXECUTIVE SUMMARY

The United States Air Force (Air Force), in consultation with the U.S. Environmental Protection Agency (USEPA) Region II conducted the third Five-Year Review for the former Griffiss Air Force Base (AFB). The first Five-Year Review was prepared by the Air Force in 2005 with USEPA acceptance on September 15, 2005. The second Five-Year Review was prepared by the Air Force in 2010. USEPA comments were received for the Final 2010 Five-Year Review on August 11, 2010. As a result of the additional comments and not a result of the protectiveness being deferred, the 2010 Five-Year Review was revised and submitted as an Addendum in February 2013 with the USEPA's approval. No additional comments from the USEPA or New York State Department of Environmental Conservation (NYSDEC) were received on the Addendum.

The Five-Year Reviews are conducted pursuant to Section 121 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, Section 300.430 (f) (4) (ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and OSWER Directive 9355.7-03B-P (EPA Five-Year Review Guidance, June 2001). The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. Protectiveness is generally defined in the NCP by the risk range and the hazard index (HI). The risk range and HI are estimated to determine the incremental probability of an individual developing health effects (carcinogenic or non-carcinogenic) over a lifetime as a result of exposure to a chemical of concern. Under USEPA regulations specified in the Risk Assessment Guidance for Superfund (EPA, December 1989), for known or suspected carcinogens, acceptable exposure levels are generally concentrations levels that represent an excess cancer risk to an individual of between $1x10^{-4}$ and $1x10^{-6}$ or the non-carcinogenic HI exceeds a level of 1. Evaluation of the remedy and the determination of protectiveness should be based on and sufficiently supported by the data and observations. The Five-Year Review is required because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure. This document will become part of the Air Force Civil Engineer Center (AFCEC) administrative record located on the web at: http://afcec.publicadmin-record.us.af.mil/

Pursuant to Section 105 of CERCLA, Griffiss AFB was included on the National Priorities List (NPL) on July 15, 1987. On August 21, 1990, the Air Force, USEPA, and NYSDEC entered into a Federal Facility Agreement (FFA) under Section 120 of CERCLA. The Department of Defense (DOD) Installation Restoration Program (IRP) at Griffiss AFB includes the investigation and clean-up of sites with CERCLA hazardous substance releases as well as petroleum sites. Some of the petroleum IRP sites were designated as Source Removal Areas of Concern (AOCs) under the FFA and are therefore included in the Five-Year Review. Overall, 41 CERCLA/FFA sites require Record of Decisions (RODs). To date, 40 RODs have been submitted by the Air Force and approved by the USEPA. Thirteen RODs are for No Further Action (NFA) and are not evaluated in the Five-Year Review. The remaining sites do not have issued RODs and are listed in the Five-Year Review as Pre-ROD sites/Operable Unit (OU).

The Griffiss AFB Five-Year Review discusses in detail CERCLA sites with issued RODs that have hazardous substances, pollutants, or contaminants remaining at the site above levels that would allow for unlimited use and unrestricted exposure. Technical assessments were performed for each CERCLA site to verify the following:

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and remedial action objectives still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

The CERCLA sites are reviewed individually within five categories. The categories are:

- Land-Use Control/ Institutional Controls (LUC/IC) Sites: Sites with RODs that only specify LUC/ICs,
- Long-Term Monitoring (LTM) Sites: Sites undergoing LTM,
- Ongoing Remedial Action Sites: Sites undergoing ongoing remedial actions,
- NFA Sites, and
- Pre-ROD Sites: Sites with RODs pending or planned.

The technical assessment consisted of the review of site documents and data from 2010 to 2014 and the review of ROD requirements, exposure assumptions, toxicity data, and clean-up levels for each site. In addition, the 2010 Five-Year Review Addendum was also reviewed. The documents reviewed are located in the AFCEC administrative record referenced above. The document review and site inspections were used to evaluate the protectiveness of the remedies. For sites where the selected remedies are still in the process of being implemented, continuing actions were identified to complete these actions and ensure protectiveness at these sites.

Based upon the review of the CERCLA sites at the former Griffiss AFB conducted by the Air Force, it has been determined that the remedies selected for the LUC/IC sites (ST006 (Building 101 AOC), SS008 (Building 112 AOC), DP012 (Building 301 AOC), DP013 (Building 255 AOC), DP015 (Building 219 AOC), SS017 (Lot 69 AOC), DP022 (Building 222 AOC), SS024 (Fire Demonstration Area AOC), SS025 (Site T-9 AOC), SS033 (Coal Yard Storage Area Operable Unit), SS044 (Electrical Power Substation AOC), and SD050 (Building 214 AOC)), LTM sites (LF001 (Landfill 1 AOC), LF002 (Landfill 2/3 AOC), LF003 (Landfill 7 AOC), LF007 (Landfill 5 AOC), and LF009 (Landfill 6 AOC)), and RA/O sites (SD052-01 (Apron 2 6 OU), SD052-02 (Building 775 OU), SD052-04 (Landfill 6 OU), SD052-05 (Building 817 OU), and SD062 (AOC 9)) at the former Griffiss AFB remain protective of human health and the environment. The next five-year review for the former Griffiss AFB will be provided 5 years from the date of this review (September 30, 2020).

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Former Griffiss Air Force Base		
EPA ID: NY4571924451		
Region: 02	**State:** NY	**City/County:** Rome/Oneida

SITE STATUS	
NPL Status: Final	
Multiple Sites/OUs? Yes	**Has the site achieved construction completion?** No

REVIEW STATUS
Lead agency: Other Federal Agency **If "Other Federal Agency" was selected above, enter Agency name:** United States Air Force
Author name (Federal or State Project Manager): Daniel Baldyga
Author affiliation: FPM-Remediations for the Air Force Civil Engineer Center
Review period: 2010-2015
Date of site inspection: September 2014
Type of review: Statutory
Review number: 3
Triggering action date: September 30, 2010
Due date *(five years after triggering action date)*: September 30, 2015
Sites not in previous Five-Year Review: ST006, SS033, and SS062
Previous Five-Year Review sites now NFA: DP011, SS023, SD031, and SD032

Issues/Recommendations				
Site(s)/OU(s): SD062 (AOC 9)	**Issue Category: Institutional Controls**			
	Issue: A deed modification for Parcel F10B will be required to implement the SD062 AOC 9 LUC/ICs required in the ROD.			
	Recommendation: Continue performance monitoring and annual LUC/IC inspections at all sites. In addition, the groundwater with system performance inspections will continue at SD052-02 (Building 775 OU)			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	No	Air Force	EPA/State	To be Determined

Protectiveness Statement(s)

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
ST006	**Protective**	

Protectiveness Statement:
Based on the document review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at ST006 (Building 101 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SS008	**Protective**	

Protectiveness Statement:
Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS008 (Building 112 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
DP012	**Protective**	

Protectiveness Statement:
Based on the document review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at DP012 (Building 301 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
DP013	**Protective**	

Protectiveness Statement:
Based on the document review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at DP013 (Building 255 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
DP015	**Protective**	

Protectiveness Statement:
Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at DP015 (Building 219 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SS017	**Protective**	

Protectiveness Statement:
Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS017 (Lot 69 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
DP022	**Protective**	

Protectiveness Statement:
Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at DP022 (Building 222 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SS024	**Protective**	

Protectiveness Statement:
Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS024 (FDA AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SS025	**Protective**	

Protectiveness Statement:
Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS025 (Site T-9 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SS033	**Protective**	

Protectiveness Statement:
Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS033 (CYSA OU) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SS044	**Protective**	

Protectiveness Statement:
SS044 - Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS044 (EPS AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SD050	**Protective**	

Protectiveness Statement:
Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD050 (Building 214 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
LF001	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF001 (Landfill 1 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
LF002	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF002 (Landfill 2/3 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
LF003	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF003 (Landfill 7 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
LF007	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF007 (Landfill 5 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
LF009	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF009 (Landfill 6 AOC) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SD052-01	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD052-01 (Apron 2 OU) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SD052-02	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD052-02 (Building 775 OU) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SD052-04	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD052-04 (Landfill 6 OU) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SD052-05	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD052-05 (Building 817 OU) is protective of human health and the environment.

Site/Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
SD062	**Protective**	

Protectiveness Statement:
Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD062 (AOC 9) is protective of human health and the environment.

1 INTRODUCTION

1.1 Authority Statement; Purpose

The Air Force, in consultation with the USEPA Region II, conducted this Five-Year Review pursuant to Section 121 (c) of the CERCLA of 1980, as amended, Section 300.430 (f) (4) (ii) of the National Oil and Hazardous Substances Pollution Contingency Plan and OSWER Directive 9355.7-03B-P (EPA Five-Year Review Guidance, June 2001). The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. Protectiveness is generally defined in the NCP by the risk range and the HI. The risk range and HI are estimated to determine the incremental probability of an individual developing health effects (carcinogenic or non-carcinogenic) over a lifetime as a result of exposure to a chemical of concern. Under the Risk Assessment Guidance for Superfund (EPA, December 1989), for known or suspected carcinogens, acceptable exposure levels are generally concentrations levels that represent an excess cancer risk to an individual of between $1x10^{-4}$ and $1x10^{-6}$ or the non-carcinogenic HI exceeds a level of 1. Evaluation of the remedy and the determination of protectiveness should be based on and sufficiently supported by the data and observations. The Five-Year review is required because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure. This document will become part of the AFCEC administrative record.

The CERCLA sites will be reviewed individually within subgroups organized as follows:

- LUC/IC Sites: Sites with RODs that only specify LUC/ICs,
- LTM Sites: Sites undergoing LTM,
- Ongoing Remedial Action Sites: Sites undergoing ongoing remedial actions, and
- Pre-ROD Site: Site with a ROD that is pending or planned (only one ROD remaining to be signed at the former Griffiss AFB as of March 2015).

This is the third Five-Year Review at the former Griffiss AFB (Figure 1). Griffiss AFB was designated for realignment under the Base Realignment and Closure Act (BRAC) in 1993 and 1995. Since the closure of the base, real estate parcels not retained by the government are being conveyed to the Oneida County Industrial Development Agency, directly to Oneida County, or other recipients such as private or public institutions. The Five-Year Review CERCLA sites are provided in Table 1 which includes 12 LUC/IC Sites, 5 LTM sites, 5 ongoing RA sites, and 1 pre-ROD OU (for Soil Vapor Intrusion (SVI) for SD052-01 and SD052-02). Table 1 also includes 18 NFA sites and sites that were closed since the last Five-Year review. Section 4.4 identifies the remaining ROD along with the anticipated date the ROD is to be signed and issued.

Table 1
Griffiss AFB CERCLA Sites

Site Status	Site Number (IRP number)	Site Name	ROD Signature Date	Five-Year Review Required	Five-Year Review Section	Protective in 2010 Five-Year Review
Land Use Control/ Institutional Controls	ST006**	Building 101	USEPA/ September 2012	Yes	4.1.1	NA
	SS008	Building 112 AOC	USEPA/ September 2001	Yes	4.1.2	Yes
	DP012	Building 301 Drywell AOC	USEPA/ September 1999	Yes	4.1.3	Yes
	DP013	Building 255 Drywells AOC	USEPA/ September 2001	Yes	4.1.4	Yes
	DP015	Building 219 Drywell AOC	USEPA/ September 1999	Yes	4.1.5	Yes
	SS017	Lot 69 AOC	USEPA/ March 2005	Yes	4.1.6	Yes
	DP022	Building 222 AOC	USEPA/ September 2001	Yes	4.1.7	Yes
	SS024	FDA AOC	USEPA/ September 1999	Yes	4.1.8	Yes
	SS025	Site T-9 AOC	USEPA/ September 2001	Yes	4.1.9	Yes
	SS033**	Coal Storage Yard	USEPA/ February 2012	Yes	4.1.10	NA
	SS044	EPS AOC	USEPA/March 2005	Yes	4.1.11	Yes
	SD050	Building 214 AOC	USEPA/ September 1999	Yes	4.1.12	Yes

Table 1 (cont'd.)
Griffiss AFB CERCLA Sites

Site Status	Site Number (IRP number)	Site Name	ROD Signature Date	Five-Year Review Required	Five-Year Review Section	Protective in 2010 Five-Year Review
Long Term Monitoring	LF001	Landfill 1 AOC	USEPA/ June 2000	Yes	4.2.1	Yes
	LF002	Landfill 2/3 AOC	USEPA/June 2000	Yes	4.2.2	Yes
	LF003	Landfill 7 AOC	USEPA/ June 2000	Yes	4.2.3	Yes
	LF007	Landfill 5 AOC	USEPA/ June 2000	Yes	4.2.4	Yes
	LF009	Landfill 6 AOC	USEPA/ June 2001	Yes	4.2.5	Yes
Ongoing Remedial Action	SD052-01	Apron 2 Operable Unit	USEPA/ March 2009	Yes	4.3.1	NA
	SD052-02	Building 775 Operable Unit	USEPA/ March 2009	Yes	4.3.2	NA
	SD052-04	Landfill 6 Operable Unit	USEPA/ March 2009	Yes	4.3.3	NA
	SD052-05	Building 817 Operable Unit	USEPA/ March 2009	Yes	4.3.4	NA
	SS062**	AOC 9	USEPA/ September 2010	Yes	4.3.5	NA
Pre-ROD	Soil Vapor Intrusion at SD052-01 and SD052-02	Building 775 Site [Buildings 774 and 776] and Apron 2 Chlorinated Plume Site [Buildings 785 and 786]	2015	Requirement Pending	4.4	NA

Table 1 (cont'd.)
Griffiss AFB CERCLA Sites

Site Status	Site Number (IRP number)	Site Name	ROD Signature Date	Five-Year Review Required	Five-Year Review Section
No Further Action	ST-04	Bulk Fuel Storage Area	USEPA/ July 2002	No	N/A
	DP011	Building 3 Drywell AOC	USEPA/March 2005	No	N/A
	SS-20	Tank Farms 1 and 3 Source Removal AOC	USEPA/ September 2009	No	N/A
	ST-21	Building 210	USEPA/ July 2003	No	N/A
	SS023	Building 20 AOC	USEPA/September 2001	No	N/A
	ST-26	Building 43 Source Removal AOC	USEPA/ September 2009	No	N/A
	FT030**	Fire Protection Training Area	USEPA/ September 2010	No	N/A
	SD031	Three Mile Creek AOC	USEPA/March 2004	No	N/A
	SD032	Six Mile Creek AOC	USEPA/March 2004	No	N/A
	ST-35	Building 26	USEPA/ July 2002	No	N/A
	ST-36$^{\Delta}$	Building 110	ROD Finalized December 2011 (a signature page was not located for this ROD)	No	N/A
	ST-37$^{\Delta}$	Pumphouse 5/ Building 771	USEPA/ February 2012	No	N/A
	ST-39	Building 117	USEPA/ July 2002	No	N/A
	SD-41$^{\Delta}$	Nosedocks 1 and 2	USEPA/ November 2011	No	N/A

Table 1 (cont'd.)
Griffiss AFB CERCLA Sites

Site Status	Site Number (IRP number)	Site Name	ROD Signature Date	Five-Year Review Required	Five-Year Review Section
No Further Action	FT-48	Suspected Fire Training Area	USEPA/ September 1999	No	N/A
	ST-51*	Building 100	USEPA/ September 2010	No	N/A
	ST-53	Building 133	USEPA/ November 2011	No	N/A
	OT-61	Small Arms Range	USEPA/ September 2007	No	N/A

Notes
* - Petroleum Sites that required a ROD under the FFA.
** - RODs were executed since the previous former Griffiss AFB Five-Year Review (2010).
Δ - RODs were executed since the previous former Griffiss AFB Five-Year Review (2010) and are petroleum sites that required a ROD under the FFA.
N/A: Not applicable.

1.2 Changes since Last Five-Year Review

1.2.1 Sites Removed from Table 1

One site was removed from Table 1. This site, SS060 (Building 35 AOC), was addressed under the Resource Conservation and Recovery Act and does not require a ROD or evaluation in this CERCLA five-year review.

1.2.2 Sites with Records of Decision Signed

Since the second five-year review, nine RODs have been signed including five NFA RODs. The NFA sites include Surface Drainage (SD)041 (Nosedocks 1 and 2), Storage Tanks (ST)053 (Building 133), ST036 (Building 110), ST037 (Pumphouse 5/Building 771), and ST051 (Building 100). Therefore, these sites have been moved in Table 1 to NFA status and are not evaluated in this five-year review.

The ROD for Fire Training (FT)030 (Fire Protection Training Area (FPTA) AOC) selected LUC/ICs for SVI evaluation prior to future construction. A SVI evaluation was completed at FT030 (FPTA AOC) in 2013, under a residential scenario, to evaluate the concentrations of contaminants and determine if they are at acceptable levels that support unrestricted use at the site. All COCs met the calculated residential SVI screening levels, thus indicating acceptable risk for residential exposure. Therefore, it was recommended that the LUC/IC be removed in the FT030 FTPA AOC SVI Evaluation and Closure Report (CAPE/FPM, September 2013). The NYSDEC and the USEPA approved this recommendation on March 17, 2014 and March 17, 2015, respectively. This site has been moved in Table 1 to NFA status and is not evaluated in this five-year review. The ROD for the FT030 site did not include Perfluorinated Compounds (PFCs), Air Force activities related to PFCs are discussed further in Section 4.5.

1.2.3 Previously Evaluated Sites Achieving No Further Action Status

Four previously evaluated sites have been closed with USEPA approval and NYSDEC acceptance since the second five-year review and are not evaluated in this five-year review. Two sites including drainage pit (DP)011 (Building 3 AOC) and Spill Site (SS)023 (Building 20 AOC) were previously LUC/IC sites. The Site Closure Report for DP011 (Building 3 AOC) was submitted following a groundwater monitoring event which showed all contaminants of concern (COCs) at the site are below NYSDEC Groundwater Standard (CAPE/FPM, January 2013). The Site Closure Report for SS023 (Building 20 AOC) was submitted in 2012 which confirmed the absence of all soil and groundwater contamination at the site (CAPE/FPM, March 2012). The USEPA approved site closure for DP011 (Building 3 AOC) and SS023 (Building 20 AOC) on February 12, 2013.

The other two sites included SD031 (Three Mile Creek AOC) and SD032 (Six Mile Creek AOC). These sites were previously LTM sites. The Remedial Action Completion Report which included each site was submitted in 2013. This report documented the achievement of Remedial Action Objectives at each site based on previous LTM data (CAPE/FPM, January 2013). The USEPA approved site closure for SD031 (Three Mile Creek AOC) and SD032 (Six Mile Creek AOC) on August 29, 2014.

1.3 Griffiss AFB Operational History

The mission of the former Griffiss AFB varied over the years. The base was activated on February 1, 1942, as Rome Air Depot, with the mission of storage, maintenance, and shipment of material for the U.S. Army Air Corps. Upon creation of the Air Force in 1947, the depot was renamed Griffiss AFB. The base became an electronics center in 1950, with the transfer of Watson Laboratory Complex (later Rome Air Development Center [1951], Air Force Research Laboratory / Rome Research Site [AFRL/ RRS], and then the Information Directorate at RRS was established with the mission of applied research, development, and testing of electronic air-ground systems). The headquarters of the Ground Electronics Engineering Installations Agency was established in June 1958 to engineer and install ground communication equipment throughout the world. The 49th Fighter Interceptor Squadron served at Griffiss AFB from 1959 until its deactivation in 1987. On July 1, 1970, the 416th Bombardment Wing of the Strategic Air Command (SAC) was activated with the mission of maintenance and implementation of both effective air refueling operations and long-range bombardment capability.

Griffiss AFB was designated for realignment under BRAC in 1993 and 1995, resulting in deactivation of the 416th Bombardment Wing in September 1995. The RRS of the AFRL and the Northeast Air Defense Sector have continued to operate at their current locations; the New York Air National Guard operated the runway for the 10th Mountain Division deployments until October 1998, when they were relocated to Fort Drum, NY. The Defense Finance and Accounting Service has established an operating location at the former Griffiss AFB.

1.4 Environmental Background

As a result of the various national defense missions carried out at the former Griffiss AFB since 1942, hazardous and toxic substances were used, and hazardous wastes were generated, stored, or disposal of at various sites on the installation. The defense missions involved, among others, were the procurement, storage, maintenance, and shipping of war material; research and development; and aircraft operations and maintenance (O&M).

Numerous studies and investigations under the U.S. DOD IRP have been carried out to locate, assess, and quantify the past toxic and hazardous waste storage, disposal, and spill sites (SS). These investigations included a records search in 1981, interviews with base personnel, a field inspection, compilation of an inventory of wastes, evaluation of disposal practices, and an assessment to determine the nature and extent of site contamination; Problem Confirmation and Quantification studies (similar to what is now designated a Site Investigation) in 1982 and 1985; soil and groundwater analyses in 1986; a base-wide health assessment in 1988 conducted by the U.S. Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR) (ATSDR, June 1988); base-specific hydrology investigations in 1989 and 1990; a groundwater investigation in 1991; and site-specific studies and investigations between 1989 and 2005. The ATSDR issued a Public Health Assessment for Griffiss AFB dated October 23, 1995 (ATSDR, December 1995), and an addendum, dated September 9, 1996 (September 1996).

Pursuant to Section 105 of CERCLA, Griffiss AFB was included on the NPL on July 15, 1987. On August 21, 1990, the Air Force, USEPA (Region 2), and NYSDEC (Division of Environmental Remediation) entered into a FFA under Section 120 of CERCLA with Air Force as the lead agency.

1.5 Land-Reuse Zoning Designations

The Griffiss Local Reuse Agency (LRA) published the Griffiss Business and Technology Park Development Standards on September 23, 1998 with amendments on September 30, 1998 and February 28, 2001. The sites in this Five-Year Review are either zoned for commercial/ industrial/ administrative use or low intensity open space use as shown in Figure 3.

Per the Development Standards, land reuse for the commercial/ industrial/ administrative use areas include administrative offices, light manufacturing assembly, warehousing, distribution facilities, and heavy industrial use at the Five-Year Review sites. Land reuse for the low intensity open space use areas include parkways, roads, storm water management facilities, pedestrian circulation systems, utility systems, and low intensity recreational facilities.

1.6 Community Notification and Involvement

A public notice of the intent to conduct the Third Five-Year Review for the former Griffiss AFB was published in the Rome Daily Sentinel newspaper on January 18, 2015. The notice invited recipients to provide comments to Mr. David Farnsworth, the AFCEC Project Manager, by telephone. Another notice will be provided with the findings and recommendations of this final report. The published notice of intent for the Third Five-Year Review is provided in Appendix B.

In addition, a copy of the Final Third Five-Year Review Report will be available online at http://afcec.publicadmin-record.us.af.mil/Search.aspx

2 ENVIRONMENTAL SETTING

2.1 Physiography and Topography

The former Griffiss AFB is located in the City of Rome in Oneida County, New York. The former Base lies within the Mohawk Valley between the Appalachian plateau and the Adirondack Mountains. A rolling plateau northeast of the former Base reaches an elevation of 1300 feet (ft) above mean sea level (MSL). The New York State Barge Canal (NYSBC) and the Mohawk River valley south of the former Base lie below 430 ft above MSL. The topography across the former Base is relatively flat with elevations ranging from 435 ft above MSL in the southwest portion to 595 ft above MSL in the northwest portion of the former Base.

2.2 Geology

Unconsolidated sediments at the former Griffiss AFB consist primarily of glacial till with minor quantities of clay and sand and significant quantities of silt and gravel. The thickness of these sediments ranges from 0 ft in the northeast portion to more than 130 ft in the southern portion of the former Base. The average thickness of the unconsolidated sediments is 25 to 50 ft in the central portion and 100 to 130 ft in the south and southwest portions of the former Base. The bedrock beneath the former Base generally dips from the northeast to the southwest and consists of black Utica Shale. It is a gray and black carbonaceous unit with a high/medium organic content (LAW Engineering and Environmental Services, Inc. [LAW], 1996).

2.3 Hydrogeology

The shallow water table aquifer lies within the unconsolidated sediments, where depth to groundwater ranged from just below ground surface (bgs) to 59 ft bgs during the June 2003 synoptic Basewide water-level measurement of wells. Groundwater across the former Base generally flows from the topographic high in the northeast to the Mohawk River and the NYSBC to the south. Several creeks, drainage culverts, and sewers intercept surface water runoff (FPM, November 2004).

A comprehensive description of regional and local geology, hydrogeology, lithology, and hydrology for the former Griffiss AFB was given in Section 4 of the Baseline Study (FPM, January 2002), and in the Remedial Investigation (RI) (LAW, December 1996), and in the Supplemental Investigation (SI) prepared by Ecology and Environment, Inc. (E&E, July 1998).

2.4 Climate

The former Griffiss AFB experiences a continental climate characterized by warm, humid, moderately wet summers and cold winters with moderately heavy snowfalls. The mean annual precipitation is 45.6 inches, which includes the mean annual snowfall of 107 inches. The annual evapotranspiration rate is 23 inches. The average temperature during the winter season is 20 degrees Fahrenheit; temperatures during the spring, summer, and fall vary from 31 to 81 degrees Fahrenheit. The prevailing winds are from the southwest, with an average wind speed of 5 knots.

The former Griffiss AFB is located in a region prone to acid precipitation; the average pH of precipitation recorded for 1992 at the three closest stations ranged from 4.25 to 4.28. Fluctuations in pH have an inverse correlation to precipitation, such that lower pH levels correlate with higher amounts of precipitation.

2.5 Biology

The former Griffiss AFB, covering 3,552 acres of property within the Erie-Ontario ecozone of the Great Lakes Physiographic Province, has been heavily disturbed from an ecological perspective. Although there are a few undisturbed communities within the former Base's boundary, the 1993 Inventory of Rare Plant Species and Significant Natural Communities identified six significant habitats of special-concern, occurring on the former Base. There are five special-concern habitats identified by the Inventory that are adjacent to AOCs. These include: (1) a white cedar-dominated rich sloping fen adjacent to the Landfill 1 wetlands on the east side, and (2) a hemlock-hardwood swamp located in a mature forest occurring hydraulically upgradient of Landfill 1; (3) a rich graminoid fen adjacent to the southeast corner of the runway, situated downgradient of Landfill 2/3; (4) a pitch pine-scarlet oak woods in the vicinity of SAC Hill; and (5) a hemlock-hardwood swamp located adjacent to Three Mile Creek in the vicinity of Landfills 4 and 6. Except for the rich sloping fen adjacent to Landfill 1 which could be affected by the activation of the Landfill 1 Trench Treatment System and the hemlock-hardwood swamp located adjacent to Three Mile Creek and downgradient of Landfill 6 which could be affected by the Landfill 6 surface run-off and site contamination migration, none of the other areas have the potential to be affected by past or present remedial actions.

3 REGULATORY COMPLIANCE

3.1 ARAR Review

Applicable or relevant and appropriate requirements (ARARs) are environmental and public health requirements set by the federal and state governments that are legally applicable or relevant and appropriate to the chemicals/contaminants, remedial, or other actions/circumstances at a CERCLA or State Superfund site. To be considered (TBC) criteria are non-promulgated federal or state standards that are to be used on an "as appropriate" basis in developing screening criteria.

The ARARs applicable to remedies for the sites in this Five-Year Review include the following New York State Standards and Guidance Values:

- Groundwater and Surface water –The water quality standards are promulgated under New York's Article 17 of the Environmental Conservation Law and 6 New York Code of Rules and Regulations (NYCRR) Parts 700-706, Water Quality Regulations (http://www.dec.ny.gov/chemical/23853.html). The water quality standards are also published under NYSDEC Division of Water Technical and Operational Guidance Series "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations", NYSDEC, June 1998 (http://www.dec.ny.gov/docs/water_pdf/togs111.pdf). NYSDEC Class GA Groundwater Standards and NYSDEC Class C Surface Water Standards apply.
- Soils – NYSDEC 6 NYCRR Part 375 Environmental Remediation Program, December 2006 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/part375.pdf).

The TBCs applicable to remedies for the sites in this Five-Year Review include the following New York State Standards and Guidance Values:

- Soils – CP-51 Soil Cleanup Guidance, October 2010, (http://www.dec.ny.gov/regulations/2393.html) which replaces "Determination of Soil Cleanup Objectives and Cleanup Levels," Technical and Administrative Guidance Memorandum (TAGM) #4046, NYSDEC, January 1994 and "Site Background Screening Concentration", LAW, December 1996.
- Groundwater and Surface water –NYSDEC Division of Water Technical and Operational Guidance Series "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations", NYSDEC, June 1998 (http://www.dec.ny.gov/docs/water_pdf/togs111.pdf). NYSDEC Class GA Groundwater Guidance Values and NYSDEC Class C Surface Water Guidance Values apply.

For petroleum Source Removal AOCs included in the FFA, TBCs for excavated soil also include NYSDEC STARS Memorandum #1, NYSDEC, August 1992.

The ARARs/TBCs applicable to previous investigations at the CERCLA sites documented in the Five-Year Review have not changed in a manner that would compromise the protectiveness or recommendations of each CERCLA site.

The TAGM #4046 guidance has been replaced with the CP-51 Soil Cleanup Guidance (NYSDEC, October 2010). This guidance is used in conjunction with the regulation 6 NYCRR Part 375 (NYSDEC, December 2006). For this five-year review, the TAGM #4046 Soil Cleanup Objectives (SCOs), CP-51 Supplemental SCOs, and 6 NYCRR Part 375 SCOs were compared. The results of this comparison showed that the use of TAGM #4046 during the previous soil removals and investigations is still protective to human health and the environment.

4 CERCLA FIVE-YEAR REVIEW

Section 4 reviews the CERCLA sites at the former Griffiss AFB. Figure 2 identifies the CERCLA sites reviewed in the Five-Year Review. The CERCLA sites are individually reviewed within the following categories:

- LUC/ IC Sites;
- LTM Sites;
- Ongoing Remedial Action Sites; and
- Pre-ROD Sites.

4.1 Land-Use Control/Institutional Control Sites

This section of the Five-Year Review includes CERCLA sites at the former Griffiss AFB with LUC/ICs as the only component of the selected remedy. These sites include:

- ST006 (Building 101 AOC)
- SS008 (Building 112 AOC)
- DP012 (Building 301 AOC)
- DP013 (Building 255 AOC)
- DP015 (Building 219 AOC)
- SS017 (Lot 69 AOC)
- DP022 (Building 222 AOC)
- SS024 (Fire Demonstration Area [FDA] AOC)
- SS025 (Site T-9 AOC)
- SS033 (CYSA OU
- SS044 (Electrical Power Substation [EPS] AOC)
- SD050 (Building 214 AOC)

DP012 (Building 301 AOC), DP013 (Building 255 AOC), DP015 (Building 219 AOC), DP022 (Building 222 AOC), and SD050 (Building 214 AOC) are located in the west-central portion of the former Griffiss AFB. SS008 (Building 112 AOC), SS017 (Lot 69 AOC), SS024 (FDA AOC), SS025 (Site T-9 AOC), SS033 (CYSA OU), SS044 (EPS AOC), and ST006 (Building 101 AOC) are located in the central portion of the former Griffiss AFB. The following summarizes each site's former use, previous investigations, present/past contamination, ROD requirements, status of protectiveness, and future actions. All sites in Section 4.1, excluding SS033 (CYSA OU) and ST006 (Building 101 AOC) were included in the 2005 Five-Year Review (FPM, September 2005) and 2010 Five-Year Review Addendum (FPM, February 2013). This is the first Five-Year Review for SS033 (CYSA OU) and ST006 (Building 101 AOC). These sites were included as pre-ROD sites in the previous Five-Year Review (FPM, February 2013).

4.1.1 ST006 (Building 101 AOC)

4.1.1.1 Document Review

4.1.1.1.1 Site History

The ST006 Building 101 AOC is located within Building 101 which is located south of Apron 3 in the central portion of the base along the northern margin of the industrial complex. It is bounded by Hangar Road to the south, Building 100 to the east, and Apron 4 parking area to the west. Building 101 was used as an aircraft maintenance hangar during base operation. Currently, the building is used as a commercial aircraft maintenance facility. ST006 (Building 101 AOC) consists of a former Battery Acid Disposal Pit (BADP) and a former Battery Acid Drainage Pit (BADrP), which are located within the building as shown in Figure 4.

The former BADP was located in the central portion of the building in an area designated as the Lead Battery Room. The BADP was in use from the early 1940s until 1985, when it was excavated. The BADP consisted of a pit beneath the concrete floor measuring approximately 2 ft long by 2 ft wide by 10 ft deep and was covered with a steel grate. Acids from spent batteries were neutralized with baking soda and poured into the BADP, where the neutralized liquid was allowed to percolate into the underlying soil. A 4-inch floor drain and overflow piping from the BADP ran west to the BADrP located beyond the west wall of the Lead Battery Room. The BADrP was approximately 17.5 ft long by 5.5 ft wide. Following removal of the BADP, a new 4-inch floor drain was installed at the former BADP location and piped to the BADrP. The BADrP was removed along with underlying soils in 1997. The former BADrP location was backfilled and sealed with concrete.

4.1.1.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

In 1984, split-spoon soil samples were taken from within the BADP and analyzed for heavy metals. The results showed high concentrations of antimony, copper, lead, and zinc at shallow depths (Weston, November 1985). In 1985, the BADP was excavated to a depth of approximately 10 ft and replaced with New York State Type 4 fill, and a floor drain with new piping between the BADP and the BADrP was installed. The former BADP is currently evident by the presence of the floor drain, which was sealed with a rubber cap in 1992 to prevent the emission of vapors from the drainage pit.

A sample of the BADrP contents was collected for analysis in August 1992. Metals, including cadmium, chromium, cobalt, lead, mercury, nickel, silver, vanadium, and zinc were detected, as well as chlorinated hydrocarbons, solvents, and polycyclic aromatic hydrocarbons (PAHs).

The RI field investigation activities performed at the location of the former BADP included the drilling of one soil boring; the collection of six soil samples from the soil boring; and the

collection of one groundwater sample from the soil boring. Groundwater results showed the presence of one Volatile Organic Compound (VOC), one Semi-Volatile Organic Compound (SVOC), three pesticides, and 19 metals with one pesticide and ten metals exceeding the most stringent criterion. The soil results indicated the presence of two VOCs, eight SVOCs, three pesticides/Polychlorinated Biphenyl (PCBs), and 23 metals with two SVOCs and six metals exceeding the most stringent criterion (LAW, December 1996). As part of the RI, a baseline risk assessment was performed to evaluate the current and future (commercial/administrative use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The total carcinogenic risk associated with exposure by industrial, landscape, utility and construction workers to contaminants in the soil or groundwater were within the lower end of the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1 for all exposure scenarios. Risks to ecological receptors due to contamination at this AOC were not quantitatively assessed because no complete exposure pathways exist. Detailed baseline risk assessment results are provided in the RI.

A removal action was performed from June 1997 to January 1998 (OHM, July 1998). The work consisted of sludge removal, removal of the concrete floor and sump, soil excavation, waste characterization sampling, confirmatory sampling, backfilling, concrete restoration, and smoke and dye testing of the drain piping under the floor. The BADrP was free of any residual liquids and contained a dry sludge layer that was approximately 8 inches thick that exhibited a solvent-like odor. Photo Ionization Detector (PID) screenings of the sludge vapor indicted the presence of VOCs ranging from 0 to 127 parts per million (ppm) and a four-point composite sample was obtained. One VOC, two SVOCs, PCBs, and six metals were detected. The sludge was removed from the pit, placed into drums for disposal, and the concrete bottom was pressure-washed and scrubbed on July 11, 1997. Six wipe samples were collected following the surface remediation and analyzed for PCBs and metals. While no PCBs were detected in any of the samples at concentrations above the wipe action levels (as indicated by 40 Code of Federal Regulations (CFR) 761.125(b)(1) and site-specific action levels derived from two studies of indoor surface contamination), several metals were detected above the action levels in each of the six wipe samples.

The concrete sump and a portion of the concrete bottom of the pit were removed in early September 1997 in order to assess soil contamination underneath the pit. PID screenings in the headspace of samples from the pit indicated the presence of VOCs ranging from 50 to 115 ppm. One bucket auger sample was collected from where the sump had been removed and was submitted for analysis of VOCs, SVOCs, PCBs, and metals. Results indicated that two SVOCs (phenol and 4-methylphenol) and five metals (cadmium, chromium, lead, mercury, and silver) were detected at concentrations above their respective TAGM 4046 action levels. Another round of soil and wipe sampling was recommended at the time to confirm the results of the initial soil sample and to assess the possibility for remaining contamination on the concrete surface.

In October 1997, three soil samples (CS01, CS02, and CS03) and two wipe samples were collected from the bottom and concrete walls of the pit, respectively. The soil samples were analyzed for VOCs, SVOCs, PCBs, and metals; the wipe samples were analyzed for metals only. At the time of the investigation the soil sample results were compared to TAGM 3028 action levels, which indicated only 1,4-dichlorobenzene (DCB) in sample CS02 at levels above the

action level. The central portion of the pit was recommended for excavation and confirmation samples were analyzed for 1,4-DCB only. Later analysis of the same data indicated several SVOCs, including phenol, 4-methylphenol, 1,2-DCB, 1,3-DCB, and 1,4-DCB and one metal (cadmium) were detected exceeding their respective TAGM 4046 action levels in the soil sample collected from the central portion of the pit bottom (CS02), and 4-methylphenol was found slightly above the TAGM 4046 action level in sample CS01.

The remaining sections of the concrete pit floor were removed in November 1997. The underlying soil in the central section of the pit was excavated to a depth of 3 ft. Three soil samples were collected and analyzed for 1,4-DCB only. This compound did not exceed TAGM 3028 action levels in any of the three soil samples collected. A sample of crushed concrete floor material was also collected and analyzed for PCBs and metals, and a sample from the pile of excavated soil was collected and analyzed for VOCs, SVOCs, PCBs, and metals. No chemicals were detected at levels above regulatory guidance levels in either the concrete waste sample or the soil waste samples. The concrete removed from the bottom of the BADrP and the soils excavated from under the pit were transported to a Subtitle D landfill in Camillus, New York, for disposal. Nine drums of solid material and two drums of rinse water were transported and disposed of as hazardous waste at the Michigan Disposal Waste Treatment Plant in Belleville, Michigan.

One final confirmation soil sample was collected from the over-excavated area in December 1997 and analyzed for VOCs, SVOCs, PCBs, and metals. No COCs exceeded either the TAGM 3028 or 4046 action levels. Although the October 1997 wipe samples of the pit walls indicated site-specific action level exceedances for cadmium, chromium, lead, mercury, and silver, the concrete walls were not recommended for removal. The BADrP was backfilled and covered with a 6-inch concrete pad in January 1998.

An additional sampling event was performed in June 2002 to compare the existing soil concentrations beneath the former BADrP to TAGM 4046 levels and determine whether closure would be appropriate for the site (FPM, August 2002). A total of seven soil borings were installed within the footprint of the former BADrP. Two soil samples were collected from each boring: one was collected in the native soils directly beneath the fill area, and the second was collected 2 ft below the top of the native soil (i.e., if native soil was encountered at 4 ft bgs, one soil boring was collected from 4 to 6 ft bgs, and a second from 6 to 8 ft bgs). The results of the sampling indicated the presence of 17 VOCs, 8 SVOCs, 22 metals, and 3 PCBs. The concentrations of one SVOC exceeded the TAGM 4046 level; however, the data was qualified as being below the laboratory method detection limit. Six metals exceeded the background screening concentrations. Following this sampling event, TAGM 4046 standards were superseded by the 6 NYCRR Part 375 Unrestricted Use SCOs. Under the 6 NYCRR Part 375 Unrestricted Use SCOs, no SVOCs and only three metals concentrations are above the SCOs. A groundwater sample was also collected from the top of the groundwater table within 100 ft downgradient of the former BADrP. The sample was submitted and analyzed for total VOCs, SVOCs, PCBs, and metals and the results did not exceed NYSDEC Groundwater Standards.

SVI sampling was conducted at the Building 101 AOC in fall 2006 and winter 2007. Soil vapor (exterior) and sub-slab vapor (interior) samples were collected in October 2006. The samples

were collected and analyzed for VOCs using the EPA Method TO-15. The results of this initial sampling round were evaluated by the agencies and additional sampling was recommended. The second round of SVI sampling occurred in February 2007. Indoor and outdoor air samples were collected and also analyzed for VOCs using the EPA Method TO-15. Results were compared to the calculated industrial/commercial scenario screening levels provided in the Report for SVI Sampling at Building 101 (FPM, November 2007). Results indicate that all soil vapor, indoor air, and outdoor air detections are below screening levels (for industrial/commercial use). Five sub-slab vapor detections were above the sub-slab vapor screening levels, but the detections are within one order of magnitude of the screening levels. This provides evidence that the concrete slab at the building (7-12 inches thick) provides an adequate SVI barrier. Moreover, although not part of the final remedy, the current occupant (an aircraft maintenance operation) has coated the entire floor it occupies with epoxy paint. This type of epoxy coating is one of the options generally applied to eliminate SVI potential, since this epoxy coating can be an effective vapor barrier.

Since the sub-slab detections above screening levels are within one order of magnitude of the sub-slab screening levels and no exceedances have been reported for the indoor air samples, NFA or evaluation of SVI is required at the site unless building use changes in the future from aircraft maintenance to another industrial/commercial use or to residential use (the latter of which is prohibited).

4.1.1.1.3 ROD Requirements

The ROD for the ST006 (Building 101 AOC) was issued by the Air Force in September 2012. The ROD identified that the majority of soil and groundwater contamination has been removed from the ST006 (Building 101 AOC). The selected remedy was LUC/ICs in the form of land use restrictions limiting future use to industrial/commercial purposes and re-evaluation for SVI if new construction is performed in the SVI restriction area. The ROD for ST006 (Building 101 AOC) state that:

- Development and use of the entire Building 101 AOC property for residential housing, elementary and secondary schools, childcare facilities and playgrounds will be prohibited unless prior approval is received from the Air Force, EPA, and NYSDEC.
- The owner/occupant of the property shall evaluate the potential for SVI if future construction is performed in the SVI restriction area.

4.1.1.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The Griffiss Local Development Corporation (GLDC), the Griffiss LRA, has designated Parcel F3/F13, which includes the ST006 (Building 101 AOC), for industrial/commercial (manufacturing/airfield and related services) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.1.1.5 Post-ROD Activities

A site closure evaluation, performed in February and April 2013, included SVI sampling. A total of ten sub-slab vapor samples, two indoor air samples and one outdoor air sample were collected and analyzed for VOCs according to the USEPA Method TO-15. Four additional sub-slab samples west and northwest of the area were collected in July 2013 to delineate the TCE contamination and to ensure that the source emanates from the former BADrP.

The 2013 sampling results were used to develop risk-based screening levels for a residential scenario at the site. Sub-slab vapor screening levels were derived from the risk-based indoor air concentrations using a sub-slab vapor-to-indoor air attenuation factor ($AF_{s/ia}$). The results showed a potential for unacceptable risk, primarily due to TCE, exists for indoor air inhalation resulting from SVI under a residential scenario (CAPE/FPM, September 2013). To remediate this unacceptable risk, a Soil Vapor Extraction (SVE) system was installed on October 7, 2013. The SVE system is composed of one vertical well with a total combined screen length of 5 ft (3 to 8 ft below grade surface [bgs]), one vacuum pump capable of a flow rate of 20 actual cubic ft per minute (acfm), a vapor treatment system, and three Vapor Monitoring Points (VMPs) (Figure 16). Extracted soil vapor is treated using two 200-pound granular activated carbon drums. The VMPs are positioned 10 ft, 20 ft, and 30 ft away from the extraction well to collect performance monitoring (PM) data. The baseline sampling event was conducted on October 17, 2013 and October 22, 2013 and consisted of sub-slab vapor, indoor air, outdoor air sampling. All samples were analyzed for VOCs using the USEPA Method TO-15. An influent sample was also collected following system start-up on October 22, 2013. That sample was collected from a sampling port on the exhaust stack prior to the vapor treatment system.

SVE system O&M have been conducted since system startup and includes weekly system component readings (system temperature, flow, vacuum and motor status), knock-out tank inspections, quarterly VMP vacuum measurements, and granular activated carbon disposal and replacement every four months. In addition to the weekly O&M readings, indoor and outdoor air sampling, sub-slab vapor sampling, and influent sampling were conducted quarterly in January 2014, April 2014, July 2014, and October 2014. All samples were analyzed for VOCs using the USEPA Method TO-15. System flow rates range from 16 acfm to 19 acfm and the vacuum readings range from 9 to 10 inches (in.) of water gauge (w.g). Vacuum readings ranged from 0.015 to 0.02 in. w.g at 101VMP-1, from 0.055 to 0.15 in. w.g. at 101VMP-2 and from 0.005 to 0.02 in. w.g. at 101VMP-3 (CAPE/FPM, January 2015).

4.1.1.2 Data Review and Analysis

The site closure evaluation showed that sub-slab TCE concentrations in the BADP ranged from non-detect to 200 micrograms per cubic meter ($\mu g/m^3$). Sub-slab TCE concentrations in the BADrP ranged from 950 $\mu g/m^3$ to 1,800 $\mu g/m^3$. The delineation sampling conducted in July 2013 confirmed that the TCE source is at the former BADrP (CAPE/FPM, March 2014). The residential sub-slab screening level for TCE is 70 $\mu g/m^3$. The 2013 indoor air sampling results showed benzene and 1,4-DCB concentrations above the residential indoor air screening levels. Following building chemical inventory review, it was found that all indoor air and outdoor air sampling results were associated with building operations. The development of the residential

screening levels is detailed in the Final ST006 (Building 101 AOC) Site Closure Evaluation Report (CAPE/FPM, September 2013).

Prior to the operation of the SVE system in October 2013, baseline sampling results showed TCE concentrations at all three VMPs (76 µg/m^3 to 540 µg/m^3) above the sub-slab vapor screening level of 70 µg/m^3. The influent air sampling result from the baseline sampling event showed a TCE concentration of 100 µg/m^3. Exceedances in the indoor air or outdoor air samples are attributed to chemicals currently used in the building to perform maintenance, repair and overhaul of airplanes.

Following the implementation of the SVE system, TCE concentrations reported during the O&M sampling events ranged from 8.4 to 18 µg/m^3 at 101VMP-1, 18 to 180 µg/m^3 at 101VMP-2, and 36 to 54 µg/m^3 at 101VMP-3. During system operation, the sub-slab TCE concentration in 101VMP-2 has been above residential vapor screening levels in all but one sampling event. All other sub-slab vapor results were below residential vapor screening levels. The TCE concentration detected in the influent samples ranged from was 32 to 100 µg/m^3. Data trends for the influent TCE concentration showed an initial increase, but the most recent sampling rounds show a stabilized trend.

4.1.1.3 Site Inspection

The site inspection was conducted on September 9, 2014 which confirmed that the ST006 (Building 101 AOC) remedy has been implemented and is protective of human health. The site is within Building 101 that is being used for industrial/commercial purposes. In addition, there has been no new construction at or near the site and the municipal water supply is used within the building. The completed five-year review checklist is provided in Appendix A.

4.1.1.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.1.4.1 Remedy Functionality

The selected remedy is functioning as intended, in a manner that ensures protectiveness. LUC/ICs have been implemented in the deed for Parcel F3/F13 which includes the ST006 (Building 101 AOC) as deed restrictions which satisfy the ROD. The deed restrictions include:

1. The portions of the Property depicted as ST006 shall not be used for residential housing, elementary or secondary schools, childcare facilities, hospitals/facilities

for human care, or playgrounds without prior written approval from the Air Force, the USEPA and the NYSDEC.

2. The Grantee shall evaluate the potential for SVI if future construction of structures intended for human occupancy is planned for the land area within the SVI Restriction Boundary. The Grantee must include mitigation measures for SVI in the design/construction of such structure prior to human occupancy if an unacceptable health risk is posed under CERCLA and the NCP. The Grantee agrees to coordinate any and all evaluations and potential mitigation measures with the USEPA and NYSDEC.

The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/commercial land-use that is compatible with the non-residential LUC/IC at the site.

4.1.1.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. A baseline human health risk assessment was conducted during the RI to determine whether chemicals detected at the Building 101 AOC could pose unacceptable health risks to individuals under current and proposed future industrial/commercial land use. The results of the human health baseline risk assessment indicate that chemicals in soil should not present a risk to current and future construction, utility, and industrial workers. The ecological risk assumptions are also still valid.

The SVI evaluation of 2006 and 2007 concluded that NFA or evaluation of SVI is required at the Building 101 AOC unless building use changes in the future from aircraft maintenance to another industrial/commercial use or to residential use (the latter of which is prohibited). As a result of the AF initiative for unrestricted use at the site, sub-slab vapor screening levels were derived from the risk-based indoor air concentrations using an $AF_{s/ia}$. The $AF_{s/ia}$ represents the ratio of the indoor air concentration measured in a structure to the vapor concentrations measured in the subsurface materials underlying the structure. Site-specific $AF_{s/ia}$ values were estimated based on (1) observed attenuation at the building (i.e., indoor air and sub-slab vapor data), (2) USEPA recommended values, and (3) building construction and use. The residential sub-slab vapor screening level for TCE was determined to be 70 $\mu g/m^3$ (CAPE/FPM, September 2013). These levels are currently used for O&M monitoring results comparison.

4.1.1.4.3 New Information of Significance

This site was not included in the previous Five-Year Review. However, site closure activities are ongoing at the site. These activities have included the 2013 SVI evaluation and the installation of the SVE System. The purpose of this system is to eliminate the potential SVI and to achieve site closure with unrestricted use at the site. System shut-down and rebound will be evaluated once sampling results show that all TCE concentrations are below residential sub-slab screening levels. Site closure will be requested if TCE concentrations remain below the residential sub-slab screening levels during the rebound evaluation period.

4.1.1.5 Recommendations and Follow-up Actions

Following site closure approval, the Air Force will recommend a deed modification to remove the groundwater use and non-residential use restrictions associated with the site.

4.1.1.6 Protectiveness Statement

Based on the document review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at ST006 (Building 101 AOC) is protective of human health and the environment.

4.1.2 SS008 (Building 112 AOC)

4.1.2.1 Document Review

4.1.2.1.1 Site History

Former Building 112, located in the center of the former Griffiss AFB (Parcel F5), near Tank Farms 1 and 3, functioned as a High Power Laboratory. The site consists of a drywell, a loading dock, and a PCB dump area. The loading dock and PCB dump area investigations indicated PCB contamination in sediment samples, subsurface soil samples and in bulk material samples during a 1982 investigation. Figure 5 illustrates the SS008 (Building 112 AOC) location and the LUC/ICs as required by the ROD.

4.1.2.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations and Interim Remedial Action (IRA) activities discussed in this section are illustrated in figures provided in the documents referenced below.

Initial investigations in 1981 and 1982 showed PCB contamination in soils in the vicinity of the loading docks (Weston, December 1992). Remedial activities were also performed on the roof of Building 112 in 1984 where a transformer ruptured. The rooftop transformer pad was removed and confirmatory samples were collected from the bulk material. Sample results indicated clean-up criteria had been met.

During the RI, the analytical results of soil samples (surface and subsurface) in the vicinity of the drywell, loading dock, and PCB dump area indicated 5 SVOCs, 2 pesticides/PCBs, and 6 metals exceedances of applicable RI criteria (LAW, December 1996). Groundwater samples were also collected from seven locations and SVOCs, pesticides/ PCBs and metals were detected. Only pesticides and metals concentrations were above the most stringent criterion.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (commercial/administrative use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The total carcinogenic risk associated with exposure by industrial, landscape, utility and construction workers to contaminants in the

soil or groundwater were within the lower end of the acceptable USEPA target risk range (1 x 10^{-6}). The HI was below the acceptable level of 1 for all exposure scenarios. The ecological baseline risk assessment was also performed at the site to model risks to the raccoon and short-tailed shrew for exposures to surface soil. None of the hazard quotients exceeded the benchmark level of 1 for the raccoon. However, the hazard quotients for three chemicals exceeded the benchmark level of 1 for the shrew (2,3,7,8-tetrachlorodibenzodioxin (4.3), cadmium (1.4), and lead (1.1)). Detailed baseline risk assessment results are provided in the RI.

An IRA was performed from 1998 to 1999. Contaminated surface and subsurface soils were removed from the SS008 (Building 112 AOC). The loading dock and PCB dump area were excavated and then over-excavated to ensure confirmatory soil sample results met clean-up criteria as stated in the Closure Certification Report (Ocuto, March 2001).

Monitoring wells B112MW-1, -2, -3, and -4 (not shown in Figure 5) were sampled in October 1999, January 2000, October 2000 and January 2001 and analyzed for PCBs only (FPM, February 2002). Three PCB detections were reported in the October 1999 sampling round (none exceeded the NYSDEC Groundwater Standards), two PCB detections (one exceeded the NYSDEC Groundwater Standards) in the January 2000 sampling round, one PCB detection in the October 2000 sampling round (no exceedances of the NYSDEC Groundwater Standards), and three detections in the January 2001 sampling round (one exceeded the NYSDEC Groundwater Standards). Monitoring well B112MW-1 contained all of the PCB exceedances detected.

4.1.2.1.3 ROD Requirements

The ROD for the SS008 (Building 112 AOC) was issued by the Air Force in June 2001 and signed by the USEPA in September 2001. Based on the previous investigations and environmental conditions at the site, the selected remedy for the SS008 (Building 112 AOC) is NFA with LUC/ICs for industrial/commercial use and groundwater use restrictions. The ROD for the SS008 (Building 112 AOC) states that:

- The property will be designated for industrial/ commercial use unless permission is obtained from the USEPA, NYSDEC, and the New York State Department of Health (NYSDOH);
- The owner or occupant of this site shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the site unless such owner or occupant obtains prior written approval from the NYSDOH; and
- The owner or occupant of the property is restricted from relocating soil in the area during any future construction activities. Soil below the clean fill must remain on site (and stay covered while stockpiled) and be covered by a minimum of 12 inches of clean fill.

4.1.2.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, which is the Griffiss LRA, designated Parcel F5, which includes the SS008 (Building 112 AOC), for

industrial/commercial (manufacturing/ airfield and related services) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.2.1.5 Post-ROD Activities

FPM performed confirmatory groundwater sampling at the SS008 (Building 112 AOC) in November 2001 at monitoring well B112MW-1 (FPM, February 2002). Results from the November 2001 groundwater sampling event indicated no residual PCB contamination. Therefore, no further groundwater monitoring was recommended at the site and monitoring ceased.

The remaining LTM wells at the site were decommissioned in the Round 3 Well Decommissioning event performed in summer/fall 2005. Also, building demolition activities were initiated at the site to demolish Building 112 in summer 2008. Activities were completed in 2009.

Annual LUC/IC inspections have also been performed at the site. In addition, the owner/occupant of the property was contacted to ensure awareness of the restrictions and to confirm that LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.2.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last Five-Year Review.

4.1.2.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SS008 (Building 112 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is grass/gravel covered open space near industrial/commercial facilities and there have been no land use changes since the previous five-year review. In addition, there has been no soil intrusive work/relocation or groundwater extraction performed at the site and adjacent facilities use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.1.2.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4. Is the remedy functioning as intended?
5. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
6. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.2.4.1 Remedy Functionality

LUC/ICs for commercial/non-residential use and groundwater use restrictions were implemented in property transfer document as specified in the ROD. Specifically, the deed for Parcel F5, which includes SS008 (Building 112 AOC), was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The Grantee covenants to use the Property for industrial/commercial/non-residential use.
2. The Grantee covenants not to extract utilize, consume or permit any extraction, use, consumption, of any water from the aquifer below the surface of the ground within the groundwater restriction area boundary unless the groundwater has been tested in advance and found to meet all applicable promulgated federal or state standards and the Grantee first obtains the prior written approval from the NYSDOH and NYSDEC. The Grantee further covenants to ensure that the aquifer will not be used in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment. The Grantee covenants to comply with all applicable Federal and State laws and regulations with regard to activities affecting the groundwater in the aquifer.
3. The Grantee also covenants to restrict the relocation of the contaminated soils below one foot of the surface from being placed outside the parcel. If the contaminated soil below one foot of the surface will be excavated, it must remain on site, stay covered if stockpiled, and covered by a minimum of one foot of clean fill once it is returned to the ground. Prior to digging on this parcel, the Grantee covenants to notify all workers performing that work of these restrictions, and the Grantee will notify the Air Force of any digging activities that will take place within the parcel.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the LUC/ICs was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/ commercial land-use that is compatible with the non-residential LUC at the site.

4.1.2.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under an industrial/ commercial reuse scenario. The results of the human health baseline risk assessment indicate that PCBs detected in soil and groundwater should not present a risk to current and future occupational workers and future industrial workers as long as groundwater at this AOC is not used for drinking water purposes. In addition, the PCB concentrations remaining in the soil after the completion of the removal action are below the most stringent criterion and will not pose a risk to residential users as long as the soil remains on-site and covered with a minimum of 12 inches of clean fill. The ecological baseline risk assessment identified the potential for adverse effects to the short tailed shrew. However, the

IRA conducted in 1998 removed contaminated soils at the site and the associated risk is no longer present

The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/ future non-residential land-use, soil relocation restriction, and groundwater use restriction minimize potential exposure pathways to PCB contaminated soil and eliminate groundwater ingestion. Furthermore, recently collected groundwater data indicate that some of the COCs (PCBs) that were previously detected in the groundwater at levels of concern, have declined to acceptable levels (below NYSDEC Class GA Groundwater Standards); and
- The previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998).

4.1.2.4.3 New Information of Significance

There is no new information of significance since the last Five-Year Review that would affect the protectiveness of the remedy.

4.1.2.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.1.2.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS008 (Building 112 AOC) is protective of human health and the environment. The Air Force has identified the restrictions necessary for ensuring the remedy protectiveness of human health and the environment. The restrictions were implemented through deed restrictions during the conveyance of the property.

4.1.3 DP012 (Building 301 AOC)

4.1.3.1 Document Review

4.1.3.1.1 Site History

The DP012 (Building 301 AOC) is located on the south side of Brooks Road in the central portion (Parcel F6A) of the former Griffiss AFB. Former Building 301 housed the Entomology Shop, which provided pest control for the base. A drywell was located in the grassy area at the south east corner of the building and south of an idle air conditioning unit. The drywell was reportedly a 4-foot square by 8-foot deep pit filled with stone and gravel. It was used from the 1940s through 1982 to dispose of small quantities of excess pesticides and rinse water from pesticide applications. The wastes were allowed to percolate into the permeable subsoil beneath

the drywell. Surface water drains into the Mohawk River through the base storm drainage system. Figure 6 illustrates the DP012 (Building 301 AOC) location and remaining deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.3.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

Monitoring well 301MW-4 was installed in 1982. It was sampled after installation and during the 1992-1993 quarterly sampling programs (Law, September 1994). Groundwater samples contained phenols, 1 VOC, 4 chlorinated VOCs, 10 metals, and glycol detections.

An RI was performed in 1994 which included a ground penetrating radar (GPR) survey, test pitting, soil sampling, and groundwater sampling (Law, December 1996). The drywell was not detected by the GPR survey and it was not discovered during test pitting. Two soil samples were collected from one soil boring and analyzed for VOCs, SVOCs, pesticides, PCBs and metals. Three VOCs, 11 SVOCs, 10 pesticides, and 8 metals were detected in the soil samples from the soil boring as stated in the RI (LAW, December 1996). Soil exceedances of applicable RI criteria were limited to 1 SVOC and 7 metals. One groundwater sample was collected from a temporary well installed downgradient of the reported drywell location in August 1994. A second groundwater sample was collected in April 1995 from a temporary well installed adjacent to the first. The groundwater samples indicated VOCs, SVOCs, pesticides, metals, cyanide, and glycol detections, with 2 VOC, 3 SVOC, and 12 metal exceedances.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The total carcinogenic risk associated with exposure by utility and construction workers were below the lower end of the acceptable USEPA target risk range (1×10^{-6}). The total carcinogenic risk associated with exposure by industrial workers to contaminants in the soil or groundwater was 3×10^{-4} which is above the upper end of the acceptable USEPA target risk range (1×10^{-4}). The primary contributors to the cancer risk were bis(2-chlorethyl)ether and 2.4-dinitrotoluene. Neither of these chemicals were detected in any of the sampling events following the RI. The HI for all exposure scenarios were below the acceptable level of 1. For the ecological baseline risk assessment, it was identified that there were no complete exposure pathways for ecological receptors.

