Basewide 5-Year Review Addendum

Former Griffiss Air Force Base

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LIST OF ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFFF	Aqueous Film Forming Foam
AFRL	Air Force Research Laboratory
AFRPA	Air Force Real Property Agency
ARARs	Applicable or Relevant and Appropriate Requirements
AOC	Area of Concern
AOI	Area of Interest
ATSDR	Agency for Toxic Substances and Disease Registry
AVGAS	aviation gasoline
BADP	battery acid disposal pit
BCT	BRAC Cleanup Team
bgs	Below Ground Surface
BRAC	Base Realignment and Closure Act
BTEX	benzene, toluene, ethylbenzene, and xylenes
CHP	Central Heating Plant
COC	Contaminant of Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
Conti	Conti Environmental, Inc.
CSYA	Coal Storage Yard Area
cy	Cubic Yards
DCE	dichloroethene
DDE	1,1-dichloro-2,2-bis(chlorophenyl) ethylene
DFAS	Defense Finance and Accounting Service
DOC	dissolved organic carbon
DOD	Department of Defense
DP	Drainage Pit
DRMO	Defense Reutilization Marketing Office
EA	EA Engineering
E&E	Ecology and Environment, Inc.
EE/CA	Engineering Evaluation/Cost Analysis
EEEPC	Ecology and Environment Engineering, P.C.
EPS	Electrical Power Substation
ESD	Explanation of Significant Differences
FDA	Fire Demonstration Area
FFA	Federal Facility Agreement
FOSET	Finding of Suitability for Early Transfer
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FPM	FPM group, Ltd.
FS	Feasibility Study

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

GLDC	Griffiss Local Development Corporation
GPM	gallon per minute
GPR	Ground Penetrating Radar
HI	hazard index
HWSA	Hazardous Waste Storage Area
IC	Institutional Control
IRA	Interim Remedial Action
IRP	Installation Restoration Program
JP-4	jet propulsion fuel grade 4
LAW	Law Engineering and Environmental Services, Inc.
LEL	lower explosive limit
LRA	Local Reuse Agency
LTM	Long-Term Monitoring
LUC	Land-Use Controls
LUR	Land-Use Restrictions
mg/L	milligrams per liter
MNA	monitored natural attenuation
MOGAS	automotive gasoline
MSL	Mean Sea Level
MTBE	methyl tert-butyl ether
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
NCP	National Contingency Plan
NEADS	Northeast Air Defense Sector
NFA	No Further Action
NPL	National Priorities List
NYANG	New York Air National Guard
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
OCIDA	Oneida County Industrial Development Agency
Ocuto	Ocuto Blacktop and Paving Environmental Services
ORC®	Oxygen Release Compound
ORP	oxygen reduction potential
OU	Operable Unit
OWS	Oil/Water Separator

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	tetrachloroethene
PEER	PEER Consultants, P.C.
PID	Photo Ionization Detector
PISCES	Passive In-Situ Chemical Extraction Sampling
PM	Performance Monitoring
POC	point-of-compliance
ppm	parts per million
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RL	reporting limit
ROD	Record of Decision
RRS	Rome Research Site
RSCOs	Recommended Soil Cleanup Objectives
SAC	Strategic Air Command
SAR	Small Arms Range
SD	Surface Drainage
SI	Supplemental Investigation
SPDES	New York State Pollution Discharge Elimination System
SS	Spill Site
SVI	Soil Vapor Intrusion
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TAGM	Technical and Administrative Guidance Memorandum
TBC	To Be Considered
TCA	1,1,1-trichloroethane
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TRPH	Total Recoverable Petroleum Hydrocarbons
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VA	Veterans Affairs
VC	vinyl chloride
VOC	Volatile Organic Compound

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

WPCF Water Pollution Control Facility
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 second 5-Year Review for September 2005 to September 2010 for the former Griffiss Air Force Base (AFB). The first 5-Year Review was prepared by the Air Force in 2005 with USEPA acceptance on September 15, 2005. The 5-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 and OSWER Directive 9355.7-03B-P (June 2001). The purpose of a 5-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 National Contingency Plan (NCP) by the risk range and the hazard index (HI). The risk range and HI are estimated to determine the incremental probably 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, 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 5-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 Real Property Agency (AFRPA) administrative record located on the web at: https://afrpaar.lackland.af.mil/ar /docsearch.aspx.

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 5-Year Review. Overall, 41 CERCLA/FFA sites require Records of Decisions (RODs). To date, 32 RODs have been submitted by the Air Force and approved by the USEPA. Eight RODs are for No Further Action (NFA) and are not evaluated in the 5-Year Review. The remaining sites do not have issued RODs and are listed in the 5-Year Review as Pre-ROD sites.

The Griffiss AFB 5-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 subgroups. The subgroups are:

- Land-Use Control/ Institutional Control (LUC/IC) Sites: Sites with RODs that only specify LUC/ICs,
- Long-Term Monitoring (LTM) Sites: Sites undergoing long-term monitoring,
- Ongoing Remedial Action Sites: Sites undergoing ongoing remedial actions,
- NFA Sites with RODs signed since the last 5-Year Review, and
- Pre-ROD Sites: Sites with RODs pending or planned.

The technical assessment consisted of the review of site documents, site data, ROD requirements, exposure assumptions, toxicity data, and clean-up levels at each site. The documents reviewed are located in the AFRPA administrative record (http://afrpaar.lackland.af.mil/ar/). 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.

The 5-Year Review also includes a Basewide Overview that identifies all CERCLA and non-CERCLA sites within each real estate parcel that has been conveyed, planned for conveyance, or retained. Griffiss AFB was designated for realignment under the Base Realignment and Closure Act 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 (OCIDA), directly to Oneida County, or other recipients such as private or public institutions. The Basewide Overview highlights and cross-references the sites addressed in the 5-Year Review with respect to each real estate parcel.

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 various sites at the former Griffiss AFB remain protective of human health and the environment. The next 5-year review for the former Griffiss AFB will be provided 5 years from the date of this review.

1 INTRODUCTION

1.1 Authority Statement; Purpose

The Air Force, in consultation with the USEPA Region II, conducted this 5-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 (June 2001). The purpose of a 5-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 probably 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, 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 5-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 AFRPA administrative record. Preparation and results regarding the 2010 5-Year Review will be presented at the former Griffiss AFB Restoration Advisory Board (RAB) during the semi-annual public meetings.

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

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

This is the second 5-Year Review at the former Griffiss AFB (Figure 1). The first 5-Year Review (FPM group, Ltd. [FPM], September 2005) included a review of the entire base to identify all CERCLA and non-CERCLA sites within each real estate parcel that has been conveyed, planned for conveyance, or retained. Griffiss AFB was designated for realignment under the Base Realignment and Closure Act in 1993 and 1995. Since the closure of the base, real estate parcels not retained by the government are being conveyed to the OCIDA, directly to Oneida County, or other recipients such as private or public institutions. The 5-Year Review CERCLA sites are provided in Table 1. Table 2 at the end of Section 4 illustrates sites with RODs that have not been signed along with the anticipated date the RODs are to be signed and issued. The Basewide Overview, which follows the individual site reviews, provides the updated list of parcels that have been conveyed or planned for conveyance since the last 5-Year Review.

Table 1
Griffiss AFB CERCLA Sites

Site Status	Site Number (IRP number)	Site Name	ROD Signature Date	5-Year Review Required	5-Year Review Section
Land Use Control/ Institutional Controls	DP-11	Building 3 Drywell AOC	USEPA/ March 2005	Yes	4.1.1
	DP-12	Building 301 Drywell AOC	USEPA/ September 1999	Yes	4.1.2
	DP-13	Building 255 Drywells AOC	USEPA/ September 2001	Yes	4.1.3
	DP-15	Building 219 Drywell AOC	USEPA/ September 1999	Yes	4.1.4
	DP-22	Building 222 AOC	USEPA/ September 2001	Yes	4.1.5
	SD-50	Building 214 AOC	USEPA/ September 1999	Yes	4.1.6
	SS-08	Building 112 AOC	USEPA/ September 2001	Yes	4.1.7
	SS-17	Lot 69 AOC	USEPA/ March 2005	Yes	4.1.8
	SS-23	Building 20 AOC	USEPA/ September 2001	Yes	4.1.9
	SS-24	FDA AOC	USEPA/ September 1999	Yes	4.1.10
	SS-25	Site T-9 AOC	USEPA/ September 2001	Yes	4.1.11
	SS-44	EPS AOC	USEPA/ March 2005	Yes	4.1.12
Long Term Monitoring	LF-1	Landfill 1 AOC	USEPA/ June 2000	Yes	4.2.1
	LF-2	Landfill 2/3 AOC	USEPA/ June 2000	Yes	4.2.2
	LF-3	Landfill 7 AOC	USEPA/ June 2000	Yes	4.2.3
	LF-7	Landfill 5 AOC	USEPA/ June 2000	Yes	4.2.4
	LF-9	Landfill 6 AOC	USEPA/ June 2001	Yes	4.2.5

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

Site Status	Site Number (IRP number)	Site Name	ROD Signature Date	5-Year Review Required	5-Year Review Section
Long Term Monitoring	LF-28	Landfill 4 AOC	USEPA/ June 2000	No	4.2.6
	SD-31	Three Mile Creek AOC	USEPA/ March 2004	Yes	4.2.7
	SD-32	Six Mile Creek AOC	USEPA/ March 2004	Yes	4.2.8
Ongoing Remedial Action	SD-52-01	Apron 2 Chlorinated Plume AOC	USEPA/ March 2009	Yes	4.3.1
	SD-52-02	Building 775 AOC	USEPA/ March 2009	Yes	4.3.2
	SD-52-04	Landfill 6 TCE AOC	USEPA/ March 2009	Yes	4.3.3
	SD-52-05	Building 817/ WSA AOC	USEPA/ March 2009	Yes	4.3.4
Pre-Record of Decision	FT-30	Fire Protection Training Area	2010	Requirement Pending	4.5
	SD-41	Nosedocks 1 and 2	2011		4.5
	SS-33	Coal Storage Yard	2011		4.5
	SS-62	AOC 9	2010		4.5
	ST-06	Building 101	2012		4.5
	ST-53	Building 133	2011		4.5
	Petroleum Source Removal AOCs* ST-36 ST-37 ST-51	 Building 110 Pumphouse 5/ Building 771 Building 100	 2011 2011 2010		4.5

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

Site Status	Site Number (IRP number)	Site Name	ROD Signature Date	5-Year Review Required	5-Year Review Section
No Further Action	FT-48	Suspected Fire Training Area	USEPA/ September 1999	No	N/A
	OT-61	Small Arms Range	USEPA/ September 2007	No	N/A
	ST-04	Bulk Fuel Storage Area	USEPA/ July 2002	No	N/A
	ST-21	Building 210	USEPA/ July 2003	No	N/A
	ST-35	Building 26	USEPA/ July 2002	No	N/A
	ST-39	Building 117	USEPA/ July 2002	No	N/A
	SS-20**	Tank Farms 1 and 3 Source Removal AOC	USEPA/ September 2009	No	N/A
	ST-26**	Building 43 Source Removal AOC	USEPA/ September 2009	No	N/A

* - Petroleum Sites that require a Record of Decision under the FFA.
** - RODs were executed since the previous former Griffiss AFB 5-Year Review (2005).
N/A: Not applicable.

1.2 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 Rome Research Site 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 inactivation 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 the Base Realignment and Closure Act 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 (NEADS) have continued to operate at their current locations; the New York Air National Guard (NYANG) 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 (DFAS) has established an operating location at the former Griffiss AFB.

1.3 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.

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. 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); 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, and an addendum, dated September 9, 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, and NYSDEC entered into a FFA under Section 120 of CERCLA.

1.4 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 throughout this 5-Year Review are either zoned for commercial/ industrial/ administrative use or low intensity open space use.

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. This does not include hotels, dormitories, or day care centers. 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.

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 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 feet above MSL. The topography across the former Base is relatively flat with elevations ranging from 435 feet above MSL in the southwest portion to 595 feet 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 feet in the northeast portion to more than 130 feet in the southern portion of the former Base. The average thickness of the unconsolidated sediments is 25 to 50 feet in the central portion and 100 to 130 feet 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 to 59 feet below ground surface (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 New York State Barge Canal to the south. Several creeks, drainage culverts, and sewers (mostly acting as drains for shallow groundwater), 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, November 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 this 5-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. The water quality standards are also published under New York State Department of Environmental Conservation (NYSDEC) Division of Water Technical and Operational Guidance Series "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations", NYSDEC, June 1998. NYSDEC Class GA Groundwater Standards and NYSDEC Class C Surface Water Standards apply.
- Soils – NYSDEC 6 NYCRR Part 375 Environmental Remediation Program, December 2006.

The TBCs applicable to this 5-Year Review include the following New York State Standards and Guidance:

- Soils – "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. 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 5-Year Review have not changed in a manner that would compromise the protectiveness or recommendations of each CERCLA site.

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4 CERCLA 5-YEAR REVIEW

Section 4 reviews the CERCLA sites at the former Griffiss AFB. The CERCLA sites are individually reviewed within the following categories:

- Land-Use Control/ Institutional Control Sites;
- LTM Sites;
- Ongoing Remedial Action Sites; and
- Pre-ROD Sites.

Figure 2 identifies the CERCLA sites reviewed in the 5-Year Review with the corresponding LUCs or ICs required by the RODs or are expected to be required (for sites currently awaiting ROD issuance). For real estate parcels that have been transferred, LUC/ICs have been implemented in the form of deed restrictions. The deed restricted areas are highlighted and the deed restriction types are also listed under parcel names on Figure 2.

4.1 Land-Use Control/Institutional Control Sites

This section of the 5-Year Review includes CERCLA sites at the former Griffiss AFB with LUC/ICs as the only component of the selected remedy. These sites include:

- Drainage Pit (DP)-11 (Building 3 Drywell AOC),
- DP-12 (Building 301 Drywell AOC),
- DP-13 (Building 255 Drywells AOC),
- DP-15 (Building 219 Drywell AOC),
- DP-22 (Building 222 AOC),
- Surface Drainage (SD)-50 (Building 214 AOC),
- Spill Site (SS)-08 (Building 112 AOC),
- SS-17 (Lot 69 AOC),
- SS-23 (Building 20 AOC),
- SS-24 (Fire Demonstration Area [FDA] AOC),
- SS-25 (Site T-9 AOC),
- SS-44 (Electrical Power Substation [EPS] AOC), and

DP-15 (Building 219 Drywell AOC), SD-50 (Building 214 AOC), DP-22 (Building 222 AOC), DP-13 (Building 255 Drywell AOC), and DP-12 (Building 301 Drywell AOC) are located in the west-central portion of the former Griffiss AFB. DP-12 (Building 3 Drywell AOC), SS-08 (Building 112 AOC), SS-25 (Site T-9 AOC), SS-23 (Building 20 AOC), SS-24 (FDA AOC), SS-44 (EPS AOC), and SS-17 (Lot 69 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 including in Section 4.1 were included in the 2005 5-Year Review (FPM, September 2005).

4.1.1 DP-11 (Building 3 Drywell AOC)

4.1.1.1 Document Review

4.1.1.1.1 Site History

The Building 3 Drywell AOC is located in the center of the former Griffiss AFB (Parcel AFRL-5) south of the Tank Farms 1 and 3 Source Removal AOC and northwest of the Building 20 AOC, as shown in Figure 3. Surface water drains to Six Mile Creek on the eastern side (drywell area) of the building and to Three Mile Creek on the western side. A drywell associated with the site was used to dispose of cleaning solvents, etching acids with metal salts, and paint thinners from 1960 to 1984 as stated in the RI (LAW, December 1996).

4.1.1.1.2 Previous Investigations

Groundwater and soil investigations were performed in 1994 at the Building 3 Drywell AOC. Three soil samples were collected from two soil borings in April 1994 and submitted for geotechnical analysis. A groundwater sample was also collected from each soil boring. Results indicated Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), Target Analyte List (TAL) inorganics, hexavalent chromium, and total recoverable petroleum hydrocarbon (TRPH) detections. Two more groundwater samples were collected in November 1994. Four VOCs were detected in both samples; however the concentrations were not above NYS Groundwater Standards. SVOCs, metals (11 exceedances), and TRPH were also detected in the groundwater samples. VOC and SVOC concentrations did not exceed ARARs; therefore it was believed that it was unlikely for there to be any off-site impacts.

As part of the 1994 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 groundwater at the site. Under commercial/administrative use, the potentially exposed future populations are utility and construction workers. However, the risks to these workers were not quantitatively addressed due to the inability to collect soil samples at the site. A hypothetical groundwater exposure scenario was evaluated which assumes that future industrial workers may use the groundwater as a potable supply (LAW, December 1996). The total carcinogenic risk associated with exposure by industrial/commercial workers to contaminants in the groundwater was below the acceptable USEPA target risk range (1×10^{-6}). The HI was below the acceptable level of 1. A vertical profile well (3VMW-1, not shown on Figure 3) was installed and sampled as part of the SI in 1997. Results showed the presence of VOCs and SVOCs; however no concentrations exceeded the most stringent criteria. For the ecological baseline risk assessment, it was identified that there were no complete exposure pathways for ecological receptors.

4.1.1.1.3 ROD Requirements

The ROD for the Building 3 Drywell AOC was issued by the Air Force in November 2004 and signed by the USEPA in March 2005. According to the ROD, the selected remedy for the Building 3 Drywell AOC is LUC/ICs for industrial/commercial use and groundwater use restrictions. The ROD states that:

- Development and use of the entire Building 3 Drywell 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, 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 New York State Department of Health (NYSDOH).

4.1.1.1.4 Land-Reuse Zoning

Parcel AFRL-5, which includes Building 3, is designated as government retained for commercial/administrative uses only. The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.1.1.5 Post-ROD Activities

Since the last 5-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.

4.1.1.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.1.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the building is occupied by the AFRL/ RRS, the facility is used for commercial/administrative purposes only, and the groundwater is not being extracted. The inspection sheet is provided in Appendix A.

4.1.1.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.1.4.1 Remedy Functionality

LUC/ICs for industrial/commercial use and groundwater use restrictions are required by the ROD and were implemented. The following summarizes the LUC/ICs for the Building 3 Drywell AOC:

1. The extraction, utilization, or consumption of any water from the aquifer below the surface of the ground will not be permitted unless the groundwater has been tested and found to meet all applicable standards and such owner or occupant obtains the prior written approval from the NYSDOH; and
2. Land-use is restricted to industrial/commercial/non-residential use.

The property has been retained by AFRL/RRS for commercial/administrative use as specified in the LUC/IC Layering Strategy. The implementation of the LUC/ICs was verified by site inspections.

4.1.1.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under industrial reuse scenario. The results of the human health baseline risk assessment indicate that VOCs, SVOCs, and TRPH 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 results for the ecological baseline risk assessment identified that there were no complete exposure pathways for ecological receptors.

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

- The current/future LUC/IC Layering Strategy minimizes potential exposure pathways and eliminates groundwater ingestion; 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).

4.1.1.4.3 New Information of Significance

There is no new information of significance since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.1.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. Based on the ROD requirements, continued LUC/IC maintenance by the Air Force is required.

4.1.1.6 Protectiveness Statement

Based on the documents review, data review and analysis, and an assessment of the remedy protectiveness, the LUC/IC remedy for the Building 3 Drywell AOC is currently protective of human health and the environment.

4.1.2 DP-12 (Building 301 Drywell AOC)

4.1.2.1 Document Review

4.1.2.1.1 Site History

The Building 301 Drywell AOC is located on the south side of Brooks Road in the central portion (Parcel F6A) of the former Griffiss AFB. Building 301 formerly 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 5 illustrates the Building 301 Drywell AOC location and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.2.1.2 Previous Investigations

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

An RI was performed in 1994 during which a ground penetrating radar (GPR) survey and two test pits were dug in an attempt to locate the drywell. The drywell was not detected by the

survey, and it was not discovered during test pit excavation. Two soil samples were collected from one soil boring and analyzed for VOCs, SVOCs, pesticides, polychlorinated biphenyl (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.

4.1.2.1.3 ROD Requirements

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

4.1.2.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. 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.

4.1.2.1.5 Post-ROD Activities

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

The March 2002 groundwater analytical results for SVOCs indicated no detections at monitoring well 301MW-4. The groundwater analytical results for metals in the March 2002 sampling round at monitoring well 301MW-4 showed three exceedances of the NYS Groundwater Standards. The April 2003 and March 2004 VOC, SVOC, and metals groundwater analyses for monitoring well 301MW-4 indicate VOC and metals detections, with only 2 metals (sodium and iron) exceedances. The 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.

The existing monitoring well at the site, 301MW-4, was decommissioned during the Round 5 Well Decommissioning event in 2009.

Also, since the last 5-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.

4.1.2.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.2.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is being used for commercial/ administrative purposes and that groundwater is not being extracted. The inspection sheet is provided in Appendix A. The building is used as office space, primarily for the AFRPA and GLDC.

4.1.2.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.2.4.1 Remedy Functionality

LUC/ICs for commercial/administrative use and groundwater use restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F6A-2 which includes Building 301 was reviewed and the following deed restrictions were determined to meet the LUC/ICs required by 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; and
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 F6A-2 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. The grantee agrees to comply with all applicable federal and state laws and regulations with regard to activities affecting the groundwater in the aquifer.

As a result, the LUC/ICs have been implemented 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.

4.1.2.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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 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 that there were no complete exposure pathways for ecological receptors.

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. Furthermore, recently collected groundwater data indicate that some of the COCs (VOCs and SVOCs) that were previously detected at levels of concern, have attenuated. The metals detections (sodium and iron) are indicative of basewide background conditions; 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 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.2.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. The latest groundwater sampling data confirmed COCs were below NYS Groundwater Standards or were indicative of basewide background conditions (identified during the RI) throughout the base. Therefore, the Air Force may consider this site as a candidate for a ROD and/or deed amendment that would delete existing LUC/ICs.

4.1.2.6 Protectiveness Statement

Based on the document review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the LUC/IC remedy for the Building 301 Drywell AOC is currently protective of human health and the environment.

4.1.3 DP-13 (Building 255 Drywells AOC)

4.1.3.1 Document Review

4.1.3.1.1 Site History

The Building 255 Drywells AOC is located in the west-central portion (Parcel F3A) of the former Griffiss AFB. Building 255 was a former vehicle maintenance shop that included several drywells and is located in the area referred to as Tin City. This building has been demolished. Surface water drains into the base storm drainage system that flows to the Mohawk River. Figure 6 illustrates the Building 255 Drywells AOC and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.3.1.2 Previous Investigations

In 1994 and 1995, a RI was performed at the Building 255 Drywells 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

NYS 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.

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.

A SI was conducted in 1997; two monitoring wells were installed at Building 255 Drywells AOC and sampled. Trichloroethylene (TCE) and chloroform were detected at one monitoring well: however, the concentrations were below NYS Groundwater Standards.

An Interim Remedial Action (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).

4.1.3.1.3 ROD Requirements

The ROD for the Building 255 Drywells 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 Building 255 Drywells AOC is NFA for soils with LUC/ICs for industrial/commercial use and groundwater use restrictions. The ROD for Building 255 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 Building 255 Drywells AOC.

4.1.3.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The GLDC, the Griffiss LRA, has designated Parcel F3A, which includes the Building 255 Drywells site, for commercial/ administrative (office campus) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.3.1.5 Post-ROD Activities

The Air Force conducted groundwater monitoring at this site as part of the On-base Groundwater AOC - Tin City Operable Unit (OU) 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 5 groundwater quarterly rounds from September 2001 to September 2002, however no exceedances of the NYS 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 Building 255 Drywells AOC. Based on the results from previous sampling and the ROD requirements for the Building 255 Drywells 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 remaining LTM wells at the site were decommissioned in the Round 3 Well Decommissioning event performed in summer/fall 2005.

Since the last 5-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.

4.1.3.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.3.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the Building 255 Drywells AOC is being used for industrial/commercial purposes, and that groundwater is not being extracted. The inspection sheet is provided in Appendix A.

4.1.3.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.3.4.1 Remedy Functionality

LUC/ICs for commercial/non-residential use and groundwater use restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F3A which includes the demolished Building 255 was reviewed and the following deed restrictions were determined to meet the LUC/ICs required by 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
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 F3A 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.

As a result, the LUC/ICs have been implemented 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.

4.1.3.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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 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 that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.

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

- The current/future non-residential land-use and groundwater use restrictions minimize potential exposure pathways and eliminate groundwater ingestion. Furthermore, recently collected groundwater data indicate that some of the COCs (VOCs and SVOCs) that were previously detected at levels of concern, have attenuated. The metals detections are indicative of basewide background conditions; 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).

4.1.3.4.3 New Information of Significance

There is no new information of significance since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.3.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. The latest groundwater sampling data confirmed COCs were below NYS Groundwater Standards or were indicative of basewide background conditions (identified during the RI). Therefore, the Air Force may consider this site as a candidate for a ROD and/or deed amendment that would delete existing LUC/ICs.

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 LUC/IC remedy for the Building 255 Drywells AOC is currently protective of human health and the environment.

4.1.4 DP-15 (Building 219 Drywell AOC)

4.1.4.1 Document Review

4.1.4.1.1 Site History

The Building 219 Drywell 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. Figure 6 illustrates the Building 219 Drywell AOC and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.4.1.2 Previous Investigations

In 1994, a soil investigation was conducted 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 Drywell 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.

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.

4.1.4.1.3 ROD Requirements

The ROD for the Building 219 Drywell 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.

4.1.4.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The GLDC, the Griffiss LRA, has designated Parcel F3A, which includes the Building 219 Drywell AOC, for industrial/commercial (manufacturing/airfield and related services) 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 part of the On-Base Groundwater AOC, Tin City OU 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 NYS 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 2 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 remaining LTM wells at the site were decommissioned in the Round 3 Well Decommissioning event performed in summer/fall 2005.

Also, since the last 5-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.

4.1.4.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.4.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is being used for industrial/commercial purposes and that groundwater is not being extracted. The inspection summary sheet is provided in Appendix A. The building is currently used for office space.

4.1.4.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.4.4.1 Remedy Functionality

LUC/ICs for in commercial/non-residential use and groundwater use restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel F3A which includes the Building 219 Drywell AOC was reviewed and the following deed restrictions were determined to meet the LUC/ICs required by 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
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 F3A 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.

As a result, the LUC/ICs have been implemented 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.

4.1.4.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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 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 that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.
The underlying assumptions support the selected remedy in remaining protective for the following reasons:

- The current/ future non-residential land-use and groundwater use restrictions minimize potential exposure pathways and eliminate groundwater ingestion. Furthermore, recently collected groundwater data indicate that some of the COCs (VOCs and SVOCs) that were

previously detected at levels of concern, have attenuated. The metals detections are indicative of basewide background conditions; 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).

4.1.4.4.3 New Information of Significance

There is no new information of significance since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.4.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. The latest groundwater sampling data confirmed COCs were below NYS Groundwater Standards or were indicative of basewide background conditions (identified during the RI). Therefore, the Air Force may consider this site as a candidate for a ROD and/or deed amendment that would delete existing LUC/ICs.

4.1.4.6 Protectiveness Statement

Based on the documents review, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the LUC/IC remedy for the Building 219 Drywell AOC is currently protective of human health and the environment.

4.1.5 DP-22 (Building 222 AOC)

4.1.5.1 Document Review

4.1.5.1.1 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 battery acid disposal pit (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 6 illustrates the Building 222 AOC site location and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.5.1.2 Previous Investigations

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.

In 1994, a RI was performed that consisted of soil and groundwater analysis. One groundwater and 6 soil samples were taken from one soil boring. Soil sample results indicated the presence of VOCs, SVOCs, pesticides, PCBs, and metals. Three SVOCs, 2 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 NYS 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 cubic yards (cy) of contaminated soils were removed from the site, as stated in the Closure Certification Report (Ocuto, March 2001).

4.1.5.1.3 ROD Requirements

The ROD for the 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 Building 222 AOC site is NFA for soils with LUC/ICs for industrial/commercial use and groundwater use restrictions. The ROD for 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.

4.1.5.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The GLDC, which is the Griffiss LRA, designated Parcel F3A, which includes the 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.

4.1.5.1.5 Post-ROD Activities

The Air Force conducted groundwater monitoring at this site as part of the On-Base Groundwater Tin City OU 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 NYS Groundwater Standards were reported (FPM, August 2003). No SVOCs were detected in March 2002. However, 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 Building 222 AOC. Based on the results from previous sampling and the ROD requirements for the 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. Also, since the last 5-Year Review, annual LUC/IC inspections have been performed at the site to ensure that the LUC/ICs have been 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

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.5.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is being used for industrial/ commercial purposes and that groundwater is not being extracted. The inspection summary sheet is provided in Appendix A. The building is currently used for office space.

4.1.5.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.5.4.1 Remedy Functionality

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

As a result, the LUC/ICs have been implemented 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.

4.1.5.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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 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 that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.

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

- The current/ future non-residential land-use and groundwater use restrictions minimize potential exposure pathways and eliminate groundwater ingestion. Furthermore, recently collected groundwater data indicate that some of the COCs (VOCs and SVOCs) that were previously detected at levels of concern, have attenuated. The metals detections are indicative of basewide background conditions; 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).

4.1.5.4.3 New Information of Significance

There is no new information of significance since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.5.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. The latest groundwater sampling data confirmed COCs were below NYS Groundwater Standards or were indicative of basewide background conditions (identified during the RI). Therefore, the Air Force may consider this site as a candidate for a ROD and/or deed amendment that would delete existing LUC/ICs.

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 LUC/IC remedy for the Building 222 AOC site is currently protective of human health and the environment.

4.1.6 SD-50 (Building 214 AOC)

4.1.6.1 Document Review

4.1.6.1.1 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 6 illustrates the Building 214 AOC and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.6.1.2 Previous Investigations

In 1994, an RI was performed which consisted of a soil gas survey, soil sampling, and groundwater sampling using 6 soil boreholes and 2 temporary wells. Results showed VOCs, SVOCs, pesticides, and petroleum hydrocarbons present in the subsurface soil samples. Several

exceedances were reported among the detected COCs, which included 1 SVOC, 2 pesticides, 5 metals, and petroleum hydrocarbons. Surface soil results indicated SVOC, pesticide, and metals contamination at the site in exceedance of the most stringent criteria. VOCs, SVOCs, pesticides, metals, and petroleum hydrocarbons were detected in the groundwater samples, while 1 SVOC, 2 pesticides, and 5 metals exceeded their respective NYS Groundwater Standards. The elevated metals results can be attributed to unfiltered grab sample methods. The SVOC and pesticides detections were slight 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.

4.1.6.1.3 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 Building 214 AOC site is no further remedial action, with LUC/ICs for industrial land-use and groundwater use restrictions. The ROD for the 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 were also specified in the ROD.

4.1.6.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. 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 Building 214 AOC. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.6.1.5 Post-ROD Activities

The groundwater at 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 NYS Groundwater Standards; iron and sodium. The metal exceedances were attributed to basewide background conditions (identified during the RI). Results showed VOC detections but none exceeded NYS Groundwater Standards. No SVOCs were detected in March 2002. Based on the results from previous sampling and the ROD requirements for the 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.

Also, since the last 5-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 5-Year Review.

4.1.6.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the Building 214 AOC is not used for residential purposes and the surrounding area is used for industrial/commercial purposes and that groundwater is not being extracted. The inspection sheet is provided in Appendix A.

4.1.6.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.6.4.1 Remedy Functionality

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

As a result, the LUC/ICs have been implemented 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.

4.1.6.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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 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 that the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.
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. Furthermore, recently collected groundwater data indicate that some of the chemicals of concern (VOCs and SVOCs) that were previously detected at levels of concern, have attenuated. The metals detections are indicative of basewide background conditions; 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).

4.1.6.4.3 New Information of Significance

There is no new information of significance since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.6.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. The latest groundwater sampling data confirmed COCs were below NYS Groundwater Standards or were indicative of basewide background conditions (identified during the RI). Therefore, the Air Force may consider this site as a candidate for a ROD and/or deed amendment that would delete existing LUC/ICs.

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 LUC/IC remedy for the Building 214 AOC is currently protective of human health and the environment.

4.1.7 SS-08 (Building 112 AOC)

4.1.7.1 Document Review

4.1.7.1.1 Site History

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 7 illustrates the Building 112 AOC location and the LUC/ICs as required by the ROD.

4.1.7.1.2 Previous Investigations

Initial investigations in 1981 and 1982 showed PCB contamination in soils in the vicinity of the loading docks. 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.

An RI was performed at Building 112 AOC in 1994. 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. Groundwater samples were also collected from seven locations at the Building 112 AOC. SVOCs, pesticides/ PCBs and metals were detected in the groundwater samples. However, 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 (1×10^{-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. 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 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 7) were sampled in October 1999, January 2000, October 2000 and January 2001 and analyzed for PCBs only. Three PCB detections were reported in the October 1999 sampling round (none exceeding NYS Groundwater Standards), 2 PCB detections (1 exceeding NYS Groundwater Standards) were reported in the January 2000 sampling round, 1 PCB detection was reported in the October 2000 sampling round (did not exceed NYS Groundwater Standards), and 3 detections were reported in the January 2001 sampling round (1 exceeding NYS Groundwater Standards). Monitoring well B112MW-1 contained all of the PCB exceedances detected.

4.1.7.1.3 ROD Requirements

The ROD for the 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 Building 112 AOC is NFA with LUC/ICs for industrial/ commercial use and groundwater use restrictions. The ROD for the Building 112 AOC 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 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.

4.1.7.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The GLDC, which is the Griffiss LRA, designated Parcel F5, which includes the Building 112 AOC, for industrial/ commercial (manufacturing/ airfield and related services) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.7.1.5 Post-ROD Activities

FPM performed confirmatory groundwater sampling at the Building 112 AOC in November 2001 at monitoring well B112MW-1. 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.

Also, since the last 5-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.

4.1.7.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.7.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the building has been demolished. The surrounding area is being used for industrial/commercial purposes only, no soil excavations/relocations are being performed, and the groundwater is not being extracted. The inspection sheet is provided in Appendix A.

4.1.7.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.7.4.1 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 Building 112, was reviewed and the following restrictions meet the LUC/ICs required by the ROD:

1. The Grantee covenants to use Parcel F5-1, F5-2, and F5-3 of 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 a result, the LUC/ICs have been implemented 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.

4.1.7.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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.

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

- The current/ future non-residential land-use soil relocation 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; 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).

4.1.7.4.3 New Information of Significance

The property owner (GLDC) confirmed that during building demolition activities, no subsurface soils were disturbed or relocated. In addition, no new backfill was brought on site and the site elevation is consistent with the pre-demolition site elevation. Therefore, the deed restriction for relocation of soils below one foot of the surface continues to be implemented.

4.1.7.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment.

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 LUC/IC remedy for Building 112 AOC is currently 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.

4.1.8 SS-17 (Lot 69 AOC)

4.1.8.1 Document Review

4.1.8.1.1 Site History

The Lot 69 AOC is located along the north side of Ellsworth Road in the area now occupied by Buildings 11 and 15 (Parcel F1), which currently house the Birnie Bus maintenance facility.

Figure 8 illustrates the 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.

