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EPA Superfund
Record of Decision:

GRIFFISS AIR FORCE BASE (11 AREAS)
EPA ID: NY4571924451
OU 18
ROME, NY
06/05/2000

Final Record of Decision for the Landfill 4 Area of Concern at the Former Griffiss Air Force Base Rome, New York

March 2000

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List of Acronyms

AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances and Disease Registry
BGS	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DFAS	Defense Finance and Accounting Services
DoD	Department of Defense
EPA	United State Environmental Protection Agency
FFA	Federal Facility Agreement
GPR	ground-penetrating radar
HI	Hazard Index
HQ	Hazard Quotient
IRP	Installation Restoration Program
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEADS	Northeast Air Defense Sector
NPL	National Priorities List
NYANG	New York Air National Guard
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
PCB	polychlorinated biphenyl
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SAC	Strategic Air Command
SVOC	semivolatile organic compound
VOC	volatile organic compound

1 Declaration

1.1 Site Name and Location

The Landfill 4 Area of Concern (AOC) is located at the former Griffiss Air Force Base (AFB) in Rome, Oneida County, New York.

1.2 Statement of Basis and Purpose

This Record of Decision (ROD) presents the no further action alternative for soils as the selected remedial action for Landfill 4 AOC at the former Griffiss AFB. Groundwater monitoring will be performed at the site due to some uncertainty in the results of the risk assessment. This alternative has been chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The Air Force Base Conversion Agency (AFBCA), the United States Environmental Protection Agency (EPA), and the New York State Department of Environmental Conservation (NYSDEC) have adopted this ROD through joint agreement. Information supporting this decision is contained in the administrative record file for this site.

1.3 Description of Selected Remedy

The selected remedy for the Landfill 4 AOC is no further action for soils with groundwater monitoring. In addition, deed restrictions will be incorporated into all property transfer documents for the duration of the groundwater monitoring program and until the EPA and NYSDEC concur with the removal of the restrictions.

1.4 Declaration Statement

The AFBCA, EPA, and NYSDEC have determined that no further action with groundwater monitoring is warranted for the Landfill 4 AOC, because radioanalytical results from the Final Closure Certification Report indicate that the site poses no significant threat to the public health or the environment. However, due to the presence of low levels of radionuclides in the grab groundwater sample, groundwater monitoring will be performed at Landfill 4. Future landowners will be notified through property transfer documents (deeds) that radionuclides detected in groundwater at the site may be naturally occurring and may present a risk to the adult resident or industrial worker through ingestion of groundwater.

1.5 Signature of Adoption of the Remedy

On the basis of the remedial investigations (RIs) 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. Future landowners will be notified through property transfer documents (deeds) that radionuclides detected in groundwater at the site, which are thought to be naturally occurring and the result of the sampling methodology chosen, may present a risk to the adult resident or industrial worker through ingestion. Groundwater monitoring will be performed at the site (in conjunction with the groundwater monitoring for Landfill 6 AOC) for a period of two years to verify that the radionuclides are naturally occurring. In addition, deed restrictions will be incorporated into all property transfer documents for the duration of the groundwater monitoring program. Once it is confirmed that the radionuclides are naturally occurring, with EPA and NYSDEC concurrence, the radionuclides will be withdrawn as a chemical of concern. NYSDEC has concurred with the selected remedial action presented in this ROD.

_____ _____

Albert F. Lowas, Jr. Date
Director
Air Force Base Conversion Agency

_____ _____

Jeanne M. Fox Date
Regional Administrator
United States Environmental Protection Agency, Region 2

2 Decision Summary

This section provides an overview of the site-specific factors that lead to the no further action decision for soils at the Landfill 4 AOC.

2.1 Site Name, Location, and Description

Regional Site Description

The former Griffiss AFB covered approximately 3,552 contiguous acres in the lowlands of the Mohawk River Valley in Rome, Oneida County, New York. Topography within the valley is relatively flat, with elevations on the former Griffiss AFB ranging from 435 to 595 feet above mean sea level. Three Mile Creek, Six Mile Creek (both of which drain into the New York State Barge Canal, located to the south of the base), and several state-designated wetlands are located on the former Griffiss AFB, which is bordered by the Mohawk River on the west. Due to its high average precipitation and predominantly silty sands, the former Griffiss AFB is considered a groundwater recharge zone.

Landfill 4 Area of Concern

Landfill 4, which is located in a woodland in the south-central portion of the former Griffiss AFB, was the location of a buried vault (see Figures 1 and 2). The vault was constructed of three vertically stacked concrete culverts (sewer pipes). When the site was closed in 1967, a concrete cap was placed over the vault. The site was surrounded by an 8-foot-high by 10-foot-square chain link fence with a locked gate and placard identifying

the area as radioactive. From July to October 1997, the vault was excavated and the site was remediated and restored to its original condition.