4.1.3.1.3 ROD Requirements

The ROD for the DP012 (Building 301 AOC) was issued by the Air Force in September 1999 and was signed by the USEPA in September 1999. Based on the previous investigations and environmental conditions at the site, the selected remedy for the DP012 (Building 301 AOC) is LUC/ICs for commercial/administrative use and groundwater use restrictions. The ROD for the DP012 (Building 301 AOC) states that:

- The property will be commercial/administrative use unless permission is obtained from the USEPA, NYSDEC, and NYSDOH; and
- The owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the property unless such owner or occupant obtains prior written approval from the NYSDOH.

4.1.3.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, which is the Griffiss LRA, has designated Parcel F6A, which includes Building 301, for commercial/ administrative (office campus) use only. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.3.1.5 Post-ROD Activities

As documented in the On-Base Groundwater LTM report post-ROD activities have been limited to groundwater monitoring only (FPM, November 2004). Groundwater investigations from the RI indicate that VOCs, SVOCs, and metals were the only COCs with exceedances at the DP012 (Building 301 AOC). As a result, VOCs, SVOCs, and metals (total and dissolved) were analyzed in groundwater in monitoring well 301MW-4 in March 2002 (SVOCs and metals only), April 2003, and March 2004.

The March 2002 groundwater results indicated no SVOC detections and three metals exceedances of the NYSDEC Groundwater Standards. The April 2003 and March 2004 VOC, SVOC, and metals groundwater results indicated VOC and metals detections, with only two metals (sodium and iron) exceedances. These sodium and iron exceedances were considered to be indicative of basewide background conditions (identified during the RI) (FPM, November 2004). Therefore, no further groundwater monitoring was recommended at the site and monitoring ceased.

Monitoring well 301MW-4 was decommissioned during the Round 5 Well Decommissioning event in 2009. A request to remove the groundwater restriction at the site was issued by the Air Force in March 2012 since no COCs were detected above NYSDEC Groundwater Standards at the site. Removal of the groundwater restriction at the site was approved by the USEPA on June 7, 2012. The removal of the groundwater restriction was also accepted by the NYSDEC (email to AFCEC dated June 6, 2012).

A site closure investigation, including a geophysical survey and soil sampling, was completed in 2012 and 2013 (CAPE/FPM, December 2013). The Geophysical Investigation was conducted in October 2012. The investigation included the collection of electromagnetic (EM), magnetometer (MAG), 200-megahertz (MHz), and 400-MHz GPR data. Based on the geophysical survey, the potential drywell location was identified (CAPE/FPM, December 2013). Soil sampling was conducted in May 2013 at three borings located within the site boundary (Figure 3). Samples were collected from 0 to 4 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs from each of the borings and analyzed for pesticides (using EPA Method SW8081). The samples were only analyzed for

pesticides as all other COCs detected in previous investigations were at concentrations below current 6 NYCRR Part 375 Residential Use SCOs (NYSDEC, December 2006).

An excavation was proposed based on the May 2013 soil sampling results (CAPE/FPM, December 2013). Confirmatory sampling was conducted on April 7, 2014 to define the boundaries of the proposed excavation. Prior to the excavation, five soil samples were collected from five soil borings (direct push) within the DP012 (Building 301 AOC) site boundary and analyzed for pesticides (using EPA method SW8081). Samples from four of the borings were collected from 0 to 4 ft bgs. These borings were positioned at the proposed north, south, east, and west walls (B301EW, B301NW, B301SW, and B301WW) as illustrated in Figure 6. One sample from one boring located in the middle of the proposed excavation was collected at 4 ft bgs (B301BE, illustrated in Figure 6). This sample was collected to represent the bottom of the excavation. Soil sampling results indicated that all pesticide concentrations were below the 6 NYCRR Part 375 Residential Use SCOs. One composite sample from B301BE was also collected from 0 to 4 ft bgs. This sample was analyzed for toxicity characteristic leaching procedure (TCLP) pesticides. An additional soil sample was collected at B301BE (o to 4 ft bgs) for TCLP metals analysis on May 21, 2014.

The excavation was conducted on July 16, 2014. The excavation was approximately 261 square ft with a depth of 4 ft bgs. The absence of the drywell at the site was verified during the excavation as material representing the drywell was identified (assumed to be 4-foot square by 8-foot deep pit filled with stone and gravel). The excavated soils were comprised of sandy silt with rocks/stone located sporadically throughout the excavation. All soils were removed and placed into 20-yard dump trucks for disposal. A total of 66.81 tons (roughly 88 cubic yards (cy)) of contaminated soils were disposed of through the Oneida Herkimer Solid Waste Authority at the Ava regional landfill in Ava, New York. The Final Site Closure Report for DP012 (Building 301 AOC) has been submitted to the USEPA, NYSDEC, and NYSDOH (CAPE/FPM, December 2014). Regulatory concurrence is pending.

Also, since the last Five-Year Review, annual LUC/IC inspections have been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.3.2 Data Review and Analysis

The 2013 soil sampling results indicated only one pesticide, dichlorodiphenyltrichloroethane (DDT), detection above the 6 NYCRR Part 375 Residential use SCOs. DDT was detected with a concentration of 3,000 microgram (µg)/ kilogram (kg) in the 0 to 4 ft bgs sampling interval during the 2013 sampling event at one boring within the site boundary (B301SCS-2). The 6 NYCRR Part 375 Residential use SCO for DDT is 1,700 micrograms per kilogram (µg/kg). The DDT concentrations detected in the 4 to 8 ft bgs and 8 to 12 ft bgs sampling intervals were 230 µg/kg and 1.2 J µg/kg, respectively at B301SCS-2. The J data qualifier indicates that the analyte was positively identified but the quantitation is an estimation.

Results from the 2014 confirmatory sampling event confirmed the extent of the July 2014 excavation. All wall and excavation bottom sampling results were below the 6 NYCRR Part 375 Residential Use SCOs. DDT detections ranged from 45 µg/kg to 120 J µg/kg. All other pesticide detections were below the 6 NYCRR Part 375 Residential Use SCOs. The sampling results were also compared to USEPA Regional Screening Levels (RSLs) (USEPA, June 2015). The results of the RSL comparison showed that all COC concentrations were well within the Target Risk (TR) range 10^{-6} to 10^{-4}. Results from the TCLP sampling showed that all pesticide and metals concentrations were below the hazardous waste characteristic levels (EPA, October 2009).

4.1.3.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the DP012 (Building 301 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is grass covered open space near industrial/commercial facilities. Former Building 301 was demolished in 2010 and a new building has been constructed adjacent the site which is used for commercial/ administrative purposes. In addition, adjacent facilities to the site use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.1.3.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.3.4.1 Remedy Functionality

LUC/ICs for commercial/administrative use were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F6A-2 which includes DP012 (Building 301 AOC) was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The grantee covenants and agrees to use the property, identified as Parcel F6A-2 for only commercial/ non-residential purposes, unless prior consent for a different use is obtained from the USEPA and NYSDEC.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is commercial/administrative land-use that is compatible with the non-residential LUC/IC at the

site. The previously implemented groundwater LUC/ICs were removed with USEPA and NYSDEC approval in 2012.

4.1.3.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under an industrial reuse scenario. The results of the human health baseline risk assessment indicate that VOCs, SVOCs, and metals detected in soils should not present a risk to current and future occupational workers. The ecological baseline risk assessment identified that there were no complete exposure pathways for ecological receptors. The ecological risk assumptions are also still valid.

The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/future non-residential land-use minimizes potential exposure pathways.
- Soil investigations conducted at the site used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and 6 NYCRR Part 375 SCOs (NYSDEC, December 2006).

4.1.3.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Since the 2010 Five-Year Review, the groundwater restriction was removed from the sites with approval from the USEPA and acceptance by the NYSDEC. In addition, site closure activities including a geophysical investigation, soil investigation, and a removal action have been performed. The objective of the site closure activities was to achieve unrestricted reuse at the site. The 2014 removal action was successful in removing all residual soil contamination. In addition, the geophysical investigation and the removal action confirmed the absence of the drywell at the site. Therefore, removal of LUC/ICs and site closure was recommended for DP012 (Building 301 AOC) (CAPE/FPM, December 2014). Regulatory concurrence is pending.

4.1.3.5 Recommendations and Follow-up Actions

Following site closure approval, the Air Force will recommend a deed modification to remove the groundwater use and non-residential use restrictions associated with the site.

4.1.3.6 Protectiveness Statement

Based on the document review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at DP012 (Building 301 AOC) is protective of human health and the environment.

4.1.4 DP013 (Building 255 AOC)

4.1.4.1 Document Review

4.1.4.1.1 Site History

The DP013 (Building 255 AOC) is located in the west-central portion (Parcel F3A) of the former Griffiss AFB. Former Building 255 was a vehicle maintenance shop that included several drywells and is located in the area referred to as Tin City. This building has been demolished. DP013 (Building 255 AOC) consists of one area south and one area west of the former Building 255. Surface water drains into the base storm drainage system that flows to the Mohawk River. Figure 7 illustrates the site and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.4.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations and IRA activities discussed in this section are illustrated in figures provided in the documents referenced below.

In 1994 and 1995, a RI was performed at the DP013 (Building 255 AOC). Fourteen temporary wells were installed and ten groundwater samples were collected and analyzed for VOCs, SVOCs, pesticides, PCBs, metals, total glycols, cyanide, and petroleum hydrocarbons. Twelve VOCs, 6 SVOCs, 2 pesticides, 1 PCB, 18 metals, and petroleum hydrocarbons exceeded the NYSDEC Groundwater Standards. Sixty-three soil samples were collected from 11 soil borings located in the area of the drywells. Results indicate that VOCs, SVOCs, pesticides, PCBs, metals, cyanide and petroleum hydrocarbons were detected in the soil samples with 6 VOCs, 9 SVOCs, 1 pesticide, 1 PCB, and 17 metals exceeding guidance values (LAW, December 1996).

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The total carcinogenic risk associated with exposure by industrial, utility and construction workers to contaminants in the soil or groundwater were within the lower end of the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1 for all exposure scenarios. The ecological baseline risk assessment was also performed at the site to model risks to the raccoon and short-tailed shrew for exposures to surface soil. The assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.

An SI was conducted in 1997; two monitoring wells were installed at DP013 (Building 255 AOC) and sampled. Trichloroethylene (TCE) and chloroform were detected at one monitoring well: however, the concentrations were below NYSDEC Groundwater Standards (E&E, July 1998).

An IRA was performed at the site in 1998 which consisted of asphalt demolition, removal and disposal of the drywell, and soil excavation. Confirmatory sampling conducted in the soil

excavation indicated clean-up goals had been met as stated in the Closure Certification Report (Ocuto Blacktop and Paving Environmental Services [Ocuto], March 2001).

4.1.4.1.3 ROD Requirements

The ROD for the DP013 (Building 255 AOC) was issued by the Air Force in June 2001 and signed by the USEPA in September 2001. Based on the previous investigations and environmental conditions at the site the selected remedy for the DP013 (Building 255 AOC) is NFA for soils with LUC/ICs for industrial/commercial use and groundwater use restrictions. The ROD for DP013 (Building 255 AOC) states that:

- The property will be industrial/commercial use unless permission is obtained from the USEPA, NYSDEC, and NYSDOH;
- The owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the property unless such owner or occupant obtains prior written approval from the NYSDOH; and
- The ROD specified further groundwater investigations were also necessary at the DP013 (Building 255 AOC).

4.1.4.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, the Griffiss LRA, has designated Parcel F3A, which includes the DP013 (Building 255 AOC), for commercial/ administrative (office campus) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.4.1.5 Post-ROD Activities

The Air Force conducted groundwater monitoring at this site as required by the ROD. Groundwater sampling was performed for 5 quarterly rounds from September 2001 to September 2002. VOCs were detected during each of the five groundwater quarterly rounds from September 2001 to September 2002. However, no exceedances of the NYSDEC Groundwater Standards were reported (FPM, August 2003). No SVOCs were detected in March 2002, but metals (total and dissolved) were detected with 2 exceedances (total metals). The metal exceedances were attributed to basewide background conditions (identified during the RI). The results from the groundwater monitoring indicated that no further groundwater monitoring was required at the DP013 (Building 255 AOC). Based on the results from previous sampling and the ROD requirements for the DP013 (Building 255 AOC), the Air Force submitted an Explanation of Significant Differences (ESD) in 2003 to the USEPA. The document requested the deletion of ROD requirements for groundwater investigations. The ESD was supported by groundwater monitoring data indicating groundwater ARARs have been met. The ESD was signed by the USEPA on September 26, 2003.

The LTM wells at the site were decommissioned in the Round 3 Well Decommissioning event performed in summer/fall 2005.

A request to remove the groundwater restriction at the site was issued by the Air Force in March 2012 since no COCs were detected above NYSDEC Groundwater Standards at the site. NYSDEC acceptance was provided on April 24, 2012 and USEPA acceptance was provided on May 16, 2012.

Site Closure activities, including soil sampling, were conducted in 2013 and 2014 to verify if the residual soil contamination at the site met residential use SCOs. Two 2013 sampling events were conducted on May 6, 2013 and July 29, 2013. These events included the collection of 25 samples from eight borings. Samples were collected from 0 to 4 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs intervals at seven borings and from the 0 to 4 ft bgs, 4 to 8 ft bgs, 8 to 12 ft bgs, and 12 to 16 ft bgs intervals at one boring (B255SCS-11). Based on the previous investigation results, the samples from boring locations B255SCS-1, -2, and -3 were analyzed for VOCs and metals, samples from B255SCS-7 and -8 were analyzed for metals, samples from B255SCS-9 were analyzed for SVOCs and metals, samples from B255SCS-10 were analyzed for SVOCs, and samples from B255SCS-11 were analyzed for metals. All sampling locations are illustrated in Figure 7.

The 2014 sampling event was conducted on May 21, 2014 to collect surface soil samples at the site (0 to 2 ft bgs). The sampling was conducted based on NYSDEC comments provided on May 8, 2014 for the Final Site Closure Report for LUC/IC Site DP013 (Building 255 AOC) (CAPE/FPM, April 2014). The samples were collected at borings B255SCS-12 and -13 which were positioned at the boring locations where a 2013 sample showed a chromium exceedance of the residential use SCOs (B255SCS-7 and -11, respectively) (Figure 7). The samples were analyzed for hexavalent chromium using USEPA Method SW7196A and total chromium using SW6010C.

Since the last Five-Year Review, annual LUC/IC inspections have been performed at the site. In addition, the owner/occupant of the property was contacted to ensure awareness of the restrictions and to confirm that LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.4.2 Data Review and Analysis

Soil sampling was conducted at the site in 2013 and 2014. The results are as follows.

<u>2013 Soil Sampling Event:</u>
Results showed that all VOC and SVOC concentrations met their respective residential use SCOs. In addition, all metals except for chromium met their respective residential use SCOs. Elevated chromium concentrations were detected at soil boring locations B255SCS-8 (8 to 12 ft bgs) and B255SCS-11 (12 to 16 ft bgs) at concentrations of 27 milligrams per kilograms (mg/kg) and 24 mg/kg, respectively. The concentrations met the trivalent chromium Residential use SCO of 36 mg/kg but exceeded the hexavalent chromium residential use SCO of 22 mg/kg. As the chromium detections could not be speciated, the chromium exceedances are based on using the more stringent of the two chromium residential use SCOs.

2014 Soil Sampling Event:
Hexavalent and total chromium were detected at B255SCS-12 at concentrations of 6.3 J mg/kg and 4.7 mg/kg, respectively. Hexavalent and total chromium were also detected at B255SCS-13 at concentrations of 2.9 mg/kg and 16 mg/kg, respectively. All results are below their respective residential use SCOs (CAPE/FPM, October 2014).

The sampling results were also compared to USEPA RSLs (USEPA, June 2015). The results of the RSL comparison showed that all COC concentrations were well within the TR range 10^{-6} to 10^{-4}.

4.1.4.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the DP013 (Building 255 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is split into two areas which are west and south of the former building. The sites are both grass covered open spaces near industrial/commercial facilities and there have been no land use changes since the previous five-year review and adjacent facilities use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.1.4.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.4.4.1 Remedy Functionality

LUC/ICs for commercial/non-residential use were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F3A which includes the site was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The grantee covenants and agrees to use the property, identified as Parcel F3A for only commercial/ non-residential purposes, unless prior consent for a different use is obtained from the USEPA and NYSDEC.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/commercial land-use that is compatible with the non-residential LUC/IC at the site.

The previously implemented groundwater LUC/ICs were removed with USEPA and NYSDEC approval in 2012.

4.1.4.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under industrial/ commercial reuse scenario. The results of the human health baseline risk assessment indicate that VOCs, SVOCs, and metals detected in soil should not present a risk to current and future occupational workers and future industrial workers. The ecological baseline risk assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant. The ecological risk assumptions are also still valid.

A Human Health Risk Assessment (HHRA) was conducted using the 2013 soil sampling results under residential use conditions (adult and child). The exposure pathways evaluated included incidental ingestion of soil, dermal contact with soil, and inhalation of fugitive dusts. The cumulative HI for residents exposed to subsurface soils was less than 1.0, indicating that exposure is not expected to result in adverse non-carcinogenic health effects. The cumulative carcinogenic risk (CR) for residents exposed to subsurface soils was less than USEPA's target risk range. As discussed in Section 4.1.4.2, the 2014 surface soil sampling results met the residential use SCOs and, therefore, the 2013 HHRA was not updated.

4.1.4.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Since the 2010 Five-Year Review, the groundwater restriction was removed from the site with approval from the USEPA and acceptance by the NYSDEC. In addition, site closure activities including soil sampling has been performed. The objective of the soil sampling was to obtain data to support site closure and removal of the remaining restriction at the site (non-residential land use). Based on the results of the previous RI (Law, December 1996), IRA (Ocuto, February 2000), the results of the 2013 residential HHRA, and the 2014 sampling results, there appears to be no unacceptable non-carcinogenic and carcinogenic risk from exposure to soil for potential residential receptors. Therefore, removal of LUC/ICs and site closure was recommended for DP013 (Building 255 AOC) (CAPE/FPM, October 2014). Regulatory concurrence is pending

4.1.4.5 Recommendations and Follow-up Actions

Following site closure approval, the Air Force will recommend a deed modification to remove the groundwater use and non-residential use restrictions associated with the site.

4.1.4.6 Protectiveness Statement

Based on the document review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at DP013 (Building 255 AOC) is protective of human health and the environment.

4.1.5 DP015 (Building 219 AOC)

4.1.5.1 Document Review

4.1.5.1.1 Site History

The DP015 (Building 219 AOC), located in the west-central portion of the Griffiss AFB (Parcel F3A), was used as the Electrical Power Production Shop. Surface water run-off drains into the Mohawk River through the base storm drainage system. One drywell at the site was used for the disposal of liquid wastes (battery acid, glycol, floor wash-water) and reportedly located south of the building. The drywell was not detected during surface geophysical surveys performed in 1993 and 1994 during the RI (Law, December 1996) and during site closure activities in 2012 (CAPE/FPM, April 2014). Figure 8 illustrates the DP015 (Building 219 AOC) and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.5.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

The RI was conducted in 1994 in which seven soil samples were collected from one soil boring at 2 foot intervals and analyzed for VOCs, SVOCs, pesticides, and metals. Three VOCs, 7 SVOCs, 10 pesticides, and 7 metals were detected in the soil samples from the soil boring as stated in the RI (LAW, December 1996). Soil exceedances of applicable RI criteria were limited to 1 SVOC and 6 metals. One groundwater sample was also collected and the results indicated 1 VOC, 3 SVOCs, 5 pesticides, 16 metals, glycols, and petroleum hydrocarbon detections of which 5 metals and glycol concentrations exceeded their respective guidance values. Glycols rapidly biodegrade in groundwater with an average half-life of 4 to 24 days, therefore it was uncertain that this detection came from the Building 219 AOC. The elevated metals results were possibly caused by the sampling method, which resulted in unfiltered samples containing naturally occurring metals in the grab groundwater samples and a poor representation of groundwater conditions. A geophysical survey was also conducted as part of the RI. This included a GPR survey which did not locate any drywells.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The total carcinogenic risk associated with exposure by industrial, utility and construction workers to contaminants in the soil or groundwater were within the lower end of the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1 for all exposure scenarios. The ecological baseline risk assessment was also performed at the site to model risks to the raccoon and short-tailed shrew for exposures to surface soil. The assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.

4.1.5.1.3 ROD Requirements

The ROD for the DP015 (Building 219 AOC) was issued by the Air Force in September 1999 and signed by the USEPA in September 1999. Based on the previous investigations and environmental conditions at the site the selected remedy for the Building 219 Drywell AOC is no further remedial action, with LUC/ICs for industrial land-use and groundwater use restrictions. The ROD for Building 219 Drywell AOC states that:

- The property will be industrial use unless permission is obtained from the USEPA, NYSDEC, and NYSDOH;
- The owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the property unless such owner or occupant obtains prior written approval from the NYSDOH; and
- The ROD also required that groundwater be investigated under the On-Base Groundwater AOC (SD-52) Tin City OU.

4.1.5.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, the Griffiss LRA, has designated Parcel F3A, which includes the Building 219 AOC, for industrial/commercial (manufacturing/airfield and related services) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.5.1.5 Post-ROD Activities

The Air Force conducted groundwater monitoring at this site as required by the ROD. Groundwater sampling was performed for 5 quarterly rounds from September 2001 to September 2002. VOCs were detected during each quarterly sampling round in 2001/2002. However, no exceedances of the NYSDEC Groundwater Standards were reported as stated in the Tin City LTM Report (FPM, August 2003). No SVOCs were detected in March 2002: however, metals results (total and dissolved) showed two exceedances (total metals). The metals exceedances were attributed to basewide background conditions (identified during the RI). The results from the groundwater monitoring indicated that no further groundwater monitoring was required at the Building 219 Drywell AOC. Based on the results from previous sampling and the ROD requirements for the Building 219 Drywell AOC, the Air Force submitted an ESD in 2003 to the USEPA. The document requested the deletion of ROD requirements for the groundwater investigations. The ESD was supported by groundwater monitoring data indicating groundwater ARARs have been met. The ESD was signed by the USEPA on September 26, 2003. The LTM wells were decommissioned in the Round 3 Well Decommissioning event performed in summer/fall 2005.

A request to remove the groundwater restriction at the site was issued by the Air Force in March 2012 since no COCs were detected above NYSDEC Groundwater Standards at the site. NYSDEC acceptance was provided on April 24, 2012 and USEPA acceptance was provided on May 16, 2012.

Site closure activities, including a geophysical investigation and soil sampling, were initiated in October 2012 (CAPE/FPM, April 2014). The Geophysical Investigation was conducted in October 2012. The investigation included the collection of EM, MAG, 200-MHz, and 400-MHz GPR data. The geophysical survey did not identify any anomalies that could be interpreted as a drywell. Anomalies identified at the site have been attributed to underground utilities in the area. Soil sampling was also conducted as part of the site closure activities in May 2013 and July 2014 to verify if the presence of residual soil contamination at the site met residential use SCOs. The 2013 event included the collection of 18 soil samples from six soil borings (direct push). Samples were collected from 0 to 4 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs from each boring. In preparation for this sampling, all historical soil sampling results were compared to the 6 NYCRR Part 375 Residential use SCOs. Only metals exceeded the residential use SCOs and therefore the site closure soil samples were analyzed for metals only via USEPA Method SW6010C. The 2014 sampling event was conducted on July 9, 2014 to collect surface soil samples at the site (0 to 2 ft bgs). This sampling event was conducted based on a NYSDEC comment provided on May 8, 2014 for the Final Site Closure Report for LUC/IC Site DP015 Building AOC (CAPE/FPM, April 2014). The samples were collected at four borings and analyzed for metals using USEPA Method SW6010C. The 2013 and 2014 sampling locations are shown in Figure 8.

Annual LUC/IC inspections have also been performed at the site. In addition, the owner/occupant of the property was contacted to ensure awareness of the restrictions and to confirm that LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.5.2 Data Review and Analysis

Soil sampling was conducted at the site in 2013 and 2014. Results from the subsurface and surface soil sampling showed that all metal concentrations met their respective 6 NYCRR Part 375 Residential use SCOs (CAPE/FPM, November 2014). The sampling results were also compared to USEPA RSLs (USEPA, June 2015). The results of the RSL comparison showed that all COC concentrations were well within the TR range 10^{-6} to 10^{-4}.

4.1.5.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the DP015 (Building 219 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is grass covered open space near industrial/commercial facilities and there have been no land use changes since the previous five-year review and adjacent facilities use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.1.5.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.5.4.1 Remedy Functionality

LUC/ICs for commercial/non-residential use were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F3A which includes the DP015 (Building 219 AOC) was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The grantee covenants and agrees to use the property, identified as Parcel F3A for only commercial/non-residential purposes, unless prior consent for a different use is obtained from the USEPA and NYSDEC.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/commercial land-use that is compatible with the non-residential LUC/IC at the site. The previously implemented groundwater LUC/ICs were removed with USEPA and NYSDEC approval in 2012.

4.1.5.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under the industrial/ commercial reuse scenario (Law, December 1996). The results of the human health baseline risk assessment indicate that VOCs, SVOCs, and metals detected in soil should not present a risk to current and future occupational workers and future industrial workers. The ecological baseline risk assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant. The ecological risk assumptions are also still valid.
The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/ future non-residential land-use minimizes potential exposure.
- The previous soil investigations used protective criteria including NYS SCOs (TAGM #4046, January 1994) and 6 NYCRR Part 375 SCOs (NYSDEC, December 2006).

4.1.5.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Since the 2010 Five-Year Review, the groundwater restriction was removed from the site with approval from the USEPA and acceptance by the NYSDEC. In addition, site closure activities including a geophysical investigation and soil sampling have been performed. The objective of the soil

sampling was to obtain data to support site closure and removal of the remaining restriction at the site (non-residential land use). The soil sampling confirmed the absence of soil contamination above the 6 NYCRR Part 375 Residential use SCOs. In addition, the 2012 geophysical investigation confirmed the absence of the drywell at the site. Therefore, removal of LUC/ICs and site closure was recommended for DP015 (Building 219 AOC) (CAPE/FPM, November 2014). Regulatory concurrence is pending.

4.1.5.5 Recommendations and Follow-up Actions

Following site closure approval, the Air Force will recommend a deed modification to remove the groundwater use and non-residential use restrictions associated with the site.

4.1.5.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at DP015 (Building 219 AOC) is protective of human health and the environment.

4.1.6 SS017 (Lot 69 AOC)

4.1.6.1 Document Review

4.1.6.1.1 Site History

The SS017 (Lot 69 AOC) is located along the north side of Ellsworth Road (Parcels F1 and F6B-4), which is currently used as a parking lot for school buses. Figure 9 illustrates the SS017 (Lot 69 AOC) location and deed restrictions, as well as the LUC/ICs as required by the ROD.

From 1965 to 1982, Lot 69 was an unfenced interim storage area for containers of liquid and solid hazardous wastes generated at Griffiss AFB. A review of aerial photographs indicates the location of Building 11 was the original storage area. Wastes managed at the site included soot from No. 6 fuel oil, flammable liquids, spent corrosives, trap grease, spent solvents, neutralized acids, spent paint thinners, fuel spill residues, and waste oils. The drums were stored outside on raised pallets, and the storage area was diked. During the period of use, spills were reported to have occurred.

4.1.6.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

The RI was conducted in 1994 which included soil sampling, groundwater sampling, and a baseline risk assessment (LAW, December 1996). A soil investigation was conducted in which soil samples were collected from 13 borings and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Soil sample results showed 5 VOCs, 21 SVOCs, 31 pesticides/PCBs, and 24 metals

(LAW, December 1996). Soil exceedances of applicable RI criteria were limited to 4 SVOCs, 1 pesticide/PCB, and 8 metals. Four groundwater monitoring wells (L69MW2-1, L69MW-1, -3, and -4, not shown on Figure 9) and one bedrock well (L69MW2-2, not shown on Figure 9) were installed in June and July 1994. August 1994 groundwater samples showed no exceedances for either VOCs or SVOCs. Metals and one pesticide exceedances were reported.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The total carcinogenic risk associated with exposure by industrial, utility and construction workers to contaminants in the soil or groundwater were within the lower end of the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1 for utility and construction workers. However, the HI was above the benchmark level of 1 for the industrial exposure scenario with groundwater. An ecological risk assessment was also performed at the site. The assessment identified that there were no complete exposure pathways for ecological receptors.

A 1997 SI included groundwater sampling in the storm drain area, yielding detections of chlorinated VOCs below NYSDEC Groundwater Standards (E&E, July 1998).

4.1.6.1.3 ROD Requirement

The ROD for SS017 (Lot 69 AOC) was issued by the Air Force in November 2004 and signed by the USEPA in March 2005. Based on the previous investigations and environmental conditions at the site, the selected remedy for the SS017 (Lot 69 AOC) is LUC/ICs for industrial/commercial use and groundwater use restrictions. The ROD for SS017 (Lot 69 AOC) states that:

- Development and use of the entire Lot 69 property for residential housing, elementary and secondary schools, childcare facilities and playgrounds will be prohibited unless prior approval is received from the Air Force, USEPA, and NYSDEC; and
- The owner or occupant of this site shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the site unless such owner or occupant obtains prior written approval from the NYSDOH.

4.1.6.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The Griffiss LRA designated Parcels F1 and F6B, which contain the Lot 69 AOC, for industrial (light industrial development) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.6.1.5 Post-ROD Activities

Following the RI the Air Force performed annual groundwater sampling in March 2002, March 2003, and March 2004 for total and dissolved metals and results showed only total metal exceedances at all of the monitoring wells. The metals exceedances were similar to elevated metals concentrations detected throughout the base during the RI. Additionally, suspended

solids were observed in the samples. Therefore, the elevated metal concentrations were attributed to basewide background conditions or suspended solids in the samples (FPM, November 2004). Therefore, no further groundwater monitoring was recommended and monitoring ceased. The SS017 (Lot 69 AOC) monitoring wells were decommissioned during the Round 5 well decommissioning event performed in winter 2008/2009.

A request to remove the groundwater restriction at the site was issued by the Air Force in March 2012 since no COCs were detected above NYSDEC Groundwater Standards at the site. NYSDEC acceptance was provided on June 7, 2012 and USEPA acceptance was provided on October 15, 2012.

Also, since the last Five-Year Review, annual LUC/IC inspections have been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.6.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last Five-Year Review.

4.1.6.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SS017 (Lot 69 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is located in a commercial area that is paved for bus parking. Land use has not changed since the previous five-year review. The completed five-year review checklist is provided in Appendix A.

4.1.6.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.6.4.1 Remedy Functionality

The SS017 (Lot 69 AOC) is located in two parcels, F1 and F6B-4. LUC/ICs, specified in the ROD, were implemented as deed restrictions. The deeds were reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The grantee covenants to restrict the use of the property to industrial and commercial non-residential activities unless it obtains written permission to do so from the USEPA, NYSDEC, and NYSDOH.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/ commercial land-use that is compatible with the non-residential LUC/IC at the site. The previously implemented groundwater LUC/ICs were removed with USEPA and NYSDEC approval in 2012.

4.1.6.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under industrial/ commercial reuse scenario. The results of the human health baseline risk assessment indicate that metals detected in soil should not present a risk to current and future occupational workers and future industrial workers. The ecological baseline risk assessment identified that there were no complete exposure pathways for ecological receptors. The ecological risk assumptions are also still valid.
The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/ future non-residential land-use minimizes potential exposure pathways.
- The previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998).

4.1.6.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Since the 2010 Five-Year Review, the groundwater restriction was removed from the site with approval from the USEPA and acceptance by the NYSDEC.

4.1.6.5 Recommendations and Follow-up Actions

A deed modification for Parcels F1 and F6B is recommended to remove the groundwater restriction.

4.1.6.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS017 (Lot 69 AOC) is protective of human health and the environment.

4.1.7 DP022 (Building 222 AOC)

4.1.7.1 Document Review

4.1.7.1.1 Site History

Building 222 was formerly used as a truck maintenance facility and entomology laboratory and is located in the west-central portion of the former Griffiss AFB (Parcel F3A). A BADP, which was located inside the building in a truck bay area, is associated with Building 222. The surface water drains into the Mohawk River through the Base storm drainage system. Figure 10 illustrates the DP022 (Building 222 AOC) site location and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.7.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations and IRA activities discussed in this section are illustrated in figures provided in the documents referenced below.

The Air Force conducted an initial site investigation in 1985. Samples of surface sludge were collected at the site. Elevated concentrations of metals were detected and contaminated soil was removed as stated in the RI (LAW, December 1996). In addition, soil samples were collected from soil borings and the results indicated detections of lead, copper, zinc, and antimony that were below guidance values.

The RI was conducted in 1994 which included soil and groundwater sampling (Law, December 1996). One groundwater and six soil samples were taken from one soil boring. Soil sample results indicated the presence of VOCs, SVOCs, pesticides, PCBs, and metals. Three SVOCs, two pesticides/PCBs, and 13 metals exceeded their respective soil standards. VOCs, SVOCs, and metals were reported in the groundwater samples, but only metals were found in exceedance of NYSDEC Groundwater Standards.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The total carcinogenic risk associated with exposure by industrial, utility and construction workers to contaminants in the soil or groundwater were within the lower end of the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1 for all exposure scenarios. The ecological baseline risk assessment was also performed at the site to model risks to the raccoon and short-tailed shrew for exposures to surface soil. The assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.

An IRA was performed from 1998 to 1999. The area of soil contamination was excavated and soil samples were collected. The results indicated that soil contamination was still present and the area was over-excavated until clean-up criteria were met for the target COCs. A total of 45.8

cys of contaminated soils were removed from the site, as stated in the Closure Certification Report (Ocuto, March 2001).

4.1.7.1.3 ROD Requirements

The ROD for the DP022 (Building 222 AOC) site was issued by the Air Force in June 2001 and signed by the USEPA in September 2001. Based on the previous investigations and environmental conditions at the site, the selected remedy for the DP022 (Building 222 AOC) site is NFA for soils with LUC/ICs for industrial/commercial use and groundwater use restrictions. The ROD for DP022 (Building 222 AOC) states that:

- The property will be industrial/ commercial use unless permission is obtained from the USEPA, NYSDEC, and NYSDOH;
- The owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the property unless such owner or occupant obtains prior written approval from the NYSDOH; and
- For groundwater, the ROD specified that additional sampling was required.

4.1.7.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, which is the Griffiss LRA, designated Parcel F3A, which includes the DP022 (Building 222 AOC) site, for industrial/commercial (manufacturing/airfield and related services) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.7.1.5 Post-ROD Activities

The Air Force conducted groundwater monitoring at this site as required by the ROD. Groundwater sampling was performed for five quarterly rounds from September 2001 to September 2002. VOCs were detected during each quarterly sampling round in 2001/2002. However, no exceedances of the NYSDEC Groundwater Standards were reported (FPM, August 2003). No SVOCs were detected in March 2002. However, metals (total and dissolved) were detected with two exceedances (total metals). The metal exceedances were attributed to basewide background conditions (identified during the RI). The results from the groundwater monitoring indicated that no further groundwater monitoring was required at the DP022 (Building 222 AOC). Based on the results from previous sampling and the ROD requirements for the DP022 (Building 222 AOC), the Air Force submitted an ESD in 2003 to the USEPA. The document requested the deletion of ROD requirements for the groundwater investigations. The ESD was supported by groundwater monitoring data indicating groundwater ARARs have been met. The ESD was signed by the USEPA on September 26, 2003. The remaining LTM wells at the site were decommissioned in the Round 3 Well Decommissioning event performed in summer/fall 2005.

A request to remove the groundwater restriction at the site was issued by the Air Force in March 2012 since no COC were detected above NYSDEC Groundwater Standards at the site.

NYSDEC acceptance was provided on April 24, 2012 and USEPA acceptance was provided on May 16, 2012.

Annual LUC/IC inspections have also been performed at the site. In addition, the owner/occupant of the property was contacted to ensure awareness of the restrictions and to confirm that LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.7.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last Five-Year Review.

4.1.7.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the DP022 (Building 222 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is located within an office building (commercial use) and the municipal water supply is used. The land use has not changed since the previous five-year review. The completed five-year review checklist is provided in Appendix A.

4.1.7.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.7.4.1 Remedy Functionality

LUC/ICs for commercial/non-residential use restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F3A which includes the DP022 (Building 222 AOC) was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The grantee covenants and agrees to use the property, identified as Parcel F3A for only commercial/ non-residential purposes, unless prior consent for a different use is obtained from the USEPA and NYSDEC; and

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/

commercial land-use that is compatible with the non-residential LUC/IC at the site. The previously implemented groundwater LUC/ICs were removed with USEPA and NYSDEC approval in 2012.

4.1.7.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under an industrial/commercial reuse scenario. The results of the human health baseline risk assessment indicate that VOCs, SVOCs, and metals detected in soil should not present a risk to current and future occupational workers and future industrial workers. The ecological baseline risk assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant. The ecological risk assumptions are also still valid.
The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/ future non-residential land-use minimizes potential exposure pathways.
- The previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998).

4.1.7.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Since the 2010 Five-Year Review, the groundwater restriction was removed from the site with approval from the USEPA and acceptance by the NYSDEC.

4.1.7.5 Recommendations and Follow-up Actions

A deed modification for Parcel F3A is recommended to remove the groundwater restriction.

4.1.7.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at DP022 (Building 222 AOC) is protective of human health and the environment.

4.1.8 SS024 (Fire Demonstration Area AOC)

4.1.8.1 Document Review

4.1.8.1.1 Site History

The SS024 (FDA AOC) is located north of Buildings 101 and 100, between Taxiways 17 and Apron 3 in Parcel A1A. Surface water run-off discharges into the Mohawk River. The FDA

was used from 1974 to 1992 for fire demonstrations. From 1974 to 1987, fuels and other flammable materials were ignited on bare ground and from 1987 to its closure in 1992 fuels were ignited in a metal trough. Figure 11 illustrates the SS024 (FDA AOC) and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.8.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

In 1986, a soil and groundwater investigation was performed at the FDA AOC. Three boreholes were drilled, soil samples collected and the results indicated the presence of petroleum hydrocarbons, zinc, and lead. One borehole became monitoring well FDA MW-1, a groundwater sample was collected and results showed cadmium, chromium, lead, nickel, and zinc detections (Hydro-Environment, December 1986).

Additional groundwater sampling and a soil gas survey were performed in 1994 during the RI (Law, December 1996). VOC concentrations were not found in exceedance of applicable standards or guidance values. Four soil borings were used at the SS024 (FDA AOC) to collect 32 subsurface screening samples and 18 confirmatory samples in late 1994 and early 1995. The presence of VOCs, SVOCs, pesticides, PCBs, dioxins, metals, cyanide, and petroleum hydrocarbons were reported. Soil exceedances of applicable RI criteria were limited to two SVOCs, one pesticide/ PCB, and five metals. A groundwater sample was also collected from a temporary well in the area of the former metal trough and one pesticide (alpha-BHC) exceeded guidance values, but the origin of this contamination is unknown.

During the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. Total carcinogenic risk associated with exposure by industrial, landscape, construction and utility workers to contaminants in the soil or groundwater were within the lower end of the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1 for all exposure scenarios. The ecological baseline risk assessment was also performed at the site to model risks to the raccoon and short-tailed shrew for exposures to surface soil. The assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.

4.1.8.1.3 ROD Requirements

The ROD for the SS024 (FDA AOC) was issued by the Air Force in September 1999 and signed by the USEPA in September 1999. Based on the previous investigations and environmental conditions at the site the selected remedy for the SS024 (FDA AOC) is no further remedial action, with LUC/ICs for industrial land-use and groundwater use restrictions. The ROD for the FDA states that:

- The property will be industrial use unless permission is obtained from the USEPA, NYSDEC, and the NYSDOH; and
- The owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the aquifer below the ground surface within the boundary of the property unless such owner or occupant obtains prior written approval from the NYSDOH.

4.1.8.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, which is the Griffiss LRA, designated Parcel A1A, which includes the FDA AOC, for industrial (manufacturing, airfield and related services) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.8.1.5 Post-ROD Activities

Site closure activities were conducted at the SS024 (FDA AOC) in 2013 and 2014. The activities included soil sampling to determine if residual soil contamination meets the 6 NYCRR Part 375 residential use and protection of groundwater SCOs. The site was historically used for fire demonstrations (at ground surface) and the results from previous investigations showed that only SVOCs, pesticides, and metals concentrations were detected above 6 NYCRR Part 375 Residential use SCOs. Therefore, samples were collected at 21 soil borings from 0 to 4 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs and analyzed for SVOCs, pesticides, and metals only. The soil borings were completed on May 7, 2013 and July 29, 2013 via direct push (4-ft Macro-core®) with additional soil sampling from 0 to 2 ft bgs on June 13, 2014 from 8 borings for pesticide analysis. The additional samples were collected based on a NYSDEC comment provided on May 8, 2014 for the Draft Site Closure Report for LUC/IC Site SS024 (FDA AOC) (CAPE/FPM, October 2014). The sampling locations are illustrated in Figure 12.

As a result of the 2013 and 2014 sampling results, a supplemental HHRA was conducted. The HHRA was conducted to determine if there were any unacceptable non-carcinogenic or carcinogenic risk from exposure to soil and groundwater for potential residential receptors at the site.

Annual LUC/IC inspections have also been performed at the site. In addition, the owner/occupant of the property was contacted to ensure awareness of the restrictions and to confirm that LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.8.2 Data Review and Analysis

The 2013 soil sampling results showed that all metals concentrations met their respective 6 NYCRR Part 375 Residential use SCOs. In addition, all SVOCs except for benzo(b)fluoranthene met their respective 6 NYCRR Part 375 Residential use SCOs. Benzo(b)fluoranthene was reported at boring FDASCS-4 in the 4 to 8 ft bgs sample interval with

a concentration of 1,200 J µg/kg, which marginally exceeded the 6 NYCRR Part 375 Residential use SCO for benzo(b)fluoranthene of 1,000 µg/kg. The benzo(b)fluoranthene detection did not exceed the 6 NYCRR Part 375 Protection of Groundwater SCO of 1,700 µg/kg. The J data qualifier indicates that the analyte was positively identified above method detection limit; however, the concentration is below the reporting limit (RL). This minor exceedance at this low frequency is considered a natural variation in concentrations and not indicative of widespread site related contamination. Therefore, no SVOCs were retained for the HHRA.

During the 2013 sampling event, all pesticides except for dieldrin met their respective 6 NYCRR Part 375 Residential use SCOs and Protection of Groundwater SCOs. Dieldrin was detected above the 6 NYCRR Part 375 Residential use SCO of 39 µg/kg at three locations and six intervals and above the 6 NYCRR Part 375 Protection of Groundwater SCO of 100 µg/kg at two locations and four intervals during the 2013 sampling event. The exceedances ranged from 47 µg/kg to 480 µg/kg. During the 2014 sampling event, dieldrin was detected above the 6 NYCRR Part 375 Residential use SCO of 39 µg/kg at five locations and above the 6 NYCRR Part 375 Protection of Groundwater SCO of 100 µg/kg at three locations. The exceedances ranged from 41 µg/kg to 510 µg/kg. All pesticide detections met the 6 NYCRR Part 375 industrial and commercial use SCOs. The sampling results were also compared to USEPA RSLs (USEPA, June 2015). The results of the RSL comparison showed that all COC concentrations were well within the TR range 10^{-6} to 10^{-4}.

An HHRA was conducted to evaluate potential adverse health effects due to the elevated dieldrin concentrations. Under hypothetical future residential land use, residential receptors (adult and child) were considered. The exposure pathways evaluated included incidental ingestion of soil, dermal contact with soil, and inhalation of fugitive dusts. The cumulative HI for residents exposed to subsurface soils was less than 1.0, indicating that exposure to potential contaminants is not expected to result in adverse non-carcinogenic health effects. The cumulative CR for residents exposed to subsurface soils was within USEPA's target risk range (CAPE/FPM, October 2014).

4.1.8.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SS024 (FDA AOC) remedy has been implemented and is currently protective of human health and the environment. The site is grass covered open space within restricted airport property. Land use has not changed since the previous five-year review. In addition, there has been no groundwater use at the site and adjacent facilities use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.1.8.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?

2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.8.4.1 Remedy Functionality

LUC/ICs for industrial/ commercial/ non-residential use and groundwater use restrictions were implemented as specified in the ROD. The deed for Parcel A1A was reviewed and the deed restrictions, for Area A1A-1 which includes the FDA, were determined to which satisfy the ROD:

1. The grantee covenants to use Area A1A-1 of the property for only industrial/ commercial/ non-residential purposes; and
2. The grantee covenants not to extract, utilize, consume or permit any extraction, use, or consumption, of any water from the aquifer below the surfaces of the ground with the Area A1A-1 boundary unless the groundwater has been tested and found to meet all applicable standards and the grantee first obtains the prior written approval from the Oneida County Department of Health.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/ commercial land-use that is compatible with the non-residential LUC/IC at the site.

4.1.8.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. An HHRA was previously conducted for the RI to evaluate potential health risks using an industrial/commercial land use scenario for the site. The RI HHRA results indicated acceptable risks for the identified receptors and pathways (Law, December 1996). A supplemental HHRA was conducted as part of the 2013 and 2014 site closure activities. This HHRA addressed future residential land use scenario only and used the most recent soil data. The exposure pathways evaluated included incidental ingestion of soil, dermal contact with soil, and inhalation of fugitive dusts. The cumulative HI for residents exposed to subsurface soils was less than 1.0, indicating that exposure to potential contaminants is not expected to result in adverse non-carcinogenic health effects. The cumulative CR for residents exposed to subsurface soils was within USEPA's target risk range. The ecological assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant. The ecological risk assumptions are also still valid.
The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/future non-residential land-use and groundwater use restriction minimize potential exposure pathways and eliminate groundwater ingestion.
- The previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994), 6 NYCRR Part 375 SCOs

(NYSDEC, December 2006), and NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998).

4.1.8.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Site closure activities including soil sampling were performed in 2013 and 2014. The objective of the soil sampling was to obtain data to support site closure and removal of the remaining restriction at the site (non-residential land use). The soil sampling showed that there is soil contamination above the 6 NYCRR Part 375 Residential use SCOs present at the site. However, the results from a supplemental HHRA show that there are no unacceptable non-carcinogenic or carcinogenic risk from exposure to soil and groundwater for potential residential receptors at the site. Therefore, removal of LUC/ICs and site closure was recommended for SS024 (FDA AOC) (CAPE/FPM, November 2014). Regulatory concurrence is pending.

4.1.8.5 Recommendations and Follow-up Actions

Following site closure approval, the Air Force will recommend a deed modification to remove the groundwater use and non-residential use restrictions associated with the site.

4.1.8.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS024 (FDA AOC) is protective of human health and the environment.

4.1.9 SS025 (Site T-9 AOC)

4.1.9.1 Document Review

4.1.9.1.1 Site History

The SS025 (Site T-9 AOC) is located near the east-central portion of former Griffiss AFB, at the intersection between Brooks Road and Selfridge Street, and covers about 30,000 square ft (Parcel F1). The site was used for parking heavy equipment and storing herbicides and petroleum-based paving products. The site formerly contained a 550-gallon kerosene AST 009-2. It was reported that former AST 009-2 leaked on several occasions and stained soils were observed at the AST location. Figure 12 illustrates the SS025 (Site T-9 AOC) and deed restrictions, as well as the LUC/ICs as required by the ROD.

In 1991, AST-009-2 was replaced with AST 009-3, a mobile 275-gallon kerosene tank, in the same location, but was relocated adjacent to Building 8 at a later date. In December 1996, AST 009-3 was removed from Building 8. Also, trucks carrying asphalt were reportedly rinsed with kerosene and the rinsate was discharged onto the ground at Site T-9. On May 7, 1997, NYSDEC Spill #9702173 was assigned to the former location of AST-009-2 and -3 due to contaminated

soil identified during a site assessment conducted by PEER Consultants, P.C. (PEER) in the fall of 1996.

4.1.9.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations and IRA activities discussed in this section are illustrated in figures provided in the documents referenced below.

During the RI, soil samples were collected and analyzed for VOCs, SVOCs, pesticides, PCBs, metals, and petroleum hydrocarbons (LAW, December 1996). Soil exceedances of applicable RI criteria were limited to 1 VOC, 6 SVOCs, 1 pesticide/ PCB, and 18 metals. Groundwater samples were also collected and analyzed from seven monitoring wells at the site: T9MW-1, -2, -3, and -4, each installed in 1986 by Hydro-Environmental Technologies, Inc.; and T9MW5-1, 5-2, and B43MW-1R, installed in 1994 by LAW (monitoring well not shown on Figure 13). TPH was detected in five of the seven samples at concentrations ranging from 0.17 to 0.2 milligrams per liter (mg/L).

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. Receptors evaluated in the human health risk assessment included landscape, industrial, utility and construction workers. Total carcinogenic risks associated with exposure by these workers to contaminants in the soil or groundwater was all within the lower end of the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1 for all human exposure scenarios. The ecological baseline risk assessment was also performed at the site to model risks to the raccoon and short-tailed shrew for exposures to surface soil. The assessment identified that the potential for adverse effects to raccoons was considered to be insignificant. However, the hazard quotient for the short-tailed shrew exceeded the benchmark level of 1 for one chemical (aluminum). Detailed results are provided in the RI. These risks were further reduced as a result of the 1998 IRA summarized below.

In February 1998, an NFA Proposed Plan was issued, but based on public comments and the required deed restrictions, the Air Force entered into an agreement with the USEPA and the NYSDEC to remove the remaining areas of soil contamination at the site. An IRA was performed from April to October 1998. A total of approximately 11,760 cy of contaminated soil was removed from the site from three areas, and transported to the on-base landfarm for bioremediation. All confirmatory soil samples indicated all VOC/SVOC contamination was removed (PEER, April 2000).

In addition to the removal activity, four existing monitoring wells (T9MW-2, -3, -4, and B43MW-1R) were re-sampled in December 1999 and analyzed for VOCs by USEPA Method SW8021 and SVOCs by Method SW8270. No compounds were detected above the RL in any of the primary samples collected, and as a result, the NYSDEC Spill #9702173 was recommended for closure (PEER, April 2000).

In a NYSDEC letter to the Air Force dated June 8, 2000, a request was made for additional groundwater sampling in the area downgradient of Site T-9. Another NYSDEC (Region 6) letter, dated June 21, 2000, required that sampling include the shallow perched water table encountered at the site.

4.1.9.1.3 ROD Requirements

The ROD for the SS025 (Site T-9 AOC) was issued by the Air Force in June 2001 and signed by the USEPA in September 2001. Based on the previous investigations and environmental conditions at the site, the selected remedy for the SS025 (Site T-9 AOC) is NFA for soils with LUC/ICs for industrial/ commercial use and groundwater use restrictions. Groundwater was deferred to the NYSDEC Petroleum Spills Program. The ROD for Site T-9 states that:

- The property will be designated for industrial/ commercial use unless permission is obtained from the USEPA, NYSDEC, and the NYSDOH;
- The owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the property unless such owner or occupant obtains prior written approval from the NYSDOH; and
- The groundwater at the site required further investigation under the NYSDEC Spills Program.

4.1.9.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, which is the Griffiss LRA, designated Parcel F1, which includes the SS025 (Site T-9 AOC), for industrial (light industrial development) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.9.1.5 Post-ROD Activities

To investigate the possibility of perched groundwater zone(s), in July 2001, three temporary wells (T9MW-6P, -7P, and -8P, not shown on Figure 12) were installed to confirm whether a perched groundwater zone was still present in the area southeast of the excavation. Continuous split-spoon sampling was conducted at the three locations at 2-ft intervals and borings were terminated at 10 ft bgs. No evidence of perched water or confining layers (such as clay) was found and PID screening during well installation did not indicate petroleum related contamination.

Monitoring wells T9MW-9 and -10 (not shown Figure 12) were installed and sampled in February 2002 along with existing monitoring wells T9MW-1, -2, B43MW-1R, and -3. No exceedances were reported at any sampling location at the SS025 (Site T-9 AOC) during this sampling event.

The Air Force conducted quarterly groundwater monitoring for VOCs using USEPA Method SW 8260 and SVOCs using USEPA Method SW8270 in March 2003, June 2003, September 2003, December 2003, and March 2004. Results indicated that monitoring wells T9MW-2, -3, -4,

B43MW-1R and -3 contained no VOC detections. T9MW-4 contained only one SVOC exceedance of the NYSDEC Groundwater Standards during the September 2003 sampling round. Other than downgradient monitoring well T9MW-10, no perched groundwater was found in the area of native soil remaining after the IRA in 1998 (FPM, July 2004). The NYSDEC closed Spill #9702173 on September 24, 2004. The remaining monitoring wells associated with the Building T-9 AOC were decommissioned in July 2005 as part of the Round 3 Monitoring Well Decommissioning event (FPM, January 2006).

A request to remove the groundwater restriction at the site was issued by the Air Force in March 2012 since no COC were detected above NYSDEC Groundwater Standards at the site. NYSDEC acceptance was provided on February 12, 2013 and USEPA acceptance was provided on October 15, 2012.

Also, since the last Five-Year Review, annual LUC/IC inspections have been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.9.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last Five-Year Review.

4.1.9.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SS025 (Site T-9 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is grass covered open space near industrial/commercial facilities. A railroad has been constructed at the site since the previous five-year review. There have not been any other land use changes and adjacent facilities use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.1.9.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.9.4.1 Remedy Functionality

LUC/ICs were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F1 which includes Site T-9 was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The grantee covenants to restrict the use of the property to industrial and commercial non-residential activities unless it obtains written permission to do so from the USEPA, NYSDEC, and NYSDOH; and

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/ commercial land-use that is compatible with the non-residential LUC/IC at the site. The previously implemented groundwater LUC/ICs were removed with USEPA and NYSDEC approval in 2012.

4.1.9.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under an industrial/ commercial reuse scenario. The results of the human health baseline risk assessment indicate that VOCs and SVOCs detected in soil and groundwater should not present a risk to current and future occupational workers and future industrial workers as long as groundwater at this AOC is not used for drinking water purposes. The ecological baseline risk assessment identified the potential for adverse effects to the short tailed shrew. However, the IRA conducted in 1998 removed contaminated soils at the site and the associated risk is no longer present

The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/future non-residential land-use minimizes potential exposure pathways; and
- The previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998).

4.1.9.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Since the 2010 Five-Year Review, the groundwater restriction was removed from the site with approval from the USEPA and acceptance by the NYSDEC.

4.1.9.5 Recommendations and Follow-up Actions

A deed modification for Parcel F1 is recommended to remove the groundwater restriction.

4.1.9.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS025 (Site T-9 AOC) is protective of human health and the environment.

4.1.10 SS033 (Coal Yard Storage Area Operable Unit)

4.1.10.1 Document Review

4.1.10.1.1 Site History

The Coal Yard Storage Area (CYSA) OU consists of the CYSA AOC and the Defense Reutilization Marketing Office area (DRMO).

The CYSA AOC is an approximately 3-acre area located in the central portion of the former AFB. The AOC consists of the CYSA, Rainbow Creek, and Area of Interest (AOI) 66. The CYSA was originally proposed as the location of a new coal storage facility. This site was a DRMO salvage yard/landfill from the 1940s into the 1980s. Incidents of chemical releases directly onto the soil surface have been reported. Unknown quantities of scrap drums and transformers may have been disposed of at this site and several hundred drums of pesticides were reportedly stored at this site in the 1970s. AOI 66 was identified during the AOI screening process. Based on aerial photography, it was determined that the DRMO area extended south of the CYSA. As a result, the southern part of the DRMO area was investigated as AOI 66 in order to address the entire former DRMO area.

The DRMO area is located in the southeast industrial portion of the former Griffiss AFB, northeast of the CYSA. From the late 1950s until 1997, the DMRO area was used as a salvage/storage yard. Contaminated soil containing SVOCs, metals, and PCBs was known to be present at the site. Historical documents also revealed the possibility that Unexploded Ordnance may have been stored at the site.

Figure 13 illustrates the SS033 (CYSA OU) and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.10.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations and IRA activities discussed in this section are illustrated in figures provided in the documents referenced below.

CYSA AOC:

In 1988, PCBs were detected in soil at one part of the AOC during routine soil testing. A preliminary soil investigation, which included 12 soil borings, was performed in 1989. At one soil boring location, the soil/fill material collected at approximately 2 ft bgs exhibited an odor similar to petroleum solvents. Three composite soil samples were collected from depths of 0-6 inches bgs and 18-24 inches bgs. The analytical results indicated the presence of PCBs, metals, and VOCs. During the advancement of geotechnical borings, a buried container was penetrated, causing an unknown green gas to emanate from the borehole, which overwhelmed a worker at the site (Kaselen and D'Angelo, July 1989).

The RI was performed was performed in 1994. As part of the RI, a GPR survey was performed to evaluate disposal areas and to identify potential drilling hazards. Several strong point sources, indicative of buried metallic objects, were detected in the survey area. In addition, a passive soil gas survey was performed at 37 sampling points. This survey indicated the presence of VOCs at 26 points. Field sampling for the RI included the collection and analysis of groundwater, sediment, soil, and surface water samples. Analytical results showed the presence of VOCs, SVOCs, pesticides, petroleum hydrocarbons, glycols, and metals in the groundwater samples. These analytes including PCBs were also detected in the surface water samples. VOCs, SVOCs, pesticides/PCBs, petroleum hydrocarbons, metals were also detected in the sediment and soil samples and VOCs, SVOCs (Law, December 1996).

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. Receptors evaluated in the human health risk assessment included landscape, industrial, utility and construction workers. Total carcinogenic risks associated with exposure by these workers to contaminants in the soil or groundwater are less than or within USEPA's acceptable exposure levels, with the exception of the excessive risk to landscape workers, which was due to dermal contact with PCBs and benzo(a)pyrene in the surface soils. The HI was below the acceptable level of 1 for all human exposure scenarios. The ecological baseline risk assessment was also performed at the site to model risks to the raccoon, American woodcock, and short-tailed shrew for exposures to surface soil, surface water, and sediment. The assessment identified that the potential for adverse effects to raccoons was considered to be insignificant. For the short-tailed shrew, six of the calculated HQs exceeded 1.0: dichlorodiphenyldichloroethane (9.0); 2-methyl-4-chlorophenoxyacetic acid (3.9); cadmium (1.5); lead (1.5); Aroclor-l260 (1.1); and aluminum (1.1). In addition, two calculated HQs exceeded 1.0 for the American woodcock: DDD (2.6) and MCPA (1.4).. The risks above were associated with soils and sediment; however, because the HQs are relatively low, and due to uncertainties and the conservatism of the risk assessment methodology, potential risks to ecological receptors are not considered to be significant at this AOC. Detailed results are provided in the RI.

An IRA was conducted at the CYSA in 1997 assuming industrial reuse at the site. For this action, PCB-contaminated soil exceeding the federal standards was removed along with all non-native fill material, including debris consisting of concrete, wood, metal, and rubber. A total of 25,922 tons of soil and debris were removed from the CYSA, with 3,046 tons characterized as

hazardous waste and 22,876 tons characterized as nonhazardous waste during four excavation rounds. The hazardous waste was disposed of at the Model City landfill and the non-hazardous waste was disposed of at the Seneca Meadows Landfill in Waterloo, New York. The excavated areas were restored to pre-construction conditions with the placement of clean backfill and topsoil, and re-vegetation (IT, July 1998).