4.1.8.1.2 Previous Investigations

The 1994 RI evaluated the nature, levels, and extent of potential contamination at the site. The RI included a baseline risk assessment to evaluate the potential effects of contaminants on human health and the environment. A soil investigation was conducted in which soil samples were collected from 13 borings and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Five VOCs, 21 SVOCs, 31 pesticides/PCBs, and 24 metals were detected in the soil samples from the borings as stated in the RI (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 8) and one bedrock well (L69MW2-2, not shown on Figure 8) were installed in June and July 1994. Groundwater samples were collected from each monitoring well in August 1994. The results indicated no exceedances for either VOCs or SVOCs; however metals and one pesticide were reported in exceedance of NYS 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 utility and construction workers. However, the HI was above the benchmark level of 1 for the industrial exposure scenario. 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 low detections of chlorinated VOCs.

4.1.8.1.3 ROD Requirement

The ROD for 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 Lot 69 AOC is LUC/ICs for industrial/commercial use and groundwater use restrictions. The ROD for 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.

4.1.8.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The GLDC, which is 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.

4.1.8.1.5 Post-ROD Activities

Following the RI the Air Force performed annual groundwater sampling at the Lot 69 AOC in March 2002, March 2003, and March 2004 analyzing total and dissolved metals. Results from the post-RI sampling from March 2002 to March 2004 indicated exceedances in only total metals at all of the monitoring wells associated with the site. The metals exceedances were indicative of metals detected throughout the base during the RI at elevated concentrations. 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). As a result of the sampling data, no further groundwater monitoring was recommended at the site and monitoring ceased.

The remaining Lot 69 AOC monitoring wells were decommissioned during the Round 5 well decommissioning event performed in winter 2008/2009.

Since the last 5-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.

4.1.8.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.8.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is being used for industrial/ commercial purposes and that groundwater is not being extracted. The inspection sheet is provided in Appendix A. The site is used as a parking lot for Birnie Bus.

4.1.8.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.8.4.1 Remedy Functionality

The Lot 69 AOC is located in two parcels, F1 and F6B. Parcel F1 has been transferred and LUC/ICs, specified in the ROD, were implemented as deed restrictions. The deed was reviewed and the following deed restrictions were determined to meet the LUC/ICs required by 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
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 F1 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.

Parcel F6B has not been transferred. The LUC/ICs for Lot 69 AOC within Parcel F6B were implemented and will become deed restrictions when the property is transferred. The following summarizes the LUC/ICs provided in the lease.

1. The Lessee shall not install (or permit its sublessees to install) any new drinking water or other wells in any location on the Leased Premises without the prior written approval of the Government.
2. The Lessee shall not conduct (or permit its sublessees to conduct) any subsurface excavating, digging, drilling, or other disturbance of the surface in Areas of Special Notice as shown on Environmental Site Map (Exhibit F-2) to the Lease without the prior written approval of the Government in accordance with Condition 18. Requests for such approval will be made in accordance with Condition 18.

As a result, the LUC/ICs have been implemented 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

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 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 that there were no complete exposure pathways for ecological receptors.

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. Furthermore, recently collected groundwater data indicate that metals exceedances present in groundwater samples are indicative of basewide background conditions or suspended solids in the samples; 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).

4.1.8.4.3 New Information of Significance

There is no new information of significance since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.8.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. The latest groundwater sampling data confirmed COCs were below NYS Groundwater Standards or were indicative of basewide background conditions (identified during the RI). Therefore, the Air Force may consider this site as a candidate for a ROD and/or deed amendment that would delete existing LUC/ICs. In addition, now that the Lot 69 AOC ROD has been approved and the remedy has been implemented, a deed amendment for Parcel F1 will be recorded to grant the CERCLA covenant that was deferred when the property was transferred under an early transfer.

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 LUC/IC remedy for Lot 69 AOC is currently protective of human health and the environment.

4.1.9 SS-23 (Building 20 AOC)

4.1.9.1 Document Review

4.1.9.1.1 Site History

Building 20 is located in the southeastern central part of the former Griffiss AFB at the northeast corner of Otis Street and Ellsworth Road. Building 20 is the Locomotive Roundhouse, which was used to store and service diesel locomotives. Lubricants and diesel locomotive parts were used and stored in the roundhouse, while PCB-containing hydraulic fluids were used in the locomotives. In 1985, during the renovation of Building 20, the steam distribution system and the floor drain system were found to be broken which allowed waste fluids to leak into a cavity beneath the floor. Approximately 150 to 200 gallons of a free-flowing oily liquid entered the cavity. Remediation of this area resulted in 157, 55-gallon drums of liquid waste and contaminated soils being removed. Figure 8 illustrates the Building 20 AOC location and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.9.1.2 Previous Investigations

In 1986, a subsurface investigation was conducted in the vicinity of the northwest corner of Building 20. Five soil borings were advanced through the concrete floor inside the building and one grab groundwater sample was collected from each soil boring. One permanent monitoring well, B20MW-1 (not shown on Figure 8), was installed approximately 10 feet north of the northwest corner of the building. Soil sampling results revealed residual hydrocarbon contamination in all borings and residual metals near the surface in the northwest and southwest corners of the building (outside). In 1992, B20MW-1 was sampled on a quarterly basis. VOCs, SVOCs, and metals were detected; glycols were reported during two of the four sampling events.

In 1994, an RI was performed at the Building 20 AOC that included the installation of six soil borings, the collection of one grab groundwater sample from one of the soil borings, the installation and sampling of two groundwater wells (B20MW-2 and -3, not shown on Figure 8), and the sampling of the existing well B20MW-1. Analysis of the soil samples collected during the RI field screening indicated that 5 SVOCs and 5 metals exceeded the TBCs or background screening concentrations for soils. Groundwater samples indicated SVOCs, one pesticide, metals, and TRPH detections above the ARARs.

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. Highest risk levels (carcinogenic and non-carcinogenic) were associated with exposure by industrial workers to contaminants in groundwater. The total carcinogenic risk was 1×10^{-4}, equal to the upper end of the USEPA target risk range, and the HI was 2.0, which is above the acceptable level of 1. An ecological risk assessment was also performed at the site. The assessment identified that there were no complete exposure pathways for ecological receptors.

Ocuto conducted an IRA at the Building 20 AOC from 1998 to 1999. Activities included the removal of concrete, soil excavation, and capping of pipelines and floor drains. A 4 foot, 7 inch by 6 foot excavation occurred in the northwest corner of the building. Confirmatory sampling of the soil excavation indicated no exceedances of project clean-up limits and TAGM #4046 Guidance Values as stated in the Closure Certification Report (Ocuto, March 2001).

4.1.9.1.3 ROD Requirements

The ROD for Building 20 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 Building 20 AOC is LUC/ICs for industrial/ commercial use and groundwater use restrictions. The ROD for the Building 20 AOC states that:

- The property will be designated for industrial/ commercial 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.

4.1.9.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The GLDC, which is the Griffiss LRA, designated Parcel F1, which includes the Building 20 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

The Air Force performed annual groundwater sampling at the Building 20 AOC in April 2001, March 2002, March 2003, and March 2004 at monitoring wells B20MW-1, -2, and -3 for SVOCs and metals (total and dissolved). No SVOCs were detected in any of the sampling locations, in any of the sampling rounds. Each location, during each sampling round, contained metals exceedances which were attributed to suspended solids in the samples (FPM, November 2004).

Therefore, no further groundwater monitoring was recommended at the site and monitoring ceased.

The remaining Building 20 AOC monitoring wells were decommissioned during the Round 5 well decommissioning event performed in winter 2008/2009.

Also, since the last 5-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 5-Year Review.

4.1.9.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is being used for industrial/ commercial purposes and that groundwater is not being extracted. The inspection sheet is provided in Appendix A. The site contains the Adirondack Scenic Railroad maintenance facility.

4.1.9.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.9.4.1 Remedy Functionality

LUC/ICs for industrial/commercial/non-residential use and groundwater use restrictions were implemented in property transfer deed as specified in the ROD. Specifically, the deed for Parcel F1 which includes Building 20 was reviewed and the following deed restrictions were determined to meet the LUC/ICs required by 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
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 F1 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.

As a result, the LUC/ICs have been implemented 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.

4.1.9.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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 SVOCs and metals (total and dissolved) 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 site is not used for drinking water purposes. The ecological baseline risk assessment identified that there were no complete exposure pathways for ecological receptors.

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. Furthermore, recently collected groundwater data indicate that some of the chemicals of concern (SVOCs and metals) that were previously detected at levels of concern, have attenuated; 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 of significance since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.9.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. The latest groundwater sampling data confirmed COCs were below NYS Groundwater Standards or were indicative of basewide background conditions (identified during the RI). Therefore, the Air Force may consider this site asa candidate for a ROD and/or deed amendment that would delete existing LUC/ICs. In addition, the Air Force will also recommend a deed amendment for Parcel F1 to eliminate the following restriction associated with SS-23:

- The grantee covenants that it shall not have access to the soils under floor in the area identified as SS-23, until the clean-up actions have been executed.

The above deed restriction was included as a result of the Finding of Suitability for Early Transfer (FOSET) which supported the transfer of Parcel F1 prior to completion of response action at SS-23.

Now that the Building 20 AOC ROD has been approved and the remedy has been implemented, a deed amendment will be recorded to grant the CERCLA covenant that was deferred when the property was transferred under an early transfer.

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 LUC/IC remedy for the Building 20 AOC is currently protective of human health and the environment.

4.1.10 SS-24 (Fire Demonstration Area AOC)

4.1.10.1 Document Review

4.1.10.1.1 Site History

The Fire Demonstration Area (FDA) 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 9 illustrates the FDA AOC and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.10.1.2 Previous Investigations

In 1986, a soil and groundwater investigation was performed at the FDA AOC. Three boreholes were drilled, one becoming monitoring well FDAMW-1 (not shown on Figure 9). Soil samples were collected from the boreholes and one groundwater sample was collected from FDAMW-1.
Soil sample results indicated the presence of petroleum hydrocarbons, zinc, and lead.
Groundwater sample results indicated cadmium, chromium, lead, nickel, and zinc detections.

Additional groundwater sampling and a soil gas survey were performed in 1994 during the RI. VOC concentrations were not found in exceedance of applicable standards or guidance values. Four soil borings were used at the 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. However, not all

detections exceeded the guidance values. Soil exceedances of applicable RI criteria were limited to 2 SVOCs, 1 pesticide/ PCB, and 5 metals. A groundwater sample was also collected from a temporary well in the area of the former metal trough. One pesticide (alpha-BHC) was detected exceeding guidance values, but the origin of this contamination is unknown.

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. 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.

4.1.10.1.3 ROD Requirements

The ROD for the 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 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.

4.1.10.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. 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.

4.1.10.1.5 Post-ROD Activities

Since the last 5-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.

4.1.10.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.10.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is vacant and the property is within the active airfield parcel. An inspection sheet is provided in Appendix A.

4.1.10.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.10.4.1 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 meet the LUC/ICs required by 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 a result, the LUC/ICs have been implemented 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

The RI risk assessment for human health and the environment was based on conservative assumptions regarding exposure under industrial reuse scenario. The results of the human health baseline risk assessment indicate that VOCs, SVOCs, pesticides, PCBs, dioxins, metals, cyanide, and petroleum hydrocarbons 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 site is not used for drinking water purposes. The ecological baseline risk assessment identified that

the potential for adverse effects to terrestrial ecological receptors was considered to be insignificant.

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) 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 since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.10.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment.

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 LUC/IC remedy for the FDA AOC is currently protective of human health and the environment.

4.1.11 SS-25 (Site T-9 AOC)

4.1.11.1 Document Review

4.1.11.1.1 Site History

Site T-9 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 feet (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 10 illustrates the 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.

4.1.11.1.2 Previous Investigations

During the RI (LAW, December 1996), soil samples were collected and analyzed for VOCs, SVOCs, Pesticides, PCBs, metals, and petroleum hydrocarbons. 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 10). TPH was detected in five of the seven samples at concentrations ranging from 0.17 to 0.2 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 1for one chemical was calculated above 1. 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 at the site were re-sampled in December 1999, including wells T9MW-2, -3, -4, and B43MW-1R. The samples were analyzed for VOCs by USEPA Method SW8021 and SVOCs by Method SW8270. No compounds were

detected above the Reporting Limit (RL) in any of the primary samples collected, and as a result, the NYSDEC Spill #9702173 was recommended for closure.

In a NYSDEC letter to the AFBCA 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.

4.1.11.1.3 ROD Requirements

The ROD for the 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 Site T-9 AOC is no further action 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.

4.1.11.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The GLDC, which is the Griffiss LRA, designated Parcel F1, which includes the Site T-9 AOC, for industrial (light industrial development) use. The City of Rome adopted the LRA's zoning designation in 1998.

4.1.11.1.5 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 10) 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. Borings were terminated at a depth of 10 ft bgs at each location. No evidence of perched water or confining layers (such as clay) was found and Photo Ionization Detector (PID) screening during well installation did not indicate petroleum related contamination.

Monitoring wells T9MW-9 and -10 (not shown Figure 10) 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 Site T-9 AOC during this sampling event.

The Air Force conducted quarterly groundwater monitoring at the Site T-9 in March 2003, June 2003, September 2003, December 2003, and March 2004. Each sampling location was sampled and analyzed for VOCs using USEPA Method SW 8260 and SVOCs using USEPA Method SW8270. 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 NYS 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. 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).

Also, since the last 5-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 5-Year Review.

4.1.11.3 Site Inspection

An inspection conducted on July 27, 2009 confirmed that groundwater is not being extracted. The area adjacent to the site is being used for industrial/ commercial purposes. The inspection sheet is provided in Appendix A.

4.1.11.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.11.4.1 Remedy Functionality

LUC/ICs for industrial/ commercial/ non-residential use and groundwater use restrictions 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 meet the LUC/ICs required by 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
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 F1 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.

As a result, the LUC/ICs have been implemented 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.

4.1.11.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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

- The current/future non-residential land-use and groundwater use restrictions minimize potential exposure pathways and eliminate groundwater ingestion. Furthermore, recently collected groundwater data indicate that some of the chemicals of concern (VOCs, SVOCs) that were previously detected at levels of concern have attenuated; 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 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.11.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. The latest groundwater sampling data confirmed COCs were below NYS Groundwater Standards or were indicative of basewide background conditions (identified during the RI). Therefore, the Air Force may consider this site as a candidate for a ROD and/or deed amendment that would delete existing LUC/ICs. In addition, the Air Force will recommend a deed amendment for Parcel F1 to eliminate the following restriction associated with SS-25:

- The grantee covenants that it shall not have access to surface and subsurface soils at SS-25.

The above deed restriction was included as a result of the FOSET which supported the transfer of Parcel F1 prior to completion of response action at SS-25.

Now that the T-9 AOC ROD has been approved and the remedy has been implemented, a deed amendment will be recorded to grant the CERCLA covenant that was deferred when the property was transferred under an early transfer.

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 LUC/IC remedy for the Site T-9 AOC is currently protective of human health and the environment.

4.1.12 SS-44 (Electrical Power Substation AOC)

4.1.12.1 Document Review

4.1.12.1.1 Site History

The Electrical Power Substation (EPS) is located on Ellsworth Road in the center of the former Griffiss AFB (primarily in Parcel F11B and partially in Parcel F2). 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 11 illustrates the EPS AOC and deed restrictions, as well as the LUC/ICs as required by the ROD.

4.1.12.1.2 Previous Investigations

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). 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, TRPH, 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 carcinogenic risks 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. 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 parts per million (ppm), below clean-up criteria.

4.1.12.1.3 ROD Requirements

The ROD for the 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 EPS AOC is LUC/ICs for industrial use as a restricted access electrical substation and groundwater use restrictions. The ROD for the 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.

4.1.12.1.4 Land-Reuse Zoning

The land-reuse zoning for the former Griffiss AFB is illustrated in Figure 4. The GLDC, which is the Griffiss LRA, designated the 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.

4.1.12.1.5 Post-ROD Activities

Since the last 5-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.

4.1.12.2 Data Review and Analysis

No new groundwater or soil data have been collected since the last 5-Year Review.

4.1.12.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is being used as an EPS, no soil excavation/relocation is being performed, and that groundwater is not being extracted. An inspection sheet is provided in Appendix A.

4.1.12.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.1.12.4.1 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 which was reviewed and the following deed restrictions were determined to meet the LUC/ICs required by 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 SS-44 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 SS-44 boundary, the Grantee covenants to notify the Air Force in Advance of the digging activities that will take place with the SS-44 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 IRP site SS-44, 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 EPS AOC was reviewed and the following deed restrictions were determined to meet the LUC/ICs required by 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 SS-44. 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 a result, the LUC/ICs have been implemented 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.

4.1.12.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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 PCBs detected in soil, which were not detected in exceedance in the groundwater samples, should not present a risk to current and future occupational workers and future industrial workers as long as groundwater at this site is not used for drinking water purposes. The ecological baseline risk assessment identified that the potential for adverse effects to terrestrial ecological receptors including the raccoon was considered to be insignificant. However, the potential for adverse effects was reported for the shrew.

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

- The current/ future non-residential land-use, soil relocation, and groundwater use restrictions 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 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).

4.1.12.4.3 New Information of Significance

There is no new information of significance since the 2005 5-Year Review that would affect the protectiveness of the remedy.

4.1.12.5 Future Actions

Annual LUC/IC inspections will be performed to document the continued LUC/IC implementation. LUC/IC implementation ensures the continued protectiveness of human health and the environment. Based on the ROD requirements, continued LUC/ICs maintenance by the Air Force is required. Now that the EPS AOC ROD has been approved and the remedy has been implemented, a deed amendment for Parcel F2 will be recorded to grant the CERCLA covenant that was deferred when the property was transferred under an early transfer.

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 LUC/IC remedy for the EPS site is currently 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.

4.2 Long-Term Monitoring Sites

This section of the CERCLA 5-Year Review includes sites with completed remedies that are undergoing Long-Term Monitoring (LTM). LTM is being conducted at the IRP AOCs Landfill (LF)-1 (Landfill 1 AOC), LF-2 (Landfill 2/3 AOC), LF-3 (Landfill 7 AOC), LF-7 (Landfill 5 AOC), LF-9 (Landfill 6 AOC), LF-28 (Landfill 4 AOC), SD-31 (Three Mile Creek AOC), and SD-32 (Six Mile Creek 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 5-Year Review (FPM, September 2005).

4.2.1 LF-1 (Landfill 1 AOC)

4.2.1.1 Document Review

4.2.1.1.1 Site History

Landfill 1, approximately 22 acres in size, is 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 12 illustrates the 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 (LAW, December 1996). 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 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 (IT Corp., May 2000). 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 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 (FPM, March 2002) 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

Groundwater investigations conducted by Roy F. Weston, Inc. in 1982 and by the Air Force in 1991 detected benzene, chlorobenzene, ethylbenzene and phenol exceeding NYS 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 NYS Groundwater Standards; glycols levels also exceeded the NYS Groundwater Standard of 0.05 milligrams per liter (mg/L) (LAW, December 1996). Inorganic constituents measured at levels exceeding NYS Groundwater Standards included manganese, zinc, lead and cadmium; however, concentrations of 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, geophysical data were collected 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 (E&E, November 1998). Also during the SI, a partially buried drum, found north of the Small Arms Range 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, November 1998).

During the RI (LAW, December 1996), three downgradient wells at the southwestern slope of the landfill (LF1MW-5, -101and LF1P-2 not shown on Figure 13) 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-dichlorobenzene, 11 µg/L chlorobenzene and 12 µg/L ethylbenzene. LF1P-2, located approximately 175 feet 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 feet 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-dichlorobenzene, 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 results of the human health baseline risk assessment indicate that chemicals detected in air, surface soil, groundwater, surface water, and sediments likely do not present an unacceptable risk to potentially exposed populations as long as groundwater is not used for drinking water. The quantitative evaluation of risk is subject to several conservative assumptions and should not be considered an absolute measure of risk. The results of the ecological baseline risk assessment indicate that the hazard quotients of risks to the raccoon were calculated to be below 1. The hazard quotients of one chemical (4 chloro-Z-methyl phenoxyacetic acid) for the short-tailed shrew exceeded 1 and the hazard quotients for two chemicals exceeded 1 for the American woodcock. 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 also installed in April 1999. Because VOCs only minimally exceeded the NYS ARARs in these wells, it was concluded that the VOC plume is localized within 750 feet of the southwestern boundary of the landfill. Only benzene was detected above NYS Groundwater Standards (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 NYS Groundwater Standards 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-dichlorobenzene and chlorobenzene.

The Baseline Study (FPM, July 2000) showed that VOC concentrations are stabilizing or decreasing as compared to those results recorded during the RI (LAW, December 1996). 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 exceedances were reported at levels above the NYS 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 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;
- Collection of groundwater/leachate from the trench located at the landfill toe;
- Treatment of collected groundwater/leachate by carbon adsorption and discharge of treated water into Six Mile Creek. All the water will be discharged to the creek in compliance with the New York State Pollution Discharge System (SPDES) requirements;
- 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.

As specified in the June 2000 ROD, the presumptive remedy at the 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 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 (September 25, 2008 to October 25, 2008). A public meeting on the revised the 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 4.

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 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. 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 during the same period 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 December 2003, quarterly LTM sampling began at the Landfill 1 AOC. The LTM network was analyzed quarterly (routine) and annually (baseline) for NYSDEC Part 360 Parameters. The LTM network consists of twelve groundwater monitoring wells and three surface water sampling locations and is currently analyzed semi-annually for total and dissolved metals.

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 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.

In August 2004, methane monitoring at fifteen gas monitoring probes began at Landfill 1. Currently, a total of 18 gas monitoring probes and 31 gas vents are sampled quarterly for methane concentrations, lower explosive limit (LEL), oxygen concentrations, and carbon dioxide concentrations.

Since April 2005, quarterly landfill inspections have been performed in accordance with the Landfill 1 AOC Post-Closure Operations & Maintenance Manual (Conti, January 2005) and the Landfill 1 AOC Post-Closure Operations & Maintenance Manual addendum (Conti, May 2006). 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.

4.2.1.2 Data Review and Analysis

LTM data indicate VOCs, metals and leachate indicator remain above NYS Groundwater and Surface Water Standards. VOCs include benzene, 1,4-dichlorobenzene, 1,2,4-trimethylbenzene, vinyl chloride, and m,p-xylene. All VOC exceedances at Landfill 1 are stable and remain within one order of magnitude of their respective NYS Groundwater Standard and NYS Surface Water Standards. In groundwater samples, metals exceedances include iron, manganese, sodium, chromium, and aluminum and leachate indicator exceedances include ammonia, total dissolved solids, total Kjeldahl nitrogen and color.. Only metal exceedances are present in the current surface water sampling results. These metals include aluminum and iron. Current data shows a site-wide stabilization of all COCs (VOCs, metals, and leachate indicators) at Landfill 1.

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 of were recorded throughout Landfill 1 AOC. However, methane concentrations at point of compliance (POC) gas monitoring probes remain at non-detectable concentrations through the latest 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 the migration of methane into neighboring properties appears to remain an effective treatment. The effectiveness of the system is made apparent by the gradient established between two monitoring points. One monitoring point (LF1GMP-4) was installed between the landfill boundary and the passive gas trench; methane readings at this location have exceeded the LEL in all but one sampling round. In contrast, the other monitoring point (LF1GMP-19) was installed just outside of both the landfill boundary and the passive gas trench and within 25 feet of LF1GMP-4; methane readings at this location are consistently lower than those reported at LF1GMP-4 and in some sampling rounds magnitudes less.

The quarterly inspections have not identified any major deficiencies that would jeopardize the integrity of the cover. However, a few areas of interest continue to be monitored closely and when necessary have been restored.

4.2.1.3 Site Inspection

An inspection of the site for the 5-Year Review was performed on July 17, 2009 in conjunction with the quarterly LTM landfill inspections. The inspection confirmed that the site is open space and that all LUC/ICs continue to be implemented. An inspection sheet is provided in Appendix A.

4.2.1.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.2.1.4.1 Remedy Functionality

The landfill has been capped 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. As part of the AOC LTM program, the landfill cap is inspected quarterly, mowed annually, and repaired on an as needed basis (vector control and small area reseeding). The quarterly

inspections have not identified any major deficiencies that would jeopardize the integrity of the cover.

In addition, groundwater and landfill gas samples are collected semi-annually and quarterly, 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. In addition, the stream environment is monitored as part of the Six Mile Creek AOC LTM (Section 4.2.8).

Implementation of LUC/ICs required by the ROD in the form of deed restrictions has not taken place at this time, as Parcel F10C has not been transferred. However, the landfill closure plan included the following LUC/ICs:

1. Groundwater extraction/utilization/consumption within the groundwater restriction area will not be permitted without prior testing and written approval from the NYSDOH;
2. Activities that disrupt or interfere with the closure and post-closure activities will not be permitted;
3. Intrusive work within the groundwater restriction area will not be permitted without prior written approval from the NYSDEC and USEPA; and
4. Posting of notices and signs to minimize the interference with closure and post-closure activities.

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.

A groundwater/ leachate collection system was installed at the site. A groundwater/ leachate collection trench performance test (Conti, February 2004) and four subsequent sampling rounds (FPM, January 2007) indicated an overall decrease and stabilization trend for COCs. Results from the performance test and additional quarterly sampling rounds concluded that the groundwater/ leachate collection system is not necessary to ensure the protection of public health and the environment. A ROD amendment to remove this requirement has been signed by the Air Force and USEPA, with concurrence with the NYSDEC.

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. The property is owned by the Air Force and the LUC/ICs will be implemented as deed restrictions when the property is transferred.

4.2.1.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC groundwater/surface water standards and site-specific sediment ARARs at Landfill 1 show that exposure assumptions documented in the Landfill 1 AOC ROD are still applicable. Remedial actions, as described in the Landfill 1 AOC ROD and Amendment, have been implemented.

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 protective criteria values are still considered protective.

4.2.1.4.3 New Information of Significance

The Report of Implementation of Remedial Actions at the Landfill 1 AOC (AFRPA, September 2009) illustrated the effectiveness of the remedy at the site in protecting human health and the environment. The report also presented an amendment to the Landfill 1 AOC ROD. The amendment was added to the ROD for the purpose of deleting the requirement for the collection and treatment of groundwater/ leachate at the site. The Final Report of Implementation of Remedial Actions at the Landfill 1 AOC was approved by the USEPA on March 17, 2010..

4.2.1.5 Future Actions

Based on the latest LTM results (FPM, October 2009) showing declining/ stable contaminant concentrations, the current scope of semi-annual groundwater and surface water sampling will be reduced to annual sampling. The current scope of quarterly landfill gas sampling and landfill cap inspections will continue. Continued monitoring of LUC/ICs is also recommended at this site. Results from the LUC/IC monitoring and LTM sampling will be reported annually.

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 Landfill 1 selected remedy is protective of human health and the environment. As new data is collected, additional actions may be necessary to ensure protectiveness.

4.2.2 LF-2 (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 13 illustrates the 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 (LAW, December 1996).

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 feet. Debris was encountered by augering at depths ranging from 1 to 4 feet; at some locations, auger borings extended to 4 feet 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, polynuclear aromatic hydrocarbons (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 were installed at

the Landfill 2/3 AOC. These new wells consisted of two downgradient wells (LF2MW-12 and -13), one upgradient well (LF2MW-14) and a bedrock monitoring well (LF2MW-100, not shown on Figure 14). 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, March 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

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 (LAW, December 1996). Concentrations of metals detected at this site were not found to be outside the range of concentrations encountered off-site, and hence, were not included in the quarterly sampling.

During the RI (LAW, December 1996), low levels of pesticides were measured in water samples from wells on the south side of the landfill, mainly in well LF2MW-5. 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 measured in water samples 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 results of the human health baseline risk assessment indicate that the only potential unacceptable risk would be to future residents, agricultural receptors, and industrial workers from ingestion of groundwater at Landfills 2/3. The quantitative evaluation of risk is subject to several conservative assumptions and should not be considered an absolute measure of risk. The results of the ecological baseline risk assessment indicate that the hazard quotients are indicative of risks to the raccoon and American woodcock for exposure to surface soil, surface water, and sediment were calculated to be 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 lead, manganese, molybdenum, aluminum, and selenium.

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. These concentrations are slightly above NYS Groundwater Standards, and similar to those reported during the RI sampling in 1994. Dichlorodifluoromethane was detected below the NYS 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 NYS 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 (FPM, July 2000) sampling results for January 1999 in upgradient well LF2MW-3 indicated several levels of 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 milligrams per liter [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). 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 were detected at levels exceeding NYS 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 hits of lead at concentrations exceeding the NYS 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 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 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. The groundwater will be monitored in accordance with the Air Force's On-base Groundwater Monitoring Plan and the stream environment will be monitored in accordance with the work plan prepared for the Six Mile Creek AOC (FPM, October 2004), reviewed and approved by the USEPA and NYSDEC.
- 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.

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 4.

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. 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. An Engineers Closure Certification Report was issued in January 2005.

In December 2003, quarterly LTM sampling began at the Landfill 2/3 AOC. The LTM network was analyzed quarterly (routine) and annually (baseline) for NYSDEC Part 360 Parameters and VOCs. The LTM network consists of six groundwater monitoring wells and three surface water sampling locations and is currently analyzed semi-annually for metals and leachate indicators.

Since April 2005, quarterly landfill inspections have been performed in accordance with the Landfill 2/3 Post-Closure Operations & Maintenance Manual (Conti, December 2004). 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 Landfill 2/3 AOC to identify the presence and concentration of methane at or near the landfill. A total of nine gas monitoring probes and 14 landfill gas vents are monitored for methane concentrations, LEL, oxygen concentrations, and carbon dioxide concentrations.

4.2.2.2 Data Review and Analysis

LTM data indicate various metals and leachate indicator concentrations remain above NYS Groundwater and Surface Water Standards. In groundwater, metal exceedances include barium, chromium, sodium, nickel, iron, and manganese, and landfill leachate indicator exceedances include total Kjeldahl nitrogen, total dissolved solids, color, ammonia, bromide, and chloride. In surface water, metal exceedances include aluminum, iron, manganese, and cobalt, and landfill leachate indicator exceedances include total Kjeldahl nitrogen and color. Current data shows a site-wide stabilization of these COCs (metals and leachate indicators).

As recommended in the Spring 2006 LTM Report (FPM, June 2006), VOCs, cyanide, mercury, and phenols were removed from the Landfill 2/3 AOC LTM network analysis list, due to their low or absent concentrations at the site.

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 three vents (Vent-5, - 6, and -12). The LEL at these vents 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 these vents show methane concentrations well below the LEL. The LELs at the remaining Landfill 2/3 vents and gas monitoring probes ranged from 0 to 47%. The continued lack of high methane concentrations at the aforementioned boundary probes suggests a limited potential risk of human exposure.

Quarterly landfill inspections have not identified any major deficiencies that would jeopardize the integrity of the cover. Minor erosion problems (vegetative bare spots) continue to be monitored and restored when necessary. Vector burrowing has been noted at the site during LTM landfill inspections. The burrows were filled during maintenance activities.

4.2.2.3 Site Inspection

An inspection of the site for the 5-Year Review was performed on July 17, 2009 in conjunction with the quarterly LTM landfill inspections. The inspection confirmed that the site is open space and that all LUC/ICs continue to be implemented. An inspection sheet is provided in Appendix A.

4.2.2.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.2.2.4.1 Remedy Functionality

The landfill has been capped 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. As part of the AOC LTM program, the landfill cap is inspected quarterly, 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 semi-annually and landfill gas samples are collected quarterly. 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 of at the site demonstrates continued protection of potential receptors. In addition, the stream environment downgradient of the site is monitored as part of the Six Mile Creek AOC LTM (Section 4.2.8).
LUC/ICs in the form of groundwater use 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 meet the LUC/ICs required by 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 a defined in the Final Record of Decisions for the LF-3 (Landfill 7) and LF-2 (Landfills 2/3) AOCs.
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.

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 Landfill 2/3 AOC show that exposure assumptions documented in the ROD are still applicable. 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 protective criteria values are still considered protective.

4.2.2.4.3 New Information of Significance

VOCs, mercury, PCBs and all leachate indicators were removed from the Landfill 2/3 AOC LTM network analysis list, due to their low or absent concentrations at the site. In addition, landfill gas sampling results show a site wide stabilization in methane concentrations.

4.2.2.5 Future Actions

Based on the latest LTM results (FPM, October 2009) showing declining/ stable contaminant concentrations, the current scope of semi-annual groundwater and surface water sampling will be reduced to annual sampling. The current scope of quarterly landfill gas monitoring could also be reduced to semi-annual due to the site wide stabilization of methane concentrations. Landfill cap inspections will continue to be performed quarterly. It is also recommended that LUC/ICs

continue to be monitored at the site. Results from the LUC/IC monitoring and LTM sampling will be reported annually.

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 Landfill 2/3 AOC selected remedy is protective of human health and the environment. As new data is collected, additional actions may be necessary to ensure protectiveness.

4.2.3 LF-3 (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 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 14 illustrates the 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). During the installation of the new landfill cover, monitoring wells HS7MW-1, LF7MW-3R, -15, -16, -17, and -18R were decommissioned. The maintenance regimen and post-closure inspection requirements for Landfill 7 can be found in the Landfill 7 AOC Post-Closure Operations and Maintenance Manual (Conti, September 2003). 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

In 1984, groundwater samples from monitoring wells revealed the presence of oil and grease, tetrachloroethene (PCE), total organic carbon, methylene chloride and metals (LAW, December 1996). The PCE concentration measured at monitoring well LF7MW-17, located downgradient from the landfill, was highest at 105 µg/L. In 1991, samples of soil, sediment and surface water 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 Landfill 7 AOC detected several

VOCs, including acetone, 1,1,1-trichloroethane, TCE, several metals, pesticides, glycols and oil and grease. Metals were measured within the range of concentrations encountered off-site.

During the RI (LAW, December 1996), 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.

During the SI (E&E, November 1998), 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-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.

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 results of the human health baseline risk assessment indicate that chemicals detected at the site pose a risk to potentially exposed populations. However, this risk may be significantly reduced if groundwater is not used for potable purposes. The quantitative evaluation of risk is subject to several conservative assumptions and should not be considered an absolute measure of risk. The results of the ecological baseline risk assessment indicate 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.

Based on results from the RI and SI, it was reported that a TCE plume originated at the landfill and extended to the southwest approximately 600 feet is approximately 500 feet 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 (FPM, July 2000) 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. In the April sampling round, TCE was detected above NYS 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 reporting limit 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 (FPM, July 2000) was cis-1,2-DCE, which was detected slightly above the NYS 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.

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; 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 NYS 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 (FPM, July 2000) 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 from water sampling during the Baseline Study (FPM, July 2000) 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 NYS 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 NYS 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 (FPM, July 2000) 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 (FPM, July 2000) did not report any COC detections in the bedrock monitoring well, LF7MW-100, located approximately 160 feet 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).

4.2.3.1.3 ROD Requirements

The ROD for the 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 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; the groundwater will be monitored in accordance with the Air Force's On-base Groundwater Monitoring Plan and the stream environment will be monitored in accordance with the Six Mile Creek AOC LTM plan (FPM, October 2004); which was reviewed and approved by the USEPA and NYSDEC;
- 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.

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 4.

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, March 2002). 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), and one well upgradient from the source (LF7MW-29).

In December 2003, quarterly LTM sampling began at the Landfill 7 AOC. The LTM network was analyzed quarterly for NYSDEC Part 360 Routine Parameters and VOCs and annually for

NYSDEC Part 360 Baseline Parameters and VOCs. The LTM network consists of eight groundwater monitoring wells and two surface water/ leachate sampling locations and is currently analyzed semi-annually for total and dissolved metals.

