United States Air Force
Environmental Restoration Program

Second Five-Year Review Report for Plattsburgh Air Force Base Plattsburgh, Clinton County, New York

Volume I
Text, Figures, Tables, and Appendix A

Former Plattsburgh Air Force Base
Plattsburgh, New York

Final
September 2004

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
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NEW YORK, NY 10007-1866

Nov 18 2004

Ms. Kathryn M. Halvorson
Acting Director
Air Force Real Property Agency
1700 North Moore St. Suite 2300
Arlington, Virginia 22209-2802

Re: CERCLA Five-Year Review
Plattsburgh Air Force Base

Dear Ms. Halvorson:

This is in regard to the "Second Five-Year Review Report for Plattsburgh Air Force Base (AFB), Plattsburgh, Clinton County, New York." On behalf of the U.S. Environmental Protection Agency (EPA), I am pleased to advise you that EPA concurs with the protectiveness determinations made in the report. Our review of the report was conducted in accordance with EPA's "Comprehensive Five-Year Review Guidance" (OSWER Directive No. 9355.7-03B-P).

Beyond the remedial actions evaluated in this review, the Air Force is also proceeding with additional studies, designs, and remedial actions (including institutional controls) that may be necessary to protect public health and the environment at other areas at Plattsburgh AFB. Remedies at these remaining areas are at various stages in the Superfund process. Until such time as all remedy decisions have been made for the Plattsburgh AFB site, a comprehensive sitewide protectiveness determination must be reserved.

Notwithstanding the above, EPA concurs that the remedies selected and implemented for Plattsburgh AFB, as reported in this Five-Year Review, are protective. EPA comments on specific portions of the Five-Year Review Report will be transmitted separately to Plattsburgh AFB, and any resulting issues will be resolved with the base. We thank you for the extensive efforts made by the Air Force in conducting this Five-Year Review, and we look forward to continuing our work together m addressing environmental investigation and cleanup of Plattsburgh AFB.

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AFRPA/DA PLBG

If you have any questions regarding the subject of this letter, please contact me at (212) 637-4390 or have your staff contact Bob Morse, EPA Project Manager, at (212) 637-4331.

Sincerely,

William McCabe

for George Pavlou, Director
Emergency and Remedial Response Division

cc: James Waldron, AFRPA
Michael D. Sorel, AFRPA
Dale A. Desnoyers, NYSDEC
James Lister, NYSDEC

FIVE-YEAR REVIEW REPORT

SECOND FIVE-YEAR REVIEW REPORT
FOR
PLATTSBURGH AIR FORCE BASE
PLATTSBURGH, CLINTON COUNTY, NEW YORK

Prepared for:

AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE
BROOKS AIR FORCE BASE, TEXAS

AFCEE CONTRACT NO. F41624-03-D-8609
DELIVERY ORDER 0111

Prepared by:

URS CORPORATION
BUFFALO, NEW YORK

FINAL
SEPTEMBER 2004

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LIST OF ACRONYMS

AFCEE	Air Force Center for Environmental Excellence
AFBCA	Air Force Base Conversion Agency
AFRPA	Air Force Real Property Agency (formerly AFBCA)
AGE	Aerospace Ground Equipment
AMC	Air mobility Command
ARAR	Applicable or Relevant and Appropriate Requirement
BTEX	Benzene, Ethylbenzene, Toluene, and Xylenes (volatile gasoline components)
BRAC	Base Realignment and Closure
CCIDA	Clinton County Industrial Development Agency
C&D	Construction and Demolition Debris
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CEQ	Council on Environmental Quality
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment Report (USAF 2000)
EBS	Environmental Baseline Survey
EDC	Economic Development Conveyance
EOD	Explosive Ordnance Demolition
EPA	United States Environmental Protection Agency
FFA	Federal Facilities Agreement
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FS	Feasibility Study
GW	Groundwater
HHRE	Human Health Risk Evaluation
IA	Industrial Area
IC	Institutional Control
IROD	Interim Record of Decision
IRP	Installation Restoration Program
LDR	LDR 1nternational, Inc.
LUC	Land Use Control
MTBE	Methyl tert-butyl ether
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NDI	Non-Destructive Inspection
NFA/DD	No Further Action Decision Document
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operations and Maintenance
OU	Operable Unit
PA	Preliminary Assessment
PAFB	former Plattsburgh Air Force Base
PARC	Plattsburgh Airbase Redevelopment Corporation
PBC	Public Benefit Conveyance
PCB	Polychlorinated Biphenyl

LIST OF ACRONYMS (Continued)

PCE	Tetrachloroethene
PIDC	Plattsburgh Intermunicipal Redevelopment Corporation
PROD	Preliminary Record of Decision
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
SAC	Strategic Air Command
SEBS	Supplemental Environmental Baseline Survey
SI	Site Investigation
SROD	Supplemental Record of Decision
SVOC	Semivolatile Organic Compound
URS	URS Consultants, Inc.
URSG	URS Greiner, Inc.
USAF	United States Air Force
VOC	Volatile Organic Compound
WSA	Weapons Storage Area

Five-Year Review Summary Form

Site name*(from WasteLAN)*: **Plattsburgh Air Force Base**

EPA ID*(from WasteLAN)*: **NY4571924774**

Region: 02	**State: NY**	**City/County: Plattsburgh/Clinton**

NPL status: ☒ Final ☐ Deleted ☐ Other (specify)

Remediation status (choose all that apply): ☒ Under Construction ☒ Operating ☒ Complete

Multiple OUs?* ☒ YES ☐ NO | **Construction completion date:** ___ / ___ / _____

Has site been put into reuse? ☒ YES ☐ NO

Lead agency: ☐ EPA ☐ State ☐ Tribe ☒Other Federal Agency United States Air Force

Author name: Air Force Real Property Agency

Consultant name: URS Corporation

Review period:** 09 / 28 / 1999 to 09 / 28 / 2004

Date of site inspection: 04 /07/ 2004

Type of review:

☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion

Review number: ☐ 1 (first) ☒ 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:

☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____
☐ Construction Completion ☒Previous Five-Year Review Report
☐Other (specify)

Triggering action date ***(from WasteLAN)***: 09 / 28 / 1999

Due date ***(five years after triggering action date)***: 09 / 28 / 2004

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

EXECUTIVE SUMMARY

The United States Air Force (USAF) has conducted a five-year review of the remedial actions implemented under CERCLA at the former Plattsburgh Air Force Base (PAFB) in Plattsburgh, New York. This is the second five-year review for PAFB. The triggering action for this statutory review (Type Ia--applicable to a site where response is still ongoing) is the completion of the first five-year review for PAFB in September 1999. This five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure. This review was prepared by URS Corporation for the Air Force Real Property Agency (AFRPA), under Air Force Center for Environmental Excellence (AFCEE) Contract No. F41624-03-D-8609 (Delivery Order 0111).

The Installation Restoration Program (IRP) at PAFB, which involves investigation and cleanup under CERCLA, currently includes a total of forty-one sites at various stages of investigation and/or cleanup. As of the date of this Report, RODs have been signed for sixteen Operable Units (OUs) at PAFB. Many of the sites required no further action and permit unlimited use and unrestricted exposure. However, nine OUs (FT-002 Source OU, FT-002/IA Groundwater OU, SS-005 Soil OU, SS-006 Soil OU, SS-018/SS-028, and former landfills LF-021, LF-022, LF-023, and LF-024) have hazardous substances, pollutants, or contaminants remaining above levels that allow for unlimited use and unrestricted exposure. Technical Assessments were performed on these nine OUs to answer the following questions:

- Is the remedy functioning as intended by the decision documents?
- Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?
- Has any other information come to light that could call into question the protectiveness of the remedy?

As part of these Technical Assessments, Human Health Risk Evaluations (HHREs) were completed for sites SS-005 and SS-006 that considered the adverse health effects that could result from exposure to site soils given a residential redevelopment scenario for the sites. Since the

Remedial Investigation human health risk assessments for these sites did not include evaluation of future residential reuse scenarios, the remedies selected in the RODs for the Soil OUs at these sites called for "Institutional Controls" limiting development of the sites to non-residential uses. The HHRIs concluded that risks to future residents from soil exposure at these sites were within acceptable levels, which would allow for unlimited use and unrestricted exposure for the SS-005 and SS-006 Soil OUs. Therefore, the Five-Year Review recommends that deed and lease restrictions specified in the RODs should no longer apply to these sites and that five-year reviews for the SS-005 and SS-006 Soil OUs be discontinued until such time as all remedial construction is completed at PAFB and the final Type 1 Five-Year Review is conducted for the entire base.

The previous five-year review report specifically recommended an evaluation of the monitoring data for the four former base landfills. O&M monitoring/groundwater sampling has been performed at landfills LF-021, LF-022, LF-023, and LF-024 subsequent to the landfill cap/cover installation at each site. O&M monitoring/groundwater sampling has also been performed at site SS-018/SS-028. An evaluation of these sites' O&M sampling analytical data was performed. Based upon the results of these evaluations, the Five-Year Review recommends reductions in the sampling analytical parameters and/or sampling frequency at former landfills LF-021, LF-022, and LF-023 and at site SS-018/SS-028.

Based upon the review of the OUs at PAFB conducted by USAF, it has been determined that the remedies selected for PAFB remain protective of human health and the environment. The next five-year review for PAFB is required prior to September 30, 2009 – five years from the date of this review.