The Landfill 4 AOC is located in an area of topography that tends toward the southwest. Surface water runoff from the landfill presumably follows the site topography and drains via Three Mile Creek, which is located approximately 800 feet southwest of the Landfill 4, into the New York State Barge Canal. The nearest wetlands are situated along Three Mile Creek approximately 600 feet west of the site.

Site soils consist of brown to yellow-brown, fine sandy silt to a depth of 2 feet below ground surface (BGS) and brown, silty fine sand from 2 to 30 feet BGS. Groundwater flows south to southwesterly toward Three Mile Creek and was encountered at a depth of 7.5 feet.

2.2 Site History and Investigation and Remediation Activities

The Former 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 U.S. Air Force in 1947, the depot was renamed Griffiss Air Force Base. The base became an electronics center in 1950, with the transfer of Watson Laboratory Complex (later Rome Laboratory). The 49th Fighter Interceptor Squadron was also added in that year. In June 1951, the Rome Air Development Center was established with the mission of accomplishing applied research, development, and testing of electronic air-ground systems. The Headquarters of the Ground Electronics Engineering Installations Agency was added in June 1958 to engineer and install ground communications equipment throughout the world. 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 resulting in deactivation of the 416th Bombardment Wing in September 1995. Rome Laboratory and the Northeast Air Defense Sector (NEADS) will continue 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; and the Defense Finance and Accounting Services (DFAS) has established an operating location at the former Griffiss AFB.

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 disposed at various sites on the installation. The defense missions involved, among others, procurement, storage, maintenance, and shipping of war materiel; research and development; and aircraft operations and maintenance.

Landfill 4 was operated from mid-1950s to the mid-1960s. It was used for the disposal of vacuum and radio tubes used in radar and communications equipment, low-level radioactive wastes, and other debris.

Numerous studies and investigations under the U.S. Department of Defense (DoD) Installation Restoration Program (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 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 investigations between 1989 and 1993. 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 National Priorities List (NPL) on July 15, 1987. On August 21, 1990, USAF, EPA, and NYSDEC entered into a Federal Facility Agreement (FFA) under Section 120 of CERCLA.

Under the terms of the agreement, the Air Force was required to prepare and submit numerous reports to NYSDEC and EPA for review and comment. These reports address remedial activities that the Air Force is required to undertake under CERCLA and

include identification of Areas of Concern on base; a scope of work for an RI; a work plan for the RI, including a sampling and analysis plan and a quality assurance project plan; a baseline risk assessment; a community relations plan; an RI report; and, for Landfill 4, the Final Closure Certification Report. The Air Force delivered the draft-final RI report covering 31 AOCs to EPA and NYSDEC on December 20, 1996. The Final Closure Certification Report for Landfill 4 was delivered in December 1997.

This ROD for the Landfill 4 AOC is based on an evaluation of potential threats to human health and the environment due to contamination in the soil and groundwater and takes into consideration the removal of the source of contamination. During the RI, a site-specific baseline risk assessment (using appropriate toxicological and exposure assumptions to evaluate cancer risks) was conducted in order to evaluate the risks posed by detected site contaminants to the reasonably maximally exposed individual under current and future land use assumptions if no remediation were conducted. The risk assessment for this site evaluated an unrestricted use scenario. In the RI report, the results of the risk assessment were compared to available standards and guidance values using federal and state environmental and public health laws that were identified as potentially applicable or relevant and appropriate requirements (ARARs) at the site. Chemical-specific ARARs are usually health- or risk-based numerical values or methodologies that result in a numerical value when applied to site-specific conditions. Currently, there are no chemical-specific ARARs for soil (other than for PCBs), sediments, or air. Therefore, other non-promulgated federal and state advisories and guidance values, referred to as To-Be-Considereds (TBCs), and background levels of the contaminants in the absence of TBCs, were considered. This comparison was used in the selection of the preferred alternative.

In the Final Closure Certification Report for the remediation of Landfill 4, site contaminants were monitored before, during, and after remediation. When remediation was completed, an analysis of the contaminants remaining at the site was conducted by computer modeling to ensure the site's compliance with established cleanup goals.

Initial Site Investigations

A concrete cap was placed over the vault when Landfill 4 was closed in 1967. The Air Force surveyed the site for beta and gamma radiation and no elevated radiation

levels over background levels were detected. EPA conducted a confirmation radiological survey in 1980 and also found no radiation levels above background readings.

Remedial Investigation

In 1994, an RI was performed. The main objective of the RI was to investigate the nature and extent of environmental contamination from historical releases at the AOC in order to determine whether any remedial action was necessary to prevent potential threats to human health and the environment that might arise from exposure to site conditions. As part of the RI, several field investigation activities were performed, including a ground-penetrating radar (GPR) survey, a walkover radiation survey, drilling of five soil borings, and collection and analysis of 31 soil samples and five grab groundwater samples.