Post-closure maintenance at Landfill 7, including quarterly landfill inspections and annual mowing, was initiated in September 2003, in accordance with the Landfill 7 Post-Closure Operations & Maintenance Manual (Conti, May 2004). The inspections are performed to identify any major deficiencies that would jeopardize the integrity of the cover.

4.2.3.2 Data Review and Analysis

As noted in the previous investigations, a TCE plume existed at the site. However, TCE has not been detected in samples from any monitoring well or surface water location since 2004. Currently, LTM data indicate various metals remain above NYS Groundwater and Surface Water Standards. Metal exceedances reported in groundwater samples include aluminum, iron, manganese, magnesium, chromium, nickel, sodium, and copper. Metals exceedances reported in the surface water samples include iron and manganese. Data also shows a site-wide stabilization of all COCs (metals) at Landfill 7. As recommended in the Spring 2006 LTM Report (FPM, June 2006), VOCs, mercury, PCBs, and all leachate indicators were removed from the Landfill 7 LTM network analysis list, due to their low or absent concentrations at the site.

Quarterly landfill inspections have not identified any major deficiencies that would jeopardize the integrity of the cover.

4.2.3.3 Site Inspection

An inspection of the site for the 5-Year Review was performed on July 17, 2009 in conjunction with the quarterly landfill inspections. The inspection confirmed that the site is open space and that all LUC/ICs continue to be implemented. An inspection sheet is provided in Appendix A.

4.2.3.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.2.3.4.1 Remedy Functionality

The landfill has been capped 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. As part of the AOC LTM program, the landfill cap is inspected quarterly, 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 semi-annually and results show statewide stabilization of all COCs in groundwater samples demonstrating continued protection of potential receptors. In addition, the stream environment downgradient of the site is monitored as part of the Six Mile Creek AOC LTM (Section 4.2.8).

LUC/ICs in the form of groundwater use restrictions were implemented in property transfer deeds as specified in the ROD. Specifically, the deed for Parcel A6 which includes the Landfill 7 AOC was reviewed and the following deed restrictions were determined to meet the ICs required by 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 Record of Decisions for the LF-3 (Landfill 7) and LF-2 (Landfills 2/3) AOCs.
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.

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 Landfill 7 AOC show that exposure assumptions documented in the Landfill 7 AOC ROD are still applicable. 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 protective criteria values are still considered protective.

4.2.3.4.3 New Information of Significance

VOCs, mercury, PCBs and all leachate indicators were removed from the Landfill 7 LTM network analysis list, due to their low or absent concentrations at the site.

4.2.3.5 Future Actions

Based on the latest LTM results (FPM, October 2009) showing declining/ stable contaminant concentrations, the current scope of semi-annual groundwater and surface water sampling will be reduced to annual sampling. In addition, landfill cap inspections will continue quarterly. Continued monitoring of LUC/ICs is also recommended at this site. Results from the LUC/IC monitoring and LTM sampling will be reported annually.

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 Landfill 7 AOC selected remedy is protective of human health and the environment. As new data is collected, additional actions may be necessary to ensure protectiveness.

4.2.4 LF-7 (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 Landfill 5 AOC consist of domestic wastes that were disposed of in the subsurface at the site. Figure 15 illustrates the 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 (IT Corp., May 2000). The property is scheduled to be transferred in 2010.

4.2.4.1.2 Previous Investigations

In 1982, groundwater sampling results from monitoring well TMCMW-8 (not shown on Figure 16), 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. Concentrations of metals were measured within the range of concentrations encountered off-site (LAW, December 1996).

Groundwater sampling from well LF5MW-1 during the RI (LAW, December 1996), north and upgradient of the site, reported 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 reporting limits in well LF5MW-2, located to the northeast and within the approximate landfill boundary.

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (open space use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The human health risk assessment evaluated exposure to potential landscape and industrial workers along with recreational and residential populations that may be exposed to soils and/or groundwater. Total carcinogenic risk associated with recreational population exposure scenarios to contaminants in the soil or groundwater exceeded the acceptable USEPA target risk range (1×10^{-4} to 1×10^{-6}). The HI calculated for the industrial and residential receptor exceeded the acceptable level of 1. The results of the ecological baseline risk assessment indicate 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 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.

During the SI (E&E, November 1998), 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.

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

The Baseline Study (FPM, July 2000) 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.

During the 1999 quarterly sampling rounds, three surface water sampling locations reported intermittent detections of various COCs. 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).

During the January 1999 sampling round, aluminum, iron and sodium concentrations at three surface water sampling points were reported at levels exceeding NYS Surface water Standards. Iron concentrations were also reported above 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 were reported above the NYS Surface water Standard at all three surface water sampling points for all sampling rounds.

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

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

4.2.4.1.3 ROD Requirements

The ROD for the 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 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. The groundwater will be monitored in accordance with the Air Force's On-base Groundwater Monitoring Plan and the stream environment will be monitored in accordance with the work plan prepared for the Three Mile Creek AOC (FPM, October 2004) which was reviewed and approved by the USEPA and NYSDEC;
- 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.

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 4.

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 of Landfill 5, an 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.

In February 2003, quarterly LTM sampling began at the Landfill 5 AOC. The LTM network was analyzed quarterly (routine) and annually (baseline) for NYSDEC Part 360 Parameters and VOCs. The LTM network consists of five groundwater monitoring wells and three surface water sampling locations and is currently analyzed semi-annually for total and dissolved metals and PCBs.

Post-closure maintenance at Landfill 5, including quarterly inspections and annual mowing, was initiated in September 2003, in accordance with the Landfill 5 Post-Closure Operations and Maintenance Manual (Conti, September 2003).

4.2.4.2 Data Review and Analysis

LTM data indicate various metals remain above NYS Groundwater and Surface Water Standards at the Landfill 5 AOC. In groundwater samples, metals exceedances include aluminum, chromium, iron, manganese, nickel, and sodium. In surface water samples, metals exceedances include aluminum and iron. As recommended in the Spring 2006 LTM Report (FPM, June 2006), VOCs, mercury, and all leachate indicators were removed from the Landfill 5 LTM network analysis list, due to their low or absent concentrations at the site. PCBs analysis was also removed from the Landfill 5 LTM analysis list, with the exception of semi-annual sampling at bedrock monitoring well LF5MW-100R.

The inspection did not identify any deficiencies that would jeopardize the integrity of the cover.

4.2.4.3 Site Inspections

An inspection of the site on July 17, 2009 confirmed that the landfill cover is in place, and that groundwater monitoring wells are protected. The inspection also confirmed that the groundwater is not being extracted, except for LTM purposes. The inspection sheet is provided in Appendix A.

4.2.4.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.2.4.4.1 Remedy Functionality

The landfill has been capped 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. As part of the AOC LTM program, the landfill cap is inspected quarterly, mowed annually, and repaired on an as needed basis (vector control and small area reseeding). The cap inspections there have not identified any major deficiencies that would jeopardize the integrity of the cover.

Groundwater samples are collected semi-annually and results show that COCs reported in the groundwater samples are stable which demonstrates continued protection of potential receptors. In addition, the stream environment downgradient of the site is monitored as part of the Three Mile Creek AOC LTM (Section 4.2.7).

Implementation of LUC/ICs required by the ROD in the form of deed restrictions have not been completed at this time Parcel F11B has not been transferred. However, the landfill closure plan included the following LUC/ICs:

1. Groundwater extraction/utilization/consumption within the groundwater restriction area will not be permitted without prior testing and written approval from the NYSDOH;
2. Activities that disrupt or interfere with the closure and post-closure activities will not be permitted;
3. Intrusive work within the groundwater restriction area will not be permitted without prior written approval from the NYSDEC and USEPA;
4. Intrusive work or other activities that impact the effectiveness of the landfill closure and post-closure activities will not be allowed within the restricted landfill boundary; and
5. Posting of notices and signs to minimize the interference with closure and post-closure activities.

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. The property is owned by the Air Force and the LUC/ICs will be implemented as deed restrictions when the property is transferred.

4.2.4.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC Groundwater/Surface water Standards at the Landfill 5 AOC show that exposure assumptions documented in the Landfill 5 AOC ROD are still applicable. 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 protective criteria values are still considered protective.

4.2.4.4.3 New Information of Significance

Based on previous analysis contaminant trends along with reduction have improved allowing the sampling to be conducted annually. Also, PCBs have been removed from the network due to a lack of detections. In addition, PCB analysis at LF5MW-100R has been discontinued, due to a lack of detection.

4.2.4.5 Future Actions

Based on the latest LTM results (FPM, October 2009) showing declining/ stable contaminant concentrations, the current scope of semi-annual groundwater and surface water sampling will be reduced to annual sampling. In addition, landfill cap inspections will continue. Continued monitoring of LUC/ICs is also recommended at this site. Results from the LUC/IC monitoring and LTM sampling will be reported annually.

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 Landfill 5 AOC selected remedy is protective of human health and the environment. As new data is collected, additional actions may be necessary to ensure protectiveness.

4.2.5 LF-9 (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 16 illustrates the 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 (Landfill 6 TCE AOC (SD-52-04)).

4.2.5.1.2 Previous Investigations

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 NYS 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 NYS 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 (LAW, December 1996) involved the collection of numerous surface soil and groundwater samples and a passive soil gas survey for contamination detection. Also, geophysical data were collected 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, November

1998) at locations where anomalous geophysical indicators suggested buried drums, but none were discovered.

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 (LAW, December 1996), 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-dichloroethene (DCE) and 30 µg/L vinyl chloride (LAW, December 1996). cis-1,2-DCE and vinyl chloride 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.

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 results of the human health risk assessment indicate that chemicals detected in the air and soil do not present a risk to future residents or current and future recreational receptors and landscape workers. The only potential unacceptable risk would be to future residents and industrial workers from ingestion of groundwater at Landfill 6 The quantitative evaluation of risk is subject to several conservative assumptions and should not be considered an absolute measure of 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,S-tetrachlorodibenzodioxIn [TCDD], HQ = 39; selenium, HQ = \.6). The HQ exceeded I for the American woodcock for one chemical (2,3,7,S-tetrachlorodibenzodioxin [TCDD], HQ = S.O). These values indicate a potential for adverse effects.

The SI was performed in 1997 (E&E) 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, total organic carbon, 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 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 feet 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 feet 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), vinyl chloride (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), vinyl chloride (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 Landfill 6 AOC to define the vertical and lateral extent 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 feet long, 80 feet deep and 200 feet wide near the top of Landfill 6 and 700 feet wide near the leading edge of the plume (located approximately 100 feet 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 ft/ft and slight vertical gradients between the overburden.

4.2.5.1.3 ROD Requirements

The ROD for the 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 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. In accordance with the Air Force's On-base Groundwater Monitoring Plan and the stream environment will be monitored in accordance with the work plan (FPM, October 2004) for the Three Mile Creek AOC reviewed and approved by the USEPA and NYSDEC;
- 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.

4.2.5.1.4 Land-Reuse Zoning

The 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 4.

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. The following monitoring wells were decommissioned as part of the July 2004 recapping effort at Landfill 6:

LF6MW-2, -3, LF6VMW-6, -7, -8, -11, 775VMW-17, -19, -21, -22, 775MW-22Br, TMC-USGS-3 and -4. It was also at this time that 11 new monitoring wells were installed at the Landfill 6 AOC (not shown on Figure 17). These new wells consisted of 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 of Landfill 6, an LTM program for groundwater and surface water downgradient of the site 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, three surface water sampling locations, two landfill leachate sampling locations, and one wetland sampling location. Groundwater and surface water samples are analyzed for VOCs, metals and landfill leachate indicators.

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. 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 at 13 gas monitoring probes (LF6GMP-01 through -13) and 16 gas vents (LF6VENT-01 through -16). Samples were analyzed for methane concentrations, LEL, oxygen concentrations, and carbon dioxide concentrations.

4.2.5.2 Data Review and Analysis

LTM data indicate various VOCs, metals and leachate indicator concentrations remain above NYS Groundwater Standards at the site. However, results indicate that COC concentrations are declining or are stable. VOC exceedancesreported in the groundwater samples include TCE and DCE and metals exceedances include aluminum, iron, manganese, cadium, chromium, nickel, and sodium. Leachate indicator exceedances include total dissolved solids, total Kjeldahl nitrogen, chloride, and color. Metals and landfill leachate indicator concentrations also remain above NYS Surface Water Standards at the site. Metals exceedances include iron, arsenic, manganese, and aluminum. Landfill leachate indicator exceedances include total dissolved solids, total Kjeldahl nitrogen, and color.

Methane was not detected at any of the gas monitoring probes during the latest gas sampling rounds. The one detection during the November 2008 gas sampling round was observed at one well but was below the LEL. All observed methane concentrations at the landfill gas vents were concentrated in the northwestern portion of the landfill. At this time elevated methane concentrations at the Landfill 6 AOC do not appear to pose a risk to surrounding properties.

LTM landfill inspections have not identified any major deficiencies that would jeopardize the integrity of the cover.

4.2.5.3 Site Inspection

An inspection of the site for the 5-Year Review was performed on July 17, 2009 in conjunction with the quarterly landfill inspections. The inspection confirmed that the site is open space and that all LUC/ICs continue to be implemented. An inspection sheet is provided in Appendix A.

4.2.5.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.2.5.4.1 Remedy Functionality

The landfill has been capped 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 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. The EPA concurrence letter was issued on September 30, 2008. As part of the AOC LTM program, the landfill cap is inspected quarterly, 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 semi-annually and quarterly, respectively. Results show that COCs reported in the groundwater samples remain above the NYS Groundwater Standards, however, these exceedances are decreasing or stable. Landfill gas sampling results also show that concentrations of methane remain stable and below the LEL. In addition, the stream environment downgradient of the site is monitored as part of the Three Mile Creek AOC LTM (Section 4.2.7).

Implementation of LUC/ICs required by the ROD in the form of deed restrictions has not taken place at this time, as Parcel F11B has not been transferred. However, the landfill closure plan included the following LUC/ICs:

1. Groundwater extraction/utilization/consumption within the groundwater restriction area will not be permitted without prior testing and written approval from the NYSDOH;
1. Activities that disrupt or interfere with the closure and post-closure activities will not be permitted;
2. Intrusive work within the groundwater restriction area will not be permitted without prior written approval from the NYSDEC and USEPA;
3. Intrusive work or other activities that impact the effectiveness of the landfill closure and post-closure activities will not be allowed within the restricted landfill boundary; and

4. Posting of notices and signs to minimize the interference with closure and post-closure activities.

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. The property is owned by the Air Force and the LUC/ICs will be implemented as deed restrictions when the property is transferred.

4.2.5.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC groundwater/surface water standards at the Landfill 6 AOC show that exposure assumptions documented in the Landfill 6 AOC ROD are still applicable. 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 protective criteria values are still considered protective.

4.2.5.4.3 New Information of Significance

The landfill has been re-capped and LTM is ongoing at the site. The report documenting the implementation of remedial action at the Landfill 6 AOC was released in September 2008 (AFRPA, September 2008). The report illustrated the effectiveness of the remedy at the site in protecting human health and the environment.

4.2.5.5 Future Actions

Based on the latest LTM results (FPM, October 2009), the current scope of quarterly groundwater and surface water sampling will be reduced to semi-annual sampling. LTM data indicate various VOCs, metals and leachate indicator remain above NYS Groundwater Standards at the site. However, results indicate that COC concentrations are declining or are stable. VOC exceedances reported in the groundwater samples include TCE and DCE and metals exceedances include aluminum, iron, manganese, cadium, chromium, nickel, and sodium. Leachate indicator exceedances include total dissolved solids, total Kjeldahl nitrogen, chloride, and color. Metals and landfill leachate indicators exceed NYS Surface Water Standards at the site. Metals exceedances include iron, arsenic, manganese, and aluminum. Landfill leachate indicator exceedances include total dissolved solids, total Kjeldahl nitrogen, and color. Also, quarterly landfill gas monitoring will be reduced to semi-annual sampling. Landfill cap inspections will continue to be performed on a quarterly basis. Continued monitoring of LUC/ICs is also recommended at this site. Results from the LUC/IC monitoring and LTM sampling will be reported annually.

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 Landfill 6 AOC selected remedy is protective of human health and the environment. In addition, 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. As new data is collected, additional actions may be necessary to ensure protectiveness.

4.2.6 LF-28 (Landfill 4 AOC)

4.2.6.1 Document Review

4.2.6.1.1 Site History

Landfill 4 consisted of a buried concrete vault which was surrounded by a 100 sq ft. of fencing, located in a woodland area in the south-central portion of the former Griffiss AFB, directly west of Landfill 6, and northeast of Three Mile Creek. Surface water runs off towards Three Mile Creek. Landfill 4 is the former location of a buried concrete vault. The site was initially closed in 1967 and a concrete cap was placed over the vault. In operation from the mid-1950s to the mid-1960s, the vault was used for the disposal of vacuum and radio tubes used in radar and communication equipment, low-level radioactive wastes, and other debris. Figure 17 illustrates the Landfill 4 site location and LTM network, as well as the LUC/ICs as required by the ROD.

4.2.6.1.2 Previous Investigations

Chemical and radioanalytical results from the RI groundwater investigation conducted in 1994 indicated the presence of numerous heavy metals, cyanide, radionuclides, and gross alpha and beta radioactivity. Of these, gross alpha and beta radioactivity levels and concentrations of 12 metals exceeded NYS Groundwater Standards in grab groundwater samples obtained from five soil borings (LF4SB-1, -2, -3, -4, and -5).

As part of the RI, a baseline risk assessment was performed to evaluate the current and future (open space use) potential risks to human health and the environment associated with COCs found in the soils and groundwater at the site. The human health risk assessment evaluated exposure to industrial and residential receptors. Total carcinogenic risk associated with exposure by industrial workers to contaminants in the groundwater was within the lower end of the acceptable USEPA target risk range (1×10^{-6}). However, the total carcinogenic risk to residential receptors was calculated above the upper end of the USEPA target risk range (1×10^{-4}). The HI was below the acceptable level of 1. The ecological baseline risk assessment indicated that habitats critical to ecological receptors were considered to be insignificant because the vault is below grade and ecological receptors are not expected to be found at these depths.

Likewise, because surface water and sediments are not present at Landfill 4 no COPCs were identified for these media. Therefore, this AOC poses no significant threat to the environment.

A pre-excavation investigation was conducted at Landfill 4 in July 1997 to confirm the results of the RI (LAW, December 1996) and provide additional data on the COCs. A soil boring (SL04) was installed 10 feet downgradient of the vault location. A water sample was extracted from the soil boring and analyzed for the eight Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, selenium, lead, silver, and mercury), cyanide, gross alpha and beta radioactivity, and eight targeted radionuclides (tritium, cobalt-60, nickel-63, cesium-137, radium-226, thorium-232, uranium-235, and naturally-occurring uranium). Lead, which was detected at concentrations of 58 µg/L (total) and 43 µg/L (dissolved), was the only compound that exceeded the established cleanup criterion of 25 µg/L. Following this investigation, removal concrete vault was conducted along with the excavation of soils from the bottom of the vault. Once the removal of the vault and excavated soils were complete, post-excavation sampling and a radionuclide pathway analysis were conducted. Sampling results showed that the site poses no significant threat to the public and the environment (Parsons, OHM, September 1997).

4.2.6.1.3 ROD Requirements

The ROD for the Landfill 4 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 and the ROD for Landfill 4 AOC, the selected remedy was NFA for soils with groundwater monitoring to confirm the absence of residual groundwater contamination. In addition, although deed restrictions were specified in the ROD to be incorporated into all property transfer documents for the duration of the groundwater monitoring program and until USEPA and NYSDEC concur with the removal of the restrictions, it is now anticipated that groundwater remedial action objectives will be met prior to property transfer. Thus, Landfill 4 is not expected to require LUC/ICs when transferred.

4.2.6.1.4 Land-Reuse Zoning

The Landfill 4 AOC is located within parcel F11B and was zoned by the GLDC, which is the Griffiss LRA, as low intensity open space reuse. 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 4.

4.2.6.1.5 Post-ROD Activities

In June 2003, quarterly LTM sampling began at the Landfill 4 AOC. The LTM network consisted of four groundwater monitoring wells. Five sampling rounds were performed and samples were analyzed for gross alpha, gross beta, radium-226, and radium-228.

4.2.6.2 Data Review and Analysis

Groundwater LTM at the Landfill 4 AOC was discontinued following the March 2004 sampling round with the exception of LF4MW-1, LF4MW-2, and LF6MW-1; which were sampled in December 2004 for confirmation of the December 2003 data. Concentrations of gross alpha, gross beta, radium-226, and radium-228 were reported below their respective NYS Groundwater Standards in four successive sampling rounds. In addition, these concentrations varied little between the downgradient, crossgradient, and upgradient wells.

4.2.6.3 Site Inspection

An inspection of the site was not performed.

4.2.6.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.2.6.4.1 Remedy Functionality

There is no further action required at the site. The requirement for additional groundwater monitoring has been removed due to the low COC concentrations reported during the 2003/2004 LTM sampling rounds. The Landfill 4 AOC will be included in Table 1 as a NFA site in the next 5-Year Review.

4.2.6.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

On the basis of the RI performed at the Landfill 4 AOC, site removal actions conducted in 1997, and the baseline risk assessment, there is no evidence that the previous operations at this site have resulted in environmental contamination that poses a current or future potential threat to human health or the environment (E&E, March 2000). 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 protective criteria values are still considered protective.

4.2.6.4.3 New Information of Significance

The Landfill 4 AOC was recommended for closure following the December 2004 sampling round (FPM, July 2005). The closure of the site was approved by the USEPA on August 31, 2005.

4.2.6.5 Future Actions

No further action at this site is required.

4.2.6.6 Protectiveness Statement

Based on the document reviews, data review, and data analysis, the Landfill 4 selected remedy is protective of human health and the environment.

4.2.7 SD-31 (Three Mile Creek AOC)

4.2.7.1 Document Review

4.2.7.1.1 Site History

The Three Mile Creek AOC is located in a forested area in the southern part of the former Griffiss AFB. It is bordered by the EPS to the northwest, Landfills 4, 5, and 6 to the northeast, and the former Skyline Housing development to the southwest. The Three Mile Creek AOC is a creek with an approximate length of 10,000 ft, a width of 10 ft and a depth ranging from 2 inches at its origination to 2 ft at the furthest downstream area near the New York State Barge Canal. The creek originates at two stormwater culvert outlets located at Ellsworth Road and Wright Drive (near the EPS). Two additional smaller culverts that drain the area surrounding the Electrical Power Substation enter the creek slightly downstream from the two larger culverts. The creek receives both surface water runoff and groundwater from the surrounding watershed. Drainage is received from Landfills 4, 5, and 6, the Electric Power Substation and the south central part of the Base. Three Mile Creek flows in a southeasterly direction and eventually flows into the NYS Barge Canal (about one mile south of the Base). Figure 18 illustrates the Three Mile Creek LTM site.

4.2.7.1.2 Previous Investigations

Preliminary studies of Three Mile Creek were performed in 1981, 1987, and 1988. Soil, sediment, surface water, groundwater, and fish tissue samples were collected. Numerous metals, PAHs, PCBs, and pesticides were detected in the streambed sediments and the fish tissue was contaminated with PCBs, some PAHs, and metals. The results of these studies led to the performance of a RI from 1993 through 1995.

The RI was performed to characterize the nature and extent of environmental contamination at the Three Mile Creek AOC to determine whether remedial action was necessary to eliminate potential threats to human health and the environment from exposures that might arise under existing or expected future site conditions. The RI included an aquatic survey, surface water sampling, sediment sampling, and fish tissue sampling. The aquatic survey was used to evaluate creek habitat, water quality, benthic and drift macroinvertebrate communities, and fish

populations within four 100-meter segments of the on-base part of the creek (one near the EPS, one near Landfill 5, one near the Thor Street residential area (Figure 18), and one further downstream just inside the base boundary). At approximately the same locations, sediment samples were collected for toxicity testing and fish samples were collected for pesticides, PCBs, and metals analyses. Results from the sediment toxicity tests performed as part of the aquatic survey indicated that chemicals were not present at levels acutely toxic to aquatic life. A slight impairment of benthic macroinvertebrate populations was noted at the locations near Landfill 5 and near the base boundary. The fish population assessment indicated that fish communities were in poor to fair condition which could be due to site contaminants and, in part, to the lack of quality habitat. The results of the fish tissue analysis indicated the presence of PCBs, pesticides, and mercury at levels exceeding NYSDEC ecological risk guidelines for protection of piscivorous wildlife.

Surface water samples were collected from 12 locations along Three Mile Creek and analyzed for VOCs, SVOCs, PCBs, pesticides, metals, glycols, radionuclides and water quality parameters. One VOC, 15 SVOCs, four pesticides, and seven metals were detected at concentrations above the most stringent criteria for surface water. Sediment samples were collected at two depths below the surface water/sediment interface (0.5 ft. and 1.0 ft.) from 15 locations, including the 12 locations along Three Mile Creek and three locations along the drainage ditch near Landfill 5. The samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxins, metals, and radionuclides. Three VOCs, 22 SVOCs, 18 pesticides, dioxin, and ten metals were detected at concentrations above the most stringent criteria for sediment.

In 1995, NYSDEC performed passive in situ concentration/extraction sampling (PISCES) at one location in Three Mile Creek to test for PCBs and other organochlorines. PCBs and 1,1-dichloro-2,2-bis(chlorophenyl)ethylene (DDE) were detected. Naturally occurring conditions such as below average rainfall and low flow in the stream may have affected the ability of PISCES to detect contaminants.

In 1997, for a separate investigation of PCB contamination associated with Landfill 5, sediment samples were collected at two depth intervals (0 to 0.5 ft. and 1 to 1.5 ft.) from seven locations in the Landfill 5 tributary to Three Mile Creek. PCBs were detected at concentrations above the most stringent criteria.

In June 1997, as part of a basewide SI, three PISCES samples and two surface water samples were collected from Three Mile Creek for pesticide and PCB analysis. Pesticides were detected in two of the PISCES samples. No contaminants were detected in the surface water.

In July 1998, additional SI samples were taken from the off-base portion of Three Mile Creek to fill data gaps that had been identified in the RI sampling. These included two surface water samples and eight sediment samples. Four metals were detected in surface water samples above

the most stringent criteria. Concentrations of 18 SVOCs, DDD, PCB (Aroclor 1260), and five metals detected in sediment were above the most stringent criteria.

A visual inspection of the habitat quality of Three Mile Creek was conducted in 1999, by the Air Force, United States Army Corps of Engineers (USACE), NYSDEC, USEPA, and US Fish and Wildlife Service to gain a better understanding of creek conditions and the impact of potential remedial actions. In the same year, for the Three Mile Creek Feasibility Study (FS), sediment samples were collected from six locations in Three Mile Creek pond (located off-base between NYS Routes 365 and 49) and analyzed for PCBs, cadmium, and lead. In 2001, the same six locations in the pond were vertically profiled to depths of 3.5 feet below creek bottom to determine the vertical extent of sediment contamination and the appropriate depth for sediment remediation. Twelve additional samples were collected, two samples per location. PCBs, cadmium, and lead were all detected at concentrations exceeding the most stringent criteria.

The 2001 FS investigation also included sampling along the on-base portion of the Three Mile Creek channel and the Landfill 5 tributary in order to define the vertical and lateral extent of contamination to better determine the potential breadth and depth of sediment remediation in those areas. Samples of sediment and native soil (beneath sediment) were collected at selected locations from depth intervals of up to 3.5 feet. Five VOCs, 24 SVOCs, 15 pesticides, two PCBs, dioxins, and 10 metals were detected at concentrations exceeding the most stringent criteria. While many of the same chemicals were also detected in the native soil samples, the concentrations were not as great, and fewer exceeded the most stringent criteria (E&E, July 2002).

4.2.7.1.3 ROD Requirements

The ROD for the Three Mile Creek AOC was issued by the Air Force in December 2003 and signed by the USEPA in March 2004. Based on the previous investigations and environmental conditions at the site the selected remedy for the creek is selected excavation of contaminated sediments and LTM. The ROD states surface water, sediment, and fish tissue samples will be analyzed in accordance with the Three Mile Creek AOC LTM program following creek bed remediation and restoration.

4.2.7.1.4 Land-Reuse Zoning

The Three Mile Creek AOC is located within Parcel F11B, a review of the proposed zoning by the GLDC, the Griffiss LRA, indicates that low intensity open space use is planned. 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 4.

4.2.7.1.5 Post-ROD Activities

Cape Inc. performed a Remedial Action (RA) at Three Mile Creek from summer 2004 to summer 2005. For the remedial action, excavation of contaminated sediments was conducted in the on-base and off-base portions of Three Mile Creek. The Three Mile Creek pond along with sixteen soil deposits was excavated to a depth of 3.5 ft bgs in the off-base portion of Three Mile Creek. Approximately 5,940 cy of sediment was excavated from the off-base portion of Three Mile Creek. The main channel, the north channel, and the Landfill 5 tributary were excavated in the on-base portion of Three Mile Creek. The design depths for the excavation ranged from 2.5 ft bgs to 4 ft bgs and approximately 29,427 cy were excavated. FPM collected two soil samples on June 29, 2005 from the Three Mile Creek pond backfill, which were analyzed for VOCs, SVOCs, PCBs, pesticides, and metals. The results indicated VOCs and metals detections, none of which exceeded the Most Stringent Ecological Screening Values.

The excavated area of the creek was restored and consisted of sediment backfill, the construction of several meanders throughout the length of the creek, and the distribution of logs across the banks of the main channel to provide wildlife habitat areas.

LTM at the Three Mile Creek AOC consists of annual surface water and sediment sampling at sampling locations TMC-1 through -8 and fish tissue sampling and a benthic qualitative assessment performed every three years at sampling locations TMC-1 through -5. Fish tissue sampling and benthic qualitative assessment is not performed at TMC-6 through -8 as these sites are upgradient potential source locations. All sampling locations are illustrated on Figure 18. LTM at the AOC was initiated in fall 2006. Surface water sampling, sediment sampling, fish tissue sampling and a benthic qualitative assessment was performed in accordance with the Final LTM work plan requirements (FPM, October 2004). Annual LTM sampling was also performed in fall 2007 and fall 2008. Only surface water and sediment samples were collected.

Surface water and sediment samples were analyzed for VOCs, SVOCs, metals, pesticides, and PCBs. Fish tissue samples were analyzed for cadmium, mercury, pesticides, and PCBs.

4.2.7.2 Data Review and Analysis

<u>Surface Water</u>
VOC detections were reported in surface water samples during the Fall 2006, Fall 2007, and Fall 2008 sampling events. None of these detections exceeded NYS Surface Water Standards. SVOC and metals concentrations exceeding NYS Surface Water Standards were reported during all sampling events. During data analysis, the SVOC and metals detections were determined to be indicative of basewide background conditions (identified during the RI) (reported at several sites throughout the base) or were detected within one order of magnitude of the surface water standard. Only one sampling location showed PCB or pesticide exceedances during the Three Mile Creek AOC LTM sampling events. Location TMC-7 reported one PCB (Aroclor 1260) and

one pesticide (dieldrin) exceedance during the Fall 2007 and Fall 2008 sampling events. The exceedances may be attributed to suspended solids in the sample.

Sediment

VOCs have not been detected at any location in all three LTM sampling rounds above the most stringent ecological screening value. SVOC and metals concentrations were detected above the most stringent ecological screening value. The SVOC and metals exceedances reported in the sampling round are indicative of basewide background conditions (identified during the RI) or were detected within one order of magnitude of the most stringent ecological screening value. Pesticide exceedances were reported at all sampling locations. Total pesticide concentrations show a decreasing trend when the 1994 RI and LTM sampling results are compared. PCB (Aroclor 1260) was detected during the Fall 2006, Fall 2007, and Fall 2008 sampling rounds at concentrations above the most stringent ecological screening value of 5 µg/kg. Exceedances show a decreasing trend at applicable sampling locations (TMC-1, -2, -3, -6, -7, and -8) when the 1994 RI sampling round and LTM sampling rounds were compared. The PCB detections reported at the site during the LTM sediment sampling are provided in Table 2.

Table 2
Six Mile Creek AOC LTM PCB (Aroclor 1260) Detections (µg/kg)

Sampling Location	Sampling Round			
	RI Results (1994)	**2006**	**2007**	**2008**
TMC-1	NA	66.5	U	51.2
TMC-2	6,600	28.5 F	16.7	13.2 F
TMC-3	3,400	U	38.1	3.76 F
TMC-4	NA	570	67.1	433
TMC-5	NA	111	116	74.6
TMC-6	U	U	8.75 F	U
TMC-7	7,500	115	101	7.97 F
TMC-8	U	U	U	U

Notes:
U = not detected.
F = The analyte was detected aboe the MDL but below the RL.
NA = not availbe.

Fish Tissue

Pesticide, PCB, and metals detections were reported in fish tissue samples at all of the sampling sites. All locations had at least one fish sample with a PCB or pesticide concentration above the NYSDEC piscivorous wildlife criteria. At sampling locations 1, 4, and 5, PCB concentrations were detected above the NYSDOH Fish Advisory Guidelines (locations 1, 4, and 5 also showed elevated PCB exceedances in the sediment samples). Therefore, the fish advisory at the TMC

AOC will remain in place. The Three Mile Creek AOC 2004/2005 Remedial Action was not performed along the entire length of the creek. It is likely that the fish sampled lived in the stretch of the creek that was not remediated because Three Mile Creek is dammed near the Barge Canal making it impossible for new fish to migrate into the creek. Additional fish tissue samples will be required to identify any trends. The PCB detections reported at the site during the LTM sediment sampling are provided in Table 3.

Table 3
Fall 2006 Fish Sampling PCB (sum of congeners) Results

Sampling Location	TMC-1	TMC-2	TMC-3	TMC-4	TMC-5
Range of PCB Detections (µg/kg)	902 – 2,890	250 – 1,370	998.7 – 1,858.13	1,628.91 – 5,192.56	1,700 – 2,576.91
Exceedances above NYSDEC Piscivorous Wildlife Criteria	7	10	5	5	6
Exceedances above NYSDOH Fish Advisory Guidelines	1	0	0	3	4

Benthic Qualitative Assessment
The results of the benthic qualitative assessment showed that the creek was slightly to moderately impacted. However, it should be noted that due to the sandy substrate and slow water flow in portions of the creek, Three Mile Creek is considered a poor habitat for macro-invertebrates.

4.2.7.3 Site Inspection

A site inspection of the Three Mile Creek AOC was performed on July 20, 2009. The inspection confirmed that there are no significant issues at the AOC that would jeopardize the protectiveness of the remedy.

4.2.7.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.2.7.4.1 Remedy Functionality

The remedy implemented at Three Mile Creek has reduced the risks posed to human health and the environment by eliminating, reducing, or controlling exposure to human and environmental

receptors through a remedial action and monitoring. Specifically, this has been accomplished through:

- Contaminated sediment excavation and proper disposal.
- Placement of clean fill in the excavated areas to eliminate the possibility of human and environmental exposure to any remaining contamination.
- Implementation of source control measures at sites potentially influencing TMC.
- LTM being conducted to ensure that the remedial action is effective and continues to be protective of the environment and human receptors.

Currently, the LTM network is used to assess the residual site contamination and as an early warning system for potential receptors. Sampling data from the LTM events indicates that the Remedial Action (2004) was successful in removing contamination from the site. LTM data shows that site COC concentrations have declined over one order of magnitude Remedial Investigation (1994). The data also shows that the current LTM network is adequate in maintaining the remedies protectiveness and will be optimized as future data is collected.