KATHRYN M. HALVORSON
Acting Director
Air Force Real Property Agency

DATE:
NOV 1 5 2004

1.0 INTRODUCTION

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

This Five-Year Review report is being prepared pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section /104J or /106J, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the result of all such reviews, and any actions taken as a result of such reviews.*

This requirement is further interpreted in the NCP; 40 CFR Section 300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.*

The United States Air Force (USAF) has conducted a five-year review of the remedial actions implemented under CERCLA at the former Plattsburgh Air Force Base in Plattsburgh, New York. This review was prepared by URS Corporation, under Air Force Center for Environmental Excellence (AFCEE) Contract No. F41624-03-D-8609 (Delivery Order 0111), from January 2004 through June 2004 for the entire former Plattsburgh Air Force Base (PAFB). This report documents the results of the review.

This is the second five-year review for PAFB. The triggering action for this statutory review (Type Ia – applicable to a site where response is still ongoing) is the completion of the first five-year review for PAFB in September 1999. The first five-year review for PAFB was conducted by the United States Environmental Protection Agency (EPA), Region II (USEPA 1999). This five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure. This document will become a part of the Administrative Record for PAFB.

2.0 SITE BACKGROUND

2.1 Site Description

PAFB is located within the Town and City of Plattsburgh, Clinton County, New York, approximately 26 miles south of the Canadian border and 167 miles north of Albany, New York (Figure 1). The facility is approximately 3,447 acres in size with an additional 1,292 acres in easements, and is bordered in part by the Saranac River and City of Plattsburgh to the north, the Salmon River to the south, Lake Champlain to the east, and Interstate 87 and State Route 22 to the west. PAFB served as a tactical (bombardment and air refueling) wing in the Air Force Strategic Air Command (SAC) from 1955 to 1991. In 1991, the bombardment wing was removed and in 1992 operations were realigned to form the 380th Air Refueling Wing under the Air Mobility Command (AMC). PAFB was slated for closure in 1993 under the Defense Base Closure and Realignment Act of 1990, and the base was closed on September 30, 1995.

2.2 Physical Features

PAFB is characterized by gently sloping topography, predominantly eastward toward Lake Champlain, but secondarily toward the Saranac and Salmon Rivers (Figure 2). Groundwater flow closely mimics surface topography (Figure 3). Groundwater flow across most of the base is from west to east, toward Lake Champlain, with some areas having a more southeasterly flow direction. A network of onbase drainageways carries surface water runoff into sewers and streams that ultimately discharge into the Saranac and Salmon Rivers and Lake Champlain. The two largest surface water drainage systems on base are the Golf Course Drainage and Weapons Storage Area (WSA) Drainage systems. Surface water (and discharging groundwater) on the western side of the base predominantly flows southward into the large topographic basin where the WSA is located and is discharged into the Salmon River. Surface water (and groundwater intercepted by leaking storm sewers) within the central, industrial corridor of the base predominantly flows to the east and southeast into the Golf Course Drainage streams and is discharged into Lake Champlain.

Four stratigraphy units underlie PAFB: glaciomarine and glaciolacustrine sand (sand unit); glaciomarine and glaciolacustrine silt and clay (clay unit); glacial till (till unit); and bedrock. This stratigraphic sequence is consistent basewide, although the thicknesses of the individual units vary. A generalized geologic cross section is shown in Figure 4. Hydrogeologically, the stratigraphic sequence can be divided into the following units: the unsaturated zone and the water table aquifer present in the sand unit; the clay confining layer; the confined till water-bearing zone; and the confined bedrock aquifer, Thus far, groundwater contamination at PAFB appears to be limited to the water table aquifer.

2.3 Land Use/Reuse

Land use near PAFB includes residential, commercial, industrial, and recreational. The City of Plattsburgh is located to the north of the base. Lands to the east, west, and south of the base are predominantly rural and residential. Reuse of PAFB is being administered by the Air Force Real Property Agency (AFRPA, formerly known as AFBCA) in conjunction with the Plattsburgh Airbase Redevelopment Corporation (PARC) and the Clinton County Industrial Development Agency (CCIDA).

A reuse plan, entitled *Comprehensive Reuse Plan for Plattsburgh Air Force Base, Champlain Valley International TradeParc, Clinton County, New York* (LDR 1995), was developed by the Plattsburgh Intermunicipal Development Corporation (PIDC) for PARC. [The PIDC is no longer in existence and was replaced by PARC.] Figure SB (Proposed Comprehensive Land Use Plan) of this Reuse Plan was referenced in the previous Five-Year Review Report. *A Final Environmental Impact Statement, Disposal and Reuse of Plattsburgh Air Force Base, New York* (FEIS) was completed in November 1995 (USAF 1995). The Proposed Action presented in the FEIS was based on the PAFB Reuse Plan and consisted of the development of a commercial airport (with relocation of the Clinton County Airport activities to the base airfield) combined with a number of other uses. In May 2000, an *Environmental Assessment, Alternative Land Uses, Plattsburgh Air Force Base (A Supplement to the Final Environmental Impact Statement, Disposal and Reuse of Plattsburgh Air Force Base, New York)* (EA) was issued which proposed more intensive commercial, industrial, and aviation support land use for the parcels designated for public/recreational uses and open space in the FEIS (USAF 2000). It also proposed mixed land use, such as commercial and industrial, on the same parcel of land instead of only one use per parcel as analyzed in the FEIS. The EA Proposed Action for PAFB is shown in Figure 5.

In accordance with Council on Environmental Quality (CEQ) Regulations (40 CFR Section 1505.2), a Partial Record of Decision (PROD) for the Disposal and Reuse of PAFB was issued on August 21, 1996 and a Record of Decision (ROD) for the Disposal and Reuse of PAFB was issued on October 2, 1997. The PROD stated that PAFB would be disposed of in parcels, described the parcels, and identified the methods of disposal for portions of the base together with possible environmental impacts and mitigations. The ROD addressed the method of disposal for a portion of the base (i.e., the Airport and Economic Development Conveyance (EDC) parcels) and also addressed what actions, if any, USAF would take to avoid or mitigate adverse environmental consequences from its disposal actions, if different from those described in the PROD. Supplemental RODs (SRODs) were issued in August 1999, July 2000, and June 2002 to create or amend disposal parcels for conveyance (AFBCA 1999, 2000b, and 2002). PAFB property has been conveyed to the City of Plattsburgh (Lakefront Recreational Area) and Clinton County (Airport) as part of Public Benefit Conveyances (PBC) and to the CCIDA as part of an Economic Development Conveyance EDC).

Laws affecting the conveyance of real property at PAFB include: the Federal Property and Administrative Services Act; 49 U.S.C. 47151-47153; the Defense Base Closure and Realignment Act of 1990, and various Base Closure and Realignment Act (BRAC) guidance; CERCLA Sections 120 (h) and 121; the Community Environmental Response Facilitation Act (CERFA), which amended portions of CERCLA 120 (h); Department of Defense Regulations 32 CFR Parts 90 and 91 (Revitalizing Base Closure Communities and Community Assistance); the National Defense Authorization Act of 1994 and subsequent years; the National Environmental Policy Act (NEPA), CEQ regulations; and Natural/Cultural Resource Laws.

A *Basewide Environmental Baseline Survey (EBS), Plattsburgh Air Force Base, New York* was prepared to document the environmental condition of real property at PAFB resulting from the storage, use, and disposal of hazardous substances and petroleum products and their derivatives over the installation's history (USAF 1997). The property environmental condition categories are used to evaluate CERFA eligibility, CERCLA Section 120 (h) notification and covenant requirements, and eligibility for transfer by deed. Environmental remedial action obligations can prevent the immediate transfer by deed of a property, but reuse of the property is possible by leasing the property in furtherance of conveyance.

Based upon reuse requests, USAF prepares Findings of Suitability to Lease (FOSL)/Findings of Suitability to Transfer (FOST) to document environmentally related findings and the suitability of the property parcel for

lease/transfer by deed. Parcel-specific Supplemental Environmental Baseline Surveys (SEBSs) are required by the FOSL/FOST process. USAF provides notification of FOSLs/FOSTs to the public and regulatory agencies (EPA and NYSDEC) for review and comment. FOSLs or FOSTs have been completed for all property parcels at PAFB. FOSTs have been completed for approximately 1,026 acres of property and are in progress for another 152 acres (as of June 2004, see Figure 6). Approximately 409.1 acres of PAFB real property has been transferred by deed and deeds are in progress for another 11.1 acres (as of June 2004, see Figure 7).

The lease or transfer documents may contain hazardous substance notifications, covenants and access clauses (to allow USAF and regulatory agencies unrestricted access to sites to conduct any necessary investigation and/or cleanup activities), and restrictions on certain activities or reuses at a site. USAF has developed documents for implementing, monitoring, and enforcing Land Use Controls/Institutional Controls (LUC/IC) at PAFB. The PAFB LUC/IC Layering Strategy Worksheet and the Land Use Control/Institutional Control Management Plan are included in Appendix A. LUC/ICs at various sites have included: digging, excavating, and ground disturbing activity restrictions; groundwater withdrawal restrictions; and residential reuse restrictions. USAF is not aware of any violations of lease or deed restrictions as of the date of this Report.