An IRA was conducted at Rainbow Creek in 1997 which included sediment excavation. A total of 4,144 tons of sediment were disposed of as nonhazardous waste. Following sediment excavation, confirmation samples were collected and analyzed, and the results were compared to the site-specific cleanup goal. PCB concentrations in remaining sediments exceeded the cleanup goal in 30 of 39 locations. Rainbow Creek was restored by lining the entire creek bed with a geotextile fabric and placement of 1 foot of crushed stone bedding to provide a barrier between contaminated sediments and surface water. The entire length of Rainbow Creek was culverted in 2008 and 2009 and geotextile fabric was reinstalled above the relocated soils (IT, July 1998).

The IRA for AOI 66 was conducted in 1998 and 1999. A total of 2,925 tons of soil was removed, with 281 tons characterized as hazardous waste and 2,644 tons characterized as nonhazardous waste over three excavation events. The hazardous waste was disposed of at the Model City landfill and the non-hazardous waste was disposed of at the Seneca Meadows Landfill in Waterloo, New York. The excavated areas were restored to pre-construction conditions with the placement of clean backfill and topsoil, and re-vegetation. The railroad and concrete skid were reconstructed (IT, May 2000).

DRMO:

In August 1996, nine pre-closure samples were collected from soil at the southwest corner of the DRMO area. Five were analyzed for PCBs, and all nine were analyzed for metals and extractable organic halides (EOX). PCBs exceeded the most stringent criteria (1 mg/kg) in two of the five samples (1.7 mg/kg and 11 mg/kg). Metals and EOX did not exceed the most stringent criteria in any of the samples. Based on the percentage of samples with PCB concentrations above the action levels of 1 ppm to a depth of 10 inches and 10 ppm at depths greater than 10 inches, delineation of the PCB contamination at the DRMO area was recommended. The IRA was initiated in 1997. A total of 5,318 tons of soil was excavated and removed as nonhazardous waste during two excavation rounds. The waste was disposed of at the Seneca Meadows Landfill in Waterloo, New York. Restoration of the DRMO area included placement of clean backfill and topsoil and re-vegetation. Backfill was spread and compacted to a depth four inches below final grade. Disturbed areas were covered with topsoil to a depth of four inches, seeded, fertilized and mulched (IT, May 1999).

LUC/IC Site Inspections:

LUC/IC site inspections were conducted at the site from 2006 through 2011. The LUC/ICs were included in the 2005 Finding of Suitability for Early Transfer for Parcel F6B as Air Force maintained requirements planned for incorporation in the future deed (Air Force Real Property Agency [AFRPA], February 2005). The LUC/ICs corresponded to non-residential use

restrictions, soil restrictions, and groundwater restrictions. The inspections did not identify any violations of the LUC/ICs.

4.1.10.1.3 ROD Requirements

The ROD for the SS033 (CYSA OU) was issued by the Air Force in December 2011 and signed by the USEPA in February 2012. Based on the previous investigations and environmental conditions at the site the selected remedy for the SS033 (CYSA OU) is no further remedial action, with LUC/ICs for industrial land-use and groundwater use restrictions. The ROD for the SS033 (CYSA OU) states that:

- Development and use of the areas (within site boundaries) for residential housing, elementary and secondary schools, and childcare facilities and playgrounds will be prohibited unless prior approval is received from the Air Force, EPA, and NYSDEC.
- The owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the site unless such owner or occupant obtains prior written approval from the New York State Department of Health.
- The owner or operator will restrict the relocation of contaminated soils greater than 1 foot bgs within the subsurface soil relocation restricted area from being placed outside the restricted area boundaries. If the contaminated soil greater than 1 foot bgs is to be excavated, it must remain on site, stay covered if stockpiled, and covered by a minimum of 1 foot of clean fill once it is returned to the ground. Prior to any digging within the soil restricted area boundary, the owner/operator will notify all workers performing such work of these restrictions. The owner/operator will notify the Air Force of any digging activities that take place within the restricted area.
- The owner or operator will restrict the relocation of contaminated soil below the geotextile fabric located in the subsurface of the former "Rainbow Creek". If soil is disturbed below the fabric, it will remain on site covered while stockpiled and will return to the ground with a geotextile fabric cover and covered with a minimum of 12-inches of clean soil.

4.1.10.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, which is the Griffiss LRA, designated Parcel F6B-2, which includes the SS033 (CYSA OU), for industrial (light industrial development) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.10.1.5 Post-ROD Activities

Annual LUC/IC inspections have been performed at the site since 2012 to ensure that the LUC/ICs have been implemented and are in practice. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.10.2 Data Review and Analysis

No new groundwater or soil data have been collected since the implementation of the ROD.

4.1.10.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SS033 (CYSA OU) remedy has been implemented and is currently protective of human health and the environment. The OU consists of the CYSA AOC and DRMO which are grass covered open spaces near industrial/commercial facilities. In addition, there has been no soil intrusive work/relocation or groundwater intrusive work performed at the site and adjacent facilities use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.1.10.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.10.4.1 Remedy Functionality

The IRA remediated the site assuming industrial reuse at the site. Therefore, LUC/ICs were implemented in property transfer deeds as specified in the ROD. Specifically, the deeds for Parcels F6B-2 and F6B-3 which include the SS033 CYSA OU were reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The portions of the Property in SS033 Proposed Coal Storage Yard partially located in Parcel F6B-3, DRMO west located in Parcel F6B-2, and AOI-66 Coal Storage Pad located in Parcel F6B-3 shall not be used for residential housing, elementary, and secondary schools, childcare facilities or playgrounds without prior written approval from the Air Force, the USEPA Region 2 and the NYSDEC.
2. No water from the subsurface aquifer within the boundaries of the portions of the Property in SS033 Proposed Coal Storage Yard, DRMO west, and AOI-66 shall be extracted, utilized or consumed without prior written approval of the NYSDOH.
3. The Grantee shall provide written notice to the Air Force prior to any digging activities within the portions of the Property in SS033 Proposed Coal Storage Yard, DRMO west, and AOI-66. All workers performing digging within such sites shall be required to restrict the relocation of contaminated soils greater than 1 foot bgs from outside the boundary of such sites and to cover stockpiled soil. When such soil is returned to the ground, it must be covered with a minimum of 12-inches of clean soil.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/ commercial land-use that is compatible with the non-residential LUC/IC at the site.

4.1.10.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. Following the baseline HHRA conducted in the RI, an IRA was conducted at the site to remove PCBs and PAHs in the soils that previously contributed to human health risks. Based on the confirmatory sampling results, the contaminants detected in soil should not present a risk to current and future occupational workers and future industrial workers. The ecological baseline risk assessment identified the potential for adverse effects to the short tailed shrew. However, the IRA conducted following the risk assessment removed contaminated soils at the site and the entire length of Rainbow Creek has been culverted. Therefore, the associated risk is no longer present.

The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/ future non-residential land-use, soil intrusion and relocation restrictions, and groundwater intrusion and use restrictions minimize potential exposure pathways.
- The previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994), 6 NYCRR Part 375 SCOs (NYSDEC, December 2006), and NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998).

4.1.10.4.3 New Information of Significance

There is no new information of significance for this site.

4.1.10.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.1.10.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS033 (CYSA OU) is protective of human health and the environment.

4.1.11 SS044 (Electrical Power Substation AOC)

4.1.11.1 Document Review

4.1.11.1.1 Site History

The EPS is located on Ellsworth Road in the center of the former Griffiss AFB (primarily in Parcel F11B and partially in Parcel F2). This site has been in operation since the 1940s and currently supplies electricity throughout the former base (Business and Technology Park). Surface water discharges into Three Mile Creek. Transformers containing PCB fluids were located at the site on concrete pads and drums containing PCB fluids were also stored at the site. One transformer rupture and oil spillage are associated with the site, which both occurred in 1987. Figure 14 illustrates the SS044 (EPS AOC) and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.11.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations and IRA activities discussed in this section are illustrated in figures provided in the documents referenced below.

In 1994, an RI consisted of groundwater sampling, sediment sampling, bulk concrete sampling, and 47 soil borings (15 soil borings were located inside of the substation enclosure and 32 soil borings were located outside of the substation) (LAW, December 1996). Four groundwater samples, 4 concrete bulk samples, 2 sediment samples (from a storm water culvert) and 75 soil samples were collected in the vicinity of the substation. Results showed VOC, SVOC, PCB, pesticide, total recoverable petroleum hydrocarbons, dioxin, dioxin/furan detections in the soil samples. Chlorinated VOCs and SVOCs were detected in the groundwater and sediment samples. PCBs were the only chemicals detected from the bulk concrete sampling.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. Receptors evaluated in the human health risk assessment included landscape, industrial, utility and construction workers. Potential risks to recreational receptors were also evaluated due to the presence of a walking/ jogging trail. Total CRs associated with exposure by these workers/ recreational users to contaminants in the soil or groundwater were all within the acceptable USEPA target risk range (1×10^{-4} to 1×10^{-6}). The HI was below the acceptable level of 1 for all human exposure scenarios. An ecological assessment was also performed for terrestrial receptors including the raccoon and the short tailed shrew. None of the hazard quotients exceeded the benchmark level of 1 for the raccoon. The hazard quotient for one chemical exceeded the benchmark level of 1 for the shrew (2,3,7,8-tetrachlorodibenzodioxin (93). Detailed baseline risk assessment results are provided in the RI. These risks were further reduced as a result of the 1998/1999 IRA summarized below.

An IRA was conducted 1998 to 1999 to remove PCB contamination at the site (IT, May 2000). A total of 85 tons of surface and subsurface soils were excavated from 4 areas previously

verified by the RI to contain PCB contamination. Confirmation sampling at these areas reported PCB concentrations averaging 0.78 to 5.6 ppm, below clean-up criteria.

4.1.11.1.3 ROD Requirements

The ROD for the SS044 (EPS AOC) was issued by the Air Force in November 2004 and signed by the USEPA in March 2005. Based on the previous investigations and environmental conditions at the site, the selected remedy for the SS044 (EPS AOC) is LUC/ICs for industrial use as a restricted access electrical substation and groundwater use restrictions. The ROD for the SS044 (EPS AOC) states that:

- Development and use of the EPS (within the site boundary) for residential housing, elementary and secondary schools, childcare facilities and playgrounds will be prohibited unless prior approval is received from the Air Force, USEPA, and NYSDEC;
- The area within the fence line will be designated for use as a restricted access electrical substation;
- That the owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the site unless such owner or occupant obtains prior written approval from the NYSDOH; and
- Within the site boundary, the owner or operator will restrict the relocation of the contaminated soils below 1 foot of the surface from being placed outside the site boundaries. If the contaminated soil below 1 foot of the surface is to be excavated, it must remain on site, stay covered if stockpiled, and covered by a minimum of 1 foot of clean fill once it is returned to the ground. Prior to any digging within the site boundary, the owner/operator will notify the Air Force of any digging activities that take place within the restricted area. The Air Force will, in turn, include any such notifications received from the owner/operator as part of the monitoring reports.

4.1.11.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, which is the Griffiss LRA, designated the SS044 (EPS AOC) for industrial (light industrial development) use as an Electrical Power Substation. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.11.1.5 Post-ROD Activities

Since the last Five-Year Review, annual LUC/IC inspections have been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.11.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last Five-Year Review.

4.1.11.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SS044 (EPS AOC) remedy has been implemented and is currently protective of human health and the environment. The site is an operational power substation located within an industrial/commercial park. There have not been any land use changes since the previous five-year review. In addition, there has been no soil intrusive work/relocation or groundwater intrusive work performed at the site and adjacent facilities use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.1.11.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.11.4.1 Remedy Functionality

LUC/ICs for restricted access substation use and groundwater use restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel EPS was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The Grantee covenants to prohibit the extraction, utilization, or consumption of any water from the aquifer below the surface of the ground within the property unless the groundwater has been tested and found to meet all applicable standards and the Grantee, owner or occupant obtains the prior written approval from the NYSDOH.
2. The Grantee covenants not to use the aquifer in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment.
3. The Grantee covenants to comply with all applicable Federal and State laws and regulations with regard to activities affecting the groundwater in the aquifer.
4. The Grantee covenants to prohibit the relocations of contaminated soils below one foot of the surface at IRP site SS044 from being placed outside the property. If the contaminated soil below one foot is excavated, it must remain on site, stay covered if stockpiled, and covered by a minimum of one foot of clean fill once it is returned to the ground. Prior to any digging within the IRP site SS044 boundary, the Grantee covenants to notify the Air Force in Advance of the digging activities that will take place with the SS044 restricted area and to notify the owner, operator and workers who will perform such work of these restrictions.
5. The Grantee covenants to prohibit the development and use of the site, for residential housing, elementary and secondary schools, childcare facilities and playgrounds unless prior approval is obtained from the Air Force, USEPA, and NYSDEC.

6. The Grantee covenants to restrict access to the substation.

Also, the deed for Parcel F2 which includes a portion of the SS044 (EPS AOC) was also reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The grantee covenants and agrees to use the property, identified as Parcel F2 for only commercial/ non-residential purposes, unless prior consent for a different use is obtained from the USEPA and NYSDEC;
2. The grantee shall not extract, utilize, consume or permit any extraction, use, consumption, of any water from the aquifer below the surfaces of Parcel F2 unless the groundwater has been tested and found to meet all applicable standards and the grantee first obtains the prior written approval from the NYSDOH. The grantee further covenants to ensure that the aquifer will not be used in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment; and
3. The grantee covenants not to relocate soils during any construction activities in the area identified as SS044. Soil below the clean fill must remain on site, stay covered while stockpiled, and be covered by a minimum of 12 inches of clean fill.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions were verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/ commercial land-use that is compatible with the non-residential LUC/IC at the site.

4.1.11.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under industrial/commercial reuse scenario. The human health baseline risk assessment evaluated human exposure to VOCs, SVOCs, PCBs/Pesticides, dioxins, and metals in soils (surface and subsurface) and VOCs, SVOCs, and metals in groundwater. The results of the human health baseline risk assessment indicated that chemicals detected in soil and groundwater should not present a risk to current and future occupational workers, and future industrial workers, and recreational joggers. Moreover, the quantitative evaluation of risk is subject to several conservative assumptions and should not be considered as an absolute quantitative measure of risk.

The ecological baseline risk assessment identified that the potential for adverse effects to terrestrial ecological receptors including the raccoon was considered to be insignificant. The potential for adverse effects was reported for the shrew. However, the IRA conducted following the risk assessment removed contaminated soils at the site. Therefore, the associated risk is no longer present.

The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/ future non-residential land-use, soil relocation restriction, and groundwater use restriction minimize potential exposure pathways and eliminate groundwater ingestion;
- The PCB contamination remaining in the soil after the completion of the removal action does not pose a risk to residential users or the environment as long as the soil remains on site with a minimum of 12-inches of clean fill; and
- The previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998).

4.1.11.4.3 New Information of Significance

There is no new information of significance since the 2010 Five-Year Review that would affect the protectiveness of the remedy.

4.1.11.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.1.11.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SS044 (EPS AOC) is protective of human health and the environment. The Air Force has identified the restrictions necessary for ensuring the remedy protectiveness of human health and the environment.

4.1.12 SD050 (Building 214 AOC)

4.1.12.1 Document Review

4.1.12.1.1 Site History

Building 214, a former vehicle maintenance shop is located in the west-central portion of the former Griffiss AFB. An Underground Storage Tank (UST), OWS, and two drywells are associated with this site. The UST reportedly overflowed due to a mechanical failure. The UST and OWS were removed in 1997. Surface water run-off in this area drains towards the Mohawk River using the base storm drainage system. The building is currently used for storage and office space for an airplane refurbishing company. Figure 15 illustrates the SD050 (Building 214 AOC) and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.12.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

In 1994, an RI was performed which consisted of a soil gas survey, soil sampling, and groundwater sampling using six soil boreholes and two temporary wells (LAW, December 1996). Subsurface soil results showed VOCs, SVOCs, pesticides, and petroleum hydrocarbons with exceedances for 1 SVOC, 2 pesticides, 5 metals, and petroleum hydrocarbons. Surface soil results showed exceedances for SVOC, pesticide, and metals. Groundwater results showed VOCs, SVOCs, pesticides, metals, and petroleum hydrocarbons with NYSDEC Groundwater Standards exceedances for 1 SVOC, 2 pesticides, and 5 metals. The elevated metals results were attributed to unfiltered grab sample methods. The SVOC and pesticides detections were minor exceedances.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (industrial use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The total carcinogenic risk associated with exposure by industrial, landscapers, utility and construction workers to contaminants in the soil or groundwater were within the lower end of the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1 for all exposure scenarios. The ecological baseline risk assessment was also performed at the site to model risks to the raccoon and short-tailed shrew for exposures to surface soil. The assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.

4.1.12.1.3 ROD Requirements

The ROD for Building 214 was issued by the Air Force in September 1999 and signed by the USEPA in September 1999. Based on the previous investigations and environmental conditions at the site, the selected remedy for the SD050 (Building 214 AOC) site is no further remedial action, with LUC/ICs for industrial land-use and groundwater use restrictions. The ROD for the SD050 (Building 214 AOC) states that:

- The property will be industrial use unless permission is obtained from the USEPA, NYSDEC, and NYSDOH;
- The owner or occupant of the property shall not extract, utilize, consume, or permit to be extracted, any water from the subsurface aquifer within the boundary of the property unless such owner or occupant obtains prior written approval from the NYSDOH; and
- Further groundwater investigations as specified in the ROD.

4.1.12.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3. The GLDC, which is the Griffiss LRA, designated Parcel F3A, indicates that industrial/ commercial (manufacturing/ airfield and related services) use is planned for the portion of Parcel F3A that includes the SD050 (Building 214 AOC). The City of Rome adopted the LRA's zoning designation in 1998.

4.1.12.1.5 Post-ROD Activities

The groundwater at SD050 (Building 214 AOC) was investigated further under the On-Base Groundwater Tin City OU from September 2001 to September 2002 as required by the ROD. Groundwater sampling results indicated two metals exceeding NYSDEC Groundwater Standard; iron and sodium. The metal exceedances were attributed to basewide background conditions (identified during the RI). Results showed VOC detections but none exceeded NYSDEC Groundwater Standard. No SVOCs were detected in March 2002. Based on the results from previous sampling and the ROD requirements for the SD050 (Building 214 AOC), the Air Force submitted an ESD in 2003 to the USEPA. The document requested the deletion of ROD requirements for the groundwater investigations based on the results indicating groundwater ARARs have been met. The ESD was signed by the USEPA on September 26, 2003. The remaining LTM wells at the site were decommissioned in the Round 3 Well Decommissioning event performed in Summer/Fall 2005.

A request to remove the groundwater restriction at the site was issued by the Air Force in March 2012 since no COC were detected above NYSDEC Groundwater Standards at the site. NYSDEC acceptance was provided on April 24, 2012 and USEPA acceptance was provided on May 16, 2012.

Site closure activities, including soil sampling, were conducted in May 2013 and July 2014 to verify if the presence of residual soil contamination at the site met residential use SCOs. The 2013 event included the collection of 12 soil samples from six soil borings (direct push). Samples were collected from 0 to 4 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs from each boring. In preparation for this sampling, all historical soil sampling results were compared to the 6 NYCRR Part 375 Residential use SCOs. Only metals exceeded the residential use SCOs. Therefore, the site closure soil samples were analyzed for metals only via USEPA Method SW6010C. The 2014 sampling event was conducted on July 9, 2014 to collect surface soil samples at the site (0 to 2 ft bgs). This sampling event was conducted based on a NYSDEC comment provided on May 8, 2014 for the Final Site Closure Report for LUC/IC Site SD050 (Building 214 AOC) (CAPE/FPM, April 2014). All sampling locations are illustrated in Figure 15. The results for the 2013 and 2014 sampling events showed all metals were below the 6 NYCRR Part 375 Residential use SCOs (CAPE/FPM, November 2014).

Annual LUC/IC inspections have also been performed at the site. In addition, the owner/occupant of the property was contacted to ensure awareness of the restrictions and to confirm that LUC/ICs continue to be implemented. The confirmation of the LUC/ICs is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.1.12.2 Data Review and Analysis

Soil sampling was conducted at the site in 2013 and 2014. Results from the soil sampling showed that metal concentrations in all samples were below their respective 6 NYCRR Part 375 Residential use SCOs. The sampling results were also compared to USEPA RSLs (USEPA, June

2015). The results of the RSL comparison showed that all COC concentrations were well within the TR range 10^{-6} to 10^{-4}.

4.1.12.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SD050 (Building 214 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is partially under the Building 214 slab and partially grass covered open space. Building 214 is used for storage and is located within an industrial/commercial area and adjacent facilities use the municipal water supply. In addition, there have been not land use changes since the previous five-year review. The completed five-year review checklist is provided in Appendix A.

4.1.12.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.1.12.4.1 Remedy Functionality

LUC/ICs for in commercial/non-residential use were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F3A which includes the SD050 (Building 214 AOC) was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The grantee covenants and agrees to use the property, identified as Parcel F3A for only commercial/non-residential purposes, unless prior consent for a different use is obtained from the USEPA and NYSDEC.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. The implementation of the deed restrictions was verified by site inspections. In addition to the deed restrictions, as specified in the GLDC's Reuse Plan, zoning is industrial/commercial land-use that is compatible with the non-residential LUC/IC at the site. The groundwater LUC/ICs were removed with USEPA and NYSDEC approval in 2012.

4.1.12.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under the industrial/ commercial reuse scenario. The results of the human health baseline risk assessment indicate that VOCs, SVOCs, and metals detected in soil should

not present a risk to current and future occupational workers and future industrial workers. The ecological baseline risk assessment identified that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant. The ecological risk assumptions are also still valid.

The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/ future non-residential land-use minimizes potential exposure.
- The previous soil investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and 6 NYCRR Part 375 SCOs (NYSDEC, December 2006).

4.1.12.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Since the 2010 Five-Year Review, the groundwater restriction was removed from the site with approval from the USEPA and acceptance by the NYSDEC. In addition, site closure activities including soil sampling have been performed. The objective of the soil sampling was to obtain data to support site closure and removal of the deed restrictions at the site. The soil sampling confirmed the absence of soil contamination above the 6 NYCRR Part 375 Residential use SCOs. Therefore, removal of LUC/ICs and site closure was recommended for SD050 (Building 214 AOC) (CAPE/FPM, November 2014). Regulatory concurrence is pending.

4.1.12.5 Recommendations and Follow-up Actions

Following site closure approval, the Air Force will recommend a deed modification to remove the groundwater use and non-residential use restrictions associated with the site.

4.1.12.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD050 (Building 214 AOC) is protective of human health and the environment.

4.2 Long-Term Monitoring Sites

This section of the CERCLA Five-Year Review includes sites with completed remedies that are undergoing LTM. LTM is being conducted at the IRP AOCs Landfill (LF)001 (Landfill 1 AOC), LF002 (Landfill 2/3 AOC), LF003 (Landfill 7 AOC), LF007 (Landfill 5 AOC), LF009 (Landfill 6 AOC). The following summarizes each area's history, previous investigations, present/ past contamination, ROD recommendations, status of protectiveness, and future actions. All sites in Section 4.2 were included in the 2005 Five-Year Review (FPM, September 2005) and 2010 Five-Year Review Addendum (FPM, February 2013). Based on the recommendations from the 2010 Five-Year Review Addendum, LF028 Landfill 4 AOC was removed from the Griffiss Five-Year Reviews following closure in 2005.

4.2.1 LF001 (Landfill 1 AOC)

4.2.1.1 Document Review

4.2.1.1.1 Site History

Landfill 1, approximately 22 acres in size, is an unlined landfill located in the northeastern portion of the former Griffiss AFB on the south side of the installation boundary, with regulated wetlands and a tributary of Six Mile Creek on the east side, Six Mile Creek and regulated wetlands on the west side, and woodlands on the south side. Figure 16 illustrates the LF001 (Landfill 1 AOC) and LTM network, as well as the LUC/ICs as required by the ROD.

The sources of potential contamination at Landfill 1 are an estimated 90,000 to 100,000 cy of waste, reportedly consisting of general refuse, hardfill and boiler ash that was buried using trench and cover methods at the site between 1960 and 1973. Unlabeled 55-gallon empty drums were also discarded in the landfill. These drums, along with the miscellaneous debris including metallic and sheetrock components along the margin of the landfill, were evident in the site visit conducted in 1982. Debris from a fire that occurred in the Base commissary in 1973 was buried in the western area of the landfill near the intersection of the unpaved access road and Six Mile Creek. Portions of the landfill were capped in the 1970s. In 1984, the same portions of the landfill were re-graded and re-capped with clay and other soils.

In accordance with the landfill consolidation project, conducted between March 1998 and August 1999, the following materials were removed from the areas adjacent to the LF001 (Landfill 1 AOC) boundary and consolidated at a designated area within Landfill 2/3: 14 empty drums, 2 tires, 6 cy of concrete rubble, 2 cy of scrap metal, and 100 cy of soils. In addition, approximately 9,000 cy of waste material (mostly ash and municipal waste) were consolidated at Landfill 1 from the adjacent Small Arms Range (SAR) property.

In the spring of 2003, in accordance with the ROD, remedial activities began at the Landfill 1 AOC. The remedial activities consisted of the regrading and capping of Landfill 1 with an impermeable cover, the installation of a groundwater/ leachate collection trench along the western edge of Landfill 1, and the decommissioning of monitoring wells located within the construction limits. In addition to the re-capping of Landfill 1, an LTM program for groundwater and surface water downgradient of the site was initiated in December 2003 to evaluate the effectiveness of the presumptive remedy. The remedy is subject to re-evaluation once every five years.

4.2.1.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents references below.

Groundwater investigations conducted by Roy F. Weston, Inc. in 1982 and by the Air Force in 1991 detected benzene, chlorobenzene, ethylbenzene and phenol exceeding NYSDEC Groundwater Standards (LAW, December 1996). In 1992 and 1993, the Air Force detected chlorinated VOCs (1,1,1-trichloromethane, chlorobenzene and methylene chloride), petroleum hydrocarbon-related VOCs (benzene, ethylbenzene and xylenes) and acetone above NYSDEC Groundwater Standards; glycols levels also exceeded the NYSDEC Groundwater Standard of 0.05 mg/L. Inorganic constituents exceeding NYSDEC Groundwater Standard included manganese, zinc, lead and cadmium. However, most detected metals were within the range of concentrations encountered at other sites on the former Griffiss AFB.

The RI involved the collection of numerous soil, landfill leachate, surface water, sediment, and groundwater samples for contamination evaluation (LAW, December 1996). Also, a geophysical investigation including the collection of MAG and GPR data was conducted on an extensive grid, which included the entire area of the landfill. Based on these geophysical data, test pits were dug during the SI at locations where anomalous geophysical indicators suggested buried drums, but none were discovered. Also during the SI, a partially buried drum, found north of the SAR in Landfill 1, was removed and surrounding stained soils were excavated, removed and disposed of at a permitted facility in January 1998. Confirmatory soil sampling indicated no residual contamination (E&E, July 1998).

During the RI, three downgradient wells at the southwestern slope of the landfill (LF1MW-5, -101 and LF1P-2) were found to contain a number of VOCs. These wells are located along an axis parallel to the southwest groundwater flow direction. LF1MW-101, which lies the most hydraulically upgradient and is closest to Landfill 1, was the most contaminated of the three downgradient wells. Concentrations were reported of 192 micrograms per liter (µg/L) trimethylbenzenes, 110 µg/L xylenes, 7.2 µg/L 1,4-DCB, 11 µg/L chlorobenzene and 12 µg/L ethylbenzene. LF1P-2, located approximately 175 ft downgradient of LF1MW-101, was the least contaminated of the three wells and had reported concentrations of 18 µg/L trimethylbenzenes, 1.4 µg/L benzene and 11 µg/L xylenes. LF1MW-5 is an additional 240 ft downgradient and across Six Mile Creek and was reported with concentrations of 102 µg/L trimethylbenzenes, 6 µg/L benzene and 63 µg/L xylenes (LAW, December 1996).

Several VOCs, including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,4-DCB, benzene, chlorobenzene, ethylbenzene, isopropylbenzene, naphthalene, n-propylbenzene and total xylenes were detected at elevated concentrations in landfill leachate samples collected during the RI. Analyses of the surface water conditions during the RI resulted in no VOC exceedances of the potential surface water ARARs. Sediment sample results showed VOCs, SVOCs, pesticides and metals at concentrations above the most stringent criteria for sediment.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future potential risks to human health and the environment associated with COCs found at the site. The human health risk assessment evaluated exposure to potential residential, agricultural, recreational, and occupations populations that may be exposed to COCs in air, surface soil, groundwater, surface water, and sediments. COCs evaluated in the risk assessment included VOCs, glycols, SVOCs, herbicides, pesticides, PCBs, and metals. The results of the human health baseline risk assessment indicate that chemicals detected in passive soil gas, surface soil,

surface water, and sediments should not present a risk to current and future occupational workers, future industrial workers, and future off-site residents as long as groundwater at the AOC is not used for drinking water or showering purposes. Metal detections were the major contributors to the risk through ingestion of groundwater.

The ecological baseline risk assessment indicated that the hazard quotients of risks to the raccoon were calculated to be below 1. The hazard quotients of two chemicals for the short-tailed shrew exceeded 1 (4-chloro-2-methyl phenoxyacetic acid (6.6) and aluminum (1.0)) and the hazard quotients for two chemicals exceeded 1 for the American woodcock (4-chloro-2-methyl phenoxyacetic acid (3.6) and strontium (1.2)). The exceedances indicate a potential for adverse effects.

Vertical profile temporary wells LF1TW-1, -2, -3 and -4 were installed southwest of the landfill in January 1999 during the Baseline Study. LF1TW-5 was installed in April 1999 (FPM, July 2000). Because VOCs only minimally exceeded the NYS ARARs in these wells, it was concluded that the VOC plume is localized within 750 ft of the southwestern boundary of the landfill. Only benzene was detected above NYSDEC Groundwater Standard (at 1.3 µg/L) in well LF1TW-1 at 20 ft bgs. However, the presence of benzene was suspected to be field activities-related.

Across the four sampling rounds in 1999, LF1MW-101 showed a general decrease in VOC concentrations, while both LF1P-2 and LF1MW-5 showed a slight increase in corresponding concentrations. By the last sampling round in November 1999, levels exceeding NYSDEC Groundwater Standard were measured in all three wells for 1,2,4-trimethylbenzene, xylene (m+p) and benzene, in LF1MW-101 and LF1MW-5 for 1,3,5-trimethylbenzene and in LF1MW-101 only for 1,4-DCB and chlorobenzene.

The Baseline Study showed that VOC concentrations are stabilizing or decreasing as compared to those results recorded during the RI (FPM, July 2000). Time-series analyses of each of the VOCs confirmed the longitudinal axis of a VOC plume along a flow orientation intercepted by wells LF1MW-5, -101 and LF1P-2. The absence of VOCs from downgradient temporary wells and cross-gradient wells aided in the delineation of the lateral extent of the VOC contamination plume.

Additional VOCs that were detected in either permanent or temporary wells associated with Landfill 1 but decreased to levels below ARARs by the November 1999 sampling round included isopropylbenzene, n-propylbenzene, p-isopropyltoluene, tert-butylbenzene and toluene. With the exception of one isolated detection in LF1TW-1 at 20 ft bgs at 2.04 µg/L, all vinyl chloride (VC) exceedances were reported at levels above the NYSDEC Groundwater Standard in monitoring well LF1MW-101 only. Concentrations varied from 2.25 µg/L to 4.45 µg/L over the four sampling rounds.

Inorganic metals were also detected in excess of NYS ARARs during the Baseline Study. Elevated concentrations were found in one or more wells for antimony, arsenic, beryllium, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, selenium, sodium, thallium, vanadium and zinc. Elevated levels of iron and manganese were reported at

upgradient well LF1MW-1, which indicates these metal exceedances are attributed to basewide background conditions (identified during the RI).

All four sampling rounds of the Baseline Study showed alkalinity, hardness and total dissolved solids (TDS) levels in the downgradient temporary/permanent well samples that exceeded those levels measured in the background wells (FPM, July 2000). These results indicated a landfill leachate plume spreading in an area broader than the wells contaminated with VOCs. The water quality analyses indicated a shallow landfill leachate plume with a flow path towards the southwest, which may discharge to Six Mile Creek, based on the results of elevated concentrations of the landfill leachate indicators in samples LF1-L1 and LF1-L2 (FPM, July 2000).

4.2.1.1.3 ROD Requirements

The ROD for LF001 (Landfill 1 AOC) was issued by the Air Force in February 2000 and signed by the USEPA in June 2000. Based on the previous investigations and environmental conditions at the site the selected remedy for the Landfill 1 consisted of the following actions:

- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary and the contaminated groundwater plume area to prevent the exposure to the contaminated landfill mass and groundwater;
- Maintenance of the impermeable cover and LTM of the groundwater and surface water in accordance with the 6 NYCRR Part 360 landfill post-closure regulations, dated November 26, 1996;
- Monitoring the groundwater and stream environment (which may include, but is not necessarily limited to surface water) downgradient of the site to evaluate the effectiveness of the presumptive remedy. Any rare plants, significant communities or wetlands disturbed during the remedial action will be restored; and
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

The RAOs specified in the ROD consist of:

- Consolidation of various debris and waste areas into the main landfill boundary in order to reduce the area to be capped and the potential for nearby wildlife and human populations to be exposed to the landfill mass;
- Significantly reduce infiltration of rain water and snow-melt water through the landfill mass in order to minimize the potential for leachate generation and groundwater contamination;
- Collection and treatment of groundwater/leachate in order to reduce or eliminate the discharge of contaminants to the environment; and
- Monitoring groundwater downgradient of the site to evaluate the effectiveness of the presumptive remedy.

As specified in the June 2000 ROD, the presumptive remedy at the LF001 (Landfill 1 AOC) included the installation of a groundwater/ leachate collection and treatment system. The system was selected because of the presence of VOCs and metals in the groundwater at the AOC. A groundwater/ leachate collection trench performance test (Conti Environmental, Inc. [Conti]/EA Environmental [EA], February 2004) and four subsequent sampling rounds (FPM, January 2007) indicated an overall stabilization and/or decreasing trend of contaminant concentrations. Analysis of the results of the performance test and groundwater sampling resulted in a determination that the groundwater/ leachate collection system is not necessary to ensure the protection of public health and the environment.

A ROD Amendment for the LF001 (Landfill 1 AOC) to remove the requirement for the collection and treatment of groundwater/leachate at the landfill toe was issued after a public comment period. A public meeting on the revised the LF001 (Landfill 1 AOC) proposed plan was held on October 8, 2008. The ROD Amendment was signed on September 18, 2009 by the Air Force and on September 25, 2009 by the USEPA with concurrence from the NYSDEC.

4.2.1.1.4 Land-Reuse Zoning

Landfill 1 is located within Parcel F10C and was zoned by the GLDC, which is the Griffiss LRA, as low intensity open space. The City of Rome adopted the LRA's zoning designation in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.2.1.1.5 Post-ROD Activities

In the spring of 2003, in accordance with the ROD, remedial activities began at the Landfill 1 AOC. The remedial activities consisted of the re-grading and capping of Landfill 1 with an impermeable cover, the installation of a groundwater/ leachate collection trench along the western edge of Landfill 1, and the decommissioning of monitoring wells located within the construction limits. During the landfill cap restoration activities in 2003 and 2004, six monitoring wells (LF1MW-10, -11, -12, -13, -14, and -103) were installed downgradient of the landfill. One monitoring well (LF1MW-1R) was installed upgradient of the landfill.

To evaluate the necessity of a groundwater/ leachate collection and treatment system, a groundwater/ leachate collection trench pump test was performed in November 2003. Upon review of the pump test analytical results, the continuation of the groundwater/ leachate treatment system design and construction was suspended for further evaluation.

In addition to the cap installation and collection trench pump testing, a post-closure monitoring program was implemented (Conti and EA, October 2002). The program requires groundwater and surface water monitoring, landfill inspections, and LUC/IC inspections.

The LTM program for groundwater and surface water was initiated in December 2003. LTM was performed at eleven monitoring wells (MWSAR03, LF1P-2, -3, -5, LF1MW-1R, -5, -6, -10, -11, -12 and -13) and three surface water locations (LF1SW-1, -2SMC, and -3). The sampling locations are illustrated in Figure 16. LF1MW-103 was added to the LTM network during the March 2004 sampling round. LF1MW-14 was added to the LTM network during the December

2004 sampling round. The LTM network was analyzed quarterly (routine) and annually (baseline) for NYSDEC Part 360 Parameters and VOCs from 2003 through 2006. The LTM network (groundwater and surface water monitoring) was optimized to semi-annual for 2007 and 2008 and then to annual from 2009 through 2014. Currently, 13 monitoring wells and three surface water locations are analyzed for leachate indicators (alkalinity, ammonia, biological oxygen demand, bromide, chemical oxygen demand, chloride, color, cyanide, hardness, nitrate, sulfate, TDS, total Kjehldahl nitrogen (TKN), and total organic carbon (TOC)). Additionally, VOCs analysis is conducted for monitoring wells LF1MW-5, -6, -11, -12, LF1P-2, and MWSAR03 and surface water locations LF1SW-1, -2, and -3. The current scope of groundwater and surface water monitoring was recommended in the CERCLA Sites Optimization Plans (CAPE/FPM, November 2011). These recommendations were made as no plumes are associated with the site, besides the downgradient VOC plume, and previous metals detections are associated with background conditions. Leachate indicator analysis is used as increases in these analytes help identify any new plumes/landfill leaching.

In April 2004, quarterly sampling of the groundwater/ leachate within the trench zone of influence was initiated. The sampling was conducted for a year in conjunction with the approved LTM program for the LF001 (Landfill 1 AOC) and Final LTM plan for Six Mile Creek. Results from the quarterly sampling confirmed the initial pump test conclusions that overall COC concentrations at the site were shown to be stable or decreasing.

Landfill gas sampling was implemented at fifteen gas monitoring probes August 2004. Landfill gas sampling was conducted quarterly until optimization to semi-annual following the Spring 2010 sampling round. Currently, a total of 18 gas monitoring probes and 31 gas vents are sampled semi-annually (spring and fall) for methane concentrations, lower explosive limit (LEL), oxygen concentrations, and carbon dioxide concentrations. The gas monitoring probes and gas vents are illustrated in Figure 16.

In April 2005, quarterly landfill inspections were implemented in accordance with the LF001 (Landfill 1 AOC) Post-Closure Operations & Maintenance Manual (Conti, January 2005) and the LF001 (Landfill 1 AOC) Post-Closure Operations & Maintenance Manual addendum (Conti, May 2006). Following the Spring 2010 sampling round landfill inspections were optimized from quarterly to semi-annual. Currently, spring and fall inspections are conducted each year. The inspections are performed to identify any major deficiencies that would jeopardize the integrity of the cover.

In September 2005, a passive gas vent trench was installed at Landfill 1. The trench was installed near the northwestern perimeter of Landfill 1 to prevent the migration of methane into neighboring properties.

Annual LUC/IC inspections have also been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.2.1.2 Data Review and Analysis

LTM data indicate VOCs and leachate indicators remain above NYS Groundwater and Surface Water Standards. VOC exceedances at Landfill 1 are limited to three monitoring wells, LF1MW-5, -11, and MWSAR03. VOC exceedances include benzene, 1,4-DCB, chlorobenzene, and VC. All VOC exceedances at Landfill 1 are stable and remain within one order of magnitude of their respective NYSDEC Groundwater Standard and NYS Surface Water Standards. Leachate indicator exceedances were reported at monitoring wells LF1MW-1R, -6, -11, -12, -13, -103, and LF1P-2 and surface water sampling locations LF1SW-2SMC and LF1SW-3. The exceedances included alkalinity, ammonia, TDS, TKN, and color. However, current data shows a site-wide stabilization of all leachate indicators at Landfill 1 (CAPE/FPM, May 2015). In addition, the concentrations of leachate indicators are comparable to previous results and below the typical range of municipal landfill leachate (Lee and Jones, 1991).

As a result of the quarterly sampling of the groundwater/ leachate within the trench zone of influence performed in 2004/2005, the operation of the trench was deemed not necessary to ensure the protection of public health and the environment. A more detailed account of the results can be located in the Final Landfill 1 Groundwater/ Leachate Collection Trench Evaluation Report (FPM, January 2007) and in the Report on Implementation of Remedial Action at Landfill 1 (AFRPA, September 2009).

Elevated methane concentrations continue to be recorded throughout the Landfill 1 AOC. However, methane concentrations at point-of-compliance (POC) gas monitoring probes (LF1GMP-13 through -17) remained non-detectable through the October 2013 sampling round. The absence of methane at the POC gas monitoring probes demonstrates continued protection of potential receptors. In addition, the passive gas trench installed near the northwestern perimeter of Landfill 1 to prevent methane migration into neighboring properties appears effective. The effectiveness of the system is made apparent by the gradient established between LF1GMP-4 and LF1GMP-19. LF1GMP-4 was installed between the landfill boundary and the passive gas trench; methane readings at this location have frequently exceeded the LEL. In contrast, LF1GMP-19 was installed just outside of both the landfill boundary and the passive gas trench and within 25 ft of LF1GMP-4; methane readings at this location are consistently lower than those reported at LF1GMP-4 and in some sampling rounds orders of magnitude less.

The semiannual inspections have not identified any major deficiencies that would jeopardize the integrity of the cover and there is optimal vegetation cover on the cap (CAPE/FPM, May 2015).

4.2.1.3 Site Inspection

The site inspection was conducted on September 9, 2014 which confirmed that the LF001 (Landfill 1 AOC) remedy has been implemented and is currently protective of human health and environment. The site is a municipal landfill that is grass covered and land use has not changed since the previous five-year review. Monitoring wells, gas vents, gas monitoring probes and landfill hazardous signs are present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site. The completed five-year review checklist is provided in Appendix A.

4.2.1.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.2.1.4.1 Remedy Functionality

The landfill has been capped thereby removing direct contact exposures to the public and the environment. The installation of an impermeable membrane cap at Landfill 1 decreases any potential impact to groundwater by reducing infiltration of precipitation through the landfill. The Landfill 1 Remedial Action Closeout and Implementation Report was submitted in 2010 finding the closure of the site was acceptable and that the remedy was operating as intended (AFRPA, April 2010). As part of the AOC LTM program, the landfill cap is inspected semi-annually, mowed annually, and repaired on an as needed basis (vector control and small area reseeding). The semi-annual inspections have not identified any major deficiencies that would jeopardize the integrity of the cover.

In addition, groundwater and landfill gas samples are collected annually and semi-annually, respectively. Results show that COCs reported in the groundwater samples are stable. Landfill gas sampling shows methane concentrations at POC gas monitoring probes remain at non-detectable concentrations. The absence of methane at the POC gas monitoring probes demonstrates continued protection of potential receptors. Also, the passive gas trench installed near the northwestern perimeter of Landfill 1 prevents the methane migration into neighboring properties and appears to remain an effective treatment.

LUC/ICs in the form of groundwater use, land-use, and soil restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F10C which includes the LF001 (Landfill 1 AOC) was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. Grantee covenants and agrees not to extract, utilize or consume groundwater on the Property without prior testing of the groundwater and reporting of the results to the NYSDOH and the NYSDEC and receipt of a determination from NYSDOH and NYSDEC that the groundwater meets applicable promulgated federal or state standards. If the groundwater does not meet standards, the Grantee agrees to coordinate the proposed action with NYSDOH and NYSDEC under applicable promulgated federal or state regulations.
2. Grantee covenants and agrees not to disrupt or interfere or permit any activities on the Property that disrupt or interfere with the selected environmental remedy as

defined in the Final ROD for Landfill 1 AOC, dated February 2000 and Section 1 of the Final Amendment to the ROD for the Landfill 1 AOC, dated September 2009.

3. Grantee covenants not to conduct intrusive work impacting the groundwater on the Property without the prior written approval from the NYSDEC, USEPA, and the Air Force confirming that such work will not impair the effectiveness of the selected environmental remedy for the landfill.
4. Grantee covenants that intrusive work or other activities that result in damage to the landfill cap and impact the effectiveness or integrity of the landfill closure (e.g. impair the effectiveness of the landfill cap) will not be allowed within the restricted landfill boundary and to ensure that the approval of the NYSDEC, USEPA and Air Force is received prior to conducting any activities on the Landfill.

These LUC/ICs are in place to further prevent potential exposures to the public including trespassers. Potential impacts from methane migration are being addressed based on the proximity of the landfill to the nearest residence and through the performance of additional methane monitoring. In addition to the above LUC/ICs, signs have been posted at the boundaries of the AOC as required by the Landfill 1 Closure Plan (Conti, October 2002) to identify that the site contains hazardous wastes and that no trespassing is allowed. The signs are inspected semi-annually during the cap inspections and repaired as needed.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. LUC/ICs have also been implemented to further prevent potential exposures to the public and are verified by annual site inspections.

4.2.1.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC groundwater/surface water standards at Landfill 1 show that exposure assumptions documented in the LF001 (Landfill 1 AOC) ROD are still applicable. Remedial actions, as described in the LF001 (Landfill 1 AOC) ROD and Amendment, have been implemented. In addition, the previous soil, gas, and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994), NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998), and NYSDEC 6 NYCRR Part 360, Subpart 2 Solid Waste Management Facilities (November 1999). The remedial action, including landfill capping, was also completed at the site. Therefore, the RI risk assumptions are no longer applicable given at that the exposure pathways are now incomplete as a result of the remedial action. The protective criteria values are still considered protective.

4.2.1.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Per the CERCLA Sites Optimization Plan (CAPE/FPM, November 2011) groundwater and surface water monitoring at Landfill 1 was optimized to annual for VOC and leachate indicators analysis only. VOC analysis is only conducted at monitoring wells which exhibited VOC exceedances in previous LTM events to track contaminant trends and/or migration. VOC analysis is also conducted in the surface water locations to verify the absence of VOC migration into the stream environment. Leachate indicators analysis is conducted at all of the monitoring wells and

surface water sampling locations associated with the site LTM network. The analysis is used as increases in the leachate indicators help identify any new plumes/landfill leaching.

Landfill gas monitoring and landfill inspections have also been optimized to semi-annual since the 2010 Five-Year Review. Landfill gas monitoring was optimized due to the site-wide stabilization of landfill gases. Landfill inspections were optimized as there is optimal vegetation cover on the cap.

4.2.1.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.2.1.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF001 (Landfill 1 AOC) is protective of human health and the environment.

4.2.2 LF002 (Landfill 2/3 AOC)

4.2.2.1 Document Review

4.2.2.1.1 Site History

Landfill 2/3, approximately 13 acres in size, is located near the east-central boundary of the former Griffiss AFB east of Perimeter Road. Landfill 2/3 is bounded by the installation boundary on the north, east, and south sides; areas to the west, southwest, and northeast have been identified as wetlands. Surface water runoff from the Landfill drains into wetlands surrounding the landfill and eventually into Six Mile Creek. Groundwater flows southwest towards Six Mile Creek. Landfill 2/3 is located in Parcel A6 which was transferred in 2008. Figure 17 illustrates the LF002 (Landfill 2/3 AOC) and LTM network, as well as the LUC/ICs as required by the ROD.

The sources of potential contamination at Landfill 2/3 consist of hardfill in the southern portion of Landfill 2, on-board aircraft wastes disposed of in the northern portion of Landfill 2 and approximately one ton of wetted and double-bagged asbestos wastes in Landfill 3, located in the eastern portion of Landfill 2. The landfills are unlined, but three areas of Landfill 2 were capped with up to 1 foot of natural soils and clay.

A Landfill Cover Investigation performed in 1997 (LAW, December 1997) further defined the extent of the landfill and the landfill boundary and revealed that the thickness of the landfill soil cover ranged from 0.5 to 4 ft. Debris was encountered by augering at depths ranging from 1 to 4 ft; at some locations, auger borings extended to 4 ft failed to penetrate through the cover to the landfill materials. Debris ranged from household and office waste to construction and demolition debris. In the wooded area along the western slope of the landfill, debris was encountered at the surface. As a follow-up to this investigation, surface debris from various on-

Base landfills was collected and consolidated at Landfill 2/3 (IT, November 1999). In addition, 27 drums found along the southern toe of the landfill were inspected, excavated and if found with contents, were disposed of off-site after chemical characterization of the contents. Drum sample results indicated that of the eight drums found with product, four were deemed non-hazardous solids (tar), three contained flammable liquids (paints) and one contained a flammable solid (tar). After the excavation activity, which included the removal of soil surrounding the drums, confirmatory soil samples analyzed for VOCs, SVOCs, pesticides/ PCBs, PAHs, and metals, indicated no residual contamination from the drums.

In the summer of 2002, in accordance with the ROD, remedial activities began at Landfill 2/3. The remedial activities consisted of the regrading and recapping of Landfill 2/3. The landfill was capped with an 18-inch low permeability soil layer, covered by a 6-inch layer of topsoil and seeded with grass (Conti and EA, March 2002). During the installation of the new landfill cover, monitoring wells LF2MW-3, -5, -6 and -10 were decommissioned. In October 2002, in accordance with the LTM Plan (FPM, March 2002), four new monitoring wells (two downgradient wells (LF2MW-12 and -13), one upgradient well (LF2MW-14) and a bedrock monitoring well (LF2MW-100) were installed. In addition to the re-capping of Landfill 2/3, an LTM program for groundwater and surface water downgradient of the site was initiated in December 2003 (FPM, October 2002) to evaluate the effectiveness of the presumptive remedy. The remedy is subject to reevaluation once every five years.

4.2.2.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

In 1981 and 1988, metals as well as some nitrate, sulfate, and phenols were detected at wells LF2MW2-1, LF2MW-10. During 1992 and 1993, no VOCs, SVOCs, or pesticides were detected in well LF2MW2-1. Metals concentrations were within the range of concentrations encountered off-site, and hence, were not included in the quarterly sampling.

During the RI, low levels of pesticides were measured in water samples from wells on the south side of the landfill, mainly in well LF2MW-5 (LAW, December 1996). Pesticides were not found in upgradient wells LF2MW-4 and LF2MW-10 located adjacent to the landfill boundary. However, the pesticide dieldrin was detected in well LF2MW-3, located further upgradient of the landfill. Due to the presence of agricultural lands around the former Base, it is plausible that the pesticides originate there and should not be attributed to the landfill. These pesticides were not detected in wells on the west side of the landfill, or further downgradient.

Also during the RI, dichlorodifluoromethane was reported in groundwater in well LF2MW-4 at 11 µg/L, but was not detected in nearby well LF2MW-10 or downgradient well LF2MW-5 (LAW, December 1996). Dichlorodifluoromethane was also detected in well LF2MW2-1 at 5.3 µg/L. Measured concentrations of 5-amino-o-cresol in well LAWMW-22, located downgradient of the landfill and across Perimeter Road, were reported at the method detection limit of 100 µg/L. Other detections of 5-amino-o-cresol were either rejected or indicated as estimated and

below the method detection limit. The RI concluded that this cresol contamination was not associated with Landfill 2/3, based on the fact that the results reported above ARARs included only isolated detections. The RI also did not identify any continuous, intact groundwater plume within the Landfill 2/3 AOC.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future potential risks to human health and the environment associated with COCs found at the site. The human health risk assessment evaluated exposure to potential residential, agricultural, recreational, and occupations populations that may be exposed to COCs in air, surface soil, groundwater, surface water, and sediments. COCs evaluated in the risk assessment included VOCs, glycols, SVOCs, herbicides, pesticides, PCBs dioxins, and metals. The results of the human health baseline risk assessment indicate that chemicals detected in passive soil gas, surface water, and sediments should not present a risk to current and future occupational workers, future industrial workers, and future off-site residents. PAHs in surface soils are of potential concern to landscape workers or future recreational receptors. Use of groundwater as a drinking water supply may result in noncarcinogenic health effects. Metal detections were the major contributors to the risk through ingestion of groundwater.

The ecological baseline risk assessment indicated that the hazard quotients for raccoon and American woodcock exposure to surface soil, surface water, and sediment are below 1. Therefore, the potential for adverse impacts to these ecological receptors is considered to be insignificant. The HQ for the short-tailed shrew slightly exceeded 1, indicating the potential for adverse effects. The risk to this species was driven by manganese (1.5), lead (1.3), molybdenum (1.3), aluminum (1.2) and selenium (1.2)..

During the Baseline Study January 1999 sampling event, dichlorodifluoromethane was detected in wells LF2MW-4 and LF2MW2-1 at 7.38 µg/L and 5.77 µg/L, respectively (FPM, July 2000). These concentrations are slightly above NYSDEC Groundwater Standard and similar to those reported during the RI sampling in 1994. Dichlorodifluoromethane was detected below the NYSDEC Groundwater Standard at downgradient well LF2MW-5, upgradient wells LF2MW-6 and LF2MW-3, and temporary well LF2/3TW-1 (2.42 µg/L at 21 ft bgs and 3.56 µg/L at 25 ft bgs). These detects at LF2/3TW-1 confirmed the stability of dichlorodifluoromethane downgradient of the landfill.

Other reported VOCs measured during the January 1999 sampling round included 1,2-dichloroethane and chloroethane, which were measured in well point LF2/3TW-3 at various depths in the ranges of 0.64 to 2.04 µg/L and 1.24 to 2.76 µg/L, respectively; these 1,2-dichloroethane concentrations are above the NYSDEC Groundwater Standard of 0.6 µg/L. Benzene was also detected in well point LF2/3TW-2 at 0.92 µg/L, although its presence was purported to be field activities-related.

The Baseline Study sampling results for January 1999 in upgradient well LF2MW-3 indicated several metals exceeding ARARs, including antimony (31 F µg/L), arsenic (139 µg/L), beryllium (8.7 µg/L), cadmium (13.2 µg/L), chromium (230 µg/L), cobalt (73.8 µg/L), copper (706 µg/L), iron (340 mg/L), lead (183 µg/L), manganese (11 mg/L), nickel (207 µg/L), selenium (25F µg/L), thallium (18F µg/L), and vanadium (354 µg/L) (FPM, July 2000).

Sampling at well LF2MW-6, also an upgradient well, showed similarly elevated levels of some metals, including antimony (12F µg/L), iron (172 mg/L), lead (30.5 µg/L), manganese (1.6 mg/L), and selenium (12 F µg/L). Several of these metals exceeded NYSDEC Groundwater Standards in the downgradient wells, including temporary well LF2/3TW-2, but their presence in the upgradient wells suggests that these can be attributed to basewide background conditions (identified during the RI) for the landfill.

Results from LF2MW-5 during the April 1999 and August 1999 sampling events included isolated lead detections exceeding the NYSDEC Groundwater Standard (42.8 µg/L and 62.6 J µg/L, respectively). However, the background/upgradient wells reported similarly high levels of lead in August 1999 and November 1999 at 27 µg/L (LF2MW-3) and 149 µg/L (LF2MW-6), respectively. These results indicate that the presence of lead in groundwater at these levels may be characteristic of basewide background conditions (identified during the RI).

Samples collected during the Baseline Study were also analyzed for landfill leachate indicators such as color, TDS, ammonia nitrogen, hardness, alkalinity, iron, manganese, and other constituents (FPM, July 2000). It was concluded based on leachate indicator levels that the temporary wells were intercepting the landfill plume. Furthermore, the elevated levels of specific indicators, especially alkalinity, hardness, nitrate, and sulfate, suggested that the leachate emanating from the landfill is anaerobic. The highest levels of landfill leachate indicators were reported in well LF2MW2-1.

During the Baseline Study, surface water could not be collected due to the absence of any standing water during all sampling rounds.

4.2.2.1.3 ROD Requirements

The ROD for the LF002 (Landfill 2/3 AOC) was issued by the Air Force in March 2000 and signed by the USEPA in June 2000. Based on the previous investigations and environmental conditions at the site the selected remedy for the LF002 (Landfill 2/3 AOC) consisted of the following actions:

- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated April 1, 1987. This action would include placing a minimum of 18 inches of low-permeability soil and 6 inches of topsoil over the entire landfill surface to reduce the amount of water infiltrating through the landfill.
- Maintenance of the cover and LTM of the groundwater and stream environment. The groundwater will be monitored in accordance with the Air Force's On-base Groundwater Monitoring Plan.
- Monitoring of the groundwater and stream environment (which may include, but not necessarily limited to surface water) downgradient of the site to evaluate the effectiveness of the presumptive remedy.
- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary to prohibit inappropriate use of the area and groundwater, and to ensure the soil cover is not damaged and the area is maintained as a landfill.

- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

The RAOs specified in the ROD consist of:

- Consolidation of various debris and waste areas into the main landfill boundary in order to reduce the area to be capped and the potential for nearby wildlife and human populations to be exposed to the landfill mass;
- Reduce infiltration of rain water and snow-melt water through the landfill mass in order to minimize the potential for leachate generation arid groundwater contamination;
- Monitoring the groundwater and stream environment downgradient of the site.
- Implementation of institutional controls in the form of deed restrictions of the main landfill boundary to prohibit use of the area and groundwater.

4.2.2.1.4 Land-Reuse Zoning

Landfill 2/3 is located within airfield Parcel A6 and was zoned by the GLDC, which is the Griffiss LRA, as low intensity open space. The City of Rome adopted the LRA's zoning designation in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.2.2.1.5 Post-ROD Activities

In accordance with the ROD, Landfill 2/3 was regraded and recapped from 2002 to 2004. The landfill was capped with an 18-inch low permeability soil layer, covered by a 6-inch layer of topsoil, and seeded with grass (Conti and EA, March 2002). In addition to the re-capping of Landfill 2/3, a methane gas venting system was installed under the cap. In addition to the re-capping, a post-closure monitoring program was implemented (Conti and EA, March 2002). The program requires groundwater and surface water monitoring, landfill inspections, and LUC/IC inspections.

The LTM program for groundwater and surface water downgradient of the site was initiated in December 2003 to evaluate the effectiveness of the presumptive remedy. An Engineers Closure Certification Report was issued in January 2005.

Beginning in December 2003, LTM was performed at six monitoring wells (LF2MW2-1, LF2MW-4, -12, -13, -14, and -100) and three surface water locations (LF2SW-1, -2, and -3). The sampling locations are illustrated in Figure 17. The LTM network was analyzed quarterly (routine) and annually (baseline) for NYSDEC Part 360 Parameters and VOCs from 2003 through 2005. The LTM network (groundwater and surface water monitoring) was optimized to semi-annual from 2006 through 2008, annual for 2009 and 2010 and then to biennial from 2011 through 2014. Currently, six monitoring wells and three surface water locations are analyzed for leachate indicators (alkalinity, ammonia, biological oxygen demand, bromide, chemical oxygen demand, chloride, color, cyanide, hardness, nitrate, sulfate, TDS, TKN, and TOC). The current scope of groundwater and surface water monitoring was recommended in the CERCLA Sites Optimization Plans (CAPE/FPM, November 2011). These recommendations were made as no plumes are associated with the site and previous metals detections are associated with

background conditions. Leachate indicator analysis is used as increases in these analytes help identify any new plumes/landfill leaching.

Since April 2005, quarterly landfill inspections have been performed in accordance with the Landfill 2/3 Post-Closure Operations & Maintenance Manual (Conti, December 2004). Following the Spring 2010 sampling round landfill inspections were optimized from quarterly to semi-annual. Currently, spring and fall inspections are conducted each year. The inspections are performed to identify any major deficiencies that would jeopardize the integrity of the cover.