4.2.7.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

The ROD was signed in 2004 and the underlying assumptions supporting the remedy and cleanup objectives selection have not changed. Exceedances of NYSDEC Surface water and Sediment Standards at the Three Mile Creek AOC show that exposure assumptions documented in the Three Mile Creek AOC ROD are still applicable. The previous soil and surface water investigations used protective criteria including NYSDEC Ambient Water Quality Standards and Guidance Values (June 1998) and NYS Soil Clean-up Objectives (TAGM #4046, January 1994).

4.2.7.4.3 New Information of Significance

There is no new information of significance that would threaten the protectiveness of the remedy.

4.2.7.5 Future Actions

Based on the LTM results, contamination still exists at the Three Mile Creek AOC. Continued sampling will be required to monitor the protectiveness of the remedy. LTM data will be analyzed and reported annually.

4.2.7.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the Three Mile Creek AOC selected remedy is protective of human health and the environment. As new data is collected, additional actions may be necessary to ensure protectiveness.

4.2.8 SD-32 (Six Mile Creek AOC)

4.2.8.1 Document Review

4.2.8.1.1 Site History

Six Mile Creek, a natural stream bordered by wetlands, enters the former Griffiss AFB from the North and exits to the southeast, intersecting the Base runway. The creek is approximately 8 feet wide and 1.5 feet deep prior to entering the Base and approximately 20 feet wide and 4 feet deep after leaving the former Base. The on-Base portion of the creek is approximately 8,400 feet long, split in an upper and a lower section, plus an additional 7,200 feet within the runway culvert separating both sections. The creek continues off Base for approximately 2 miles, ultimately flowing into the New York State Barge Canal. Prior to Base construction, Six Mile Creek reportedly was used for agricultural irrigation. Currently, the on-Base portion of the creek serves as a surface water runoff and storm water drainage system for the Base. Surface water runoff from Landfills 1, 2/3, and 7, the Weapon Storage Area (WSA), WSA Landfill, runway, on-Base shops, and Rainbow Creek flows to the creek. Leachate from the same landfills also discharges into the creek. In addition, portions of the On-Base storm water system discharge into the lower portion of the creek. The Base storm water system also received rinse water and washdown, which may have contained oils, solvents, and fuels from various Base shops. The Six Mile Creek AOC also includes the aqueous film-forming foam (AFFF) lagoon, which is located between the WSA fence line and Perimeter Road. This 50-by-50-foot retention pond, which received aqueous waste overflow from the AFFF system at Building 917, has periodically overflowed, potentially resulting in surface discharges to Six Mile Creek. Six Mile Creek has been classified as a NYSDEC Class C stream. The section of Six Mile Creek below the Base Perimeter Road is classified as Class C(t). According to the NYCRR 701, the best usage for Class C stream waters is fishing, where waters shall be suitable for fish propagation and survival. Based on an Aquatic Habitat Assessment, at least 12 species of fish are found in Six Mile Creek (E&E, July 2003). Figure 19 illustrates the Six Mile Creek site location.

4.2.8.1.2 Previous Investigations

Preliminary studies of Six Mile Creek were performed in 1981 and 1988. Soil, sediment, and fish tissue samples were collected. Numerous metals and PAHs were detected in the sediments. Several metals and PCBs were detected in the fish tissue samples at levels below the Food and Drug Administration's action level of 2.0 ppm but above the 0.1 ppm level representing risk to piscivorous wildlife. The results of these studies led to the performance of an RI in 1994 and 1995.

The RI was performed to evaluate the nature and extent of environmental contamination at the site and to determine whether RA was necessary to eliminate potential threats to human health and the environment from exposures that might arise under existing or expected future site

conditions. The RI included an aquatic survey that evaluated creek habitat, water quality, benthic and drift macroinvertebrate communities, and fish populations at three stations along the northern section of the creek (SMC-FS1, SMC-FS2, and SMC-FS3, similar in location to location 1, 2, and 3, not shown on Figure 19). At approximately the same three locations, sediment samples were collected for toxicity testing and fish samples were collected for pesticides, PCBs, and metals analyses. Results from the sediment toxicity tests performed as part of the aquatic survey indicated that chemicals were not present at levels acutely toxic to aquatic life; however, the benthic macroinvertebrate community at one station was classified as slightly impaired.

During the RI, surface water samples were collected over several rounds of sampling from 21 locations: 14 from Six Mile Creek, one at the AFFF lagoon, three in the Mohawk River, and three in the Barge Canal. Two VOCs, 14 SVOCs, four pesticides, six metals, cyanide, and sulfide were detected at concentrations above the most stringent criteria for surface water. Sediment samples were collected at two depths (0 to 0.5 foot and 0.5 to 1.0 foot) below the surface water/sediment interface from the same 21 locations. Three VOCs, 18 SVOCs, 20 pesticides, one PCB and six metals were detected at concentrations above the most stringent criteria for sediment.

In 1995, the NYSDEC conducted a benthic macroinvertebrate community analysis for Six Mile Creek just downstream of the former AFB's boundary at the Route 365 bridge. Due to a significantly impacted benthic macroinvertebrate community, the water quality was assessed as being moderately impacted. Fish population data indicated that fish communities were generally in fair condition and whole-body fish tissue concentrations indicated that PCBs, pesticides and mercury were present at levels exceeding NYSDEC ecological risk guidelines. The concentration of PCBs in fish tissue also exceeded the previously mentioned FDA action level.

Also in 1995, NYSDEC performed Passive In-situ Chemical Extraction Sampling (PISCES) on the lower portion of Six Mile Creek to test for PCBs and other organochlorines. No contaminants were detected. However, naturally occurring conditions, such as below average rainfall and low flow in the stream, may have affected the ability of PISCES samplers to detect contaminants.

As part of a basewide SI performed in June 1997, one water sample was collected from a storm sewer manhole located within the Six Mile Creek culverted section, and two surface water samples were collected from the storm sewer outfalls at the headwaters of Rainbow Creek. No contaminants were detected in these water samples. In addition, ten PISCES samples were collected for pesticides and PCBs analyses from Six Mile Creek, two from unnamed tributaries to the creek, and one from the Rainbow Creek Tributary. No PCBs were detected. The levels of pesticides found in Rainbow Creek and downstream in Six Mile Creek were higher than in the upper portion of Six Mile Creek and the other tributaries. There are no screening criteria for PISCES samples.

IT Corporation performed an IRA in 1997 at the Coal Storage Yard Area (CSYA) OU, which include the CSYA, the Defense Reutilization and Marketing Office (DRMO), and Area of Interest (AOI) 66. Rainbow Creek also underwent an IRA at the same time. PCB contaminated soil at the CSYA OU was removed until cleanup goals were reached (< 1 ppm PCB for soil up to 10 inches and <10 ppm for deeper soils). The Rainbow Creek IRA involved removing 1 ft of sediment over a 1,900-ft stretch of the creek. Results of the confirmatory sampling indicated that 30 of the 39 sampling locations exceeded the site cleanup goal of 0.0386 mg/Kg PCB. No additional sediment removal was performed and the USACE recommended alternate engineering controls (geotextile fabric and 1 ft of crushed stone) to isolate contaminated sediments (E&E, July 2003).

In July 1998, additional SI samples were collected, primarily from off-Base locations, to fill data gaps that had been identified in the RI sampling. These included two surface water samples and 12 sediment samples. Three metals were detected above the most stringent criteria for surface water. Ten SVOCs, PCBs, dioxins/furans, and two metals were above the most stringent criteria for sediment.

In July 1999, the habitat quality of the creek was visually inspected by AFRPA, USACE, NYSDEC, USEPA, and USFWS. A brief walkover of the on-Base portion revealed the presence of orange floc (iron oxide) at a few locations above and below the culvert. This was attributed to the presence of leachate seeps with extensive orange floc upstream at Landfill 1. A more extensive walkover of the off-Base portion of the creek revealed an aquatic habitat of relatively high quality. The surrounding habitat is also of high quality for plants and wildlife, including extensive areas of forest, shrub, and emergent wetlands. The presence of cloudiness and some orange floc in the water column was observed. The floc is probably due to leachate seepage from Landfill 1. However, it should be noted that high concentrations of iron were observed in identified during the RI as basewide background conditions (E&E, July 2003).

4.2.8.1.3 ROD Requirements

The ROD for the Six Mile Creek AOC was issued by the Air Force in December 2003 and signed by the USEPA in March 2004. Based on the previous investigations and environmental conditions at the site, the selected remedy is Source Control at sites potentially discharging to Six Mile Creek and LTM of the Six Mile Creek AOC, stated in the ROD.

4.2.8.1.4 Land-Reuse Zoning

A review of the proposed zoning by the GLDC, the Griffiss LRA, has sited the area surrounding the creek designated industrial (manufacturing) and airfield 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 4.

4.2.8.1.5 Post-ROD Activities

FPM conducted surface water sampling at Six Mile Creek in February 2003 to March 2009 under the Landfill 1 LTM program. The creek is also sampled (starting in 2002) to present under the Apron 2 Petroleum Spill Site LTM and Nosedocks/ Apron 2 Chlorinated Plume monitoring program.

LTM at the Six Mile Creek AOC consists of annual surface water and sediment sampling at twelve sampling locations (SMC-1 through -12) and fish tissue sampling and a benthic qualitative assessment is conducted every three years at only 5 sampling locations (SMC-1 through -5). The sampling locations are illustrated on Figure 19. LTM at the AOC was initiated in fall 2004. Surface water sampling, sediment sampling, fish tissue sampling and a benthic qualitative assessment was performed in fall 2004 and fall 2007. Surface water and sediment sampling was also conducted in fall 2005, fall 2006, and fall 2008.

As recommended in the Fall 2007 LTM Report, seven sampling locations were removed from the LTM network. The locations were removed as a result of little to no contamination reported at the sites over four consecutive sampling rounds.

4.2.8.2 Data Review and Analysis

Surface Water

One VOC (benzene) exceedance is present at two sampling locations downgradient of the Apron 2 Petroleum Spill Site, which are currently undergoing active remediation. The Apron 2 Petroleum Spill Site is illustrated on Figure 19. In addition, samples from several locations have reported SVOC and metals concentrations above NYS Surface Water Standards. However, concentrations were within one order of magnitude of the NYS Surface Water Standards. There were no PCB or pesticide exceedances reported in any of the sampling events. The benzene detections reported at the site during the LTM surface water sampling are provided in Table 4. The NYS Surface Water Standard for benzene is 1 µg/L.

Sediment

No VOC exceedances were reported in any sediment sample. SVOC exceedances were reported at five sampling locations. SVOC concentrations show a declining trend compared to previous data or are within one order of magnitude. Pesticides also exceeded of the most stringent ecological values, but detections are attributed to minor residual contamination. The metal exceedances were reported at several sampling locations. Exceedances were reported for arsenic, cadmium, copper, iron, lead, manganese, nickel, and zinc. The metal exceedances have been reported in numerous investigations for samples collected throughout the Base and can therefore be contributed to basewide background conditions (identified during the RI) (LAW, December 1996, LAW, September 1998, FPM, July 2000).

Table 4
Six Mile Creek AOC LTM Benzene Detections (µg/L)

Sampling Round	SMC-2	SMC-4	SMC-5
2004	U	5.8	3.8
2005	U	2.1	3
2006	0.330 F	5.98	3.61
2007	0.280 F	3.38	2.01
2008	NS	2.53	1.21

Notes:
U = not detected
F = the analyte was reported above the MDL but below the RL.
NS = not sampled.
X = exceedance of standard.

One PCB (Aroclor 1254) is present in the sediment samples from three Six Mile Creek sampling locations above the most stringent screening criteria. One location is in Rainbow Creek where a remedial action for PCB contamination was performed. Rainbow Creek is located on Figure 19. The other two locations are located downstream of Rainbow Creek and the contamination may be attributed to the migration of residual contamination after the removal action. Fall 2008 PCB concentrations at all three locations decreased one order of magnitude from the fall 2007 results. PCB concentrations at this site have shown fluctuation in the concentrations indicative of spatial variability. The PCB detections reported at the site during the LTM sediment sampling are provided in Table 5. The most stringent ecological screening value for Aroclor 1248 and 1254 is 15.96 µg/kg. The most stringent ecological screening value for Aroclor 1260 is 5 µg/kg.

Table 5
Six Mile Creek AOC LTM PCB Detections (µg/kg)

Sampling Locations	PCB (Aroclor)	SamplingRound					
		2004	2005	2006	2007	2008	2009
SMC-4	1248	54	9.9 F	U	U	U	U
	1254	61	52	67.1	120 J	14.5 F	72.7
	1260	19 F	U	U	U	U	U
SMC-5	1248	U	U	U	U	U	U
	1254	24 F	U	U	92.6	U	U
	1260	U	U	19.4 F	U	U	U
SMC-11	1248	310	59U	544	U	U	NS
	1254	220	590	1,390 J	1,900	74.9	NS
	1260	120	66 M	U	U	U	NS

Notes:
U = not detected
F = the analyte was reported above the MDL but below the RL.
J = the analyte was detected, the quantitation is an estimate.
X=– exceedance of screening value.

Fish Tissue

During the Fall 2007 sampling event, fish sampling locations 4 and 5 samples exceeded PCB piscivorous wildlife criteria for all samples. The sediment at these sampling locations also exceeded the standards for PCB (Arochlor 1254), which appears to be reflected in the fish PCB exceedances. The fish however, also contain significant concentrations of Arochlor 1260, which has only been sporadically reported in the sediment. This indicates that the fish might have migrated from a different location which contains Arochlor 1260 (e.g. barge canal). The PCB detections reported at the site during the LTM fish tissue sampling are provided in Table 6.

Table 6
Fall 2007 Fish Sampling PCB (sum of congeners) Results

Sampling Location	SMC-3	SMC-4	SMC-5
Range of PCB Detections (µg/kg)	10.92 – 25.9	604 – 1,692	41.6 – 1,234
Exceedances above NYSDEC Piscivorous Wildlife Criteria	6	10	9
Exceedances above NYSDOH Fish Advisory Guidelines	0	0	0

Benthic Qualitative Assessment

Assessment profiles for kick sampling shows that the Six Mile Creek AOC benthic macroinvertebrate community was impacted at four of the five sampling locations even though no exceedances of the biological index value criteria were reported. These impacted profiles may be attributed to surface water contamination present in Six Mile Creek AOC, poor habitat (flooded areas), and/or the limited surface water supply.

4.2.8.3 Site Inspection

A site inspection of the Six Mile Creek AOC was performed on July 20, 2009. The inspection confirmed that there are no significant issues at the AOC that would jeopardize the protectiveness of the remedy.

4.2.8.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedies will remain protective of human health and the environment.

4.2.8.4.1 Remedy Functionality

The remedy implemented at Six Mile Creek AOC has reduced the risks posed to human health and the environment by eliminating, reducing, or controlling exposure to human and environmental receptors through source control and long-term monitoring. Specifically, this has

been accomplished through the completion of source control measures at sites potentially influencing Six Mile Creek AOC such as Landfill re-capping and LTM and the remediation of petroleum contamination near Aprons 1 and 2. In addition, the current LTM data shows that the current LTM network is adequate in maintaining the remedies protectiveness and will be optimized as future data is collected. The LTM data also is beneficial in ensuring that the remedial action of upgradient AOCs and petroleum spill sites are continuing to operate properly and successfully.

4.2.8.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

The ROD was signed in 2004 and the underlying assumptions supporting the remedy and cleanup objectives selection have not changed. Exceedances of NYSDEC Surface water and Sediment Standards at the Six Mile Creek AOC show that exposure assumptions documented in the Six Mile Creek AOC ROD are still applicable. The previous soil and surface water investigations used protective criteria including NYSDEC Ambient Water Quality Standards and Guidance Values (June 1998) and NYS Soil Clean-up Objectives (TAGM #4046, January 1994).

4.2.8.4.3 New Information of Significance

All remedies have been implemented for Landfill 1, the Nosedocks/Apron 2 Chlorinated Plume, and the Apron 2 petroleum spill sites which are potential discharge sources to Six Mile Creek. In 2008/2009, Rainbow Creek was culverted and geotextile fabric was reinstalled above the relocated soils eliminating the pathways of residual PCB contamination to downstream receptors at Six Mile Creek.

4.2.8.5 Future Actions

Based on the LTM results, contamination still exists at the Six Mile Creek AOC. Continued sampling will be required to monitor the protectiveness of the remedy. LTM data will be analyzed and reported annually.

4.2.8.6 Protectiveness Statement

Based on the document reviews, data review and analysis, site inspection, and an assessment of the remedy protectiveness, the Six Mile Creek AOC selected remedy is protective of human health and the environment. As new data is collected, additional actions may be necessary to ensure protectiveness.

4.3 Ongoing Remedial Action Sites

This section of the CERCLA 5-Year Review includes sites with ongoing remedial actions. Ongoing Remedial Action Sites include SD-52-01 (Apron 2 Chlorinated Plume AOC), SD-52-02 (Building 775 AOC), SD-52-04 (Landfill 6 TCE AOC), and SD-52-05 (Building 817/Weapons Storage Area [WSA] AOC). The following summarizes each area's history, previous investigations, present/ past contamination, ROD recommendations, and future actions. The sites in Section 4.3 were not included in the 2005 5-Year Review (FPM, September 2005).

4.3.1 SD-52-01 (Apron 2 Chlorinated Plume AOC)

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 feet long and 500 feet 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 20 illustrates the Apron 2 Chlorinated Plume AOC and LUC/ICs as required by the ROD.

4.3.1.1.2 Previous Investigations

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 reporting limits was cis-1,2-DCE, reported at 782MW-4R (12 µg/L) and 782MW-1R (0.4 J µg/L, not shown in Figure 20).

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 feet 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, November 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 feet 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 vinyl chloride (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 Nosedocks/Apron 2 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 concentrations of chlorinated hydrocarbons exceeding the NYS Groundwater Standards. The majority of elevated concentrations of total chlorinated hydrocarbons 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, were benzene

levels reported at levels more than one order of magnitude above the NYS Groundwater Standard (1 µg/L), ranging from 16 to 241 µg/L. These locations are 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 hydrocarbons. The samples were analyzed for STARS Volatiles 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 reported exceedances of the NYS Groundwater Standard for Vinyl chloride. 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 were reported with cis-1,2-DCE or VC levels above NYS Groundwater Standards. 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 were concentrations of 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 reporting limits 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, continuous with the southern cis-1,2-DCE plume, were identified by assessing the extent of chlorinated hydrocarbon results above NYS 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 Nosedocks / Apron 2 site, additional sampling was recommended to delineate groundwater contamination upgradient (northwest) of Buildings 783 and 784 and isolate the source of contamination. Therefore, in 2002 a RI was conducted to define the vertical and lateral extent of the Nosedocks/Apron 2 Chlorinated Plume. 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 Draft RI Report [FPM, February 2003]).

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 NYS 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 NYS 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 NYS 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 NYS 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 reporting limits 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 feet 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 reporting limits. VC was detected at seep sample location 782SW-114 (0.31 F µg/L), and below the reporting limit 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 vinyl chloride 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 Apron 2 Chlorinated Plume 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.

Groundwater monitoring wells were sampled from February 2003 to April 2005. Samples were analyzed for VOCs and natural attenuation parameters. 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 Nosedocks/Apron 2 Chlorinated Plume was completed in 2005 and concluded that monitored natural attenuation through groundwater and surface water sampling to be protective of human health and the environment. The FS was reviewed and approved by the USEPA and NYSDEC before being released as a final document.

Additional sampling was performed at the Apron 2 Chlorinated Plume AOC 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 performance monitoring (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 Apron 2 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).

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 Apron 2 area, upgradient on Apron 2 and downgradient near Six Mile Creek. The concentrations of 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 was detected above the NYS Groundwater Standard at two upgradient monitoring wells. The concentrations of the cis-1,2-DCE exceedances ranged from 14 to 42 µg/L.

VC, cis-1,2-DCE, and TCE results (concentrations) from the 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 in either round.

4.3.1.1.3 ROD Requirements

The ROD for the Apron 2 Chlorinated Plume AOC 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:

- 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.

The selected remedy is expected to reduce the levels of groundwater contamination at the Nosedocks/Apron 2 site. The selected remedy will result in the reduction of VOC concentrations in groundwater to achieve groundwater standards.

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 4.

4.3.1.1.5 Post-ROD Activities

PM sampling at the Apron 2 Chlorinated Plume AOC was performed in March 2009 and June 2009. The samples were analyzed for VOCs and natural attenuation parameters (nitrate, chloride, sulfate, DOC, and alkalinity).

4.3.1.2 Data Review and Analysis

Results from the March 2009 and June 2009 sampling rounds show VC exceedances at twelve monitoring wells. Concentrations above the NYS Groundwater Standards ranged from 3.79 µg/L to 150 M µg/L. The M data qualifier indicates a matrix effect was present. cis-1,2-DCE exceedances were reported in sampling results at three monitoring wells ranging from 16.6 µg/L to 45.9 µg/L. TCE exceedances were also reported at two monitoring wells, 782VMW-105B and 782VMW-81. The TCE concentration at 782VMW-105B was 17.8 µg/L and 7.20 µg/L in the March 2009 and June 2009 sampling rounds, respectively. The TCE concentration at

782VMW-81 was 6.72 µg/L in the June 2009 sampling round. TCE was detected below NYS Groundwater Standards at 782VMW-81 during the previous sampling rounds. 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.

MAROS statistical analysis (Mann Kendall statistic) was conducted using site sampling data to identify data trends. The Mann Kendall statistic for TCE is negative for all six monitoring wells that had TCE detections. For cis-1,2-DCE, the Mann Kendall statistic is negative for seven of the eight wells for which sufficient sampling results were available for MAROS statistical analysis. One well (782VMW-105B) had a positive Mann Kendall statistic for cis-1,2-DCE indicating increasing concentrations. These are likely the result of the petroleum constituents in the well acting as a carbon source to enhance the natural attenuation of TCE and forming cis-1,2-DCE. For VC, seven of the nine wells with VC detections had a negative Mann Kendall statistic. The other two wells (782VMW-101 and -105B) had a positive Mann Kendall statistic and thus increasing VC concentrations. The increasing VC concentrations in monitoring well 782VMW-105B are likely caused by the TCE breakdown into daughter products (including cis-1,2-DCE and VC) as described above. Similarly, the commingling petroleum plume south of the chlorinated plume is thought to cause an increase in chlorinated solvent breakdown which results in an increase in VC.

4.3.1.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is vacant and the property is within the active airfield parcel. An inspection sheet is provided in Appendix A.

4.3.1.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.3.1.4.1 Remedy Functionality

The selected remedy at the site is MNA. PM data indicates that the Apron 2 Chlorinated Plume concentrations appear to be decreasing. The trend was confirmed by the MAROS statistical analysis. Further analysis shows the estimated TCE mass has decreased which is likely the result of natural attenuation possibly enhanced though the presence of petroleum constituents.

The Apron 2 Chlorinated Plume AOC is located in three parcels, Parcel A2, Parcel F6B, and Parcel F4A/F12A. Parcel F4A/F12A has been transferred. The LUC/ICs required by 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.

Parcels A2 and F6B have not been transferred. The LUC/ICs for The Apron 2 Chlorinated Plume AOC within Parcels A2 and F6B were implemented and will become deed restrictions when both properties are transferred. The following summarizes the LUC/ICs provided in the airfield lease.

1. The Lessee shall restrict the conduct of any type of excavation, digging, drilling, utilization of groundwater, or other ground disturbing activity on the property without prior written Air Force approval and Air Force coordination with applicable federal and state regulatory agencies as necessary.
2. The Lessee shall restrict access to subsurface soils on the Leased Premises until the Base Realignment and Closure Team (BCT) identifies appropriate cleanup requirements, and cleanup actions are executed by the Air Force to the satisfaction of the BCT.

The protectiveness of this remedy is still under evaluation and the Interim Remedial Action Completion Report for the On-base Groundwater Sites is pending. In addition, the stream environment in the vicinity of the site is monitored under the SMC LTM network.

4.3.1.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC groundwater/surface water 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, quarterly sampling is conducted to determine whether or not natural attenuation is occurring at the site.

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

At present, MNA including groundwater and surface water monitoring is ongoing to verify that human health and the environment are protected. There is no new information of significance.

4.3.1.5 Future Actions

The remedy for the site is MNA, which results in slow changes at the site over an extended period of time. Since the remedy is MNA and data trends show a slow decrease in concentrations, the current scope of quarterly and annual groundwater and surface water sampling will be reduced to semi-annual sampling. Continued monitoring of LUC/ICs is also recommended at this site and will be reported annually.

4.3.1.6 Protectiveness Statement

The Apron 2 Chlorinated Plume AOC selected remedy has been implemented. However, the protectiveness of the remedy is still being evaluated. The results of this evaluation will be provided in the Interim Remedial Action Completion Report which is pending. As data is obtained from the PM sampling, additional actions will be evaluated to ensure protectiveness. This site has been categorized as current human exposure under control since assessments for human exposure indicate there are no unacceptable human exposure pathways and the site is under control for current conditions site wide.

4.3.2 SD-52-02 (Building 775 AOC)

4.3.2.1 Document Review

4.3.2.1.1 Site History

The Building 775 AOC 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 NYS Groundwater Standards is TCE with minor detections of 1,1,1-trichloroethane (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 feet. 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 the SAC Hill. Figure 21 illustrates the Building 775 AOC location and LUC/ICs as required by the ROD.

4.3.2.1.2 Previous Investigations

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 Building 775 AOC. 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 and at a concentration 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 Building 775 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 Building 775 Chlorinated Plume site. The human health risk assessment determined that site COCs in groundwater are within the acceptable target risk range. However, the downgradient edge of this plume commingles with the Landfill 6 Chlorinated plume and serves as a source to the Landfill 6 plume. . 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 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.

An additional investigation was conducted in spring 2000 in order to define the vertical and lateral extent of the Building 775 AOC plume. 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 Building 775 site is the area around former Buildings 773 and 775 and current Building 774. The contamination has traveled both laterally, approximately 1,000 feet to the south/southwest, and vertically, a total of 120 feet downward from the surface (including 60 feet through vadose and 60 feet through the water table to the top of bedrock). The width of the plume is approximately 500 feet in the source area and 800 feet in the leading edge. These data indicate that the leading edge of the Building 775 plume appears to merge or nearly merges with the base of the Landfill 6 plume.

A Bedrock Groundwater Study for the Building 775 AOC 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 Building 775 groundwater study results (E & E, August 2000). 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 Apron 2 site is upgradient of this plume. Groundwater was collected and sampled for VOCs, methane, ethane, ethene, 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 feet 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 the Building 775 AOC was completed in 2005 which concluded that groundwater extraction and groundwater sampling to be protective of human health and the environment. The FS was reviewed and 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 NYS 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. 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 (WPCF). The current system extraction pump rate is 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 during this sampling event. TCE exceedances were detected at seven monitoring wells in the January 2009 sampling round and concentrations ranged from 5.18 to 64.7 µg/L.

4.3.2.1.3 ROD Requirements

The ROD for the Building 775 AOC 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:

- 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.

The selected remedy is expected to reduce the levels of VOC contamination (TCE) in groundwater at the Building 775 AOC to levels below NYS 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 is still under evaluation and the Interim Remedial Action Completion Report for the On-base Groundwater Sites 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 4.

4.3.2.1.5 Post-ROD Activities

PM sampling at the Building 775 site was performed on April 2009 and June 2009. During both sampling rounds, samples were collected via bladder pump from monitoring wells 775MW-6, -20, -27, -28, 775VMW-5, -8, -10, -19R, and 775EW-1.

Following start-up, inspections of the Building 775 site extraction and discharge system occur weekly to monitor system performance. Discharge of the groundwater is to an off-site treatment facility.

4.3.2.2 Data Review and Analysis

One VOC, exceedance was reported for the Building 775 site during both sampling rounds: TCE exceedances were reported for seven monitoring wells in the April 2009 sampling round and concentrations ranged from 5.61 µg/L to 68.8 µg/L. TCE exceedances were reported for six monitoring wells in the June 2009 sampling round and concentrations ranged from 36.5 µg/L to 74 µg/L. Several other VOCs were reported, but concentrations were minor and never exceeded the NYSDEC Groundwater Standards.

MAROS statistical analysis (Mann Kendall statistic) was conducted using site sampling data to identify data trends. All monitoring wells with sufficient sampling results for MAROS statistical analysis show a negative Mann Kendall statistic indicating decreasing concentrations. Concentrations have decreased since the groundwater extraction and discharge system was put in operation.

The Building 775 groundwater extraction and discharge system is operating as designed. After initial fine tuning, the system is operating at its design pump rate of 4 gpm. The effluent is high in TCE (52.5 µg/L) which indicates the groundwater extraction and discharge system is removing TCE contamination from the site.

4.3.2.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that is site is used for commercial purposes. An inspection sheet is provided in Appendix A.

4.3.2.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.3.2.4.1 Remedy Functionality

The Building 775 groundwater extraction and discharge system is operating as designed. After initial fine tuning, the system is operating at its design pump rate of 4 gpm. The effluent sample

results show that TCE is being effectively extracted from the Building 775 site, albeit with a decreasing trend. In addition, the groundwater is discharged to an off-site treatment facility. Additional PM results also show a decreasing trend in chlorinated solvents throughout the site.

LUC/ICs were implemented in the property transfer deeds as specified in the ROD. The Building 775 AOC is within four parcels (Parcels F2C, F4B, F6B, and F11B). Parcels F2C and F4B have been transferred and the LUC/ICs were implemented as deed restrictions. Parcels F6B and F11B have not been transferred and the LUC/ICs were implemented. The LUC/ICs will be implemented as deed restrictions when both properties are transferred.

The deed for Parcel F2 includes the following deed restriction as recommend by 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 remedial investigation, 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 restriction as recommend by 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 protectiveness of this remedy is still under evaluation and the Interim Remedial Action Completion Report for the On-base Groundwater Sites is pending.

4.3.2.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC Groundwater Standards ARARs 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, quarterly sampling is conducted to determine whether the remedy is still protective.

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).

4.3.2.4.3 New Information of Significance

At present, groundwater extraction as well as groundwater sampling is ongoing at the site. There is no new information of significance.

4.3.2.5 Future Actions

Groundwater extraction with system performance inspections will continue at the site. The ongoing quarterly groundwater sampling will continue at a reduced frequency of semi-annual sampling. In addition, the monitoring of LUC/ICs is recommended at the site and will be reported annually.

4.3.2.6 Protectiveness Statement

The Building 775 AOC selected remedy has been implemented. However, the protectiveness of the remedy is still being evaluated. The results of this evaluation will be provided in the Interim Remedial Action Completion Report which is pending. As data is obtained from the PM sampling, additional actions will be evaluated to ensure protectiveness. This site has been categorized as current human exposure under control since assessments for human exposure indicate there are no unacceptable human exposure pathways and the site is under control for current conditions site wide.

4.3.3 SD-52-04 (Landfill 6 TCE AOC)

4.3.3.1 Document Review

4.3.3.1.1 Site History

The Landfill 6 TCE AOC plume is located downgradient to the west of the former Landfill 6. The most contaminated portion of the Landfill 6 TCE AOC plume is located southwest of the landfill beneath the floodplain of Three Mile Creek. Based on Three Mile Creek AOC LTM results, VOC contaminants associated with the Landfill 6 TCE AOC plume have not migrated to the creek. The contaminants exceeding NYS Groundwater Standards are TCE, cis-1,2-DCE, trans-1,2-DCE, and VC. Figure 22 illustrates the Landfill 6 TCE site location and LUC/ICs as required by the ROD.

Monitoring activities are also performed at the site for the Landfill 6 AOC (LF-09).

4.3.3.1.2 Previous Investigations

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). Both chlorinated compounds 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 detections of 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 the installation of one vertical profiling well, LF6VMW-6, downgradient of LF6MW -2. 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 concentrations of cis-1,2-DCE (total) (83 µg/L) and VC (20 µg/L) in LF6MW-2 exceed cleanup goals. Analysis of the sample from LF6VMW -6, installed southwest of LF6MW-2, indicated 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. Because Geoprobe® results were nondetect in all cases, the new well, LF6VMW-6, was placed within 200 feet directly downgradient of LF6MW-2 and screened across the interval (35 to 45 feet bgs) that showed the highest level of chlorinated solvents (i.e., 27 µg/L TCE) in Hydropunch® samples collected during drilling.

A groundwater study was performed in spring 2000 at Landfill 6 to define the vertical and lateral extent of the Landfill 6 TCE plume. 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 Landfill 6 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 three 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 three 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, Landfill 6VMW-6. The concentrations of the compounds 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 Building 775 groundwater study results (E & E August 2000). An upgradient well was not installed because the Building 775 groundwater plume is immediately upgradient of the Landfill 6 plume. Groundwater was collected and sampled for VOCs, methane, ethane, ethene, 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 the Landfill 6 TCE AOC was completed in 2005 which concluded that vegetable oil injection to enhance dechlorination and groundwater sampling to be protective of human health and the environment. The FS was reviewed and approved by the USEPA and NYSDEC before being released as a final document.

FPM sampled the Landfill 6 TCE AOC in November 2006 in accordance with the final Baseline Letter WP (FPM, November 2006). FPM sampled six monitoring wells. The samples were analyzed for the following parameters: VOCs, sulfate, DOC, and methane/ethane/ethene. Field parameters collected were Oxygen Reduction Potential (ORP), oxygen, and pH. Ecology and Environment Engineering, P.C. (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 NYS Groundwater Standards in a relatively small area centered around LF6MW-12.

A groundwater sampling event was performed from February through April 2007. This sampling event was performed in accordance with the Final WP for PDI Investigations (EEEPC, July 2006). Five additional temporary wells at Landfill 6 TCE (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 injections 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.

PM sampling was performed in September 2008 and January 2009. Groundwater samples were collected at the eight monitoring wells and five temporary wells. Nine monitoring wells showed cis-1,2-DCE concentrations above NYS Groundwater Standards during the September 2008 sampling round and ten monitoring wells showed cis-1,2-DCE exceedances during the January 2009 sampling round. The NYS Groundwater Standard for cis-1,2-DCE is 5 µg/L. The concentrations ranged 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. Three monitoring wells showed trans-1,2-DCE concentrations above NYS Groundwater Standards during the September 2008 sampling round and five monitoring wells showed concentrations above NYS Groundwater Standards during the January 2009 sampling round. The NYS Groundwater Standard for trans-1,2-DCE is 5 µg/L. The concentrations ranged 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 reporting limit. Nine monitoring wells showed TCE concentrations above NYS Groundwater Standards during both sampling rounds (standard of 5 µg/L). The 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.

4.3.3.1.3 ROD Requirements

The ROD for the Landfill 6 TCE AOC 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 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.

The selected remedy is expected to reduce the levels of groundwater contamination at the Landfill 6 TCE AOC. The selected remedy will result in the reduction of the highest concentrations of VOCs in site groundwater.

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 4.

4.3.3.1.5 Post-ROD Activities

The third round of PM sampling at the Landfill 6 TCE AOC was performed in April 2009 and the fourth round of PM sampling was performed in July 2009. The samples were analyzed for VOCs and natural attenuation parameters (nitrate, chloride, sulfate, DOC, and alkalinity).

4.3.3.2 Data Review and Analysis

Three VOCs exceeded the NYSDEC Class GA Groundwater Standards on a regular basis at the Landfill 6 TCE AOC: cis-1,2-DCE, trans-1,2-DCE, and TCE. 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 while the wells in the surrounding plume are stable.