Geophysical Surveys. The GPR survey was conducted to define the features of the disposal vault. The survey confirmed the presence of the waste vault buried near the ground surface, but because the cap was so thick, the survey was not able to characterize the features of the vault.

Radiation Survey. The radiation survey detected levels of gamma radiation that only slightly exceeded background levels.

Soil Investigation. The soil samples were analyzed for radionuclides that emit gamma rays, total gross alpha and beta radioactivity, and strontium-90. Chemical and radioanalytical results from the investigation detected the presence of naturally occurring radionuclides that would be expected from uranium and thorium decay and radionuclides from man-made sources commonly found in many upper soils due to worldwide atmospheric nuclear weapons testing. The radionuclide concentrations detected were similar to background levels, and none of the detected radionuclides appeared to be associated with the radioactive tubes in the vault. The radiation levels detected inside the soil borings were similar to background radiation levels.

Groundwater Investigation. Chemical and radioanalytical results from the RI groundwater investigation detected the presence of 20 metals, one cyanide, nine radionuclides, and gross alpha and beta radioactivity. Gross alpha radioactivity, gross beta radioactivity, and 12 metals exceeded the most stringent criterion. Groundwater standards have been promulgated for only two of the nine radionuclides detected, radium-226 and radium-228, both of which exceeded the standards (see Table 1).

Landfill Remediation

Pre-excavation Investigation. Pre-excavation work at Landfill 4 began in July 1997. Prior to removal of the vault, an initial walkover radiation survey was conducted, background soil samples were collected, and a downgradient soil boring was installed. The radiation survey was performed to locate potential hotspots (readings two times greater than background readings) for soil sampling; however, no readings were above background levels. Three surface soil samples were collected from an area hydrologically upgradient of the vault to establish local background concentrations of the targeted radionuclides and inorganic chemicals.

A hydrologically downgradient soil boring (SL04) was installed approximately 10 feet south of the vault location to confirm the results of the RI and potentially provide additional data on the contaminants of concern. Samples were collected from the boring at 2-foot intervals to a depth of 18 feet BGS. All samples were monitored for radiation and VOCs; no levels above background were detected. Two composite samples were 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); none were detected above established soil cleanup criteria.

A groundwater sample was collected from the soil boring and analyzed for the eight RCRA metals, cyanide; gross alpha and beta radioactivity; and the eight targeted radionuclides. 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.

Vault Excavation. The buried vault was found to be 4 feet in diameter and 12 feet long. It was constructed of three 4-foot-long concrete culvert sections stacked vertically. Excavation began with the first section, which was reinforced with rebar and completely filled with concrete. The first section served as a cap to the vault. When it was removed, entrapped water and waste materials were exposed in the second section. This water and waste, which consisted of wood and concrete debris, partially crushed 5-gallon metal containers, metal signs, a metal pipe, other metal containers, and several small electrical components, were removed prior to excavation of the second culvert section. The second and third sections, separated by 1 to 2 feet of concrete, were excavated as one unit. Because the third section had no bottom, the waste from the third section remained at the bottom of the excavation and was removed separately. This waste consisted of several metal canisters containing several types of electrical components and many small glass electron tubes approximately 2 inches long. Following removal of the waste at the bottom of the vault, approximately 1 foot of additional soil was scraped from the bottom of the excavation and disposed with the vault waste.

Once removal of the vault debris was completed, a final radiological survey was conducted to identify any hot spots within the excavation. Because no hot spots were identified by the survey, seven confirmatory soil samples were collected from the excavation area, three from the bottom of the excavation and one from each of four sidewalls. These samples were tested for the eight RCRA metals, cyanide, gross alpha and beta radioactivity, and the eight targeted radionuclides. Only the concentrations of silver (7.8 mg/kg in one sample) and selenium (34 mg/kg and 37 mg/kg in two samples) were higher than their respective soil cleanup goals of 0.36 mg/kg (site background) and 2 mg/kg (NYSDEC soil cleanup objective). These metals are naturally occurring and may not be associated with contents of the vault.

Using site characterization data, the Final Closure Certification Report for the Remediation of Landfill 4 was prepared; all of the analytical results from the pre- and post-excavation samples are provided in the report. NYSDEC reviewed and approved the report and released the site. The original chain link fence was removed, and the site was backfilled and restored to its original condition. All disturbed areas were graded, covered

with at least 6 inches of clean fill, and seeded with grass. The final site closure inspection was performed on October 10, 1997.

2.3 Highlights of Community Participation

The final proposed plan and a fact sheet for the Landfill 4 AOC were released to the public on February 7, 2000. The document was made available to the public in both the administrative record file located at Building 301 in the Griffiss Business and Technology Park and in the Information Repository maintained at the Jervis Public Library. The notice announcing the availability of this document was published in the *Rome Sentinel* on February 5, 2000. A public comment period lasting from February 7, 2000, to March 8, 2000, was set up to encourage public participation in the remedial action selection process. In addition, a public meeting was held on February 23, 2000. At this meeting, representatives from AFBCA, EPA, and NYSDEC answered questions about issues at the AOC and the no further action proposal under consideration. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this ROD (see Section 3).