Since October 2005, landfill gas monitoring has been performed quarterly at the LF002 (Landfill 2/3 AOC) to identify the presence and concentration of methane at or near the landfill. Landfill gas sampling was optimized after the Spring 2010 sampling round from quarterly to semi-annual monitoring. Currently, spring and fall gas monitoring is conducted each year. A total of nine gas monitoring probes and 14 landfill gas vents are monitored for methane concentrations, LEL, oxygen concentrations, and carbon dioxide concentrations. The gas monitoring probes and gas vents are illustrated in Figure 17.

Annual LUC/IC inspections have also been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.2.2.2 Data Review and Analysis

Landfill leachate indicators exceeded NYS Groundwater and Surface water Standards at wells LF2MW2-1, LF2MW-12, -13, and -100, and surface water locations LF2SW-1, -2, and -3 for TDS, TKN, ammonia, bromide, chloride, and color. However, current data shows a site-wide stabilization of all leachate indicators at the LF002 (Landfill 2/3 AOC) (CAPE/FPM, May 2015). In addition, the concentrations of leachate indicators are comparable to previous results and below the typical range of municipal landfill leachate (Lee and Jones, 1991).

Results from the latest landfill gas monitoring events continue to show site-wide stabilization of methane concentrations at the Landfill 2/3 AOC. All methane concentrations at Landfill 2/3 gas vents were well below the LEL except for two gas monitoring probes (GMP-2 and -5) and one vent (Vent-6). The LEL at these probes and vent were above 100%. However, the concentrations have shown a declining trend in the latest monitoring events. Additionally, it should be noted that the perimeter gas monitoring probes (LF2GMP-6 and -7) near this vent shows methane concentrations well below the LEL. The LELs at the remaining Landfill 2/3 vents and gas monitoring probes ranged from 0 to 86%. The continued lack of high methane concentrations at the aforementioned boundary probes suggests a limited potential risk of human exposure.

The semiannual inspections have not identified any major deficiencies that would jeopardize the integrity of the cover and there is optimal vegetation cover on the cap.

4.2.2.3 Site Inspection

The site inspection was conducted on September 9, 2014 which confirmed that the LF002 (Landfill 2/3 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is a municipal landfill that is grass covered and land use has not changed since the previous five-year review. Monitoring wells, gas vents, gas monitoring probes and landfill hazardous signs are present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site. The completed five-year review checklist is provided in Appendix A.

4.2.2.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.2.2.4.1 Remedy Functionality

The landfill has been capped thereby removing direct contact exposures to the public and ecological receptors. The potential impacts to groundwater are being addressed by the cap, which reduces infiltration of precipitation through the landfill. The Landfill 2/3 Remedial Action Closeout and Implementation Report was submitted in 2007 finding the closure of the site was acceptable and that the remedy was operating as intended (AFRPA, September 2007). As part of the AOC LTM program, the landfill cap is inspected semi-annually, mowed annually, and repaired on an as needed basis (vector control and small area reseeding). Landfill inspections have not identified any major deficiencies that would jeopardize the integrity of the cover.

Groundwater and surface water samples are collected biennially and landfill gas samples are collected semi-annually. Results show that COCs reported in the groundwater samples are stable. Landfill gas sampling results also show a site-wide stabilization of methane concentrations. The methane stabilization at the site demonstrates continued protection of potential receptors.

LUC/ICs in the form of groundwater use, land-use, and soil restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel A6 which includes Landfill 2/3 was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The Grantee covenants to use Parcel A6 of the Property, for airport or related services or low intensity open space.

2. The Grantee covenants not to extract, utilize, consume or permit any extraction, use, consumption, of any water from the aquifer below the surface of the ground within the groundwater restriction boundary (LF-2 and LF-3) unless the groundwater has been tested in advance and found to meet all applicable promulgated federal or state standards and the Grantee first obtains the prior written approval from the NYSDOH and NYSDEC. The Grantee further covenants to ensure that the aquifer will not be used in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment. The Grantee covenants to comply with all applicable Federal and State laws and regulations with regard to activities affecting the groundwater in the aquifer.
3. The Grantee covenants to restrict activities in Area A that disrupt or interfere with the selected remedy as defined in the Final ROD for the LF-2 (Landfills 2/3) AOC.
4. The Grantee covenants not to permit intrusive work within the groundwater restriction area without prior written approval from NYSDEC and the USEPA confirming that work will not impair the effectiveness of the selected remedy for the landfills.
5. The Grantee covenants not to allow intrusive work or other activities within the restricted landfill boundary that impact the effectiveness or integrity of the landfill closures and caps.

In addition to the above LUC/ICs, signs have been posted at the boundaries of the AOC as required by the Landfill 2/3 Closure Plan (Conti, March 2002) to identify that the site contains hazardous wastes and that no trespassing is allowed. The signs are inspected semi-annually during the cap inspections and repaired as needed.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. LUC/ICs have also been implemented as deed restrictions to further prevent potential exposures to the public.

4.2.2.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC groundwater/surface water standards at the LF002 (Landfill 2/3 AOC) show that exposure assumptions documented in the ROD are still applicable. In addition, the previous soil, gas, and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994), NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998), and NYSDEC 6 NYCRR Part 360, Subpart 2 Solid Waste Management Facilities (November 1999). The remedial action, including landfill capping, was also completed at the site. Therefore, the RI risk assumptions are no longer applicable given at that the exposure pathways are now incomplete as a result of the remedial action. The protective criteria values are still considered protective.

4.2.2.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Per the CERCLA Sites Optimization Plan (CAPE/FPM, November 2011) groundwater and surface water monitoring at Landfill 2/3 was optimized to biennial for leachate indicators analysis only. There are no plumes currently associated with this site and previous metals exceedances are

associated with background conditions. The LTM network was optimized to leachate indicators analysis only as increases in these analytes identify any new plumes/landfill leaching.

Landfill gas monitoring and landfill inspections have also been optimized to semi-annual since the 2010 Five-Year Review. Landfill gas monitoring was optimized due to the site-wide stabilization of landfill gases. Landfill inspections were optimized as there is optimal vegetation cover on the cap

4.2.2.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.2.2.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF002 (Landfill 2/3 AOC) is protective of human health and the environment.

4.2.3 LF003 (Landfill 7 AOC)

4.2.3.1 Document Review

4.2.3.1.1 Site History

Landfill 7, approximately 11 acres in size, is located northeast of Runway 15/33. The sources of potential contamination at the LF003 (Landfill 7 AOC) consist of domestic refuse and solid waste, liquid wastes, petroleum products, and miscellaneous Base operations waste (such as airplane parts). The landfill was active from 1950 to 1954. Figure 18 illustrates the LF003 (Landfill 7 AOC) and LTM network, as well as the LUC/ICs as required by the ROD.

In accordance with the ROD, Landfill 7 was re-capped and re-graded in spring 2002. The landfill was capped with an 18-inch low permeability soil layer, covered by a 6-inch layer of topsoil, and seeded with grass (Conti and EA, March 2002). The maintenance regimen and post-closure inspection requirements for Landfill 7 can be found in the LF003 (Landfill 7 AOC) Post-Closure O&M Manual (Conti, May 2004). In addition to the capping of Landfill 7, an LTM program for groundwater and surface water downgradient of the site was initiated in February 2003 (FPM, March 2002) to evaluate the effectiveness of the presumptive remedy. The remedy is subject to reevaluation once every five years.

4.2.3.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

In 1984, groundwater samples revealed the presence of oil and grease, tetrachloroethene (PCE), TOC, methylene chloride and metals. The PCE concentration measured at monitoring well LF7MW-17, located downgradient from the landfill, was the highest at 105 µg/L. In 1991, soil, sediment and surface water samples were collected from the unnamed tributary of Six Mile Creek that flows north of Landfill 7. Results included several detections of VOCs, pesticides and metals in the surface water and SVOCs, methylene chloride, pesticides and metals in the creek bank soils and sediments. Quarterly sampling conducted in 1992 and 1993 in and near the LF003 (Landfill 7 AOC) detected several VOCs, including acetone, 1,1,1-trichloroethane (TCA), TCE, several metals, pesticides, glycols and oil and grease. Metals concentrations were in the same range of concentrations encountered off-site (Law, December 1994).

During the RI, TCE was found in water samples from well LF7MW-17 at 31 µg/L. Pesticides, including aldicarb, were also detected at low levels in several downgradient wells (LAW, December 1996).

As part of the RI, a baseline risk assessment was performed to evaluate the current and future potential risks to human health and the environment associated with COCs found at the site. The human health risk assessment evaluated exposure to potential residential, agricultural, recreational, and occupations populations that may be exposed to COCs in air, surface soil, groundwater, surface water, and sediments. COCs evaluated in the risk assessment included VOCs, glycols, SVOCs, herbicides, pesticides, PCBs, dioxins, and metals. The results of the human health baseline risk assessment indicate that chemicals detected in passive soil gas, surface soil, groundwater, surface water, and sediments should not present a risk to current and future occupational workers, future industrial workers, and future off-site residents as long as groundwater at the AOC is not used for drinking water or showering purposes. Metals detections were the major contributors to the risk through ingestion of groundwater.

The ecological baseline risk assessment indicated risks to the three indicator species were calculated to be less than 1, therefore, the potential for adverse impacts to these ecological receptors is considered to be insignificant.

During the SI, the TCE concentration in monitoring well LF7MW-17 had decreased to 26 µg/L. Also during the SI, TCE was detected in several monitoring wells downgradient of LF7MW-17, including LF7MW-22 at a concentration of 11 µg/L and temporary wells LF7TW-24 and -25 at concentrations of 13 µg/L and 64 µg/L, respectively. cis-1,2-dichloroethene (DCE) was also detected and was reported highest in LF7MW-22 at 4.4 µg/L. Temporary monitoring wells LF7TW-24 and -25 were decommissioned in August 1997 after sampling was completed (E&E, July 1998).

Based on RI and SI results, a TCE plume originated at the landfill and extended to the southwest approximately 600 ft is approximately 500 ft wide. Prior reports did not determine whether the plume flowed underneath the 30-inch storm drain or continued to flow further southwest. The SI also suggested that the TCE plume was bioattenuating.

The Baseline Study results for 1999 sampling rounds reported that during January sampling, TCE was detected in wells LF7MW-17 and LF7MW-22 at concentrations of 23.6 µg/L and 18.3 µg/L, respectively (FPM, July 2000). In the April sampling round, TCE was detected above NYSDEC Groundwater Standards in only LF7MW-22 at 5.25 µg/L. Subsequent sampling in August and November 1999 for VOCs showed TCE levels in well LF7MW-17 increased to 20.2 µg/L and 26.1 µg/L, respectively and in well LF7MW-22 increased to 24.0 µg/L and 31.3 µg/L, respectively. An elevated concentration of TCE (15.7 µg/L) was also reported in wetland sample LF7WL-4 collected during the November sampling event. However, no TCE was found above the RL in temporary wells, which were drilled downgradient from the storm drain, indicating that the TCE plume probably had not migrated beneath the storm drain.

Another VOC detected during the Baseline Study was cis-1,2-DCE, which was detected slightly above the NYSDEC Groundwater Standard at 5.04 µg/L in LF7MW-22 during the August sampling round and near but below this level during the January (3.58 µg/L) and November (4.15 µg/L) sampling rounds. cis-1,2-DCE was also detected (61.2 µg/L) in a wetland sample at site LF7WL-4 in November 1999. These levels were strongly indicative of ongoing biodegradation (FPM, July 2000).

In the temporary wells sampled during the January 1999 round of the Baseline Study, benzene was detected at 1.05 µg/L and naphthalene at 15.9 µg/L in LF7TW-2 and naphthalene was also detected at 1.43 µg/L in LF7TW-3. However, the presence of the COCs was not confirmed by any upgradient permanent wells during any of the sampling rounds were probably the result of sample contamination during field activities. No other VOCs were detected above NYSDEC Groundwater Standards in the temporary wells. Temporary wells LF7TW-1, -2 and -3 were Hydropunch® samples that were only collected during the January 1999 sampling round.

The Baseline Study reported concentrations of arsenic, iron and manganese in excess of ARARs during the first two rounds at upgradient monitoring well LF7MW-16. Iron and manganese levels also exceeded ARARs in upgradient monitoring well HS7MW-1 during the April 1999 and August 1999 sampling rounds. Iron and manganese were found at levels above ARARs in every well sampled during at least one of the four sampling rounds. These elevated concentrations likely reflect basewide background conditions (identified during the RI).

Landfill leachate indicators were used to delineate the extent of a possible landfill leachate plume. Color (measured only in January 1999) was either equal to or exceeded the NYSDEC Groundwater Standard in samples collected from upgradient well LF7MW-16, downgradient wells LF7MW-17 and -22, wetland samples LF7WL-5 and -6 and in at least one sample from each of the multilevel temporary wells. TDS was measured at levels at or above the NYSDEC Groundwater Standard (500 mg/L) in LF7MW-16 (715 - 865 mg/L), LF7MW-17 (601 - 695 mg/L) and LF7MW-22 (623 - 790 mg/L) during each of the four sampling rounds. In the January 1999 sampling round, TDS was measured above standards for two levels in temporary well LF7TW-3 (663 mg/L and 606 mg/L). The relatively low concentrations of TDS in wells LF7MW-18R (267 - 329 mg/L) and LF7MW-23 (101 - 200 mg/L), during each of the four sampling rounds, indicated that these wells were not intercepting the main COC sources from the landfill. This implied that the plume emanating from the landfill is located northwest of these wells and helped to define the leachate plume extent.

The Baseline Study concluded that based on comparisons between alkalinity, hardness and TDS landfill leachate indicators in both temporary and permanent wells, a continuous plume originates from the landfill area and attenuates in the area of the 30-inch storm drain.

The Baseline Study did not report any COC detections in the bedrock monitoring well, LF7MW-100, located approximately 160 ft southwest of LFMW-17 (with the exception of an isolated detection of benzene at 1.44 µg/L in November 1999, probably the result of sampling contamination during field activities) (FPM, July 2000).

4.2.3.1.3 ROD Requirements

The ROD for the LF003 (Landfill 7 AOC) was issued by the Air Force in March 2000 and signed by the USEPA in June 2000. Based on the previous investigations and environmental conditions at the site the selected remedy for the LF003 (Landfill 7 AOC) consisted of the following actions:

- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated April 1, 1987. This action would include placing a minimum of 18 inches of low-permeability soil and 6 inches of topsoil over the entire landfill surface to reduce the amount of water infiltrating through the landfill;
- Maintenance of the cover and LTM of the groundwater and wetland environment; the groundwater will be monitored in accordance with the Air Force's On-base Groundwater Monitoring Plan;
- Monitoring of the groundwater and stream environment downgradient of the site to evaluate the effectiveness of the presumptive remedy;
- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary to prohibit inappropriate use of the area and groundwater, and to ensure the soil cover is not damaged and the area is maintained as a landfill; and
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

The RAOs specified in the ROD consist of:

- Consolidation of various debris and waste areas into the main landfill boundary in order to reduce the area to be capped and the potential for nearby wildlife and human populations to be exposed to the landfill mass;
- Reduce infiltration of rain water and snow-melt water through the landfill mass in order to minimize the potential for leachate generation arid groundwater contamination;
- Monitoring the groundwater and stream environment (which may include, but is not necessarily limited to surface water) downgradient of the site.
- Implementation of institutional controls in the form of deed restrictions of the main landfill boundary to prohibit use of the area and groundwater.

4.2.3.1.4 Land-Reuse Zoning

Landfill 7 is located within airfield Parcel A6 and was zoned by the GLDC, which is the Griffiss LRA, as low intensity open space. The City of Rome adopted the LRA's zoning designation in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.2.3.1.5 Post-ROD Activities

In accordance with the ROD, Landfill 7 was recapped and regraded in spring 2002. The landfill was capped with an 18-inch low permeability soil layer, covered by a 6-inch layer of topsoil, and seeded with grass (Conti and EA, May 2004). During the installation of the new landfill cover, five new monitoring wells were installed. These new wells consisted of four downgradient wells (LF7MW-26, -27, and -30), including one POC well (LF7MW-28, which replaced LF7TW-2), and one well upgradient from the source (LF7MW-29).

In addition to the re-capping, a post-closure monitoring program was implemented (Conti and EA, March 2002). The program requires groundwater and surface water monitoring, landfill inspections, and LUC/IC inspections.

The LTM program for groundwater and surface water was initiated in February 2003. LTM was performed at eight monitoring wells (LF7W-22, -23, -26, -27, -28, -29, -30, and -100) and two wetland surface water locations (LF7WL-3 and -4). The sampling locations are illustrated in Figure 18. The LTM network was analyzed quarterly (routine) and annually (baseline) for NYSDEC Part 360 Parameters and VOCs from 2003 through 2005. VOCs were removed from the LTM network due to the confirmed absence of detections above NYSDEC Groundwater Standards following 2005 (FPM, June 2006). The LTM network (groundwater and surface water monitoring) was optimized to semi-annual from 2006 through 2008, annual for 2009 and 2010 and then to biennial from 2011 through 2014. Currently, eight monitoring wells and two surface water locations are analyzed for leachate indicators (alkalinity, ammonia, biological oxygen demand, bromide, chemical oxygen demand, chloride, color, cyanide, hardness, nitrate, sulfate, TDS, TKN, and TOC). The current scope of groundwater and surface water monitoring was recommended in the CERCLA Sites Optimization Plans (CAPE/FPM, November 2011). These recommendations were made as no plumes are associated with the site and previous metals detections are associated with background conditions. Leachate indicator analysis is used as increases in these analytes help identify any new plumes/landfill leaching.

Since September 2003, quarterly landfill inspections have been performed in accordance with the Landfill 7 Post-Closure Operations & Maintenance Manual (Conti, May 2004). Following the Spring 2010 sampling round landfill inspections were optimized from quarterly to semi-annual. Currently, spring and fall inspections are conducted each year. The inspections are performed to identify any major deficiencies that would jeopardize the integrity of the cover.

Annual LUC/IC inspections have also been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.2.3.2 Data Review and Analysis

Leachate indicator exceedances reported in groundwater samples from 2010 to 2014 include TDS, bromide, color, and sulfate (CAPE/FPM, May 2015). However, current data shows a site-wide stabilization of all leachate indicators at LF003 (Landfill 7 AOC) (CAPE/FPM, May 2015). In addition, the concentrations of leachate indicators are comparable to previous results and below the typical range of municipal landfill leachate (Lee and Jones, 1991). The semiannual inspections have not identified any major deficiencies that would jeopardize the integrity of the cover and there is optimal vegetation cover on the cap.

4.2.3.3 Site Inspection

The site inspection was conducted on September 9, 2014 which confirmed that the LF003 (Landfill 7 AOC) remedy has been implemented and is currently protective of human health and the environment. The site is a municipal landfill that is grass covered and land use has not changed since the previous five-year review. Monitoring wells and landfill hazardous signs are present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site. The completed five-year review checklist is provided in Appendix A.

4.2.3.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.2.3.4.1 Remedy Functionality

The landfill has been capped thereby removing direct contact exposures to the public. The potential impacts to groundwater are being addressed by the cap, which reduces infiltration of precipitation through the landfill. The Landfill 7 Remedial Action Closeout and Implementation Report was submitted in 2005 finding the closure of the site was acceptable and that the remedy was operating as intended (AFRPA, August 2005). As part of the AOC LTM program, the landfill cap is inspected semi-annually, mowed annually, and repaired on an as needed basis (vector control and small area reseeding). The inspections have not identified any major deficiencies that would jeopardize the integrity of the cover

Groundwater samples are collected biennially and results show site-wide stabilization of all COCs in groundwater samples demonstrating continued protection of potential receptors.

LUC/ICs in the form of groundwater use, land-use, and soil restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel A6 which includes the LF003 (Landfill 7 AOC) was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The Grantee covenants to use Parcel A6 of the Property, for airport or related services or low intensity open space.
2. The Grantee covenants not to extract, utilize, consume or permit any extraction, use, consumption, of any water from the aquifer below the surface of the ground within the groundwater restriction boundary (LF-3) unless the groundwater has been tested in advance and found to meet all applicable promulgated federal or state standards and the Grantee first obtains the prior written approval from the NYSDOH and NYSDEC. The Grantee further covenants to ensure that the aquifer will not be used in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment. The Grantee covenants to comply with all applicable Federal and State laws and regulations with regard to activities affecting the groundwater in the aquifer.
3. The Grantee covenants to restrict activities in Area A that disrupt or interfere with the selected remedy as defined in the Final ROD for the LF003 Landfill 7 AOC.
4. The Grantee covenants not to permit intrusive work within the groundwater restriction area without prior written approval from NYSDEC and the USEPA confirming that work will not impair the effectiveness of the selected remedy for the landfills.
5. The Grantee covenants not to allow intrusive work or other activities within the restricted landfill boundary that impact the effectiveness or integrity of the landfill closures and caps.

In addition to the above LUC/ICs, signs have been posted at the boundaries of the AOC as required by the Landfill 5 Closure Plan (Conti, July 2002) to identify that the site contains hazardous wastes and that no trespassing is allowed. The signs are inspected semi-annually during the cap inspections and repaired as needed.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. LUC/ICs have also been implemented as deed restrictions to further prevent potential exposures to the public.

4.2.3.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC groundwater/surface water standards at LF003 (Landfill 7 AOC) show that exposure assumptions documented in the LF003 (Landfill 7 AOC) ROD are still applicable. In addition, the previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994), NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998), and NYSDEC 6 NYCRR Part 360, Subpart 2 Solid Waste Management Facilities (November 1999). The remedial action, including landfill capping, was also completed at the site. Therefore, the RI risk assumptions are no longer applicable given at that the exposure pathways are now incomplete as a result of the remedial action. The protective criteria values are still considered protective.

4.2.3.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Per the CERCLA Sites Optimization Plan (CAPE/FPM, November 2011) groundwater and surface water monitoring at Landfill 7 was optimized to biennial for leachate indicators analysis only. There are no plumes associated with this site and previous metals exceedances are associated with background conditions. The LTM network was optimized to leachate indicators analysis only as increases in these analytes identify any new plumes/landfill leaching.

Landfill inspections have also been optimized to semi-annual since the 2010 Five-Year Review. Landfill inspections were optimized as there is optimal vegetation cover on the cap.

4.2.3.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.2.3.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF003 (Landfill 7 AOC) is protective of human health and the environment.

4.2.4 LF007 (Landfill 5 AOC)

4.2.4.1 Document Review

4.2.4.1.1 Site History

Landfill 5, approximately 4 acres in size, is located in the south-central portion of the former Base, south of Patrick Square, immediately southwest of the unpaved access road and east of Three Mile Creek. The sources of potential contamination at the LF007 (Landfill 5 AOC) consist of domestic wastes that were disposed of in the subsurface at the site. Figure 19 illustrates the LF007 (Landfill 5 AOC) and LTM network, as well as the LUC/ICs as required by the ROD.

In accordance with the landfill consolidation project, conducted between March 1998 and August 1999, the following materials were removed from the areas adjacent to the Landfill 5 boundary and consolidated at a designated area within Landfill 5: 3 empty drums, 1 tire, 1 cy of concrete rubble, 2 cy of scrap metal, and 0.5 cy of wood debris. The property is scheduled to be transferred in 2010.

4.2.4.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

In 1982, groundwater sampling results from monitoring well TMCMW-8 (not shown on Figure 19), located downgradient of the landfill and upgradient of Three Mile Creek, indicated no detections of VOCs. Results obtained from samples collected from monitoring well TMCMW-8 during quarterly sampling conducted for the RI in 1994, indicated measurable concentrations of acetone, methylene chloride, di-n-butylphthalate, total glycols, metals, and cyanide. Metals concentrations were reported within the range of concentrations encountered off-site.

Groundwater sampling from well LF5MW-1 during the RI, north and upgradient of the site, showed a carbon tetrachloride concentration of 6.6 µg/L. A concentration of 0.5 µg/L of the pesticide lindane was detected in well LF5MW-3, located to the west and downgradient of part of the landfill. Several PCBs were also detected above their respective laboratory RLs in well LF5MW-2, located to the northeast and within the approximate landfill boundary (LAW, December 1996).

As part of the RI, a baseline risk assessment was performed to evaluate the current and future potential risks to human health and the environment associated with COCs found at the site. The human health risk assessment evaluated exposure to potential residential, agricultural, recreational, and occupations populations that may be exposed to COCs in air, surface soil, groundwater, surface water, and sediments. COCs evaluated in the risk assessment included VOCs, glycols, SVOCs, herbicides, pesticides, PCBs, and metals. The results of the human health baseline risk assessment indicate that chemicals detected in passive soil gas and groundwater should not present a risk to current and future occupational workers, future industrial workers, and future off-site residents as long as groundwater at the AOC is not used for drinking water. Metals detections contributed to the unacceptable hazards in groundwater is manganese. The results also showed that exposure to PCBs detected in surface soils and sediment at the site may pose an unacceptable risk for receptors exposed to soils through inhalation of fugitive dusts, dermal contact, and incidental ingestion.

The ecological baseline risk assessment indicated that the hazard quotients of risks to the raccoon were calculated to be below 1; therefore, the potential for adverse impacts is considered to be insignificant. The HQs for three out of approximately 80 chemicals exceeded 1 for the short-tailed shrew (27 for 2,3,7,8-tetrachlorodibenzodioxin (TCDD); 1.89 for aluminum; and 1.69 for selenium). The HQ for one chemical exceeded 1 for the American woodcock (2.8 for 2,3,7,8-TCDD). These results indicate a potential for adverse effects to these ecological receptors. However, these exceedances were partially driven by the Three Mile Creek sediments which have been excavated.

During the SI, the sampling of monitoring well LF5MW-4 to the approximate south of the landfill boundary, in addition to the re-sampling of the existing wells, confirmed the presence of

carbon tetrachloride in the groundwater, highest at a concentration of 6.1 µg/L in well LF5MW-1. No other water chemistry results exceeded ARARs (E&E, July 1998).

While chlorinated VOCs had been reported in the RI (LAW, December 1996) and SI (E&E, July 1998) in monitoring wells for this landfill, significant levels were not detected during the Baseline Study (FPM, July 2000).

The Baseline Study reported that iron and manganese concentrations exceeded ARARs in background well LF5MW-1 as well as other wells sampled. The report concluded that groundwater in the landfill had reducing conditions and that the variations in the concentrations of iron and manganese in the samples from the wells was caused by the joint influences of available mineral sources, flow conditions, and anaerobic conditions at the site.

For the Baseline Study, quarterly sampling rounds were conducted. During the 1999 sampling events, three surface water sampling locations showed intermittent detections of various VOCs. In the January sampling round, detections included benzene at a concentration of 5.22 µg/L, 9.08 M µg/L, and 3.68 µg/L at LF5SW-1, -2, and -3, respectively (M = a matrix effect was present). Chlorobenzene was also detected in surface water samples collected during the January 1999 sampling round, at levels of 7.08 M µg/L at LF5SW-2 and about 2.5 µg/L at LF5SW-1 and LF5SW-3. (VOC analysis was only performed in the January 1999 sampling round). Since benzene and chlorobenzene were detected in the surface water, but not in any groundwater samples, the contaminants may be from another source (e.g., stormwater runoff).

In addition, aluminum, iron and sodium concentrations at three surface water sampling points exceeded NYS Surface water Standards. Iron concentrations also exceeded the NYS Surface water Standard for the August sampling round at LF5SW-1, and for the November 1999 sampling round at LF5SW-3. Sodium concentrations exceeded the NYS Surface water Standard at all three surface water sampling points for all sampling rounds.

The Baseline Study concluded that the relatively high surface water concentrations of aluminum, iron, and sodium in January 2000, followed by uniform, relatively lower levels of the metals in April 2000, along with other fluctuations in COC concentrations observed, were likely due to changes in runoff sources to Three Mile Creek rather than Landfill 5.

The Baseline Study also showed TDS and total hardness at levels above NYSDEC Groundwater Standards in upgradient wells LF5MW-1 and LF5MW-1A in at least one of the sample rounds. All other wells sampled exceeded the NYSDEC Groundwater Standard for TDS except for wells MW49D07 and LF5MW-4. Color exceeded the NYSDEC Groundwater Standard in well LF5MW-2 within the landfill area. All other wells exceeded the color criteria except for well MW49D07. Most wells had elevated hardness above the NYSDEC Groundwater Standard during one of the sampling events. The most elevated values for hardness consistently were detected in monitoring well MW49D03 (FPM, July 2000).

4.2.4.1.3 ROD Requirements

The ROD for the LF007 (Landfill 5 AOC) was issued by the Air Force in March 2000 and signed by the USEPA in June 2000. Based on the previous investigations and environmental conditions at the site the selected remedy for the LF007 (Landfill 5 AOC) consisted of the following actions:

- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated April 1, 1987. This action would include placing a minimum of 18 inches of low-permeability soil and 6 inches of topsoil over the entire landfill surface to reduce the amount of water infiltrating through the landfill;
- Maintenance of the cover and LTM of the groundwater and stream environment. The groundwater will be monitored in accordance with the Air Force's On-base Groundwater Monitoring Plan;
- Monitoring of the groundwater and stream environment downgradient of the site to evaluate the effectiveness of the presumptive remedy;
- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary to prohibit inappropriate use of the area and groundwater, and to ensure the soil cover is not damaged and the area is maintained as a landfill; and
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

The RAOs specified in the ROD consist of:

- Consolidation of various debris and waste areas into the main landfill boundary in order to reduce the area to be capped and the potential for nearby wildlife and human populations to be exposed to the landfill mass;
- Reduce infiltration of rain water and snow-melt water through the landfill mass in order to minimize the potential for leachate generation arid groundwater contamination;
- Monitoring the groundwater and stream environment (which may include, but is not necessarily limited to surface water) downgradient of the site.
- Implementation of institutional controls in the form of deed restrictions of the main landfill boundary to prohibit use of the area and groundwater.

4.2.4.1.4 Land-Reuse Zoning

Landfill 5 is located within Parcel F11B and was zoned by the GLDC, which is the Griffiss LRA, as low intensity open space. The City of Rome adopted the LRA's zoning designation in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.2.4.1.5 Post-ROD Activities

In accordance with the ROD, Landfill 5 was recapped and regraded in fall 2002. The landfill was capped with an 18-inch low permeability soil layer, covered by a 6-inch layer of topsoil, and seeded with grass, stated in the Landfill 5 Cover Improvements, Engineer's Certification Report (Conti and EA, May 2003). In addition to the re-capping, a post-closure monitoring program

was implemented (Conti and EA, July 2002). The program requires groundwater and surface water monitoring, landfill inspections, and LUC/IC inspections.

The LTM program for groundwater and surface water, downgradient of the site, was initiated in February 2003 as reported in the Landfill 5 LTM Report (FPM, July 2004) to evaluate the effectiveness of the presumptive remedy. Beginning in February 2003, LTM was performed at five monitoring wells (LF5MW-1A, -3, -5, -100R, and MW49D07) and three surface water locations (LF5SW-1, -2, and -3). The sampling locations are illustrated in Figure 19. The LTM network was analyzed quarterly (routine) and annually (baseline) for NYSDEC Part 360 Parameters and VOCs from 2003 through 2005. The LTM network (groundwater and surface water monitoring) was optimized to semi-annual from 2006 through 2008, annual for 2009 and 2010 and then to biennial from 2011 through 2014. Currently, five monitoring wells and three surface water locations are analyzed for leachate indicators (alkalinity, ammonia, biological oxygen demand, bromide, COD, chloride, color, cyanide, hardness, nitrate, sulfate, TDS, TKN, and TOC). The current scope of groundwater and surface water monitoring was recommended in the CERCLA Sites Optimization Plans (CAPE/FPM, November 2011). These recommendations were made as no plumes are associated with the site and previous metals detections are associated with background conditions. Leachate indicator analysis is used as increases in these analytes help identify any new plumes/landfill leaching.

Since September 2003, quarterly landfill inspections have been performed in accordance with the Landfill 5 Post-Closure Operations & Maintenance Manual (Conti, September 2003). Following the Spring 2010 sampling round landfill inspections were optimized from quarterly to semi-annual. Currently, spring and fall inspections are conducted each year. The inspections are performed to identify any major deficiencies that would jeopardize the integrity of the cover.

Annual LUC/IC inspections have also been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.2.4.2 Data Review and Analysis

Leachate indicator exceedances reported in groundwater samples include ammonia, chloride, TDS, color, sulfate, bromide, and TKN. However, current data shows a site-wide stabilization of all leachate indicators at LF007 (Landfill 5 AOC) (CAPE/FPM, May 2015). In addition, the concentrations of leachate indicators are comparable to previous results and below the typical range of municipal landfill leachate (Lee and Jones, 1991). There were no exceedances reported in the surface water samples.

The semiannual inspections have not identified any major deficiencies that would jeopardize the integrity of the cover and there is optimal vegetation cover on the cap.

4.2.4.3 Site Inspections

The site inspection was conducted on September 10, 2014 which confirmed that the LF007 (Landfill 5 AOC) remedy has been implemented and is currently protective of human health.

The site is a municipal landfill that is grass covered and land use has not changed since the previous five-year review. Monitoring wells and landfill hazardous signs are present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site. The completed five-year review checklist is provided in Appendix A.

4.2.4.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.2.4.4.1 Remedy Functionality

The landfill has been capped thereby removing direct contact exposures to the public and ecological receptors. The potential impacts to groundwater are being addressed by the cap, which reduces infiltration of precipitation through the landfill. The Landfill 5 Remedial Action Closeout and Implementation Report was submitted in 2005 finding the closure of the site was acceptable and that the remedy was operating as intended (AFRPA, August 2005). As part of the AOC LTM program, the landfill cap is inspected semi-annually, mowed annually, and repaired on an as needed basis (vector control and small area reseeding). The cap inspections have not identified any major deficiencies that would jeopardize the integrity of the cover.

Groundwater and surface water samples are collected biennially and results show that COCs reported in the groundwater samples are stable which demonstrates continued protection of potential receptors.

LUC/ICs in the form of groundwater use, land-use, and soil restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F11B which includes Landfill 5 was reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The Grantee shall not engage in, or allow others to engage in, activities that will disturb, move, damage, tamper with, interfere with any wells, operating remedial system, or infrastructure associated with such wells or remedial system located on the Property or with the Grantor's operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of any remedial action performed pursuant to CERCLA to address environmental contamination on the Property.
2. The Grantee shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundaries of the Property

unless such owner or occupant obtains the prior written approval from the NYSDOH.

3. The Grantee shall not develop or use the portions of the Property for residential housing, elementary or secondary schools, childcare facilities, or playgrounds unless prior written approval is received from the Air Force, USEPA, and NYSDEC.
4. With respect to any excavations in the portions of the Property, the Grantee shall restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface until cleanup goals are achieved and have been confirmed through sample results as defined in the applicable ROD(s) and pursuant to the joint EPA/DOD Guidance on Streamlined Site Closeout and National Priority List Deletion Process.
5. For the portion of the Property identified as Landfill site LF007 Landfill 5 AOC, the Grantee shall not allow vehicular traffic, digging, or ground-disturbing work within the restricted landfill boundary that may impact the effectiveness or integrity of the landfill closure and cap. The Grantor shall maintain the landfill cap and the signs warning of the restrictions and prohibitions on the boundary of the landfills.

In addition to the above LUC/ICs, signs have been posted at the boundaries of the AOC as required by the Landfill 5 Closure Plan (Conti, March 2002) to identify that the site contains hazardous wastes and that no trespassing is allowed. The signs are inspected semi-annually during the cap inspections and repaired as needed.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. LUC/ICs have also been implemented to further prevent potential exposures to the public and are verified by annual site inspections.

4.2.4.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC Groundwater/Surface water Standards at the LF007 (Landfill 5 AOC) show that exposure assumptions documented in the LF007 (Landfill 5 AOC) ROD are still applicable. In addition, the previous soil and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994), NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998), and NYSDEC 6 NYCRR Part 360, Subpart 2 Solid Waste Management Facilities (November 1999). The remedial action, including landfill capping, was also completed at the site. Therefore, the RI risk assumptions are no longer applicable given at that the exposure pathways are now incomplete as a result of the remedial action. The protective criteria values are still considered protective.

4.2.4.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Per the CERCLA Sites Optimization Plan (CAPE/FPM, November 2011) groundwater and surface water monitoring at LF007 (Landfill 5 AOC) was optimized to biennial for leachate indicators analysis only. There are no plumes identified at this site and previous metals exceedances are associated with background conditions. The LTM network was optimized to leachate indicators analysis only as increases in these analytes identify any new plumes/landfill leaching.

Landfill inspections have also been optimized to semi-annual since the 2010 Five-Year Review. Landfill inspections were optimized as there is optimal vegetation cover on the cap.

4.2.4.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.2.4.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF007 (Landfill 5 AOC) is protective of human health and the environment.

4.2.5 LF009 (Landfill 6 AOC)

4.2.5.1 Document Review

4.2.5.1.1 Site History

Landfill 6, approximately 16 acres, is located near the southern boundary of the former Griffiss AFB, between Perimeter Road and Three Mile Creek. The landfill was operational from 1955 to 1959 for the disposal of hardfill and general refuse. Groundwater flow in the vicinity of the landfill is toward Three Mile Creek. Landfill 6 was initially capped in 1986 and recapped in 2004. Figure 20 illustrates the LF009 (Landfill 6 AOC) and LTM network, as well as the LUC/ICs as required by the ROD.

Remediation and monitoring activities for the TCE contamination at the site are performed under the On-base Groundwater AOCs program (SD052-04 Landfill 6 OU).

4.2.5.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

Groundwater monitoring at one monitoring well (TMCMW-9) installed downgradient from Landfill 6 was conducted by Roy F. Weston, Inc. in 1982 and by the Air Force in 1992 and 1993, as part of the quarterly groundwater sampling study. In 1982, groundwater was analyzed for dissolved metals, phenols and VOCs; phenols were reported at 14 µg/L and dissolved chromium, copper and zinc were reported above detection limits. During the quarterly sampling, groundwater was analyzed for VOCs, SVOCs, pesticides, PCBs, total metals, cyanide and total glycols. Total glycols were reported in March 1993 at levels exceeding the NYSDEC Groundwater Standards and methylene chloride and acetone were also reported. However, the VOC data are suspected to be the result of sample contamination in the laboratory. Inorganic constituents measured at levels exceeding NYSDEC Groundwater Standards included iron, magnesium, manganese, sodium and zinc. However, concentrations of most detected metals

were found within the range of concentrations encountered off-site.

The RI involved the collection of numerous surface soil and groundwater samples and a passive soil gas survey for contamination detection. Also, a geophysical investigation including the collection of MAG and GPR data was conducted on an extensive grid, which included the entire area of the landfill. Based on these geophysical data, two test pits were dug during the SI (E&E, July 1998) at locations where anomalous geophysical indicators suggested buried drums, but none were discovered (LAW, December 1996).

The passive soil gas survey indicated the presence of either toluene or benzene at 12 of the 33 locations. Surface soil samples collected at two erosion gullies indicated SVOCs and PCBs (primarily in the sample from the south erosion gulley), pesticides, metals and petroleum hydrocarbons (on the order of 100 mg/kg). Surface soil samples collected at three sample locations downhill from Landfill 6 indicated that surface water runoff from the landfill may have impacted the area. However, only acetone, benzo(a)anthracene, benzo(a)pyrene and 12 metals were found at levels above potential ARARs.

During the RI, seven monitoring wells were sampled and groundwater was found to contain three VOCs, six metals, total glycols and petroleum hydrocarbons at levels above ARARs. These wells are generally located along the southwest edge of the landfill. LF6MW-1, an upgradient well, was also reported with sodium and total glycols levels above ARARs. LF6MW-2, located in the northern, uncapped portion of Landfill 6, was reported with concentrations of 1.4 µg/L benzene, 170 µg/L cis-1,2-DCE and 30 µg/L VC. cis-1,2-DCE and VC are the reductive dechlorination products of TCE and contamination is believed to be the result of the landfill, or spills or discharges of TCE upgradient of the landfill (LAW, December 1996).

As part of the RI, a baseline risk assessment was performed to evaluate the current and future potential risks to human health and the environment associated with COCs found at the site. The human health risk assessment evaluated exposure to potential residential, agricultural, recreational, and occupations populations that may be exposed to COCs in air, surface soil, groundwater, surface water, and sediments. COCs evaluated in the risk assessment included VOCs, glycols, SVOCs, herbicides, pesticides, PCBs, and metals. The results of the human health baseline risk assessment indicate that chemicals detected in passive soil gas, surface soil, groundwater, surface water, and sediments should not present a risk to current and future occupational workers, future industrial workers, and future off-site residents as long as groundwater at the AOC is not used for drinking water purposes. VOC detections were the major contributors to the risk through ingestion of groundwater. Surface soils at the site are also a potential risk for receptors exposed to soils through inhalation of fugitive dusts, dermal contact, and incidental ingestion. Metals detections were the major contributor to this risk.

The environmental evaluation modeled risks to raccoons, shrews, and American woodcocks from exposures to surface soil. The HQs Indicative of risks to the raccoon were calculated to be below 1; therefore, the potential for adverse impact on this ecological receptor is considered to be insignificant. The HQ for the short-tailed shrew exceeded 1 for 2 chemicals (2,3,7,8-TCDD,

HQ = 39; selenium, HQ = 1.6). The HQ exceeded I for the American woodcock for one chemical (2,3,7,8-TCDD, HQ = 8.O). These values indicate a potential for adverse effects.

The SI was performed in 1997 and included the excavation of two test pits, the collection of Geoprobe® groundwater screening samples at four locations, the resampling of four existing wells and the installation and sampling of one vertical profile monitoring well. Samples were submitted for VOCs and SVOCs analysis, as well as natural attenuation parameters, including anions (chloride, sulfate, nitrate/nitrite, sulfide), methane/ethane/ethene (MEE), TOC, ferrous iron and alkalinity. The groundwater-related activities were performed as part of the On-Base Groundwater AOC, which is being evaluated separate from the soils. The LF009 (Landfill 6 AOC) is associated with the east side of the Three Mile Creek drainage basin and the groundwater wells at Landfill 6 will be evaluated in this context.

During the test pit excavation, although no drums were encountered (as discussed above), at test pit LF6TP-2, a petroleum odor was noticed at 6 ft bgs and headspace readings conducted using a PID indicated VOCs ranging from 100 to 400 ppm. Also, at test pit LF6TP-1, at a depth of 2 ft bgs, three large 2.5 to 5-inch ID steel pipes ranging in length from 6 to 10 ft were encountered.

The results of the four Geoprobe® groundwater screening samples, installed 200 to 300 ft downgradient of LF6MW-2, collected from approximately 15 to 19 ft bgs, were nondetect for VOCs and SVOCs. The groundwater screening samples collected during vertical profiling at LF6VMW-6, installed within 150 ft directly downgradient of LF6MW-2, indicated the presence of TCE at the 39 to 40 ft bgs interval only (27 µg/L) (screening was conducted every 10 ft from approximately 17 ft bgs to 80 ft bgs). Samples collected from the permanent well LF6VMW-6, screened from 35 to 45 ft bgs, contained cis-1,2-DCE (180 µg/L), VC (29 µg/L), TCE (26 µg/L) and benzene (1.0 µg/L). Resampling at LF6MW-2 indicated contaminants at similar concentrations as those measured during the RI: cis-1,2-DCE (83 µg/L), VC (20 µg/L) and benzene (1.2 µg/L). These compounds were not reported above the detection limit at wells LF6MW-1, TMC-USGS-3 and TMCMW-9, with the exception of cis-1,2-DCE at TMCMW-9 at 0.30 J µg/L.

A groundwater study was performed in spring 2000 at the LF009 (Landfill 6 AOC) to define the vertical and lateral extent of a TCE plume (in association with the On-Base Groundwater AOC discussed above) (E&E, August 2000). Up to 105 Hydropunch® samples for vertical profiling were collected, eight new wells were installed and sampled and four existing wells were resampled. Results indicated a chlorinated solvents plume approximately 800 ft long, 80 ft deep and 200 ft wide near the top of Landfill 6 and 700 ft wide near the leading edge of the plume (located approximately 100 ft from Three Mile Creek). The base of the plume beneath the top of Landfill 6 was found to merge or nearly merge with the leading edge of a chlorinated solvents plume delineated in association with Building 775 (E&E, August 2002).

A bedrock well study was performed in February and March of 2002 at the Landfill 6 AOC. The 2002 Bedrock Groundwater Study (E&E, August 2002), determined that bedrock underlying Landfill 6 was free of chlorinated organic contamination observed in the overlying overburden groundwater. Groundwater samples collected at two downgradient bedrock monitoring wells LF6VMW-12RBr and -14Br showed no detectable concentrations of TCE and cis-1,2-DCE.

Both chemicals were detected in overburden monitoring wells directly upgradient at concentrations several orders of magnitude greater than their associated screening levels. Additionally, the study characterized the bedrock groundwater flow beneath Landfill 6 with an extremely low horizontal gradient of 0.001 feet per foot (ft/ft) and slight vertical gradients between the overburden.

4.2.5.1.3 ROD Requirements

The ROD for the LF009 (Landfill 6 AOC) was issued by the Air Force in February 2001 and signed by the USEPA in June 2001. Based on the previous investigations and environmental conditions at the site the selected remedy for the LF009 (Landfill 6 AOC) consisted of the following actions:

- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated November 26, 1996. This action will include placing a gas venting layer, a geomembrane cover, and a barrier protection layer over the entire landfill surface to reduce the amount of water infiltrating through the landfill;
- Maintenance of the impermeable cover;
- LTM of the groundwater and stream environment downgradient of the site to evaluate the effectiveness of the presumptive remedy. In accordance with the Air Force's On-base Groundwater Monitoring Plan;
- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary to prohibit inappropriate use of the area and groundwater, and to ensure the soil cover is not damaged and the area is maintained as a landfill; and
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

The RAOs specified in the ROD consist of:

- Consolidation of various debris and waste areas into the main landfill boundary in order to reduce the area to be capped and the potential for nearby wildlife and human populations to be exposed to the landfill mass;
- Significantly reduce infiltration of rain water and snow-melt water through the landfill mass in order to minimize the potential for leachate generation and groundwater contamination;
- Monitoring the groundwater and stream environment (which may include, but is not necessarily limited to surface water) downgradient of the site.
- Implementation of institutional controls in the form of deed restrictions within the main landfill boundary and for the affected groundwater to prohibit use of the area and groundwater.

4.2.5.1.4 Land-Reuse Zoning

The LF009 (Landfill 6 AOC) is located within airfield Parcel F11B and was zoned by the GLDC, which is the Griffiss LRA, as low intensity open space. The City of Rome adopted the

LRA's zoning designation in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.2.5.1.5 Post-ROD Activities

Beginning in July 2004, Conti began closure construction activities at Landfill 6. In accordance with the ROD, the landfill was capped with a 12-inch barrier protection layer and a geocomposite drainage layer, covered by a 6-inch layer of topsoil and seeded with grass (Conti and EA, January 2007). Prior to the installation of any of the cap components, common borrow fill material was placed on Landfill 6 to achieve the design grades. A portion of the fill material used at Landfill 6 consisted of soil/ debris from various on-base projects, including: approximately 52,600 cy of material from the Three Mile Creek restoration project, approximately 3,000 cy of cobbles from the Apron 1 biopile remediation project and approximately 2 cy of soil from the Rainbow Creek remediation project.

During the installation of the new landfill cover, a total of 13 monitoring wells were decommissioned, due to their location within or near the Landfill 6 limit of waste. Eleven new monitoring wells were installed at the LF009 (Landfill 6 AOC); ten downgradient wells (LF6VMW-17D, -17S, -18, -19, -20, -22, -23, -24, -25 and -26) and one upgradient well (LF6VMW-21).

In addition to the re-capping, a post-closure monitoring program was implemented (Conti and EA, July 2002). The program requires groundwater and surface water monitoring, landfill inspections, and LUC/IC inspections.

The LTM program for groundwater and surface water was initiated in June 2006 (FPM, February 2004) to evaluate the effectiveness of the presumptive remedy. LTM sampling is currently performed quarterly at 19 groundwater monitoring wells (775VMW-10, -18R, -20R, LF6MW-1, -12, LF6VMW-10R2, -17D, -17S, -18, -19, -20, -21, -22, -23, -24, -25, -26, TMCMW-9 and TMC-USGS-2), three surface water sampling locations (LF6SW-1, -2, -3), two landfill leachate sampling locations (LF6LH-1, -2), and one wetland sampling location (LF6W-1). The sampling locations are illustrated in Figure 20. The LTM network was analyzed quarterly (routine) and annually (baseline) for NYSDEC Part 360 Parameters and VOCs from 2006 to 2009. The LTM network (groundwater and surface water monitoring) was optimized to semi-annual for 2010 and then to annual from 2011 through 2014. Currently, 19 monitoring wells, three surface water locations, one wetland location and two leachate locations are analyzed annually for leachate indicators. Additionally, VOCs analysis is conducted for monitoring wells 775VMW-10, LF6VMW-12, -23, -24, -25, -26, and TMCMW-9, surface water locations LF6SW-1, -2, -3 and wetland sample LF6W-1. The current scope of groundwater and surface water monitoring was recommended in the CERCLA Sites Optimization Plans (CAPE/FPM, November 2011). These recommendations were made as no plumes are associated with the site, besides the downgradient VOC plume, and previous metals detections are associated with background conditions. Leachate indicator analysis is used as increases in these analytes help identify any new plumes/landfill leaching.

Since June 2006, quarterly landfill inspections have been performed in accordance with the Landfill 6 Post-Closure Operations & Maintenance Manual (Conti, December 2006) as part of the post-closure maintenance of Landfill 6. Following the Spring 2010 sampling round landfill inspections were optimized from quarterly to semi-annual. Currently, spring and fall inspections are conducted each year. The inspections are performed to identify any major deficiencies that would jeopardize the integrity of the cover.

Beginning in June 2006, landfill gas sampling was conducted quarterly at 13 gas monitoring probes (LF6GMP-01 through -13) and 16 gas vents (LF6VENT-01 through -16). Landfill gas sampling was optimized after the Spring 2010 sampling round from quarterly to semi-annual monitoring. Currently, spring and fall gas monitoring is conducted each year. Samples were analyzed for methane concentrations, LEL, oxygen concentrations, and carbon dioxide concentrations. The gas monitoring probes and gas vents are illustrated in Figure 20.

Annual LUC/IC inspections have also been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.2.5.2 Data Review and Analysis

LTM data indicate VOCs and leachate indicators remain above NYS Groundwater and Surface Water Standards (CAPE/FPM, May 2015). VOC exceedances for TCE, PCE, acetone, DCE, and VC are limited to three monitoring wells, 775VMW-10, LF6MW-12, and LF6VMW-26. These VOC exceedances are addressed under the SD052-04 Landfill 6 Operable Unit (On-base Groundwater Site). Leachate indicator exceedances were reported at monitoring wells 775VMW-10, -18R, LF6MW-1, -12, LF6VMW-10R2, 21, -24, -25, -26, and TMCMW-9 and surface water sampling locations LF6LH-1, LF6W-1, LF6SW-1, -2, and -3. The exceedances included chloride, color, TDS, and TKN. However, current data shows a site-wide stabilization of all leachate indicators at Landfill 6. In addition, the concentrations of leachate indicators are comparable to previous results and below the typical range of municipal landfill leachate (Lee and Jones, 1991).

Methane was not detected at any of the gas monitoring probes during the latest gas sampling rounds. All observed methane concentrations are at one landfill gas vent located in the northwestern portion of the landfill. At this time elevated methane concentrations at the LF009 (Landfill 6 AOC) do not appear to pose a risk to surrounding properties.

The semiannual inspections have not identified any major deficiencies that would jeopardize the integrity of the cover and there is optimal vegetation cover on the cap.

4.2.5.3 Site Inspection

The site inspection was conducted on September 9, 2014 which confirmed that the LF009 (Landfill 6 AOC) remedy has been implemented and is currently protective of human health. The site is a municipal landfill that is grass covered and land use has not changed since the previous five-year review. Monitoring wells, gas vents, gas monitoring probes and landfill

hazardous signs are present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site. The completed five-year review checklist is provided in Appendix A.

4.2.5.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.2.5.4.1 Remedy Functionality

The landfill has been capped thereby removing direct contact exposures to the public and ecological receptors. The potential impacts to groundwater are being addressed by the cap, which reduces infiltration of precipitation through the landfill. The Landfill 6 Remedial Action Closeout and Implementation Report was submitted in 2008 finding the closure of the site was acceptable and that the remedy was operating as intended (AFRPA, September 2008). The EPA concurrence letter was issued on September 30, 2008. As part of the AOC LTM program, the landfill cap is inspected semi-annually, mowed annually, and repaired on an as needed basis (vector control and small area reseeding). The inspections have not identified any major deficiencies that would jeopardize the integrity of the cover.

Groundwater and landfill gas samples are collected annually and semi-annually, respectively. Results show that COCs reported in the groundwater samples remain above the NYSDEC Groundwater Standards, however, these exceedances are decreasing or stable. Landfill gas sampling results show that methane concentrations are stable and are only observed at one gas vent within the northwestern portion of the landfill.

LUC/ICs were also implemented in the deed for Parcel F11B which includes LF009 (Landfill 6 AOC) as well as SD052-04 (Landfill 6 OU). It should be noted that due to the close proximity of the two sites, groundwater and soil use restrictions for LF009 (Landfill 6 AOC) overlap the groundwater and soil use restrictions associated with SD052-04 (Landfill 6 OU).

The following bullets provide the deed restrictions in the Parcel F11B deed that satisfy the LF009 ROD and Closure Plan (Conti and EA, March 2004).

1. The Grantee shall not engage in, or allow others to engage in, activities that will disturb, move, damage, tamper with, interfere with any wells, operating remedial system, or infrastructure associated with such wells or remedial system located on the Property or with the Grantor's operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of any remedial action performed pursuant to CERCLA to address environmental contamination on the

Property.

2. The Grantee shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundaries of the Property unless such owner or occupant obtains the prior written approval from the NYSDOH.
3. The Grantee shall not develop or use the portions of the Property for residential housing, elementary or secondary schools, childcare facilities, or playgrounds unless prior written approval is received from the Air Force, USEPA, and NYSDEC.
4. With respect to any excavations in the portions of the Property, the Grantee shall restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface until cleanup goals are achieved and have been confirmed through sample results as defined in the applicable ROD(s) and pursuant to the joint EPA/DOD Guidance on Streamlined Site Closeout and National Priority List Deletion Process.
5. For the portion of the Property identified as Landfill site LF009 Landfill 6 AOC, the Grantee shall not allow vehicular traffic, digging, or ground-disturbing work within the restricted landfill boundary that may impact the effectiveness or integrity of the landfill closure and cap. The Grantor shall maintain the landfill cap and the signs warning of the restrictions and prohibitions on the boundary of the landfills.

In addition to the above LUC/ICs, signs have been posted at the boundaries of the AOC as required by the Landfill 6 Closure Plan (Conti, December 2003) to identify that the site contains hazardous wastes and that no trespassing is allowed. The signs are inspected semi-annually during the cap inspections and repaired as needed.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. LUC/ICs have also been implemented to further prevent potential exposures to the public and are verified by annual site inspections.

4.2.5.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC groundwater/surface water standards at the LF009 (Landfill 6 AOC) show that exposure assumptions documented in the LF009 (Landfill 6 AOC) ROD are still applicable. In addition, the previous soil, gas, and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994), NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC, June 1998), and NYSDEC 6 NYCRR Part 360, Subpart 2 Solid Waste Management Facilities (November 1999). The remedial action, including landfill capping, was also completed at the site. Therefore, the RI risk assumptions are no longer applicable given at that the exposure pathways are now incomplete as a result of the remedial action. The protective criteria values are still considered protective.

4.2.5.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Per the CERCLA Sites Optimization Plan (CAPE/FPM, November 2011) groundwater and surface water monitoring at Landfill 6 was optimized to annual for VOC and leachate indicators analysis only. VOC analysis is only conducted at monitoring wells which exhibited VOC exceedances in

previous LTM events to track contaminant trends and/or migration. VOC analysis is also conducted in the surface water locations to verify the absence of VOC migration into the stream environment. It should be noted that the VOC contamination (TCE) is also addressed under the SD052-04 Landfill 6 Operable Unit. Leachate indicators analysis is conducted at all of the monitoring wells and surface water sampling locations associated with the site LTM network. The analysis is used as increases in the leachate indicators help identify any new plumes/landfill leaching.

Landfill gas monitoring and landfill inspections have also been optimized to semi-annual since the 2010 Five-Year Review. Landfill gas monitoring was optimized due to the site-wide stabilization of landfill gases. Landfill inspections were optimized as there is optimal vegetation cover on the cap.

4.2.5.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.2.5.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at LF009 (Landfill 6 AOC) is protective of human health and the environment.

4.3 Ongoing Remedial Action Sites

This section of the CERCLA Five-Year Review includes sites with ongoing remedial actions. Ongoing Remedial Action Sites include SD052-01 (Apron 2 OU, SD052-02 (Building 775 OU), SD052-04 (Landfill 6 OU), and SD052-05 (Building 817 OU) and SD062 (AOC 9). The following summarizes each area's history, previous investigations, present/ past contamination, ROD recommendations, and future actions. On-base Groundwater AOCs, SD052-01, -02, -04, and -05 were included in the 2010 Five-Year Review Addendum (FPM, February 2013). This is the first Five-Year Review for SD062 (AOC 9). SD062 (AOC 9) was included as a pre-ROD site in the two previous five-year reviews.

4.3.1 SD052-01 (Apron 2 Operable Unit)

4.3.1.1 Document Review

4.3.1.1.1 Site History

Apron 2, a former aircraft parking apron and refueling area, and the Nosedocks, each used as aircraft maintenance facilities, are located in the southeast portion of the former Griffiss AFB. The Apron is a relatively flat, 18-inch thick, steel reinforced concrete pad. The concrete paving is flanked by 50-foot wide areas of asphalt paving on the northwest and southeast sides. The surrounding surface is unpaved lawn. The vicinity of the Nosedocks encompasses the buildings themselves, two oil/water separators (OWS 5730 [removed in 2001] and 6389-3), and several

underground utilities (storm drains and sanitary sewers). Groundwater flow in the area of the Nosedocks is complicated due to the large surface pavements of Aprons 1 and 2. Massive construction has altered the natural hydrology in the area of the Aprons and has compacted the subsurface layers, leading to perched groundwater conditions in the area. In general, however, the groundwater flow direction is northeasterly.

The chlorinated VOC contamination in the Apron 2 area is present as a plume approximately 2,800 ft long and 500 ft wide and appears to originate in the area of the nosedock wash water system near Building 786. Chlorinated solvent use probably occurred in all nosedock facilities and multiple small sources could exist along floor drains, sewer lines, and oil water separators. Figure 21 illustrates the SD052-01 (Apron 2 OU) and LUC/ICs as required by the ROD.

4.3.1.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

Groundwater and soil samples were collected from the north and northwest sides of Buildings 782 and 783 (Nose Docks 1 and 2) during the RI (LAW, December 1996). Twenty VOCs were detected in the groundwater samples, 13 of which were detected at concentrations exceeding potential ARARs. The only chlorinated hydrocarbon detected above RLs was cis-1,2-DCE, reported at 782MW-4R (12 µg/L) and 782MW-1R (0.4 J µg/L, not shown in Figure 21).

PEER conducted closure activities on the Wash Waste System in 1996. In association with the Nose Dock Wash Waste System, Manholes 13 through 18 and 21 through 23 were excavated, and the Wash Waste System pipeline was cleaned then either removed or closed in place with hydraulic cement (PEER, July 1998). Endpoint soil samples were collected following excavation procedures. The analytical results from bottom samples collected at Manholes 13, 21, 22, and 23 and from an area approximately 24 ft downstream of Manhole 15 along a removed pipeline section indicated VOC concentrations above STARS Guidance Values. VOCs were analyzed at these locations using EPA Method SW8021 (no chlorinated hydrocarbon results are available).