2.4 Water Usage

PAFB obtains its potable water from the City of Plattsburgh municipal water system; there are currently no drinking water wells located on PAFB. However, approximately 2,000 people obtain drinking water from private wells located within 3 miles of the base. Nearby off-base water supplies have been identified over the course of several environmental investigations conducted at PAFB. These include the homes along Kemp Lane (near the base's north gate), the residential development on old Route 22 (near the Route 22 and I-87 interchange), and residences along Route 9 (north of the Salmon River and south of Cliff Haven) (Figure 8).

USAF has installed sentry wells to ensure that onbase contamination does not impact off-base groundwater users. As of the date of this Report, no contamination is known to have migrated off-base via groundwater. Some minor contamination (fuel-related compounds and solvents) has been detected sporadically over time in local off-base drinking water wells, but studies performed by USAF and reviewed by the regulators did not link USAF activities to the contamination, which was attributed to other off-base sources.

2.5 Environmental Investigations/Cleanup

As a result of the various national defense missions carried out at PAFB, hazardous substances have been released into the environment. USAF has conducted environmental investigations at PAFB since the early 1980s. These investigations have included record searches, Preliminary Assessments (PAs), Site Inspection 1nvestigations (SIs), and Remedial Investigations (RIs). The Installation Restoration Program (IRP) at PAFB, which involves investigation and cleanup under CERCLA, currently includes a total of forty-one sites at various stages of investigation and/or cleanup (Figure 9). The IRP is being implemented according to a Federal Facilities Agreement (Docket No.: II-CERCLA-FFA-10201) signed between the USAF, EPA, and the New York State Department of Environmental Conservation (NYSDEC) on July 10, 1991. PAFB was placed on the National Priorities List (NPL) on November 21, 1989.

As of the date of this Report, RODs have been signed for sixteen Operable Units (OUs) at PAFB. The sixteen OUs, covering fifteen of the forty-one IRP sites at PAFB, include (listed in chronological order of ROD signing; ROD signing dates are in parentheses):

- Landfill LF-022 Source Control (September 1992)
- Landfill LF-023 Source Control (September 1992)
- SS-011 (Defense Reutilization and Marketing Office (DRMO)) Soil Operable Unit (March 1993)
- ST-020 (Civil Engineering Squadron Pesticide Tank) (March 1995)
- Landfill LF-023 Groundwater, Surface Water, and Sediment (March 1995)
- Landfill LF-021 Soil and Groundwater (March 1997)
- Landfill LF-024 Soil and Groundwater (March 1997)
- SS-005 (Non-Destructive Inspection Facility) Soil Operable Unit (April 1998) SS-006 (Aerospace Ground Equipment Facility) Soil Operable Unit (April 1998)
- SS-010 (Heavy Equipment Maintenance Facility) (September 2000)
- SS-018 (Auto Hobby Shop) and SS-028 (Open Storage Area) (September 2000)
- SS-033 (Old Small Arms Range) (May 2001)
- FT-002 (Fire Training Area) Source Operable Unit (March 2001)
- SS-017 (Building 2774) Soil Operable Unit (July 2002)
- SS-026 (Explosive Ordnance Disposal Range) (June 2003)
- Fire Training Area (FT-002)/Industrial Area Groundwater Operable Unit (Interim ROD) (June 2003)

3.0 OPERATIONAL UNIT DESCRIPTIONS AND REMEDIAL ACTION SUMMARY

Descriptions of the OUs with RODs and their selected remedies are provided below. More complete descriptions of the history and characteristics of the sites that are the focus of this review are contained in the RODs and in Appendix D of the Basewide EBS (USAF 1997).

3.1 LF-022 Source Control

Landfill LF-022 covers an area approximately 500 feet wide by 1,200 feet long on the west side of PAFB and is located approximately 500 feet within the base boundary, This landfill received domestic wastes from 1959 to 1966, Depth of fill was up to 30 feet. Soil and fill are contaminated with metals and organics. The volume of fill is estimated to be 524,000 cubic yards.

The ROD for this site was signed in September 1992 (ABB 1992a). The remedy selected for the site was "Site Grading and Vegetation Establishment for Closure" and included:

- clearing and grubbing of the site;
- establishing a 12-inch thick soil cover;
- managing surface water runoff to minimize erosion of the final cover and minimize maintenance requirements;
- establishing vegetation to minimize erosion of the final cover and enhance evapotranspiration;
- developing a post-closure plan to monitor, maintain, and inspect the site;
- monitoring groundwater;
- and conducting five year site reviews.

Construction of the landfill cover was completed in the spring of 1995. USAF conducted a final inspection of the landfill cap construction on July 20, 1995 and notified EPA that the project was completed on July 24, 1995. A Remedial Action Construction Completion Report was signed by EPA on September 27, 1995, A post closure plan was developed specifying inspection, monitoring, and maintenance programs to be carried out over a 30-year period (URS 1992). The ROD also stated that institutional controls for the site would be incorporated into the PAFB Comprehensive Plan to ensure that future owners will be made aware of the landfill location and are informed that the integrity of the final cover or any other component of the containment or monitoring system must not be compromised.

3.2 LF-023 Source Control

Landfill LF-023, located about 300 feet within the base boundary on the west side of PAFB, covers an area approximately 500 feet wide by 1,400 feet long. This landfill received domestic wastes and construction debris from 1966 to 1981. Depth of fill was up to 30 feet. Soil and fill are contaminated with metals, organics, and PCBs. The maximum volume of fill is estimated to be 406,000 cubic yards.

The ROD for this OU was signed in September 1992 (ABB 1992b). The remedy selected was "Installation of a Low Permeability Barrier Cover System" meeting the requirements of 6 NYCRR Part 360 and included:

- regrading to control rainwater runoff and minimize erosion;

- installation of gas detection wells to monitor for the presence or migration of methane and other landfill gases;
- installation of a gas management system (including venting pipes between a gas-venting soil layer and the cover system surface);
- installation of the cover;
- developing a post-closure plan to monitor, maintain, and inspect the site;
- monitoring groundwater;
- and conducting five year site reviews.

Construction of the landfill cover was completed in the spring of 1994. The cover's barrier layer was constructed of a synthetic liner to keep rainwater and snowmelt from infiltrating the landfill. The barrier layer was covered by a soil barrier protection layer to protect the barrier layer from frost and root penetration. Six inches of topsoil was placed on top of the barrier protection layer, where grass and small plants having only limited root systems were established. USAF conducted a final inspection of the landfill cap construction on September 19, 1994 and notified EPA that the project was completed on September 27, 1994. A *Remedial Action Construction Completion Report* was signed by EPA on September 30, 1994. A post closure plan was developed specifying inspection, monitoring, and maintenance programs to be carried out over a 30-year period (Malcolm Pirnie 1994). The ROD also stated that five year site reviews would be conducted and that institutional controls for the site would be incorporated into the PAFB Comprehensive Plan to ensure that future owners will be made aware of the landfill location and are informed that the integrity of the final covers, liners, or any other component of the containment or monitoring system must not be compromised.

3.3 SS-011 Soil Operable Unit

The DRMO facility consisted of several small buildings used for storage and offices and an adjacent, paved open storage area. Its function was to handle USAF discarded materials (such as transformers and refrigerators) that may have had reclaimable components, Soil at the site was contaminated with DDT from leaking storage drums. A Removal Action consisting of the excavation of approximately 600 cubic yards of soil and offsite disposal was conducted in November 1991.

The ROD for this site, signed in March 1993 (URS 1993), stated the following:

- Based on the Risk Assessment, the Removal Action conducted in 1991 was fully effective in achieving protection of human health and the environment. No further action will be taken to reduce site contaminants beyond their current levels.

- Inspections will be conducted to assess the general condition of the site, including the progress of revegetation in areas disturbed by the Removal Action and the potential effects of runoff from or onto the site. The first inspection was completed in 1992. Future inspections are planned at five-year intervals. After each inspection, an evaluation wi11 be undertaken to ensure the continued protection of human health and the environment.

As required by the ROD, the second inspection of the site was conducted by EPA and USAF personnel on September 17, 1998. Adequate revegetation had occurred and no negative effects due to runoff from or onto the site were noted. No problems were noted with the general condition of the site. The first five-year review recommended that future five-year reviews for the SS-011 Soil OU be discontinued until such time as all remedial construction is

completed at PAFB and the final Type I Five-Year Review is conducted for the entire base. Therefore, no additional evaluation of this OU will be performed in this report.

A FOSL was prepared for a property parcel that includes former site SS-011. Bombardier Inc. is the current lessee and operates a railcar test track facility at the site. Land usage at the site has thus far been non-residential.

3.4 ST-020

Site ST-020 was a 1,000 gallon storage tank that was used to store wastewater that contained pesticides. In November 1992, USAF conducted a removal action at this site. The tank contents, the tank itself, and surrounding soils were removed, The soils and tank were transported to West Sand Lake Landfill in West Sand Lake, New York for disposal. The tank contents (wastewater) were taken to CIBRO's wastewater treatment facility in Albany, New York. After completion of the removal action, confirmatory soil samples were collected. The sampling results indicated that the removal action was fully effective in achieving protection of human health and the environment.