2.4 Scope and Role of Site Response Action

The scope of the no further action alternative for the Landfill 4 AOC addresses the soils and groundwater at the site as well as concerns for human health and the environment. Based on the radioanalytical results from the Final Closure Certification Report, there is no evidence that the site poses a significant current or potential threat to the public health or the environment. However, due to the presence of low levels of radionuclides in the grab groundwater sample, which may be naturally occurring, groundwater monitoring will be performed at Landfill 4.

2.5 Summary of Site Risks

A baseline risk assessment was performed during the RI to estimate current and future potential risks to human health and the environment associated with the contaminants found in the groundwater before the vault was excavated. After excavation of the vault, a radionuclide pathway analysis was conducted to determine the potential

doses from residual radioactive materials remaining at the site. The results of these assessments were considered when formulating this no further action proposal.

Human Health Risk Assessment

A baseline human health risk assessment was conducted during the RI to determine whether chemicals detected at the Landfill 4 AOC could pose health risks to individuals under current and proposed future land uses in an unrestricted-use scenario. As part of the baseline risk assessment, the following four-step process was used to assess site-related human health risks for a reasonable maximum exposure scenario:

- Hazard identification-identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration;

- Exposure Assessment-estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathway (e.g., ingestion of contaminated soils) by which humans are potentially exposed;

- Toxicity Assessment-determines the types of adverse health effects associated with chemical exposures and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and

- Risk Characterization-summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative (e.g., one-in-a-million excess cancer risk and non-cancer Hazard Index value) assessment of site-related risks and a discussion of uncertainties associated with the evaluation of the risks and hazards for the site.

Chemicals of potential concern (COPCs) were selected for use in the risk assessment based on the analytical results and data quality evaluation. The potential sources of contamination in soils were the radionuclides present within the vault; therefore no COPCs were selected for soils at this site because no complete exposure pathway was identified (the only contact with soil was at the bottom of the vault, which was 12 feet below the surface). All contaminants detected in the groundwater at the site were considered COPCs with the exception of inorganics detected at concentrations less than twice the mean background concentrations; iron, magnesium, calcium, potassium, and sodium, which are essential human nutrients; and compounds detected in less than 5 % of the total

samples (unless they were known human carcinogens). All of the radionuclides detected in the groundwater at the Landfill 4 AOC are considered Class A known carcinogens.

As proposed in the Griffiss Redevelopment Planning Council redevelopment scenario, the current and future land use designations for the Landfill 4 AOC is open space. The human health risk assessment evaluated exposure to potential future occupational (future industrial worker) and residential populations that may be exposed to chemicals detected in the site media through ingestion of groundwater. Intake assumptions, which are based on EPA guidance, are more fully described in the RI.

Quantitative estimates of carcinogenic risks were calculated for the Landfill 4 AOC as part of a risk characterization. The risk characterization evaluates potential health risks based on estimated exposure intakes and toxicity values. For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the potential carcinogen. The risks of the individual chemicals are summed for each pathway to develop a total risk estimate. The only pathway considered in this risk assessment was ingestion of groundwater because the soil contaminants are below ground surface and surface water and sediment are not associated with this site.

The range of acceptable risk is generally considered to be 1 in 10,000 (1×10^{-4}) to 1 in 1,000,000 (1×10^{-6}) of an individual developing cancer over a 70-year lifetime from exposure to groundwater under specific exposure assumptions. Therefore, sites with carcinogenic risk within or below the risk range for a reasonable maximum exposure do not generally require cleanup based upon carcinogenic risk under the NCP.

The carcinogenic risks to the adult receptor were presented in the RI report. Specific exposure assumptions are described in the RI report.

The reasonable maximum exposure carcinogenic risk to an adult resident due to the ingestion of groundwater from the Landfill 4 AOC was calculated as 3 in 10,000 (3×10^{-4}), which exceeded the upper end of the NCP's carcinogenic risk range of 1 in 10,000 (1×10^{-4}) to 1 in 1,000,000 (1×10^{-6}) for Superfund sites. Potassium-40 and thorium-234, both naturally occurring radioactive materials not associated with the electron tubes, were the two largest contributors of risk.

The carcinogenic risk to an industrial worker from ingestion of groundwater at the Landfill 4 AOC was calculated to be 8 in 100,000 (8×10^{-5}), which falls within EPA's

target risk range. Potassium-40, thorium-234, and radium-228, all of which are naturally occurring were the largest contributors of risk.

Noncarcinogenic risks were not calculated because reference doses for radionuclides are not available.