An SI was performed in 1997 and identified chlorinated hydrocarbon contamination locations north of Building 782 (E&E, July 1998). New monitoring wells were installed including 782MW-5, located approximately 600 ft west of Building 782; and782MW-6R1 and 782MW-6R2, located approximately 150 ft east of Building 782. Existing wells 782MW-1R, -2, and -3R were also sampled during the SI. Monitoring well 782MW-6R1 proved to be unsuitable for sampling, as it was assumed to be screened across a perched zone. A groundwater sample collected at 782MW-6R2 indicated the presence of cis-1,2-DCE (37 µg/L) and VC (26 µg/L) above ARARs; no chlorinated hydrocarbons were reported above the detection limits in 782MW-2, 782MW-3R, or 782MW-5. A trace concentration (1.0 µg/L) of cis-1,2-DCE was detected at 782MW-1R; located downgradient (northeast) of 782MW-4R. The SI recommended that additional wells be installed to the east of Building 782 to characterize the extent of groundwater contamination.

Additional groundwater monitoring was conducted by FPM at SD052-01 (Apron 2 OU) from August to October 1999. Monitoring was performed to characterize the downgradient extent of the chlorinated solvent contamination, as recommended by the SI. Groundwater samples were collected from temporary wells installed using Geoprobe® technology. After continuous soil screening was conducted to the groundwater table, groundwater samples were collected using a Geoprobe® Mill-Slotted Sampler and pumping through dedicated tubing with a peristaltic pump. In August 1999, 12 borings were installed in the vicinity of Building 782 (782TW-54 through –65). No evidence of soil contamination was detected in the unsaturated zone during soil screening procedures. Groundwater samples were collected at each of the 12 locations from screened depths of 22 to 26 ft. bgs. Groundwater samples were also collected from existing wells 782MW-1R, -4R, -6R1, and -6R2 in August 1999.

Groundwater samples were analyzed for VOCs by EPA Method SW8260B, which includes full chlorinated hydrocarbon analysis. The laboratory analytical results for groundwater indicated that samples collected from 13 locations (782TW-54 through -59, 782TW-61, and 782TW-64) contained chlorinated VOCs exceeding the NYSDEC Groundwater Standards. The majority of elevated concentrations of total chlorinated VOCs were detected at locations southeast of Building 782 and were reported highest at location 782TW-55 (46 µg/L). In addition, slight exceedances for cis-1,2-DCE (5.55 µg/L) and VC (3.67 µg/L) were reported in existing monitoring wells 782MW-4R and 782MW-6R2, respectively. Only in temporary wells 782TW-60 through -65, located north-northeast of Building 782, did benzene exceed the NYSDEC Groundwater Standard (1 µg/L) by more than one order of magnitude (16 to 241 µg/L). These locations were likely associated with a separate petroleum hydrocarbon plume identified in association with Apron 1 and Nose Docks 1 and 2.

FPM also collected groundwater samples at locations 782TW-66, -67, and -68 in August 1999 during a separate petroleum spills investigation that did not target chlorinated VOCs. The samples were analyzed for STARS VOC List 8021. Soil samples collected from the top of the capillary zone were also submitted for analysis, but no soil contamination was reported.

In October 1999, five new permanent wells were installed and sampled, including 782MW-6D, -7, -8, -9, and -10. Monitoring wells 782MW-6D, -7, and -10 each showed exceedances of the NYSDEC Groundwater Standard for VC. 782MW-10, originally intended as an upgradient monitoring well, contained the highest concentration of total chlorinated ethenes (49 µg/L).

In June 2000, FPM installed seven temporary wells (using a Geoprobe® / Geoprobe® Mill-Slotted Sampler) west of Building 782 to characterize the upgradient (or western) extent of the chlorinated hydrocarbon plume and to possibly identify the source area. The wells were installed along transects perpendicular to the presumed groundwater flow direction. Samples were collected from two depth intervals at each location: from the top of the water table and from approximately 4 ft below the water table. Of the 13 samples submitted, five had cis-1,2-DCE or VC exceedances. The highest concentrations were reported at 782TW-72 from 24 to 28 ft bgs, with cis-1,2-DCE at 79 µg/L and VC at 15 µg/L. Of particular interest was cis-1,2-DCE, the parent compound to VC during anaerobic biodegradation, at higher levels in upgradient locations relative to downgradient locations. (TCE, the parent compound to cis-1,2-DCE, had not been

detected above RLs in any of the locations sampled thus far, but was detected at 782TW-74 at 0.22 F µg/L.)

From these investigations, two cis-1,2-DCE plumes and one VC plume, which overlap, were identified by assessing the extent of chlorinated VOC results exceeding NYSDEC Groundwater Standards. The axis of the south cis-1,2-DCE plume was depicted along a line connecting sampling locations 782TW-73, 782TW-69, 782MW-10, and 782MW-6D. The upgradient extent of this plume was thus undefined. Suspected source areas were associated with the former Wash Waste System between Buildings 783 and 784, or between Buildings 784 and 785, or even further upgradient between Buildings 785 and 786. Several manholes associated with the former Wash Waste system are located between Buildings 783 and 786, including manholes 15, 16, 17, 22, and 23. The manholes are upgradient of those locations where elevated concentrations of chlorinated hydrocarbons were detected.

Based on the results from the previous groundwater sampling activities in the vicinity of the SD052-01 (Apron 2 OU), additional sampling was recommended to delineate groundwater contamination upgradient (northwest) of Buildings 783 and 784 and isolate the source of contamination. Therefore, in 2002 an RI was conducted to define the vertical and lateral extent of the SD052-01 (Apron 2 OU). As part of the RI, a total of 39 vertical profile wells were installed, using a combination of both hollow-stem auger and Hydropunch® techniques. The "plume area extent" was characterized by the groundwater sampling results of 25 well locations, including 782VMW-76 through -82, -84 through -96, -100 through -103, and -106. The "source area extent" was characterized by the results of soil samples taken from the remaining 14 boreholes installed during the RI, including 782VMW-83, -97, -104, -105, -105B, -107 through -113, and upgradient wells 782VMW-98 and -99 (detailed discussion of vertical well location selection and results can be found in the Final RI Report [FPM, April 2004]).

Permanent monitoring wells were installed at each of the "plume area extent" vertical profile well locations, except for 782VMW-79 and -103. Permanent monitoring wells were also installed at "source area extent" vertical profile well locations 782VMW-83, -97, -104, and -105b, and at upgradient vertical profile well locations 782VMW-98 and -99. Groundwater samples collected from permanent monitoring wells were submitted for VOC analysis and for the analysis of geochemical parameters (e.g., nitrate, total iron, sulfate, etc.)

Four contaminants were detected at levels exceeding NYSDEC Groundwater Standards from the "plume extent" permanent wells sampled in February 2002: TCE, which was reported in one of 25 plume extent wells at 21.2 µg/L in 782VMW-81; cis-DCE, which was reported in eight wells ranging from 1.47 µg/L to 66 µg/L, and at levels exceeding NYSDEC Groundwater Standards in five wells, including 782VMW-78, -81, -90, 782MW-6R2 and -10; VC, which was detected in 13 wells ranging from 1.39 µg/L to 77.8 µg/L, and at levels exceeding NYSDEC Groundwater Standards in 11 wells, including 782VMW-76, -78, -84, -87, -88, -93, -96, -101, 782MW-6R2, -6D and -10; and methyl tert-butyl ether (MTBE), which was reported in eight wells ranging from 9.59 µg/L to 251 µg/L, and at levels exceeding NYSDEC Groundwater Standards in five wells, including 782VMW-80, -87, -92, -102, and AP2MW-3.

During the permanent well sampling event in February 2002, TCE was reported in three of the source area wells (782VMW-83, -97, and -105B) ranging from 6.05 µg/L to approximately 50.0 µg/L; and cis-DCE was found above RLs in 782VMW-105B at 4.63 µg/L. Neither VC nor MTBE was reported above their respective detection limits in the source area wells, suggesting that (a) reductive dechlorination from cis-DCE to VC probably does not occur until the TCE is depleted; and (b) the MTBE detected in other wells located further downgradient is originating from another source area, probably former Building 7001.

Soil samples were collected at several locations in the vicinity of the source area near Building 786 (782VMW-104, -105, -105B, and -107 through -111), in an attempt to identify if there was remaining contamination in the soil (that could be considered a continuing source) at the approximate depth of the Nosedocks Wash Waste line. An additional soil boring was installed in the vicinity of sampling location 782VMW-90 (soil boring ID 782SB-90RE2), after elevated PID readings (i.e., greater than 50 ppm) indicated strong petroleum odor in the shallow soils. Soil samples from one interval indicating the highest PID readings were submitted from each temporary well. In the shallow (i.e., less than 20 ft bgs) samples, chlorinated hydrocarbons were indicated at 782VMW-107, with 1,1-DCE recorded at approximately 12 µg/kg, TCE at approximately 36 µg/kg, and cis-DCE at 2.5 F µg/kg. Petroleum-related hydrocarbons were reported at elevated levels at two locations: 782SB-90RE2 and 782VMW-104.

Surface water samples were collected at Six Mile Creek both upstream and downstream of a concrete stormwater channel located between sampling locations 782VMW-101 and -102. Among the three seepage and four surface water samples collected along Six Mile Creek, only MTBE and benzene were detected at levels above their respective RLs. VC was detected at seep sample location 782SW-114 (0.31 F µg/L), and below the RL but above the detection limit (0.13 µg/L) at seep sample location 782SW-116 (0.17 F µg/L). However, at 782SW-114, the NYSDEC groundwater effluent limitation of 2 µg/L is applicable, so these VC concentrations are compliant with regulatory limits.

MTBE was reported in seepage samples collected at 782SW-116 and -117 at 62.9 µg/L and 190 µg/L, respectively. Both seepage locations are downgradient of monitoring well 782VMW-102, where MTBE was also detected. Benzene was reported at 2.69 µg/L at surface water sampling location 782SW-120. Because benzene was not found at levels above the detection limit in any upstream samples, the source for the benzene may possibly be related to the petroleum contamination plume associated with Building 789, or from other sources upstream (i.e., the stormwater outfall from the Aprons, or other Petroleum Spill Sites).

A baseline risk assessment was performed as part of the 2002 SD052-01 (Apron 2 OU) RI to evaluate the current and future potential risks to human health and the environment associated with COCs found at the site. The results of the human health risk assessment indicated that the potential risk of COCs in groundwater would be reduced substantially if groundwater was not used for drinking water purposes. The quantitative evaluation of risk is subject to several conservative assumptions and should not be considered an absolute measure of risk. An ecological baseline risk assessment for exposure to groundwater was not performed because wildlife does not have access to groundwater in this area (FPM, April 2004).

Groundwater monitoring wells were sampled and analyzed for VOCs and natural attenuation parameters from February 2003 to April 2005. Results indicated that anaerobic conditions which are favorable for reductive dechlorination processes dominate the site, and that these processes are actively working to reduce site concentrations of chlorinated solvents. The FS for the SD052-01 (Apron 2 OU) was completed in 2005 and concluded that monitored natural attenuation (MNA) including groundwater and surface water sampling to be protective of human health and the environment (FPM, August 2006). The feasibility study (FS) was reviewed and approved by the USEPA and NYSDEC before being released as a final document.

Additional sampling was performed at the SD052-01 (Apron 2 OU) in November 2006 at ten monitoring wells (782VMW-76, -78, -81, -84, -93, -96, -98, -100, -101, -105B, and 782MW-10) and three surface water locations (782SW-115, -118, and -119). The monitoring wells sampled have historically shown chlorinated solvent contamination. The sampling event was conducted as a baseline sampling event for the proposed PM as recommended by the FS. The samples were analyzed for VOCs and natural attenuation parameters (nitrate, chloride, sulfate, and alkalinity). VC and cis-1,2-DCE exceedances were detected at all monitoring wells except for 782VMW-98 (upgradient of source), 782VMW-100 (downgradient), 782VMW-101 (downgradient), and 782VMW-105B (within plume). A TCE exceedance was also detected at monitoring well 782VMW-105B (7.97 µg/L). VC exceedances ranged from 8.86 to 68.2 µg/L and cis-1,2-DCE exceedances ranged from 11.5 to 43.9 µg/L. The NYS Groundwater and Surface Water Standards for VC, TCE, and cis-1,2-DCE are 2 µg/L, 5 µg/L, and 5 µg/L, respectively. Results from the surface water samples did not show chlorinated VOC exceedances. Following the sampling, two monitoring wells (782VMW-121 and 782VMW-121D) were installed at the most downgradient point of the plume near 782VMW-100 and one monitoring well was installed in the middle of the plume near 782VMW-84.

Under the NYSDEC Spill Program, one horizontal biosparging well was installed downgradient of the site near Six Mile Creek in October 2006. This well was installed to remediate the petroleum constituent groundwater contamination south of the chlorinated plume through biodegradation.

PM sampling rounds occurred at SD052-01 (Apron 2 OU) in September 2008 and December 2008. Fifteen monitoring wells and three surface water sample locations were sampled in September 2008 and twelve monitoring wells and three surface water sample locations were sampled in December 2008. Two wells were not sampled in December 2008 because they are sampled annually. All samples from both rounds were analyzed for VOCs and natural attenuation parameters (nitrate, chloride, sulfate, dissolved organic carbon [DOC], and alkalinity) (FPM, May 2009).

The two wells that are sampled annually did not show any chlorinated VOC exceedances during the September 2008 sampling round. VC exceedances were reported in samples collected from twelve wells located throughout the SD052-01 (Apron 2 OU) area, upgradient on SD052-01 (Apron 2 OU) and downgradient near Six Mile Creek. The VC exceedances ranged from 2.02 to 49.6 µg/L. A TCE exceedance was also reported at 782VMW-105B (23.9 µg/L), which is located in the most upgradient portion of the plume. cis-1,2-DCE exceeded the NYSDEC Groundwater Standard at two upgradient monitoring wells at 14 and 42 µg/L.

VC, cis-1,2-DCE, and TCE results (concentrations) from December 2008 were similar to the September 2008 results. However, two monitoring wells that showed VC and/or DCE exceedances in the September 2008 sampling round were not detected during the December 2008 sampling round. The concentrations of the VC exceedances ranged from 6.67 µg/L to 50.9 µg/L (11 monitoring wells). A TCE exceedance was reported at 782VMW-105B (24.7 µg/L) and the concentrations of the cis-1,2-DCE exceedances ranged from 18.9 µg/L to 42.8 µg/L (three monitoring wells).

Surface Water sample locations did not show any chlorinated VOC exceedances of NYSDEC Class C Surface Water Standards in either round.

4.3.1.1.3 ROD Requirements

The ROD for the SD052-01 (Apron 2 OU) was issued by the Air Force in December 2008 and signed by the USEPA in March 2009 which addresses the groundwater contamination at the site. Based on the previous investigations and environmental conditions at the site, the selected remedy includes:

- MNA including groundwater and surface water monitoring to verify that human health and the environment are protected.
- Implementation of the contingency alternative, such as a horizontal air sparging barrier (or other action agreed upon by the Air Force, EPA, and NYSDEC), if surface water samples from Six Mile Creek contain elevated concentrations of VC that could be attributed to site groundwater.
- LTM of the groundwater plume will be performed. The contaminant level variations will be monitored with quarterly monitoring of VOCs for the first year and semi-annually thereafter. A higher monitoring frequency is selected for the first year to identify seasonal fluctuations and uncertainties within the plume.
- Institutional controls in the form of deed restrictions for affected groundwater will also be implemented.

The RAOs specified in the ROD consist of:

- Achieve the cleanup goals for 1,2-DCE, TCE, and VC (5 µg/L, 5 µg/L, and 2 µg/L, respectively).
- Prevent human exposure to groundwater through groundwater use restrictions until cleanup goals are achieved.
- Prevent contaminated groundwater from the site from adversely impacting surface water (in Six Mile Creek), which is defined as surface water concentrations above performance indicators (NYSDEC Class GA Groundwater Quality Standard of 2 µg/L for VC).
- Prevent development and use of the property for residential housing, elementary and secondary schools, childcare facilities and playgrounds.

SVI contamination at this site will be addressed in the SD052-01 (Apron 2 Chlorinated Plume Site [Buildings 785 and 786]) and SD052-02 (Building 775 Site [Buildings 774 and 776]) SVI ROD which is pending.

4.3.1.1.4 Land-Reuse Zoning

The GLDC, which is the Griffiss LRA, designated the site for industrial/ commercial (manufacturing/ airfield and related services) use. The City of Rome adopted the LRA's zoning designation in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.3.1.1.5 Post-ROD Activities

PM sampling at the SD052-01 (Apron 2 OU) was performed quarterly in March 2009 and June 2009 at thirteen monitoring wells (AP2MW-3, 782VMW-76, -78, -81, -84, -84D, -93, -100, -101, 105B, -121, -121D and 782MW-10) and three surface water locations (782SW-115, -118 and -119). The sampling locations are illustrated in Figure 21. Following the Summer 2009 Annual PM Report (FPM, November 2010), sampling frequency was optimized to semi-annual (Spring and Fall) from September 2009 through September 2013, while monitoring wells AP2MW-3 and 782VMW-84D were optimized to annual (Fall) sampling. As recommended in the Spring 2013 Annual PM Report (FPM, July 2014), the sampling frequency was optimized to annual (beginning in Sept. 201 3) for all monitoring wells and surface water samples. Anions and alkalinity analysis was also eliminated from the sampling network. The samples are currently analyzed for VOCs and DOC.

Annual LUC/IC inspections have also been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.3.1.2 Data Review and Analysis

Results indicate chlorinated VOCs remain above NYSDEC Groundwater Standards (FPM, March 2015). However, data shows that dechlorination is occurring at the site based on the decreasing trend in TCE and stable/increasing trends in cis-1,2-DCE and VC as summarized below.

- TCE exceedances were reported at 782VMW-105B in 2010, 2011, 2012, 2013, and 2014. The concentrations were 34.8 µg/L, 43.6 µg/L, 22.3 µg/L, 25.5 µg/L, and 11.6 µg/L, respectively.

- cis-1,2-DCE exceedances were detected in samples from three monitoring wells (782VMW-78, -81, and 782MW-10). Current data shows that cis-1,2-DCE concentrations are stable to slightly increasing at all three locations. The highest cis-1,2-DCE exceedances were all reported in monitoring well 782VM-78 during the 2010, 2011, 2012, 2013, and 2014 PM events. The concentrations were 46.0 µg/L, 56.9 µg/L, 46.7 µg/L, 45.7 µg/L, and 51.0 µg/L, respectively.

- VC exceedances were reported at ten monitoring wells (782VMW-76, -78, -81, -84, -84D, -96, -101, -121, -121D and 782MW-10). Current data shows that VC concentrations are stable to slightly decreasing. The highest VC exceedances per year were as follows:
    - 2010 – 48.6 µg/L at 782VMW-93
    - 2011 – 45.9 µg/L at 782VMW-93
    - 2012 – 45.8 µg/L at 782VMW-96
    - 2013 – 63.7 µg/L at 782VMW-96
    - 2014 – 35.6 µg/L at 782VMW-96

One trans-1,2-DCE exceedance was reported in 782VMW-78 in 2011, the only exceedance for this compound. Surface Water sample locations showed only minor chlorinated VOC detections. All detections were more than one order of magnitude below the NYS Surface Water Standard.

4.3.1.3 Site Inspection

The site inspection was conducted on September 9, 2014 which confirmed that the SD052-01 (Apron 2 OU) remedy has been implemented and is currently protective of human health and the environment. The site is used for industrial/commercial purposes and consists of open space, an aircraft apron, and several aircraft hangars. Land use has not changed has the previous five-year review and adjacent facilities use the municipal water supply. Monitoring wells are also present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site. The completed five-year review checklist is provided in Appendix A.

4.3.1.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.3.1.4.1 Remedy Functionality

The selected remedy at the site is MNA and LUC/ICs. PM data indicates that the estimated TCE mass has decreased. In addition, the Demonstration of Remedial Actions Operating Properly and Successfully was finalized in June 2013. In this document, the Air Force concluded that the remedy implemented at the site is operating properly and successfully consistent with the provisions of CERCLA, 120(h)(3)(B (Ecology and Environment Engineering, P.C. [EEEPC], August 2013).

The SD052-01 (Apron 2 OU) is located in three parcels, Parcel A2, Parcel F6B, and Parcel F4A/F12A. All parcels have been transferred. The LUC/ICs which satisfy the ROD were implemented as deed restrictions in the deed for this property. The following summarizes the LUC/ICs provided in the deed for Parcel F4A/F12A:

1. The grantee, its successors and assigns shall be prohibited from accessing or otherwise disturbing or causing exposure to subsurface soils or consuming or otherwise using or causing exposure to the underlying groundwater.
2. The grantee is prohibited from extraction, utilization, or consumption of any water from the aquifer below the surface of the ground unless the water has been tested and found to meet all applicable standards and such owner obtains the prior written approval from the NYSDOH.
3. The grantee is prohibited from managing the aquifer in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment.
4. Activities by the grantee and its successors and assigns shall not disturb the integrity or effectiveness of the grantor's actions to complete closure of the environmental sites.

The following summarizes the LUC/ICs provided in the deed for Parcel A2 and Parcel F6B:

1. The Grantee shall not engage in, or allow others to engage in, activities that will disturb, move, damage, tamper with, interfere with any wells, operating remedial system, or infrastructure associated with such wells or remedial system located on the Property or with the Grantor's operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of any remedial action performed pursuant to CERCLA to address environmental contamination on the Property.
2. The Grantee shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundaries of the Property unless such owner or occupant obtains the prior written approval from the NYSDOH.
3. The Grantee shall not develop or use the portions of the Property for residential housing, elementary or secondary schools, childcare facilities, or playgrounds unless prior written approval is received from the Air Force, USEPA, and NYSDEC.
4. With respect to any excavations in the portions of the Property, the Grantee shall restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface until cleanup goals are achieved and have been confirmed through sample results as defined in the applicable ROD(s) and pursuant to the joint EPA/DOD Guidance on Streamlined Site Closeout and National Priority List Deletion Process.
5. With respect to risks that may be posed by indoor air contamination from chemicals volatilizing from groundwater (vapor intrusion) in the portions of the Property identified as SD-52-01 On Base Groundwater Contamination Apron 2 Operable Unit, the Grantee shall conduct either (a) construction of new buildings within the sites in a manner that will mitigate unacceptable risk under CERCLA and the NCP; or (b) an evaluation of the potential for unacceptable risk prior to the erection of any structure in the Groundwater Restriction Area. If an evaluation discloses unacceptable risk under CERCLA and the

NCP, then the Grantee shall include mitigation of the vapor intrusion in the design/construction of the structure. Grantee shall provide any such evaluation to, and coordinate any such mitigation with, the USEPA and NYSDEC. The slabs of Buildings 785 and 786 shall not be compromised without the prior written approval of USEPA, NYSDEC and the Air Force. The Grantee may demolish Buildings 785 and 786 at its discretion.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. LUC/ICs have also been implemented to further prevent potential exposures to the public and are verified by annual site inspections.

4.3.1.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. Exceedances of NYSDEC groundwater standards at the site show that exposure assumptions documented in the On-base Groundwater AOC ROD are still applicable. Remedial actions, as described in the ROD, were implemented. As a result, annual PM is conducted to monitor the natural attenuation occurring at the site. The assumptions for ecological risks are also still valid.

In addition, the previous soil, surface water and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (June 1998).

4.3.1.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Per the Spring 2013 Annual PM Report (FPM, July 2014), groundwater and surface water at SD052-01 (Apron 2 OU) are currently analyzed for VOCs and DOC annually. In addition, the Operating Properly and Successfully status was granted to SD052-01 (Apron 2 OU) since the MNA remedy meets the RAOs established in the April 2009 ROD and appears to be protective of human health and the environment (EEEPC, August 2013).

4.3.1.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.3.1.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD052-01 (Apron 2 OU) is protective of human health and the environment.

4.3.2 SD052-02 (Building 775 Operable Unit)

4.3.2.1 Document Review

4.3.2.1.1 Site History

The SD052-02 (Building 775 OU) is located downgradient to the south of former maintenance facilities in Building 774 and 776, and former fuel pump house Building 775. Although the source has not been identified, solvent use in Building 774 was thought to be a primary source of TCE contamination. Solvent use was widespread in these facilities in the 1950s, 1960s and early 1970s. The primary contaminant exceeding NYSDEC Groundwater Standards is TCE with minor detections of 1,1,1-TCA and PCE.

The groundwater flow beneath the site is predominantly to the southwest with a slight southerly component in localized areas. The average depth to groundwater is about 60 ft. The water table exhibits a very low hydraulic gradient (0.005 ft/ft) across the site, with an even lower gradient (0.001 ft/ft) to the northeast between the Nose Dock area and the northeast edge of SAC Hill. Figure 22 illustrates the SD052-02 (Building 775 OU) location and LUC/ICs as required by the ROD.

4.3.2.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

The 1993 and 1994, quarterly sampling analysis indicated the presence of TCE, acetone, and chloroform in groundwater from wells around Building 773, and PCE was detected in wells around the site. Acetone was detected in four wells and exceeded cleanup goals in one well. Benzene was detected in four wells and only marginally exceeded cleanup goals in those four wells. Xylenes were detected only once marginally above the cleanup goal. Chloroform, detected in five wells, exceeded cleanup goals in only one well. Methylene chloride marginally exceeded cleanup goals in all six wells. Building 774 was identified as a TCE storage area and subsequent soil gas and Geoprobe® samples found widespread TCE contamination in the vicinity of, and downgradient of, Buildings 774 and 775. PCE was detected in five wells and marginally exceeded cleanup goals in two wells. TCE was detected in five wells and exceeded cleanup goals in the SD052-02 (Building 775 OU) wells only. Two wells were sampled during the RI in 1994, 773MW-2 and 775MW-3. TCE was detected in 775MW-3 and PCE was detected in 773MW-2 at levels above cleanup goals.

In 1994, as part of the RI, a baseline human health risk assessment was conducted to evaluate current and future potential risks to human health and the environment associated with contaminants found in the groundwater at the SD052-02 (Building 775 OU). The human health risk assessment determined that site COCs in groundwater are within the acceptable target risk range (LAW, December 1996). However, the downgradient edge of this plume commingles with the Landfill 6 Chlorinated Plume and serves as a source to the Landfill 6 plume (SD052-04

Landfill 6 OU). An ecological baseline risk assessment was not performed at the site as ecological receptors did not have access to the groundwater at the site (Law, December 1996).

The 1997 SI involved the resampling of wells 773MW-1, -2, and -3, and well 775MW-2, and the installation and sampling of seven new wells downgradient (southwest) of Buildings 775/774. Well 775MW-1 could not be resampled because the submersible pump did not function, and well 775MW-3 could not be resampled because the well casing was broken and the well was filled with sand. The seven new wells installed and sampled during the SI are: 775MW-6 and vertical profile wells 775VMW-4, 775VMW-5, 775VMW-7, 775VMW-8, 775VMW-9 and 775VMW-10. TCE was detected in all wells sampled during the SI wells at levels ranging from 2.9 to 100 µg/L except 773MW-2, 773MW-3, and 775VMW-9. Two other analytes were detected at concentrations exceeding cleanup goals: chloroform, and PCE. Each was detected in one well and only marginally exceeded cleanup goals (E&E, July 1998).

An additional investigation was conducted in spring 2000 in order to define the vertical and lateral extent of the SD052-02 (Building 775 OU) plume (E&E, October 2000). Additional wells were installed farther downgradient to determine if this plume is connected to the adjacent Landfill 6 plume. A total of 13 new wells were installed and sampled and 19 boreholes were drilled and vertically profiled and included 104 Hydropunch® samples. Eight pre-existing wells were also sampled. Three contaminants were detected at levels exceeding cleanup goals in the groundwater samples collected from the Building 775 wells: 1,2-DCE, which was detected in one of 21 wells at a concentration of 1.14 µg/L exceeding cleanup goals in 775VMW-18R; TCA, which was detected in 10 of 21 wells at concentrations ranging from 0.23 µg/L to 7.1 µg/L and exceeded cleanup goals in one well, 775VMW-22; and TCE, which was detected in 12 of 21 wells at concentrations ranging from 0.429 µg/L to 218 µg/L and exceeded cleanup goals in seven wells, 775MW-2, 775VMW-5, 775MW-6, 775VMW-7, -8, -10, and -16. Vertical profiling data indicate that the source area for the SD052-02 (Building 775 OU) site is the area around former Buildings 773 and 775 and current Building 774. The contamination has traveled both laterally, approximately 1,000 ft to the south/southwest, and vertically, a total of 120 ft downward from the surface (including 60 ft through vadose and 60 ft through the water table to the top of bedrock). The width of the plume is approximately 500 ft in the source area and 800 ft in the leading edge. These data indicate that the leading edge of the SD052-02 (Building 775 OU) plume appears to merge or nearly merges with the base of the Landfill 6 plume.

A Bedrock Groundwater Study for the SD052-02 (Building 775 OU) conducted in 2002 consisted of the installation of two new downgradient bedrock wells (775MW-20RBr and 775MW-22Br) and three new overburden monitoring wells (775MW-20, -20D, and -22D). Overburden well 775MW-20 was installed in the most contaminated portion of the plume, based on the Landfill 6 and SD052-02 (Building 775 OU) groundwater study results (E & E, August 2002). The other two overburden wells (775MW-20D and -22D) were installed in the till zone beneath the overlying silty fine sands and underlying bedrock. This zone was determined to be thicker than originally suspected; therefore, wells were screened in this zone to determine the presence or absence of contamination. An upgradient bedrock well was not installed because the SD052-01 (Apron 2 OU) is upgradient of this plume. Groundwater was collected and sampled for VOCs, MEE, anions, and DOC from each of the wells. Based on analytical results,

groundwater contamination observed in the overburden aquifer does not appear to have migrated downward into the underlying till zone or bedrock.

Groundwater sampling was conducted at the site in September 2004. The maximum TCE concentration was 134 µg/L (detected at well 775MW-20, located near the leading edge of the plume near Perimeter Road). TCE was detected at 132 µg/L in well 775VMW-10, which is also located near the leading edge of the plume near Perimeter Road. TCE in both of these wells was detected in the bottom half of the sandy aquifer in screened intervals from 88 to 120 ft bgs. Monitoring well 775VMW-5, located near the corner of Building 776, is the only well in the maintenance area that contains significant levels of TCE (99 µg/L).

The FS for SD052-02 (Building 775 OU) was completed in 2005. The FS, which is an engineering study, was prepared to provide information on all possible alternatives for the AF, USEPA, and NYSDEC to determine the preferred alternative. The FS concluded that groundwater extraction and groundwater sampling to be protective of human health and the environment (E&E, April 2005). The FS was approved by the USEPA and NYSDEC before being released as a final document.

Baseline sampling was performed at Building 775 site in November 2006. Groundwater samples were collected at nine monitoring wells and analyzed for VOCs. TCE was the only VOC detected at concentrations above the NYSDEC Groundwater Standards. The TCE concentrations ranged from 15 µg/L to 81.2 µg/L.

The groundwater extraction and discharge system was started in January 2009 (FPM, January 2010). The groundwater extraction system is designed to contain the contaminated plume (> 50 µg/L) and extract the contaminants from the aquifer. Initially, one extraction well (775EW-1) was installed but deemed inappropriate for groundwater extraction. It was replaced by a replacement extraction well (775EW-1R) and an additional extraction well (775EW-3). 775EW-1 was completed as a monitoring well. 775EW-1R and -3 were connected with a force main and the extracted contaminated groundwater is discharged to the existing sanitary sewer system for treatment at the City of Rome Water Pollution Control Facility. The initial extraction pump rate was 4 gallons per minute (gpm).

PM sampling was performed following the installation and final testing and operation of the groundwater extraction system. The first sampling round was performed in January 2009 following extraction and discharge system start-up. The results indicated only one VOC exceedance (TCE), which reported at seven monitoring wells ranging from 5.18 to 64.7 µg/L (FPM, November 2009).

4.3.2.1.3 ROD Requirements

The ROD for the SD052-02 (Building 775 OU) was issued by the Air Force in December 2008 and signed by the USEPA in March 2009 which addresses the groundwater contamination at the site. Based on the previous investigations and environmental conditions at the site, the selected remedy includes:

- Installation of recovery wells to extract the groundwater from the Building 775 plume.
- The groundwater will be discharged to a sanitary sewer for off-site treatment at a wastewater treatment facility or treated on site and discharged to Three Mile Creek.
- Long-term maintenance of the treatment system that will require sampling of the influent and effluent VOC concentrations prior to discharge.
- Treatment PM during full-scale implementation.
- Institutional controls in the form of deed restrictions for affected groundwater have been/will be implemented.

The selected remedy is expected to reduce the levels of VOC contamination in groundwater to levels below NYSDEC Groundwater Standards. The monitoring is currently assumed to be required for 20 years (10 years during O&M of the extraction and treatment system and 10 years of LTM). The remedy was implemented and summarized in the Final IRA Completion Report was issued in August 2011 (EEEPC, August 2011).

The RAOs specified in the ROD consist of:

- Achieve the cleanup goals for TCE (5 µg/L).
- Prevent human exposure to groundwater through groundwater use restrictions until cleanup goals are achieved.
- Prevent contaminated groundwater from the site from adversely impacting surface water (in Three Mile Creek), which is defined as surface water concentrations above performance indicators (NYSDEC Class GA Groundwater Quality Standards of 5 µg/L for DCE and 2 µg/L for VC).
- Prevent development and use of the property for residential housing, elementary and secondary schools, childcare facilities and playgrounds.

SVI contamination at this site will be addressed in SVI at SD052-01 (Apron 2 Chlorinated Plume Site [Buildings 785 and 786]) and SD052-02 (Building 775 Site [Buildings 774 and 776]) ROD which is pending.

4.3.2.1.4 Land-Reuse Zoning

The GLDC, which is the Griffiss LRA, designated the site for light industrial use. The City of Rome adopted the LRA's zoning designation in 1998. The land-reuse zoning for the Griffiss AFB is illustrated on Figure 3.

4.3.2.1.5 Post-ROD Activities

PM sampling at the SD052-02 (Building 775 OU) was performed quarterly in April 2009 and June 2009 at twelve monitoring wells (775VMW-4, -5, -8, -9, -10, -19R, -20R, 775MW-6, -20, -27, -28 and EW-1) and at the SD052-02 (Building 775 OU) groundwater extraction and discharge system (EF-1). The sampling locations are illustrated in Figure 22. Following the Summer 2009 Annual PM Report (FPM, November 2010), sampling frequency was optimized to semi-annual (Spring and Fall) from September 2009 through September 2013, while monitoring wells 775VMW-4, -9 and 775MW-7 were optimized to annual (Fall) sampling. As

recommended in the Spring 2013 Annual PM Report (FPM, July 2014), the sampling frequency was optimized to annual (Beginning in September 2013) for all monitoring wells except monitoring wells 775EW-1, 775VMW-9, -19R and -20R which were reduced to biennial sampling. All samples are analyzed for VOCs.

The groundwater extraction and discharge system was inspected monthly to monitor system performance starting in 2010. In addition, effluent samples were collected quarterly from 2009 to 2014 and analyzed for VOCs. The discharge rate is approximately 3 gpm. Discharge of the groundwater is to an off-site treatment facility under a discharge permit through the City of Rome (Permit number GAFB-775-1). As of October 2014, a total 9,433,304 gallons of groundwater have been removed from the site.

Annual LUC/IC inspections have been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.3.2.2 Data Review and Analysis

The PM results indicate that one chlorinated VOC remains above NYSDEC Groundwater Standards at the site (FPM, March 2015). TCE exceedances were reported for eight monitoring wells (775VMW-4, -5, -8, -9, -10, 775MW-6, -20 and -27). Current data shows a site-wide stabilization of TCE concentrations at the site. The highest TCE exceedances per year were as follows:

- 2010 – 71.7 µg/L at 775VMW-5
- 2011 – 79.2 µg/L at 775VMW-5
- 2012 – 62.8 µg/L at 775VMW-5
- 2013 – 53.1 µg/L at 775VMW-5
- 2014 – 62.1 µg/L at 775VMW-20

The effluent TCE result was 39.3 µg/L in June 2014 which indicates the groundwater extraction and discharge system is removing TCE contamination from the site.

4.3.2.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SD052-02 (Building 775 OU) remedy has been implemented and is currently protective of human health and the environment. The site is used for industrial/commercial purposes and consists of open space, parking lots, and several office buildings. Land use has not changed since the previous five-year review and adjacent facilities use the municipal water supply. Monitoring wells are also present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site. The completed five-year review checklist is provided in Appendix A.

4.3.2.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.3.2.4.1 Remedy Functionality

The SD052-02 (Building 775 OU) groundwater extraction and discharge system is operating as designed. After initial fine tuning, the system is operating at its design pump rate of 3 gpm. The effluent sample results show that TCE is being effectively extracted from the site. Additional PM results show a stable TCE trend throughout the site. In addition, the Demonstration of Remedial Actions Operating Properly and Successfully was finalized in June 2013. In this document, the Air Force concluded that the remedy implemented at the site is operating properly and successfully consistent with the provisions of CERCLA, 120(h)(3)(B (EEEPC, June 2013).

LUC/ICs were implemented in the property transfer deeds as specified in the ROD. The SD052-02 (Building 775 OU) is within four parcels (Parcels F2C, F4B, F6B, and F11B). All parcels have been transferred and the LUC/ICs were implemented as deed restrictions.

The deed for Parcel F2 includes the following deed restrictions which satisfy the ROD:

1. The grantee covenants to restrict the use of the property to industrial, educational and commercial non-residential activities unless it obtains written permission to do so from the USEPA, NYSDEC, and NYSDOH.
2. The grantee covenants that it will not engage in any activities that will disrupt required RI, response actions or oversight activities, should any be required on the property. The grantor agrees to coordinate its remediation activities with the grantee so as not to unreasonably disrupt use of the property by the grantee.
3. The grantee covenants not to extract, utilize, consume or permit any extraction, use, consumption, of any water from the aquifer below the surface of the ground on the property unless the groundwater has been tested and found to meet all applicable standards and the grantee first obtains the prior written approval from NYSDOH. The grantee further covenants to ensure that the aquifer will not be used in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment. The grantee and its successors and assignees covenant to comply with all applicable federal and state laws and regulations with regard to activities affecting the groundwater in the aquifer.

The deed for Parcel F4B includes the following deed restrictions which satisfy the ROD:

1. The grantee covenants and agrees that it will not spread or exacerbate environmental contamination or open exposure pathways to humans or the environment, and that it will not disrupt environmental investigations and remedial activities, or jeopardize the protectiveness of such remedies.
2. The transaction documents will restrict property use to industrial and commercial non-residential use unless permission is obtained from the USEPA, NYSDEC, and NYSDOH.
3. The grantee covenants not to extract, utilize, consume or permit any extraction, use, consumption, of any water from the aquifer below the surface of the ground on the property unless the groundwater has been tested and found to meet all applicable standards and the grantee first obtains the prior written approval from NYSDOH. The grantee further covenants to ensure that the aquifer will not be used in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment. The grantee and its successors and assignees covenant to comply with all applicable federal and state laws and regulations with regard to activities affecting the groundwater in the aquifer. The grantee will bear all costs associated with obtaining use of such water, including the cost of studies, analysis or remediation, without any cost whatsoever to the grantor.

The deed for Parcel F6B and F11B includes the following deed restrictions which satisfy the ROD:

1. The Grantee shall not engage in, or allow others to engage in, activities that will disturb, move, damage, tamper with, interfere with any wells, operating remedial system, or infrastructure associated with such wells or remedial system located on the Property or with the Grantor's operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of any remedial action performed pursuant to CERCLA to address environmental contamination on the Property.
2. The Grantee shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundaries of the Property unless such owner or occupant obtains the prior written approval from the NYSDOH.
3. The Grantee shall not develop or use the portions of the Property for residential housing, elementary or secondary schools, childcare facilities, or playgrounds unless prior written approval is received from the Air Force, USEPA, and NYSDEC.
4. With respect to any excavations in the portions of the Property, the Grantee shall restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface until cleanup goals are achieved and have been confirmed through sample results as defined in the applicable ROD(s) and pursuant to the joint EPA/DOD Guidance on Streamlined Site Closeout and National Priority List Deletion Process.

As identified above, the selected remedy is functioning as intended, in a manner that ensures protectiveness. LUC/ICs have been implemented to further prevent potential exposures to the public and are verified by annual site inspections.

4.3.2.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. Exceedances of NYSDEC Groundwater Standards at the site show that exposure assumptions documented in the On-base Groundwater ROD are still applicable. Remedial actions, as described in the ROD, were implemented. As a result, annual PM was initially conducted to determine whether the remedy is still protective. The assumptions for ecological risks are also still valid.

In addition, the previous soil, surface water and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (June 1998).

4.3.2.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Following recommendations made in the Spring 2013 Annual PM Report (FPM, July 2014), groundwater at SD052-02 (Building 775 OU) is analyzed for VOCs annually and biennially for certain wells. Additionally, quarterly effluent sampling will continue to fulfill the requirements of the discharge permit. In addition, the OPS status was granted to SD052-02 (Building 775 OU) since the groundwater extraction and discharge system remedy meets the RAOs established in the April 2009 ROD and appears to be protective of human health and the environment (EEEPC, June 2013).

4.3.2.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.3.2.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD052-02 (Building 775 OU) is protective of human health and the environment.

4.3.3 SD052-04 (Landfill 6 Operable Unit)

4.3.3.1 Document Review

4.3.3.1.1 Site History

The SD052-04 (Landfill 6 OU) is located downgradient to the west of the former Landfill 6. The most contaminated portion of the SD052-04 (Landfill 6 OU) plume is located southwest of the landfill beneath the floodplain of Three Mile Creek. Based on PM results, VOC contaminants associated with the SD052-04 (Landfill 6 OU) have not migrated to the creek. The contaminants exceeding NYSDEC Groundwater Standards are TCE, cis-1,2-DCE, trans-1,2-DCE, and VC. Figure 23 illustrates the SD052-04 (Landfill 6 OU) site location and LUC/ICs as required by the ROD.

4.3.3.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

At Landfill 6, the RI results showed that LF6MW-2 was contaminated with cis-1,2-DCE (170 µg/L) and VC (30 µg/L) (Law, December 1996). Both chlorinated VOCs are products of the reductive dechlorination of TCE and because the well is hydraulically downgradient of the landfill, it may have been contaminated either as the result of spills or discharges of TCE upgradient or by disposal in the landfill. Localized low concentrations of aldicarb and benzene were also detected but do not constitute a plume.

In 1994, as part of the RI, a baseline human health risk assessment was conducted to evaluate current and future potential risks to human health and the environment associated with contaminants found in the groundwater at the Landfill 6 Chlorinated Plume site. The results of the human health risk assessment indicated that the potential risk of COCs in groundwater would be reduced substantially if groundwater was not used for drinking water purposes. An ecological baseline risk assessment was not performed at the site as ecological receptors did not have access to the groundwater at the site.

The SI involved direct push borings and analysis of groundwater. Because Geoprobe® results were nondetect in all cases, the new well, LF6VMW-6, was placed within 200 ft directly downgradient of LF6MW-2 and screened across the interval (35 to 45 ft bgs) that showed the highest level of chlorinated solvents (i.e., 27 µg/L TCE) in Hydropunch® samples collected during drilling. This well was then sampled, and existing wells LF6MW-1, LF6MW-2, TMC-USGS-3, and TMCMW-9 were resampled. Analyses of the resampling data confirmed that cis-1,2-DCE (total) (83 µg/L) and VC (20 µg/L) in LF6MW-2 exceed cleanup goals. LF6VMW-6 had 180 µg/L of 1,2-DCE, 26 µg/L TCE, and 29 µg/L VC, indicating that there is no obvious decline in concentration in the southwest (E&E, July 1998).

A groundwater study was performed in spring 2000 at Landfill 6 to define the vertical and lateral extent of the SD052-04 (Landfill 6 OU). The investigation consisted of drilling and vertically profiling 16 boreholes, including 105 Hydropunch® samples, the installation and sampling of eight new wells, and the sampling of two preexisting Landfill 6 wells and two preexisting Three Mile Creek wells. The SD052-04 (Landfill 6 OU) contamination plume was delineated both vertically and horizontally using Hydropunch® data. Three chlorinated solvents were detected at levels exceeding cleanup goals in the Hydropunch® samples: cis-1,2-DCE, which was detected in eight of 16 boreholes with a maximum concentration of 983 µg/L in LF6VMW-12; TCE, which was detected in nine of 16 boreholes with a maximum concentration of 1,587 µg/L in LF6VMW-12; and VC, which was detected in one of 16 boreholes with a maximum concentration of 8.4 µg/L in LF6VMW-11.

Three contaminants were detected at levels exceeding cleanup goals in the groundwater samples collected from the Landfill 6 wells during the spring 2000 investigation: cis-1,2-DCE, which was

detected in four of 12 wells with concentrations ranging from 0.254 µg/L to 35.4 µg/L and at levels exceeding cleanup goals in three wells, LF6MW-2, LF6VMW-6, and LF6VMW-11; TCE, which was detected in 3 of 12 wells, with concentrations ranging from 0.864 µg/L to 26.3 µg/L and at levels exceeding cleanup goals in two wells, LF6VMW-6, and LF6VMW-11; and VC, which was detected in 3 of 12 wells with concentrations ranging from 0.247 µg/L to 6.21 µg/L and at levels exceeding cleanup goals in one well, LF6VMW-6. The COC concentrations in the spring 2000 samples were lower than the 1997 SI samples from the same wells. This decrease in contaminant concentration appears to correspond with the direction of groundwater flow and expected plume migration.

A Bedrock Groundwater Study for Landfill 6 conducted in 2002 consisted of the installation of two new downgradient bedrock wells (LF6MW-12RBr and LF6MW-14Br) and one new overburden monitoring well (LF6MW-12) at the most contaminated portion of the plume, based on the Landfill 6 and SD052-02 (Building 775 OU) groundwater study results (E&E, August 2002). An upgradient well was not installed because the SD052-02 (Building 775 OU) groundwater plume is immediately upgradient of the Landfill 6 plume. Groundwater was collected and sampled for VOCs, MEE, anions, and DOC from each of the wells. Based on analytical results, groundwater contamination observed in the overburden aquifer does not appear to have migrated downward into the underlying bedrock.

Groundwater sampling was conducted in March 2004, the maximum TCE concentration was 2,140 µg/L and the maximum DCE concentration was 346 µg/L. Both of these maximums were detected in wells located within a 1,600-square-foot area centered around well LF6MW-12.

The FS for SD052-04 (Landfill 6 OU) was completed in 2005. The FS, which is an engineering study, was prepared to provide information on all possible alternatives for the AF, USEPA, and NYSDEC to determine the preferred alternative. The FS concluded that groundwater extraction and groundwater sampling to be protective of human health and the environment (E&E, April 2005). The FS was approved by the USEPA and NYSDEC before being released as a final document.

FPM sampled the SD052-04 (Landfill 6 OU) in November 2006 in accordance with the final Baseline Letter WP (FPM, November 2006). FPM sampled six monitoring wells which were analyzed for VOCs, sulfate, DOC, and MEE. Field parameters collected were Oxygen Reduction Potential (ORP), oxygen, and pH. EEEPC installed and sampled seven new monitoring wells. The samples collected by EEEPC were analyzed for VOCs only. Results confirmed significant cis-1,2-DCE and TCE detections exceeding the NYSDEC Groundwater Standards in a relatively small area centered around LF6MW-12.

A groundwater sampling event was performed from February through April 2007. Five additional temporary wells at SD052-04 (Landfill 6 OU) (LF6TW-33 through -38) were installed in February 2007 and sampled in April 2007. The results showed a relatively low concentration TCE contamination plume with a smaller central area (hot spot) with much higher TCE concentrations. This hot spot is an approximately 1,600-sq. ft. area around monitoring wells LF6MW-12, -16, -17, and -20).

The vegetable oil injection was performed at injection wells LF6IW-01, -02, -03, -04, and -05 in July 2008. These injection wells are located in a cluster slightly upgradient of the cluster of monitoring wells at the hot spot (LF6MW-12, -16, -17, and -20). A total volume of 4,457 gallons of water were injected with a total of 104 gallons vegetable oil, 48 gallons of lactate, and 68 gallons of buffer solution (E&E, October 2009).

PM sampling was performed in September 2008 and January 2009. Groundwater samples were collected at the eight monitoring wells and five temporary wells. TCE exceedances were reported for nine monitoring wells in both rounds with concentrations ranged from 18.6 µg/L to 1,000 µg/L in September 2008 and from 32.7 µg/L to 722 µg/L in January 2009. cis-1,2-DCE exceedances were reported for nine wells in September 2008 and ten wells in January 2009 with concentrations ranging from 16.4 µg/L to 324 µg/L in September 2008 and from 5.34 µg/L to 396 µg/L in January 2009. trans-1,2-DCE exceedances were reported for three wells in September 2008 and five wells in January 2009 with concentrations ranging from 28.5 µg/L to 75.5 µg/L in September 2008 and from 7 F µg/L to 60.2 µg/L in January 2009. The F data qualifier indicates that the analyte was positively identified above the method detection limit but below the RL (FPM, May 2009).

4.3.3.1.3 ROD Requirements

The ROD for the SD052-04 (Landfill 6 OU) was issued by the Air Force in December 2008 and signed by the USEPA in March 2009. Based on the previous investigations and environmental conditions at the site, the selected remedy includes:

- Bioremediation of the plume in the area exhibiting the highest COC concentrations.
- Installation of recovery wells to extract groundwater for recirculation, if necessary, based on review of the treatment system performance data. The remedy at the Landfill 6 TCE site will be implemented in a phased approach. First, bioremediation will occur and then groundwater extraction and recirculation will be implemented, if needed.
- Implementation of a contingency plan including an in-situ air sparge wall (or other action agreed upon by the Air Force, EPA, and NYSDEC), if elevated levels of DCE and/or VC attributable to site groundwater are detected in Three Mile Creek.
- Treatment PM during full-scale implementation.
- Implementation of LUC/ICs in the form of deed restrictions within the main landfill boundary and for affected groundwater.

The RAOs specified in the ROD consist of:

- Achieve the cleanup goals for 1,2-DCE, TCE, and VC (5 µg/L, 5 µg/L, and 2 µg/L, respectively).
- Prevent human exposure to groundwater through groundwater-use restrictions until cleanup goals are achieved.
- Prevent contaminated groundwater from the site from adversely impacting surface water (in Three Mile Creek), which is defined as surface water concentrations above performance indicators (NYSDEC Class GA Groundwater Quality Standards of 5 µg/L for DCE and 2 µg/L for VC).

- Prevent intrusive work or other activities that will impact the effectiveness of the landfill closure and post-closure activities.
- Prevent development and use of the property for residential housing, elementary and secondary schools, childcare facilities and playgrounds.

4.3.3.1.4 Land-Reuse Zoning

The GLDC, which is the Griffiss LRA, designated the site for low intensity open space use. This zoning designation was adopted by the City of Rome in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.3.3.1.5 Post-ROD Activities

In August 2010, an emulsion of 7,352 gallons of water, 490.8 gallons vegetable oil, and 312 gallons of buffer solution was injected at the site. An emulsion of 6,412 gallons of water, 672 gallons vegetable oil, and 101 gallons of buffer solution was injected again in October 2013. The injections were conducted at injection wells LF6IW-01 through -06 each event.

PM sampling at Landfill 6 was performed quarterly in April 2009 and July 2009 at eight monitoring wells (LF6VMW-13R, -13RD, -26, LF6MW-16, -17, -20, -31 and -39), five direct push wells (LF6TW-33, -34, -35, -36 and -38) and one surface water location (LF6-SW1PM). Additionally, data was used from the Landfill 6 Long Term Monitoring (LTM) program for monitoring well LF6MW-12. The sampling locations are illustrated in Figure 23. Following the Summer 2009 Annual PM Report (FPM, November 2010), sampling frequency was optimized to semi-annual (Spring and Fall) from September 2009 through April 2014. The samples were analyzed for VOCs and natural attenuation parameters (sulfate, DOC, and MEE).

Annual LUC/IC inspections have been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.3.3.2 Data Review and Analysis

Four chlorinated VOCs exceeded the NYSDEC Class GA Groundwater Standards on a regular basis; cis-1,2-DCE, trans-1,2-DCE, TCE, and VC (FPM, March 2015). A relatively small hot spot exists with high concentrations (approximately 1,000 µg/L for all three VOCs combined) with a larger surrounding VOC plume with concentrations at approximately 300 µg/L or below. The hot spot wells (LF6MW-12, -16, -17, and -20) concentrations are decreasing. Chlorinated VOC exceedances were also identified in wells LF6VMW-26, LF6TW-33, -34, -35, -36, and -38 at lower levels than the wells identified above. Data shows that dechlorination is occurring at the site based on the decreasing trend in TCE and stable/increasing trends in cis-1,2-DCE and VC as demonstrated below.

- TCE exceedances were reported at ten monitoring wells (LF6MW-12, -16, -17, -20, LF6VMW-26, LF6TW-33, -34, -35, -36, and -38). Current data shows that TCE concentrations are decreasing. The highest TCE exceedances per year were as follows:

- 2010 – 1,010 µg/L at LF6MW-16
- 2011 – 786 µg/L at LF6MW-16
- 2012 – 849 µg/L at LF6MW-16
- 2013 – 580 µg/L at LF6MW-16
- 2014 – 470 µg/L at LF6MW-12

- cis-1,2-DCE exceedances were reported at ten monitoring wells (LF6MW-12, -16, -17, -20, LF6TW-33, -34, -35, -36, and -38). Current data shows that cis-1,2-DCE concentrations are increasing/stable. The highest cis-1,2-DCE exceedances were reported at LF6MW-20 in 2010, 2011, 2012, 2013, and 2014. The concentrations were 2,230 µg/L, 1,430 µg/L, 699 µg/L, 465 µg/L, and 1,220 µg/L, respectively.

- trans-1,2-DCE exceedances were reported at ten monitoring wells (LF6MW-12, -16, -17, -20, and LF6TW-34). Current data shows that trans-1,2-DCE concentrations are decreasing. The highest trans-1,2-DCE exceedances were reported at LF6MW-20 in 2010, 2011, 2012, 2013, and 2014. The concentrations were 132 µg/L, 127 µg/L, 132 µg/L, 104 µg/L, and 79.8 µg/L, respectively.

- VC exceedances were reported at one monitoring well (LF6MW-12). The VC exceedances were reported in 2011, 2012, 2013, and 2014. The concentrations were 4.7 µg/L, µg/L, 4.1 µg/L, µg/L, and 29 µg/L, respectively.

Surface water sample locations showed only minor chlorinated VOC detections. All detections were more than one order of magnitude below the NYS Surface Water Standard.

4.3.3.3 Site Inspection

The site inspection was conducted on September 10, 2014 which confirmed that the SD052-04 (Landfill 6 OU) remedy has been implemented and is currently protective of human health and the environment. . The site is open space/forest which overlaps LF009 (Landfill 6 AOC) and land use has not changed since the previous five-year review. Monitoring wells are also present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site. The completed five-year review checklist is provided in Appendix A.

4.3.3.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.3.3.4.1 Remedy Functionality

The remedy has been implemented and the protectiveness is still under evaluation. The selected remedy for the site, vegetable oil injection, targeted monitoring wells which exhibited chlorinated VOC concentrations above 500 µg/L. Following the injection, statistical analysis of the groundwater sampling data indicates a decreasing trend in chlorinated solvent concentrations.

LUC/ICs were also implemented in the deed for Parcel F11B which includes SD052-04 (Landfill 6 OU) as well as LF009 (Landfill 6 AOC). The deed for Parcel F11B includes the following deed restrictions which satisfy the SD052-04 (Landfill 6 OU) ROD. It should be noted that the SD052-04 (Landfill 6 OU) ROD also included LUC/ICs associated with LF009 (Landfill 6 AOC) due to the close proximity of the two sites as specified below in bullet #5.

1. The Grantee shall not engage in, or allow others to engage in, activities that will disturb, move, damage, tamper with, interfere with any wells, operating remedial system, or infrastructure associated with such wells or remedial system located on the Property or with the Grantor's operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of any remedial action performed pursuant to CERCLA to address environmental contamination on the Property.
2. The Grantee shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundaries of the Property unless such owner or occupant obtains the prior written approval from the NYSDOH.
3. The Grantee shall not develop or use the portions of the Property for residential housing, elementary or secondary schools, childcare facilities, or playgrounds unless prior written approval is received from the Air Force, USEPA, and NYSDEC.
4. With respect to any excavations in the portions of the Property, the Grantee shall restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface until cleanup goals are achieved and have been confirmed through sample results as defined in the applicable ROD(s) and pursuant to the joint EPA/DOD Guidance on Streamlined Site Closeout and National Priority List Deletion Process.
5. Landfill Restriction. For the portion of the Property identified in LF009 (Landfill 6 AOC), the Grantee shall not allow vehicular traffic, digging, or ground-disturbing work within the restricted landfill boundary that may impact the effectiveness or integrity of the landfill closure and cap. The Grantor shall maintain the landfill cap and the signs warning of the restrictions and prohibitions on the boundary of the landfills.
6. With respect to risks that may be posed by indoor air contamination from chemicals volatilizing from groundwater (vapor intrusion) in the portions of the Property identified as SD-52-04 Landfill 6 On-Base, the Grantee shall conduct either (a) construction of new buildings within the sites in a manner that will mitigate unacceptable risk under CERCLA and the NCP; or (b) an evaluation of the potential for unacceptable risk prior to the erection of any structure in the Groundwater Restriction Area. If an evaluation discloses unacceptable risk under CERCLA and the NCP, then the Grantee shall include mitigation of the vapor intrusion in the design/construction of the structure. Grantee shall provide any such evaluation to, and coordinate any such mitigation with the USEPA and NYSDEC.

4.3.3.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. Exceedances of NYSDEC groundwater standards at site show that exposure assumptions documented in the On-base Groundwater ROD are still applicable. Remedial actions, as described in the ROD, were implemented. As a result, semi-annual PM is conducted to determine whether the remedy is still protective. The assumptions for ecological risks are also still valid.

In addition, the previous soil, surface water and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (June 1998).

4.3.3.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. Two additional injection events were performed in 2010 and 2013 as described in Section 4.3.3.1.5.

4.3.3.5 Recommendations and Follow-up Actions

There are no recommendations or follow-up actions for this site.

4.3.3.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD052-04 (Landfill 6 OU) is protective of human health and the environment.

4.3.4 SD052-05 (Building 817 Operable Unit)

4.3.4.1 Document Review

4.3.4.1.1 Site History

The SD052-05 (Building 817 OU) is located on the north side of the main runway between Building 817 and the culverted section of Six Mile Creek south of the former weapons storage area (WSA). Building 817 was once used for electronics parts maintenance, and TCE and PCE were solvents used in small quantities at this location.

The TCE and PCE contaminated aquifer is composed of relatively uniform fine sands that begin 5 ft bgs and extend to shale bedrock at approximately 20 to 25 ft bgs. Contamination is not found in the bedrock. Figure 24 illustrates the SD052-05 (Building 817 OU) site location and LUC/ICs as required by the ROD.

4.3.4.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

TCE detected in well LAWMW-9 (7.6 µg/L) during the RI indicated that this area could be a source of contamination. An SI was performed and three temporary monitoring wells were installed around this well. Only one temporary well, WSATW-6, which was located east of LAWMW-9, had low TCE levels (31 µg/L) and chloroform (9 µg/L) and PCE (7.5 µg/L). The source and aerial extent of the TCE contamination was not determined during the SI, and therefore, an additional SI was warranted.

