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**MEMORANDUM**

DATE: December 18, 2009

TO: See Distribution List

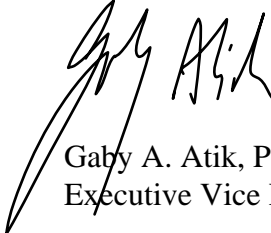
FROM: FPM Group

RE: Fall 2008 Annual Long-Term Monitoring Report  
Three Mile Creek Area of Concern (AOC)  
Former Griffiss Air Force Base, Rome, New York  
Contract No. F41624-03-D-8601-0027  
Revision 2.0  
December 2009

FPM Group, Ltd. (FPM) is pleased to re-submit two (2) copies of the above-referenced Fall 2008 Annual Long-Term Monitoring Report for Three Mile Creek Area of Concern (AOC) at the former Griffiss Air Force Base, Rome, New York. This revision includes the changes resulting from the comments received from the USEPA on August 19, 2009. The response to comments is also included.

If you have any questions or require additional information, please call me at 315-336-7721 ext. 202, or e-mail me at [g.atik@fpm-group.com](mailto:g.atik@fpm-group.com).

Very truly yours,



Gaby A. Atik, P.E.  
Executive Vice President

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**Fall 2008 Three Mile Creek LTM Report –  
Response to Comments  
Douglas Pocze, USEPA (August 19, 2009)**

**Comment 1. Introduction, 2nd PP: Please include reference to the fact that the AF performed dredging and wetland restoration at TMC as part of the selected remedy.**

**Response** - To address this comment, the paragraph will be revised as stated below.

“The Record of Decision (ROD) for TMC was signed in March 2004. The selected remedy for the AOC was select excavation of contaminated sediments and LTM (Ecology and Environment, Inc. [E&E], December 2003). The Air Force dredged and restored select sections of TMC in 2004 and 2005 as discussed in Section 3.3. The purpose of this report is to document LTM activities. The LTM program was implemented to monitor the presence/absence of contaminants of concern (COCs), assess the potential for COC migration and establish an early warning system for assuring compliance with potential COC receptors (human, terrestrial, and aquatic wildlife). The LTM program is conducted in accordance with provisions of the Basic Contract # F41624-03-D-8601 and Delivery Order (DO) # 0027.”

**Comment 2. Page 4-3, 3rd PP: Please elaborate as to how large were the exceedances of the four SVOCs at TMC-4.**

**Response** – The text has been revised to clarify the SVOC detections at TMC-4, as stated below.

“Four SVOC exceedances were reported at sampling location TMC-4. These SVOCs were benzo(a)anthracene at 350 F  $\mu\text{g}/\text{Kg}$  (most stringent ecological screening value is 261  $\mu\text{g}/\text{Kg}$ ), fluoranthene at 670 F  $\mu\text{g}/\text{Kg}$ , (most stringent ecological screening value is 600  $\mu\text{g}/\text{Kg}$ ) phenanthrene at 500 F  $\mu\text{g}/\text{Kg}$  (most stringent ecological screening value is 240  $\mu\text{g}/\text{Kg}$ ), and pyrene at 510 F  $\mu\text{g}/\text{Kg}$  (most stringent ecological screening value is 490  $\mu\text{g}/\text{Kg}$ ). The F data qualifier indicates that the analyte was positively identified above the method detection limit (MDL), but below the reporting limit (RL).”

**Comment 3. Page 4-3, 6th PP: Please include a short summary as to the historical values of the Aroclor 1260. The values ranged from 7.97  $\mu\text{g}/\text{Kg}$  to 433  $\mu\text{g}/\text{Kg}$ . How does this range compare to historical data?**

**Response** - A figure has been added to the report to show the PCB concentrations detected in all of the sampling rounds at each sampling location (Figure 4-1). A graph (Figure 4-2) was also added to the report to illustrate the PCB concentration trends at the site. The text will also be revised to clarify the PCB trends at the TMC AOC. The revised text is as follows:

“Arochlor 1260 was detected at a maximum concentration of 7,500  $\mu\text{g}/\text{Kg}$  in the 1993/4 RI and declined to a maximum concentration of 433  $\mu\text{g}/\text{Kg}$  in the Fall 2008 sampling

round. The maximum detection in the Fall 2007 round was 116 µg/Kg and 570 µg/Kg in the Fall 2006 round. This decline is not steady due to spatial variability during sample collection. However, the general trend is declining from the 1993/4 RI to the Fall 2008 results by an order of magnitude. The declining trend is illustrated in Figures 4-1 and 4-2.”

**Comment 4. Page 4-4, 1st PP. Please explain the sentence, "Fall 2008 PCB concentrations are similar to previous LTM results and lower than RI sampling results (sampling locations TMC-2 and -7)." Is this statement applicable for only the two sampling locations? If so, then what do the other samples indicate and does all the data support such a statement. Please clarify.**

**Response –** A declining trend in PCB concentrations has been identified at the entire AOC between the 1993/94 RI and the latest sampling round (Fall 2008). The maximum PCB concentration detected during the Fall 2008 round (433 µg/Kg) has decreased by over an order of magnitude since the 1993/94 RI (7,500 µg/Kg). The text has been revised to describe the PCB trends for the TMC AOC, please refer to the response to Comment #3 for the revised text. A PCB trend chart (Figure 4-2) was added to report to illustrate the declining PCB trend for each sampling location.

**Comment 5. Page 4-4, 1st PP. Please note while some sampling results may be one order of magnitude greater than previous results, others are greater and this was not highlighted or reported.**

**Response –** Significant variation was reported in the PCB results for sediment samples over the 2006 – 2008 timeframe at sampling locations TMC-1, -3, and -6. This variation resulted in intermittent PCB detections and non-detect results, which explains the difference greater than one order of magnitude. This variation is likely caused by spatial variability during sample collection. The text will be revised to clarify the PCB concentration trends, please refer to the response to Comment #3 for the revised text.

## **Recommendations**

**Comment - At this point in time, I do not recommend changing (i.e., reducing) the sampling analysis. The current analysis should be used for one more sampling event which would be next year (since sediment and surface water analyses are performed annually). Next year, in addition to sediment and surface water samples, fish tissue and benthic analyses will be performed. Also, the 5-Year Review should be completed. After reviewing all the information due next year, I would then recommend making such changes to the sampling program.**

**Response –** The recommendation is accepted. No sampling location and analysis reduction will be proposed until after the Fall 2009 sampling round. Following the 2009 sampling round, the sampling network and analytical list will be evaluated and optimized.

**Three Mile Creek Area of Concern  
Long-Term Monitoring Program  
Former Griffiss Air Force Base  
Rome, New York**

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**FALL 2008  
ANNUAL  
LONG TERM MONITORING  
REPORT**



**Prepared by:**

**FPM Group, Ltd.  
153 Brooks Road  
Rome, NY 13441**

**Contract No. F41624-03-D-8601  
Delivery Order: 0027**

**Revision 2.0  
December 2009**

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**FPM**group

**FALL 2008  
ANNUAL  
LONG-TERM MONITORING  
REPORT**

**Prepared for:**

**Three Mile Creek Area of Concern  
Long-Term Monitoring Program  
Former Griffiss Air Force Base  
Rome, New York**

**through**

**The Air Force Center for Engineering and the Environment  
3300 Sidney Brooks  
Brooks City-Base, TX 78235**

**Prepared by:**

**FPM Group, Ltd.  
153 Brooks Road  
Rome, NY 13441**

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**APPENDICES**

(Appendix B, C, D, and E are provided on CD)

<b>Appendix A</b>	Surface Water and Sediment LTM Results
<b>Appendix B</b>	Daily Chemical Quality Control Reports
<b>Appendix C</b>	Validated Lab Data
<b>Appendix D</b>	Raw Lab Data
<b>Appendix E</b>	Potentially Impacting Site Results and Maps