The ROD for this site was signed in March 1995 (AFBCA 1995). The remedy selected for the site was "no further action" with no restriction on reuse of the site. In achieving remediation goals during the removal action, the selected remedy is protective of human health and the environment. Five-year reviews will not be required for this remedy according to Section 121(c) of CERCLA because no hazardous substances, pollutants, or contaminants are remaining at the site above levels that would allow for unlimited use and unrestricted exposure. Therefore, no additional evaluation of this OU will be performed in this report.

3.5 LF-023 Groundwater, Surface Water, and Sediment

The ROD for this OU was signed in March 1995 (URS 1995). The remedy selected was "Institutional Action" and called for deed restrictions prohibiting withdrawal of groundwater for potable use in the area, all elements of the Source Control ROD, installation of additional side- and down-gradient monitoring wells, long-term environmental monitoring of groundwater, action criteria for sidegradient wells to protect drinking water, action criteria for downgradient wells to protect surface water resources, and five-year reviews.

The action criteria for the new sidegradient wells were set in the ROD as groundwater ARARs. The action criteria for the downgradient wells were to be set after "baseline" levels for the contaminants of concern were established. The "baseline" levels were to be determined by initially sampling each of the two new downgradient wells twice, with the highest level detected for each contaminant of concern to be set as the baseline level for that particular contaminant; the two downgradient wells were sampled twice in June 1996 to establish the baseline levels. USAF presented the baseline results and proposed action criteria for the two downgradient wells in a February 10, 1997 letter to the regulators, The action criteria were taken from a NYSDEC Division of Fish, Wildlife and Marine Resources memorandum dated December 9, 1996. EPA and NYSDEC concurred with the baseline levels and action criteria. The action criteria for the two downgradient wells are as follows: benzene 60 ppb, chlorobenzene 50 ppb, other VOCs at ten times the existing groundwater standard, bis (2-ethylhexyl) phthalate 6 ppb, naphthalene 100 ppb, arsenic 380 ppb, chromium 412 ppb, nickel 190 ppb, and zinc 165 ppb. If either set of action criteria is exceeded in two consecutive samples from the same well, a focused feasibility study is to be conducted. The feasibility study for the sidegradient wells would include an initial phase addressing immediate measures that could be taken to protect human health, such as the provision of potable water to affected residences.

3.6 LF-021 Soil and Groundwater

This six-acre landfill was used from 1956 to 1959 for the disposal of municipal wastes, construction and demolition debris, and sludge from the PAFB wastewater treatment plant. Soil and fill are contaminated with VOCs, SVOCs, PCBs, pesticides, and metals.

The ROD for this site was signed in March 1997 (URSG 1997a). The remedy selected for the site was "Native Soil Cap and Institutional Controls." In accordance with the ROD, a 12-inch thick cap, consisting of a nine-inch borrow layer, three inches of topsoil, and a vegetative cover, was constructed to control surface water runoff and erosion. The cap is to be inspected during groundwater sampling events, with repairs of the cap performed as necessary. The institutional controls consist of deed restrictions to be imposed to:

- Limit development of any structure on the landfill site which would adversely affect human health and safety;

- Prevent any adverse action leading to the deterioration of the cap;
- Prohibit the installation of any wells which could result in use of the underlying groundwater;
- Prohibit any excavation of the landfill cap without prior approval of NYSDEC;
- Restrict groundwater use in the area encompassing the landfill, northward to the Saranac River within the property boundaries.

The remedy also included the installation of one additional groundwater monitoring well, monitoring of the new well and five existing wells for a period of thirty years, Five-Year Reviews, and the development of a post closure plan that specifies more detailed requirements for cap maintenance and inspection, and monitoring.

Construction of the landfill cap was completed in the fall of 1997. The vegetative cover was established in the spring of 1998 and the grass was mowed for the first time in July 1998. Installation of the additional groundwater monitoring well was completed in August 1998. USAF and EPA personnel conducted an inspection of the landfill on September 17, 1998, and found the remedial construction to be satisfactorily completed. A *Remedial Action Construction Completion Report* was signed by EPA in September 1998. A post closure plan was developed specifying inspection, monitoring, and maintenance programs to be carried out over a 30-year period (URS 1997).

3.7 LF-024 Soil and Groundwater

This one-acre construction/demolition (C&D) debris landfill was used from 1980 to 1986. Soils at the site are contaminated with metals.

The ROD for this site was signed in March 1997 (URSG 1997b). The remedy selected for the site, based on EPA's Presumptive Remedy for Military Landfills, was "Containment with a Native Soil Cap and Institutional Controls." In accordance with the ROD, a 12-inch thick cap, consisting of a nine-inch borrow layer, three inches of topsoil, and a vegetative cover, was constructed to control surface water runoff and erosion. The cap is inspected during groundwater sampling events, with repairs of the cap performed as necessary. The institutional controls consist of deed/lease restrictions that:

- Limit development of any structure on the landfill site which would adversely affect human health and safety; Prevent any adverse action leading to the deterioration of the cap;
- Prohibit the installation of any wells which could result in use of the underlying groundwater;
- Prohibit any excavation of the landfill cap without prior approval of NYSDEC;

- Restrict groundwater use in the area encompassing the landfill and groundwater pathway between the landfill and the Salmon River.

The remedy also included the installation of three groundwater monitoring wells near the locations of three existing well points, an additional new well downgradient of the landfill to serve as a sentry well to monitor plume containment, monitoring of the four new wells and an existing upgradient well (for comparison to background conditions) for a period of thirty years, Five-Year Reviews, and the development of a post closure plan that specifies more detailed requirements for cap maintenance and inspection, and monitoring.

Construction of the cap was completed in the fall of 1997. Appropriate health and safety measures were followed during construction. The vegetative cover was established in the spring of 1998 and the grass was mowed for the first time in July 1998. Installation of the additional groundwater monitoring wells was completed in August 1998. USAF and EPA personnel conducted an inspection of the landfill on September 17, 1998, and found the remedial construction to be satisfactorily completed. A Remedial Action Construction Completion Report was signed by EPA in September 1998. A post closure plan was developed specifying inspection, monitoring, and maintenance programs to be carried out over a 30-year period (URS 1997).

3.8 SS-005 Soil Operable Unit

Site SS-005 is the former Non-Destructive Inspection (NDI) Facility and is located on approximately 750 square yards in the industrial area of the base, approximately 1200 feet east of the flightline. The facility was used for the non-destructive x-ray inspection of aircraft parts. A waste accumulation area was formerly located at the site, handling various cleaning solvents and petroleum products. Although there was evidence of spillage and/or disposal of hazardous substances at the site, chlorinated hydrocarbons and fuel-related compounds were detected in site soils and groundwater during the RI at levels only slightly above ARARs and guidance values. The minor groundwater contamination detected was shown to be unrelated to soil contamination at the site. The Risk Assessment for the site, which did not include evaluation of a future residential use scenario, concluded that risks to human health and the environment, given the current and planned future use of the site (industrial/commercial), were within acceptable levels.

The ROD for the Soil OU at this site was signed in April 1998 (URS 1998a). The remedy selected for the site was “Institutional Controls” and called for restrictions limiting development of the site to non-residential uses, prohibition of the installation of any wells that could result in the use of groundwater underlying the site, and evaluation of the institutional controls during five-year reviews of the remedy. The ROD specified that the institutional controls would be implemented through lease and deed restrictions, and that groundwater remedial actions, including monitoring, would be specified in the preferred alternative for the Fire Training Area (FT-002)/Industrial Area (IA) Groundwater (GW) OU. The FT-002/IA GW OU currently includes groundwater at site SS-005.

3.9 SS-006 Soil Operable Unit

Site SS-006 is the former Aerospace Ground Equipment (AGE) Facility, and is located on approximately 1.6 acres in the industrial area of the base, approximately 600 feet east of the flightline. The site consists of the AGE Building (0 2815), at which power carts utilized on the flightline were maintained and repaired, and Building 2801, which housed the Precision Measurement Equipment Laboratory, The Weapons Systems Management and Maintenance Facility, and other flightline-related offices. A hazardous waste accumulation point was also located within the site, in addition to two underground storage tanks (USTs) for fuel storage, and an oil/water separator. Although there was evidence of spillage and/or disposal of hazardous substances at the site, chlorinated hydrocarbons

and fuel-related compounds were detected in site soils and groundwater during the RI at levels only slightly above ARARs and guidance values. The minor groundwater contamination detected was shown to be unrelated to soil contamination at the site. The Risk Assessment for the site, which did not include evaluation of a future residential use scenario, concluded that risks to human health and the environment, given the current and planned future use of the site (industrial/commercial), were within acceptable levels.

The ROD for the Soil OU at this site was signed in April 1998 (URS 1998b). The remedy selected for the site was "Institutional Controls" and called for restrictions limiting development of the site to non-residential uses, prohibition of the installation of any wells that could result in the use of groundwater underlying the site, and evaluation of the institutional controls during five-year reviews of the remedy. The ROD specified that the institutional controls would be implemented through lease and deed restrictions, and that groundwater remedial actions, including monitoring, would be specified in the preferred alternative for the FT-002/IA GW OU. The FT-002/IA GW OU currently includes groundwater at site SS-006.