Uncertainties exist in many areas of the human health risk assessment process. However, use of conservative variables in intake calculations and conservative assumptions throughout the entire risk assessment process results in an assessment that is protective of human health and the environment. Examples of uncertainties associated with the risk assessment for the Landfill 4 AOC include: (1) Groundwater samples consisted of five grab samples. This type of sample typically contains particulate matter, which causes sample results to be elevated for metals and inorganic radionuclides that are natural constituents of soil and rock. This may result in a potential overestimation of risk; (2) The risk assessment was quantified based on the analysis of a small number of samples, which adds to the uncertainty of the assessment; (3) Site-specific background concentrations for groundwater were established based on analytical results for only one sample. Therefore, it is possible that inclusion of some radionuclides that are not site-related (in this case potassium-40) has resulted in an overestimation of risk; (4) The radionuclides detected in groundwater that contributed to the excess cancer risk are potassium-40, thorium-234, and radium-228. These radionuclides may be naturally occurring and may not be associated with the radioactive waste buried in the vault.

The overall results of the human health baseline risk assessment indicate that the radionuclides detected in groundwater may present a risk to the adult resident of industrial worker through ingestion. Therefore, groundwater monitoring will be performed at Landfill 4. Quantitative evaluation of risk is subject to several conservative assumptions and should not be considered an absolute measure of risk.

Ecological Risk Assessment

A risk assessment for ecological receptors at the Landfill 4 AOC was conducted during the RI. 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.

Although certain state-listed endangered plants and animals have been observed on or in the vicinity of the base, no threatened and/or endangered species have been identified at this site. There are no federally listed (U.S. Department of the Interior) threatened or endangered plant or animal species at the former base.

Radionuclide Pathway Analysis

As part of the Final Closure Certification Report for the removal of the low-level radioactive wastes, a computer program using post-excavation sampling results was used to mathematically model a closure pathway analysis. The closure pathway analysis was used to determine potential doses for the residual radioactive material remaining at the Landfill 4 AOC. The analysis was performed in accordance with NYSDEC Technical Administrative Guidance Memorandum number 4003, "Cleanup Guidelines for Soils Contaminated with Radioactive Materials." The computer program RESRAD, as approved and validated by the US Department of Energy, was used to model the dispersion of radionuclides through the environment. Pathways considered in the analysis included external gamma radiation from radionuclides in the soil; inhalation of contaminated dust; and ingestion of contaminated plants, water, and soil. The analysis concluded that the remaining radioactive material in the soil meets the guideline that the Total Effective Dose Equivalent (TEDE) to the maximally exposed individual of the general public is less than 10 millirems per year. NYSDEC reviewed and approved the report and released the site.

2.6 Description of the No Further Action Alternative

No further action for soils with groundwater monitoring is proposed at the Landfill 4 AOC. Radioanalytical results from the Final Closure Certification Report indicate that the site poses no significant threat to the public health or the environment. However, due to the presence of low levels of radionuclides in the grab groundwater sample, which may be naturally occurring, groundwater monitoring will be performed. In addition, deed restrictions will be incorporated into all property transfer documents .

2.7 Documentation of Significant Changes

The proposed plan for the Landfill 4 AOC was released for public comment on February 7, 2000, and identified no further action with groundwater monitoring as the preferred alternative. The agencies have reviewed all written and verbal comments submitted during the public comment period. Upon review of the comments, it was determined that no significant changes to the remedy, as it was originally identified in the proposed plan, were necessary.

Table 1
COMPOUNDS EXCEEDING STANDARDS OR GUIDANCE VALUES
GRAB GROUNDWATER SAMPLES

Compound	Range of Detected Concentrations	Frequency of Detection Above Most Stringent Criterion	Most Stringent Criterion
Metals (mg/L)			
Aluminum	21.2 - 462	5/5	0.05[a]
Arsenic	0.017 - 0.22	4/5	0.025[b]
Barium	0.15 - 4.7	2/5	1[b]
Beryllium	0.006 - 0.03	4/5	0.003[c]
Chromium	0.061 - 1.3	5/5	0.05[b]
Copper	0.091 - 2.7	4/5	0.2[b]
Iron	59.9 0 - 1,440	5/5	0.3[b]
Lead	0.041 - 0.54	5/5	0.015[d]
Manganese	3.5 - 137	5/5	0.05[c]
Mercury	0.00041 - 0.0025	1/5	0.002[b]
Nickel	0.081 - 1.8	4/5	0.1[d]
Zinc	0.17 - 4.1	4/5	0.3[b]
Radionuclides (pCi/L)			
Gross Alpha Activity	181 - 726	5/5	15[b]
Gross Beta Activity	169 - 2,482	1/5	1,000[b]
Radium-226	5.4	1/5	3[b]
Radium-228	10	1/5	5[b]

[a] Federal secondary contaminant level.