## LIST OF ACRONYMS AND ABBREVIATIONS

<b>AFB</b>	Air Force Base
<b>AFCEE</b>	Air Force Center for Engineering and the Environment
<b>AOC</b>	Area of Concern
<b>ARAR</b>	Applicable or Relevant and Appropriate Requirements
<b>bgs</b>	below ground surface
<b>COC</b>	contaminant of concern
<b>DDE</b>	1,1-dichloro-2,2-bis(chlorophenyl) ethylene
<b>DO</b>	Delivery Order
<b>E&amp;E</b>	Ecology and Environment, Inc.
<b>EPA</b>	Environmental Protection Agency
<b>FPM</b>	FPM Group, Ltd.
<b>FS</b>	Feasibility Study
<b>FSP</b>	Field Sampling Plan
<b>ft</b>	feet
<b>HSP</b>	Health and Safety Plan
<b>LAW</b>	Law Engineering and Environmental Services, Inc.
<b>LTM</b>	long-term monitoring
<b>MDL</b>	method detection limit
<b>MSL</b>	mean sea level
<b>µg/Kg</b>	micrograms per kilogram
<b>µg/L</b>	micrograms per liter
<b>NYS</b>	New York State
<b>NYSBC</b>	New York State Barge Canal
<b>NYSDEC</b>	New York State Department of Environmental Conservation
<b>NYSDOH</b>	New York State Department of Health
<b>PAH</b>	polynuclear aromatic hydrocarbon
<b>PCB</b>	polychlorinated biphenyl
<b>PISCES</b>	passive in-situ chemical extraction sample
<b>QA/QC</b>	quality assurance/quality control
<b>QAPP</b>	Quality Assurance Project Plan

**LIST OF ACRONYMS AND ABBREVIATIONS (continued)**

<b>RA</b>	Remedial Action
<b>RI</b>	Remedial Investigation
<b>RL</b>	reporting limit
<b>SAP</b>	Sampling and Analysis Plan
<b>SCG</b>	Standards, Criteria, and Guidelines
<b>SI</b>	Supplemental Investigation
<b>SMC</b>	Six Mile Creek
<b>SVOC</b>	semivolatile organic compound
<b>TMC</b>	Three Mile Creek
<b>USACE</b>	United States Army Corps of Engineers
<b>USFWS</b>	United States Fish and Wildlife Service
<b>VOC</b>	volatile organic compound
<b>WP</b>	Work Plan

## **1 INTRODUCTION**

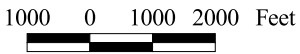
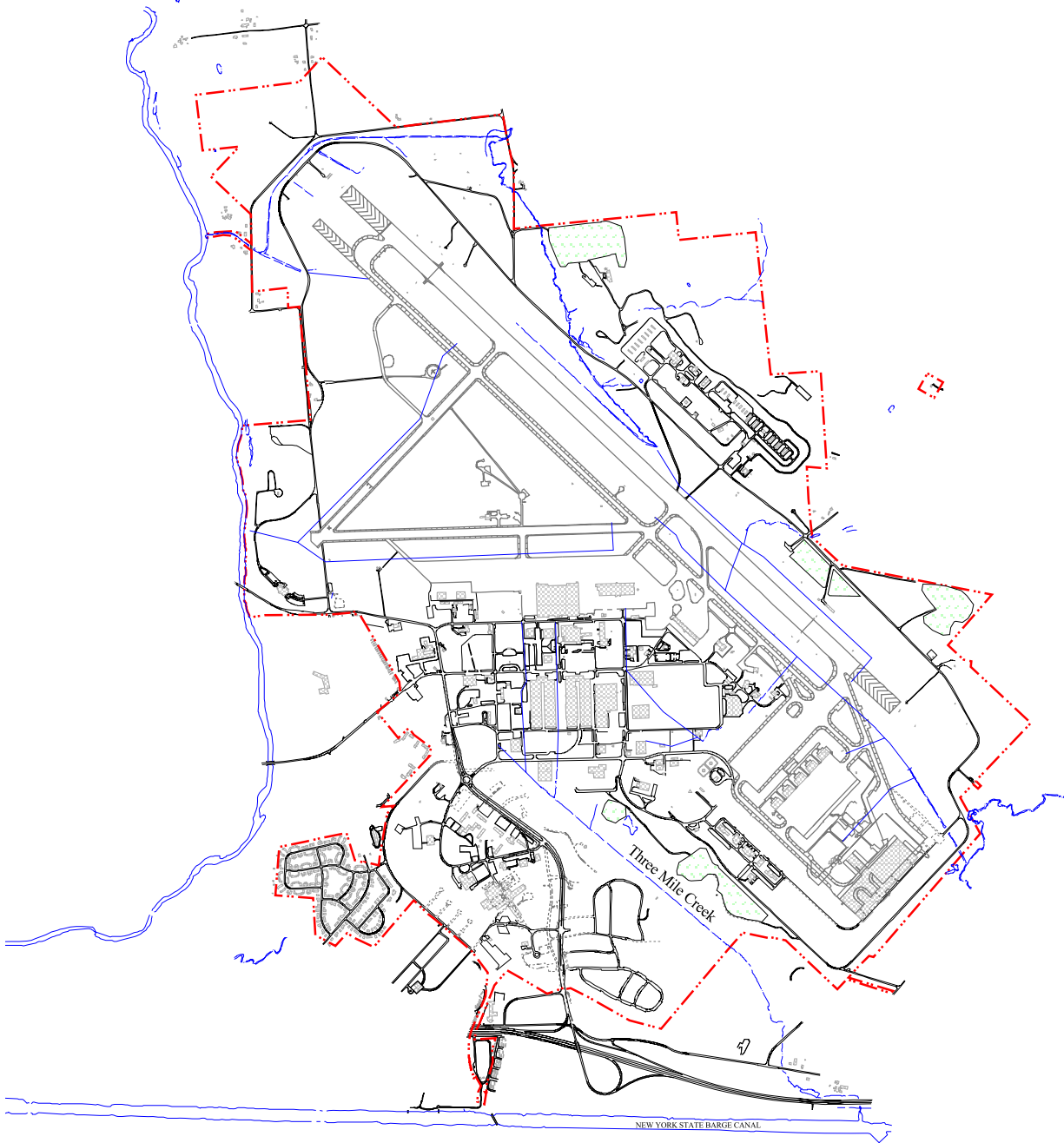
### **1.1 Description of Intent**

FPM Group, Ltd. (FPM), under contract with the Air Force Center for Engineering and the Environment (AFCEE), is conducting a long-term monitoring (LTM) program for sediment, surface water, fish tissue, and qualitative benthic macroinvertebrate community analysis at the Three Mile Creek (TMC) Area of Concern (AOC) at the former Griffiss Air Force Base (AFB), Rome, New York. Please refer to Figure 1-1 for the TMC AOC location.

The Record of Decision (ROD) for TMC was signed in March 2004. The selected remedy for the AOC was select excavation of contaminated sediments and LTM (Ecology and Environment, Inc. [E&E], December 2003). The Air Force dredged and restored select sections of TMC in 2004 and 2005 as discussed in Section 3.3. This document's purpose is to report the LTM program part of the selected remedy. The LTM program was implemented to monitor the presence/absence of contaminants of concern (COCs), assess the potential for COC migration and establish an early warning system for assuring compliance with potential COC receptors (human, terrestrial, and aquatic wildlife). The LTM program is conducted in accordance with provisions of the Basic Contract # F41624-03-D-8601 and Delivery Order (DO) # 0027.

Sediment, surface water, and fish tissue samples, as appropriate, were collected in October 2006 and analyzed for their respective COCs as identified during previous investigations. Qualitative benthic macroinvertebrate community analysis was performed at all fish sampling locations. Both the data collected in this sampling round and previous data were utilized for the overall performance evaluation. The results from the Fall 2006 sampling round functioned as a baseline for subsequent sampling rounds. In the Fall 2007 and Fall 2008 sampling rounds, only sediment and surface water samples were collected.

The sampling is being performed in accordance with the following documents: the final LTM Work Plan (WP) for the Three Mile Creek and Six Mile Creek AOCs (FPM, October 2004), Basewide Health and Safety Plan (HSP) (FPM, December 2003), and Basewide Field Sampling Plan (FSP) (FPM, March 2005). Reference is also made to the AFCEE Quality Assurance Project Plan (QAPP), Version 3.1 (AFCEE, August 2001) or later, with project-specific United States Army Corps of Engineers (USACE)-approved variances.