3.10 SS-010 Soil Operable Unit

The Heavy Equipment Maintenance Facility, which housed the 380th Transportation Squadron, is located in the east-central portion of the base, within the industrial area. The 380th Transportation Squadron provided traffic management, vehicle operational services, and vehicle maintenance. The facility was constructed in 1957 and ceased operations in 1995. The initially suspected spill site is situated approximately 150 feet west of Idaho Avenue between Buildings 2540, 2542, and the railroad tracks where a waste accumulation area was formerly located. Additional spill areas also were located along the east side of Building 2540, which was used as a maintenance shop for heavy trucks. Building 2542 was used to service base fuel-tanker trucks.

Soil and groundwater at SS-010 were contaminated with fuel-related compounds and TCE as a result of surface spills and runoff from the waste accumulation area and maintenance shop. During several investigations from the late 1980s through 1996, the areas of soil contamination were defined. In 1996-1997, approximately 8,670 cubic yards of contaminated soil were excavated during a removal action and transported off site.

The removal action undertaken in 1996-1997 is considered to have been successful in eliminating the principal threats at the SS-010 site. Sampling and analysis conducted concurrently during removal activities and groundwater sampling conducted subsequent to removal activities indicate that contamination previously present at the site has been reduced to below regulatory levels considered protective of human health. No unacceptable ecological risk is associated with site contaminants.

The ROD for the Soil OU at this site was signed in September 2000 (URS 2000a). The remedy selected for the site was "no further action" with no restrictions on reuse of the site. In achieving remediation goals during the removal action, the selected remedy is protective of human health and the environment. Five-year reviews will not be required for this remedy according to Section 121(c) of CERCLA because no hazardous substances, pollutants, or contaminants are remaining at the site above levels that would allow for unlimited use and unrestricted exposure, Therefore, no additional evaluation of this OU will be performed in this report.

3.11 SS-018 and SS-028

SS-018 and SS-028 are located adjacent to one another on the old base portion of PAFB near the intersection of Wisconsin Street and Ohio Avenue. SS-018 (Building 509, the Auto Hobby Shop) was built in 1936 by the United

States Army (PAFB was formerly Plattsburgh Army Barracks) for use as a regimental parking garage. From the mid-1950s until the early 1970s, Building 509 was used as a vehicle maintenance shop. From the early 1970s until base closure, the facility was used for the maintenance of private vehicles owned by base personnel. SS-028, the Open Storage Area, is associated with Building 508, which housed several base engineer maintenance shops. Building 508 was built in 1935 and also initially served as a regimental parking garage. North and east of Building 508 is a paved open area that USAF used for the general storage of equipment and containerized product since the late 1950s. Contamination at SS-018 and SS-028 includes polycyclic aromatic hydrocarbons (PAHs) and metals present in fill materials along the edge of and underneath pavement at the sites, chemicals in soil related to past small spills of fuel and solvents, and volatile organic compounds (VOCs) present in groundwater at concentrations above New York State groundwater standards.

The SI and RI revealed tetrachloroethene (PCE) in groundwater at the site at levels slightly above groundwater standards. A removal action conducted from December 1998 through June 1999 at site SS-028 resulted in the removal of chlorinated hydrocarbon contaminated soil that constituted the principal threat wastes at the sites. Soils with volatile organic contaminant (VOC) concentrations that exceeded cleanup levels contained in NYSDEC's TAGM were removed. A Closure Report for the removal action was issued in October 1999 (URS 1999) and received regulatory agency concurrence. However, polycyclic aromatic hydrocarbon contamination in soil, largely located below pavement, remains in place untreated. Also, chlorinated hydrocarbon groundwater contaminants remained at concentrations above regulatory standards.

Groundwater beneath the SS-018 and SS-028 sites was also impacted by methyl tert-butyl ether (MTBE), an additive to unleaded gasoline, at concentrations above groundwater standards. The MTBE source was investigated by USAF in consultation with the NYSDEC Region 5 Bureau of Spill Prevention and Response. The contamination source was not found but is not believed to be attributable to sites SS-018 and SS-028.

The ROD for this site was signed in September 2000 (URS 2000b). The remedy addressed risks from residual contaminants in soil and groundwater by restricting groundwater use and by limiting land uses to those that have limited potential to threaten public health (nonresidential). The following actions were included in the remedy:

- Restriction of site development to facilities that support nonresidential use;
- Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater;
- Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC;
- Periodic monitoring of site groundwater and groundwater seeps for volatile organic compounds and MTBE until groundwater contaminant levels naturally attenuate with time and are below current regulatory standards;
- Evaluation of the institutional controls during five-year reviews of the remedy.

Because of the age of Buildings 508 and 509 (over 50 years old) and their potential contribution to an existing historic district, the general area surrounding and including SS-028 and SS-018 is eligible to be nominated to the National Register of Historic Places. Negotiations with the New York State Office of Historic Preservation

(NYSOHP) to establish a programmatic agreement to protect historical resources have been completed. The agreement requires protective convenants for Buildings 508 and 509 and adjacent property in accordance with Section 106 of the National Historic Preservation Act.

3.12 SS-033

Soil at site SS-033 was contaminated as a result of its past use as a small caliber firearms practice range. In 1993, lead projectiles and lead-contaminated soil from the firing range backstop embankment were removed from the site by the USAF. In 1994, a SI was undertaken to evaluate the effectiveness of the removal effort. The evaluation concluded that a potential human health risk was posed by the remaining onsite lead levels in soils north of the target line, which were not remediated during the initial removal action. In addition, elevated metals concentrations, primarily arsenic, were identified in the soil fill material used to backfill the backstop area excavated during the 1993 removal action. These metals were not expected to pose a risk to human health given the land use at that time (the base was still open) or given future industrial development,

From 1996 to 1997, additional soil lead delineation and soil removal activities were undertaken by the USAF during which 647 tons of lead contaminated soil, located in separate areas of the site, were excavated and disposed. In 2000, the SI was updated to incorporate all data collected at the site and to evaluate risks posed to human health given both the planned commercial/industrial reuse of the site and a hypothetical residential reuse scenario. A potential risk was identified through exposure to arsenic in the soil located in the backstop area, given residential reuse. Lead contamination has been successfully mitigated at the site and does not pose a risk to human health.

The ROD for this site was signed in May 2001 (URS 2001a). Based on the assessment undertaken in the SI, the remedial action objective for site SS-033 was to prevent exposure to soil containing arsenic at concentrations that would cause a noncancer risk above the EPA target hazard index of 1. The remedy consisted of excavation of arsenic contaminated soil containing arsenic greater than 7.5 mg/kg and disposal of the arsenic contaminated soil offbase.

The arsenic contaminated soil removal took place between November 2001 and November 2002. A total of 447 tons of arsenic contaminated soil were excavated and sent off-site for disposal. The Final Remedial Action/ Closure Report for the site was issued in August 2003 (Versar 2003). EPA and NYSDEC reviewed the report and found the site remediation to be acceptable (i.e., meeting the conditions of the ROD).

The selected remedy for the SS-033 site is protective of human health and the environment. A five-year review will not be required for this remedy according to Section 121(c) of CERCLA because no hazardous substances, pollutants, or contaminants remain at the site above levels that would allow for unlimited use and unrestricted exposure after the remedy is implemented. Therefore, no additional evaluation of this OU will be performed in this report.

3.13 FT-002 Source Operable Unit

The FT-002 site is located approximately 500 feet west of the runway and 500 feet east of the PAFB base boundary. The site consists of four fire training pits, each 50 to 100 feet in diameter, centered within an approximately 8-acre area. The area has since been extensively regraded. Fire training activities at PAFB began in the middle 1950s and continued until the site was permanently closed to operations on May 22, 1989, with the exception of limited emergency rescue training. During training exercises, firefighters saturated the pits with water, then poured off-specification jet fuel mixed with waste oil, solvents, or other chemicals and ignited the mixture. The fires were then extinguished.

The FT-002 site has been extensively investigated. A PA was conducted in 1984-1985, a SI was conducted in 1987, a multi-phased RI was undertaken from 1988-1993, and smaller soil investigations were conducted thereafter. A Product Removal Action began operation in 1993 and is ongoing. An additional Removal Action was initiated in 1996 to address contaminated soil above the water table with bioventing and soil vapor extraction. Site history is more fully detailed in the FT-002 Source OU ROD (URS 2001b).

Contamination at the site includes: 1) free product (primarily fuel), which is floating on groundwater below the ground surface; 2) soil contamination above the water table, which is mainly confined to the area of the four pits; 3) residual product adhering to soi1 in the zone of water table fluctuation (i.e., smear zone), which has resulted from horizontal and vertical movement of product in the subsurface; and 4) groundwater contamination, which has resulted from product and soil contamination. The first three elements of contamination are the subject of the Source OU; the fourth element (contaminated groundwater) is being addressed under the Groundwater OU (see Section 3.16). Soil located at the surface does not require remediation to protect human health and the environment.

A ROD for the Source OU was signed in March 2001. The remedy involves a combination of soil vapor extraction and bioventing of the contaminated soil, free product collection, water table depression enabling remediation of residual product adhering to soil below the water table, hydraulic containment of the remaining source, institutional controls, progress monitoring and sampling, and five-year site reviews in accordance with CERCLA Section 121(c). The existing technological components of ongoing removal actions, with upgrade and expansion, are being utilized by USAF in the execution of the selected remedy.