Ten monitoring wells showed cis-1,2-DCE concentrations above NYS Groundwater Standards during both sampling rounds (standard of 5 µg/L). The concentrations ranged from 5.01 µg/L to 480 µg/L in April 2009 and from 5.29 µg/L to 859 µg/L in July 2009. Four monitoring wells showed trans-1,2-DCE concentrations above NYS Groundwater Standards during the April 2009 sampling round and five monitoring wells showed concentrations above NYS Groundwater Standards during the July 2009 sampling round. The NYS Groundwater Standard for trans-1,2-DCE is 5 µg/L. The concentrations ranged from 6.5 F µg/L to 57 µg/L in April 2009 and from 6 F µg/L to 71.2 µg/L in July 2009. The F data qualifier indicates that the analyte was positively identified above the method detection limit but below the reporting limit. Nine monitoring wells showed TCE concentrations above NYS Groundwater Standards during both sampling rounds (standard of 5 µg/L). The concentrations ranged from 31.3 µg/L to 664 µg/L in April 2009 and from 27.9 µg/L to 833 µg/L in July 2009.

The vegetable oil injection appears to have had a decreasing effect on the concentrations at the significantly contaminated monitoring wells. The concentrations at the perimeter monitoring wells and upgradient well are stable.

4.3.3.3 Site Inspection

An inspection of the site on July 17, 2009 confirmed that the site is a wooded/vacant area. The inspection sheet is provided in Appendix A.

4.3.3.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.3.3.4.1 Remedy Functionality

The selected remedy for the Landfill 6 TCE AOC, vegetable oil injection, targeted monitoring wells which exhibited chlorinated solvent concentrations above 500 µg/L. Following the injection, statistical analysis of the groundwater sampling data indicates a decreasing trend in chlorinated solvent concentrations.

Implementation of LUC/ICs required by the ROD in the form of deed restrictions has not taken place at this time, as Parcel F11B has not been transferred. However, the Landfill 6 TCE AOC ROD included the following LUC/ICs:

1. Development and use of the entire SD-52, Landfill 6 TCE 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.
2. The owner or occupant of this site shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundary of the site unless such owner or occupant obtains prior written approval from the NYSDOH.

3. The owner or occupant of this site will not engage in any activities that will disrupt required remedial investigation, remedial actions, and oversight activities, should any be required.
4. The owner or occupant of this site will restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface at this AOC until cleanup goals are achieved and have been confirmed through sample results.
5. Intrusive work or other activities that impact the effectiveness of the landfill closure and post-closure activities will not be allowed within the restricted landfill boundary.
6. Posting of notices and signs to minimize the interference with the landfill closure and post-closure activities.

The protectiveness of this remedy is still under evaluation and the Interim Remedial Action Completion Report for the On-base Groundwater Sites is pending. The property is owned by the Air Force and the LUC/ICs will be implemented as deed restrictions when the property is transferred. In addition, the stream environment in the vicinity of the site is monitored under the TMC LTM network.

4.3.3.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

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, quarterly sampling is conducted to determine whether the remedy is still protective.

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

At present, the injection of vegetable oil has been performed and performance monitoring is ongoing quarterly.

4.3.3.5 Future Actions

The current scope of quarterly and annual groundwater sampling will continue but the quarterly sampling will be reduced to semi-annual sampling. Continued monitoring of LUC/ICs is also recommended at this site and will be reported annually.

4.3.3.6 Protectiveness Statement

The Landfill 6 TCE AOC selected remedy has been implemented. However, the protectiveness of the remedy is still being evaluated. The results of this evaluation will be provided in the Interim Remedial Action Completion Report which is pending. As data is obtained from the PM

sampling, additional actions will be evaluated to ensure protectiveness. This site has been categorized as current human exposure under control since assessments for human exposure indicate there are no unacceptable human exposure pathways and the site is under control for current conditions site wide.

4.3.4 SD-52-05 (Building 817/WSA AOC)

4.3.4.1 Document Review

4.3.4.1.1 Site History

The Building 817/WSA AOC 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 WSA. Building 817 was once used for electronics parts maintenance, and TCE and PCE were solvents used in small quantities at this location. The contaminants exceeding NYS Groundwater Standards are TCE and PCE.

The contaminated aquifer is composed of relatively uniform fine sands that begin 5 feet bgs and extend to shale bedrock at approximately 20 to 25 feet bgs. Contamination is not found in the bedrock. Figure 23 illustrates the Building 817/WSA site location and LUC/ICs as required by the ROD.

4.3.4.1.2 Previous Investigations

TCE detected in the groundwater 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 in which three temporary monitoring wells were installed around this well. Only one temporary well, WSATW-6, which is located east of LAWMW-9, showed low levels of TCE (31 µg/L). It also showed 9 µg/L of chloroform and 7.5 µg/L of PCE. 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 contaminants of concern 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 feet to the southwest) and vertically (25 feet downward to the top of bedrock). The width of the plume is approximately 250 feet. The Building 817/WSA 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).

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 concentration of TCE 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 Building 817/WSA 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, methane, ethane, ethene, 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.

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 feet bgs and extend to shale bedrock at approximately 20 to 25 feet bgs. Contamination is not found in the bedrock. Groundwater velocities at this site have been estimated as high as 110 feet 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 the Building 817/WSA AOC was completed in 2005 which concluded that vegetable oil injection to enhance dechlorination and groundwater sampling to be protective of human health and the environment. The FS was reviewed and approved by the USEPA and NYSDEC before being released as a final document.

In October/November 2006, FPM and EEEPC performed sampling at the Building 817/WSA site 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 methane/ethane/ethene. 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) detections above 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 WSA-MW18. The analytical results showed PCE and TCE contamination. TCE concentrations above the NYS Groundwater Standards ranged from 5.17 to 49.1 µg/L at three monitoring wells and PCE concentrations ranged from 8.78 J to 37.3 µg/L at two monitoring wells.

The vegetable oil injection occurred at Building 817/WSA 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, as detailed in the table below.

The first two rounds of performance monitoring 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 methane/ethane/ethene (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 -MW23). 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 concentrations above NYS Groundwater Standards during both sampling rounds. The concentrations ranged 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 concentrations above NYS Groundwater Standards during both sampling rounds. The concentrations ranged 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. The NYS Groundwater Standards for TCE and PCE is 5 µg/L.

4.3.4.1.3 ROD Requirements

The ROD for the Building 817/WSA AOC 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/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.

The selected remedy is expected to reduce the levels of groundwater contamination at the Building 817/WSA AOC. 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 NYS Groundwater Standards for DCE and VC.

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 4.

4.3.4.1.5 Post-ROD Activities

The third and fourth rounds of PM sampling at the Building 817/WSA AOC were performed on April 2009 and June 2009. All wells identified as quarterly sampling wells were sampled. No deviations of the sampling plan were reported. No surface water samples were collected because monitoring well WSA-MW9 did not show any VOC detections.

4.3.4.2 Data Review and Analysis

Five monitoring wells showed TCE concentrations above NYS Groundwater Standards during both sampling rounds. The monitoring wells are illustrated on Figure 23. The concentrations ranged from 15.4 µg/L to 42.5 µg/L in April 2009 and 6.95 µg/L to 47.4 µg/L in June 2009. Four monitoring wells showed PCE concentrations above NYS Groundwater Standards during both sampling rounds. The concentrations ranged from 9.19 µg/L to 31.8 µg/L in April 2009 and 10.7 µg/L to 36.2 µg/L in June 2009. The NYS Groundwater Standards for TCE and PCE is 5 µg/L. Samples collected at the most downgradient monitoring well near Six Mile Creek does not show PCE or TCE detections. Therefore, it is believed that the contamination is not discharging into SMC.

A MAROS statistical analysis (Mann Kendall statistic) was conducted using site sampling data to identify data trends. The MAROS site results show negative Mann Kendall statistics for both PCE and TCE mass, which indicate a decreasing mass. However, for PCE the threshold was not exceeded and therefore a stable trend was reported. For TCE, the confidence level exceeded the threshold and a decreasing trend is reported. The 1st moment which indicates the center of the plume relative to the source has a zero Mann Kendall statistic for PCE and a slightly positive statistic for TCE. Confidence levels are low for both COCs. This indicates that the center of mass of the plume is not moving. PM data analysis suggests that dechlorination is occurring at the site as demonstrated by the negative Mann Kendall statistics for VOC concentrations detected during the four performance monitoring events.

4.3.4.3 Site Inspection

An inspection of the site on July 27, 2009 confirmed that the site is vacant. The property is also within the airport boundary which is a secured area. The inspection sheet is provided in Appendix A

4.3.4.4 Assessment of Remedy Protectiveness

During the process of completing the 5-Year Review, the following criteria were evaluated to ensure that the selected remedy remains protective of human health and the environment.

4.3.4.4.1 Remedy Functionality

The remedy for the Building 817/WSA AOC was 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.

Implementation of LUC/ICs required by the ROD in the form of deed restrictions has not taken place at this time, as Parcel F10C or Parcel A5 have not been transferred. However, the LUC/ICs for this site have been implemented and are included in the lease document as provided below.

1. The Lessee shall restrict the conduct of any type of excavation, digging, drilling, utilization of groundwater, or other ground disturbing activity on the property without prior written Air Force approval and Air Force coordination with applicable federal and state regulatory agencies as necessary.
2. The Lessee shall restrict access to subsurface soils on the Leased Premises until the Base Realignment and Closure Team (BCT) identifies appropriate cleanup requirements, and cleanup actions are executed by the Air Force to the satisfaction of the BCT.

The protectiveness of this remedy is still under evaluation and the Interim Remedial Action Completion Report for the On-base Groundwater Sites is pending. The stream environment in the vicinity of the site is addressed under the SMC LTM network.

4.3.4.4.2 Exposure/Toxicity Assumptions and Cleanup Objectives Validity

Exceedances of NYSDEC groundwater standards 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, quarterly sampling is conducted to determine whether the remedy is still protective.

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

At present, the injection of vegetable oil has been performed and performance monitoring is ongoing quarterly.

4.3.4.5 Future Actions

The current scope of quarterly and annual groundwater sampling will continue, but the quarterly sampling will be reduced to a semi-annual sampling frequency. In addition, 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. Continued monitoring of LUC/ICs is also recommended at this site and will be reported annually.

4.3.4.6 Protectiveness Statement

The Building 817/WSA AOC selected remedy has been implemented. However, the protectiveness of the remedy is still being evaluated. The results of this evaluation will be provided in the Interim Remedial Action Completion Report which is pending. As data is obtained from the PM sampling, additional actions will be evaluated to ensure protectiveness. This site has been categorized as current human exposure under control since assessments for human exposure indicate there are no unacceptable human exposure pathways and the site is under control for current conditions site wide.

4.4 Pre-ROD Sites

For completeness, this section provides a listing of CERCLA or FFA Sites where remedies have not yet been selected. The sites that are in pre-ROD status are summarized in the following Table 2, which identifies the site's current status, anticipated remedy, and anticipated ROD date. The Pre-ROD sites are also shown on Figure 24. It should be noted, that if the selected remedy is NFA, the 5-Year Review will not be required for the site and will be included in Table 1 as an NFA site in the next 5-Year Review.

Table 7
Pre ROD Site Descriptions

Site ID	Site Description	Current Status	Anticipated Remedy	ROD Date
FT-30	Fire Protection Training Area	The FPTA is recommended for spill closure due to the absence of contamination at the site.	LUC/ICs to manage Soil Vapor Intrusion	2010
SD-41	Nosedocks 1 and 2	Undergoing groundwater monitoring under the NYSDEC Petroleum Spills Program.	No further CERCLA action.	2010
ST-36*	Building 110	The Building 110 site spill closure was accepted by the NYSDEC on September 24, 2004.	No further action.	2010
ST-37*	Pumphouse 5 / Building 771	The Building 771 site closure was received on October 20, 2004. Spill closure will occur once associated landfarm soils are approved.	No further action for soils and groundwater.	2010 (In Coal Storage Yard Area OU ROD)
ST-51*	Building 100	The Building 100 site spill closure was accepted by the NYSDEC on September 27, 2004.	No further action.	2010
SS-33	Coal Storage Yard	Subsurface soil contamination is present at the site.	LUC/ICs for industrial/ commercial use only with groundwater and soil relocation restrictions.	2010 (In Coal Storage Yard Area OU ROD)

Notes:
*- Petroleum Source Removal AOC requiring ROD per FFA, however not a CERCLA site.

Table 2 (cont'd.)
Pre ROD Site Descriptions

Site ID	Site Description	Current Status	Anticipated Remedy	ROD Date
SS-62	AOC 9	VOCs and chlorinated VOCs are present at the AOC 9 site.	Excavation of source area/ groundwater remediation/ performance monitoring/ LUC/ICs.	2010
ST-06	Building 101	The Building 101 site is recommended for no more monitoring due groundwater contamination levels under NYS Groundwater Standards and Guidance Values.	LUC/ICs.	2010
ST-53	Building 133	The Building 133 site is recommended for spill and site closure due to the absence of contamination at the site.	No further action.	2010

Notes:
*- Petroleum Source Removal AOC requiring ROD per FFA, however not a CERCLA site.

5 NEXT 5-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 5-Year Review for the former Griffiss AFB should be completed by September 2015. The next 5-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. All AOCs in this 5-Year Review will be evaluated in the 2015 5-Year Review excluding LF-28 (Landfill 4). LF-28 (Landfill 4) will not be included in the 2015 5-Year Review. This site was included in the 2010 5-Year since the site was closed following the 2005 5-Year Review. Sites with Record of Decisions signed between 2010 and 2015 will also be included in the 2015 5-Year Review. Sites with the selected remedy for NFA will not be evaluated in the 2015 5-Year Review but provided in Table 1 to provide the selected remedy and signature date. The 2015 5-Year Review will further examine whether specific LUC/ICs are warranted.

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6 BASEWIDE OVERVIEW

This section provides an overview of the environmental conditions at the former Griffiss AFB with specific emphasis on the location of CERCLA sites. The overview is organized along property boundaries (parcels) established during the BRAC process. The parcels are currently categorized as follows:

a) **Government Retained:** Parcels that are retained by Federal agencies such as the AFRL/ RRS, the NEADS, and the DFAS.
b) **Deeded:** Parcels that were transferred or are in the process of being transferred by the Air Force following the preparation of a FOST or a FOSET.
c) **Federal to Federal Transfer:** Parcels that were transferred between two federal agencies, such parcels include Parcel Veterans Affairs (VA) and Parcel SAR (planned).
d) **Not-Deeded:** Parcels that have not been deeded to-date and the transfer process has not been initiated. Such parcels may include parcels that are currently leased following the preparation of a Finding of Suitability to Lease (FOSL).

Table 3 summarizes the current parcel status.

The previous 5-Year Review and the updated EBS detail the environmental conditions at each of the parcels identified in Table 3.

Table 8
Parcel Summary Table

Parcel Name	Acres	Transfer Status	Transfer Support	Support Document[1]
A1A	1327.1	Deeded	FOST	FOST AirfieldA.pdf
A1B	2.61	Not Deeded	FOST	FOST AirfieldB.pdf
A1C	9.21	Not Deeded	FOST	FOSL Airfield.pdf
A2	27.2	Not Deeded	FOSL	FOSL Airfield.pdf
A3	26.37	Not Deeded	FOSL	FOSL Airfield.pdf
A4	12.04	Not Deeded	FOSL	FOSL Airfield.pdf
A5	15.9	Not Deeded	FOSL	FOSL Airfield.pdf
A6	98.53	Deeded	FOST	FOST A6.pdf
A7	0.03	Not Deeded	FOSL	FOSL Airfield.pdf
AFRL 1	7.9	Government Retained	Partial ROD	Government Retained -PROD.pdf
AFRL 2	1.74	Government Retained	Partial ROD	Government Retained -PROD.pdf
AFRL 3	18.74	Government Retained	Partial ROD	Government Retained -PROD.pdf
AFRL 3-7	4	Government Retained	Partial ROD	Government Retained -PROD.pdf
AFRL 3 Road	0.12	Government Retained	Partial ROD	Government Retained -PROD.pdf
AFRL 4	5.04	Government Retained	Partial ROD	Government Retained -PROD.pdf
AFRL 5	37.49	Government Retained	Partial ROD	Government Retained -PROD.pdf
AFRL 6	11.2	Government Retained	Partial ROD	Government Retained -PROD.pdf
AFRL 7	1.72	Government Retained	Partial ROD	Government Retained -PROD.pdf
B231	3.0	Not Deeded	FOSL	FOST F3A-Buildings 231 and 232.pdf
B232	0.8	Not Deeded	FOSL	FOST F3A-Buildings 231 and 232.pdf
B346	6.9	Deeded	FOST	FOST B346.pdf
B750	4.04	Deeded	FOST	FOST B750.pdf
Central Heating plant (CHP)	17.84	Deeded	FOST	FOST CHP.pdf
DFAS	19.32	Government Retained	Partial ROD	Government Retained-PROD.pdf
DFAS	5.17	Government Retained	Partial ROD	Government Retained-PROD.pdf
DFAS	0.7	Government Retained	Partial ROD	Government Retained-PROD.pdf
F1	63.92	Deeded	FOSET	FOSET F1.pdf
F2	92.63	Deeded	FOSET	FOSET F2.pdf
F3	10.57	Not Deeded	FOST	FOSL F3 B101 and B101 Bay 3&5.pdf
F3A	89.82	Deeded	FOST	FOST F3A_F3B.pdf
F3B	14.22	Deeded	FOST	FOST F3A_F3B.pdf
F4A	106.29	Deeded	FOST	FOST F4A.pdf
F4B	20.7	Deeded	FOSET	FOSET F4B.pdf
F4C	54.92	Deeded	FOST	Not Available
F4C	2.26	Deeded	FOST	Not Available

[1] These documents are provided in Former Griffiss Air Force Base Website (Griffiss.com).

Table 8 (cont'd.)
Parcel Summary Table

Parcel Name	Acres	Transfer Status	Transfer Support	Support Document[2]
F5	1.06	Deeded	FOST	FOST F5.pdf
F5	8.34	Deeded	FOST	FOST F5.pdf
F5	3.27	Deeded	FOST	FOST F5.pdf
F6A	55.48	Deeded	FOST	FOST F6A.pdf
F6B	21.49	Transfer in Progress	FOSET	Not Available
F6B	7.3	Transfer in Progress	FOSET	Not Available
F6B	0.82	Transfer in Progress	FOSET	Not Available
F6B	3.06	Transfer in Progress	FOSET	Not Available
F6B	3.6	Transfer in Progress	FOSET	Not Available
F6B	35.98	Transfer in Progress	FOSET	Not Available
F6B	5.53	Transfer in Progress	FOSET	Not Available
F7NR	52.28	Deeded	FOST	FOST F7.pdf
F7R	223.65	Deeded	FOST	FOST F7.pdf
F8	72.71	Deeded	FOST	FOST F8.pdf
F9	193.37	Deeded	FOST	FOST F9A.F9B.pdf
F10A	12.61	Deeded	FOST	FOST F10A.pdf
F10B	291.62	Deeded	FOST	Not Available
F10C	46.95	Not Deeded	--	--
F10C	3.3	Not Deeded	--	--
F10C	10.11	Not Deeded	--	--
F11A	163.53	Deeded	FOST	FOST F11A_F11C.pdf
F11B	120.17	Not Deeded	FOSL	FOSL F11B-EPS-a and b.pdf
F11C	4.24	Deeded	FOST	FOST F11A_F11C.pdf
F12A	46.73	Deeded	FOST	FOST F12A.pdf
F13	20.41	Not Deeded	FOSL	FOSL B101a, b, c.pdf
F14	7.18	Not Deeded	--	--
Mohawk Glen Club (MGC)	15.14	Deeded	FOST	FOST F7.pdf
NEADS	2.97	Government Retained	Partial ROD	Government Retained -PROD.pdf
NEADS	12.44	Government Retained	Partial ROD	Government Retained -PROD.pdf
NEADS	23.88	Government Retained	Partial ROD	Government Retained -PROD.pdf
SAR	4.38	Not Deeded	Finding Suitability to Permit (FOSP)	FOSP SAR.pdf
VA	7.49	Federal to Federal Transfer	Federal Transfer/ Decision Document	VA-DD.pdf

[2] These documents are provided in Former Griffiss Air Force Base Website (Griffiss.com).

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7 CERCLA NATIONAL PRIORITIES LIST DELETION

Since the last 5-Year Review, sites at the former Griffiss AFB have been deleted from the CERCLA National Priorities list. Table 4 provides each site that was deleted, including its associated acreage. The deleted sites are illustrated in the CERCLA NPL Deletion figure in Appendix B.

Table 9
CERCLA National Priorities List Deletion

Parcel Name	Acres
Property A1A - Airfield	1324.45
Building 750 - Former Air Force Special Investigations	4.07
Central Heat Plant	17.78
Parcel F1	61.40
Parcel F2	88.37
Electrical Power Substation	3.20
Parcel F3A	75.99
Parcel F3B	14.04
Parcel F4A	107.59
Parcel F4C	56.96
Parcel F6A	52.20
Parcel F7NR	52.09
Parcel F7R	223.75
Parcel F8 Housing	69.22
Parcel F9A	135.25
Parcel F9B	64.99
Parcel F10A	11.05
Parcel F10B	275.82
Parcel F11A Housing	152.56
Parcel F11C	4.24
Parcel F11D	45.23
Parcel F12A	41.82
MGC - Mohawk Glen Club	15.13
Total	**2,897.2**

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8 STATEMENT ON PROTECTIVENESS

Based upon the review of the CERCLA sites at the former Griffiss AFB conducted by the United States Air Force (Air Force), it has been determined that the remedies selected for the LUC/IC and LTM sites at the former Griffiss AFB remain protective of human health and the environment. Evaluation of the remedies selected for the RA/O sites, SD-52-01 (Apron 2 Chlorinated Plume AOC), SD-52-02 (Building 775 AOC), SD-52-04 (Landfill 6 TCE AOC), and SD-52-05 (Building 817/WSA AOC), is ongoing. The results of this evaluation will be included in the next 5-Year Review. The next 5-year review for the former Griffiss AFB will be provided 5 years from the date of this review.

_____ _____

ROBERT MOORE, SES
Director, Installations Center of Excellence
AFCEC/CI

Date

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9 REFERENCES

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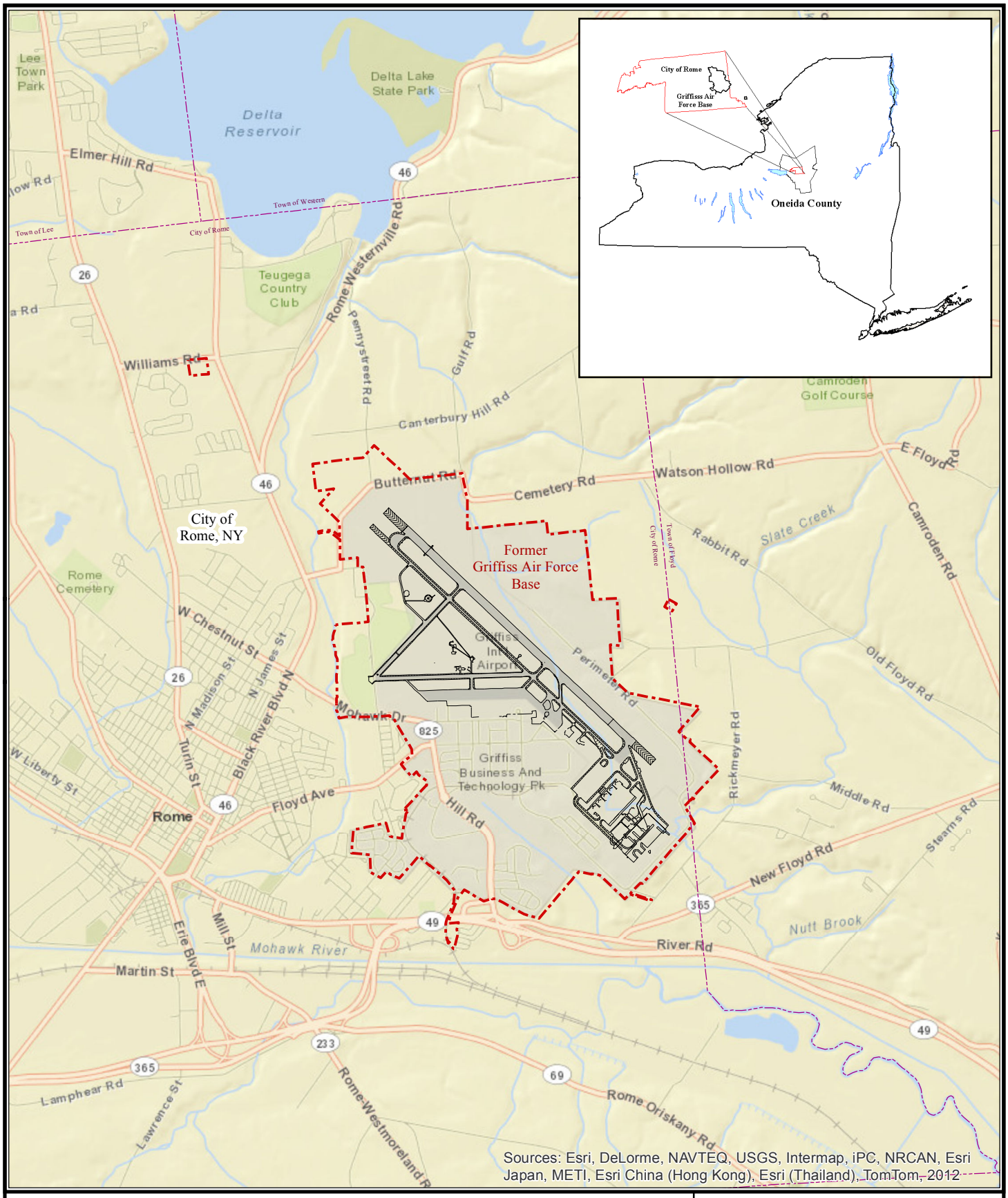


Figure 1
Former Base Location

N

4,800 2,400 0 4,800
Feet

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LF-1 (Landfill 1)
Land-Use Restriction
5-Year Review
Adverse Aquifer Use Prohibited
Annual Inspection / Reporting to USEPA / NYSDEC
Groundwater Consumption - Prior Approval
Groundwater Intrusive Work - Prior Approval
Landfill Fencing / Signage
Land-Use Restriction-Protect Remedial Operations
Protect Closure / Post-Closure Activities

SD-32 (Six Mile Creek)

SS-24 (Fire Demonstration Area)
Land-Use Restriction
Groundwater Consumption - Prior Approval
Groundwater Well Installation - Prior Approval
Protect Remedial Operations

SS-08 (Building 112 PCB Spill)
Land-Use Restriction
Adverse Aquifer Use Prohibited
Groundwater Consumption - Prior Approval
Industrial / Commercial / Non-Residential
Subsurface Soil Relocation Restriction

SD-52-05 (Building 817/WSA)
Land-Use Restriction
Soil / Groundwater Intrusive Work - Prior Approval
Groundwater Well Installation Restriction
Protect Remedial Operations

SD-50 (Building 214 OWS)
Land-Use Restriction
Adverse Aquifer Use Prohibited
Groundwater Consumption - Prior Approval
Industrial / Commercial / Non-Residential

LF-3 (Landfill 7)
Land-Use Restriction
5-Year Review
Adverse Aquifer Use Prohibited
Annual Inspection / Reporting to USEPA / NYSDEC
Groundwater Consumption - Prior Approval
Groundwater Intrusive Work - Prior Approval
Landfill Fencing / Signage
Land-Use Restriction-Protect Remedial Operations
Protect Closure / Post-Closure Activities

DP-15 (Building 219 Drywell)
Land-Use Restriction
Adverse Aquifer Use Prohibited
Groundwater Consumption - Prior Approval
Industrial / Commercial / Non-Residential

DP-22 (Building 222 BADR)
Land-Use Restriction
Adverse Aquifer Use Prohibited
Groundwater Consumption - Prior Approval
Industrial / Commercial / Non-Residential

LF-2 (Landfill 2/3)
Land-Use Restriction
5-Year Review
Adverse Aquifer Use Prohibited
Annual Inspection / Reporting to USEPA / NYSDEC
Groundwater Consumption - Prior Approval
Groundwater Intrusive Work - Prior Approval
Landfill Fencing / Signage
Land-Use Restriction-Protect Remedial Operations
Protect Closure / Post-Closure Activities

DP-13 (Building 255 Drywells)
Land-Use Restriction
Adverse Aquifer Use Prohibited
Groundwater Consumption - Prior Approval
Industrial / Commercial / Non-Residential

DP-12 (Building 301 Drywell AOC)
Land-Use Restriction
Groundwater Consumption - Prior Approval
Adverse Aquifer Use Prohibited
Commercial / Administrative / Non-Residential

SS-25 (Building T-9)
Land-Use Restriction
Adverse Aquifer Use Prohibited
Groundwater Consumption - Prior Approval
Industrial / Commercial / Non-Residential
Soil / Groundwater Intrusive Work - Prior Approval

DP-11 (Building 3 Drywell AOC)
Land-Use Restriction
Groundwater Consumption - Prior Approval
Adverse Aquifer Use Prohibited
Industrial / Commercial / Non-Residential

SS-23 (Building 20 HWSA)
Land-Use Restriction
Groundwater Consumption - Prior Approval
Industrial / Commercial / Non-Residential
Protect Remedial Operations
Soil / Groundwater Intrusive Work - Prior Approval

SD-32 (Six Mile Creek)

SS-44 (Electrical Power Substation)
Land-Use Restriction
5-Year Review
Annual Inspection / Reporting to USEPA / NYSDEC
Electrical Power Substation
Groundwater Consumption - Prior Approval
Groundwater Intrusive Work - Prior Approval
Industrial / Commercial / Non-Residential
Protect Remedial Operations
Subsurface Soil Relocation Restriction

SD-52-01
(Apron 2 Chlorinated Plume)
Land-Use Restriction
Groundwater Well Installation - Prior Approval
Land-Use Restriction-Protect Remedial Operations
Soil / Groundwater Intrusive Work - Prior Approval

SS-17 (Lot 69)
Land-Use Restriction
Groundwater Consumption - Prior Approval
Industrial / Commercial / Non-Residential
Protect Remedial Operations

SD-52-02
(Apron 2 Chlorinated Plume)
Land-Use Restriction
Groundwater Well Installation - Prior Approval
Land-Use Restriction-Protect Remedial Operations
Soil / Groundwater Intrusive Work - Prior Approval

LF-9 (Landfill 6)
Land-Use Restriction
Soil / Groundwater Intrusive Work - Prior Approval
Groundwater Well Installation - Prior Approval
Protect Remedial Operations
Groundwater Intrusive Work - Prior Approval
Annual Inspection / Reporting to USEPA / NYSDEC
5-Year Review
Groundwater Consumption - Prior Approval
Adverse Aquifer Use Prohibited
Protect Closure / Post-Closure Activities
Landfill Fencing / Signage

LF-7 (Landfill 5)
Land-Use Restriction
5-Year Review
Adverse Aquifer Use Prohibited
Annual Inspection / Reporting to USEPA / NYSDEC
Groundwater Consumption - Prior Approval
Groundwater Intrusive Work - Prior Approval
Landfill Fencing / Signage
Land-Use Restriction-Protect Remedial Operations
Protect Closure / Post-Closure Activities

SD-31 (Three Mile Creek)

LF-28 (Landfill 4)
Land-Use Restriction
5-Year Review

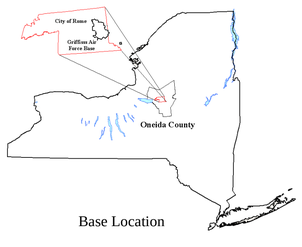
SD-52-04 (Landfill 6 TCE)
Land-Use Restriction
Groundwater Well Installation - Prior Approval
Protect Remedial Operations
Soil / Groundwater Intrusive Work - Prior Approval

SD-32 (Six Mile Creek)

SD-52-01
(Apron 2 Chlorinated Plume)
Land-Use Restriction
Groundwater Well Installation - Prior Approval
Land-Use Restriction-Protect Remedial Operations
Soil / Groundwater Intrusive Work - Prior Approval

SD-52-02
(Apron 2 Chlorinated Plume)
Land-Use Restriction
Groundwater Well Installation - Prior Approval
Land-Use Restriction-Protect Remedial Operations
Soil / Groundwater Intrusive Work - Prior Approval

LF-9 (Landfill 6)
Land-Use Restriction
Soil / Groundwater Intrusive Work - Prior Approval
Groundwater Well Installation - Prior Approval
Protect Remedial Operations
Groundwater Intrusive Work - Prior Approval
Annual Inspection / Reporting to USEPA / NYSDEC
5-Year Review
Groundwater Consumption - Prior Approval
Adverse Aquifer Use Prohibited
Protect Closure / Post-Closure Activities
Landfill Fencing / Signage



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
- Land Use Control Site

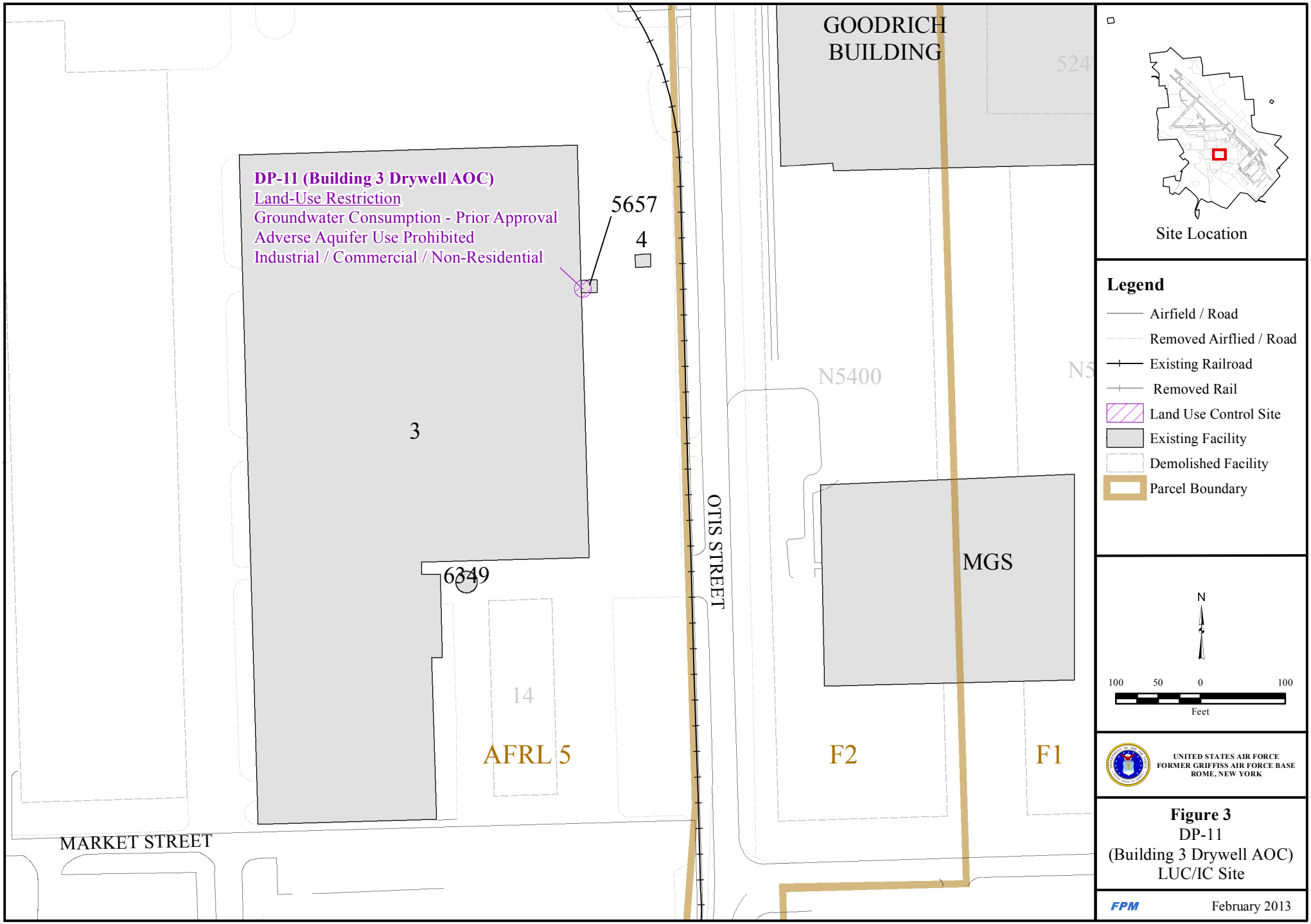
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Figure 2
Land Use Control Locations