**Legend**

- Landfills
- AF Boundary
- Streams/Creeks
- Storm Drain
- Airfield
- Road Existing
- Road Removed
- Facilities Existing
- Facilities Demolished

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



**Figure 1-1  
Three Mile Creek Site Location Map**

## **2 ENVIRONMENTAL SETTING**

### **2.1 Physiography and Topography**

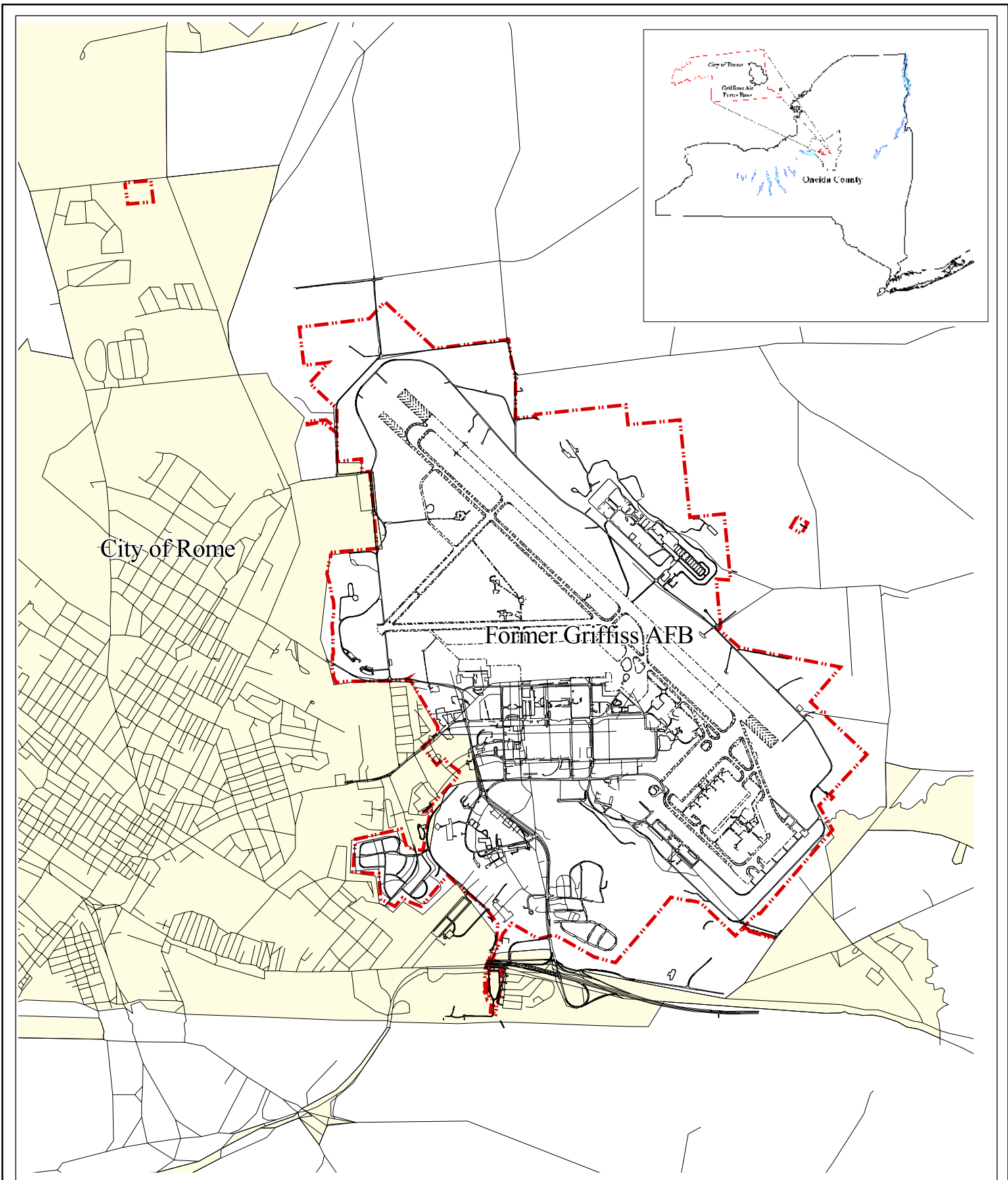
The former Griffiss AFB is located in the city of Rome in Oneida County, New York (refer to Figure 2-1). The former Base lies within the Mohawk Valley between the Appalachian plateau and the Adirondack Mountains. A rolling plateau northeast of the former Base reaches an elevation of 1300 feet (ft) above mean sea level (MSL). The New York State Barge Canal (NYSBC) and the Mohawk River valley south of the former Base lie below 430 ft MSL. The topography across the former Base is relatively flat with elevations ranging from 435 ft MSL in the southwest portion to 595 ft MSL in the northwest portion of the former Base.

### **2.2 Geology**

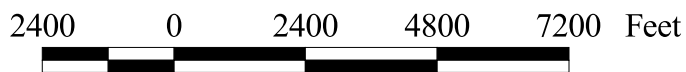
Unconsolidated sediments at the Griffiss AFB consist primarily of glacial till with minor quantities of clay and sand and significant quantities of silt and gravel. The thickness of these sediments ranges from 0 ft in the northeast portion to more than 130 ft in the southern portion of the former Base. The average thickness of the unconsolidated sediments is 25 to 50 ft in the central portion and 100 to 130 ft in the south and southwest portions of the former Base. The bedrock beneath the former AFB generally dips from the northeast to the southwest and consists of the black Utica Shale. It is a gray and black carbonaceous unit with a high/ medium organic content (Law Engineering and Environmental Services, Inc. [LAW], December 1996). More details on the geologic features were discussed in Sections 3 and 4 of the AOC LTM Baseline Study (FPM, July 2000).

### **2.3 Hydrogeology**

The shallow water table aquifer lies within the unconsolidated sediments, where depth to groundwater ranged from 0 ft below ground surface (bgs) in the southwest portion to 63 ft bgs in the northeast portion of the former Base during the December 1998 synoptic Base-wide water-level measurement of wells (FPM, July 2000). Groundwater across the former Base generally flows from the northeast to the southwest. Several creeks, drainage culverts, and sewers (mostly acting as drains for shallow groundwater), intercept surface water runoff. A comprehensive description of regional and local geology, hydrogeology, and lithology for the former Griffiss AFB was given in Section 4 of the AOC LTM Baseline Study (FPM, July 2000), and in the Remedial Investigation (RI) by Law (LAW, December 1996), and in the Supplemental Investigation (SI) prepared by E&E (E&E, November 1998).



**Figure 2-1**  
**Base Location Map**



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



## **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 annual 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 (LAW, December 1996).

## **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 (New York Natural Heritage Program, January 1994). There are five special-concern habitats identified by the Inventory that are adjacent to or within the confines of AOCs at the former Base. These special-concern habitats include: (1) a white-cedar-dominated rich sloping fen adjacent to the SMC floodplain, (2) a hemlock-hardwood swamp located in a mature forest occurring hydraulically upgradient of Landfill 1 (Ammo Storage Area); (3) a rich graminoid fen adjacent to the southeast corner of the runway, situated on top of the buried section of SMC; (4) a pitch pine-scarlet oak woods northwest of the point where TMC leave the base boundary; and (5) a hemlock-hardwood swamp of several acres at the southern end of TMC. These last two are in the vicinity of the TMC AOC. The pitch pine-scarlet oak woods site is located several hundred feet from TMC and it is therefore not affected by any TMC sampling activity. TMC traverses the hemlock-hardwood swamp at the southern part of its stretch. LTM activities will strictly be performed in TMC or its banks and only designated access roads will be used. No permanent disturbance of the hemlock-hardwood special-concern habitat is expected.

Although no plant or animal species at the former Base have been considered threatened or endangered by the U.S. Department of the Interior, some species listed on the NYS Threatened Species List have been identified, with habitats relevant to the AOCs at the former Base. None of these species have been reported in areas that influence or are near TMC.



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### **3 THREE MILE CREEK AOC**

#### **3.1 Site Location and History**

The TMC AOC is located in a forested area in the southern part of the former Griffiss AFB. It is bordered by the Electrical Power Substation on the northwest side, Landfills 5 and 6 on the northeast side, and the former Skyline housing development on the southwest side (Figure 3-1).

The TMC AOC is a creek with an approximately 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 (NYS) Barge Canal). The creek originates at two stormwater culvert outlets located at Ellsworth Road (near the Electrical Power Substation). Two additional smaller culverts that drain the area surrounding the Electrical Power Substation enter the creek slightly downstream from the two larger culverts.