3.14 SS-017 Soil Operable Unit

Site SS-017 (Building 2779) is located in the industrial area of the base, east of the flightline ramp. The site, which includes the immediate areas surrounding Building 2774 and 2753, is paved except for a few grassy medians. Building 2774 supported aircraft engine maintenance activities from 1956 to base closure. Building 2753 served as an aircraft maintenance machine shop.

Initial investigations at site SS-017 began in 1985; investigations were focused on a concrete pad, located near the southeast corner of Building 2774, which was used as a drum storage pad and waste accumulation area. High levels of dichlorobenzene isomers and fuel-related compounds were detected in the soil surrounding the pad. Investigations were expanded to the area between Building 2774 and Building 2753. Chlorinated hydrocarbons and fuel-related compounds were detected in this area, but at lower concentrations than the contamination found in the immediate vicinity of the concrete pad. Contamination also was detected in groundwater. An Interim Remedial Measure (IRM) was executed in 1992, during which the concrete pad and approximately 200 cubic yards of contaminated soil surrounding the pad were removed and disposed. Subsequent investigations were implemented to evaluate the area surrounding both buildings. In February 1997, a second removal action was initiated to address soil contamination remaining following the IRM. Systems installed and operated for the removal action included soil vapor extraction (SVE), bioventing, and biosparging.

The IRM implemented in 1992 and the second removal action undertaken from 1997 to 2002 are considered to have been successful in eliminating the principal threats for the SS-017 Soil OU. Soil sampling and analysis conducted to assess the progress of the removal action indicated that soil contamination was reduced to levels considered protective of human health and groundwater resources.

The ROD for SS-017 Soil OU was signed in July 2002 (URS 2002). The selected remedy was no further action and no restriction on reuse of the site. A five-year review wi11 not be required for the SS-017 Soil OU according to Section 121(c) of CERCLA because no hazardous substances, pollutants, or contaminants are remaining at the site at levels that would not allow for unlimited use and unrestricted exposure. Therefore, no additional evaluation of this OU will be performed in this report.

The FT-002/IA GW OU currently includes groundwater beneath site SS-017. Groundwater remedial actions will be specified in the preferred alternative for the FT-002/IA GW OU.

3.15 SS-026

SS-026, the Explosive Ordnance Disposal (EOD) Range, is an approximately eight-acre area located in the southwest portion of PAFB. SS-026 was used primarily for explosive ordnance demolition and disposal. Magnesium flares, Mace, tear gas, RR 119, and ALA 40 were also disposed of and burned at the site (RR 119 and ALA 40 are USAF designations for magnesium-based flare/illumination munitions).

A Preliminary Assessment (PA) for SS-026 was completed in 1992. Because of the ordnance disposal activities and the historical use of defoliant and diesel fuel at the site, the PA recommended further investigation of the site. In July 1994, USAF EOD personnel conducted a survey to locate and dispose of unexploded ordnance at the site in preparation for subsequent site investigations. A SI was initiated later in the summer of 1994 and continued through 1999. In 1997-1998, comprehensive explosive ordnance range clearing was undertaken at the site. The clearing included sensing of potential ordnance using magnetic detection equipment, excavation and sifting of at least the top four feet of soil over the entire EOD Range, and clearing of a 32.5-acre buffer zone around the range to a depth of one foot. Several discoveries were made that were considered evidence of potential for impact to human health or the environment including buried drums, chemical warfare training materials, and debris/fill. The drums were removed in 1997, the chemical warfare training materials were removed in 1998, and the debris/fill was removed in 2001.

In groundwater sampling conducted in 1999 as part of the SI, only two chemicals, iron and selenium, were detected above chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs) in groundwater sampled at SS-026, but these compounds were at levels similar to regional background concentrations. Carcinogenic risk calculated for hypothetical future potable use of groundwater fell within the range of risk (10^{-4} to 10^{-6}) that can be considered acceptable on a case-by-case basis according to current EPA guidelines. Non-carcinogenic risks associated with potable use of site groundwater were within acceptable levels. Further SI characterization (including investigation of debris/fill areas) conducted in 1999 revealed no evidence of chemical warfare agents in site soils. Soils generally contained organic chemicals at concentrations below New York State guidelines; however, high concentrations of polycyclic aromatic hydrocarbons (PAHs) were present that were associated with a tar-like material discovered in an area of debris/fill located south of the EOD Range. The April 2000 Draft-Final SI concluded that, other than in the area of high PAHs, no unacceptable human health risk was associated with exposure to site soils.

The debris/fill (soil, tar-like material, pieces of asphalt, and miscellaneous debris that included scrap metal and metal cans covered with tar) was removed in 2001 during an investigation of the tar-like material. This resulted in the removal of the remaining principal threat waste at the site, and human health risks from site soils were reduced to acceptable levels.

The ROD for this site was signed in June 2003 (URS 2003a). The selected remedy was no further action and no restriction on reuse of the site. The actions undertaken at SS-026 to date have resulted in the reduction of

contamination to levels that do not pose a threat to human health or the environment. However, the ROD required that notification of the prior use of the site as an EOD range be included in the site property transfer documents. Transfer records shall detail past ammunition and explosive contamination information. [A recent FOST (AFBCA 2004a) for parcel A2.15, which includes former site SS-026, contained the notification information specified in the ROD]. Information shall also be entered in the permanent land records of the civil jurisdiction in which the property is located. A five-year review will not be required for the site according to Section 121(c) of CERCLA because no hazardous substances, pollutants, or contaminants are remaining at the site at levels that would not allow for unlimited use and unrestricted exposure. Therefore, no additional evaluation of this OU will be performed in this report.

3.16 Fire Training Area (FT-002)/Industrial Area Groundwater Operable Unit

The FT-002/IA GW OU addresses contaminated groundwater at and downgradient from the FT-002 site and groundwater at or near six other IRP sites situated in the base's industrial corridor that formerly supported aircraft maintenance and operations including:

- SS-004 (Flightline)
- SS-005 (Non-destructive Inspection Facility)
- SS-006 (Aerospace Ground Equipment Facility)
- SS-011 (Defense Reutilization and Marketing Office)
- SS-017 (Jet Engine Inspection and Maintenance Shop)
- SD-041 (Building 2612)

These six sites have been combined with the groundwater portion of FT-002 because they lie downgradient from site FT-002 and contamination from site FT-002 is currently co-mingling with or will potentially co-mingle with groundwater beneath them (see Figure 9), Cleanup of product (chemicals in pure form not dissolved in water) and contaminated soils at the FT-002 site (the source media for FT-002 groundwater contamination) and cleanup of contaminated soils at the other sites listed above are being addressed as part of separate operable units; separate RODs have been or will be issued for these other operable units.

Groundwater contamination that begins at the source areas and has migrated downgradient includes chlorinated hydrocarbons and fuel-related compounds (URS 2001c). Contamination has spread within the unconfined sand aquifer over 1 mile downgradient from the FT-002 site; contaminants have not been found in the underlying till water-bearing zone and carbonate bedrock aquifer. Groundwater is retarded from migrating downward by a low-permeability clay unit which appears to be continuous beneath the sand aquifer. This clay approaches the ground surface to the east of the base's industrial corridor (east of Idaho Avenue), which limits eastward migration of contamination in groundwater. Offbase groundwater users to the east along Route 9, who utilize the bedrock aquifer for private supply, have not been impacted by the groundwater contamination detected on base. Groundwater contamination is discharging into the Golf Course drainage system, which ultimately flows to Lake Champlain, and the Weapons Storage Area (WSA) drainage system, which ultimately flows to the Salmon River.

An interim ROD (IROD) that addresses the FT-002/IA GW OU was signed in June 2003 (URS 2003b). The interim remedial objectives for the FT-002/IA GW OU are: 1) to prevent ingestion of groundwater containing contaminant concentrations above applicable and/or relevant and appropriate requirements (ARARs); 2) to restore groundwater to ARARs; 3) to prevent migration of groundwater with contaminant concentrations above ARARs beyond base boundaries; and 4) to prevent further impact to surface water that has been impacted by contaminated groundwater.

The interim remedy for the FT-002/IA Groundwater OU includes: interim institutional controls (e.g., lease and deed restrictions, PAFB dig permit system) to limit the use and discharge of groundwater and to prohibit property development that would interfere with remedial operations; two collection trenches, one located between the runway and flightline and the other along the eastern edge of the flightline; two permeable treatment walls, one located along Idaho Avenue and the other upgradient of the WSA drainage system; extraction wells located in the plume core west of the runway; a groundwater treatment system to treat contaminated groundwater from the collection systems discharging to the WSA drainage system; groundwater and surface water monitoring; and five-year site reviews in accordance with Section 121(c) of CERCLA. The interim remedy involves two contingencies that may be implemented during the design of the remedy. These include: 1) a consideration to replace the permeable treatment wall envisioned along Idaho Avenue with a collection trench and 2) a consideration to treat groundwater from collection systems discharging to the Golf Course drainage system.

The interim action specified in the IROD is protective of human health and the environment, but is an interim solution only. Subsequent actions, specifically finalization of institutional controls and how they are implemented, will be addressed in the final ROD for the final response action.