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Low Intensity Open Space

Manufacturing Complex, Airfield & Related Services

Low Intensity Open Space

Low Intensity Open Space

Light Industrial Development

Manufacturing Complex, Airfield & Related Services

Low Intensity Open Space

DOD Retained

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

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
- Demolished Facility
- 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)

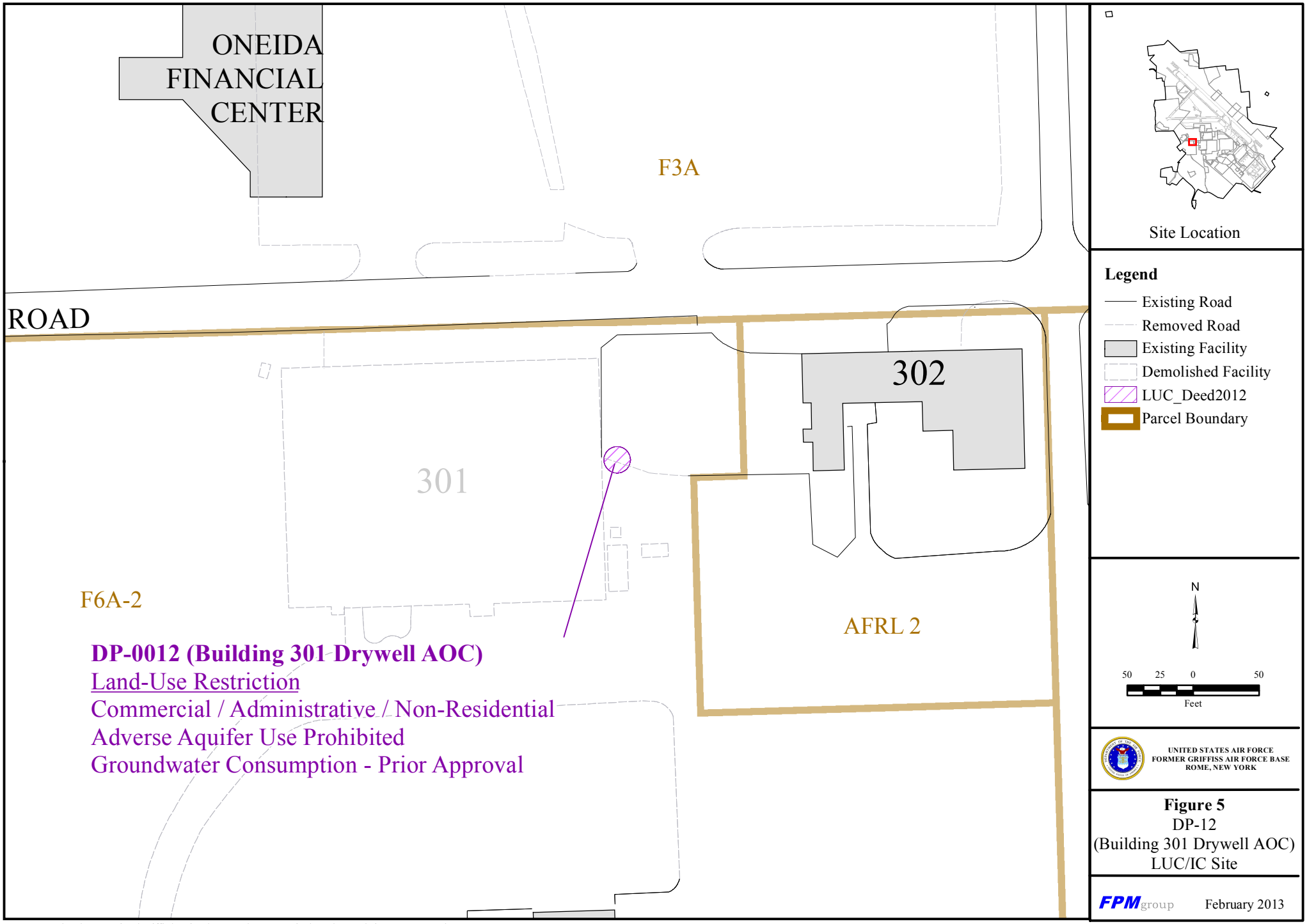
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Figure 4
Zoning Districts

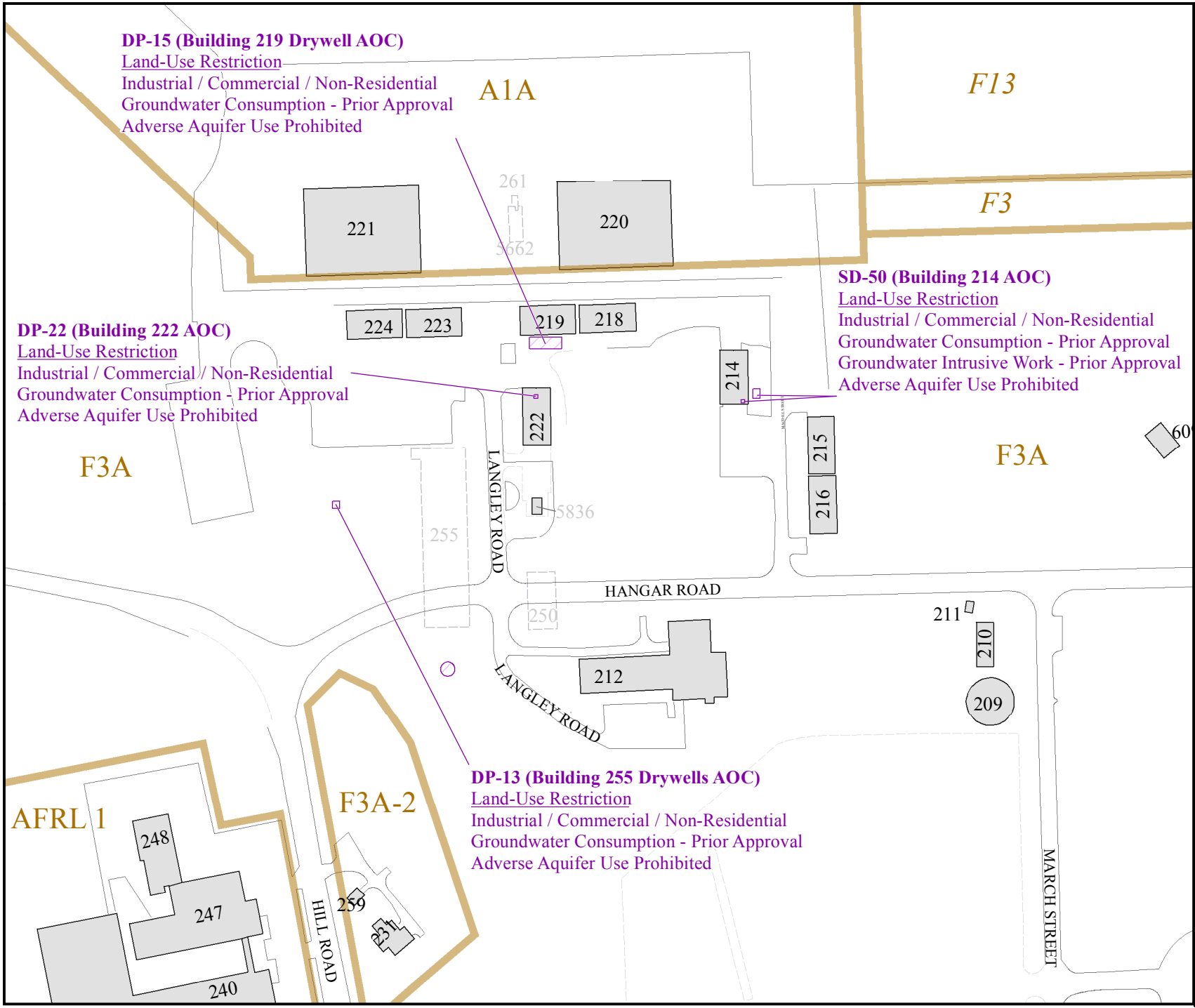
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Site Location

Legend

- Existing Road
- Removed Road
- Existing Facility
- Demolished Facility
- Land Use Control Site
- Parcel Boundary

N

100 50 0 100

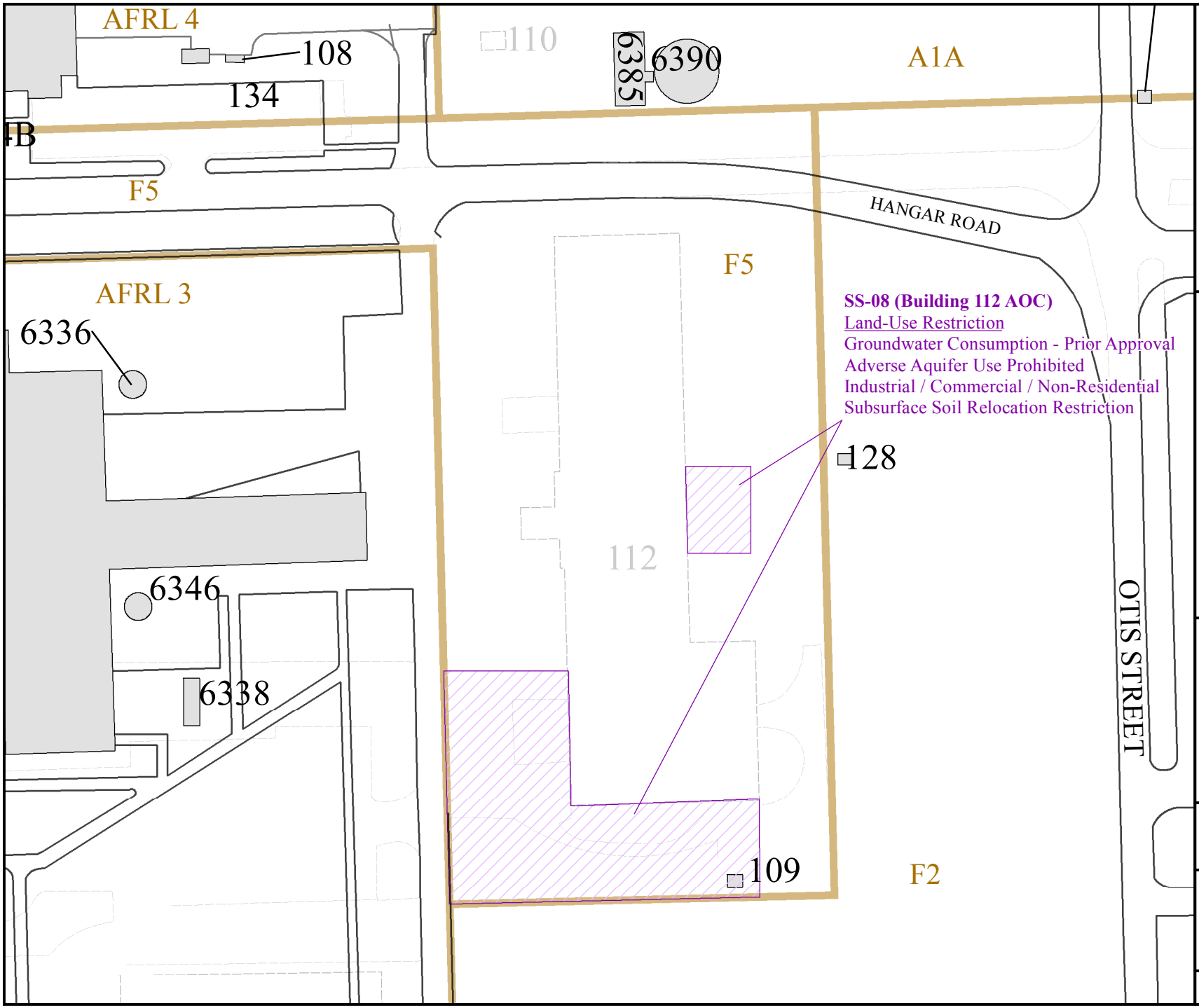
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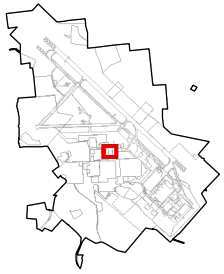
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Figure 6
DP-13 (Building 255 Drywells AOC),
DP-15 (Building 219 Drywell AOC),
DP-22 (Building 222 AOC),
and SD-50 (Building 214 AOC)
LUC/IC Sites

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Site Location

Legend

- Existing Road
- Removed Road
- Land Use Control Site
- Existing Facility
- Demolished Facility
- Parcel Boundary

N

50 25 0 50

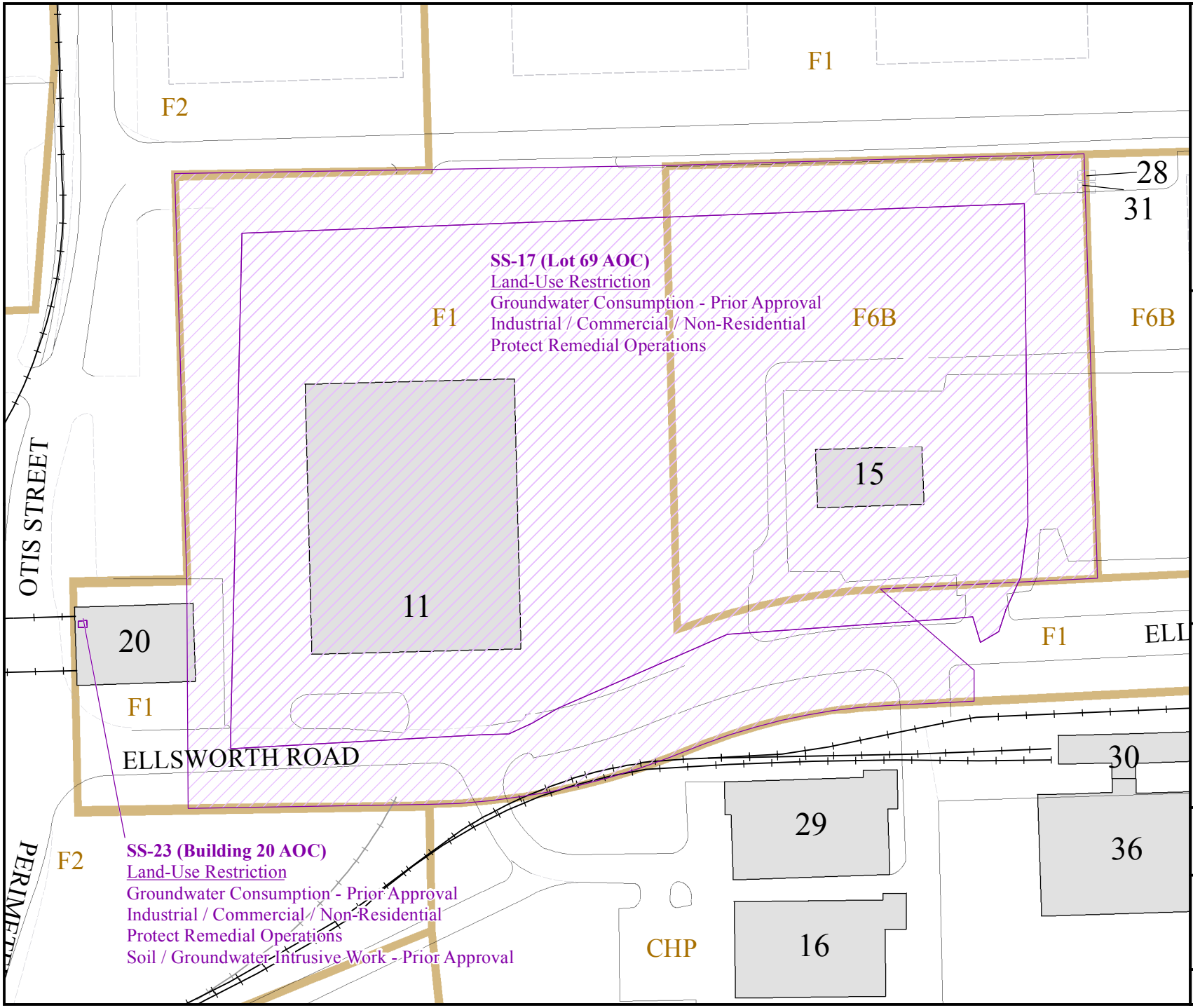
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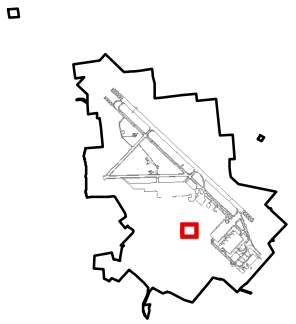
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Figure 7
SS-08
(Building 112 AOC)
LUC/IC Site

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Legend

- Existing Road
- Removed Road
- Existing Railroads
- Removed Rails
- Existing Facility
- Demolished Facility
- Land Use Control Site
- Parcel Boundary

N

50 25 0 50 100

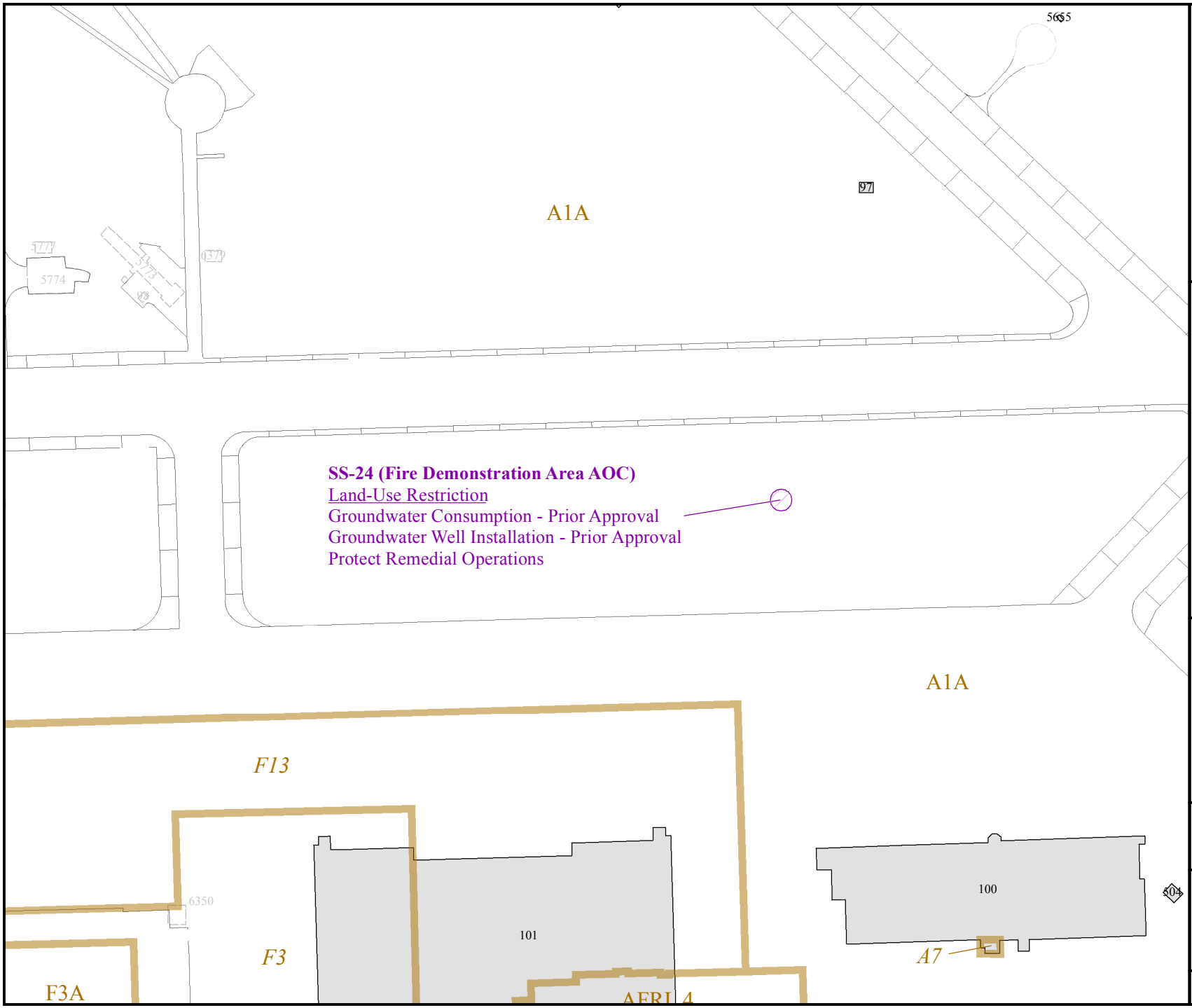
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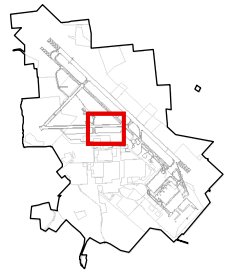
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Figure 8
SS-17 (Lot 69 AOC) and
SS-23 (Building 20 AOC)
LUC/IC Sites

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Site Location

Legend

- Existing Airfield / Road
- Removed Airfield / Road
- Existing Facility
- Demolished Facility
- Land Use Control Site
- Parcel Boundary

N

0 50 100 200 300

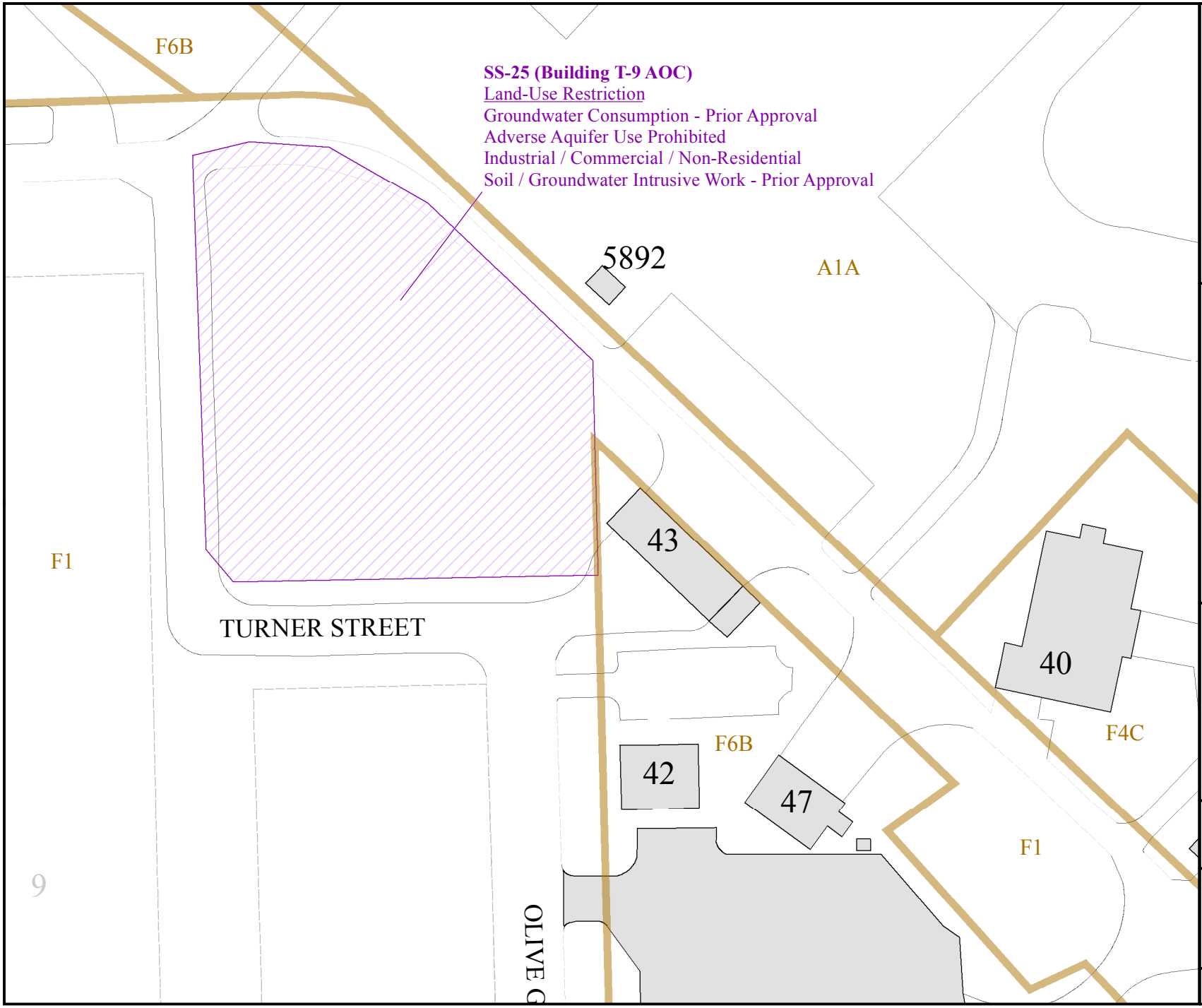
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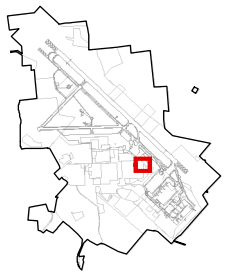
UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 9
SS-24
(Fire Demonstration Area AOC)
LUC/IC Site

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Site Location

Legend

- Existing Airfield / Road
- Removed Airfield / Road
- Existing Facility
- Demolished Facility
- Land Use Control Site
- Parcel Boundary

N

50 25 0 50 100

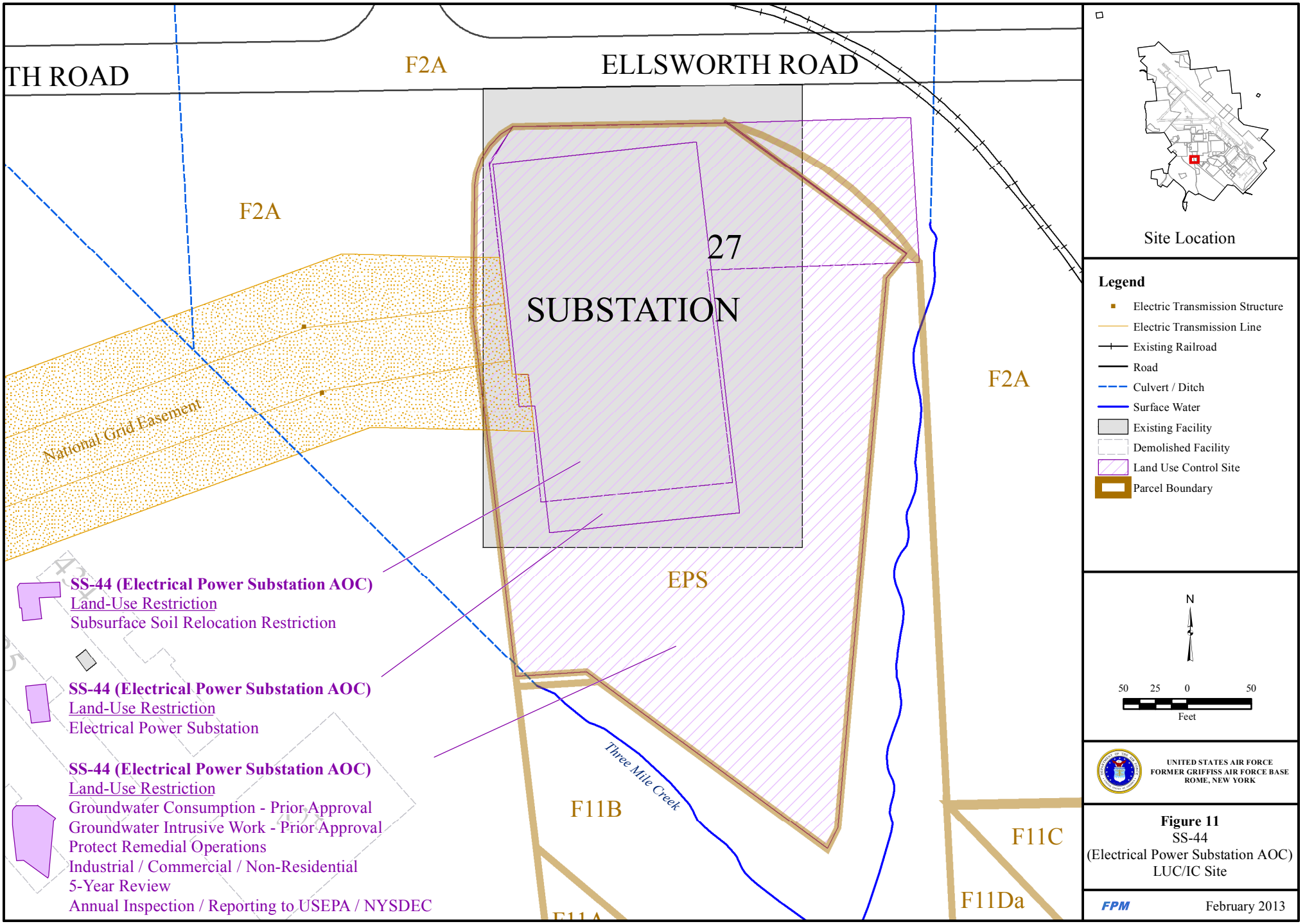
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UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

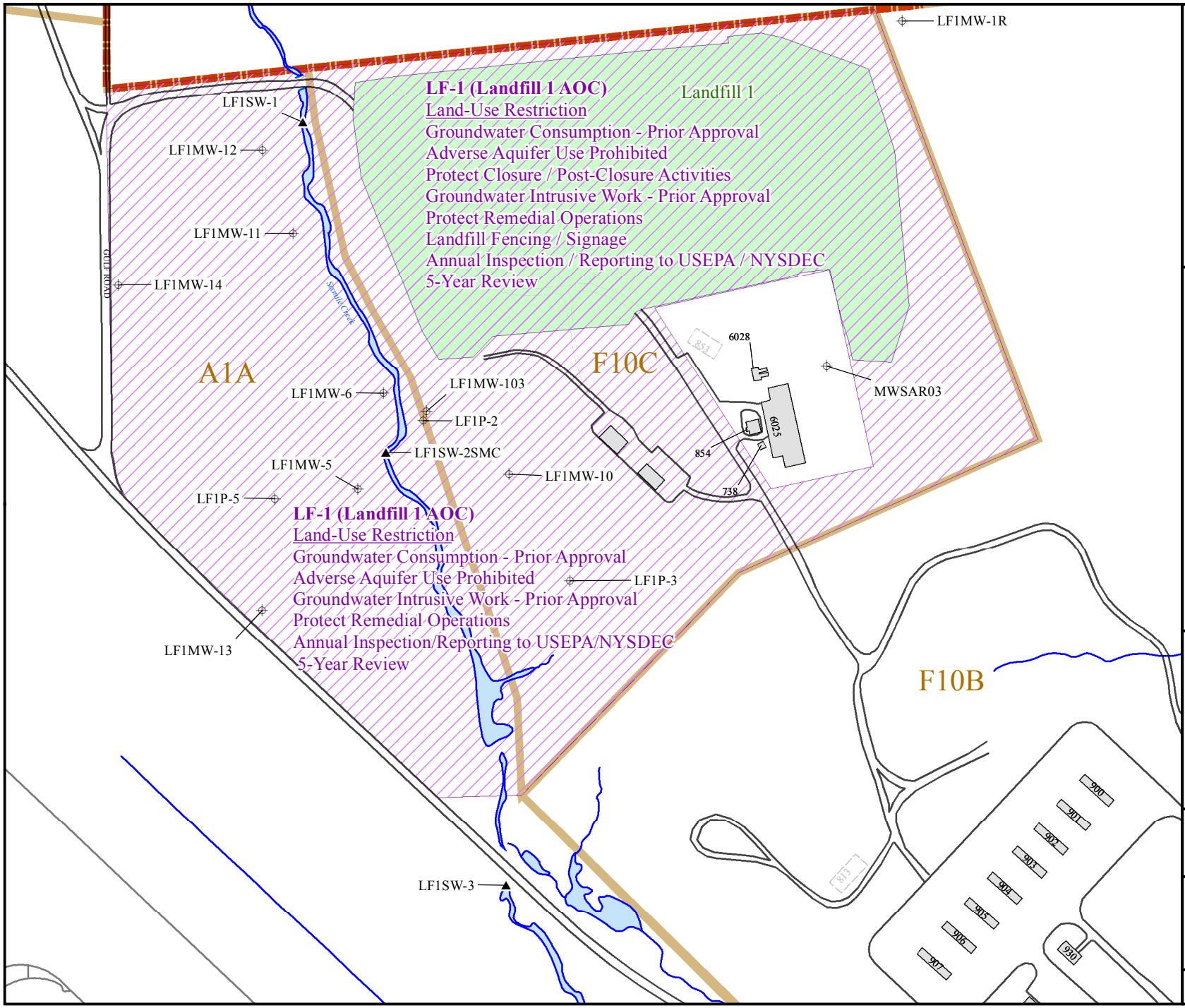
Figure 10
SS-25
(Building T-9 AOC)
LUC/IC Site

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Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Airfield / Road
- Removed Road
- Culvert / Ditch
- Surface Water
- Base Boundary
- Existing Facility
- Demolished Facility
- Landfill
- Land Use Control Site
- Parcel Boundary