#### **3.2 Hydrogeological Setting**

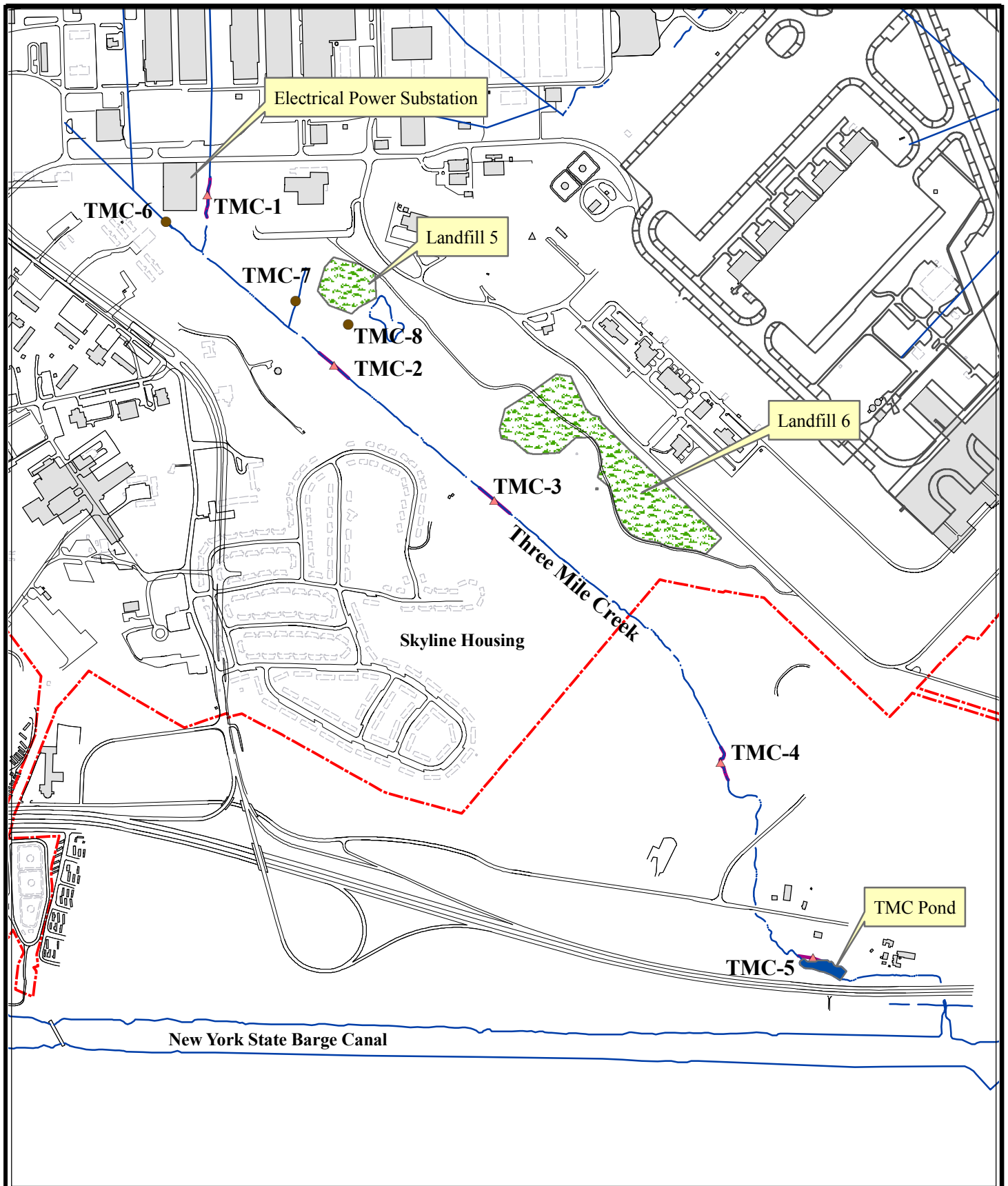
The TMC AOC is located in the southern part of the former Griffiss AFB. The topography is generally sloping towards the southeast. The creek receives greatly varying amounts of surface water runoff, both via the culverts as well as the watershed. The creek also receives more stable amounts of groundwater inflow from the culverts and along its stretch.

The creek receives both surface water runoff and groundwater from the surrounding watershed. Drainage is received from Landfills 5, and 6, the Electric Power Substation, and the south central portion of the Base including former floor drains, roads, and parking lots. TMC flows in a southeasterly direction and eventually flows into the NYS Barge Canal (about one mile south of the former Base).

#### **3.3 Summary of Previous Investigations**

Preliminary studies of TMC were performed in 1981, 1987, and 1988. Soil, sediment, surface water, groundwater, and fish tissue samples were collected. Numerous metals, polynuclear aromatic hydrocarbon (PAHs), polychlorinated biphenyls (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 Remedial Investigation (RI) from 1993 through 1995.

The RI was performed to characterize the nature and extent of environmental contamination at the TMC 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



<p>Site Location</p>	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li>Demolished Building</li> <li>Existing Building</li> <li>Landfill</li> <li>Surface Water/Sediment Sample Location</li> <li>Surface Water/Sediment/Fish/Benthic Sample Location</li> <li>Surface Water</li> <li>Airfield/Road</li> <li>Air Force Boundary</li> <li>Fish Sampling Stretch</li> </ul> <p>Scale: 310 155 0 310 620 Feet</p> <p>North Arrow</p>	<p>UNITED STATES AIR FORCE FORMER GRIFFISS AIR FORCE BASE ROME, NEW YORK</p> <p><b>Figure 3-1 Three Mile Creek Site Layout Map</b></p> <p>FPM group</p> <p>Page 3-2</p>
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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 Electrical Power Substation, one near Landfill 5, one near the Thor Street residential area, 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 New York State Department of Environmental Conservation (NYSDEC) ecological risk guidelines for protection of piscivorous wildlife.

Surface water samples were collected from 12 locations along TMC 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 TMC 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 TMC 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 TMC. 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 TMC 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 TMC 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 1260, and five metals detected in sediment were above the most stringent criteria.

A visual inspection of the habitat quality of TMC was conducted in 1999, by the Air Force, United States Army Corps of Engineers (USACE), NYSDEC, United States Environmental Protection Agency (EPA), 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 TMC feasibility study (FS), sediment samples were collected from six locations in TMC 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 TMC 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).

Cape Inc. performed a Remedial Action (RA) at TMC 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 TMC. The TMC pond along with sixteen soil deposits was excavated to a depth of 3.5 ft bgs in the off-base portion of TMC. Approximately 5,940 cubic yards of sediment was excavated from the off-base portion of TMC. The main channel, north channel, and Landfill 5 tributary were excavated in the on-base portion of TMC. The design depths for the excavation ranged from 2.5 ft bgs to 4 ft bgs and approximately 29,427 cubic yards were excavated. FPM collected two soil samples on June 29, 2005 from the TMC pond backfill, which were analyzed for VOCs, SVOCs, PCBs, pesticides, and metals. The results indicated VOCs and metals detections, none of which exceeded NYS standards, as shown in Table 3-1.

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.

**Table 3-1**  
**Three Mile Creek Pond Backfill Soil Samples**

Sample ID	Most Stringent Ecological Screening Value	TMCBF0101AA	TMCBF0201AA
Date of Collection		6/29/2005	6/29/2005
<b>VOCs (µg/Kg)</b>			
acetone	--	5.4 F	3.8 F
methylene chloride	--	6.2	9.2
<b>Metals (mg/Kg)</b>			
aluminum	--	2590	2240
arsenic	6	1.5 F	1.2 F
barium	--	7.2	6.7
beryllium	--	0.11 F	0.092 F
cadmium	5	U	0.082 F
calcium	--	788	542
chromium	26	2.6	2.2
cobalt	--	2.1	1.8
copper	16	6.1	5.3
iron	20,000	5370	4680
lead	31	1.3 F	1.1 F
magnesium	--	1160	977
manganese	460	196	168
nickel	16	4.7	4.1
potassium	--	462	415
thallium	--	U	0.66 F
vanadium	--	4	3.5
zinc	120	10.8	9.9

Notes:

F = The analyte was positively identified above the MDL, however the concentration was below the RL.

U = The analyte was analyzed for, but not detected.