As of the date of this Report, the portions of the FT-002/IA GW OU remedy that have been constructed include: the collection trench located between the runway and flightline; a portion of the collection trench located along the eastern edge of the flightline; five extraction wells located in the plume core west of the runway; and a groundwater treatment plant to treat contaminated groundwater from the collection systems discharging to the WSA drainage system. The ROD has been advanced to near completion. USAF responses to NYSDEC and EPA comments on the Second-Revised Draft-Final ROD, along with corresponding modified pages of the document, were forwarded to these agencies for review in April 2004. This document exercises the consideration to replace the permeable treatment wall originally envisioned along Idaho Avenue with a collection trench and documents one significant difference from the remedy proposed in the Proposed Plan – long-term monitoring will be implemented upgradient from the WSA drainage system rather than installing a permeable treatment wall. Once agency review is complete, the ROD will be issued as final and executed. The IROD will be superceded upon execution of the final ROD.

3.17 Status of Other IRP Sites

Brief discussions of the other sites in the IRP are presented below, Complete descriptions of all 41 IRP sites are contained in Appendix D of the Basewide EBS (USAF 1997). A schedule for completion of ongoing studies and cleanup for the sites not currently covered by RODs or regulator-approved Decision Documents is provided in Appendix B of this report. In accordance with EPA five-year review guidance, evaluation of the protectiveness of remedial actions for sites where investigations are ongoing will be deferred until the investigations are complete and a remedial decision is made. Investigations will proceed at these sites until it can be determined that there are no unacceptable risks from the site or until remedial decisions can be made. Additional details regarding these sites will be reported in the next five-year review.

3.17.1 No Further Action IRP Sites

USAF has issued No Further Action Decision Documents (NFA/DD) for five IRP sites (ST-032, SS-035, SS-036, SS-037, and SS-038) which, based on Preliminary Assessments (PAs) conducted for each site, have been determined not to be of environmental concern.

USAF has also issued NFA/DDs for four IRP sites (SD-001, SS-019, SS-034, and SS- 040) which, based on SIs conducted for each site, have been determined not to be of environmental concern.

3.17.2 Pending No Further Action IRP Sites

NFA/DDs are currently being prepared by USAF for three IRP sites: SS-007, SS-027, and SS-029. Draft Final SI Reports have been completed for each site and regulatory agency comments have been received indicating no further action is necessary at the sites. Pending resolution of any regulatory agency comments, it is anticipated that these NFA/DDs will be signed in the latter half of 2004.

3.17.3 Pending Investigations/Remedial Actions

3.17.3.1 CERCLA Remedial Investigations/Remedial Actions

As previously mentioned in Section 3.15, the FT-002/IA GW OU physical remedy is currently under construction as outlined in the IROD. The Final ROD for this OU is in progress.

The Draft Revised RI Report for site SS-004 is currently being reviewed by the regulatory agencies.

At site SS-013, RI and Supplemental RI Reports have been completed and multiple soil removals have been completed. A Remedial Alternatives Technical Memorandum, recommending an ozone sparging system to treat contaminated groundwater, is currently being reviewed by the regulatory agencies. A Draft Proposed Plan, also recommending the selection of ozone sparging as the preferred alternative for site SS-013, was submitted to the regulatory agencies on May 28, 2004.

Studies/remedial activities completed at site SS-016 include: a Treatability Study, consisting of the installation and operation of a combination groundwater extraction and treatment/SVE system (this system has been operated continuously, with minor shutdowns, since January 1997); an Engineering Evaluation/Cost Analysis (EE/CA); a RI; sump and soil removal; and a Supplemental Evaluation and Feasibility Study. A Draft Final Proposed Plan, which recommends the injection of Oxygen Release Compound (ORC) to address groundwater contamination, is currently being reviewing by the regulatory agencies,

At site SD-041, the Draft Final RI Report was completed and regulatory agency comments were received. Additional fieldwork will be performed in mid 2004 to address regulatory agency comments on the Draft Final RI Report.

3.17.3.2 NYSDEC Fuel-Spill Sites

PAs were done at these ten fuel-spill IRP sites. Eight sites (SS-003, SS-008, SS-009, SS- 014, SS-015, ST-025, SS-031, and SS-039) have been designated by USAF as No Further Action, and two sites (ST-012 and ST-030) are being addressed by the NYSDEC Region 5 Office of Environmental Quality Spill Response Division. In a December 12, 2003 letter, USAF requested concurrence from NYSDEC to discontinue sampling at ST-012 and that the site be designated No Further Action.

A biosparging remedial system was installed at site ST-030 and began operation in November 2002. Significant decreases in petroleum-related contaminant concentrations in groundwater have occurred since the system began operation and site cleanup is ongoing.

3.18 EBS Factors

Fourteen additional areas of potential environmental concern and multiple former PCB locations, known as "EBS Factors", were identified as requiring additional evaluation by USAF based on record searches, interviews, and research performed as part of the PAFB Basewide EBS (USAF 1997). These sites were further investigated as part of a Supplemental Evaluation to the EBS (URS 200ld), which included sampling, laboratory analysis, and health risk assessments. Additional actions were recommended for 8 environmental factors and 4 former PCB transformer locations. Fieldwork has been completed to close out these remaining factors and a Draft Close Out Report is in progress. A ROD will be written for those EBS factors where additional work was performed.

4.0 PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

This section summarizes the recommendations from the previous Five-Year Review report (USEPA 1999) and discusses follow-up actions taken to address these recommendations.

4.1 SS-011

4.1.1 Previous Five-Year Review Recommendations

The previous Five-Year Review Report had the following recommendation regarding site SS-011:

"The Risk Assessment conducted for the site states that the Removal Action conducted in 1991 was fully effective in achieving protection of human health and the environment. Furthermore, cleanup levels for DDT have not changed sufficiently to necessitate changes in the agreed-upon target cleanup level for DDT m soils at this site. The target cleanup levels set in the ROD for site SS-011 soils are still considered to be protective of human health and the environment. It is recommended, therefore, that five-year reviews for the SS-011 Soil OU be discontinued until such time as all remedial construction is completed at PAFB and the final Type I Five-Year Review is conducted for the entire base. It must be noted, however, that groundwater contamination at the site still needs to be addressed. As of the date of this report [September 1991 Five-Year Review], this issue is under discussion by the BCT. lt should also be noted that any future leases, FOSLs, deeds for transfer, and FOSTs that include real property located at this site will need to include the same restrictions found in the Railroad Spurs, Industrial Area, and Vacant Land FOSL."

4.1.2 Follow-up Actions

Contaminated groundwater at the SS-011 site is being addressed as part of the FT-002/IA GW OU. The planned remedy for the FT-002/IA GW OU includes a groundwater collection trench located along Idaho Avenue, immediately adjacent to the SS-011 site.

Site SS-011 lies within the Railroad Spurs, Industrial Area, and Vacant Land FOSL property. The *Final Finding of Suitability to Lease, Railroad Spurs, Industrial Area, and Vacant Lands, Plattsburgh Air Force Base, New York* (AFBCA 1998a) states that notice will be given in the lease documents of the type and quantity of hazardous substances and the time at which storage and release took place, and that the lessee will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities at the site without prior written approval from the Air Force. The FOSL also states that provisions will be placed in the lease to allow the Air Force and regulatory agencies unrestricted access to the site to conduct any necessary investigation and/or cleanup activities.

The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the EDC Property Lease (which includes site SS-011) agreement between PARC and USAF (see Section 5.3.4). PARC has subleased property that includes parts of site SS-011 to Bombardier Transit Corporation, which operates a railcar test track facility at the site. The hazardous substance notifications, access clauses, and reuse restrictions have been incorporated into the sublease agreement between PARC and Bombardier Transit Corporation by way of reference to the "Main Lease" between PARC and USAF.

Deed restrictions will be placed on the property at the time of transfer. USAF provides copies of SEBS, FOSL, and FOST documents to EPA and NYSDEC for review to verify that the appropriate notifications, restrictions, and covenants are present.

4.2 LF-021

4.2.1 Previous Five-Year Review Recommendations

The previous Five-Year Review Report had the following recommendation regarding site LF-021:

"Although deed restrictions are specified in the Proposed Plan and ROD, lease restrictions are not. All future leases (as well as FOSLs, deeds for transfer, and FOSTs) that will include real property located at this site will need to include all of the restrictions specified in the ROD. Also, the results of groundwater monitoring conducted at this site will need to be reviewed as they are received, as well as during the next five-year review."

4.2.2 Follow-up Actions

Site LF-021 lies within the Flightline, Navigational Aids, and Miscellaneous Structures FOSL property. The *Finding of Suitability to Lease for Flightline, Navigational Aids, and Miscellaneous Structures, Former Plattsburgh Air Force Base, New York* (AFBCA 1998b) states that notice will be given in the lease documents of the type and quantity of hazardous substances and the time at which storage, spill, release or migration took place, and that the lessee will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities at the site without prior written approval from the Air Force. The FOSL also states that provisions will be placed in the lease to allow the Air Force and regulatory agencies unrestricted access to the site to conduct any necessary investigation and/or cleanup activities.

The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the PBC Airport Property Lease (which includes site LF-021) agreement between Clinton County and USAF (see Section 5.3.4). The site is currently not being occupied. Deed restrictions will be placed on the property at the time of transfer. USAF provides copies of SEBS, FOSL, and FOST documents to EPA and NYSDEC for review to verify that the appropriate notifications, restrictions, and covenants are present. Post-closure groundwater monitoring reports have been submitted for regulatory agency review and the data is reviewed in Section 5.3 of this report.