N

0 100 200 400

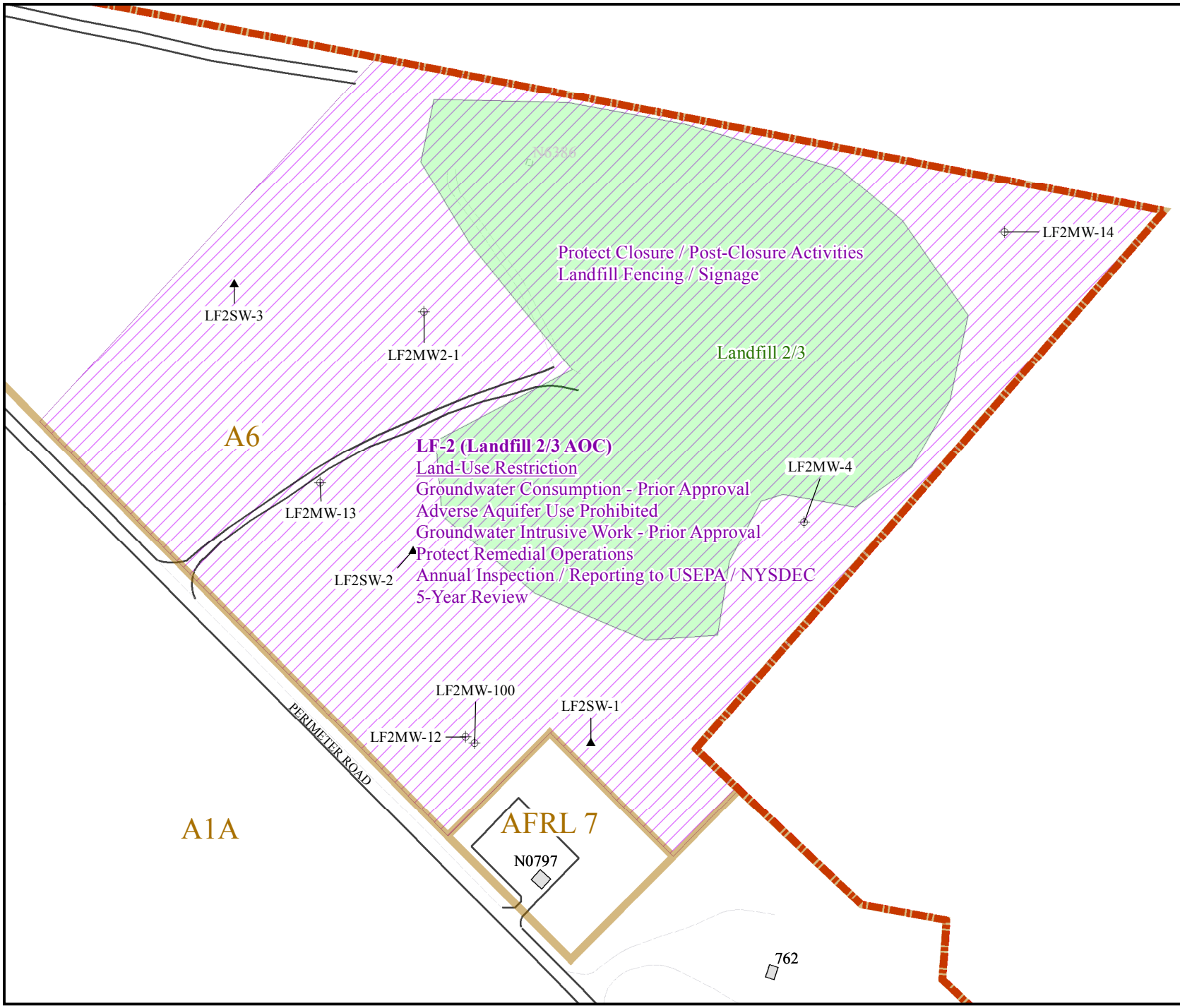
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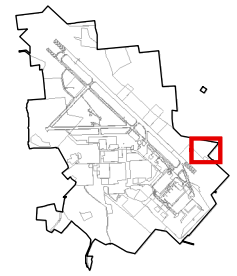
UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 12
LF-1
(Landfill 1 AOC)
LTM Site

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Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Existing Road
- Removed Road
- Base Boundary
- Landfills
- Existing Facility
- Demolished Facility
- Land Use Control Site
- Parcel Boundary

N

0 50 100 200 300

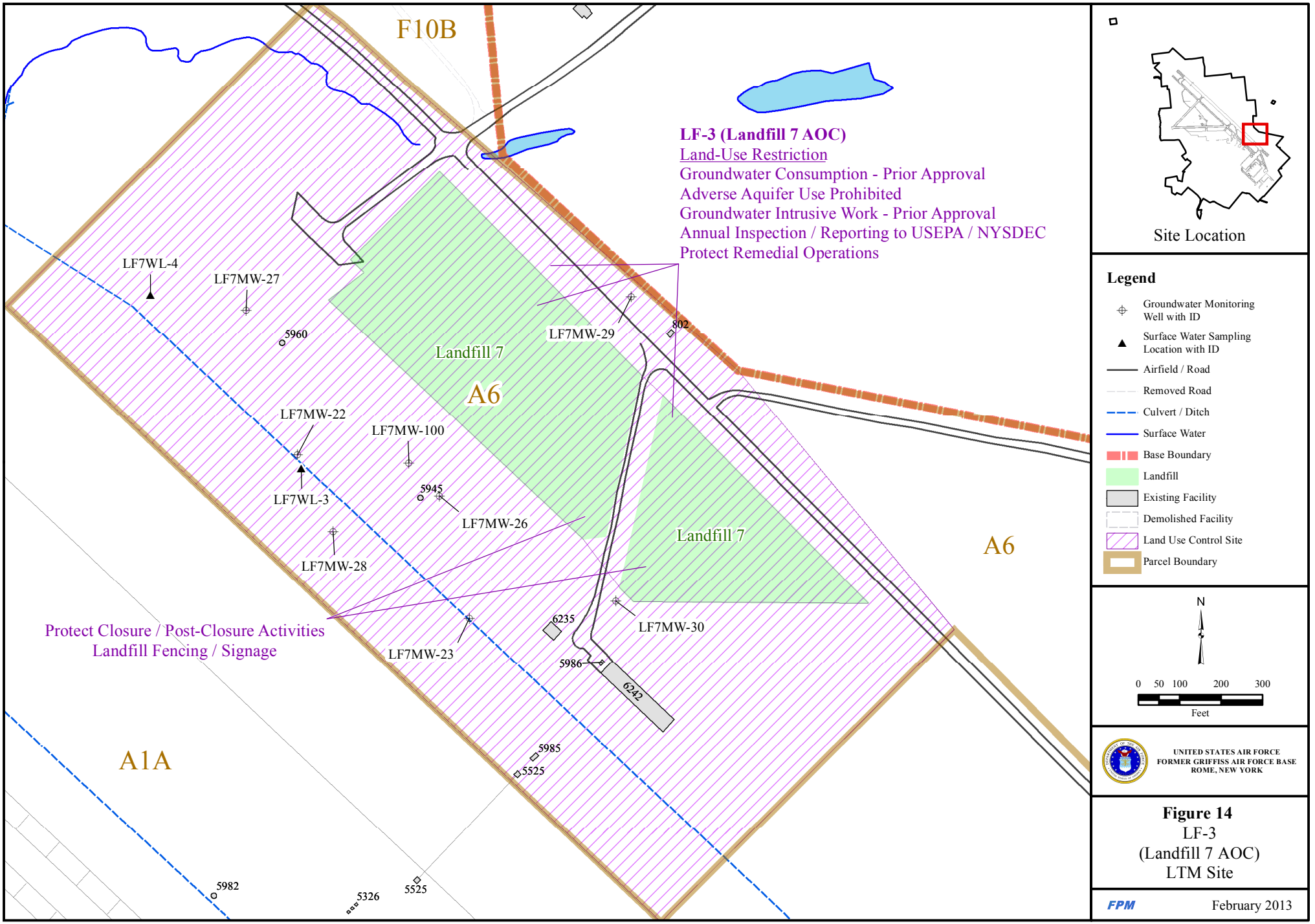
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Figure 13
LF-2
(Landfill 2/3 AOC)
LTM Site

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Document Path: Y:\GIS_Projects\Griffiss\Projects\40-04-11\5-year_review\2013\Layout\Fig_13_LF2.mxd



Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Airfield / Road
- Removed Road
- Culvert / Ditch
- Surface Water
- Base Boundary
- Landfill
- Existing Facility
- Demolished Facility
- Land Use Control Site
- Parcel Boundary

N

0 50 100 200 300

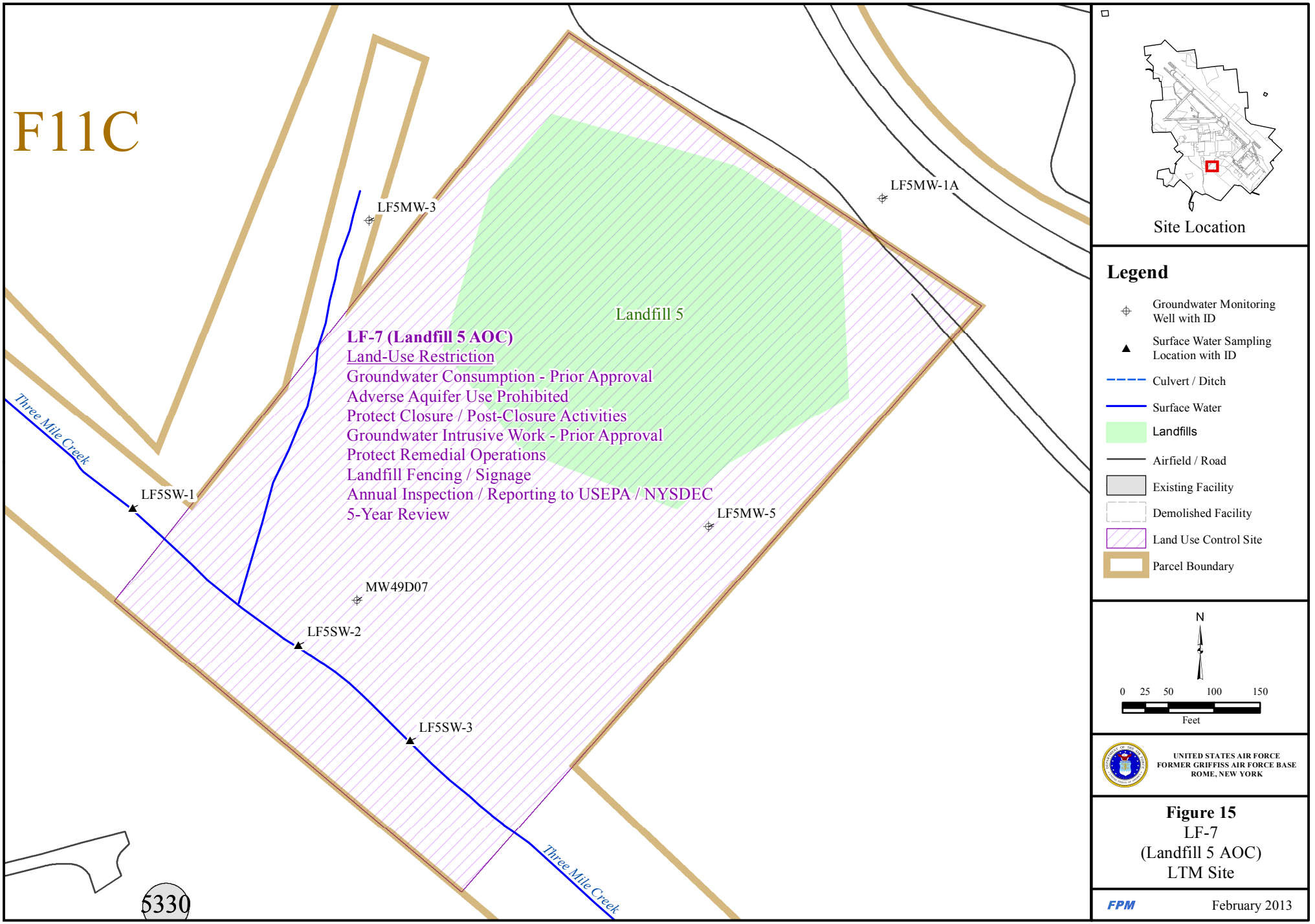
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UNITED STATES AIR FORCE
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ROME, NEW YORK

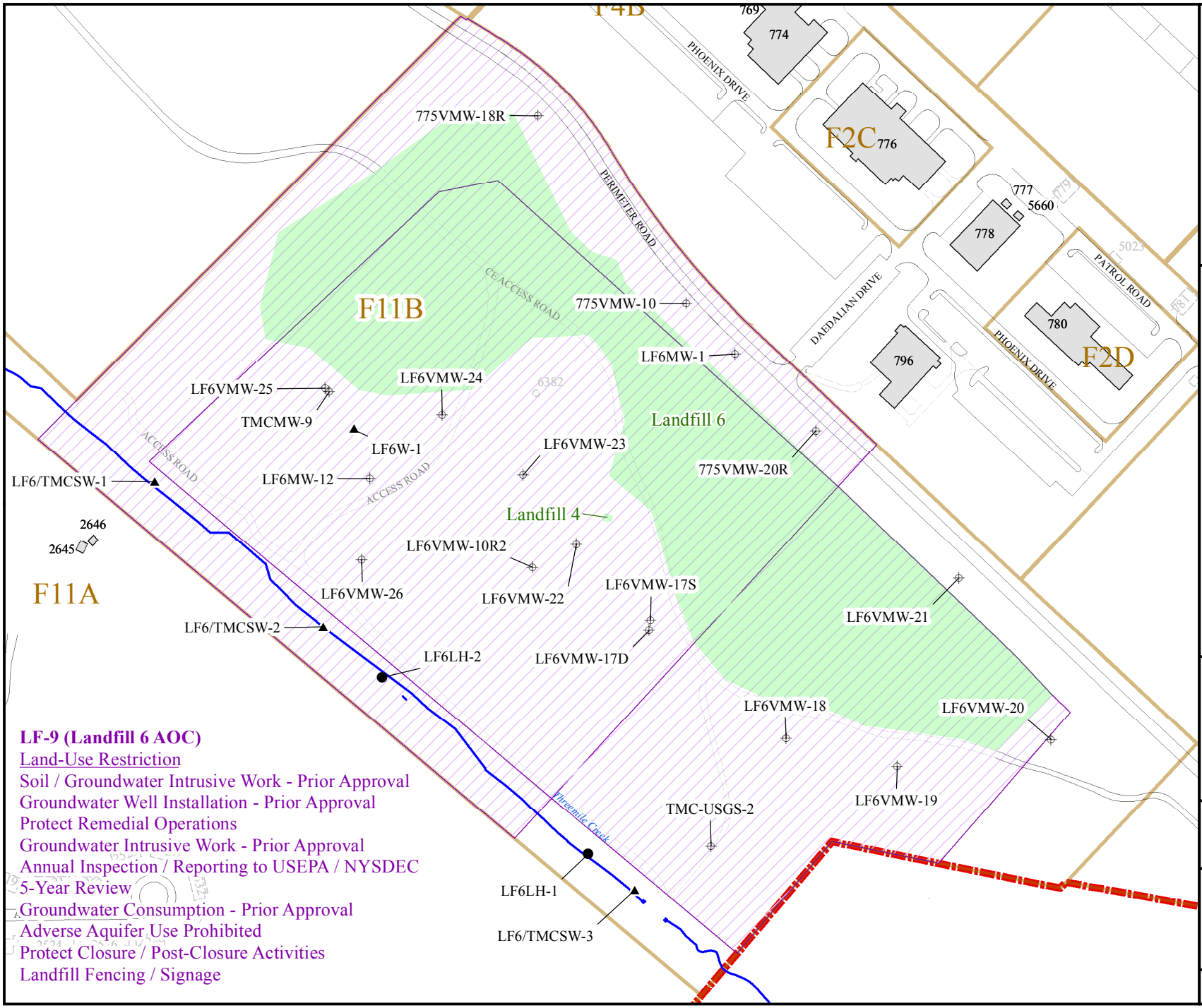
Figure 14
LF-3
(Landfill 7 AOC)
LTM Site

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Site Location

Legend

- Leachate Sampling Location with ID
- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Removed Airfield / Road
- Existing Airfield / Road
- Culvert / Ditch
- Surface Water
- Base Boundary
- Landfill
- Existing Facility
- Demolished Facility
- Land Use Control Site
- Parcel Boundary

N

0 50 100 200 300

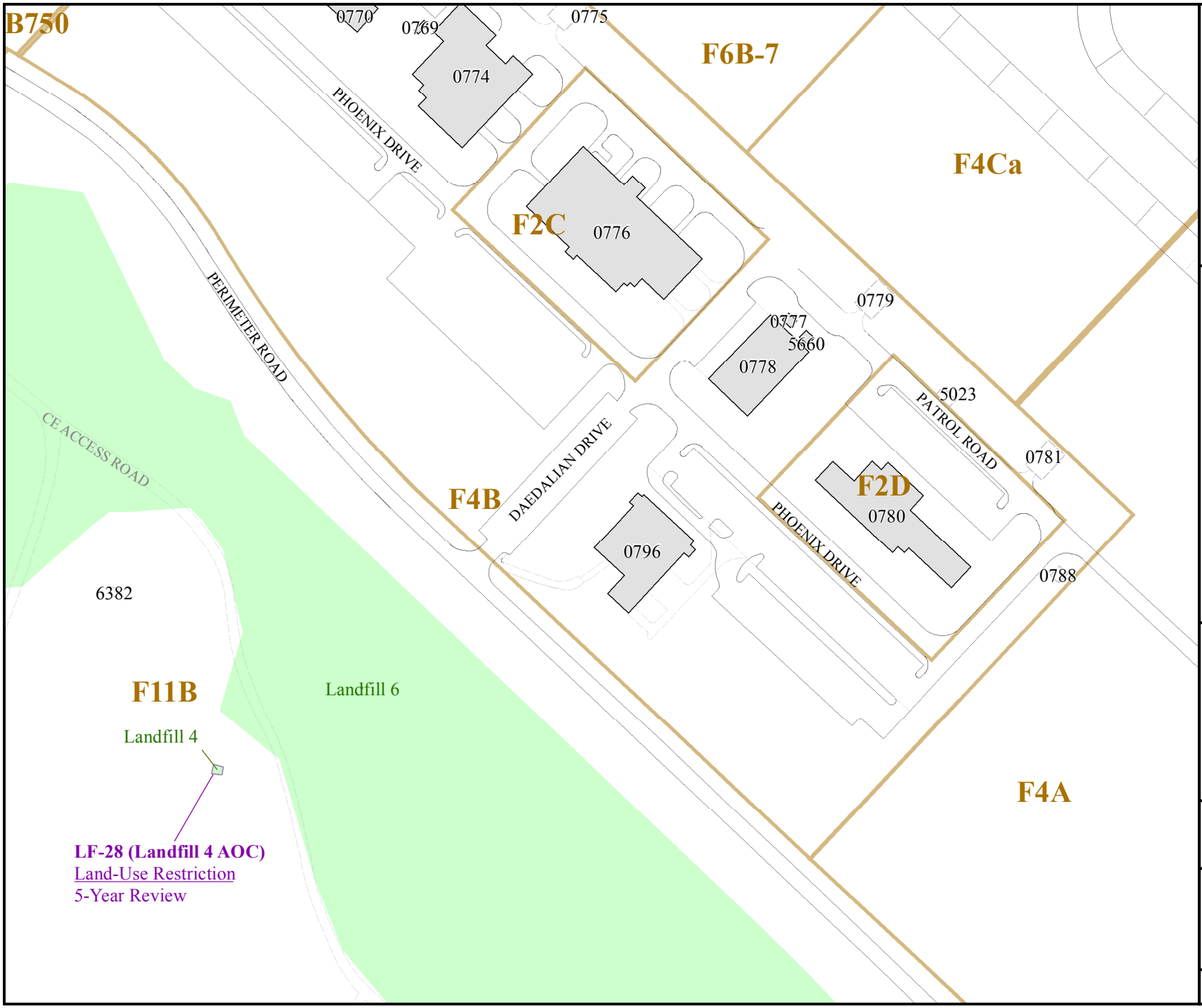
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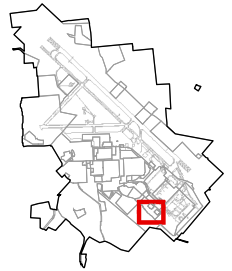
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Figure 16
LF-9
(Landfill 6 AOC)
LTM Site

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Legend

- Existing Airfield/Road
- Removed Airfield/Road
- Existing Facility
- Demolished Facility
- Landfill
- Land Use Control Site
- Parcel Boundary

N

0 25 50 100 150 200

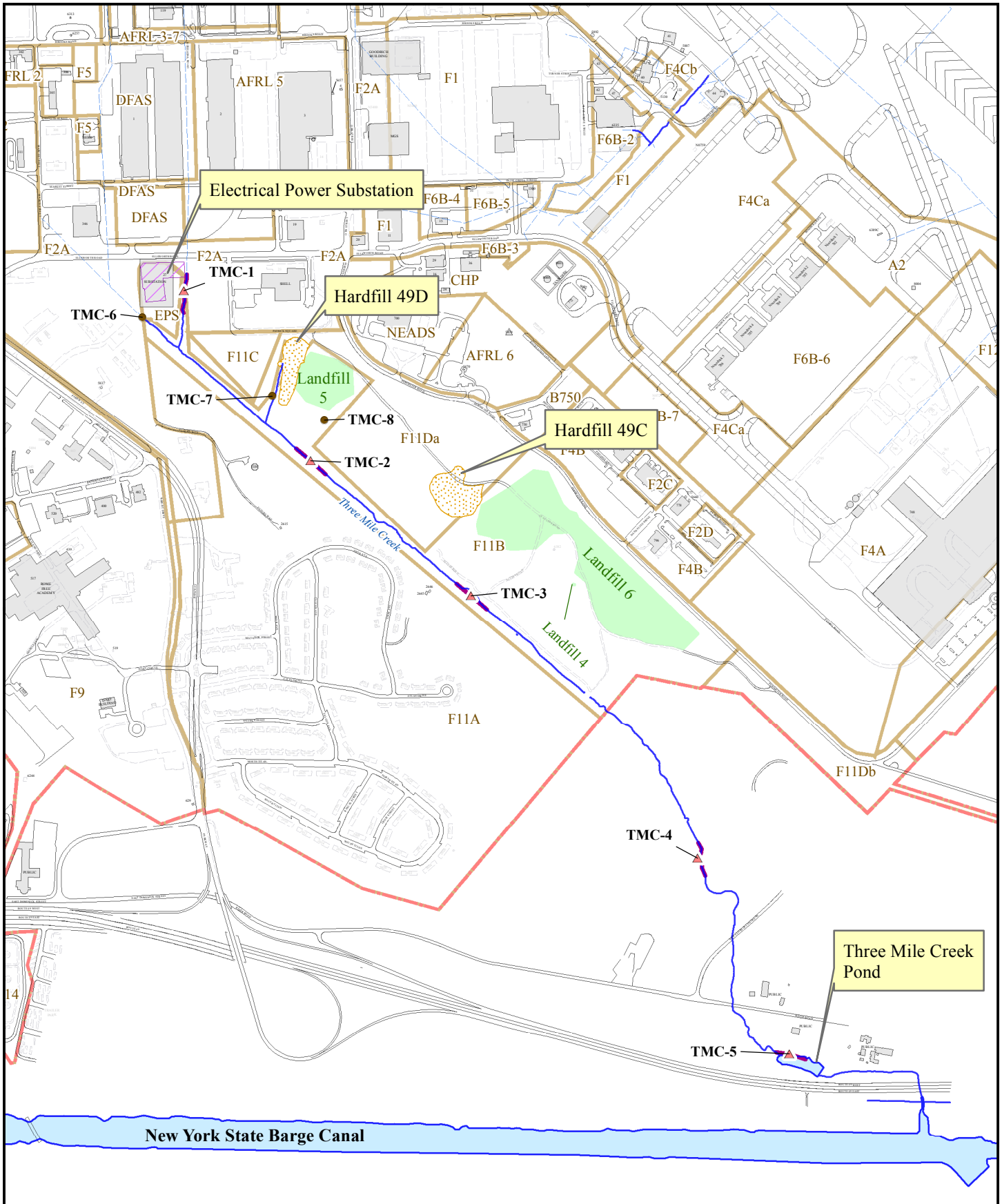
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Figure 17
LF-28
(Landfill 4 AOC)
LTM Site

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Site Location

Legend

- Suface Water/Sediment/Fish/Benthic Sampling Location with ID
- Suface Water/Sediment Sampling Location with ID
- Fish Sampling Stretch
- Former Base Boundary
- Existing Airfield / Road
- Removed Airfield /
- Culvert / Storm Drain
- Surface Water
- Hardfill
- Electric Power Substation
- Existing Facility
- Demolished Facility
- Landfill
- Parcel Boundary

N

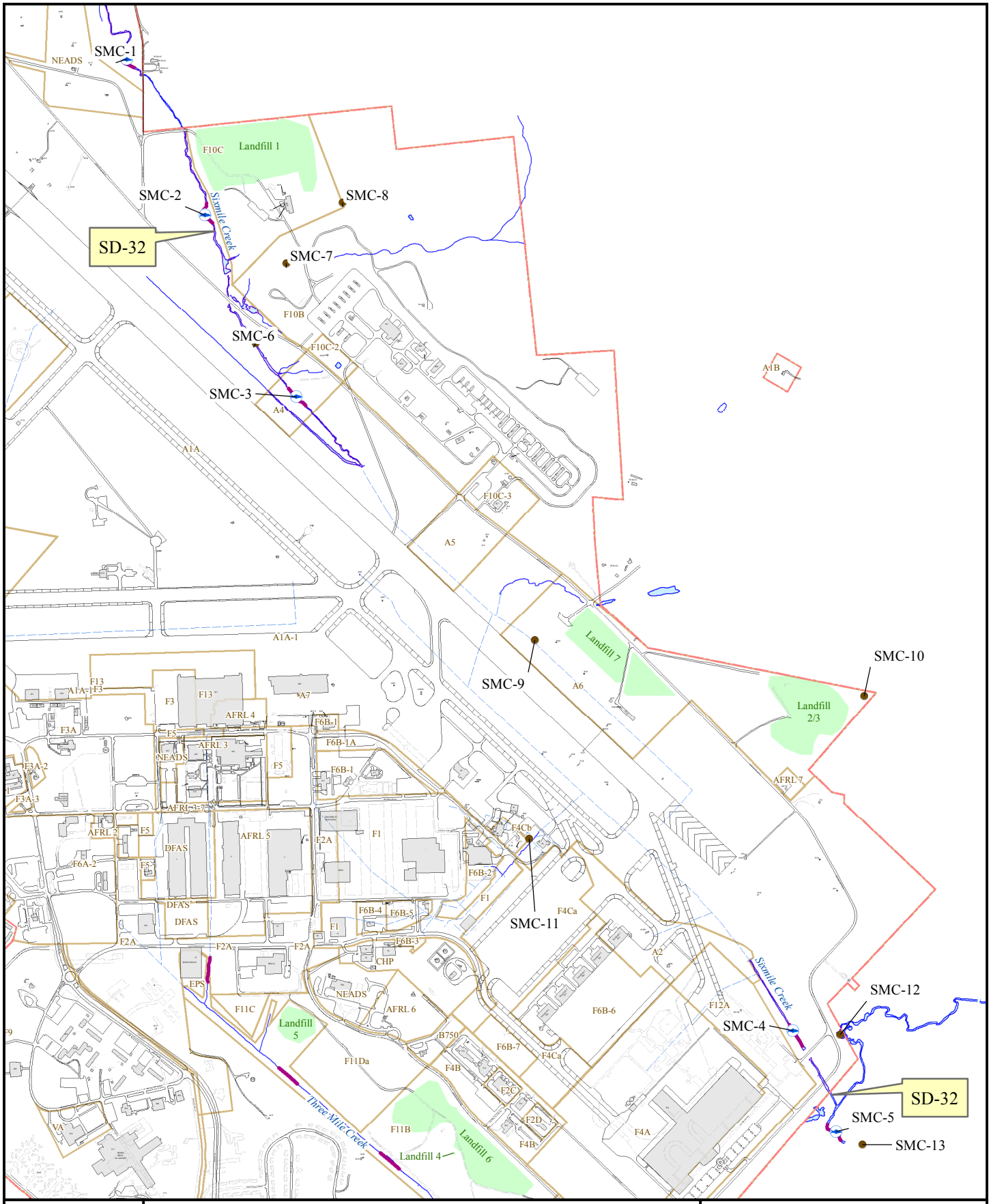
0 250 500 1,000
Feet

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Figure 18
SD-31
(Three Mile Creek AOC)
LTM Site

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Site Location

Legend

- Previous SMC Fish Sampling Location with ID
- Previous SMC Suface Water/Sediment Sampling Location with ID
- Existing Airfield / Road
- Removed Airfield / Road
- Fish Sampling Stretch
- Former Base Boundary
- Culvert / Storm Drain
- Surface Water
- Land Use Control Site
- Existing Facility
- Demolished Facility
- Parcel Boundary
- Landfill

N

0 250 500 1,000 1,500
Feet

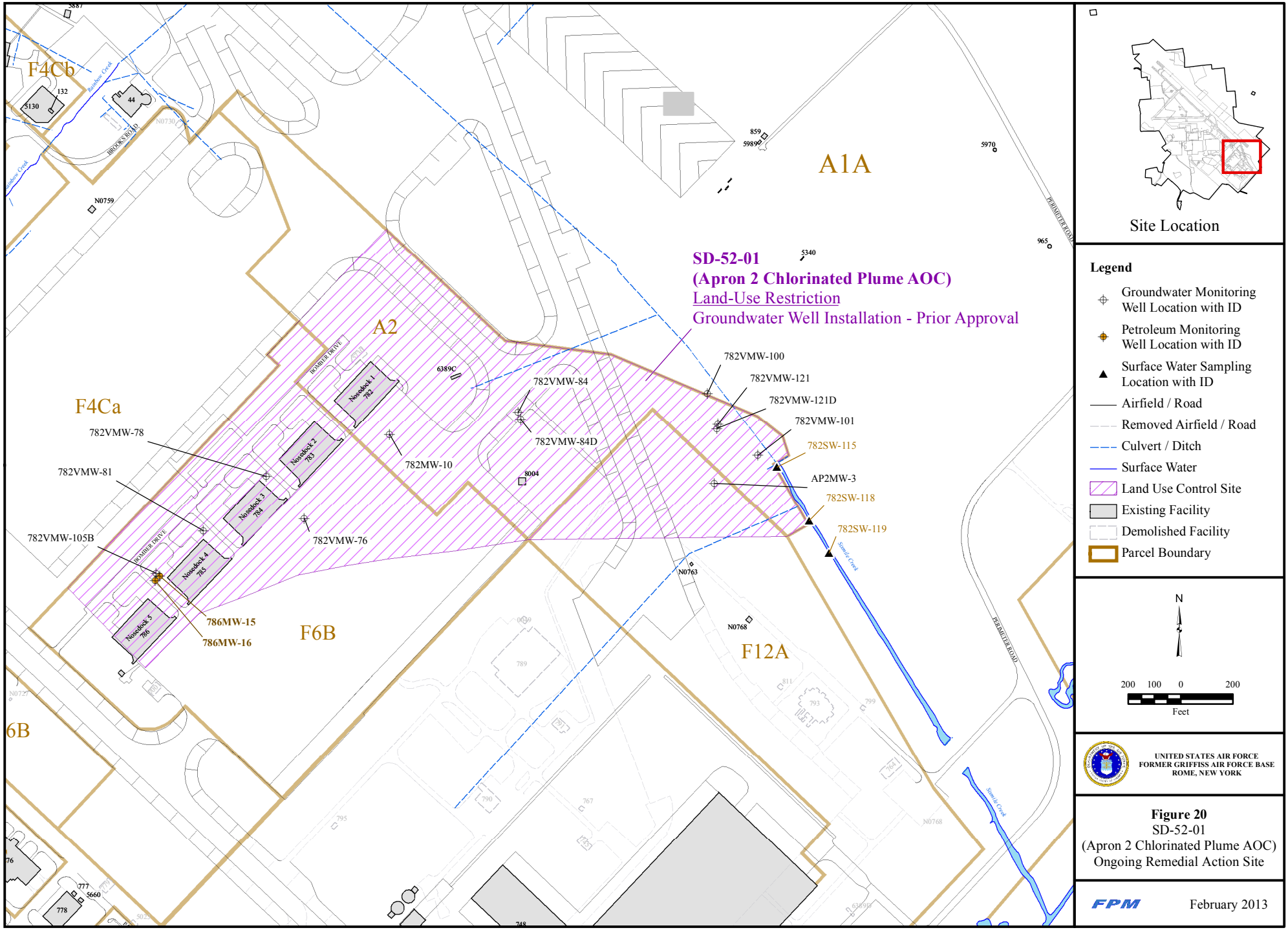
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ROME, NEW YORK