[b] NYSDEC Class GA groundwater standard. (Ra-228 standard applies to the sum of Ra-226 and Ra-228).

[c] NYSDEC Class GA groundwater guidance value.

[d] Federal maximum contaminant level.

Key:
pCi/L = picocuries/liter.

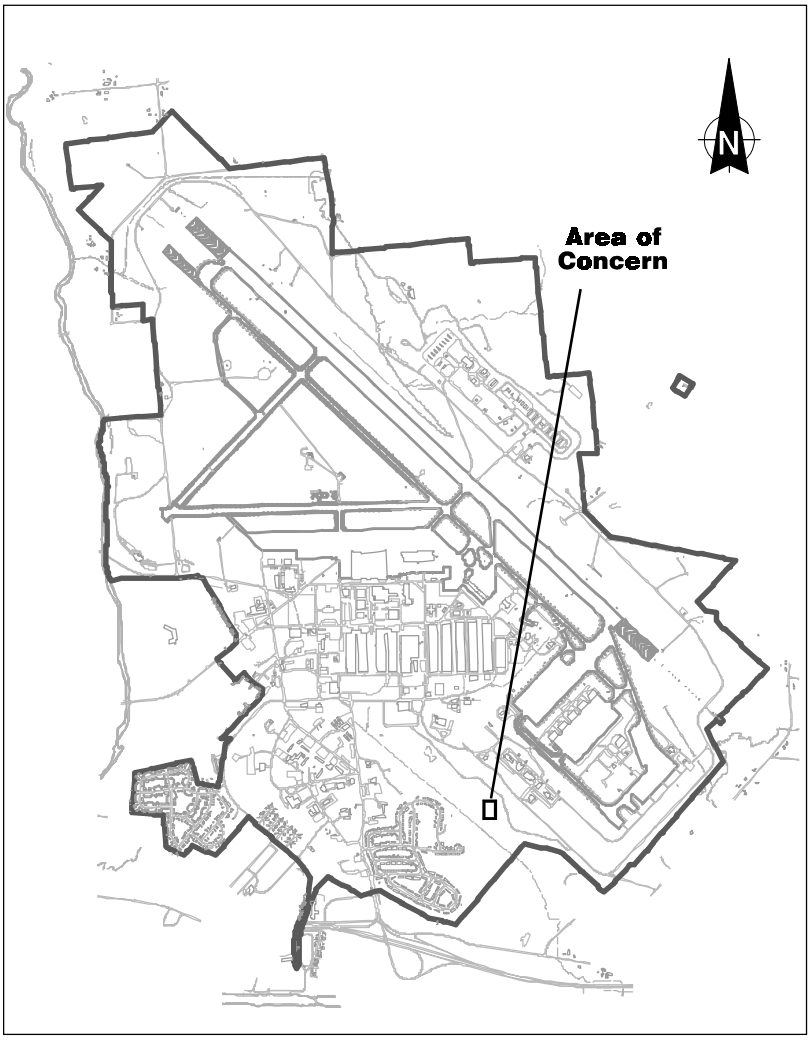
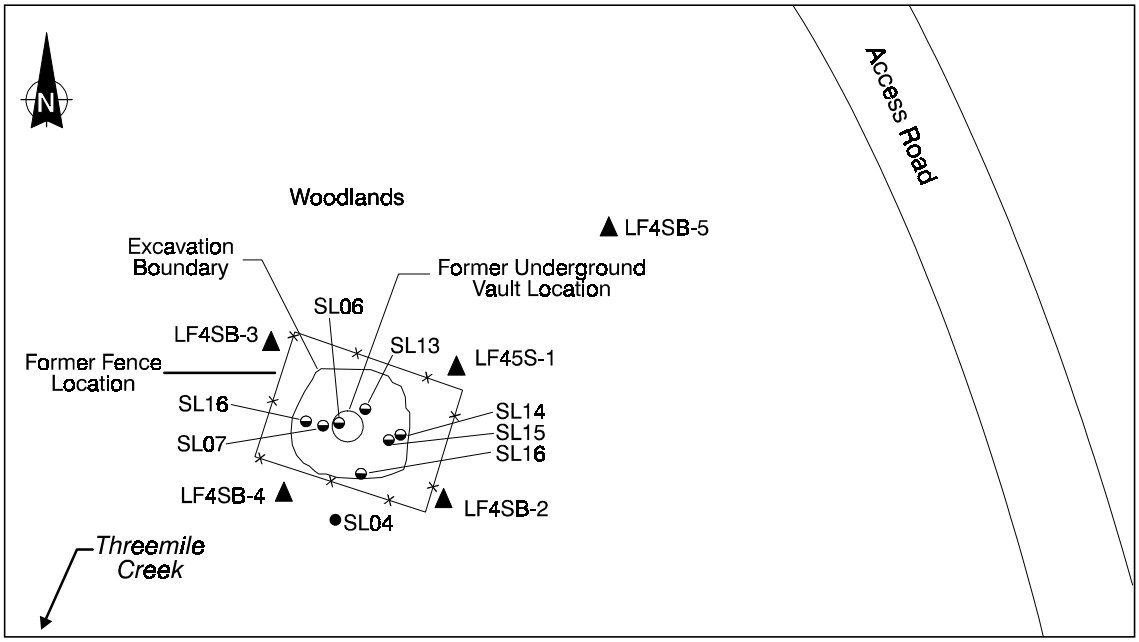


Figure 1: The Landfill 4 AOC is located in the south-central portion of the former Griffiss AFB.