### 3.4 Three Mile Creek LTM Plan

The LTM program for TMC was implemented after RA completion and site restoration at Three Mile Creek and after all RAs at sites potentially influencing TMC have been completed. The LTM sampling is performed during the late summer/early fall (August/October). At that time of the year, the fat content of the fish tissue is the highest and consequently the highest concentration of lipophilic contaminants can be expected to have accumulated in fish tissue. During the initial sampling round (Fall 2006), baseline information for sediment, surface water

and fish tissue contaminants was collected. A qualitative benthic macroinvertebrate community analysis was also performed at each fish sample location.

LTM Need - Exceedances were reported for VOCs, SVOCs, metals, pesticides, PCBs, and dioxins in sediment samples in the FS (E&E, January 1998) and the Final FS Addendum (E&E, July 2002). Fish tissue was reported to contain significant levels of metals, pesticides and PCBs. Table 3-2 summarizes the LTM sampling rationale for the TMC AOC. Sediment and surface water samples are collected annually and fish tissue samples are collected every three years.

**Table 3-2**  
**Three Mile Creek LTM Field Activities Rationale**

Matrix	Analysis	Frequency	Rationale
Sediment/ Surface water	VOCs, SVOCs, metals, pesticides/ PCBs.	Annually <sup>1</sup>	Monitoring of the effectiveness of the RAs on potential source sites. Frequency based on relatively low flow regime and limited sediment transport.
Fish tissue	Pesticides/PCBs, cadmium and mercury, % lipid.	Every three years <sup>2</sup>	Monitoring of fish for pesticides/PCBs, and cadmium and mercury is proposed to identify potential bioaccumulation of contaminants of concern.
Benthic Invertebrate Organisms (Qualitative)	According to Bode et al. (September 1990) and Bode et al. (June 2002).	Every three years <sup>2</sup>	The quality of the benthic macroinvertebrate community in TMC will be evaluated applying NYSDEC approved protocols.

Notes:

<sup>1</sup> An annual frequency for sediment sampling is commensurate with the rate at which changes in sediment quality are expected; that is, given that the sources of contamination are remediated. Frequent changes in sediment quality are not expected. Surface water samples are planned for collection at the same rate as sediments.

<sup>2</sup> A three year frequency for fish tissue (or benthic macroinvertebrate organisms) analysis and qualitative benthic macroinvertebrate community evaluation is commensurate with recommendations from NYSDEC personnel. Sampling will commence the year after the remedial activities have been completed and preferable within the August-October timeframe.

LTM Objectives – Sampling of sediment, surface water, and fish tissue in TMC is recommended to achieve the following objectives:

- Establish first round sediment concentrations in the sampling round performed in the year following the completion of all RAs;
- Monitor and confirm the effectiveness of the RAs that have been or will have been

performed at potential sources of contamination (Landfill 5, and 6, and the Electrical Power Substation) and TMC itself; and

- Monitor the potential influx of contaminants from potential sources of contamination (i.e., early warning system).

LTM Extent – The focus of the sediment sampling is on detecting changes in the sediment quality through the potential influx of contamination from upstream sources and potential sources of contamination that have been remediated. Sediment surface samples are collected from 0 to 6 inches below top of sediment in order to monitor any influx of contamination effectively. To demonstrate the absence of COCs, annual monitoring for VOCs, SVOCs, metals, and pesticides/PCBs was initially recommended for both sediment and surface water (see Table 3-2). The annual sampling results was initially compared to the most stringent criterion or guidance value as described in Table 2-3b of the Final FS Addendum (E&E, July 2002) and to previous sampling results.

The eight sediment and surface water sampling locations (Figure 3-1) were chosen in consideration of results from previous investigations and following discussions with NYSDEC and EPA personnel. During sediment sampling, sediment deposition locations in the vicinity of the proposed locations were targeted for sample collection. Surface water samples are collected from the same location before the sediment samples are taken.

Fish tissue collection is performed in accordance with NYSDEC Guidelines (NYSDEC, October 2002). Tissue samples are collected at five of the eight sediment and surface water sampling locations to identify potential tissue contamination and potential accumulation of COCs. Electrofishing is the preferred method of fish collection from the 100-meter stretches of the creek as indicated in Figure 3-1. All fish are collected, sorted, measured, and weighted. Forty gram fish samples are collected as requested by the laboratory for all analyses combined. Qualitative benthic macroinvertebrate community analysis is also performed every three years at all five fish sample locations according to the protocols described in Bode et al., September 1990 and Bode et al., June 2002.

Fish samples are being collected every three years until the results of two subsequent rounds of sampling do not exceed the calculated NYSDOH and EPA Guidance Values for human health or the ecological risk level for piscivorous wildlife. For ecological evaluation, a bottom feeder (White sucker [*Catostomus commersoni*]) and an omnivorous species (Creek chub [*Semolilus atromaculatus*]) are targeted. For human health evaluation, a bottom feeder (white sucker) and a different predatory species (Trout [*Trutta sp.*]) are targeted.

The fish samples are analyzed for pesticides, PCBs, cadmium, mercury, and % lipid as described in Table 3-2. The samples are analyzed by the current laboratory under contract: Life Science Laboratories, Inc (Syracuse, NY). The sampling locations and analyses are tabulated in Table 3-3 and shown in Figure 3-1. The northings and eastings of the sampling locations are provided



in Table 3-4.

LTM Re-evaluation Criteria – The LTM plan will be re-evaluated every three years to assess the creek conditions. Proposed re-evaluation procedures follow:

- The sediment and surface water results from subsequent sampling events will be compared to baseline results established during the first sampling round and all Applicable or Relevant and Appropriate Requirements (ARAR), Standards, Criteria, and Guidelines (SCGs), and remedial action goals. These annual results serve as general guidelines for changes in sediment quality as a result of releases to TMC. If the concentrations show an increasing trend, the Air Force, in consultation with the EPA and NYSDEC, will evaluate modifying the LTM network to identify potential causes of concentration increases,
- If, after consultation with the regulatory agencies, the monitoring results indicate that the goals of the program are not being attained, modifications to the remedy will be evaluated, and
- Alterations to the frequency and duration of the LTM plan may be sought by the Air Force at any time. In general, the basis for such requests is explained in the paragraph below.

Acceptable Limits on Decisions – Decisions will be made based on data collected in accordance with the FSP associated with this LTM WP (FPM, December 2003) and analyzed by the laboratory in accordance with the AFCEE QAPP (including associated USACE project-specific variances). The data will then be reviewed and validated based on an evaluation of the results in relation to the AFCEE QAPP (Version 4.0) in conjunction with the EPA National Functional Guidelines. The AFCEE QAPP specifies accuracy and precision objectives while the EPA National Functional Guidelines provides general data usability guidance.

The decision to discontinue sampling will be evaluated during three-year reviews provided that the following objectives are met:

- A) All the RAs planned for sites that potentially impact TMC have been completed,
- B) Levels of contaminants in fish meet values for protection of fish and wildlife and no fish advisories are in place, and
- C) Concentrations in the sediment have stabilized at:
  - levels below the NYS Guidance Values as described in Table 2-3b of the FS Addendum (E&E, July 2002); or
  - levels indicative of background conditions; or
  - other levels accepted/approved by NYSDEC and EPA.

**Table 3-3**  
**Three Mile Creek Sampling Locations and Analyses**

Location Number	Location within Three Mile Creek	Detailed Location Description	Sample Matrix	No. of samples per location	Analyses performed per sample	Total No. of Analyses
1	Northern end of the northern fork of TMC (Three Mile Creek).	Appr. 100 ft south of the culvert on Ellsworth Road.	Sediment	1	Full suite <sup>1</sup>	5
			Surface water	1	Full suite <sup>1</sup>	5
			Fish Tissue	10 <sup>2</sup>	Fish suite <sup>3</sup>	40
2	Downstream of the Landfill 5 tributary.	Appr. 500 ft downstream of the Landfill 5 tributary in TMC.	Sediment	1	Full suite <sup>1</sup>	5
			Surface water	1	Full suite <sup>1</sup>	5
			Fish Tissue	10 <sup>2</sup>	Fish suite <sup>3</sup>	40
3	Downstream of Landfill 5.	Appr. 1500 ft upstream of the base boundary in TMC.	Sediment	1	Full suite <sup>1</sup>	5
			Surface water	1	Full suite <sup>1</sup>	5
			Fish Tissue	10 <sup>2</sup>	Fish suite <sup>3</sup>	40
4	Downstream of Base boundary.	Appr. 1500 ft downstream of the Base boundary in TMC.	Sediment	1	Full suite <sup>1</sup>	5
			Surface water	1	Full suite <sup>1</sup>	5
			Fish Tissue	10 <sup>2</sup>	Fish suite <sup>3</sup>	40
5	In the Three Mile Creek Pond.	Pond between Route 365 and Route 49.	Surface water	1	Full suite <sup>1</sup>	5
			Surface water	1	Full suite <sup>1</sup>	2
			Fish Tissue	10 <sup>2</sup>	Fish suite <sup>3</sup>	40

Notes:

<sup>1</sup> Full suite of analyses includes VOCs (SW 8260), SVOCs (SW 8270), metals (SW 6010B), pesticides (SW 8081) and PCBs (SW 8082).