The additional SI was conducted in spring 2000 to complete the lateral and vertical delineation of the contaminant plume. This investigation included 56 Geoprobe® samples at 36 locations and 13 of the 36 locations were vertically profiled. The COC include TCE, which was detected in 30 of 56 Geoprobes® with a maximum concentration and location of 98.5 µg/L in WSA-GP09I; PCE, which was detected in 20 of 56 Geoprobes® with a maximum concentration of 56.9 µg/L in WSA-GP04S; VC, which was detected in one of 56 Geoprobes® with a maximum concentration of 3.4 µg/L in WSA-GP1D; and benzene, which was detected in seven of 56 Geoprobe® with a maximum concentration of 1.7 µg/L in WSAGP04I. Because Building 817 is the only facility near the upgradient edge of the contaminant plume, the data obtained from the vertical profiling indicate that contaminants may have originated in its vicinity. The contamination has traveled both laterally (approximately 1,000 ft to the southwest) and vertically (25 ft downward to the top of bedrock). The width of the plume is approximately 250 ft. The SD052-05 (Building 817 OU) contamination plume is migrating southwest but has not reached the culverted section of Six Mile Creek. Based on the contaminant concentration distribution within the plume, contamination appears to have resulted from several spill or disposal events, creating several hot spots of contamination within the water column (one in the shallow zone centered around WSA-GP10S; two in the intermediate zone between WSA-GP09I and WSA-GP04I, and WSA-GP10I and WSA-GP02S; and one in the deep zone between WSA-GP04D and WSA-GP02I) (E&E, October 2000).

Since the three new monitoring wells (WSAMW-8, -9, and -10) were installed either close to or outside the plume area delineated by the Geoprobe® survey, none of the contaminants detected in the groundwater samples from the monitoring wells exceeded cleanup goals. The TCE concentration in the spring 2000 sample from LAWMW-9 (3.89 µg/L) was lower than the 1994 RI sample (7.6 µg/L) from the same well. This decrease in contaminant concentration corresponds with the direction of groundwater flow and expected plume migration.

A Bedrock Groundwater Study for SD052-05 (Building 817 OU) conducted in 2002 consisted of the installation of three new bedrock wells (WSA-MW12Br [upgradient], -MW13Br [downgradient], and -MW14Br [downgradient]) and one new overburden monitoring well (WSA-MW11). Bedrock groundwater was collected and sampled for VOCs, MEE, anions, and DOC from each of the bedrock wells. Based on analytical results, groundwater contamination

observed in the overburden aquifer does not appear to have migrated downward into the underlying bedrock (E&E, August 2002).

Groundwater sampling was conducted at the site in September 2004. The maximum TCE concentration was 90 µg/L and the maximum PCE concentration was 72 µg/L. Site groundwater flows south toward the culverted section of Six Mile Creek. The contaminated aquifer is composed of relatively uniform fine sands that begin 5 ft bgs and extend to shale bedrock at approximately 20 to 25 ft bgs. Contamination is not found in the bedrock. Groundwater velocities at this site have been estimated as high as 110 ft per year. The TCE/PCE plume does not contain other petroleum-based organics to stimulate reductive dechlorination. There is no significant cis-1,2-DCE in the plume.

The FS for SD052-05 (Building 817 OU) was completed in 2005. The FS, which is an engineering study, was prepared to provide information on all possible alternatives for the AF, USEPA, and NYSDEC to determine the preferred alternative. The FS concluded that groundwater extraction and groundwater sampling to be protective of human health and the environment (E&E, April 2005). The FS was approved by the USEPA and NYSDEC before being released as a final document.

In October/November 2006, FPM and EEEPC performed sampling at the SD052-05 (Building 817 OU) in accordance with the final Baseline Letter WP (FPM, November 2006). FPM sampled five monitoring wells. The samples were analyzed for the following parameters: VOCs, sulfate, DOC, and MEE. Field parameters collected were ORP, oxygen, and pH. EEEPC installed and sampled four monitoring wells and Parsons installed and sampled three. The samples collected by EEEPC and Parsons were analyzed for VOCs only. Results showed PCE (at six wells) and TCE (at eight wells) exceedances of the NYSDEC GA Groundwater Standards. PCE exceedances ranged from 5.6 to 53 J µg/L. The J data qualifier indicates that the analyte was positively identified, the quantitation is an estimation. TCE exceedances ranged from 5.01 to 68 µg/L.

Additional sampling was performed February 2007, to monitor the effect of an initial soybean oil emulsion/high fructose corn syrup injection in October 2006. This injection was a 1,000-gallon mixture containing 143 pounds of a 60% soybean oil emulsion, 150 pounds of an 80 % high fructose corn syrup, and drinking water. FPM collected four samples at B817-MW-001 through -003 and monitoring well WSAMW-18. The analytical results showed PCE and TCE exceedances with TCE ranging from 5.17 to 49.1 µg/L at three monitoring wells and PCE ranging from 8.78 J to 37.3 µg/L at two monitoring wells.

The vegetable oil injection occurred at SD052-05 (Building 817 OU) at injection wells B817IW-1 through -8 in July 2008. These injections wells are located in a row approximately 10 ft downgradient of the southwesterly corner of Building 817. A total volume of 27,557 gallons of water were injected with a total of 750 gallons vegetable oil and 370 gallons of buffer solution (E&E, October 2009).

The first two rounds of PM included sampling of nine monitoring wells and the inspection of three electrical manholes (MH-1, -2, and -3) to evaluate the effectiveness of the remedial

approach. All groundwater samples collected are analyzed for VOCs (EPA Method SW8260B), sulfate (SW9056), DOC (SM5310B), and MEE (RSK-175). Field parameters collected are ORP, DO, pH, and water levels. Three of the monitoring wells were designated for annual sampling (LAWMW-9, WSAMW-8, and WSAMW-23). This sampling frequency is based on their location relative to the plume contour. The sampling frequency is lower because these monitoring wells are either upgradient, substantially crossgradient, or far downgradient wells. Additional details on the sampling are provided in the PM Work Plan (FPM, September 2008).

Surface water samples are located along SMC upstream, at, and downstream of the potential plume discharge location. The surface water samples were only collected from the unnamed SMC culvert manholes if the analytical results of monitoring well WSA-MW9 exceeded the NYS Class GA Groundwater Standards.

Five monitoring wells showed TCE exceedances in both sampling rounds with concentrations ranging from 5.28 µg/L to 51.3 µg/L in September 2008 and 18.3 µg/L to 49.6 µg/L in December 2008. Four monitoring wells showed PCE exceedances in both sampling rounds with concentrations ranging from 11.5 µg/L to 39 µg/L in September 2008 and 10.5 µg/L to 38.8 µg/L in December 2008 (FPM, May 2009).

4.3.4.1.3 ROD Requirements

The ROD for the SD052-05 (Building 817 OU) was issued by the Air Force in December 2008 and signed by the USEPA in March 2009. Based on the previous investigations and environmental conditions at the site, the selected remedy includes:

- Enhanced bioremediation to remove VOCs from Building 817 site groundwater.
- Implementation of the contingency air sparge wall (or other action agreed upon by the Air Force, EPA, and NYSDEC) will be completed if surface water samples from the culverted section of Six Mile Creek contain elevated concentrations of DCE and/or VC that could be attributed to site groundwater.
- Institutional controls in the form of deed restrictions for affected groundwater will also be implemented.

The selected remedy is expected to reduce the levels of groundwater contamination at the SD052-05 (Building 817 OU). The selected remedy will result in the reduction of the highest concentrations of VOCs in groundwater at this site. Air sparging will only be utilized if surface water concentrations exceed the NYSDEC Groundwater Standards for DCE and VC.

The RAOs specified in the ROD consist of:

- Achieve the cleanup goals for TCE and PCE (5 µg/L and 5 µg/L)
- Prevent human exposure to groundwater through groundwater use restrictions until cleanup goals are achieved.
- Prevent contaminated groundwater from the site from adversely impacting surface water (in Six Mile Creek), which is defined as surface water concentrations above performance

indicators (NYSDEC Class GA Groundwater Quality Standards of 5 µg/L for DCE and 2 µg/L for VC).
- Prevent development and use of the property for residential housing, elementary and secondary schools, childcare facilities and playgrounds.

4.3.4.1.4 Land-Reuse Zoning

The GLDC, which is the Griffiss LRA, designated the site for light industrial and airfield and related services use. This zoning designation was adopted by the City of Rome in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.3.4.1.5 Post-ROD Activities

PM sampling at SD052-05 (Building 817 OU) was performed quarterly in April 2009 and June 2009 at nine monitoring wells (LAWMW-9, WSAMW-8, -9, -16, -18, -19, -21, -23 and WSAVMW-17). Additional samples were collected at piezometers B817-MW-001, -002 and -003 in June 2009, April 2010 and April 2011. The sampling locations are illustrated in Figure 24. Following the Summer 2009 Annual PM Report (FPM, November 2010), sampling frequency was optimized to semi-annual (Spring and Fall) from September 2009 through April 2014 for all monitoring wells and piezometers. Monitoring wells LAWMW-9, WSAMW-8 and -23 were optimized to annual (Fall) sampling. The monitoring wells were analyzed for VOCs and natural attenuation parameters (sulfate, DOC, and MEE). The three piezometers are analyzed for VOCs and natural attenuation parameters (sulfate and DOC).

Annual LUC/IC inspections have also been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

In August 2010, an emulsion of 24,017 gallons of water, 2,066.6 gallons of vegetable oil, and 745.2 gallons of buffer solution was injected into injection wells B817IW-1 through -8.

A SI was conducted in summer 2014. The basis of this investigation was to provide additional information about the chlorinated VOC source location near Building 817 and to determine if a secondary chlorinated VOC source could be located downgradient of the existing injection points. For the investigation, 106 soil samples and 22 groundwater samples were collected using Geoprobes® advanced along seven transects in the vicinity southwest of Building 817 and near Perimeter Road. The results will be presented in the SD052-05 (Building 817 OU) SI Report which is pending.

4.3.4.2 Data Review and Analysis

Three chlorinated VOCs exceeded the NYSDEC Class GA Groundwater Standards on a regular basis at the site (FPM, March 2015). The chlorinated VOCs include TCE, PCE, and cis-1,2-DCE. The TCE, PCE, and cis-1,2-DCE exceedances are summarized below.

- TCE exceedances were identified in wells LAWMW-9, WSAMW-8, -16, -17, -18, -19, -21, and B817-MW-001. The highest TCE exceedances per year were as follows:
    - 2010 – 62.4 µg/L at WSAMW-19
    - 2011 – 55.4 µg/L at WSAMW-18
    - 2012 – 52.4 µg/L at WSAMW-19
    - 2013 – 58.2 µg/L at WSAMW-18
    - 2014 – 44.3 µg/L at WSAMW-19

- PCE exceedances were identified in wells WSAMW-16, -17, -18, and -19. The highest PCE exceedances per year were as follows:
    - 2010 – 51.1 µg/L at WSAMW-18
    - 2011 – 53.1 µg/L at WSAMW-18
    - 2012 – 42.5 µg/L at WSAMW-19
    - 2013 – 40.9 µg/L at WSAMW-18
    - 2014 – 45.2 µg/L at WSAMW-19

- cis-1,2-DCE exceedances were identified in wells B817-MW-002 and -003 in 2013 and 2014. The highest cis-1,2-DCE exceedances were both identified at B817-MW-002 with concentrations of 84.3 µg/L and 84.2 µg/L, respectively.

Overall the site has shown a decreasing trend in TCE concentrations and a stable trend in PCE concentrations. Dechlorination has been observed at the three piezometers (B817-MW-001, -002, and -003) due to increasing levels of cis-1,2-DCE, which is the breakdown product of TCE via reductive dechlorination. These piezometers are located within the 2008 vegetable oil injection area. Samples collected at the most downgradient monitoring well (WSAMW-9) near Six Mile Creek does not show PCE or TCE detections. Therefore, it is believed that the contamination is not discharging into SMC.

4.3.4.3 Site Inspection

The site inspection was conducted on September 9, 2014 which confirmed that the SD052-05 (Building 817 OU) remedy has been implemented and is currently protective of human health and the environment. . The site is adjacent to industrial/commercial facilities and consists of open space and one vacant building and adjacent facilities use the municipal water supply. Monitoring wells are also present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site except for the SI conducted by the AF in summer 2014 as discussed in Section 4.3.4.1.5. The completed five-year review checklist is provided in Appendix A.

4.3.4.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?

2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.3.4.4.1 Remedy Functionality

The remedy has been implemented and the protectiveness is still under evaluation. The remedy for the SD052-05 (Building 817 OU) is enhanced bioremediation via vegetable oil emulsion injection. The injection was performed at injection wells located near the Building 817, upgradient of the chlorinated solvent plume. Following the injection, statistical analysis of the groundwater sampling data indicates a decreasing trend in chlorinated solvent concentrations.

The SD052-05 (Building 817 OU) is located in two parcels, Parcel A5 and Parcel F10C. Both parcels have been transferred. The Deeds for Parcel A5 and F10C were reviewed and the following deed restrictions were determined to satisfy the ROD:

1. The Grantee shall not engage in, or allow others to engage in, activities that will disturb, move, damage, tamper with, interfere with any wells, operating remedial system, or infrastructure associated with such wells or remedial system located on the Property or with the Grantor's operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of any remedial action performed pursuant to CERCLA to address environmental contamination on the Property.
2. The Grantee shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundaries of the Property unless such owner or occupant obtains the prior written approval from the NYSDOH.
3. The Grantee shall not develop or use the portions of the Property for residential housing, elementary or secondary schools, childcare facilities, or playgrounds unless prior written approval is received from the Air Force, USEPA, and NYSDEC.
4. With respect to any excavations in the portions of the Property, the Grantee shall restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface until cleanup goals are achieved and have been confirmed through sample results as defined in the applicable ROD(s) and pursuant to the joint EPA/DOD Guidance on Streamlined Site Closeout and National Priority List Deletion Process.
5. With respect to risks that may be posed by indoor air contamination from chemicals volatized from groundwater (vapor intrusion) in the portions of the Property identified as SD-52-05 On Base Groundwater Contamination Building 817 OU, the Grantee shall conduct either (a) construction of new buildings within the sites in a manner that will mitigate unacceptable risk under CERCLA and the NCP; or (b) an evaluation of the potential for unacceptable risk prior to the erection of any structure in the Groundwater Restriction Area. If an evaluation discloses unacceptable risk under CERCLA and the NCP, then the Grantee shall include mitigation of the vapor intrusion in the design/construction of the structure. Grantee shall provide any such evaluation to, and coordinate any such mitigation with, the USEPA and NYSDEC.

The above SVI restriction (Bullet #5) was not documented in the SD052-05 (Building 817 OU) ROD. Therefore, documentation of this restriction in a decision document will be required in the future.

4.3.4.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. Exceedances of NYSDEC groundwater standards at the site show that exposure assumptions documented in the On-base Groundwater ROD are still applicable. Remedial actions, as described in the ROD, were implemented. As a result, semi-annual PM was conducted to determine whether the remedy is still protective.

In addition, the previous soil, surface water and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (June 1998).

4.3.4.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. An additional injection event was performed in 2010 as described in Section 4.3.4.1.5. In addition, an SI was conducted at the site in summer 2014. Evaluation of the results and submittal of the SI Report is pending.

4.3.4.5 Recommendations and Follow-up Actions

Surface water sampling will be conducted if exceedances are identified in monitoring well WSA-MW9, which is located downgradient of the source and upgradient of the creek.

4.3.4.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD052-05 (Building 817 OU) is protective of human health and the environment.

4.3.5 SD062 (AOC 9)

4.3.5.1 Document Review

4.3.5.1.1 Site History

SD062 (AOC 9) is a grass-covered area approximately 1,500 ft long and 650 ft wide located in the southwest side of the inactive WSA. In the 1940s and 1950s, the first landfill for the base (currently known as AOC 9) was located beneath the northern portion of the former WSA and extended south between Perimeter Road and Six Mile Creek. Based on aerial photographs, it was determined that the landfill was used between 1943 and 1957 but no later than 1960. The type of material buried at this site is unknown; however, it was reported that large quantities of

the landfill material were removed during construction of the WSA. Two former WSA igloos, identified as Buildings 912 and 913, are located at AOC 9. Due to the presence of elevated chlorinated VOCs (i.e., in excess of NYSDEC Class GA standards and EPA maximum contaminant levels) in groundwater samples collected during the Expanded Site Investigation (ESI) at AOI 9, the status of this site was changed from AOI to AOC in 1998. Figure 25 illustrates the SD062 (AOC 9) site location and LUC/ICs as required by the ROD.

4.3.5.1.2 Previous Investigations

This section provides a summary of the pre-ROD activities conducted at the site. All sampling locations discussed in this section are illustrated in figures provided in the documents referenced below.

In 1994, a groundwater monitoring well (WSAMW-4) was installed and sampled at SD062 (AOC 9). The results showed low levels of chloromethane. Surface soil, subsurface soil, surface water, and groundwater samples were also collected in 1997. Sample results indicated the presence of chlorinated hydrocarbons in the groundwater.

In 1997, an Expanded Site Investigation (ESI) was performed to investigate the nature and extent of environmental contamination from historical releases at the site. The ESI included the installation and sampling of four permanent monitoring wells. Analytical results indicated the presence of benzene, chlorobenzene, cis-1,2-DCE, 1,2-DCB, 1,3-DCB, 1,4-DCB, PCE, and TCE at concentrations that exceeded screening criteria. Several metals, including aluminum, iron, manganese, and potassium, were also detected in concentrations that exceeded screening criteria in one or more wells (E&E, July 1998a).

In 2000, a SI was performed including groundwater sampling at 45 locations. In addition, four new monitoring wells were installed and sampled. Analytical results indicated the presence of VOCs and metals at levels exceeding the most stringent criteria (E&E, August 2001). A second SI was performed in 2002 to collect additional data to further delineate the chlorinated hydrocarbon plume and determine if petroleum hydrocarbons were present within the groundwater. A total of 56 groundwater screening samples were collected from 14 locations. Analytical results indicated the presence of VOCs exceeding the most stringent screening criteria. During the SI, five test pits were excavated to the water table and groundwater samples were collected to determine if petroleum hydrocarbons were present within the groundwater. Analytical results indicated that there was no significant petroleum hydro- carbon contamination in the test pit samples (E&E, October 2002).

A Bedrock Groundwater Study was also conducted in 2002 to determine whether contamination was present in the bedrock. The study consisted of drilling, installation, development, sampling, and slug testing of three new bedrock wells and installation of one soil boring. The study concluded that groundwater contamination observed in the overlying overburden aquifer does not appear to have migrated downward into the underlying bedrock at the site. Therefore, NFA was recommended for bedrock groundwater (E&E, December 2002).

In situ chemical oxidation bench-scale studies (treatability studies) for groundwater contamination were conducted in 2002 and 2003 at AOC 9 using both potassium permanganate and Fenton-based reagent as the oxidants. Results from the Fenton-based test indicated a very effective 99.9% destruction of VOCs (i.e., total VOCs were reduced from 591 µg/L to 0.41 µg/L), but groundwater treated with permanganate showed no VOC reduction (E&E, October 2004).

A soil vapor study was conducted in 2006. The study included the collection of six soil vapor samples (from 5 to 8 ft bgs). PCE and TCE concentrations were detected below the screening levels in all samples at 130 to 610 µg/m^3 for PCE (screening level 4,088 µg/m^3) and 17 to 810 µg/m^3 for TCE (screening level 1,386 µg/m^3). Chlorobenzene was detected in only one sample at a concentration of 1.4 µg/m^3. The potential soil vapor risk was analyzed for an occupant of a structure in this area using modeling based on maximum detection levels in soil and groundwater. It was determined that there is a potential unacceptable non-cancer risk (HI greater than 1) for 1,2,4-trimethylbenzene and chlorobenzene. The calculated cumulative non- cancer HI for a resident was estimated as 40, with a non-cancer HI for an industrial worker at 28.7. Total cancer risk was estimated to be $1.8x10^{-4}$ for a resident and 1.1×10^{-4} for an industrial worker due mostly to PCE with the remainder attributable to TCE. These risk levels exceed the range of acceptable levels in the NCP (E&E, October 2007).

A Predesign Investigation (PDI) was conducted from September through November 2006. The investigation included the installation and sampling of four groundwater monitoring wells (AOC9-MW14 through AOC9-MW17). VOCs exceeding NYSDEC Class GA Groundwater standards were 1, 2, 4-trimethylbenzene; 1, 2-DCB; mesitylene; 1, 3-DCB; 1, 4-DCB; benzene; chlorobenzene; cis-1, 2-dichloroethylene; ethylbenzene; cumene; xylene; methylenechloride; naphthalene; propylbenzene; cymene; butylbenzene; and TCE. The highest concentrations of VOCs (1, 2-DCB, 1, 4-DCB, chlorobenzene, and benzene) were detected in presumed upgradient wells AOC9-MW14 and AOC9-MW15 at 1,989 µg/L and 2,082 µg/L, respectively (E&E, February 2007).

The second PDI was performed from February through April 2007 (E&E, November 2007). This study included the installation of 25 temporary monitoring wells and identified areas containing levels of chlorobenzene and related compounds east of Building 913. Monitoring wells TW39 and TW32 had chlorobenzene concentrations of 14,400 µg/L and 8,580 µg/L, respectively. A third PDI was performed and included the installation of 56 new temporary monitoring wells. Twenty-two different VOCs were detected in the groundwater samples collected from the temporary monitoring wells at concentrations exceeding the groundwater standards. In addition, characterization of a potential source for groundwater contamination involved installation of 42 boreholes in the soil. Soil cores were screened continuously with a PID/flame ionization detector (FID) from ground surface to refusal (in the glacial till layer, approximately between 20 and 30 ft bgs. Twelve VOCs (1,2, 4-trimethylbenzene, 1,3,5-trimethylbenzene, 1, 2-DCB, 1,3-DCB, 1, 4-DCB, chlorobenzene, ethylbenzene, naphthalene, n-butylbenzene, n-propylbenzene, sec-butylbenzene, and toluene) were detected at concentrations exceeding screening criteria in the soil samples collected from the 42 soil borings. Based on the PDIs, the soil east of Building 913 was identified as the source of the AOC 9 groundwater contamination.

4.3.5.1.3 ROD Requirements

The ROD for the SD062 (AOC 9) was issued by the Air Force in July 2010 and signed by the USEPA in September 2010. Based on the previous investigations and environmental conditions at the site, the selected remedy includes:

- Removal of the source area through excavation of contaminated soil, treatment of contaminated groundwater using chemical oxidation, and land use controls.

The RAOs specified in the ROD consist of:

- Achieve the cleanup goals (NYSDEC Groundwater Standards, NYSDEC 1998) for site COCs.
- Prevent potential unacceptable human risk associated with exposure to groundwater through groundwater-use restrictions until cleanup goals are achieved.
- Prevent contaminated groundwater from the site from adversely impacting surface water (in Six Mile Creek), which is defined as surface water concentrations above performance indicators for site COCs.
- Prevent the potential for unacceptable human risk under CERCLA associated with exposure to Soil Vapor until the groundwater cleanup goals (NYSDEC Groundwater Standards, NYSDEC 1998) are achieved.

4.3.5.1.4 Land-Reuse Zoning

The GLDC, which is the Griffiss LRA, designated the site for light industrial and airfield and related services use. This zoning designation was adopted by the City of Rome in 1998. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 3.

4.3.5.1.5 Post-ROD Activities

The remedial action at the SD062 (AOC 9) was performed in 2010. The remedial action included the excavation of contaminated soils and the application of reducing agents to contaminated soil and groundwater intervals. Prior to the remedial action, a baseline groundwater/surface water monitoring event was conducted. Groundwater samples were collected from wells G009-MW01, -MW02, AOC9-MW05, -MW06, -MW14, -MW15, -MW17, and -MW18 and surface water samples were collected at locations SW01, SW02, and SW03.

As part of the excavation, approximately 9,987 tons of contaminated soil was removed from the site and disposed of off-site in a permitted landfill at the Oneida Herkimer Solid Waste Authority Regional Landfill in Herkimer, New York. During the excavation, approximately 465,354 gallons of contaminated water was also disposed of under permit to the City of Rome potable treatment works.

Once all soil removal was completed, Klozur®, a sodium persulfate oxidant, and Dissolvine®, an iron chelate activator, were applied to the bottom of the excavation to oxidize any low-level

residual contamination prior to site restoration. Application of the oxidant was performed to enhance the reduction of residual contamination at the site. In addition, a PermeOx® Plus slurry was injected via 53 temporary injection points between November 5 and November 18, 2013, to enhance aerobic bioremediation of the contaminated groundwater plume (EEEPC, October 2014a).

Following the remedial action, semi-annual PM was conducted in 2011 and 2012 and annually in 2013 and 2014. As part of the PM, groundwater samples were collected from G009-MW01, -MW02, AOC9-MW05, -MW06, -MW14, -MW15, -MW17, -MW18, and -MW19 and analyzed for VOCs (USEPA Method SW8260B). In addition, surface water samples were collected from SW01 through SW03 and also analyzed for VOCs (USEPA Method SW8260B) (EEEPC, October 2014b). The sampling locations are illustrated in Figure 25.

Annual LUC/IC inspections have been performed at the site to ensure that the LUC/ICs continue to be implemented. The confirmation of the LUC/ICs protectiveness is obtained through on-site inspections and LUC/IC confirmation forms signed by the owner/occupant of the property.

4.3.5.2 Data Review and Analysis

The following discusses the sampling results from the baseline sampling event and the subsequent PM events.

Baseline:

Groundwater sampling results from the baseline monitoring event showed VOC exceedances in wells AOC9-MW14, -MW15, and -MW17. VOC exceedances included 1,2-DCB, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,3-DCB, 1,4-DCB, chlorobenzene, benzene, cis-1,2-DCE, ethylbenzene, isopropylbenzene, n-propylbenzene, naphthalene, sec-butylbenzene, TCE, and VC (EEEPC, October 2014b). The VOC with the highest concentrations was chlorobenzene with a concentration of 1,400 µg/L at AOC9-MW14, 1,300 µg/L at AOC9-MW15, and 760 µg/L at AOC9-MW17 (EEEPC, October 2014b). Other site COC concentrations that were above the NYSDEC Groundwater Standards are included below:

- 1, 2-DCB: highest concentration at 150 µg/L
- 1, 4-DCB: highest concentration at 87 µg/L
- Benzene: highest concentration at 26 µg/L
- cis1,2-DCE: highest concentration at 23 µg/L
- TCE: highest concentration at 28 µg/L
- VC: highest concentration at 17 µg/L

Performance Monitoring – 2011 to 2014:
Overall, contaminant concentrations have decreased since the baseline sampling and remedial action. VOCs exceeding the NYSDEC Class GA Groundwater Standards during PM included 1,2-DCB, 1,2,4-trimethylbenzene, 1,3-DCB, 1,4-DCB, chlorobenzene, benzene, cis-1,2-DCE, ethylbenzene, isopropylbenzene, sec-butylbenzene, TCE, and VC. The following discusses the exceedances for 1,2-DCB, 1,4-DCB, chlorobenzene, benzene, cis-1,2-DCE, TCE, and VC.

1,2,4-trimethylbenzene, 1,3-DCB, ethylbenzene, isopropylbenzene, and sec-butylbenzene are not discussed further as they were only found in exceedance of the NYSDEC Class GA Groundwater Standards during the 2011 PM events at wells AOC9-MW14 and -MW15 and have shown a decreasing trend from the 2011 to 2014 PM events.

- 1,2-DCB exceedances were identified in wells AOC9-MW14, -MW15, –MW17, and –MW19. The highest 1,2-DCB exceedances per year were as follows:
  - 2011 – 76 µg/L at AOC9-MW14
  - 2012 – 91 µg/L at AOC9-MW17
  - 2013 – 73 µg/L at AOC9-MW15
  - 2014 – 49 µg/L at AOC9-MW17

- 1,4-DCB exceedances were identified in wells AOC9-MW14, -MW15, –MW17, and –MW19. The highest 1,4-DCB exceedances per year were as follows:
  - 2011 – 58 µg/L at AOC9-MW15
  - 2012 – 21 µg/L at AOC9-MW14
  - 2013 – 24 µg/L at AOC9-MW15
  - 2014 – 19 µg/L at AOC9-MW15

- chlorobenzene exceedances were identified in wells AOC9-MW14, -MW15, –MW17, and –MW19. The highest chlorobenzene exceedances were reported at AOC9-MW15 in 2011, 2012, 2013, and 2014. The concentrations were 990 J µg/L, 390 µg/L, 380 J µg/L, and 270 µg/L, respectively.

- benzene exceedances were identified in wells AOC9-MW15, –MW17, and –MW19. The highest benzene exceedances per year were as follows:
  - 2011 – 6 J µg/L at AOC9-MW19 (the J data qualifier indicates that the quantitation is an estimate)
  - 2012 – 2.8 µg/L at AOC9-MW19
  - 2013 – 2 µg/L at AOC9-MW19
  - 2014 – 1.5 µg/L at AOC9-MW15

- cis1,2-DCE exceedances were identified in wells AOC9-MW17 in 2011 and at AOC9–MW19 in 2011 and 2012. The highest cis1,2-DCE exceedances for 2011 and 2012 were identified at AOC9-MW19 with concentrations of 15 µg/L and 12 µg/L, respectively.

- TCE exceedances were reported at AOC9-MW17 in 2011, 2012, 2013, and 2014. The concentrations were 14 µg/L, 20 µg/L, 15 µg/L, and 16 µg/L, respectively.

- VC exceedances were identified in wells AOC9-MW15, –MW17, and –MW19 in 2011 and 2012. The highest VC exceedance in 2011 was identified at AOC9-MW17 with a concentration of 4 µg/L and the highest VC exceedance in 2012 was identified at AOC9-MW19 with a concentration of 2.9 µg/L.

Only one VOC (chlorobenzene) was detected above the NYS Surface Water Standards. The exceedance (9 µg/L) was from one sample from SW-02 collected in 2011. Chlorobenzene has not been detected in any of the surface water samples since.

4.3.5.3 Site Inspection

The site inspection was conducted on September 9, 2014 which confirmed that the SD062 (AOC 9) remedy has been implemented and is currently protective of human health and the environment. . The site is adjacent to industrial/commercial facilities and consists of open space and several weapons bunkers used for storage. The adjacent facilities use the municipal water supply. Monitoring wells are also present at the site and were in good condition at the time of the inspection. In addition, there has been no soil or groundwater intrusive work performed at the site and adjacent facilities use the municipal water supply. The completed five-year review checklist is provided in Appendix A.

4.3.5.4 Assessment of Remedy Protectiveness

During the process of completing the Five-Year Review, the following three questions were evaluated to ensure that the selected remedy remains protective of human health and the environment.

1. Is the remedy functioning as intended?
2. Are the exposure assumptions, toxicity data, clean-up levels, and RAOs still valid?
3. Has any other information come to light that could call into question the protectiveness of the remedy?

4.3.5.4.1 Remedy Functionality

The remedy has been implemented and the protectiveness is still under evaluation. The remedial action included the removal of the source area through excavation of contaminated soil, treatment of contaminated groundwater using chemical oxidation, and LUCs. The excavation and treatment of contaminated groundwater were completed in 2010. Following the remedial action, statistical analysis of the groundwater sampling data indicates a decreasing trend in contaminant concentrations.

The SD062 (AOC 9) is located in three parcels, Parcel A4, Parcel F10C, and Parcel F10B. All parcels have been transferred. The deed for Parcel F10B was finalized prior to the finalization of the SD062 (AOC 9) ROD. Therefore, the deed restrictions were not implemented in that deed. The Deeds for Parcel A4 and F10C include the following deed restrictions which satisfy the ROD:

The following summarizes the LUC/ICs provided in the deed for Parcel A4 and Parcel F10C:

1. The Grantee shall not engage in, or allow others to engage in, activities that will disturb, move, damage, tamper with, interfere with any wells, operating remedial system, or infrastructure associated with such wells or remedial system located on the

Property or with the Grantor's operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of any remedial action performed pursuant to CERCLA to address environmental contamination on the Property.

2. The Grantee shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundaries of the Property unless such owner or occupant obtains the prior written approval from the NYSDOH.
3. The Grantee shall not develop or use the portions of the Property for residential housing, elementary or secondary schools, childcare facilities, or playgrounds unless prior written approval is received from the Air Force, USEPA, and NYSDEC.
4. With respect to any excavations in the portions of the Property, the Grantee shall restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface until cleanup goals are achieved and have been confirmed through sample results as defined in the applicable ROD(s) and pursuant to the joint EPA/DOD Guidance on Streamlined Site Closeout and National Priority List Deletion Process.
5. With respect to risks that may be posed via indoor air contaminated by chemicals volatilizing from the groundwater (vapor intrusion), the Grantee will covenant to conduct either (a) construction of new structures within the Groundwater Restriction Area in a manner that would mitigate unacceptable risk under CERCLA and the NCP; or (b) an evaluation of the potential for unacceptable risk prior to the erection of any structure in the Groundwater Restriction Area, and the Grantee shall include mitigation of the vapor intrusion in the design/construction of the structure prior to occupancy if an unacceptable risk under CERCLA and the NCP is posed. Any such mitigation or evaluations will be coordinated with the EPA and NYSDEC. In addition, with respect to vapor intrusion, Buildings 912 and 913 will remain unoccupied until either of the actions under (a) or (b) above is completed. 'Occupied' means that the building is used and there is human occupation of it with regularity. Incidental use of the building, such as for storage of materials, that necessitates intermittent visits by individuals who would not remain in the building after delivery or retrieval of such materials, would not meet this definition of occupation. 'Occupied' has the same meaning throughout this document. The owner may also choose to demolish the buildings.

4.3.5.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

All exposure assumptions, toxicity data, and clean-up levels are still valid. Exceedances of NYSDEC groundwater standards at the site show that exposure assumptions documented in the SD062 (AOC 9) ROD are still applicable. Remedial actions, as described in the ROD, were implemented. As a result, annual PM is conducted to determine whether the remedy is protective.

In addition, the previous soil, surface water and groundwater investigations used protective criteria including NYS Soil Clean-up Objectives (TAGM #4046, January 1994) and NYSDEC Ambient Water Quality Standards and Guidance Values (June 1998). The protective criteria values are still considered protective.

4.3.5.4.3 New Information of Significance

There is no new information that would question the protectiveness of the remedy. SD062 (AOC 9) was included in the second five-year review as a pre-ROD site. This is the first Five-Year Review for SD062 (AOC 9) site

4.3.5.5 Recommendations and Follow-up Actions

A deed modification for Parcel F10B will be required to implement the SD062 AOC 9 LUC/ICs required in the ROD. The LUC/ICs will include the deed restrictions provided above in 4.3.5.4.1 (provided in Deeds for Parcel A4 and F10C). In addition, the following LUC/IC that pertains to buildings within Parcel F10B should be included in the deed as specified in the ROD:

- With respect to vapor intrusion, Buildings 912 and 913 will remain unoccupied until either of the actions under (a) or (b) above is completed. "Occupied" means that the building is used and there is human occupation of it with regularity (e.g., persons present the same day of the week, for approximately the same number of hours). Incidental use of the building, such as for storage of materials, that necessitates intermittent visits by individuals who would not remain in the building after delivery or retrieval of such materials, would not meet this definition of occupation. "Occupied" has the same meaning throughout this document. The owner may also choose to demolish the buildings. The restriction on occupancy of Buildings 912 and 913 will remain in effect after the groundwater cleanup goals are achieved unless the requirements of the previous paragraph are followed.

4.3.5.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the remedy at SD062 (AOC 9) is protective of human health and the environment.

4.4 Pre-ROD Sites

One ROD remains for the former Griffiss AFB that will be for the SVI component of SD052. The site number and description is SD052-02 (Building 775 [Buildings 774 and 776]) and SD052-01 (Apron 2 Chlorinated Plume Site [Buildings 785 and 786]). Buildings 774 and 776 and Buildings 785 and 786 are illustrated in Figure 26, Griffiss Pre-ROD Sites.

An IRA was implemented in 2011 at Buildings 774 and 776 and Building 785 and 786 in coordination with the building occupants, USEPA, NYSDEC, and NYSDOH which included SVI mitigation by sub-slab depressurization. The IRA is currently ongoing and performance monitoring, consisting of indoor air and sub-slab vapor sampling, has demonstrated that the SVI mitigation by sub-slab depressurization systems provide protectiveness at all four buildings. The pending ROD will include the IRA in more detail.

Based on the IRA results, the anticipated remedy for the remaining ROD will be for SVI mitigation by sub-slab depressurization and LUC/ICs. The ROD is anticipated to be finalized in 2015.

4.5 Perfluorinated Compounds

The Air Force environmental program has conducted an enterprise-wide response to potential release of aqueous film-forming foam (AFFF) containing PFCs, an emerging contaminant (EC). In 1970, the United States Air Force began purchasing and using AFFF containing PFCs with (perfluorooctane sulfonic acid [PFOS] and perfluorooctanoic acid [PFOA]) for extinguishing petroleum fires and fire training activities (Air Force, August 2012). In 2009, the USEPA Office of Water issued Provisional Health Advisories (PHAs) for two PFCs, PFOS and PFOA, to protect humans from potential risk of exposure to PFOA and PFOS through drinking water (USEPA, 2009). PHAs represent reasonable, health based hazard concentrations above which action should be taken to reduce exposure to these contaminants in drinking water. The PHAs for PFOS and PFOA are 0.2 µg/L and 0.4 µg/L, respectively. The State of New York does not currently regulate PFCs. As such, the FT030 ROD does not include PFOA and or PFOS.

As part of the EC program, a PFC Site Investigation was conducted at FT030 in November 2014 at the former Griffiss AFB. The work plan (AMEC, November 2014) was approved by NYDEC and USEPA in October 2014. In the absence of Federal or State regulatory standards for PFCs, the Air Force utilized BRAC-wide Project Action Limits (PALs) for PFOS and PFOA based on the USEPA PHAs (0.2 µg/L PFOS and 0.4 µg/L PFOA in groundwater and surface/stormwater) and USAF-calculated screening value derived from Office of Superfund Remediation and Technology Innovation residential and direct contact criteria (5 mg/kg PFOS and 12 mg/kg PFOA in soil and sediments). The site investigation included collection of groundwater, soil, and stormwater samples at FT030. Groundwater samples exceeded the PAL for PFOS in the nine sampling locations at FT030 and exceeded the PAL for PFOA in one location. There was one very minor exceedance for stormwater (PFOS - 0.289 µg/L). PALs were not exceeded for soil samples collected during the site investigation. The PFC Draft Site Investigation (AMEC, August 2015) was submitted to the USEPA and NYDEC on August 6, 2015; regulatory comments have been received and the Final Site Investigation is in progress. Based on the findings of the SI, further investigation is being planned for the spring of 2016. A Remedial Investigation is being planned for 2017, pending the results of the supplemental investigation.

A Preliminary Assessment was performed to identify the areas where AFFF containing PFCs were used at the former Griffiss AFB for extinguishing petroleum fires and firefighting training activities, as well as in fire suppression systems at several of the installation buildings. The Preliminary Assessment (AMEC, July 2015) identified 17 potential AFFF areas in addition to FT030. The Draft Preliminary Assessment was submitted to the USEPA and NYDEC on November 5, 2014, and the Final Preliminary Assessment Report was submitted July 15, 2015. A Site Investigation of the PFC locations, where a release is likely to have occurred, will be conducted in 2016. A Remedial Investigation is planned to occur in 2017, pending the results of the Site Investigation.

5 NEXT FIVE-YEAR REVIEW

In accordance with 40 CFR 300.43(f)(4)(ii), the Air Force, as the lead agency, shall review the remedial action for the former Griffiss AFB AOCs at least every 5 years.

The next Five-Year Review for the former Griffiss AFB is required to be completed by September 2020. The next Five-Year Review will focus on CERCLA sites where hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure. Pending regulatory concurrence on site closure and removal of deed restrictions, sites DP012 (Building 301 AOC), DP013 (Building 255 AOC), DP015 (Building 219 AOC), SS024 (FDA AOC), and SD050 (Building 214 AOC) will be moved to NFA Status in Table 1 and will not be evaluated in the 2020 Five-Year Review. All other AOCs in this Five-Year Review will be evaluated in the 2020 Five-Year Review. One remaining ROD for the SVI component of the SD052 sites (SD052-02 (Building 775 Site [Buildings 774 and 776]) and SD052-01 (Apron 2 Chlorinated Plume Site [Buildings 785 and 786]) will be signed between 2015 and 2020 and will be included in the 2020 Five-Year Review.

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6 STATEMENT ON PROTECTIVENESS

The remedies at the LUC/IC sites (ST006 (Building 101 AOC), SS008 (Building 112 AOC), DP012 (Building 301 AOC), DP013 (Building 255 AOC), DP015 (Building 219 AOC), SS017 (Lot 69 AOC), DP022 (Building 222 AOC), SS024 (Fire Demonstration Area AOC), SS025 (Site T-9 AOC), SS033 (Coal Yard Storage Area Operable Unit), SS044 (Electrical Power Substation AOC), and SD050 (Building 214 AOC)), LTM sites (LF001 (Landfill 1 AOC), LF002 (Landfill 2/3 AOC), LF003 (Landfill 7 AOC), LF007 (Landfill 5 AOC), and LF009 (Landfill 6 AOC)), and RA/O sites (SD052-01 (Apron 2 6 OU), SD052-02 (Building 775 OU), SD052-04 (Landfill 6 OU), SD052-05 (Building 817 OU), and SD062 (AOC 9)) at the former Griffiss AFB are protective of human health and the environment. The next Five-Year review for the former Griffiss AFB will be provided 5 years from the date of this review.

ROBERT E. MORIARTY, P.E., SES, DAF
Director
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Air Force Civil Engineer Center

25 MAR 16
Date

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Figures

N

Figure 1
Former Base Location

4,800 2,400 0 4,800
Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

FPM

January 2015

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LF001 (Landfill 1 AOC)

SS024 (Fire Demonstration Area AOC)

SD062 (AOC 9)

SS008 (Building 112 AOC)

SD052-05 (Building 817 OU)

SD050
(Building 214 AOC)

DP015
(Building 219 AOC)

ST006
(Building 101 AOC)

LF003 (Landfill 7 AOC)

LF002
(Landfill 2/3 AOC)

DP022
(Building 222 AOC)

SS025
(Site T-9 AOC)

DP013
(Building 255 AOC)

DP012
(Building 301 AOC)

SD052-01
(Apron 2 OU)

SS033
(Coal Yard Storage Area
Operable Unit)

SS044
(Electrical Power Substation AOC)

SS017 (Lot 69 AOC)

SD052-02
(Building 775 OU)

LF007 (Landfill 5 AOC)

SD052-04 (Landfill 6 OU)

LF009 (Landfill 6 AOC)

Base Location

N

Map is projected in accordance with the State Plane New York Central - 3102 (NAD 83, Feet)

Key to Features

- Existing Roads / Airfield
- Culvert / Ditch
- Surface Water
- Base Boundary
- Demolished Facilities
- Existing Facilities
- Landfill
- Site Boundary

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 2
Former Griffiss AFB Five-Year Review Site Locations

FPM

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Low Intensity Open Space

Manufacturing Complex, Airfield & Related Services

Low Intensity Open Space

Low Intensity Open Space

Low Intensity Open Space

Light Industrial Development

Manufacturing Complex, Airfield & Related Services

Low Intensity Open Space

DOD Retained

Mohawk Glen Club

Rome Lab / R&D / Office Campus

Rome Lab R&D Office Campus

DOD Retained

DOD Retained

DOD Retained

Light Industrial Development

Heavy Industrial Developmen Aviation & Related Services

DOD Retained

Service Campus

Woodhaven Village

Corporate Development

Low Intensity Open Space

Low Intensity Open Space

Corporate Development

Base Location

N

0 500 1,000 2,000 3,000

Feet

Legend

- Road / Airfield
- Existing Facility
- Corporate Development
- DOD Retained
- Heavy Industrial Development, Aviation & Related Services
- Light Industrial Development
- Low Intensity Open Space
- Manufacturing Complex, Airfield & Related Services
- Mohawk Glen Club
- Rome Lab / R&D / Office Campus (Commercial/Administrative)
- Service Campus (Institutional)
- Woodhaven Village (Residential)

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 3

Former Griffiss AFB
Zoning Districts

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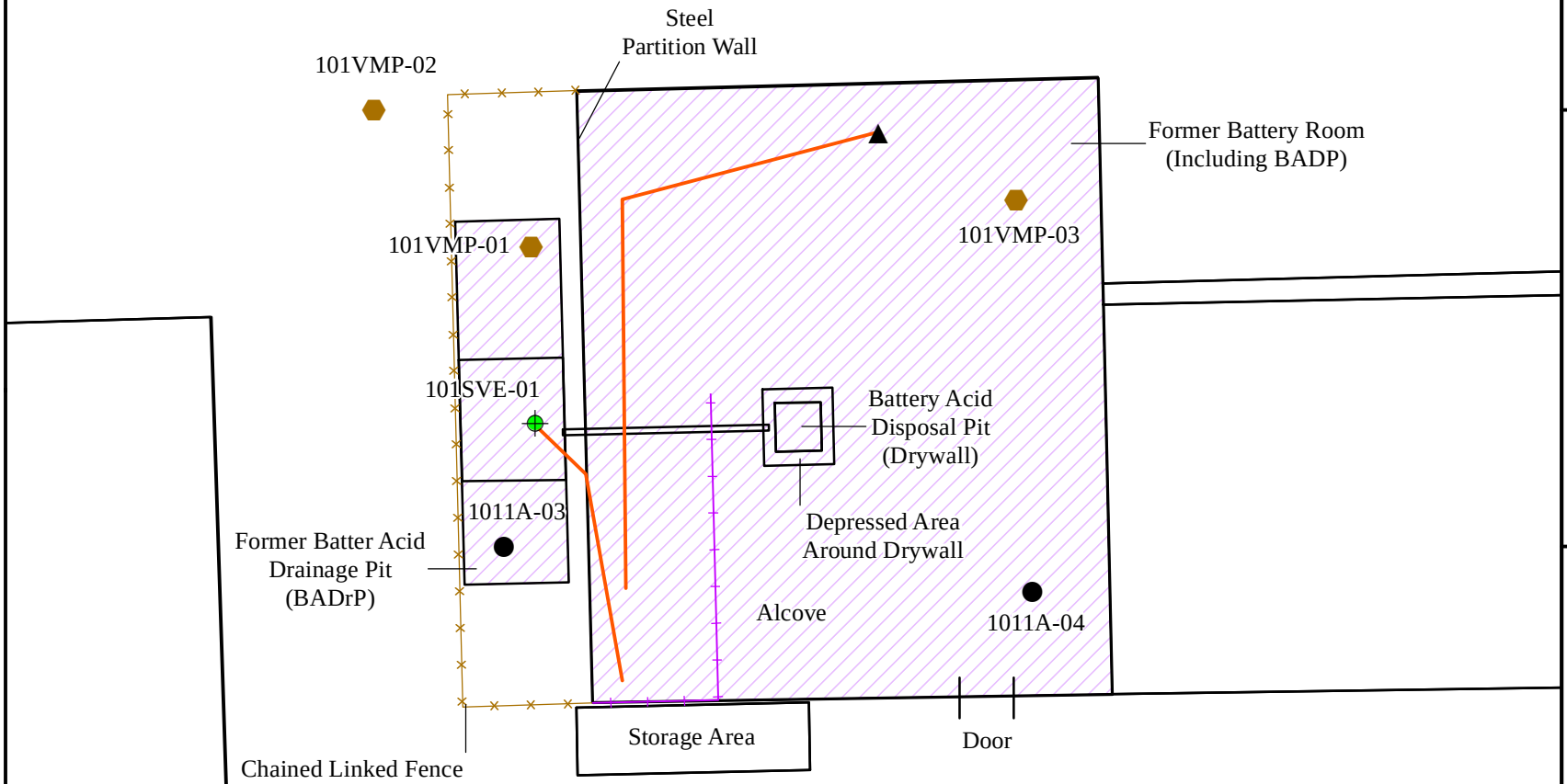
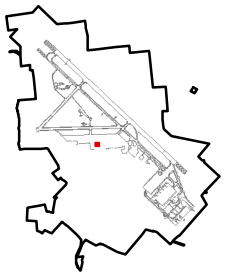
ST006
(Building 101 AOC)
Land-Use Restriction
Land-use Restriction-Industrial/Commercial / Non-Residential
SVI Evaluation prior to new construction





Site Location

Legend

- Vapor Monitoring Point
- Vertical SVE Point
- Indoor Air Sample Location
- Exhaust Hood
- Alcove
- Fence
- SVE System Piping
- B101_Floorplan
- Site and LUC/IC Boundary

N

0 5 10
Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 4
ST006
(Building 101 AOC)
LUC/IC Site

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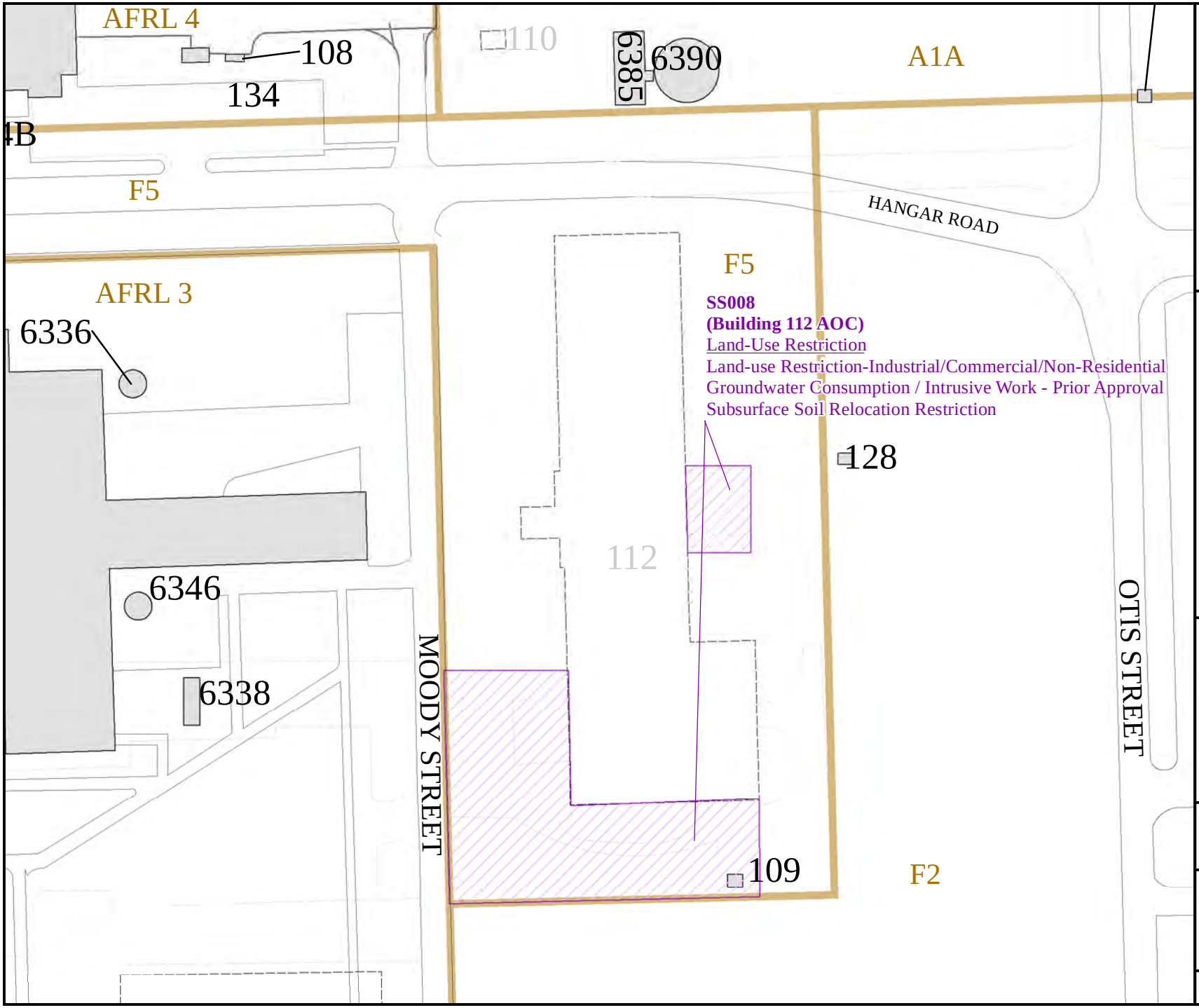

Site Location

Legend

- Existing Airfield / Road
- Removed Airfield / Road
- Site Boundary
- Existing Facility
- Demolished Facility
- Parcel Boundary

N

50 25 0 50

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 5
SS008
(Building 112 AOC)
LUC/IC Site

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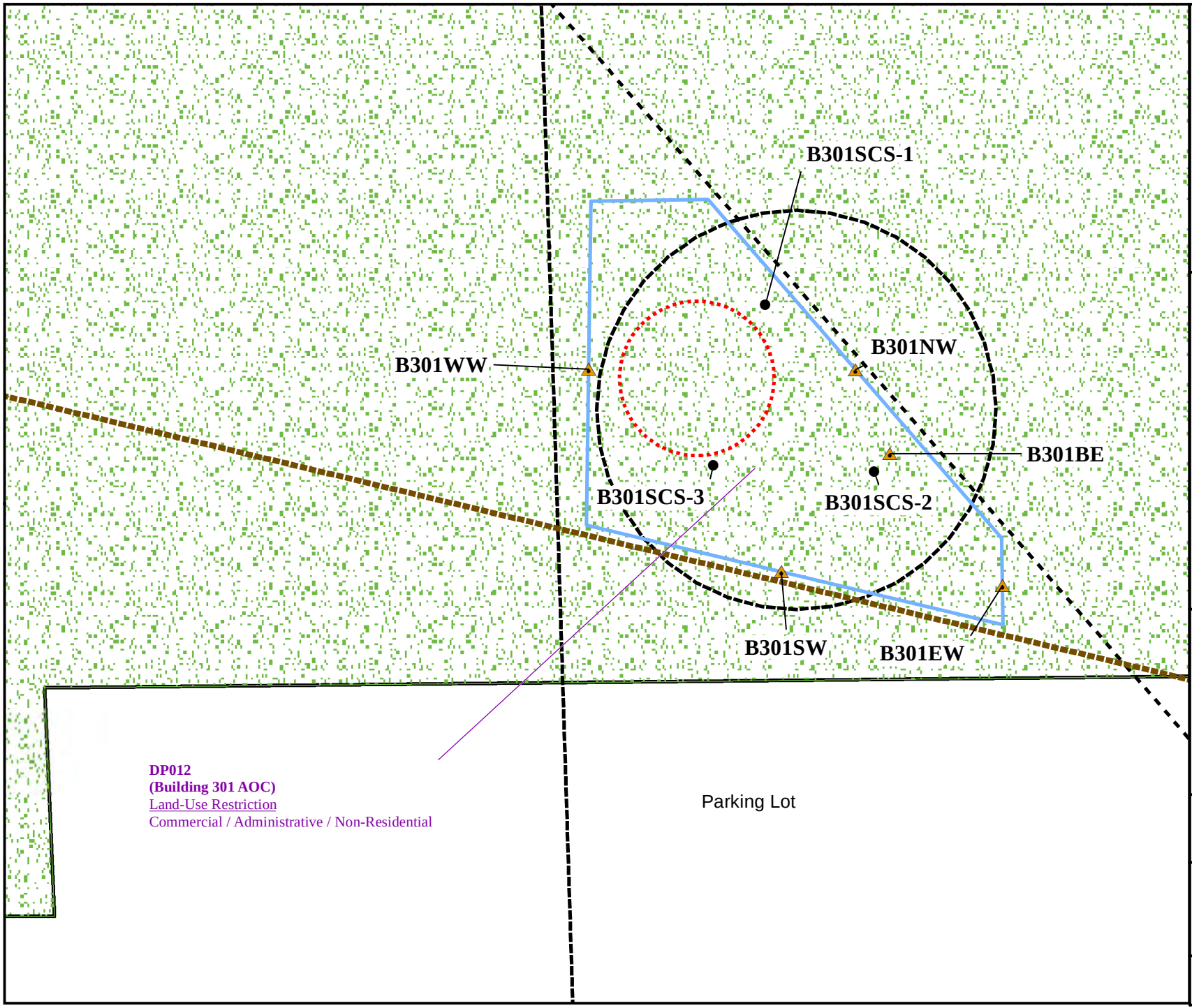

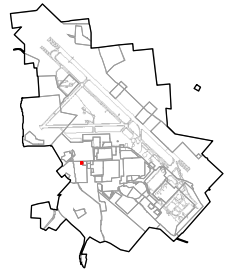

Site Location

Legend

- 2013 Soil Sample Location
- 2014 Soil Sample Location
- Interpreted Sewer Line
- Possible Buried Pipe
- Possible Well Location
- Demolished Facility
- Extent of Excavation
- Grass
- Pavement

N

0 5 10

Feet

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FORMER GRIFFISS AIR FORCE BASE
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Figure 6
DP012
(Building 301 AOC)
LUC/IC Site

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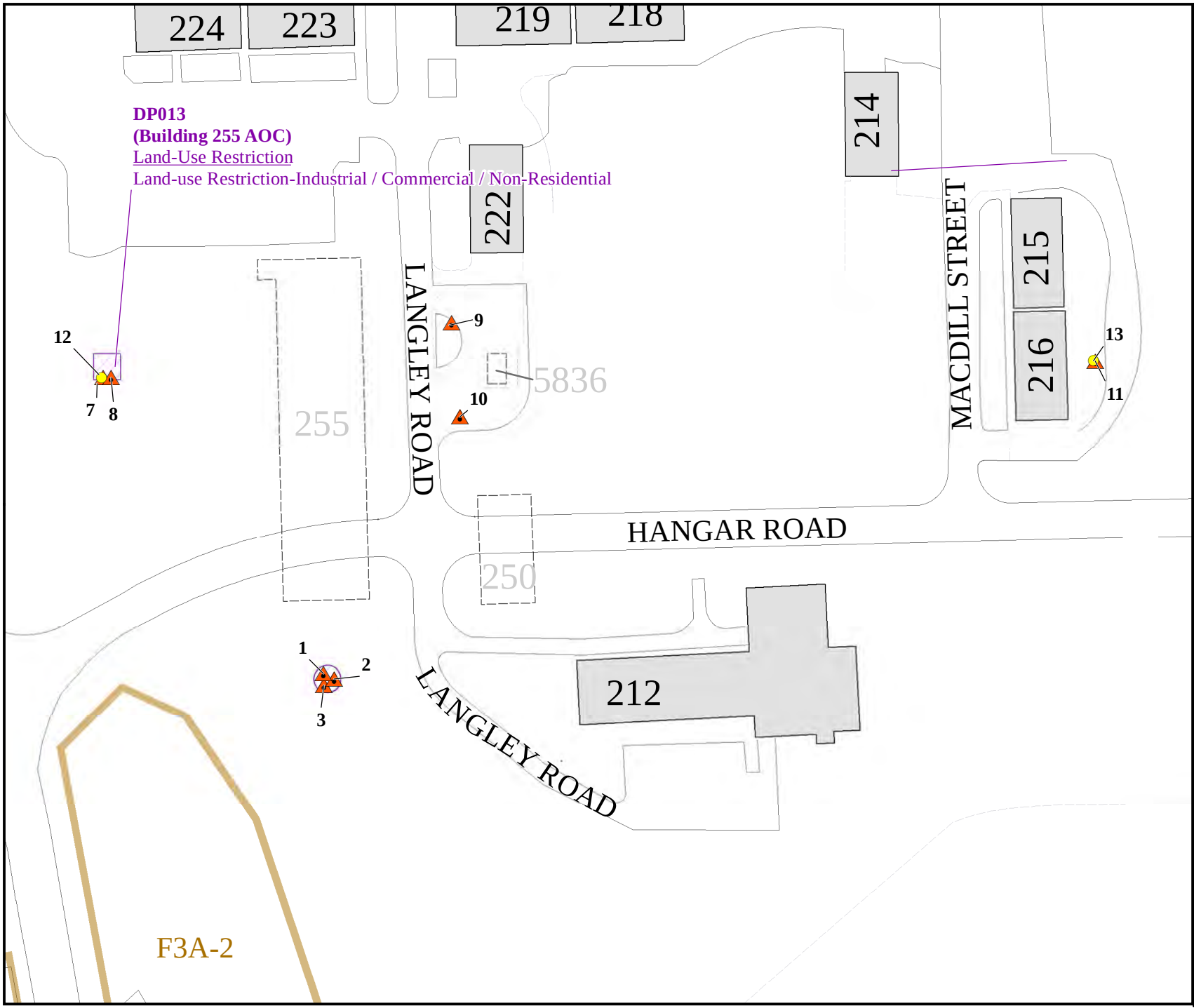