KEY:

- ▲ Soil boring/grab groundwater sampling location - RI
- ● Soil boring location - vault excavation
- ◒ Confirmatory soil sample location (SL) - vault excavation

Figure 2: The Landfill 4 AOC was the location of an inactive underground vault.

3 Responsiveness Summary

On Monday, February 7, 2000, AFBCA, following consultation with and concurrence of the EPA and NYSDEC, released for public comment the proposed plan for no further action for soils with groundwater monitoring at the Landfill 4 AOC at the former Griffiss Air Force Base. The release of the proposed plan initiated the public comment period, which concluded on March 8, 2000.

During the public comment period, a public meeting was held on Wednesday, February 23, 2000, at 5:00 p.m. at the Floyd Town Hall located at 8299 Old Floyd Road, Rome, New York. The public meeting included a presentation and discussion of four landfill AOCs: Landfills 2/3, Landfill 4, Landfill 5, and Landfill 7. A court reporter recorded the proceedings of the public meeting. Copies of the transcript and attendance list are included in the Administrative Record. The public comment period and the public meeting were intended to elicit public comment on the proposals for remedial action at Landfills 2/3, 5, and 7, and the proposal for no further action for soils with groundwater monitoring at Landfill 4.

This section summarizes and provides responses to the verbal comments received at the public meeting and the written comments received during the public comment period.

Comment #1 (oral - John Fitzgerald)

Mr. Fitzgerald expressed the following concerns: a) Contaminant levels are exceeding standards or criteria, but the public has been told not to worry about it because, "we are going to put a cover on it and we will walk away, and you will be fine, just don't drink the water….I seem to be the only one worried about it." b) He believes that there

is a mess on the base with the landfills and that the Federal government has the capability to clean them up, but instead they're going to walk away and leave the mess to the residents. He doesn't think that an unlined landfill should be capped, but rather the material should be dug up and put in a lined landfill. c) He indicated that some people kept their old wells when the new water main was installed because the new water is metered and they use the water from the wells to wash cars, water gardens, fill pools, and kids also drink from the hose.

Response #1

a) Although certain contaminant concentrations exceeded the most stringent criteria, the risk assessments performed for these AOCs (which take into account site-specific conditions and reuse planning options) determined that the risks associated with these contaminants fall within EPA's acceptable risk range, with the exception of groundwater ingestion for Landfills 2/3, 4, and 7 and groundwater ingestion and surface soil ingestion and contact for the child receptor at Landfill 5. Low-level contamination is limited to isolated areas. The Presumptive Remedy for Landfills 2/3, 5, and 7 calls for long-term monitoring of the groundwater; installation of a low-permeability soil cover in accordance with 6 NYCRR Part 360 landfill closure regulations, which will reduce exposure to the landfill mass; and implementation of institutional controls in the form of deed restrictions of the main landfill boundary to prohibit use of the area and groundwater. For Landfill 4, long-term monitoring of the groundwater will be performed and deed restrictions will be incorporated into all property transfer documents.

b) This comment does not apply to Landfill 4.

c) As long as the old wells were disconnected from household plumbing served by the public water supply, homeowners were able to keep their old wells active as a completely separated system. There is no rule or regulation that would prevent a homeowner from making that decision. Fortunately, even for the highest levels of contamination found during the sampling programs performed in the late 1980s and early 1990s, the risks associated with watering gardens and filling swimming pools would be negligible. Very occasional ingestion, such as drinking from a garden hose several times a summer,

would also pose a negligible risk, considering that most contaminants were detected at the same magnitude as drinking water standards. The actual area of possible contaminated groundwater where potential exposure would be a concern was much smaller than the extent of the new water main installation, which was a large loop for design purposes. The Landfills 2/3, 4, 5, and 7 AOCs have not been shown to contribute to off-site contamination. In addition, the on-base groundwater monitoring wells have shown isolated areas of low-level contamination and will be part of a long-term groundwater monitoring program designed to detect contamination before it migrates to off-site locations.

Comment #2 (oral – Carmen Malagisi)

Mr. Malagisi asked if the public will be allowed to comment on the long-term groundwater monitoring plan.