<sup>2</sup> Fish samples will be collected from the largest specimens available. A combined number of ten samples will be collected from both the bottom feeder and predatory species, depending on availability. Fillet samples (5) analysis results are used for human evaluation. The offal samples (5) from the filleted fish are also analyzed so that results can be mathematically combined and used for ecological evaluation. If no fillets are available, 5 'whole fish' (beheaded and eviscerated) will be collected and its offal will be analyzed separately. If no fillets or whole fish are available, 10 composite samples will be collected.

<sup>3</sup> Fish suite of analyses includes pesticides/PCBs (SW8540C), cadmium and mercury (SW 6010B/ SW7470) and % lipid.

**Table 3-3 (cont'd.)**  
**Three Mile Creek Sampling Locations and Analyses**

Location Number	Location within Three Mile Creek	Detailed Location Description	Sample Matrix	No. of samples per location	Analyses performed per sample	Total No. of Analyses
6	On the northern side of the southern fork of TMC.	Appr. 30 ft south of the culvert of Wright Drive.	Sediment	1	Full suite <sup>1</sup>	5
			Surface water	1	Full suite <sup>1</sup>	5
7	In Landfill 5 tributary.	Appr. 200 ft upstream of the confluence of the Landfill 5 tributary and TMC.	Sediment	1	Full suite <sup>1</sup>	5
			Surface water	1	Full suite <sup>1</sup>	5
8	In the wetland downgradient of Landfill 5.	The wetland adjacent to TMC (south of Landfill 5).	Sediment	1	Full suite <sup>1</sup>	5
			Surface water	1	Full suite <sup>1</sup>	5

Notes:

<sup>1</sup> Full suite of analyses includes VOCs (SW 8260), SVOCs (SW 8270), metals (SW 6010B), pesticides (SW 8081) and PCBs (SW 8082).

**Table 3-4**  
**Three Mile Creek Sampling Locations**  
**Longitude and Latitude**

Sample Location ID	Longitude (degrees, minutes, second)	Latitude (degrees, minutes, second)
1	75° 24' 42"	43° 13' 02"
2	75° 24' 29"	43° 12' 50"
3	75° 24' 13"	43° 12' 39"
4	75° 23' 50"	43° 12' 20"
5	75° 23' 41"	43° 12' 05"
6	75° 24' 46"	43° 13' 01"
7	75° 24' 33"	43° 12' 55"
8	75° 24' 28"	43° 12' 53"

Recommendations for LTM Optimization will be made after at least two sampling rounds have been completed (i.e. after two years for sediment and surface water and after six years for fish tissue and macroinvertebrates). Any change in the number of LTM sampling locations, the analyses performed at these sampling locations or sampling frequency will be subject to EPA and NYSDEC approval.

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## **4 LTM SAMPLING ROUNDS**

In Fall 2006, LTM sampling was initiated at the TMC AOC. The LTM events consisted of annual sediment/ surface water sampling and triennial fish sampling (every third year; starting in Fall 2006). In conjunction with the fish sampling, a qualitative benthic macroinvertebrate community evaluation was also performed on a triennial basis.

The following sections provide the Fall 2008 LTM results. It should be noted that only surface water and sediment sampling were conducted as part of the most recent sampling round. Detailed information pertaining to the Fall 2006 and Fall 2007 sampling events are provided in the Fall 2006 Annual LTM Report for the Three Mile Creek AOC (FPM, October 2007) and in the Fall 2007 Annual LTM Report for the Three Mile Creek AOC (FPM, October 2008), respectively.

Sampling locations at this site were sampled according to the above-mentioned LTM sampling plan.

### **4.1 Fall 2008 Sampling**

#### **4.1.1 Field Activities**

The TMC LTM is performed to determine the impacts of other sites on TMC as well as the effectiveness of the RA performed in 2004 and 2005. All sediment and surface water sampling locations were sampled in October 2008 in accordance with the Final LTM work plan requirements (FPM, October 2004). Sediments and surface water were collected on October 27th, 2008. Sampling locations TMC-1, -4, and -5 were re-sampled on November 11, 2008 for sediment PCB analysis. Surface water and sediment results are provided in Appendix A and Daily CQCRs are attached in Appendix B.

#### **4.1.2 Surface Water Results**

The Fall 2008 surface water sampling results, provided in Appendix A, were compared to the previous LTM surface water sampling results and the 1993/4 RI (if applicable). The validated lab results are attached in Appendix C and the raw lab data are attached in Appendix D.

VOCs were detected at sampling locations TMC-1, -2, -3, -4, and -8. None of the VOC detections exceeded the NYS Surface Water Standards. Previous LTM sampling and RI results also show no VOC exceedances.

SVOCs exceedances were reported at sampling locations TMC-1, -6, -7, and -8. Bis(2-ethylhexyl) phthalate exceeded the NYS Surface Water Standard of 0.6 µg/L at all four sampling locations. Concentrations ranged from 0.716 F µg/L to 1.04 F µg/L. It was confirmed that this

SVOC is a lab contaminant and reported when using new plastic bottles for sample collection. Sampling location TMC-7 sampling showed two additional SVOC exceedances, however the concentrations were minimal and within one order of magnitude of the NYS Surface Water Standards. The surface water sample from sampling location TMC-7 also contained a benzo(a)anthracene exceedance (0.621 F  $\mu\text{g/L}$ ) and a benzo(b)fluoranthene exceedance (0.558 F  $\mu\text{g/L}$ ). The NYS Surface Water Standard for both compounds is 0.002  $\mu\text{g/L}$ . The F data qualifier indicates that the analyte was positively identified above the method detection limit (MDL), but the concentration is below the reporting limit (RL).

Metals exceedances were reported at all sampling locations in the Fall 2008 sampling round. Sodium exceedances were reported at all sampling locations except sampling location TMC-8. Iron exceedances were reported at sampling locations TMC-3, -4, -5, -7, and -8 and a manganese exceedance was reported at sampling locations TMC-3 and -7. An aluminum exceedance was also reported at sampling location TMC-7. Many other metals were detected, but none exceeded the NYS Surface Water Standards. The metals detected during all of the LTM sampling rounds and during the RI sampling event are indicative of background conditions, because they have been reported in many previous investigations at the former Griffiss AFB, including sites that potentially impact the TMC AOC. The results tables from the potential impact sites (Landfill 5 and Landfill 6) are included in Appendix E

Pesticide detections were only reported at sampling locations TMC-7 and -8. Sampling location TMC-7 showed one pesticide detection, dieldrin (0.042 F  $\mu\text{g/L}$ ), which exceeded the NYS Surface Water Standard of 0.004  $\mu\text{g/L}$ . This sampling location is in the TMC tributary north of Landfill 5 and the water at this location is shallow and murky, which resulted in samples with suspended solids. The p,p-DDD detection (0.018 F  $\mu\text{g/L}$ ) at sampling location TMC-8 was well below the NYS Surface Water Standard (0.3  $\mu\text{g/L}$ ). Sampling location TMC-8 is located on the south side of Landfill 5 and also exhibits shallow and murky water.

One PCB exceedance (Aroclor 1260), 1.2  $\mu\text{g/L}$ , was reported at sampling location TMC-7. This was the only surface water PCB detection. The NYS Surface Water Standard for Aroclor 1260 is 0.09  $\mu\text{g/L}$ . The PCB exceedance may be attributed to the suspended solids at this sampling location.

#### **4.1.3 Sediments Results**

The sediment sampling results are provided in a table in Appendix A. Similar to the surface water results, sediment sampling results were compared to previous LTM sampling results and the 1993/4 RI. The validated lab results are attached in Appendix C and the raw lab data are attached in Appendix D.