Figure 19
SD-32
(Six Mile Creek AOC)
LTM Site

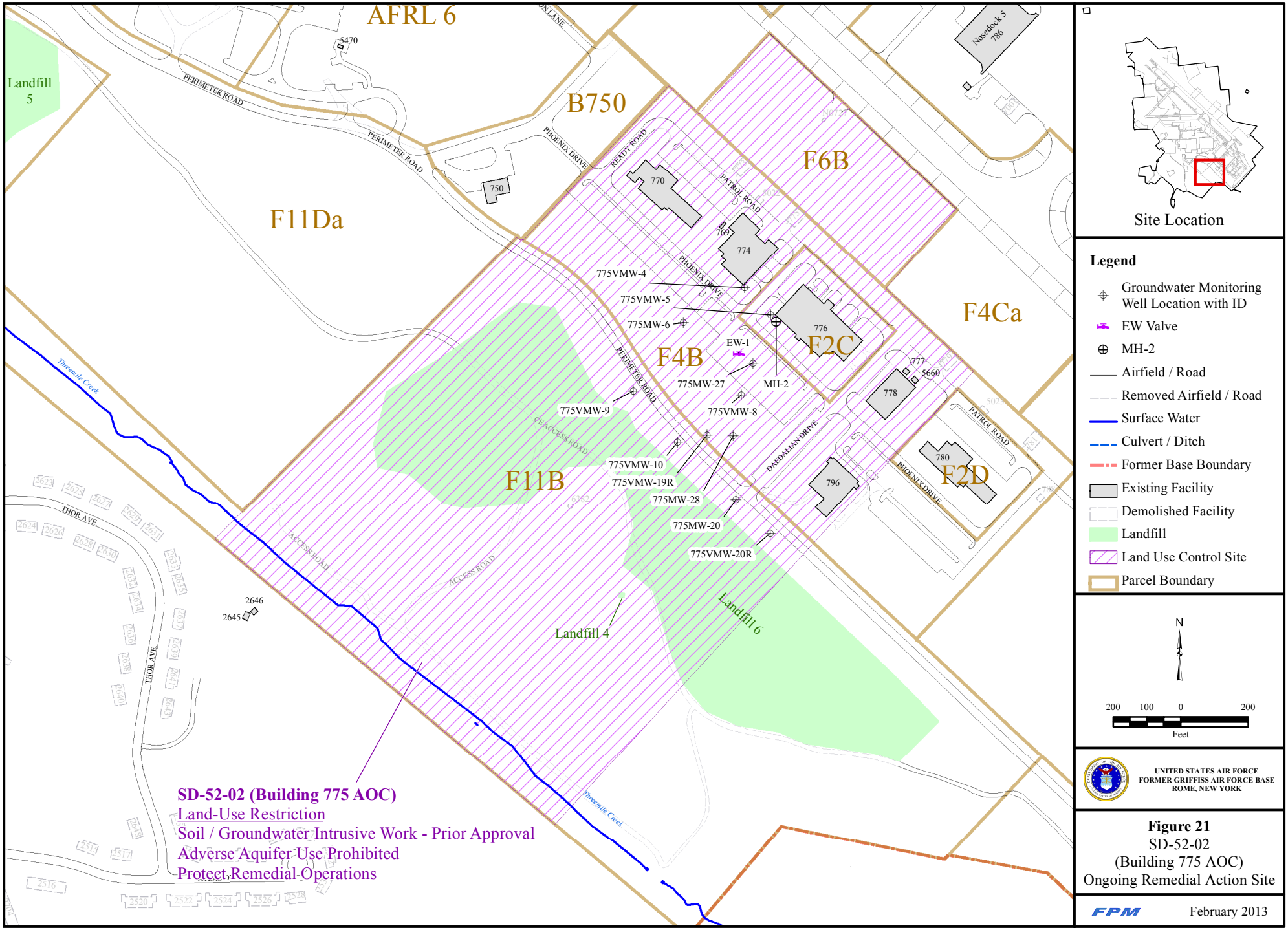
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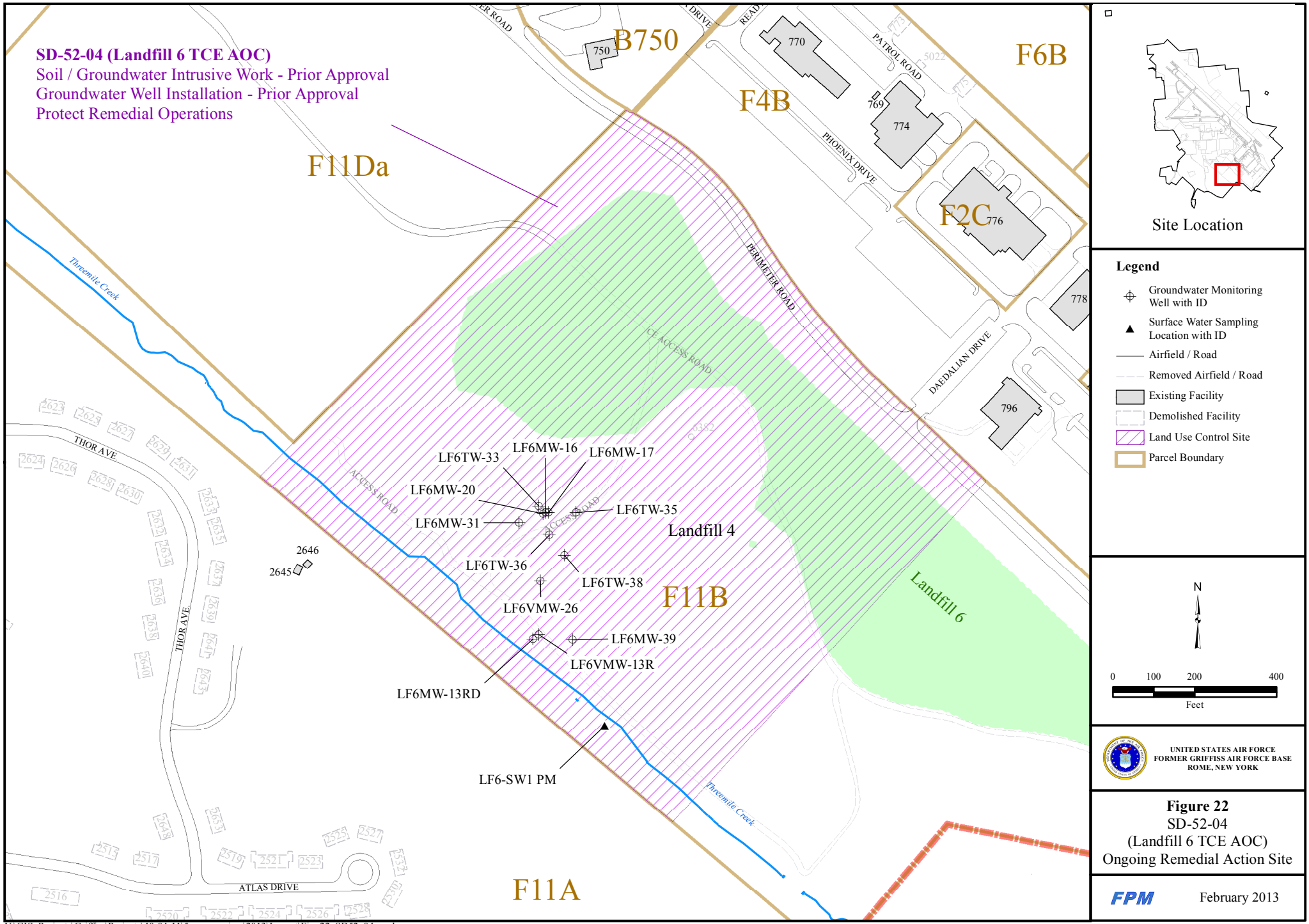
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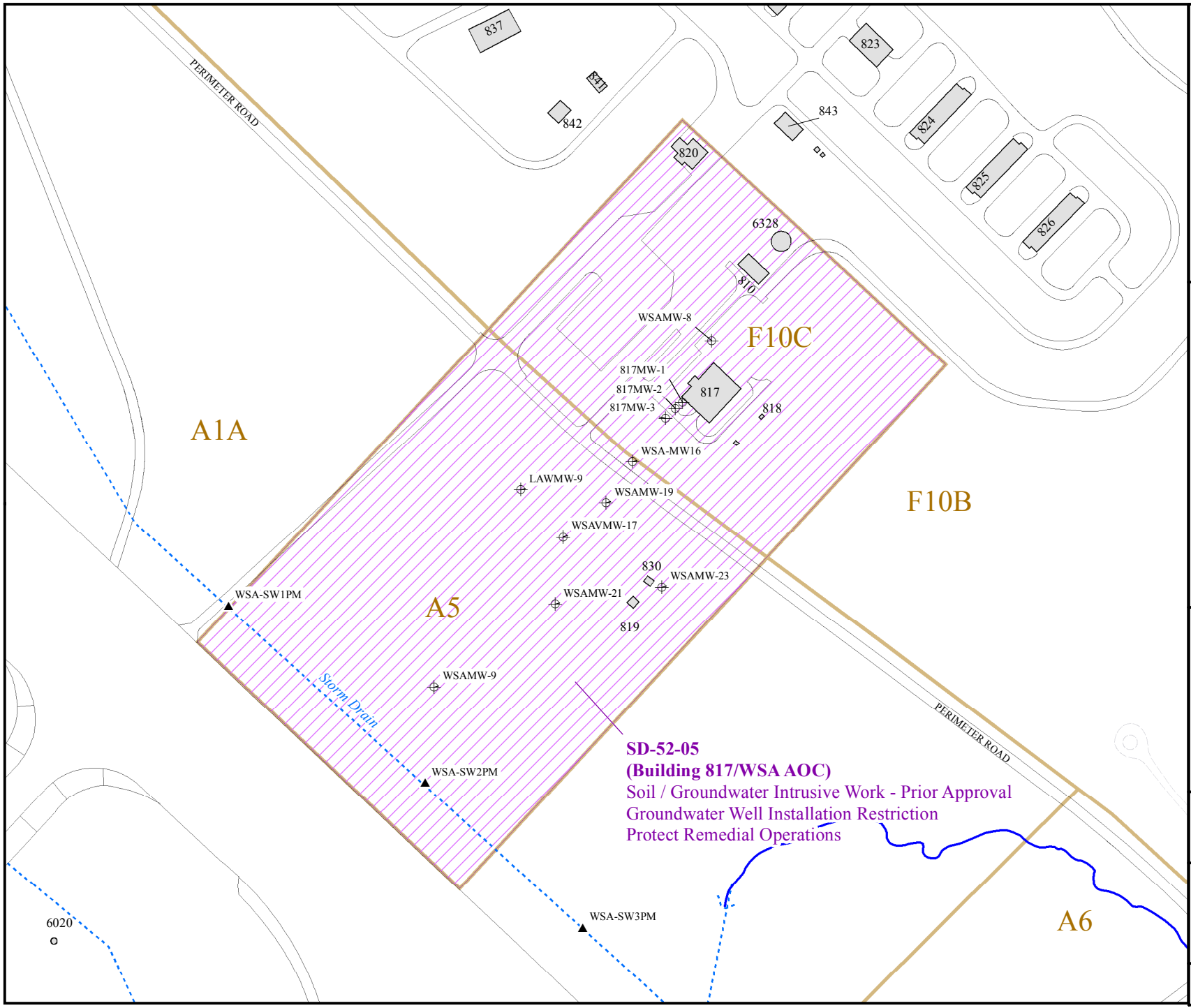
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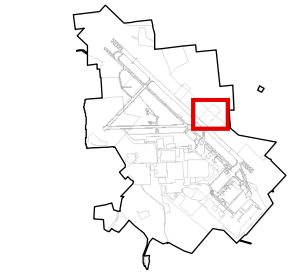


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Site Location

Legend

- Groundwater Monitoring Well with ID
- Surface Water Sampling Location with ID
- Surface Water
- Culvert / Ditch
- Airfield / Road
- Removed Road
- Facilities
- Land Use Control Site
- Parcel Boundary

N

200 100 0 200

Feet

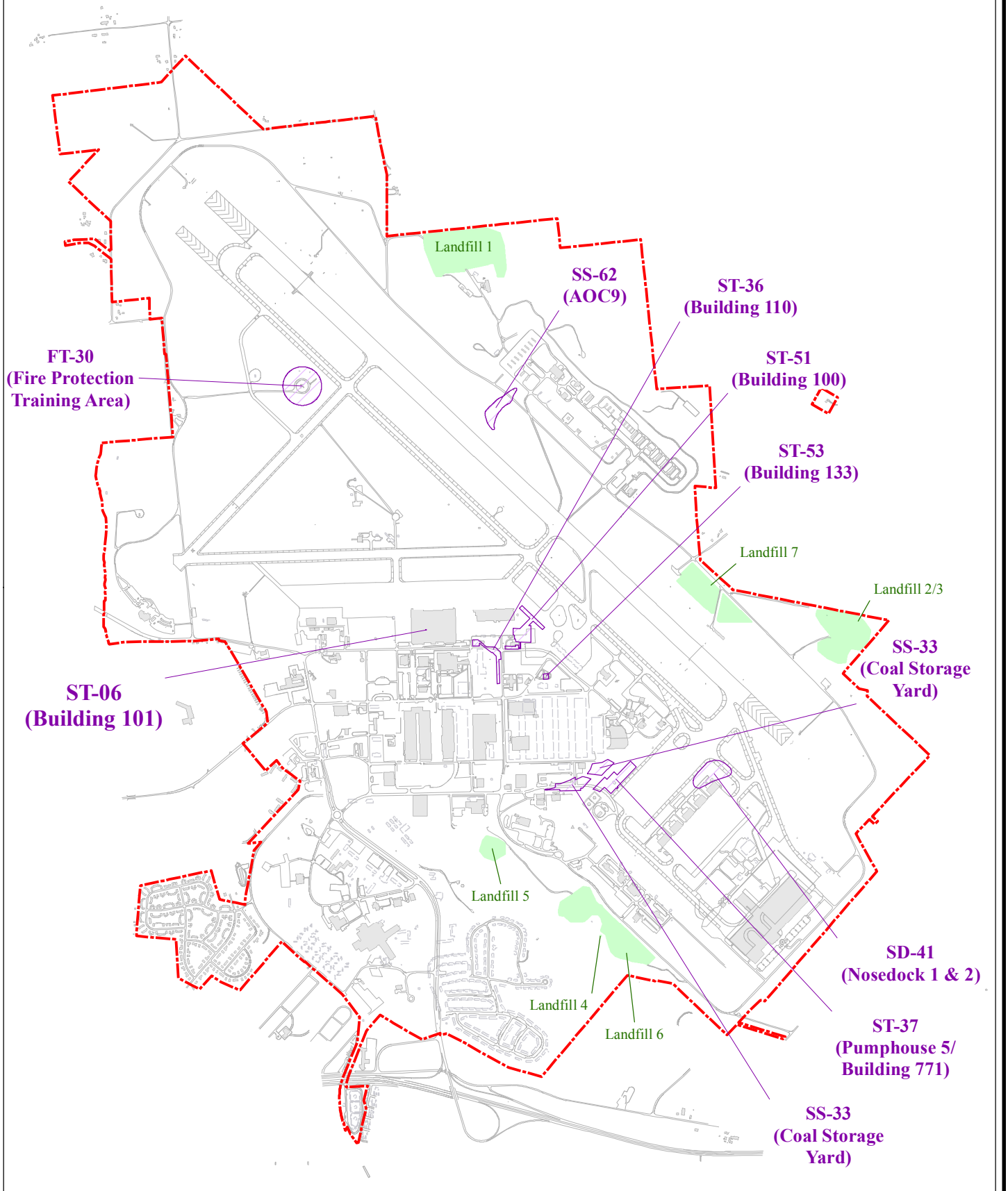
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Figure 23
SD-52-05
(Building 817/WSA AOC)
Ongoing Remedial Action Site

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Legend

- Base Boundary
- Airfield / Road
- Existing Facility
- Demolished Facility
- Landfill
- Pre-ROD Site

N

Figure 24
Griffiss Pre-ROD Sites

2,400 1,200 0 2,400
Feet

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Appendix A
5-Year Review Site Inspection Tables

DP-11 (Building 3)
Inspection Report

LUC/IC Site

ROD Requirement – Land-use restrictions for industrial/ commercial use and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Interview Confirmation	General Site Condition
DP-11-01	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented	Fred Conover, AFRL, 8-17-09	Building 3 is used for industrial purposed by the Department of Defense
DP-11-02	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented		
DP-11-03	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented		

DP-12 (Building 301)
Inspection Report

LUC/IC Site

ROD Requirement – Institutional controls, in the form of land-use restrictions for commercial/ administrative use and groundwater use restrictions

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Letter Confirmation	General Site Condition
DP-12-01	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented	Frank Sanzone, GLDC, 9-1-09	Building used for commercial/ administrative purposes
DP-12-02	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented		
DP-12-03	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented		



DP-13 (Building 255)
Inspection Report

LUC/IC Site

ROD Requirement - No further action for soils with land-use restrictions for industrial/ commercial use and groundwater use restrictions

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
DP-13-01	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented	Building was demolished
DP-13-02	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented	
DP-13-03	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented	
DP-13-04	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented	
DP-13-05	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented	
DP-13-06	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented	



DP-15 (Building 219)
Inspection Report

LUC/IC Site

ROD Requirement – No further remedial action, with land-use restrictions for industrial land-use and groundwater use restrictions**.**

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Letter Confirmation	General Site Condition
DP-15-01	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented	Robert Angelicola, Roberts Office Interiors, 10-2-09	Building is used for commercial purposes
DP-15-02	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented		
DP-15-03	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented		



DP-22 (Building 222)
Inspection Report

LUC/IC Site

ROD Requirement – No further action for soils with land-use restrictions for industrial/commercial use and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Interview Confirmation	General Site Condition
DP-22-01	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented	Robert Angelicola, Roberts Office Interiors, 10-2-09	Building is used for commercial purposes
DP-22-02	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented		
DP-22-03	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented		

SD-50 (Building 214)
Inspection Report

LUC/IC Site

ROD Requirement – No further remedial action, with land-use restrictions for industrial land-use and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Letter Confirmation	General Site Condition
SD-50-01	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented	Robert Angelicola, Roberts Office Interiors, 10-2-09	Building is used for commercial/ industrial purposes.
SD-50-02	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented		
SD-50-03	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented		
SD-50-04	Soil / groundwater intrusive work – prior approval	On-site	7/27/2009	Implemented		



SS-08 (Building 112)
Inspection Report

LUC/IC Site

ROD Requirement – No further action with land-use restrictions for industrial/ commercial use and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Interview Confirmation	General Site Condition
SS-08-01	Groundwater consumption-prior approval	On-site	7/27/2009	Implemented	Frank Sanzone, GLDC, 9-1-09	-vacant lot, building demolished
SS-08-02	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented		
SS-08-03	Land-use restriction-industrial/ commercial/ non-residential	On-site	7/27/2009	Implemented		
SS-08-04	Subsurface soil relocation restriction	On-site	7/27/2009	Implemented		



SS-17 (Lot 69)
Inspection Report

LUC/IC Site

ROD Requirement – Institutional controls in the form of land-use restrictions for industrial/commercial use and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Interview Confirmation	General Site Condition
SS-17-01	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented	Andy Thompson, Birnie Bus, 8-17-09	-Birnie Bus parking lot and roadway near Building 15
SS-17-02	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented		
SS-17-03	Land-use restriction – protect remedial operations	On-site	7/27/2009	Implemented		
OWS-015-3-01	Soil / groundwater intrusive work – prior approval	On-site	7/27/2009	Implemented		
OWS-015-3-02	Soil / groundwater intrusive work – prior approval	On-site	7/27/2009	Implemented		



SS-23 (Building 20)
Inspection Report

LUC/IC Site

ROD Requirements – Institutional controls, in the form of land-use restrictions for industrial/ commercial use and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Interview Confirmation	General Site Condition
SS-23-01	Groundwater consumption – prior approval	Interview	9/1/09	Implemented	Frank Sanzone, GLDC, 9-1-09	Site is used for industrial purposes
SS-23-02	Land-use restriction – industrial / commercial / non-residential	Interview	9/1/09	Implemented		
SS-23-03	Land-use restriction – protect remedial operations	Interview	9/1/09	Implemented		
SS-23-04	Soil / groundwater intrusive work – prior approval	Interview	9/1/09	Implemented		



SS-24 (Fire Demonstration Area)
Inspection Report

LUC/IC Site

ROD Requirement – No further remedial action, with land-use restrictions for industrial land-use and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Interview Confirmation	General Site Condition
SS-24-01	Groundwater consumption – prior approval	Interview	8/24/09	Implemented	Vernon Gray, GIA, 8-24-09	Vacant field within the airfield.
SS-24-02	Groundwater well installation restriction	Interview	8/24/09	Implemented		
SS-24-03	Land-use restriction – protect remedial operations	Interview	8/24/09	Implemented		



SS-25 (Site T-9)
Inspection Report

LUC/IC Site

ROD Requirement – No further action for soils with land-use restrictions for industrial/ commercial use and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
SS-25-01	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented	Railroad through LUC/IC area. Monitoring wells installed for olive oil plant
SS-25-02	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented	
SS-25-03	Land-use restriction – industrial / commercial / non-residential	On-site	7/27/2009	Implemented	
SS-25-04	Soil/groundwater intrusive work – prior approval	On-site	7/27/2009	Implemented	



SS-44 (Electrical Power Substation)
Inspection Report

LUC/IC Site

ROD Requirement – Land-use restrictions for industrial use as a restricted access electrical substation and groundwater use restrictions.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Letter Confirmation	General Site Condition
SS-44-01	Groundwater consumption – prior approval	On-site	7/27/2009	Implemented	Dan Saunders, GUSC, 8-14-09	Power Substation
SS-44-02	Groundwater intrusive work – prior approval	On-site	7/27/2009	Implemented		
SS-44-03	Land-use restriction – protect remedial operations	On-site	7/27/2009	Implemented		
SS-44-04	Land-use restriction – electrical power substation	On-site	7/27/2009	Implemented		
SS-44-05	Land-use restriction – industrial/ commercial/ non-residential	On-site	7/27/2009	Implemented		
SS-44-06	5-Year Review	On-site	7/27/2009	Implemented		
SS-44-07	Annual inspection / reporting to the USEPA and NYSDEC	On-site	7/27/2009	Implemented		
SS-44-08	Subsurface soil relocation restriction	On-site	7/27/2009	Implemented		



LF-01 (Landfill 1)
Inspection Report

LTM Site with LUC/ICs

ROD Requirement – Implementation of institutional controls, groundwater LTM, maintenance of landfill cap, 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 ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
LF-01-01	Groundwater consumption-prior approval	On-site	7/17/2009	Implemented	Landfill 1 in good working condition. Remedy is currently protective of human health and the environment.
LF-01-02	Adverse aquifer use prohibited		7/17/2009	Implemented	
LF-01-03	Protect Closure / Post-Closure Activities		7/17/2009	Implemented	
LF-01-04	Groundwater intrusive work – prior approval		7/17/2009	Implemented	
LF-01-05	Land-use restriction-protect remedial operations		7/17/2009	Implemented	
LF-01-06	Landfill Fencing / Signage		7/17/2009	Implemented	
LF-01-07	Annual inspection / reporting to USEPA/ NYSDEC		7/17/2009	Implemented	
LF-01-08	5-Year Review		7/17/2009	Implemented	





LF-02 (Landfill 2/3)
Inspection Report

LTM Site with LUC/ICs

ROD Requirement – Implementation of institutional controls, groundwater LTM, maintenance of landfill cap, 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 ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
LF-02-01	Groundwater consumption-prior approval	On-site	7/17/2009	Implemented	Landfill 2/3 in good working condition. Remedy is currently protective of human health and the environment.
LF-02-02	Adverse aquifer use prohibited		7/17/2009	Implemented	
LF-02-03	Protect Closure / Post-Closure Activities		7/17/2009	Implemented	
LF-02-04	Groundwater intrusive work – prior approval		7/17/2009	Implemented	
LF-02-05	Land-use restriction-protect remedial operations		7/17/2009	Implemented	
LF-02-06	Landfill Fencing / Signage		7/17/2009	Implemented	
LF-02-07	Annual inspection / reporting to USEPA/NYSDEC		7/17/2009	Implemented	
LF-02-08	5-Year Review		7/17/2009	Implemented	





LF-03 (Landfill 7)
Inspection Report

LTM Site with LUC/ICs

ROD Requirement – Implementation of institutional controls, groundwater LTM, maintenance of landfill cap, 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 ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
LF-03-01	Groundwater consumption-prior approval	On-site	7/17/2009	Implemented	Landfill 7 in good working condition. Remedy is currently protective of human health and the environment. New fencing installed along LF7/ Perimeter Rd boundary in May 2009
LF-03-02	Adverse aquifer use prohibited		7/17/2009	Implemented	
LF-03-03	Protect Closure / Post-Closure Activities		7/17/2009	Implemented	
LF-03-04	Groundwater intrusive work – prior approval		7/17/2009	Implemented	
LF-03-05	Land-use restriction-protect remedial operations		7/17/2009	Implemented	
LF-03-06	Landfill Fencing / Signage		7/17/2009	Implemented	
LF-03-07	Annual inspection / reporting to USEPA/NYSDEC		7/17/2009	Implemented	
LF-03-08	5-Year Review		7/17/2009	Implemented	





LF-07 (Landfill 5)
Inspection Report

LTM Site with LUC/ICs

ROD Requirement – Implementation of institutional controls, groundwater LTM, maintenance of landfill cap, 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 ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
LF-07-01	Groundwater consumption-prior approval	On-site	7/17/2009	Implemented	Landfill 5 in good working condition. Remedy is currently protective of human health and the environment.
LF-07-02	Adverse aquifer use prohibited		7/17/2009	Implemented	
LF-07-03	Protect Closure / Post-Closure Activities		7/17/2009	Implemented	
LF-07-04	Groundwater intrusive work – prior approval		7/17/2009	Implemented	
LF-07-05	Land-use restriction-protect remedial operations		7/17/2009	Implemented	
LF-07-06	Landfill Fencing / Signage		7/17/2009	Implemented	
LF-07-07	Annual inspection / reporting to USEPA/NYSDEC		7/17/2009	Implemented	
LF-07-08	5-Year Review		7/17/2009	Implemented	



LF-09 (Landfill 6)
Inspection Report

LTM Site with LUC/ICs

ROD Requirement – Implementation of institutional controls, groundwater LTM, maintenance of landfill cap, 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 ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
LF-09-01	Groundwater consumption-prior approval	On-site	7/17/2009	Implemented	Landfill 6 in good working condition. Remedy is currently protective of human health and the environment.
LF-09-02	Adverse aquifer use prohibited		7/17/2009	Implemented	
LF-09-03	Protect Closure / Post-Closure Activities		7/17/2009	Implemented	
LF-09-04	Groundwater intrusive work – prior approval		7/17/2009	Implemented	
LF-09-05	Land-use restriction-protect remedial operations		7/17/2009	Implemented	
LF-09-06	Landfill Fencing / Signage		7/17/2009	Implemented	
LF-09-07	Annual inspection / reporting to USEPA/NYSDEC		7/17/2009	Implemented	
LF-09-08	5-Year Review		7/17/2009	Implemented	



SD-31 (Three Mile Creek)
Inspection Report

LTM Site with no LUC/ICs

ROD Requirement - Selected excavation of contaminated sediments and LTM.

LUC/IC ID	ROD Requirement	Method	Date	Confirmation	General Site Condition
No LUC/ICs at site	Selected excavation of contaminated sediments and LTM	On site	7/20/09	LTM, initiated in 2006, is ongoing annually. Excavation of contaminated sediments was conducted in 2005.	Creek, no recreational use on the on base portion of the creek. Results from the annual sampling are provided in the TMC section of the 5-Year Review.



SD-32 (Six Mile Creek)
Inspection Report

LTM Site with NO LUC/ICs

ROD Requirement - Source Control at sites potentially discharging to Six Mile Creek and LTM of Six Mile Creek, stated in the ROD.

LUC/IC ID	ROD Requirement	Method	Date	Confirmation	General Site Condition
No LUC/ICs at site	Source Control at sites potentially discharging into SMC and LTM of SMC	On site	7/20/09	LTM is ongoing annually. Annual site inspections of potential discharge site is also conducted	Creek, no recreational use on the on base portion of the creek. Fishing at SMC near the Barge Canal. Results from the annual sampling are provided in the SMC section of the 5-Year Review.





SD-52-01 (Apron 2)
Inspection Report

Ongoing Remedial Action Site with LUC/ICs

ROD Remedy – Institutional Controls and Long Term Monitoring.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Interview Confirmation	General Site Condition
SD-52APRON2-01	Soil/groundwater intrusive work – prior approval	On-site	7/27/2009	Implemented	Vernon Gray, GIA, 8-24-09	Area used for airport operations. LTM is ongoing.
SD-52APRON2-02	Groundwater well installation restriction		7/27/2009	Implemented		
SD-52APRON2-03	Land-use restriction-protect remedial operations		7/27/2009	Implemented		



SD-52-02 (Building 775)
Inspection Report

Ongoing Remedial Action Site with LUC/ICs

ROD Requirement – Groundwater extraction, treatment, and discharge as well as institutional controls and LTM.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
SS-38-01	Soil / groundwater intrusive work – prior approval	On-site	7/27/2009	Implemented	Site is used for commercial purposes
SS-38-02	Adverse aquifer use prohibited	On-site	7/27/2009	Implemented	
SS-38-03	Land-use restriction – protect remedial operations	On-site	7/27/2009	Implemented	



SD-52-04 (Landfill 6)
Inspection Report

Ongoing Remedial Action Site with LUC/ICs

ROD Requirement –Enhanced bioremediation, groundwater extraction and institutional controls with LTM.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	General Site Condition
SD-52LF6-01	Soil/groundwater intrusive work – prior approval	On-site	7/17/2009	Implemented	Open space Landfill 6 (TCE plume). Landfill 6 in good working condition. Remediation at site with LTM.
SD-52LF6-01	Groundwater well installation restriction		7/17/2009	Implemented	
SD-52LF6-01	Land-use restriction-protect remedial operations		7/17/2009	Implemented	



SD-52-05 (Building 817/WSA)
Inspection Report

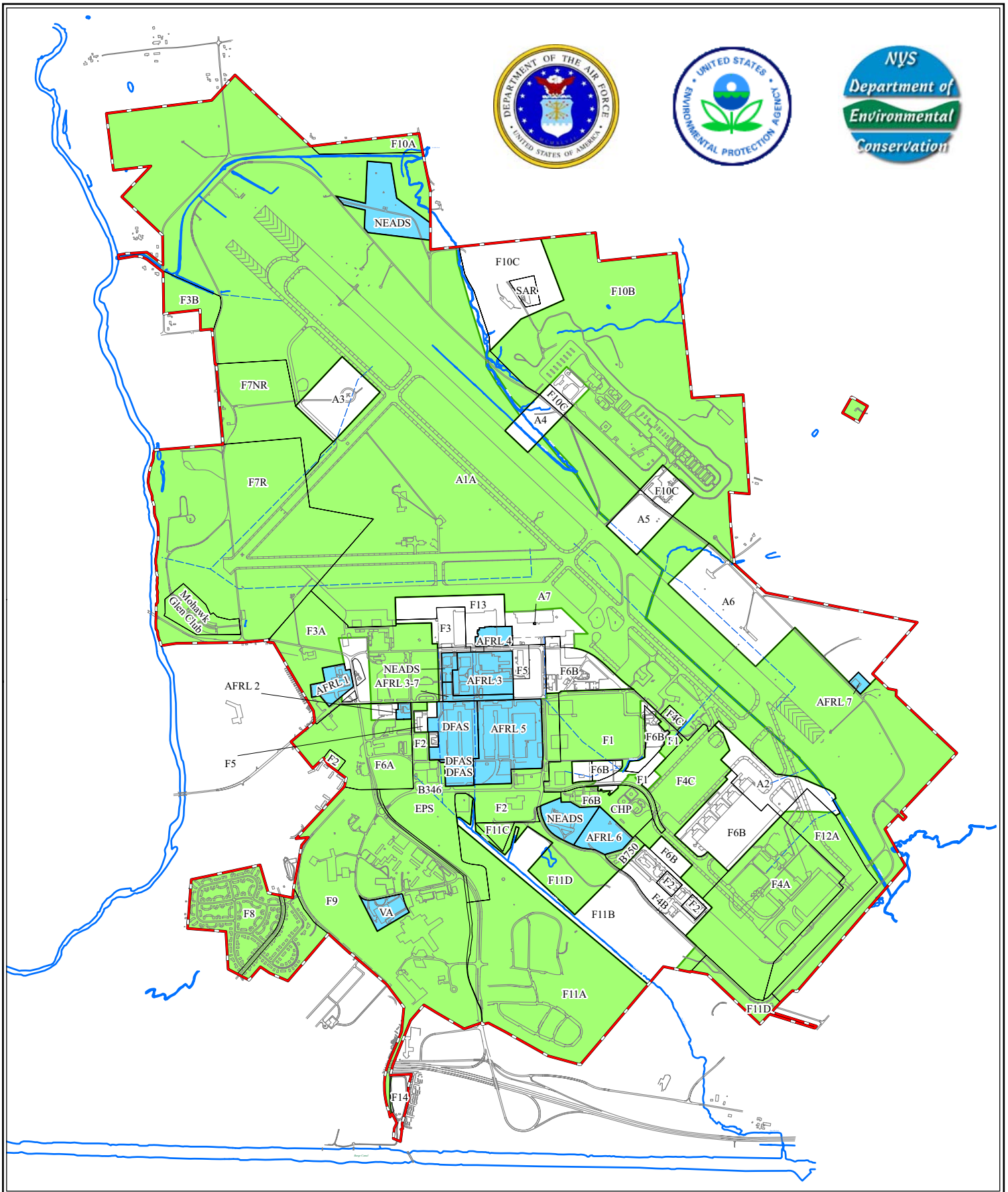
Ongoing Remedial Action Site with LUC/ICs

ROD Requirement –Enhanced bioremediation and institutional controls with LTM.

LUC/IC ID (tracking ID)	LUC/IC Type	Method	Date	Confirmation	Letter Confirmation	General Site Condition
SD-52B817-01	Soil/groundwater intrusive work – prior approval	On-site	7/27/2009	Implemented	Vernon Gray, GIA, 8-24-09	Area is used for airfield activities. Remediation and evaluation is ongoing.
SD-52B817-02	Groundwater well installation restriction	On-site	7/27/2009	Implemented		
SD-52B817-03	Land-use restriction-protect remedial operations	On-site	7/27/2009	Implemented		



Appendix B
CERCLA National Priorities List Deletion Figure





Base Location

Key to Features
- Base Boundary
- Culvert/Storm Drain
- Surface Water
- Delisted from NPL
- Remaining on NPL
- Government Retained Parcels (Delisting Not Requested)

National Priorities List
Partial Deletion

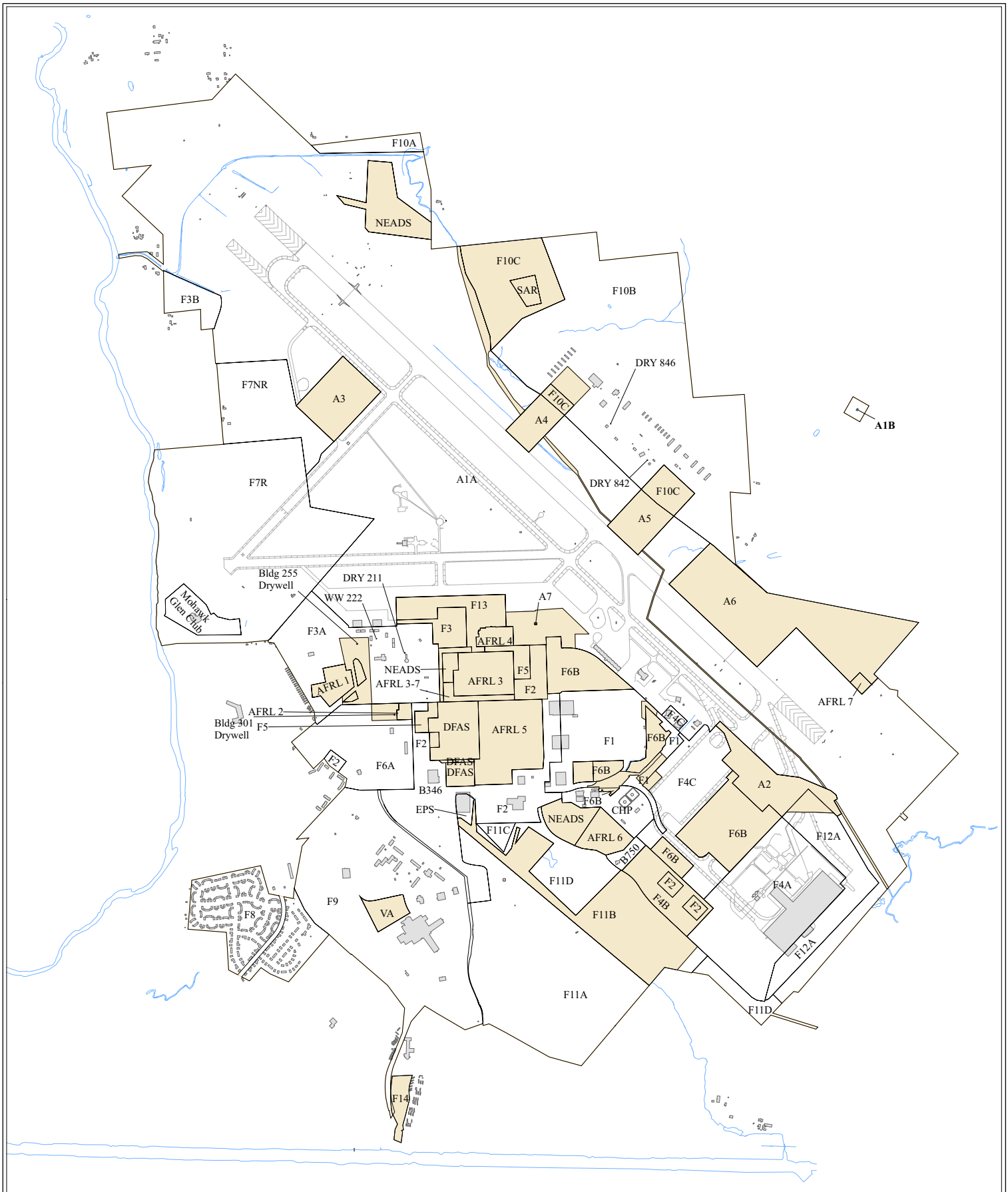
1,200 600 0 1,200 2,400
Feet

N

UNITED STATES AIR FORCE
GRIFFISS AIR FORCE BASE
ROME, NEW YORK

20 March 2009

FPM group





Base Location

Key to Features

Remaining on NPL

Deleted from NPL

NPL STATUS

1,200 600 0 1,200 2,400

Feet

UNITED STATES AIR FORCE
GRIFFISS AIR FORCE BASE
ROME, NEW YORK

March 20, 2009

FPM group

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