Site Location

Legend

- 2013 Soil Sample Location
- 2014 Soil Sample Location
- Existing Airfield / Road
- Removed Airfield / Road
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

50 25 0 50

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 7
DP013
(Building 225 AOC)
LUC/IC Site

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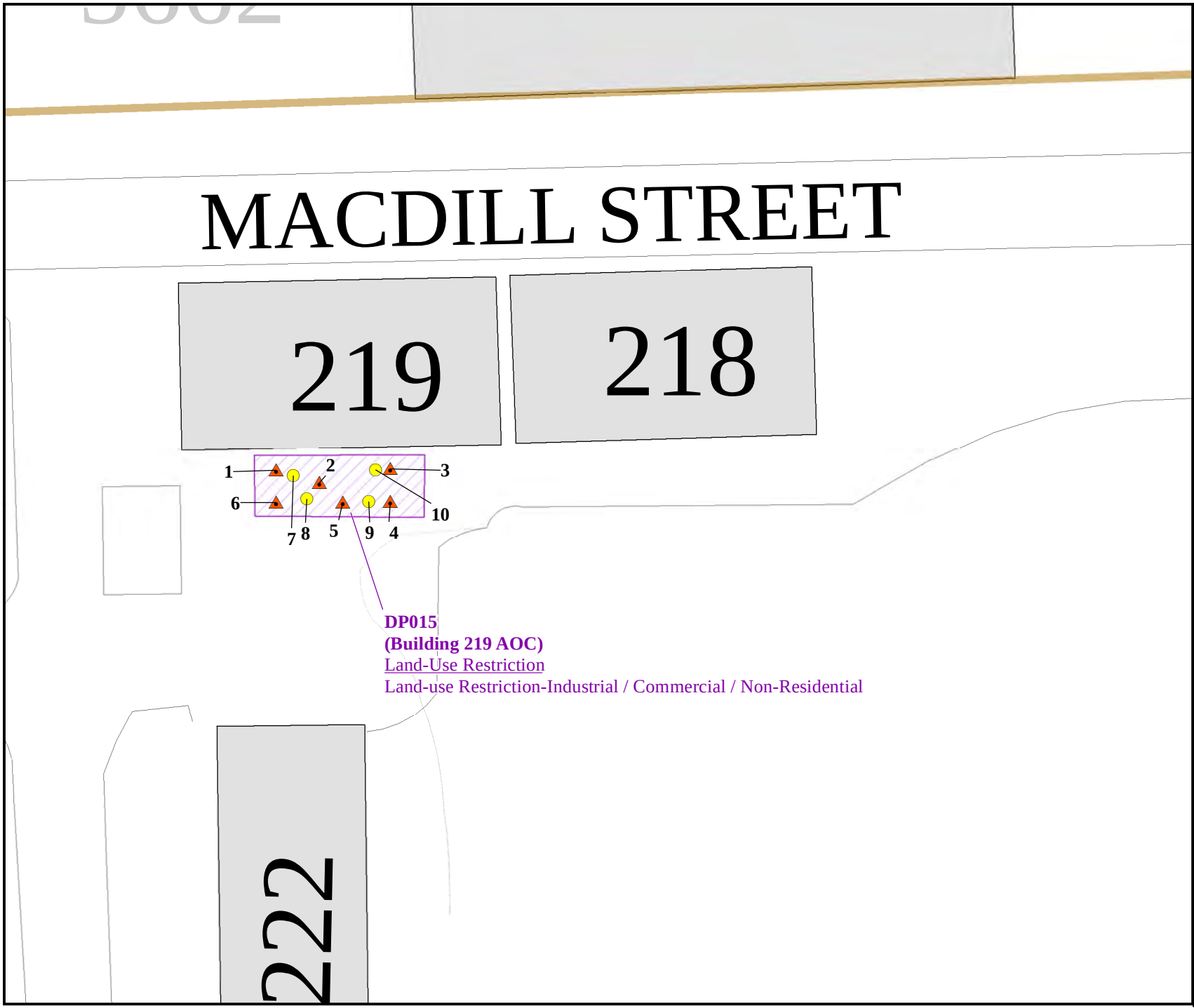

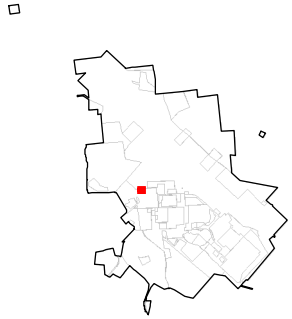

Site Location

Legend

Samp_Date

- 2013 Soil Sample Location
- 2014 Soil Sample Location
- Existing Airfield / Road
- Removed Airfield / Road
- Existing Facility
- Demolished Facility
- Land Use Control Site
- Parcel Boundary

N

0 15 30

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 8
DP015
(Building 219 AOC)
LUC/IC Site

FPM

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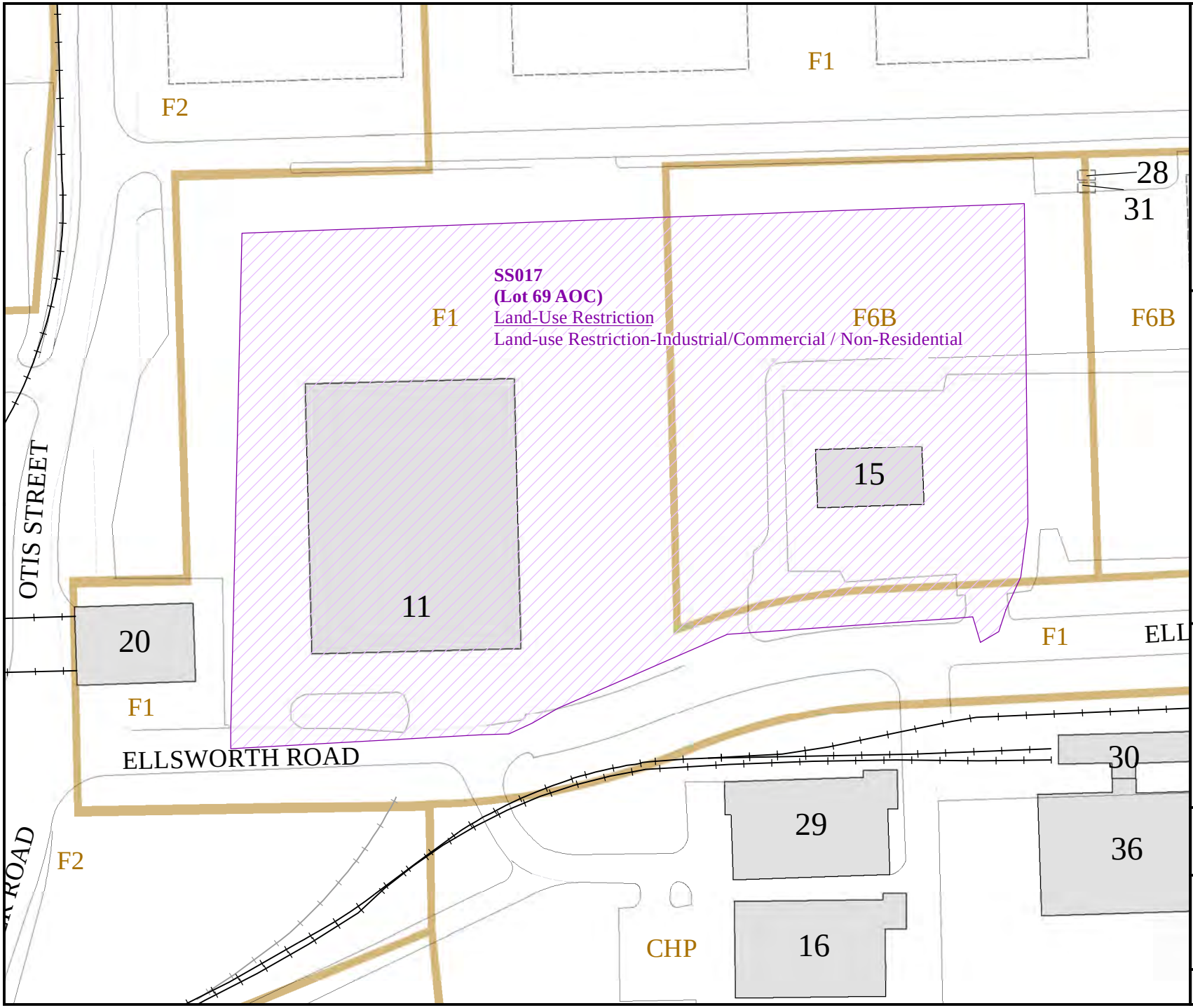

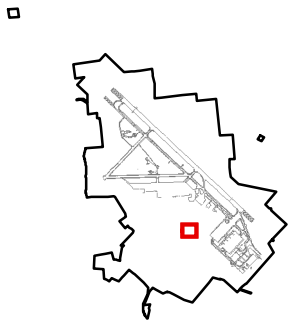

Site Location

Legend

- Existing Airfield / Road
- Removed Airfield / Road
- Existing Railroads
- Removed Rails
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

0 25 50 100

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 9
SS017
(Lot 69 AOC)
LUC/IC Site

FPM

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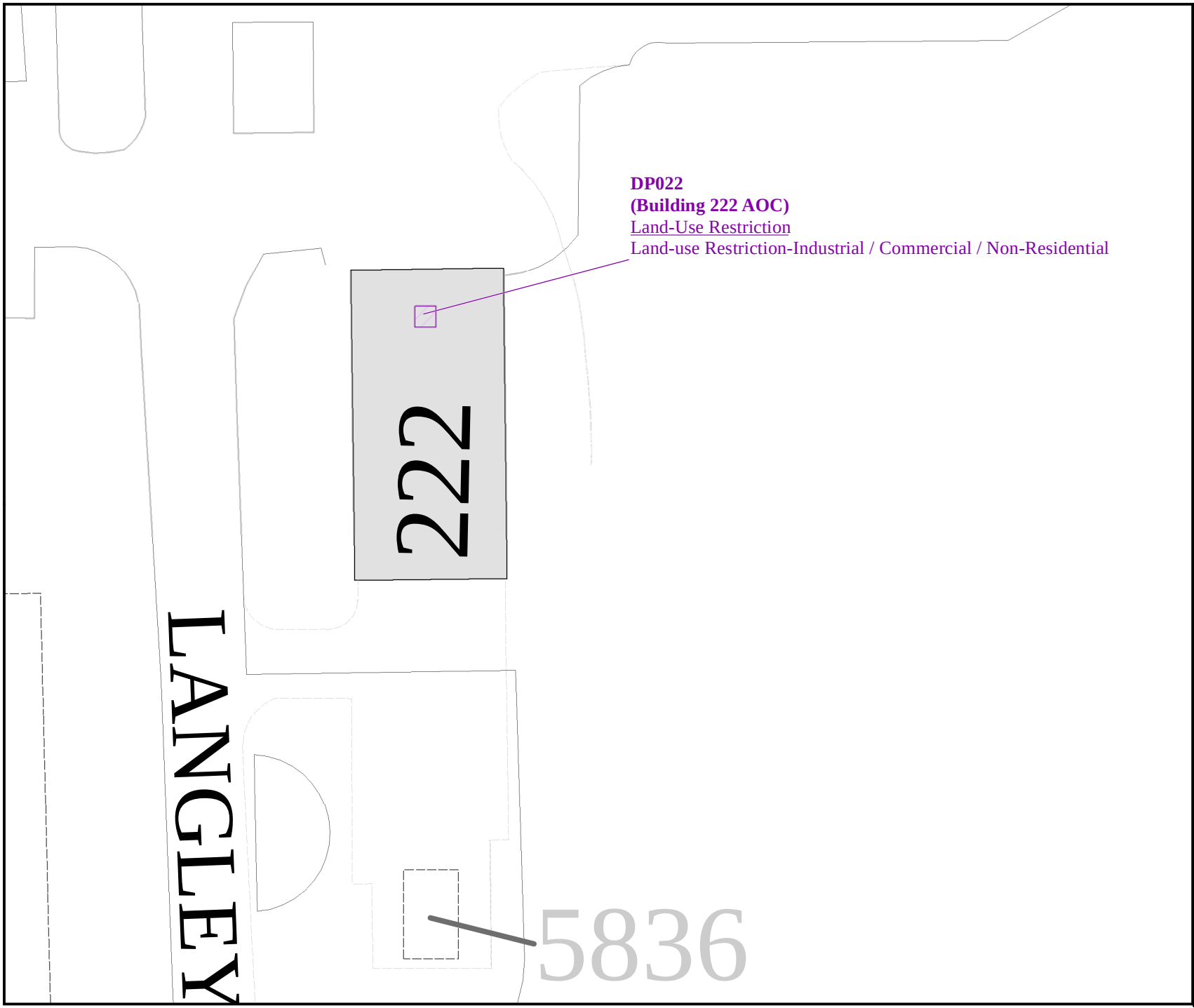

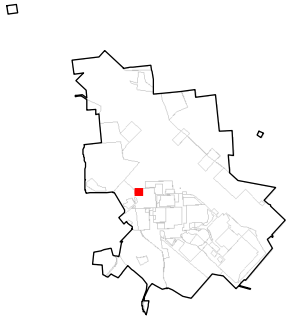

Site Location

Legend

- Existing Road
- Removed Road
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

40 20 0

Feet

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ROME, NEW YORK

Figure 10
DP022
(Building 222 AOC)
LUC/IC Sites

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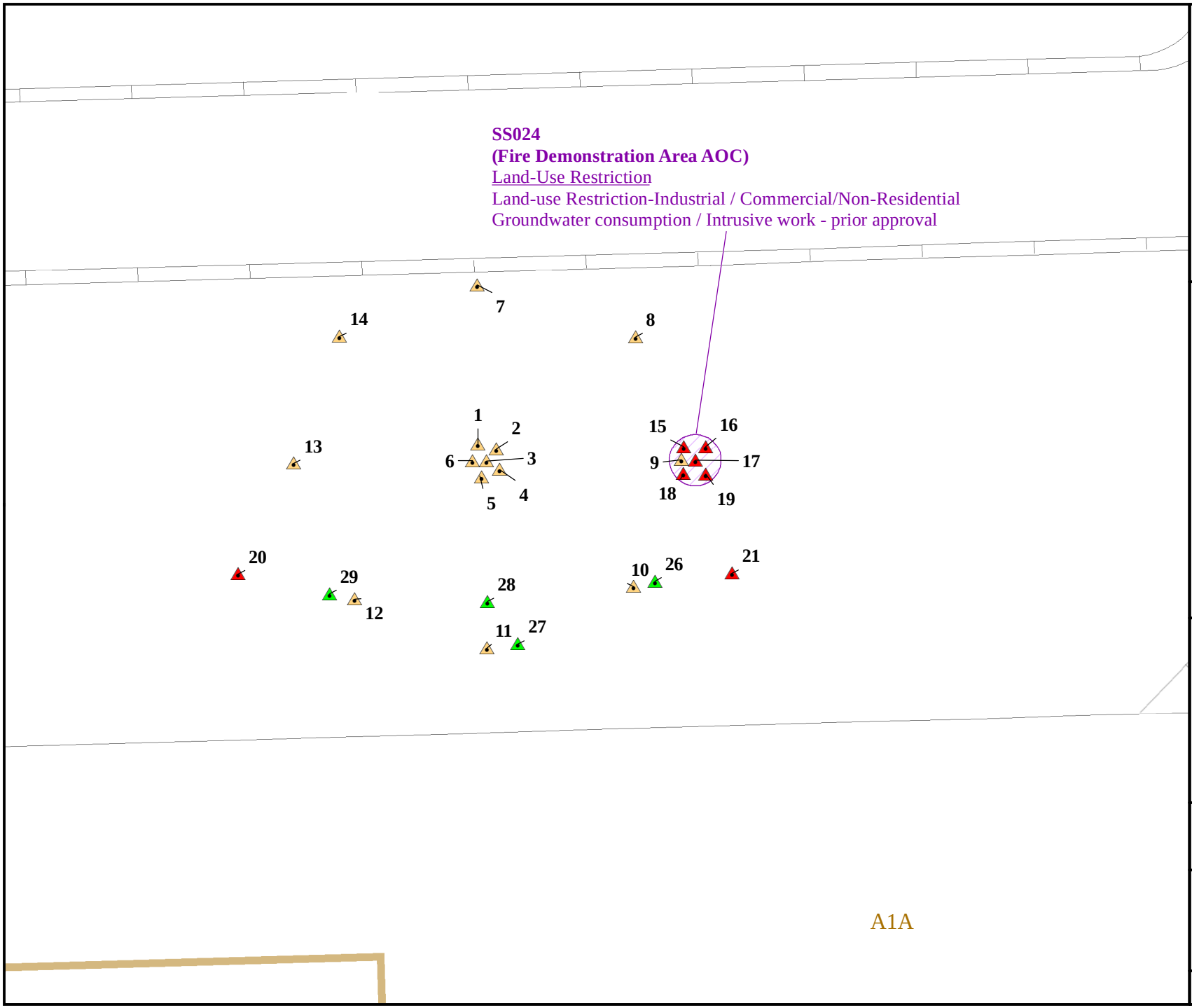

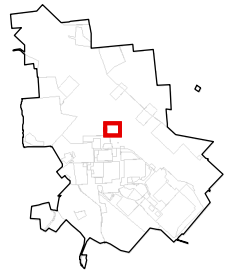

Site Location

Legend

- June 2014 - Soil Sample Location
- July 2013 - Soil Sample Location
- May 2013 - Soil Sample Location
- Existing Airfield / Road
- Removed Airfield / Road
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

0 60 120

Feet

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Figure 11
SS024
(Fire Demonstration Area AOC)
LUC/IC Site

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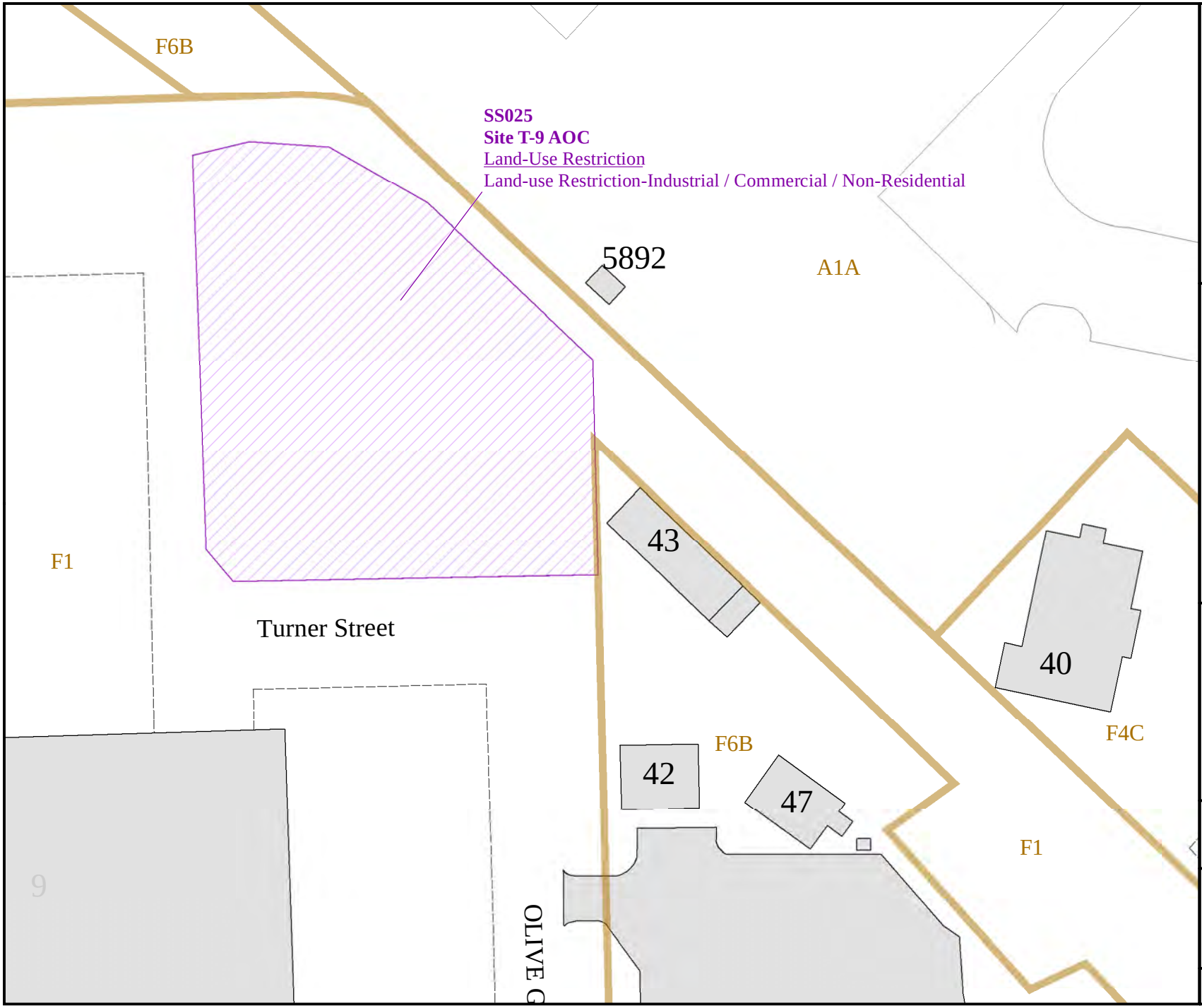

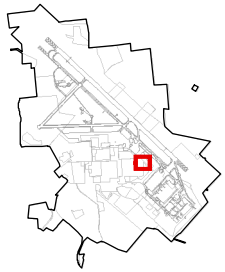

Site Location

Legend

- Existing Airfield / Road
- Removed Airfield / Road
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

50 25 0 50 100

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 12
SS025
(Site T-9 AOC)
LUC/IC Site

FPM April 2015

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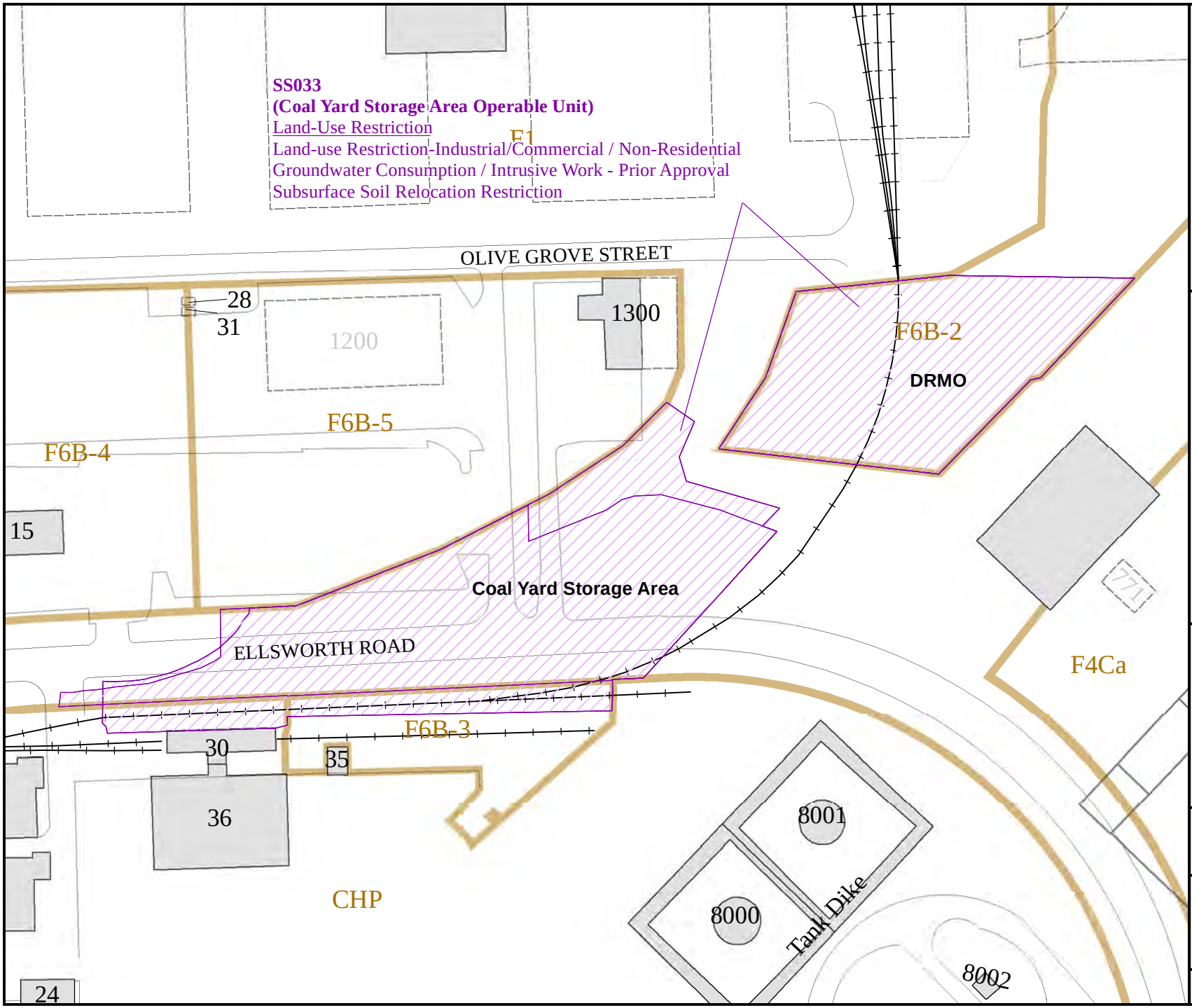

Site Location

Legend

- Existing Railroads
- Removed Rails
- Existing Airfield / Road
- Removed Airfield / Road
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

0 75 150

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 13
SS033
(Coal Yard Storage Area
Operable Unit)
LUC/IC Sites

FPM April 2015

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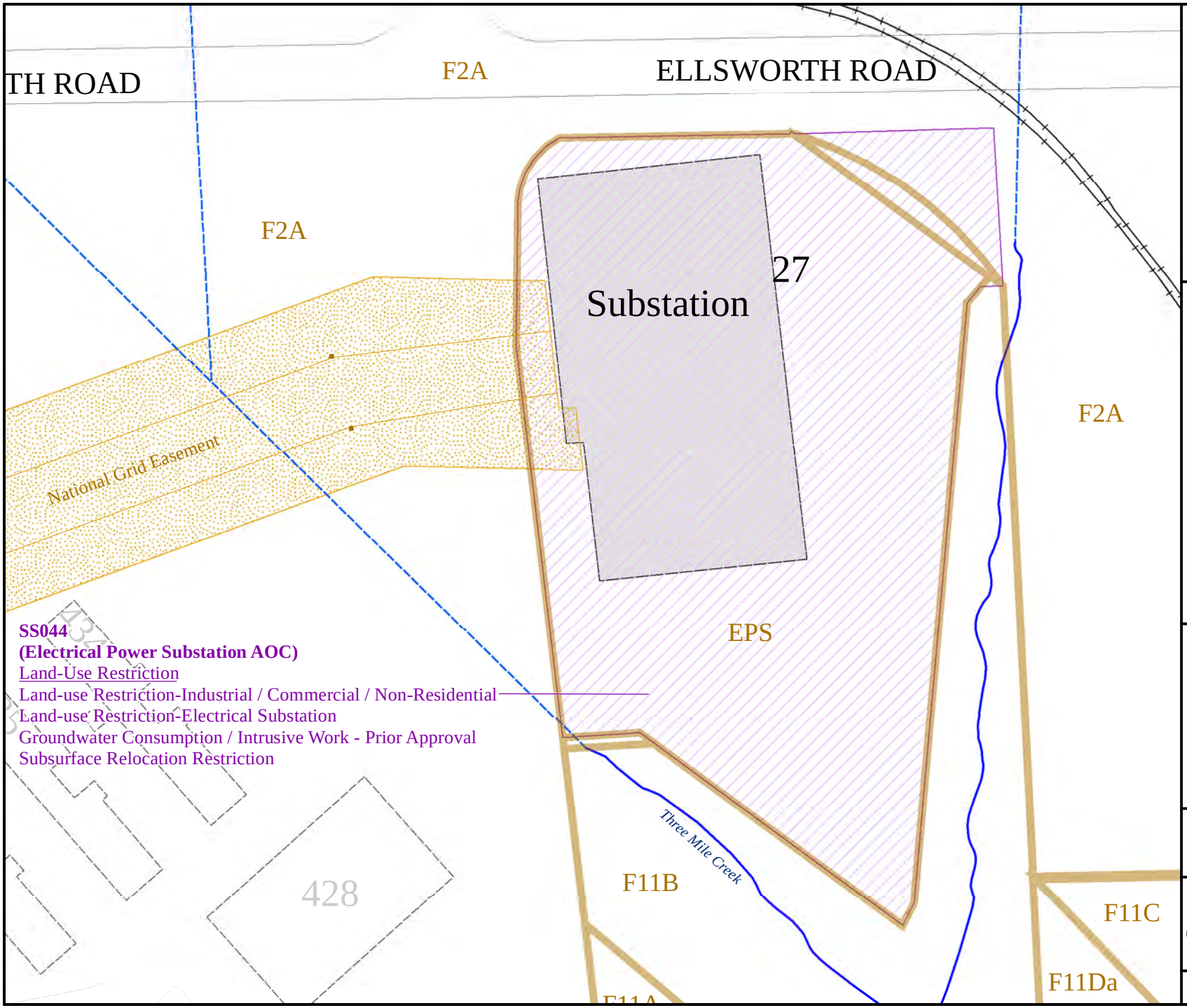

Site Location

Legend

- Electric Transmission Structure
- Electric Transmission Line
- Existing Railroad
- Existing Airfield / Road
- Removed Airfield / Road
- Culvert / Ditch
- Surface Water
- Site Boundary
- Existing Facility
- Demolished Facility
- Parcel Boundary

N

50 25 0 50

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 14
SS044
(Electrical Power Substation AOC)
LUC/IC Site

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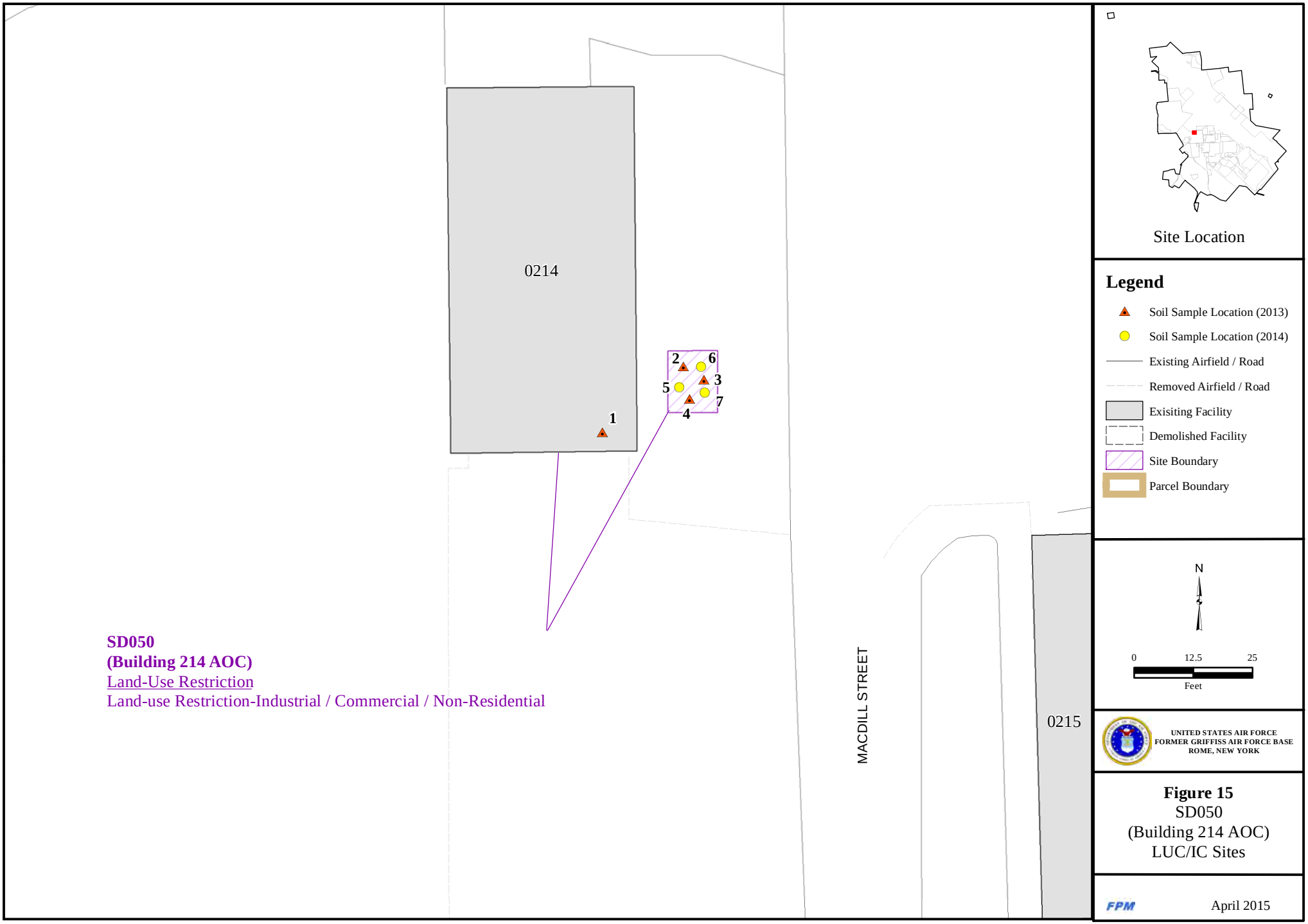

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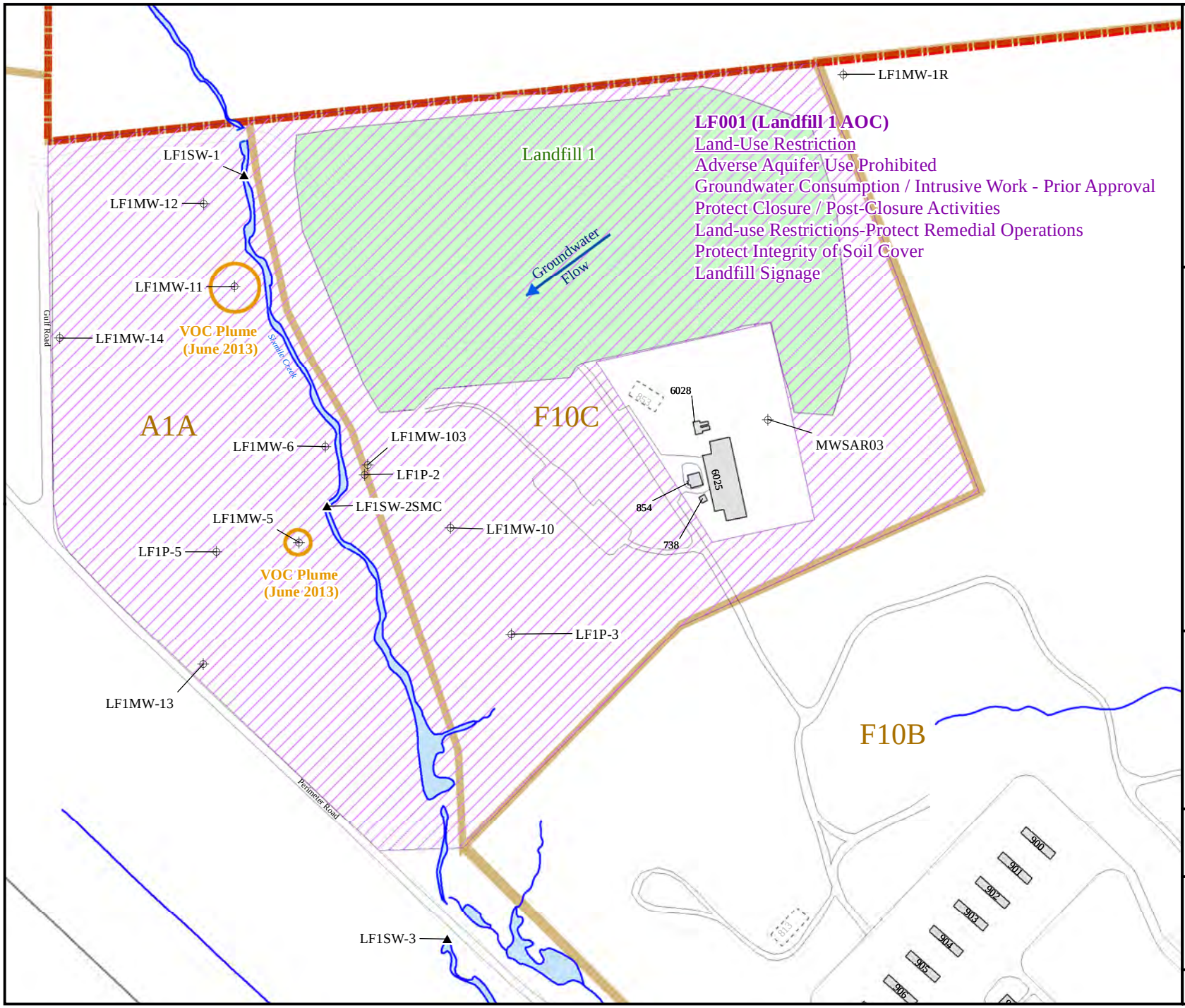

Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Existing Airfield / Road
- Removed Airfield / Road
- Culvert / Ditch
- Surface Water
- Groundwater Flow
- Base Boundary
- VOC Contamination Plume (June 2013)
- Existing Facility
- Demolished Facility
- Site Boundary
- Landfill
- Parcel Boundary

N

0 100 200 400

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 16
LF001
(Landfill 1 AOC)
LTM Site

FPM April 2015

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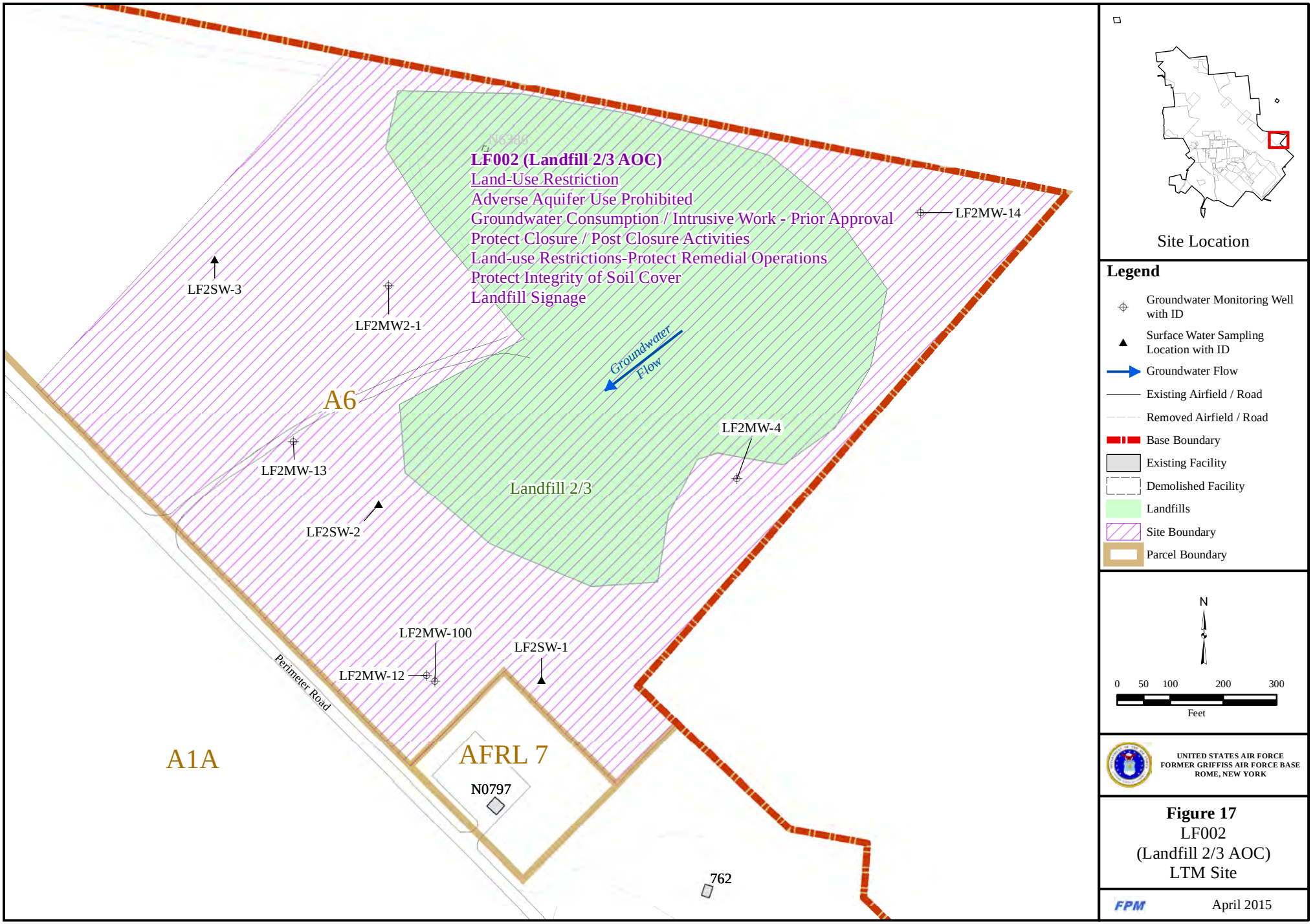

Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Groundwater Flow
- Existing Airfield / Road
- Removed Airfield / Road
- Base Boundary
- Existing Facility
- Demolished Facility
- Landfills
- Site Boundary
- Parcel Boundary

N

0 50 100 200 300

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 17
LF002
(Landfill 2/3 AOC)
LTM Site

FPM April 2015

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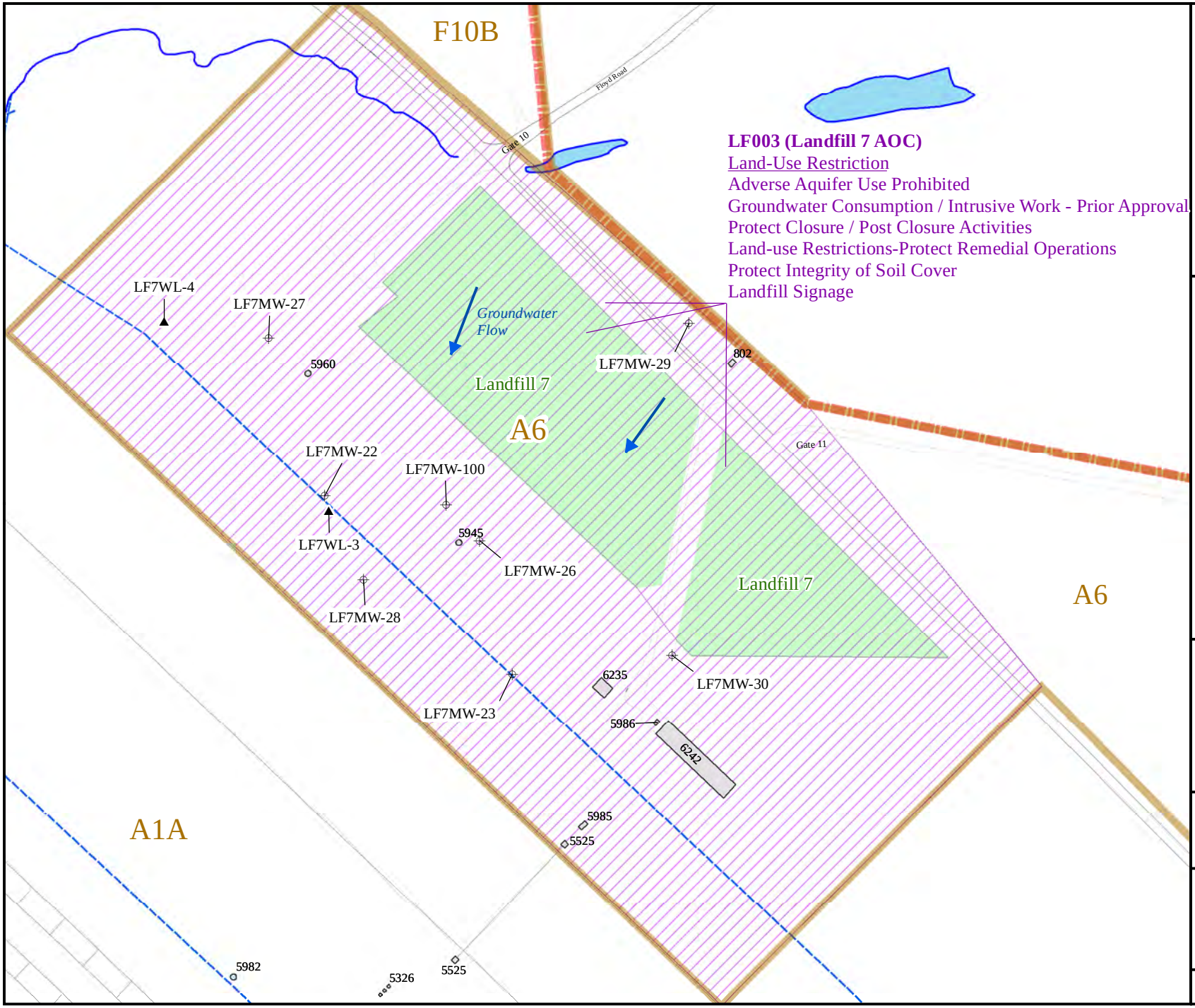

Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Groundwater Flow
- Existing Airfield / Road
- Removed Airfield / Road
- Culvert / Ditch
- Surface Water
- Base Boundary
- Existing Facility
- Demolished Facility
- Landfill
- Site Boundary
- Parcel Boundary

N

0 50 100 200 300

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 18
LF003
(Landfill 7 AOC)
LTM Site

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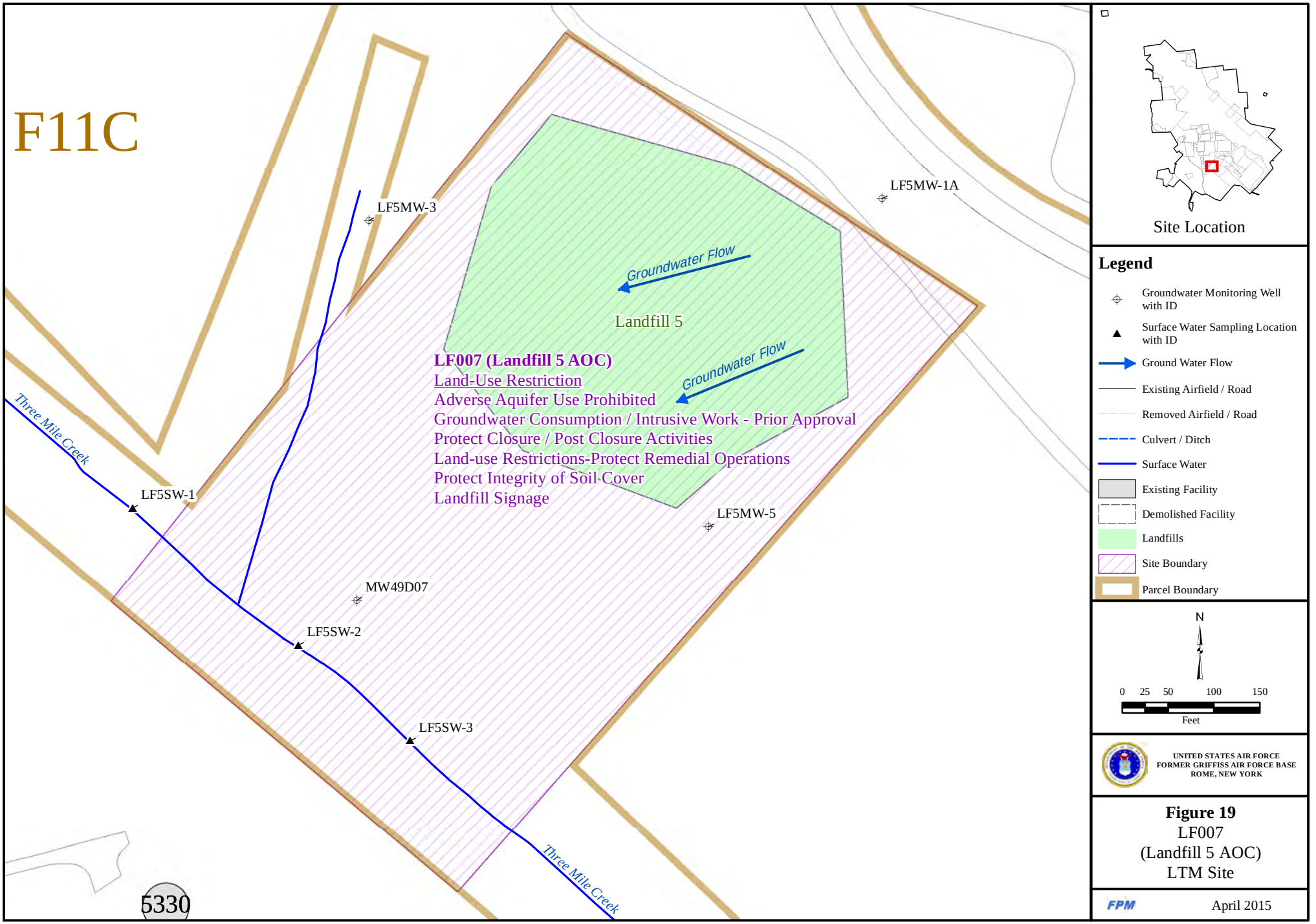

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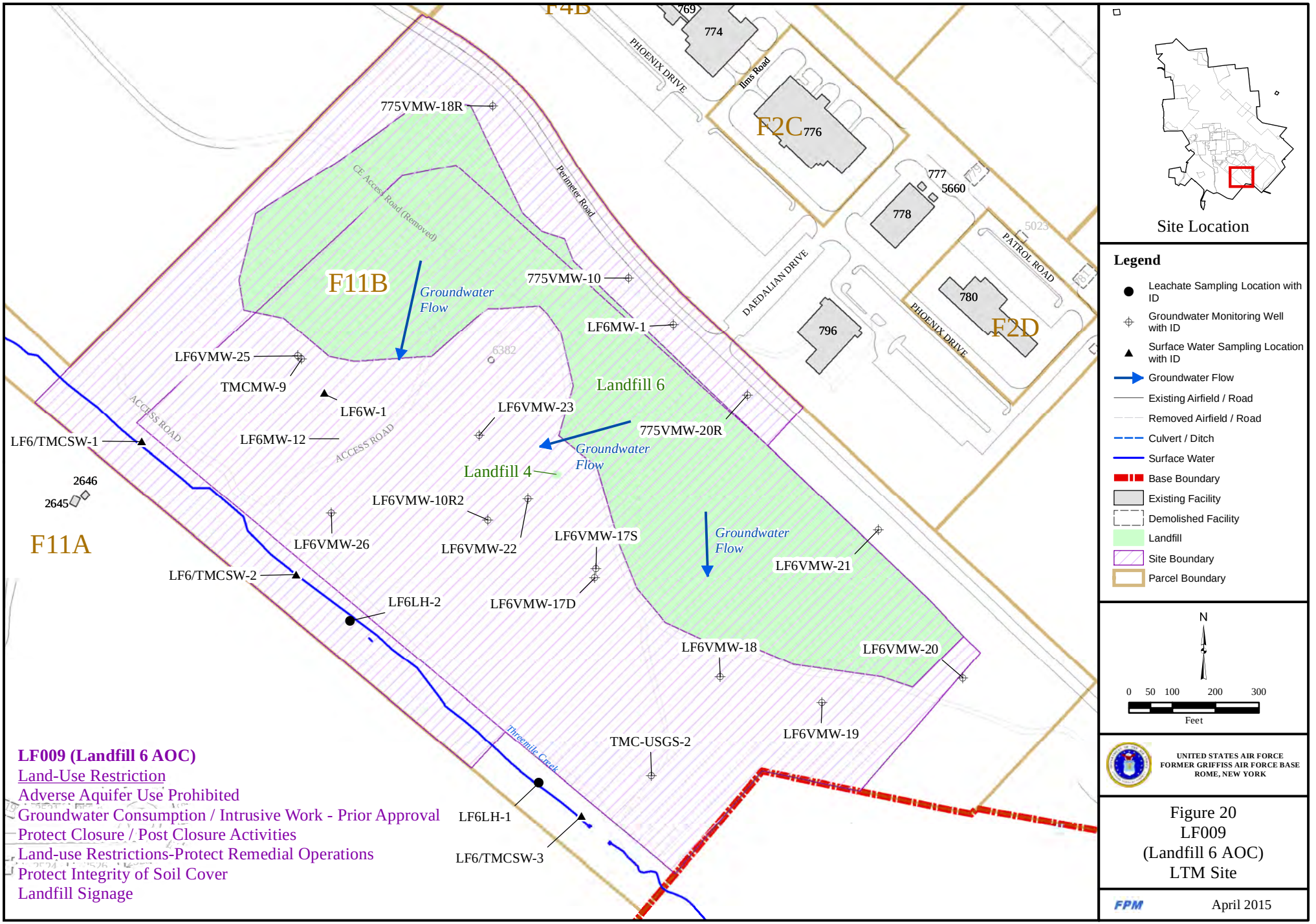

Site Location

Legend

- Leachate Sampling Location with ID
- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Groundwater Flow
- Existing Airfield / Road
- Removed Airfield / Road
- Culvert / Ditch
- Surface Water
- Base Boundary
- Existing Facility
- Demolished Facility
- Landfill
- Site Boundary
- Parcel Boundary

N

0 50 100 200 300

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 20
LF009
(Landfill 6 AOC)
LTM Site

FPM April 2015

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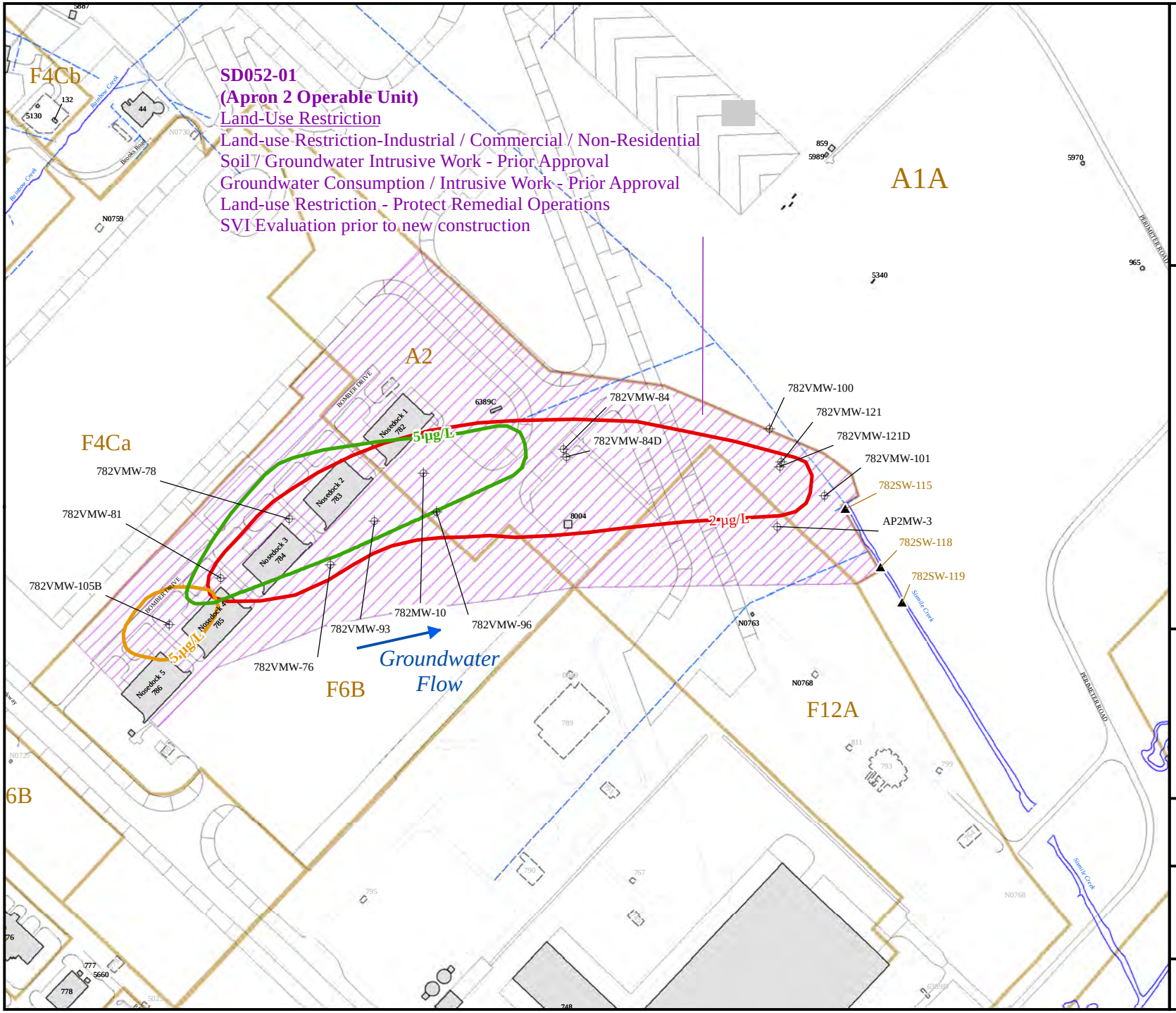

Site Location

Legend

- Groundwater Monitoring Well Location with ID
- Surface Water Sampling Location with ID
- Groundwater Flow
- DCE Plume (5 µg/L)
- TCE Plume (5 µg/L)
- VC Plume (2 µg/L)
- Existing Airfield /
- Removed Airfield /
- Culvert / Ditch
- Surface Water
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

200 100 0 200

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 21
SD052-01
(Apron 2 Operable Unit)
Ongoing Remedial Action Site