VOC detections were reported at sampling locations TMC-1, -2, and -4. No VOCs exceeded the most stringent ecological screening values. Previous LTM sampling and RI results also show no

VOC exceedances.

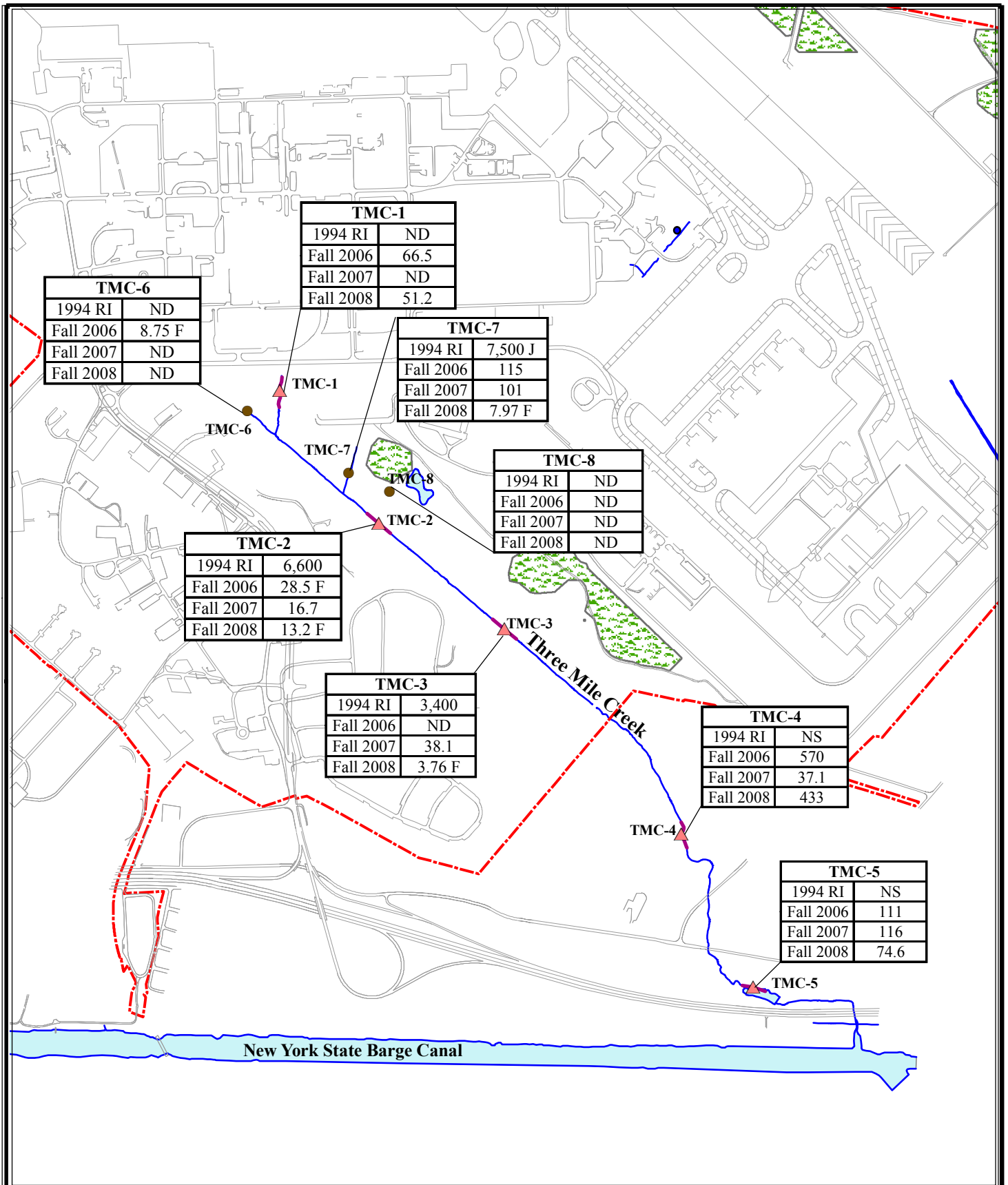
Four SVOC exceedances were reported at sampling location TMC-4. These SVOCs were benzo(a)anthracene at 350 F  $\mu\text{g}/\text{Kg}$  (most stringent ecological screening value is 261  $\mu\text{g}/\text{Kg}$ ), fluoranthene at 670 F  $\mu\text{g}/\text{Kg}$ , (most stringent ecological screening value is 600  $\mu\text{g}/\text{Kg}$ ) phenanthrene at 500 F  $\mu\text{g}/\text{Kg}$  (most stringent ecological screening value is 240  $\mu\text{g}/\text{Kg}$ ), and pyrene at 510 F  $\mu\text{g}/\text{Kg}$  (most stringent ecological screening value is 490  $\mu\text{g}/\text{Kg}$ ). The F data qualifier indicates that the analyte was positively identified above the method detection limit (MDL), but below the reporting limit (RL).

Metals detections were reported at all sampling locations. Sampling locations TMC-4 and -5 were the only sampling locations with metals exceedances. Cadmium was reported with a concentration of 1.4 mg/Kg at sampling location TMC-4 and 0.62 F mg/Kg at sampling location TMC-5. The most stringent ecological screening value for cadmium in sediment is 0.6 mg/Kg. The cadmium exceedance at sampling location TMC-5 is likely a result of downstream migration from sampling location TMC-4, which was not part of the TMC AOC RA.

Pesticide exceedances were reported at all sampling locations except sampling location TMC-3. At sampling locations TMC-1, -2, -4, -5, -7, and -8, dieldrin exceeded the most stringent ecological screening value of 0.02  $\mu\text{g}/\text{Kg}$  with concentrations ranging from 1.1 F  $\mu\text{g}/\text{Kg}$  to 28 J  $\mu\text{g}/\text{Kg}$ . At sampling locations TMC-1 (13 J  $\mu\text{g}/\text{Kg}$ ), -6 (2.2 F  $\mu\text{g}/\text{Kg}$ ), and -7 (2.3 F  $\mu\text{g}/\text{Kg}$ ), p,p-DDT exceeded the most stringent ecological screening value of 1  $\mu\text{g}/\text{Kg}$ . p,p-DDD was reported at sampling location TMC-4 with a concentration of 11  $\mu\text{g}/\text{Kg}$ ; the most stringent ecological screening value for this compound is 2  $\mu\text{g}/\text{Kg}$ . And lastly at sampling locations TMC-6 and -8, gamma-chlordane exceeded the most stringent ecological screening value of 0.05  $\mu\text{g}/\text{Kg}$  at 1.7 F  $\mu\text{g}/\text{Kg}$  and 0.68 F  $\mu\text{g}/\text{Kg}$ , respectively. Pesticides were historically applied on base, especially the pesticide dieldrin. The practice of pesticide application at the former AFB has been discontinued and it is assumed that no new pesticides are being introduced to the TMC AOC.

The Fall 2008 PCB (Aroclor 1260) exceedances were reported for sampling locations TMC-1 (51.2  $\mu\text{g}/\text{Kg}$ ), -2 (13.2 F  $\mu\text{g}/\text{Kg}$ ), -4 (433  $\mu\text{g}/\text{Kg}$ ), -5 (74.6  $\mu\text{g}/\text{Kg}$ ), and -7 (7.97 F  $\mu\text{g}/\text{Kg}$ ). The most stringent ecological screening value for Aroclor 1260 is 5  $\mu\text{g}/\text{Kg}$ . Aroclor 1260 was also detected at TMC-3 (3.76 F mg/Kg), which was below the most stringent ecological screening value. The F data qualifier indicated that the analyte was positively identified above the method detection limit (MDL), but below the reporting limit (RL). The highest PCB concentration during the Fall 2008 sampling round was reported at TMC-4 (433  $\mu\text{g}/\text{Kg}$ ). Sampling location TMC-4 was not part of the creek RA, therefore, COCs are likely to be greater at that location than those reported at remediated sampling locations. Figure 4-1 shows the PCB concentrations detected in all of the sampling rounds at each sampling location.