Response #2

Yes, a meeting will be set up to discuss the plan with the Restoration Advisory Board (RAB). The general public will be invited to attend this meeting.

Comment #3 (oral – John Fitzgerald)

Mr. Fitzgerald asked if it would be possible to recruit new members for the RAB because some of the current members have shown little interest.

Response #3

The AFBCA will forward this request to Mark Reynolds, the RAB Co-Chairman, and recommend that he seek new members.

Comment #4 (oral – Freda Melkum)

Ms. Freda Melkum relayed an incident in which she thinks that barrels filled with antifreeze were disposed in one of the landfills because the antifreeze made a group of airmen sick. She believed this incident occurred in the late 1960s or early 1970s and wanted to know which landfill the barrels were disposed in.

Response #4

The geophysical surveys performed during the RI did not detect a significant number of drums within these landfills. However, the AFBCA has researched the possibility of this incident (interviews with past base employees and base environmental engineering records), and no recollection or mention of an incident involving the use of antifreeze that made airmen sick or the disposal of such antifreeze can be found. The drums that were found in Landfills 2/3 and Landfill 5 were excavated and properly disposed, and stained soil surrounding the drums was removed. Analytical results for confirmatory soil samples collected following excavation indicated that there was no residual contamination from the drums. No drums were found in Landfill 7 or Landfill 4.

Comment #5 (oral – Roger Krol with Ocuto Blacktop in Rome)

Mr. Krol asked if the capping of the landfills would be a competitive bid.

Response #5

The present contracting strategy for Landfills 2/3 and 7 is to solicit open competitive bids. Contracts for Landfills 2/3 and 7 will be handled in a manner similar to the contracting methods used for a previous hardfill capping contract. The Air Force Center for Environmental Excellence (AFCEE) will be the contracting service center. The remedial actions are completed at Landfill 4, so there is no additional work programmed for this site. A contracting strategy has not yet been developed for Landfill 5.

Comment #6 (written – Freda Melkum)

In her letter, Ms. Melkum expresses concern that just capping the landfills with a dirt cover would not be enough. She states that during periods of snow thaw and heavy rain, the water table rises and when it recedes it takes dissolved chemicals with it. She states, " So for decades these chemicals are going to drain into 3 and 6 mile creeks." Ms. Melkum requests that a) besides monitoring and deed restrictions, an advertisement program be initiated to warn the residents not to use the well water under any circumstances; and b) signs be posted warning people to stay away from the creeks, particularly at Rickmeyer Road, Route 365, Skyline Heights, and River Road near the creeks. She states, "Considering that you are spending millions and millions of dollars on this questionable

cleanup, I don't think it's too much to ask of you to spend a few hundred dollars to post some signs to warn people to the dangers. I feel we are entitled to them due to what's in these landfills." She also states that she was pleased with the cleanup of Landfill 4.

Response #6

a) As long as the old wells were disconnected from household plumbing served by the public water supply, homeowners were able to keep their old wells active as a completely separated system. There is no rule or regulation that would prevent a homeowner from making that decision. Fortunately, even for the highest levels of contamination found during the sampling programs performed in the late 1980s and early 1990s, the risks associated with watering gardens and filling swimming pools would be negligible. Very occasional ingestion, such as drinking from a garden hose several times a summer, would also pose a negligible risk, considering that most contaminants were detected at the same magnitude as drinking water standards. The actual area of possible contaminated groundwater where potential exposure would be a concern was much smaller than the extent of the new water main installation, which was a large loop for design purposes. The Landfills 2/3, 4, 5, and 7 AOCs have not been shown to contribute to off-site contamination. In addition, the on-base groundwater monitoring wells have shown isolated areas of low-level contamination and will be part of a long-term groundwater monitoring program designed to detect contamination before it migrates to off-site locations.

b) Presently, the Air Force does not plan to post signs along Three or Six Mile Creeks. When purchasing a New York State fishing license, a pamphlet is also provided that indicates the fish advisories for each individual body of water within the limits of the state. This advisory is based upon the results of independent periodic sampling performed by NYSDEC. Presently there are no specific New York State fish advisories indicated for Six Mile Creek and only the white sucker (no more than one meal a month) for Three Mile Creek. However, the general health advisory for sport fish is that you eat no more than one meal (one-half pound) per week of fish taken from the State's fresh waters. This general advisory is to protect against eating large amounts of fish that have not been tested or may contain unidentified contaminants. This advisory is based upon the results of independent periodic sampling performed by NYSDEC. In addition, human

health risk assessments were performed during the remedial investigations for the creeks. The results of the assessments indicate that the risks associated with the incidental ingestion of surface water and sediments, and the dermal exposure to them resulting from swimming or wading in the water, are within the acceptable limits required by the EPA. Separate proposed plans, which will address these concerns, will be issued for Three Mile Creek and Six Mile Creek.