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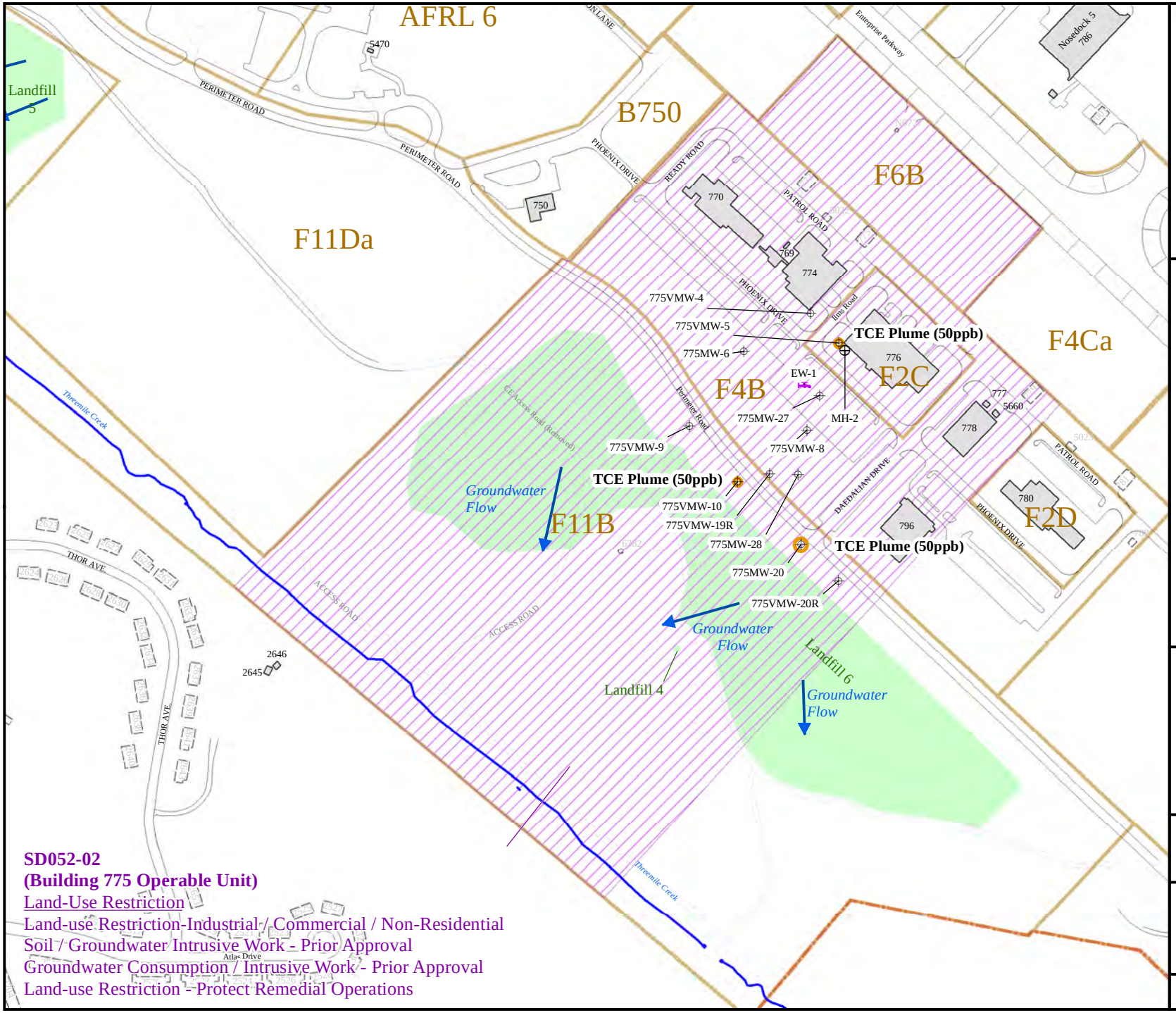


Site Location

Legend

- Groundwater Monitoring Well Location with ID
- EW Valve
- MH-2
- Building 775 TCE Plume (50ppb)
- Groundwater Flow
- Existing Airfield / Road
- Removed Airfield / Road
- Surface Water
- Culvert / Ditch
- Former Base Boundary
- Existing Facility
- Demolished Facility
- Landfill
- Site Boundary
- Parcel Boundary

N

200 100 0 200

Feet

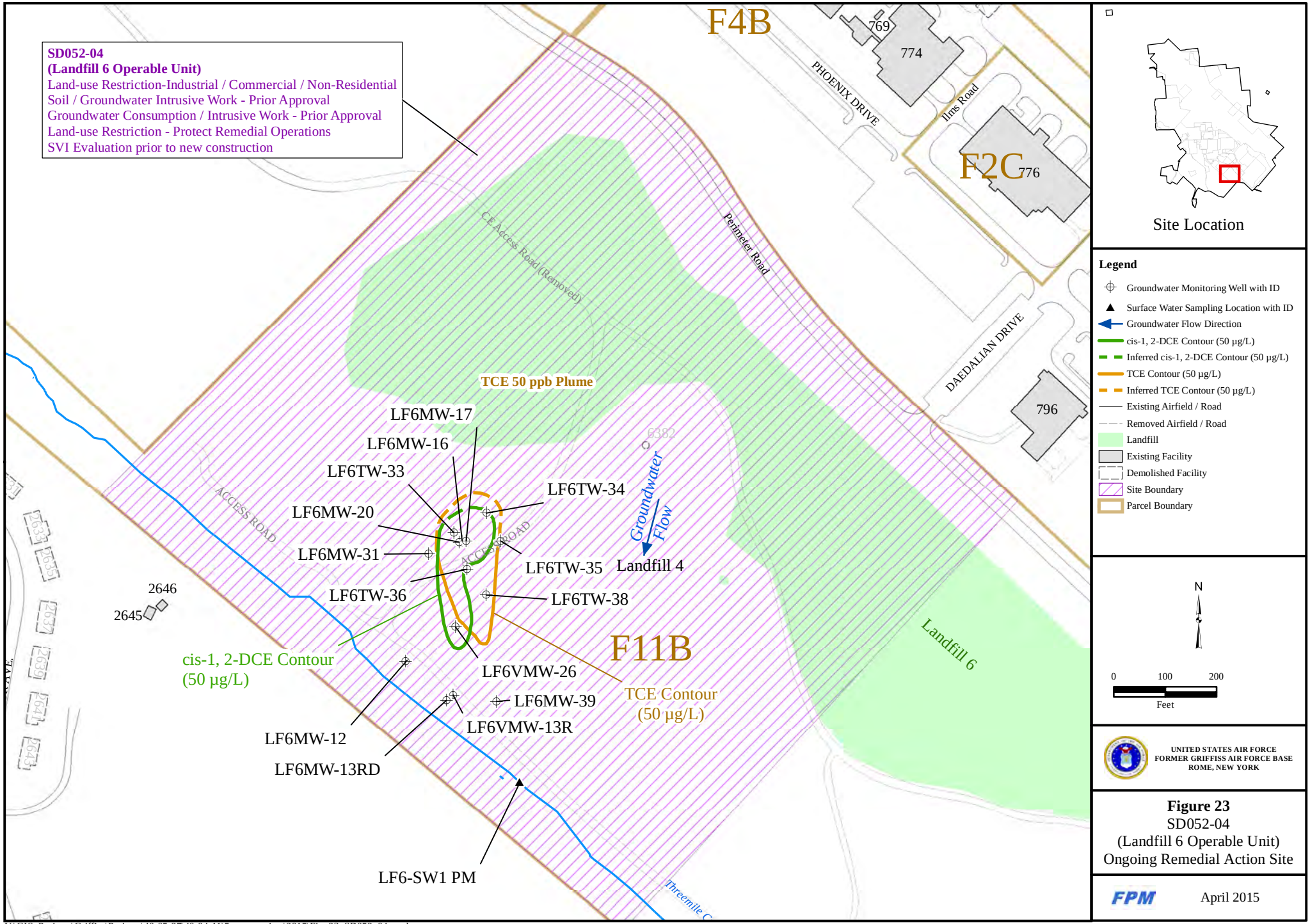
UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

SD052-02
(Building 775 Operable Unit)
Land-Use Restriction
Land-use Restriction-Industrial / Commercial / Non-Residential
Soil / Groundwater Intrusive Work - Prior Approval
Groundwater Consumption / Intrusive Work - Prior Approval
Land-use Restriction - Protect Remedial Operations

Figure 22
SD052-02
(Building 775 Operable Unit)
Ongoing Remedial Action Site

FPM April 2015

Y:\GIS_Projects\Griffiss\Projects\40-05-27\40-04-11\5-year_review\2015\Fig_22_SD052_02.mxd



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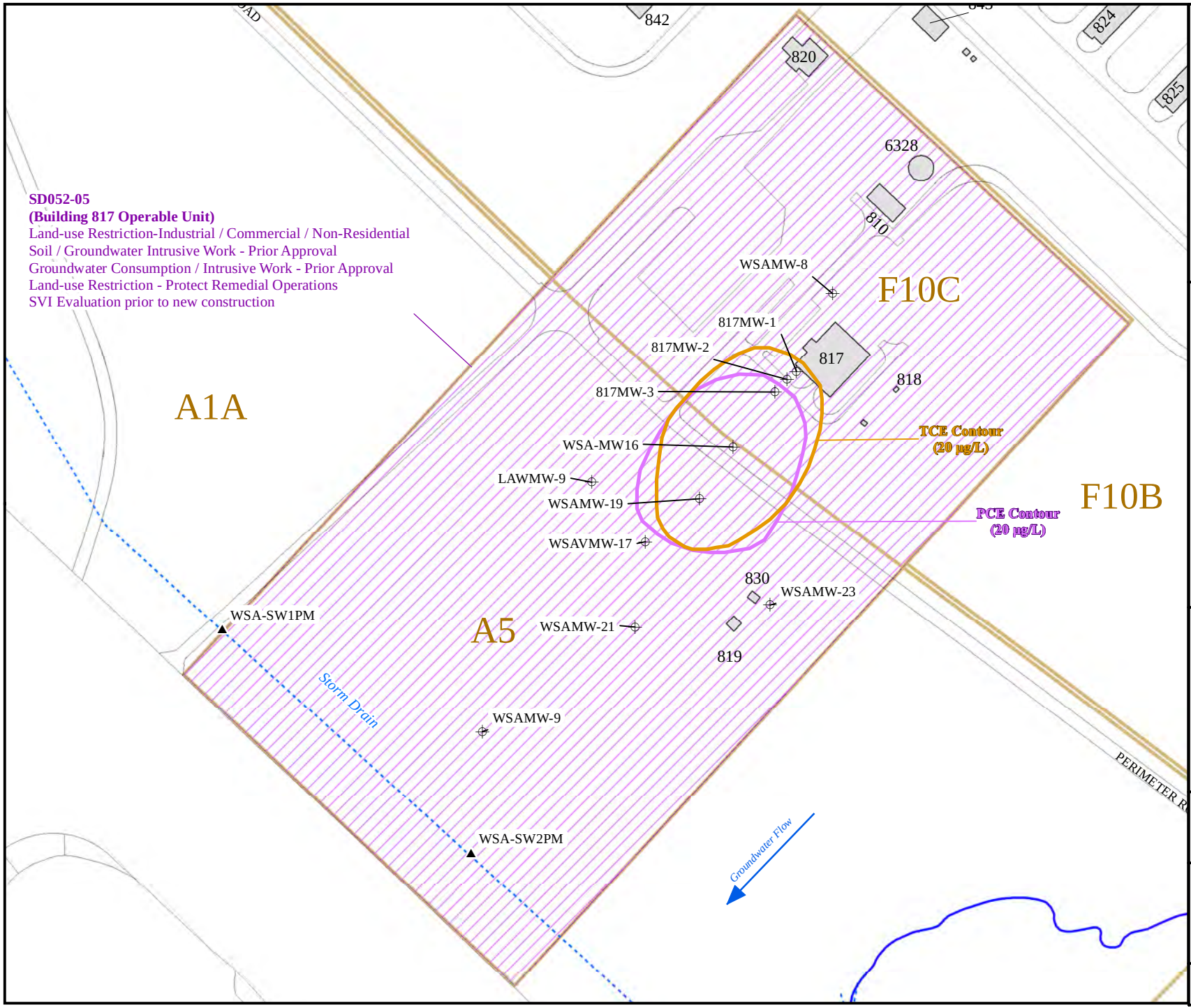

Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- B817_GW_Flow
- PCE Contour (20 µg/L)
- TCE Contour (20 µg/L)
- Surface Water
- Culvert / Ditch
- Existing Airfield / Road
- Removed Airfield / Road
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

0 100 200 300

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 24
SD052-05
(Building 817 Operable Unit)
Ongoing Remedial Action Site

FPM April 2015

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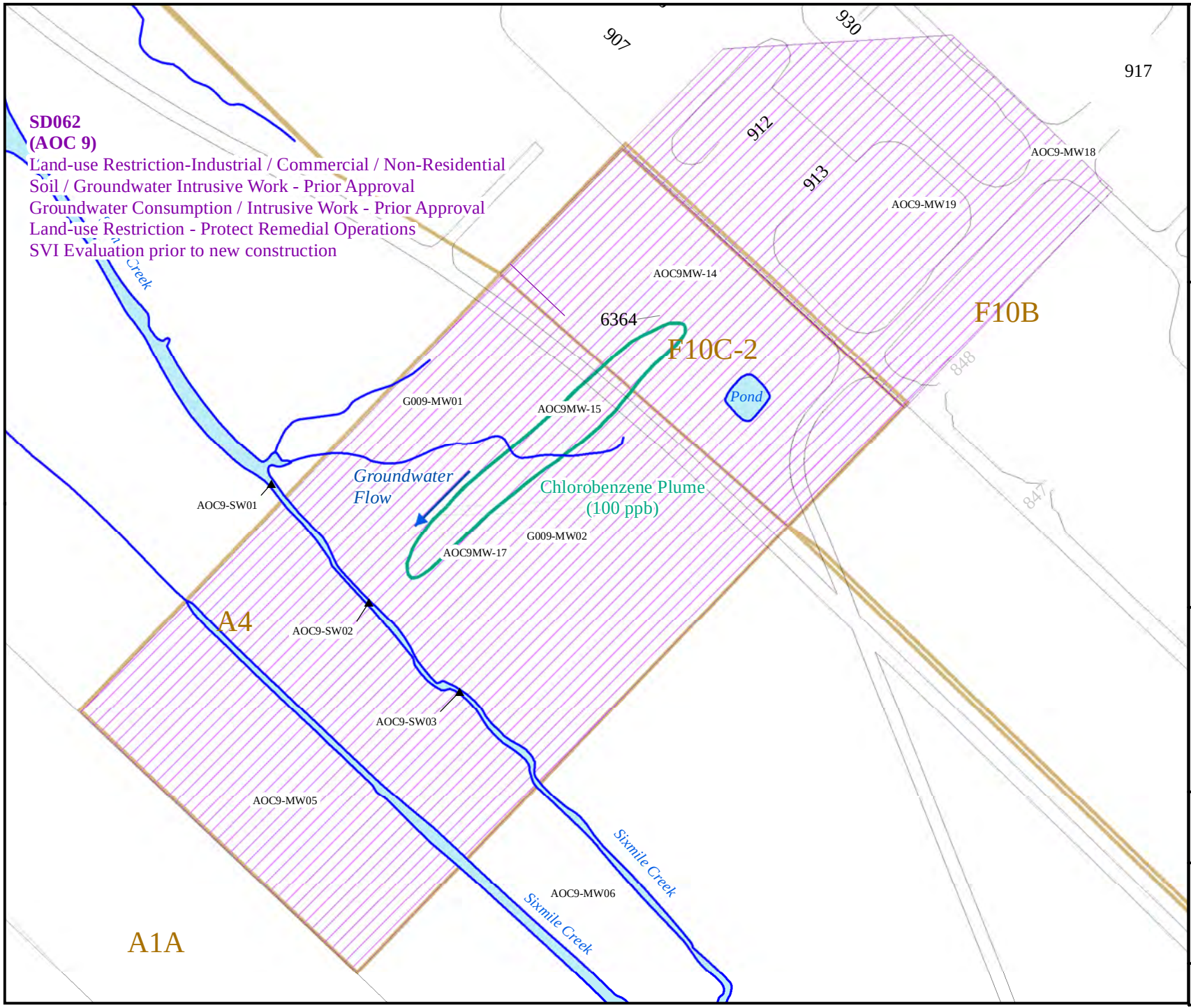

Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Surface Water
- Culvert / Ditch
- Existing Airfield / Road
- Removed Airfield / Road
- Groundwater Flow
- Chlorobenzene (100 ppb)
- Existing Facility
- Demolished Facility
- Site Boundary
- Parcel Boundary

N

200 100 0

Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 25
SD062
(AOC 9)
Ongoing Remedial Action Site

FPM

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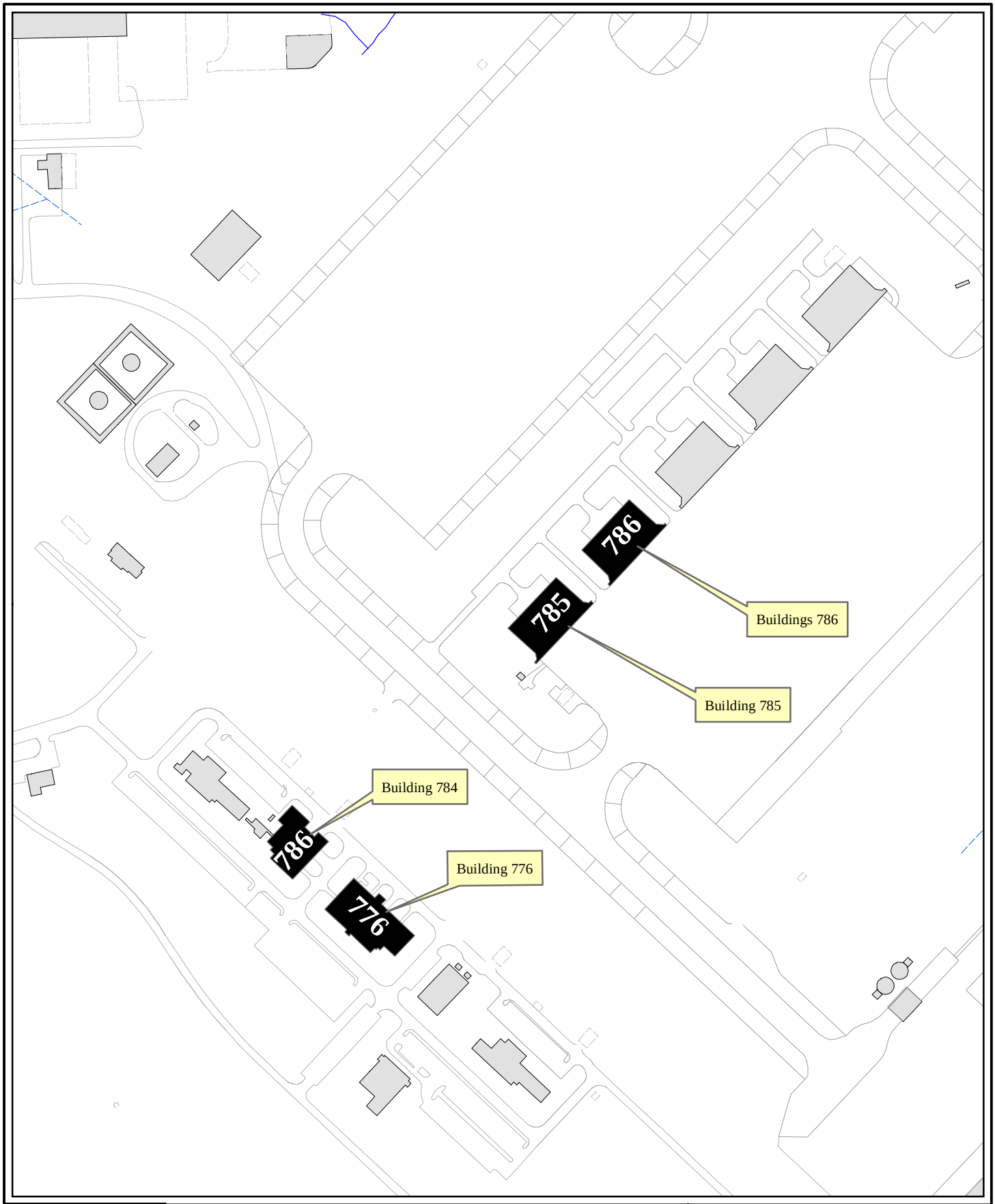

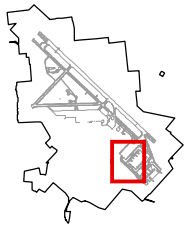

Base Location

Key to Features

- Road/Airfield
- Storm Drain
- Surface Water
- Base Boundary
- Site Location
- Existing Facility
- Demolished Facility

Figure 26
Griffiss Pre-ROD Sites

0 200 400
Feet

N

UNITED STATES AIR FORCE
GRIFFISS AIR FORCE BASE
ROME, NEW YORK

FPM Remediations, Inc

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Appendix A

Five-Year Review Site Inspection Checklist

I. BASE INFORMATION	
FORMER GRIFFISS AFB	
Location and Region: Oneida County, Region 2	**EPA ID: NY4571924451**

LUC/IC Sites

Site: ST006 Building 101

Date of Inspection: 9/10/2014

Site Condition:

- LUC/IC site is within Building 101 (former Battery Room).
- Building 101 used for office space and aircraft maintenance.
- Soil vapor extraction system installed in 2013 under AFCEC contract.

Land-use Changes: The property was transferred in 2014. There were no other changes at the site since the ROD was signed.

ROD Requirement: The selected remedy was LUC/ICs in the form of land use restrictions limiting future use to industrial/commercial purposes and re-evaluation for SVI if new construction is performed in the SVI restriction area.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	

LUC/IC Monitoring	**Frequency**
	Annually and Reports are up to date

Comments: LUC/IC evaluation including sub-slab vapor sampling conducted in January 2013. As a result, a soil vapor extraction system was installed in October 2013. All vapor monitoring points and the SVE system are in good condition. Municipal water supply used within the facility.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
ST-06-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
ST-06-02	SVI evaluation prior to new construction	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.

Site Photos: SVE System in former battery room.

Site: SS008 Building 112 AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is located within a commercial area.
- Grassy/gravel open space
- Building 112 demolished.
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: None.

ROD Requirement: The selected remedy for the Building 112 AOC is no further action with LUC/ICs for industrial/ commercial use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	

Comments: Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
SS-08-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
SS-08-02	Groundwater Consumption / Intrusive Work – Prior Approval	X	
SS-08-03	Subsurface Soil Relocation Restriction	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Site Location (facing north)

Site: DP012 Building 301 AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is located outside of a commercial building.
- Grassy open space which is routinely mowed.
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: Building 301 was demolished and a new office building has been constructed further away from the site. No other changes.

ROD Requirement: The selected remedy for the Building 301 AOC is LUC/ICs for commercial/administrative use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	

LUC/IC Monitoring	**Frequency**
	Annually and Reports are up to date

Comments: Groundwater restrictions removed from site with EPA and NYSDEC approval in 2012. LUC/IC evaluation including soil sampling conducted in May 2013. A removal action was conducted in July 2014. Site closure is pending. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
DP-12-01	Land-use Restriction-Commercial/Administrative/Non-Residential	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Site location (facing north)

Site: DP013 Building 255 AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is split into two locations (western area and southern area) located in a commercial/industrial area.
- Both areas are grassy open spaces which are routinely mowed.
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: None

ROD Requirement: The selected remedy for the Building 255 AOC is no further action for soils with LUC/ICs for industrial/commercial use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	

Comments: Groundwater restrictions removed from site with EPA and NYSDEC approval in 2012. LUC/IC evaluation including soil sampling conducted in May 2013 and May 2014. Site closure is pending. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
DP-13-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
DP-13-04	Land-use Restriction-Industrial/Commercial/Non-Residential	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos:

Western Area (facing west, area is off pavement)

Southern Area (facing west)

Site: DP015 Building 219 AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is located outside of a commercial building.
- Grassy open space which is routinely mowed.
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: None.

ROD Requirement: The selected remedy for the Building 219 Drywell AOC is no further action, with LUC/ICs for industrial land-use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	

LUC/IC Monitoring	**Frequency**
	Annually and Reports are up to date

Comments: Groundwater restrictions removed from site with EPA and NYSDEC approval in 2012. LUC/IC evaluation including soil sampling conducted in May 2013 and July 2014. Site closure is pending. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
DP-15-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Robert Angelicola, Roberts Office Interiors	**Date:** 9/24/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Site Location (facing southeast, area is off pavement in grass)

Site: SS017 Lot 69 AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is located within a commercial area.
- Paved parking lot for buses.
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: None.

ROD Requirement: The selected remedy for the Lot 69 AOC is LUC/ICs for industrial/commercial use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	

LUC/IC Monitoring	**Frequency**
	Annually and Reports are up to date

Comments: Groundwater restrictions removed from site with EPA and NYSDEC approval in 2012. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
SS-17-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Lynn Harvey, Birnie Bus	**Date:** 9/18/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Site Location (facing north)

Site: DP022 Building 222 AOC			
Date of Inspection: 9/10/2014			
Site Condition: • The site is located inside of a commercial building. Building used for office space. • No monitoring wells or remedial activities ongoing at site.			
Land-use Changes: None.			
ROD Requirement: The selected remedy for the Building 222 AOC site is no further action for soils with LUC/ICs for industrial/commercial use and groundwater use restrictions.			
LUC/IC Implementation	**Implemented:**		
	YES	**NO**	
	X		
LUC/IC Monitoring	**Frequency**		
	Annually and Reports are up to date		
Comments: Groundwater restrictions removed from site with EPA and NYSDEC approval in 2012. Municipal water supply used at facilities adjacent to the site.			
1. 5-Year Review Site Inspection:			
LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
DP-22-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
2. 5-Year Review Site Interview:			
Owner/Occupant: Robert Angelicola, Roberts Office Interiors	**Date:** 9/24/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	
3. Implementation of the Remedy			
• The remedy has been implemented and is protective of human health. • There has been no change is site use since the last five-year review that would prevent the remedy from being protective.			

Site Photos: Site Location (facing north, site in building near the right corner)

Site: SS024 Fire Demonstration Area AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is located inside of a restricted airfield
- Grassy open space which is routinely mowed.
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: None.

ROD Requirement: The selected remedy for the FDA AOC is no further remedial action, with LUC/ICs for industrial land-use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	

LUC/IC Monitoring	**Frequency**
	Annually and Reports are up to date

Comments: LUC/IC evaluation including soil sampling conducted in May 2013 and July 2014. Site closure is pending. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
SS-24-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
SS-24-02	Groundwater consumption / Intrusive work – prior approval	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Chad Lawrence, GAI	**Date:** 9/18/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Site Location (facing north)

Site: SS025 Site T-9 AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is located in a commercial/industrial area.
- Grassy open space which is not maintained.
- No Air Force monitoring wells or remedial activities ongoing at site. Current property owner installed monitoring wells.

Land-use Changes: Olive oil plant constructed next to the site. Installation of railroad in the site

ROD Requirement: The selected remedy for the Site T-9 AOC is no further action for soils with LUC/ICs for industrial/commercial use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	

LUC/IC Monitoring	**Frequency**
	Annually and Reports are up to date

Comments (last LUC/IC Site Inspection submittal, etc.): Groundwater restrictions removed from site with NYSDEC and EPA approval in 2012 and 2013, respectively. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
SS-25-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Site Location (facing southwest)

Site: SS033 Coal Storage Yard Area Operable Unit

Date of Inspection: 9/10/2014

Site Condition:

- The OU is two areas consisting of the CSYA AOC and the DRMO.
- The site is located in a commercial/industrial area.
- Grass covered open space (is mowed).
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: Since ROD signature, a railroad has been constructed through the site. The property was transferred in 2013. There were no other changes at the site.

ROD Requirement: The selected remedy for the CYSA OU is no further remedial action, with LUC/ICs for industrial land-use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	

Comments: Trenching was conducted to install a gas pipeline in 2014. The company was contacted and informed of the restriction. A plan was coordinated to not relocate any soils and to place soils back into the correct intervals. Periodic inspections were also conducted during the trenching activities. No violations were noted. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
SS-33-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
SS-33-02	Groundwater consumption / Intrusive work – prior approval	X	
SS-33-03	Subsurface Soil Relocation Restriction	X	

2. 5-Year Review Site Interview:

		Confirmation: LUC/ICs are observed	
		Valid	**Not Valid**
Owner/Occupant: Daniel Sanders, GUSC	**Date:** 9/17/2014	X	
Owner/Occupant: Lynn Harvey, Birnie Bus	**Date:** 9/18/2014	X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.

Site Photo: Site Location (facing north, CSYA AOC in foreground and DRMO)

Site: SS044 Electrical Power Substation AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is an active electrical power substation.
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: None.

ROD Requirement: The selected remedy for the EPS AOC is LUC/ICs for industrial use as a restricted access electrical substation and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	

LUC/IC Monitoring	**Frequency**
	Annually and Reports are up to date

Comments: Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
SS-44-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
SS-44-02	Land-use Restriction-Electrical Substation	X	
SS-44-03	Groundwater consumption / Intrusive work – prior approval	X	
SS-44-04	Subsurface Soil Relocation Restriction	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Daniel Sanders, GUSC	**Date:** 9/17/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Site Location (facing west)

Site: SD050 Building 214 AOC

Date of Inspection: 9/10/2014

Site Condition:

- The site is located in two areas. Both areas are next to each other; however, one area is inside Building 214 and the other area is outside.
- Building 214 is a commercial building used for storage
- The area outside is grassy open space which is routinely mowed.
- No monitoring wells or remedial activities ongoing at site.

Land-use Changes: None.

ROD Requirement: The selected remedy for the Building 214 AOC site is no further remedial action, with LUC/ICs for industrial land-use and groundwater use restrictions.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	

Comments: Groundwater restrictions removed from site with EPA and NYSDEC approval in 2012. LUC/IC evaluation including soil sampling conducted in May 2013 and July 2014. Site closure is pending. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
SD-50-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	

2. 5-Year Review Site Interview:

Owner/Occupant: Robert Angelicola, Roberts Office Interiors	**Date:** 9/24/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Building 214 site facing north (site in right-hand corner of building, inside and outside)

LTM and Ongoing Remedial Action Sites

Site: LF001 Landfill 1 AOC

Date of Inspection: 9/9/2014

Site Condition:

- Unlined Landfill with cap
- Grassy open space which is maintained (mowed annually). Vegetation cover is optimal with no signs of erosion in cap
- Groundwater sampling, Surface water sampling, Cap inspections, and Landfill gas monitoring are ongoing at site.

Land-use Changes: The property was transferred in 2011. There were no other changes at the site.

ROD Requirement: The selected remedy for the Landfill 1 consisted of the following actions:

- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary and the contaminated groundwater plume area to prevent the exposure to the contaminated landfill mass and groundwater;
- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated November 26, 1996;
- Maintenance of the impermeable cover and long-term monitoring of the groundwater, surface water, and sediment in accordance with the 6 NYCRR Part 360 landfill post-closure regulations, dated November 26, 1996;
- Monitoring the groundwater and stream environment (which may include, but is not necessarily limited to sediment, surface water, and biota) downgradient of the site to evaluate the effectiveness of the presumptive remedy. Any rare plants, significant communities or wetlands disturbed during the remedial action will be restored; and
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Landfill Cap Inspections	Semiannually	
Groundwater Sampling	Annually	
Surface Water Sampling	Annually	
Landfill Gas Monitoring	Semiannually	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation:**	
		Valid	**Not Valid**
LF-01-01	Adverse Aquifer Use Prohibited	X	
LF-01-02	Groundwater Consumption / Intrusive Work - Prior Approval	X	
LF-01-03	Protect Closure/ Post Closure Activities	X	
LF-01-04	Land-use Restrictions-Protect Remedial Operations	X	
LF-01-05	Protect Integrity of the Soil Cover	X	
LF-01-06	Landfill Signage	X	

<table>
<tr><td colspan="4">Condition of Monitoring Wells/Gas Vents/Gas Monitoring Probes/Landfill Signs: All Monitoring Wells/Gas Vents/Gas Monitoring Probes/Landfill Signs inspected and maintained on a semi-annual basis. All in good condition and no maintenance required at time of this inspection.</td></tr>
<tr><td colspan="4">2. 5-Year Review Site Interview:</td></tr>
<tr><td rowspan="2">Owner/Occupant: Chad Lawrence, GAI</td><td rowspan="2">Date: 9/18/2014</td><td colspan="2">Confirmation: LUC/ICs are observed</td></tr>
<tr><td>Valid</td><td>Not Valid</td></tr>
<tr><td colspan="2"></td><td>X</td><td></td></tr>
<tr><td colspan="4">3. Implementation of the Remedy</td></tr>
<tr><td colspan="4">• The remedy has been implemented and is protective of human health.
• There has been no change is site use since the last five-year review that would prevent the remedy from being protective.</td></tr>
</table>

Site Photos: Site Location (facing north)

Site: LF002 Landfill 2/3 AOC

Date of Inspection: 9/9/2014

Site Condition:

- Unlined Landfill with cap
- Grassy open space which is maintained (mowed annually). Vegetation cover is optimal with no signs of erosion in cap
- Groundwater sampling, Surface water sampling, Cap inspections, and Landfill gas monitoring are ongoing at site.

Land-use Changes: None.

ROD Requirement: The site the selected remedy for the Landfill 2/3 AOC consisted of the following actions:

- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated April 1, 1987. This action would include placing a minimum of 18 inches of low-permeability soil and 6 inches of topsoil over the entire landfill surface to reduce the amount of water infiltrating through the landfill.
- Maintenance of the cover and long-term monitoring of the groundwater and stream environment.
- Monitoring of the groundwater and stream environment (which may include, but not necessarily limited to, sediment, surface water, and biota) downgradient of the site to evaluate the effectiveness of the presumptive remedy.
- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary to prohibit inappropriate use of the area and groundwater, and to ensure the soil cover is not damaged and the area is maintained as a landfill.
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Landfill Cap Inspections	Semiannually	
Groundwater Sampling	Biennially	
Surface Water Sampling	Biennially	
Landfill Gas Monitoring	Semiannually	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
LF-02-01	Adverse Aquifer Use Prohibited	X	
LF-02-02	Groundwater Consumption / Intrusive Work - Prior Approval	X	
LF-02-03	Protect Closure/ Post Closure Activities	X	
LF-02-04	Land-use Restrictions-Protect Remedial Operations	X	
LF-02-05	Protect Integrity of the Soil Cover	X	
LF-02-06	Landfill Signage	X	

Condition of Monitoring Wells/Gas Vents/Gas Monitoring Probes/Landfill Signs: All Monitoring Wells/Gas Vents/Gas Monitoring Probes/Landfill Signs inspected and maintained on a semi-annual basis. All in good condition and no maintenance required at time of this inspection.

<table>
<tr><td colspan="4">2. 5-Year Review Site Interview:</td></tr>
<tr><td rowspan="2">Owner/Occupant: Chad Lawrence, GAI</td><td rowspan="2">Date: 9/18/2014</td><td colspan="2">Confirmation: LUC/ICs are observed</td></tr>
<tr><td>Valid</td><td>Not Valid</td></tr>
<tr><td colspan="2"></td><td>X</td><td></td></tr>
<tr><td colspan="4">3. Implementation of the Remedy</td></tr>
<tr><td colspan="4">• The remedy has been implemented and is protective of human health.
• There has been no change is site use since the last five-year review that would prevent the remedy from being protective.</td></tr>
</table>

Site Photos: Site Location (facing north in the middle of the landfill)

Site: LF003 Landfill 7 AOC

Date of Inspection: 9/9/2014

Site Condition:

- Unlined Landfill with cap
- Grassy open space which is maintained (mowed annually). Vegetation cover is optimal with no signs of erosion in cap
- Groundwater sampling, Surface water sampling, and Cap inspections are ongoing at site.

Land-use Changes: None.

ROD Requirement: The selected remedy for the Landfill 7 AOC consisted of the following actions:

- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated April 1, 1987. This action would include placing a minimum of 18 inches of low-permeability soil and 6 inches of topsoil over the entire landfill surface to reduce the amount of water infiltrating through the landfill;
- Maintenance of the cover and long-term monitoring of the groundwater and wetland environment;
- Monitoring of the groundwater and stream environment downgradient of the site to evaluate the effectiveness of the presumptive remedy;
- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary to prohibit inappropriate use of the area and groundwater, and to ensure the soil cover is not damaged and the area is maintained as a landfill; and
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Landfill Cap Inspections	Semiannually	
Groundwater Sampling	Biennially	
Surface Water Sampling	Biennially	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
LF-03-01	Adverse Aquifer Use Prohibited	X	
LF-03-02	Groundwater Consumption / Intrusive Work - Prior Approval	X	
LF-03-03	Protect Closure/ Post Closure Activities	X	
LF-03-04	Land-use Restrictions-Protect Remedial Operations	X	
LF-03-05	Protect Integrity of the Soil Cover	X	
LF-03-06	Landfill Signage	X	

Condition of Monitoring Wells/Gas Vents/Gas Monitoring Probes/Landfill Signs: All Monitoring Wells and Landfill Signs inspected and maintained on a semi-annual basis. All in good condition and no maintenance required at time of this inspection. No Gas Vents/Gas Monitoring Probes at site.

2. 5-Year Review Site Interview:			
Owner/Occupant: Chad Lawrence, GAI	**Date:** 9/18/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	
3. Implementation of the Remedy			
• The remedy has been implemented and is protective of human health. • There has been no change is site use since the last five-year review that would prevent the remedy from being protective.			

Site Photos: Site Location (facing northwest)

Site: LF007 Landfill 5 AOC

Date of Inspection: 9/10/2014

Site Condition:

- Unlined Landfill with cap
- Grassy open space which is maintained (mowed annually). Vegetation cover is optimal with no signs of erosion in cap
- Groundwater sampling, Surface water sampling, and Cap inspections are ongoing at site.

Land-use Changes: The property was transferred in 2012. There were no other changes at the site.

ROD Requirement: The selected remedy for the Landfill 5 AOC consisted of the following actions:

- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated April 1, 1987. This action would include placing a minimum of 18 inches of low-permeability soil and 6 inches of topsoil over the entire landfill surface to reduce the amount of water infiltrating through the landfill;
- Maintenance of the cover and long-term monitoring of the groundwater and stream environment;
- Monitoring of the groundwater and stream environment downgradient of the site to evaluate the effectiveness of the presumptive remedy;
- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary to prohibit inappropriate use of the area and groundwater, and to ensure the soil cover is not damaged and the area is maintained as a landfill; and
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Landfill Cap Inspections	Semiannually	
Groundwater Sampling	Biennially	
Surface Water Sampling	Biennially	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
LF-07-01	Adverse Aquifer Use Prohibited	X	
LF-07-02	Groundwater Consumption / Intrusive Work - Prior Approval	X	
LF-07-03	Protect Closure/ Post Closure Activities	X	
LF-07-04	Land-use Restrictions-Protect Remedial Operations	X	
LF-07-05	Protect Integrity of the Soil Cover	X	
LF-07-06	Landfill Signage	X	

Condition of Monitoring Wells/Gas Vents/Gas Monitoring Probes/Landfill Signs: All Monitoring Wells and Landfill Signs inspected and maintained on a semi-annual basis. All in good condition and no maintenance required at time of this inspection. No Gas Vents/Gas Monitoring Probes at site.

2. 5-Year Review Site Interview:			
Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	
3. Implementation of the Remedy			
• The remedy has been implemented and is protective of human health. • There has been no change is site use since the last five-year review that would prevent the remedy from being protective.			

Site Photos: Site Location (facing south)

Site: LF009 Landfill 6 AOC

Date of Inspection: 9/10/2014

Site Condition:

- Unlined Landfill with cap
- Grassy open space which is maintained (mowed annually). Vegetation cover is optimal with no signs of erosion in cap
- Groundwater sampling, Surface water sampling, Cap inspections, and Landfill gas monitoring are ongoing at site.

Land-use Changes: The property was transferred in 2012. There were no other changes at the site.

ROD Requirement: The selected remedy for the Landfill 6 AOC consisted of the following actions:

- Installation of an impermeable cover in accordance with 6 NYCRR Part 360 landfill closure regulations, dated November 26, 1996. This action will include placing a gas venting layer, a geomembrane cover, and a barrier protection layer over the entire landfill surface to reduce the amount of water infiltrating through the landfill;
- Maintenance of the impermeable cover;
- Long-term monitoring of the groundwater and stream environment downgradient of the site to evaluate the effectiveness of the presumptive remedy;
- Implementation of institutional controls in the form of deed restrictions on the main landfill boundary to prohibit inappropriate use of the area and groundwater, and to ensure the soil cover is not damaged and the area is maintained as a landfill; and
- Evaluation of the site conditions at least once every five years to ensure that the remedy is protective of human health and the environment.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Landfill Cap Inspections	Semiannually	
Groundwater Sampling	Annually	
Surface Water Sampling	Annually	
Landfill Gas Monitoring	Semiannually	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
LF-09-01	Adverse Aquifer Use Prohibited	X	
LF-09-02	Groundwater Consumption / Intrusive Work - Prior Approval	X	
LF-09-03	Protect Closure/ Post Closure Activities	X	
LF-09-04	Land-use Restrictions-Protect Remedial Operations	X	
LF-09-05	Protect Integrity of the Soil Cover	X	
LF-09-06	Landfill Signage	X	

Condition of Monitoring Wells/Gas Vents/Gas Monitoring Probes/Landfill Signs: All Monitoring Wells/Gas Vents/Gas Monitoring Probes/Landfill Signs inspected and maintained on a semi-annual basis. All in good condition and no maintenance required at time of this inspection.

2. 5-Year Review Site Interview:			
Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	
3. Implementation of the Remedy			
• The remedy has been implemented and is protective of human health. • There has been no change is site use since the last five-year review that would prevent the remedy from being protective.			

Site Photos: Site Location (facing northwest)

Site: SD052-01 Apron 2 Operable Unit

Date of Inspection: 9/9/2014

Site Condition:

- Site is located within a commercial/industrial area
- Open space and aircraft apron (currently used for aircraft parking).
- Groundwater and surface water sampling are ongoing at the site.

Land-use Changes: The property was transferred in 2012. There were no other changes at the site.

ROD Requirement: The selected remedy includes:

- Monitored Natural Attenuation (MNA) including groundwater and surface water monitoring to verify that human health and the environment are protected.
- Implementation of the contingency alternative, such as a horizontal air sparging barrier (or other action agreed upon by the Air Force, EPA, and NYSDEC), if surface water samples from Six Mile Creek contain elevated concentrations of vinyl chloride that could be attributed to site groundwater.
- Long-term monitoring of the groundwater plume will be performed. The contaminant level variations will be monitored with quarterly monitoring of VOCs for the first year and semi-annually thereafter. A higher monitoring frequency is selected for the first year to identify seasonal fluctuations and uncertainties within the plume.
- Institutional controls in the form of deed restrictions for affected groundwater will also be implemented.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Groundwater Sampling	Annual	
Surface Water Sampling	Annual	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
SD-52APRON2-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
SD-52APRON2-02	Soil/Groundwater Intrusive Work - Prior Approval	X	
SD-52APRON2-03	Groundwater Consumption / Intrusive Work - Prior Approval	X	
SD-52APRON2-04	Land-use Restriction - Protect Remedial Operations	X	
SD-52APRON2-05	SVI Evaluation prior to new construction.	X	

Condition of Monitoring Wells: All Monitoring Wells are in good condition and no maintenance required at time of this inspection.

2. 5-Year Review Site Interview:

Owner/Occupant: Chad Lawrence, GAI	**Date:** 9/18/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy
• The remedy has been implemented and is protective of human health. • There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Site Location (facing east)

Site: SD052-02 Building 775 Operable Unit

Date of Inspection: 9/10/2014

Site Condition:

- Site is located within a commercial/industrial area
- Grassy open space and parking lots for office buildings.
- Groundwater and surface water sampling are ongoing at the site.
- Groundwater Extraction ongoing at this site.

Land-use Changes: None.

ROD Requirement: The selected remedy includes:

- Installation of recovery wells to extract the groundwater from the Building 775 plume.
- The groundwater will be discharged to a sanitary sewer for off-site treatment at a wastewater treatment facility or treated on site and discharged to Three Mile Creek.
- Long-term maintenance of the treatment system that will require sampling of the influent and effluent VOC concentrations prior to discharge.
- Treatment performance monitoring during full-scale implementation.
- Institutional controls in the form of deed restrictions for affected groundwater have been/will be implemented.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Groundwater Sampling	Annually	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
SD-52-02-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
SD-52-02-02	Soil/Groundwater Intrusive Work-Prior Approval	X	
SD-52-02-03	Groundwater Consumption / Intrusive Work - Prior Approval	X	
SD-52-02-04	Land-use Restriction-Protect Remedial Operations	X	

Condition of Monitoring Wells: All Monitoring Wells are in good condition and no maintenance required at time of this inspection. Extraction control box at site in good condition.

2. 5-Year Review Site Interview:

Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is protective of human health.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Northern portion of site (facing north)

Site: SD052-04 Landfill 6 Operable Unit

Date of Inspection: 9/10/2014

Site Condition:

- Site is located within a landfill site and wooded area
- Groundwater and surface water sampling are ongoing at the site.

Land-use Changes: The property was transferred in 2012. There were no other changes at the site.

ROD Requirement: The selected remedy includes:

- Bioremediation of the plume in the area exhibiting the highest COC concentrations.
- Installation of recovery wells to extract groundwater for recirculation, if necessary, based on review of the treatment system performance data. The remedy at the Landfill 6 TCE site will be implemented in a phased approach. First, bioremediation will occur and then groundwater extraction and recirculation will be implemented, if needed.
- Implementation of a contingency plan including an in-situ air sparge wall (or other action agreed upon by the Air Force, EPA, and NYSDEC), if elevated levels of DCE and/or VC attributable to site groundwater are detected in Three Mile Creek.
- Treatment performance monitoring during full-scale implementation.
- Implementation of LUC/ICs in the form of deed restrictions within the main landfill boundary and for affected groundwater.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Groundwater Sampling	Semiannually	
Surface Water Sampling	Semiannually	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
SD-52LF6-01	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
SD-52LF6-02	Groundwater Consumption / Intrusive Work - Prior Approval	X	
SD-52LF6-03	Land-use Restriction-Protect Remedial Operations	X	
SD-52LF6-04	Soil / Groundwater Intrusive Work Prior Approval	X	
SD-52LF6-05	SVI Evaluation prior to new construction.	X	

Condition of Monitoring Wells: All Monitoring Wells are in good condition and no maintenance required at time of this inspection.

2. 5-Year Review Site Interview:

Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	**Confirmation: LUC/ICs are observed**	
		Valid	**Not Valid**
		X	

3. Implementation of the Remedy

- The remedy has been implemented and is being evaluated.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos:

Site Location, central portion showing injection wells (facing southwest)

Site: SD052-05 Building 817 Operable Unit

Date of Inspection: 9/9/2014

Site Condition:

- Site is located within a commercial/industrial area.
- Grassy open space with a building in the northern portion of the site. Southern portion in restricted airfield.
- Building is used for storage and poorly maintained.
- Groundwater and surface water sampling are ongoing at the site.

Land-use Changes: The property was transferred in 2012 (Parcel F10C-3) and 2013 (Parcel A5). There were no other changes at the site.

ROD Requirement: The selected remedy includes:

- Enhanced bioremediation to remove VOCs from Building 817/WSA site groundwater.
- Implementation of the contingency air sparge wall (or other action agreed upon by the Air Force, EPA, and NYSDEC) will be completed if surface water samples from the culverted section of Six Mile Creek contain elevated concentrations of DCE and/or vinyl chloride that could be attributed to site groundwater.
- Institutional controls in the form of deed restrictions for affected groundwater will also be implemented.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Groundwater Sampling	Semiannually	
Surface Water Sampling	Semiannually	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
SD-52B817-01	Soil/Groundwater Intrusive Work – Prior Approval	X	
SD-52B817-02	Groundwater Consumption / Intrusive Work – Prior Approval	X	
SD-52B817-03	Land-use Restriction-Protect Remedial Operations	X	
SD-52B817-04	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
SD-52B817-05	SVI Evaluation prior to new construction	X	

Condition of Monitoring Wells: All Monitoring Wells are in good condition and no maintenance required at time of this inspection.

2. 5-Year Review Site Interview:

		Confirmation: LUC/ICs are observed	
		Valid	**Not Valid**
Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	X	
Owner/Occupant: Chad Lawrence, GAI	**Date:** 9/18/2014	X	

3. Implementation of the Remedy
• The remedy has been implemented and is being evaluated. • There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Northern portion of site with vacant building (facing southeast)

Site: SD062 AOC-9

Date of Inspection: 9/9/2014

Site Condition:

- Site is located within a commercial/industrial area.
- Grassy open space with buildings/bunkers in the northern portion of the site. Southern portion of the site is in a restricted airfield.
- Buildings and bunkers are used for storage and poorly maintained.
- Groundwater and surface water sampling are ongoing at the site.

Land-use Changes: The property was transferred in 2012 (Parcel F10C-2) and 2013 (Parcel A4). There were no other changes at the site.

ROD Requirement: The Selected Remedy for AOC 9 includes removal of the source area through excavation of contaminated soil, treatment of contaminated groundwater using chemical oxidation, and land use controls.

LUC/IC Implementation	**Implemented:**	
	YES	**NO**
	X	
LUC/IC Monitoring	**Frequency**	
	Annually and Reports are up to date	
LTM/Performance Monitoring Implementation	**Implemented:**	
	YES	**NO**
	X	
Monitoring:	**Frequency:**	
Groundwater Sampling	Annually	
Surface Water Sampling	Annually	

Comments: Annual Reporting is up to date for all LTM activities. Municipal water supply used at facilities adjacent to the site.

1. 5-Year Review Site Inspection:

LUC/IC ID	**LUC/ICs**	**Confirmation**	
		Valid	**Not Valid**
AOC-9-01	Soil/Groundwater Intrusive Work – Prior Approval	X	
AOC-9-02	Groundwater Consumption / Intrusive Work – Prior Approval	X	
AOC-9-03	Land-use Restriction-Protect Remedial Operations	X	
AOC-9-04	Land-use Restriction-Industrial/Commercial/Non-Residential	X	
AOC-9-05	SVI Evaluation prior to new construction	X	

Condition of Monitoring Wells: All Monitoring Wells are in good condition and no maintenance required at time of this inspection.

2. 5-Year Review Site Interview:

		Confirmation: LUC/ICs are observed	
		Valid	**Not Valid**
Owner/Occupant: Frank Sanzone, GLDC	**Date:** 10/13/2014	X	
Owner/Occupant: Chad Lawrence, GAI	**Date:** 9/18/2014	X	

3. Implementation of the Remedy

- The remedy has been implemented and is being evaluated.
- There has been no change is site use since the last five-year review that would prevent the remedy from being protective.

Site Photos: Northern portion of site (facing north)

Appendix B

CHIC PAIL — The home composting trend has been helped along by a variety of small composters, some stylish-looking and many designed to cut odors. (AP Photo/NatureMill.net)

RED WIGGLERS — Red wiggler worms have been enlisted to help homeowners and apartment dwellers with new trends in composting. (AP Photo/The Journal-Star, Tessa Lighty)

AUTOMATIC — Composting, long reserved for those with gardens or at least enough outdoor space for a big pungent composter, is now being embraced by many apartment-dwellers. (AP Photo/NatureMill.net)

GARDENING

Countertop composting a hit with homeowners, apartment dwellers

BY KATHERINE ROTH (AP)

NEW YORK (AP) — Composting and collecting kitchen scraps, once the province of those with gardens or space for a big, pungent, outdoor composter, is now being embraced by a growing number of apartment-dwellers and homeowners with small yards that lack the space needed for outdoor composting.

The trend has been helped along by the development of small composters and organic waste bins designed to be short on size and odors and long on environmental impact. Some are even sleek and stylish.

A growing number of cities offer pickup or drop-off options for compost and food scraps, which make up an estimated 14 percent of the waste stream nationwide, according to the U.S. Composting Council.

"Five years ago there really wasn't much, but now lots of communities have options," said Leanne Spaulding of the Bethesda, Maryland-based organization.

Almost 300 U.S. municipalities have food-waste collection programs and over a hundred others have community-based programs, she said. Many more have drop-off sites for food waste or compost.

For those who want to start composting in their homes, the cheapest method is vermicomposting, which can be done in a small container using, yes, worms.

"It sounds gross, but they can eat a half pound of fruit and vegetable bits, eggshells and coffee grounds a day, and if you manage the composter well you should forget it's even there," said Teddy Tedesco, project manager for the New York City Compost Project, hosted by the Brooklyn Botanic Garden.

In a composter small enough for even the tiniest studio apartment, red wiggler worms, widely available online, process food waste, which is then cured and used to enrich soil. So long as the worms are not fed meat, dairy or grains, or kale, broccoli or cabbage, the odors are minimal, Tedesco said.

The New York City Compost Project, funded and managed by the city sanitation department, teaches communities about composting, offers technical support and sells inexpensive, apartment-friendly vermicomposters — basically small plastic containers topped with a screen or ventilated lid.

The general rule is 1 pound of worms per square foot of surface area of the composting bin. The resulting vermicompost (worm poop) is then moved to a separate container with a few holes punched in the lid to be cured, generally for about a week or so.

The nutrient-rich "soil amendment" produced by the little composters can be used to help feed houseplants as well as community trees and plants.

For those squeamish about sharing their home with worms and willing to spend a couple hundred dollars, a snazzy electric composter designed for small urban kitchens is also a possibility.

"These composters provide heat and continually move the compost, and the only organisms involved are the bacteria that are doing the decomposing," Tedesco said. "Often they can include things like meat and dairy because they're closed and use heat to help in the process."

Electric composters generally include a mechanism that allows the processed food waste to fall to the bottom, where it cures before being used.

But for many apartment dwellers, collecting food waste in small, sealed, countertop containers to be picked up or dropped off and then professionally composted remains the easiest way to compost in a city.

"This is a great way of getting food waste out of landfills until you're ready to begin composting at home," Tedesco said.

The scraps can be kept for up to a week in an airtight countertop container or frozen, to further minimize odors, before being dropped off at a composting site.

"A lot of urban drop-off sites even request that the waste be frozen," he said.

CompostNow, based in Raleigh, N.C., distributes its own bins in eight different cities and then collects them once a week, dropping off clean bins in their place. Food waste is then professionally composted, and participants can select which community garden or other recipient will get the compost.

The group's website has a map of food-waste pickup and composting services across the United States.

"Every week someone is reaching out to us saying we want to start something like this where we live. I've gotten calls from as far away as Singapore and New Zealand," said Justin Senkbeil, co-founder of the group.

"When you recycle a bottle, you feel good. But when you compost, you not only feel good, but can also see exactly where your compost is going and enjoy the results," he said.

For information:

- New York Compost Project: www.nyc.gov/compostproject
- U.S. Composting Council: www.compostingcouncil.org
- For a list of areas with compost pick-up programs: www.CompostNow.org
- For more information on indoor composting: http://www.bbg.org/gardening/article/indoor_composting

You never know where or when life's lessons will come

BY PETER SESTITO

You never know when you are going to learn a valuable lesson. You never know who will be responsible for teaching that lesson. The important thing is that you continue to learn from your experiences.

I was having lunch in a local restaurant with a friend and we were discussing the state of affairs of our city.

We were quick to point out deficiencies and issues, in addition to pointing fingers. When we asked for our check to pay the bill, the waiter smiled and said the elderly couple sitting in the next booth paid your bill and left me a very generous tip!

I looked a bit confused and the waiter handed me a napkin and said to read it.

Written on the napkin was, "I apologize for listening to your conversation, but I noticed you didn't offer any solutions." I placed the napkin down and the waiter said there is more on the other side. I flipped the napkin and written in capital letters, "CRITICISM DEFINES FOLLOWERS, SOLUTIONS DEFINE LEADERS."

We left the restaurant feeling a bit ashamed, but after thinking about the events of the day, I smiled at the experience. At 53, I continue to learn from people.

I tried to find out who the elderly couple was, but the owner smiled and wouldn't tell me. The only thing she revealed was that they were a retired military couple who have lived all over the world, but chose to come back to Rome.

I asked her "why Rome, NY?"

She said, "I asked the same question and they both said at the same time, the people."

Rome has problems and issues as do all communities, both this couple was right, the people of Rome are special.

Have a great week and look for next week's column about...You have to read it to believe it!

EDITOR'S NOTE: The Seven Day Sentinel is pleased to introduce a new local columnist Peter Sestito. Readers can look for his column each week.

HELPING CHILDREN — The Annunciation Church, 7616 E. South St., Clark Mills, donates $1,000 to the JROB Foundation. From left, back row: Volunteers Nina Nelson, Dianne French, Kathy Chiarmonte; Rich Fluharty, Annunciation Family Volunteers chairperson; Erin Robinson, JROB founder, and Rev. Kevin Bunger; front row: Maddie, Ariana and Jason Robinson, who is holding Garret Robinson. (Photos submitted)

Harvest dinner aids organizations

CLARK MILLS — The Annunciation Church, 7616 E. South St., is helping a pair of local organizations with funds raised from its annual Harvest Ham Dinner in October. Receiving $1,000 each from the church are:

The JRob Foundation, which purchases adaptive equipment for children with disabilities such as hand-operated bicycles. The foundation is named after Jason Robinson, of Westmoreland, a youth wheelchair athlete with spina bifida.

The Country Pantry which provides food to people in need, serving roughly 280 families.

ASSISTING HUNGRY — Members of the Annunciation Church give a check for $1,000, raised during the church's annual Harvest Ham Dinner, to the Country Pantry. From left, Rev. Kevin Bunger; Dianne French, church volunteer; Kathy Chairmonte, board member of the Country Pantry; Rich Fluharty, Annunciation Family Volunteers chairperson; and volunteers Nina Nelson and Donna Hinman.

MVCC to offer classes to help participants improve lives

Mohawk Valley Community College's Center for Corporate and Community Education is offering non-credit classes to the community designed to help area residents improve their lives. Among the classes are:

Weight Loss: Better Health Through Hypnosis, which will be held 6-8 p.m. Tuesday, Jan. 20 at the Utica Campus. Cost is $19.

Obesity is at an all-time high in America and people are searching for solutions. Real weight loss begins and ends with eating properly now, and forever. In the class, participants will learn the principles of being able to respond to your appetite properly and to put an end to overeating.

By applying simple behavior-changing techniques that anyone can learn and everyone can enjoy, class members will learn how to lose weight in a unique way. They will experience a light trance state and the power of focused concentration and relaxation to fast-track lifestyle changes.

Unlimited You: A complete, immersive, and easy-to-learn, easy-to-use method of utilizing the unused 90 percent of the mind, will be held from 6-7:30 p.m. Wednesdays, Feb. 4-25. Cost is $59.

By learning this method, participants can be at peace, get more things done in almost any situation, enhance their daily life using the power of intuition, instantly eliminate bad habits and boost creativity, MVCC officials said.

Enrollment is limited and will be taken on a first come basis. For information or to register, call 792-5300 or visit www.mvcc.edu/cced.

Utica dentist writes about mini implants

Dr. Brian J. Jackson, a partner in the dental group The Center for Comprehensive Dentistry, has been published in a recent edition of the Journal of Oral Implantology Volume 40.

The journal is a peer-reviewed publication devoted to scientific research and clinical studies associated with dental implants. Dr. Jackson's article was titled "Fixed Partial Denture Treatment with Mini Dental Implants."

Dr. Jackson is a diplomate of the American Board of Oral Implantology/Implant Dentistry and an honored fellow of the American Academy of Implant Dentistry. His practice is located at 2534 Genesee St. in Utica. For more information, visit Slavin-JacksonBurns.com.

PUBLIC NOTICE
INITIATION OF THIRD FIVE-YEAR REVIEW AT THE FORMER GRIFFISS AIR FORCE BASE

The United States Air Force Civil Engineer Center (AFCEC) announces it has initiated preparation of the Third Five-Year Review in order to evaluate whether the ongoing environmental remedies continue to be protective of human health and the environment.

The Five-Year Review report is being prepared pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, and the National Contingency Plan (NCP).

This is the third five-year review conducted for the former base and is a statutory review (Type Ia—applicable to a site where response is still ongoing). It is required due to the fact that hazardous substances, pollutants, and contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

Public input is being solicited during the preparation of this Five-Year Review report. Any questions, comment, or input should be directed to the contact address located below. The completion date for the final document is September 2015 and will become a part of the AFCEC Administrative Record for the former Griffiss Air Force Base on the web at: http://afcec.publicadmin-record.us.af.mil/.

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