**Site Location**

**Legend**

- Surface Water/Sediment Sample Location
- ▲ Surface Water/Sediment/Fish/Benthic Sample Location
- Pond/Canal
- Landfill
- Creek/Culvert
- Airfield/Road
- Air Force Boundary
- Fish Sampling Stretch

ND - not detected  
NS - indicates that a sample was not collected  
PCB concentrations in µg/Kg

430 215 0 430 860  
Feet

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

**Figure 4-1**  
**Three Mile Creek**  
**Sediment PCB (Aroclor 1260)**  
**Concentrations (µg/Kg)**

FPM group

Arochlor 1260 was detected at a maximum concentration of 7,500 µg/Kg in the 1993/4 RI and declined to a maximum concentration of 433 µg/Kg in the Fall 2008 sampling round. The maximum detection in the Fall 2007 round was 116 µg/Kg and 570 µg/Kg in the Fall 2006 round. This decline is not steady due to spatial variability during sample collection. However, the general trend is declining from the 1993/4 RI to the Fall 2008 results by an order of magnitude. The declining trend is illustrated in Figures 4-1 and 4-2.

Given the data trends from the RI and LTM data, the RA was effective in removing a large amount of the PCB contamination in the TMC sediments.

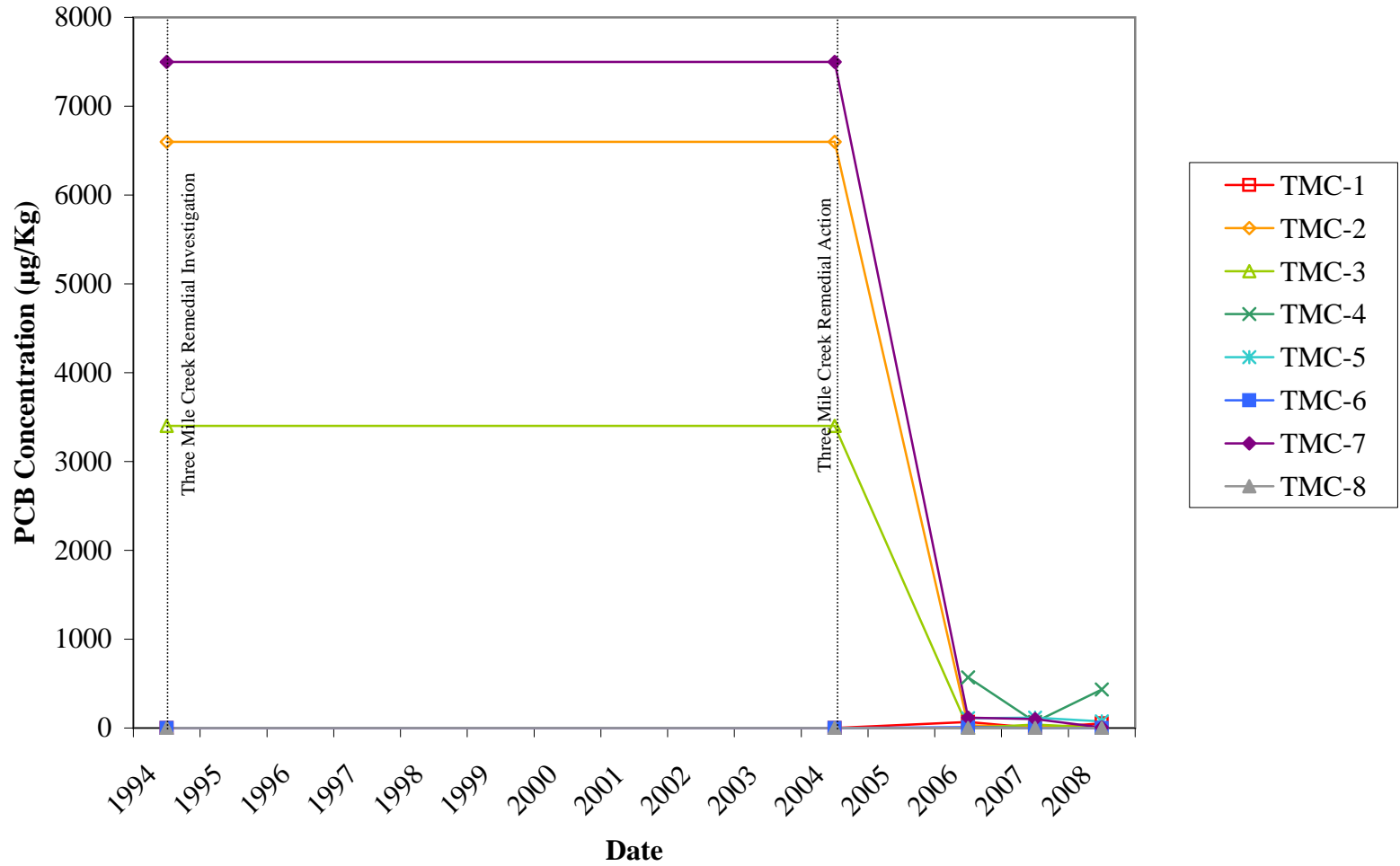
#### **4.1.4 Conclusions and LTM Optimization Recommendations**

The Fall 2008 LTM surface water results are similar in concentration and in number of detected COCs to the two previous LTM rounds. VOCs have not been detected at any location above the NYS Surface Water Standards in all three LTM sampling rounds. Also, it was found that the SVOC, metals, and pesticide exceedances reported in the Fall 2008 round are indicative of base background conditions, confirmed as laboratory contaminants, or have been detected as a minimal exceedance within one order of magnitude of the surface water standard. One PCB, aroclor 1260, exceedance was also detected in one surface water sampling location (TMC-7) and may be attributed to the sample containing suspended solids.

In sediments, VOCs have not been detected at any location in all three LTM sampling rounds above the most stringent ecological screening value. Also, the SVOC and metals exceedances reported in the Fall 2008 round are indicative of base background conditions or have been detected as a minimal exceedance within one order of magnitude of the most stringent ecological screening value. Pesticide exceedances were reported at all sampling locations except for sampling location TMC-3. Compared to the 1994 RI and previous LTM sampling results, total pesticide concentrations show a decreasing trend. PCB (Aroclor 1260) was reported at five sampling locations (TMC-1, -2, -4, -5, and -7) during the Fall 2008 sampling round at concentrations above the most stringent ecological screening value. As described in Section 4.1.3, exceedances show a decreasing trend compared to the 1994 RI sampling round, at applicable sampling locations (TMC-1, -2, -3, -6, -7, and -8) and previous LTM sampling rounds.

Due to the existing contamination throughout the AOC, annual surface water and sediment sampling will continue at the TMC AOC. The future LTM sample network for TMC is shown in Table 4-1 and will be evaluated following the Fall 2009 sampling event for possible analysis optimization. The second fish sampling round and qualitative benthic community evaluation will be conducted during the Fall 2009 LTM sampling event as described in Table 4-1.

**Figure 4-2**  
**Three Mile Creek**  
**Sediment PCB (Aroclor 1260) Concentration Trend Chart**



Note: Sampling Locations TMC-4 and TMC-5 were not sampled during the 1993/94 RI.

**Table 4-1**  
**Three Mile Creek Proposed Future LTM Sampling**

<b>Sampling Locations</b>	<b>Sampling Rationale</b>	<b>Sample Medium/ Target Analytes/ Method Numbers</b>	<b>Sampling Frequency</b>	<b>Evaluation Criteria/ Modification Justification</b>
TMC-1 TMC-2  TMC-3  TMC-4 TMC-5	Upstream, northern fork Downstream of Landfill 5 tributary  Downstream of Landfill 5, cross gradient of Landfill 6 Downstream of Base Boundary In TMC Pond	<b>Surface Water and Sediment</b> VOCs/SW8260, SVOCs/SW8270, Metals/SW6010, Pesticides/SW8081, PCBs/SW8082  <b>Fish</b> Cadmium/SW6010, Mercury/SW7471, Pesticides/SW8081, PCBs/SW8082, % lipid.	Annually for sediment and surface water.      Every three years for fish and benthic macroinvertebrates.	Sediment and surface water are sampled annually to track COC concentrations. Fish and benthic macroinvertebrates are sampled every three years to track COC changes in fish tissues and benthic macroinvertebrates.
TMC-6 TMC-7 TMC-8	Upstream, southern fork Landfill 5 tributary Wetland adjacent to TMC and south of Landfill 5	<b>Surface Water and Sediment</b> VOCs/SW8260, SVOCs/SW8270, Metals/SW6010, Pesticides/SW8081, PCBs/SW8082	Annually for sediment and surface ater.	Sediment and surface water are sampled annually to track COC concentrations.

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