4.3 LF-024

4.3.1 Previous Five-Year Review Recommendations

The previous Five-Year Review Report had the following recommendation regarding site LF-024:

"All future leases, FOSLs, deeds for transfer, and FOSTs that will include real property located at this site will need to include all of the restrictions specified in the ROD, Also, the results of groundwater monitoring conducted at this site will need to be reviewed as they are received, as well as during the next five-year review."

4.3.2 Follow-up Actions

The real property located at LF-024 is part of parcel A2.15, for which a FOST has recently been signed (March 25, 2004). The *Final Finding of Suitability to Transfer, Parcel 22.15, Northwest and Southwest Base Areas, Plattsburgh Air Force Base, New York* (AFBCA 2004a) contains the deed notifications and restrictions specified in the ROD for LF-024. The FOST was reviewed and commented upon by NYSDEC and EPA prior to being finalized and signed. Post-closure groundwater monitoring reports have been submitted for regulatory agency review and the data is reviewed in Section 5.3 this report.

4.4 LF-022

4.4.1 Previous Five-Year Review Recommendations

The previous Five-Year Review Report had the following recommendation regarding site LF-022:

"The institutional controls specified in the ROD for this site (notification of future owners regarding the landfill's location and protection of the containment/monitoring system) will need to be included in all future leases, FOSLs, deeds for transfer, and FOSTs for real property located at this site. It is suggested that the restrictions go beyond protection of the cap to specifically include the same restrictions as LF-022 and LF-024, i.e.,

- *Limit development of any structure on the landfill site which would adversely affect human health and safety; Prevent any adverse action leading to the deterioration of the cap;*
- *Prohibit the installation of any wells which could result in use of the underlying groundwater at the site;*
- *Prohibit any excavation of the landfill cap without prior approval of NYSDEC.*

Also, groundwater monitoring needs to be continued until the thirty-year period specified in the ROD has been completed. "

4.4.2 Follow-up Actions

Site LF-022 lies within the Flightline, Navigational Aids, and Miscellaneous Structures FOSL property. The *Finding of Suitability to Lease for Flightline, Navigational Aids, and Miscellaneous Structures, Former Plattsburgh Air Force Base, New York* (AFBCA 1998b) states that notice will be given in the lease documents of the type and quantity of hazardous substances and the time at which storage, spill, release or migration took place, and that the lessee will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities at the site without prior written approval from the Air Force. The FOSL also states that provisions will be placed in the lease to allow the Air Force and regulatory agencies unrestricted access to the site to conduct any necessary investigation and/or cleanup activities.

The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the EDC Property Lease (which includes site LF-022) agreement between PARC and USAF (see Section 5.3.4). The site is currently not being occupied. Deed restrictions wi11 be placed on the property at the time of transfer. USAF provides copies of SEBS, FOSL, and FOST documents to EPA and NYSDEC for review to verify that the appropriate notifications, restrictions, and covenants are present.

The restrictions suggested in the previous Five-Year Review Report have been added to the LF-022 Land Use Controls/Institutional Controls Map in the *Land Use Control/Institutional Control Management Plan* (see Appendix A). Post-closure groundwater monitoring at the site is ongoing and monitoring reports have been submitted for regulatory agency review; the data is reviewed in Section 5.3 this report.

4.5 LF-023 Source Control R Groundwater, Surface Water, and Sediment

4.5.1 Previous Five-Year Review Recommendations

The previous Five-Year Review Report had the following recommendation regarding site LF-023:

"The institutional controls specified in the ROD for the Source OU (notification of future owners regarding the landfill's location and protection of the containment/monitoring system) will need to be included in all future leases, FOSLs, deeds for transfer, and FOSTs for real property located at the site. It is suggested that the restrictions go beyond protection of the cap to specifically include the same restrictions as LF-021 and LF-024, i.e.:

- *Limit development of any structure on the landfill site which would adversely affect human health and safety;*
- *Prevent any adverse action leading to the deterioration of the cap;*
- *Prohibit the installation of any wells which could result in use of the underlying groundwater at the site;*
- *Prohibit any excavation of the landfill cap without prior approval of NYSDEC.*

Although the ROD for the Groundwater, Surface Water, and Sediment OU called for deed restrictions prohibiting withdrawal of groundwater for potable use in the area, lease restrictions were not specified. Any future leases (as well as all FOSLs, deeds for transfer, and FOSTs) for real property located at this site will need fo include this restriction and the other restrictions specified in the Groundwater, Surface Water, and Sediment OU ROD. Also, groundwater monitoring needs to be continued until the 30-year period specified in the ROD has been completed."

4.5.2 Follow-up Actions

Site LF-023 lies within the Western Area FOSL property. The *Final Finding of Suitability to Lease for Western Area, Former Plattsburgh Air Force Base, New York* (AFBCA 2000a) states that notice will be given in the lease documents of the type and quantity of hazardous substances and the time at which storage, spill, release or migration took place, and that the lessee wi11 be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities at the site without prior written approval from the Air Force. The FOSL also states that provisions wi11 be placed in the lease to allow the Air Force and regulatory agencies unrestricted access to the site to conduct any necessary investigation and/or cleanup activities.

The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the EDC Property Lease (which includes site LF-023) agreement between PARC and USAF (see Section 5.3.4). The site is currently not being occupied. Deed restrictions will be placed on the property at the time of transfer. USAF provides copies of SEBS, FOSL, and FOST documents to EPA and NYSDEC to verify that the appropriate notifications, restrictions, and covenants are present.

The restrictions suggested in the previous Five-Year Review Report have been added to the LF-023 Land Use Controls/Institutional Controls Map in the *Land Use Control/Institutional Control Management Plan* (see Appendix A). Post-closure groundwater monitoring at the site is ongoing and monitoring reports have been submitted for regulatory agency review; the data is reviewed in Section 5.3 this report.

4.6 SS-005 Soil

4.6.1 Previous Five-Year Review Recommendations

The previous Five-Year Review Report had the following recommendation regarding site SS-005:

"The restriction required hy the ROD for this site, that future use of the site be limited to non-residential uses, needs to be added to the Flightline, Industrial, and Administrative Building lease. Also, all future leases, FOSLs, deeds for transfer, and FOSTs that will include real property located at this site will need to include all of the restrictions specified in the ROD."

4.6.2 Follow-up Actions

The site is included within the PBC Airport Property Lease agreement between Clinton County and USAF (see Section 5,3.4), but is currently not being occupied. The PBC Airport Lease allows only airfield-related reuses on the property, effectively disallowing residential reuse at site SS-005. Nearby facilities are being leased for nonresidential, airfield-related reuses.

As part of this report, a Human Health Risk Evaluation was performed for SS-005 soil exposure that included evaluation of a future residential reuse scenario (see Appendix D). The Health Risk Evaluation concluded that risks to future residents from soil exposure were within acceptable levels, which would allow unlimited use and unrestricted exposure for the SS-005 Soil OU. Groundwater beneath site SS-005 is currently included in the FT-002/IA GW OU. Therefore, the non-residential reuse restrictions specified in the ROD should no longer apply to this site (this is discussed further in Sections 6.6 and 7.0). Implementation of these reuse restrictions is the only action specified in the SS-005 ROD. With removal of these restrictions, site SS-005 could be closed via correspondence between USAF and the regulatory agencies.

4.7 SS-006 Soil

4.7.1 Previous Five-Year Review Recommendations

The previous Five-Year Review Report had the following recommendation regarding site SS-006:

"The restriction required by the ROD for this site, that future use of the site be limited to non-residential uses, needs to be added to the Building 28l5 lease. Also, all future leases, FOSLs, deeds for transfer, and FOSTs that will include real property located at this site will need to include all of the restrictions specified in the ROD."

4.7.2 Follow-up Actions

The site is included within the PBC Airport Property Lease agreement between Clinton County and USAF (see Section 5.3.4). The PBC Airport Lease allows only airfield-related reuses on the property, effectively disallowing residential reuse at site SS-006. As of the date of this Report, Building 2815 and associated facilities are currently

being leased by TransEd Inc., a company that produces wheel assemblies for subway railcars, and Building 2801 is being leased by Exelon Power Labs (PECO Nuclear), a calibration laboratory. Nearby facilities are being leased for nonresidential, airfield-related reuses.

As part of this report, a Human Health Risk Evaluation was performed for SS-006 soil exposure that included evaluation of a future residential reuse scenario (see Appendix D). The Health Risk Evaluation concluded that risks to future residents from soil exposure were within acceptable levels, which would allow unlimited use and unrestricted exposure for the SS-006 Soil OU. Groundwater beneath site SS-006 is currently included in the FT-002/IA 6W OU. Therefore, the non-residential reuse restrictions specified in the ROD should no longer apply to this site (this is discussed further in Sections 6.6 and 7.0), Implementation of these reuse restrictions is the only action specified in the SS-006 ROD. With removal of these restrictions, site SS-006 could be closed via correspondence between USAF and the regulatory agencies.

4.8 Reuse Recommendations

4.8.1 Previous Five-Year Review Recommendations

The previous Five-Year Review Report had the following recommendation regarding the Capehart FOST:

"EPA concerns with the Capehart FOST related to lead-based paint and the BX Gas Station plume need to be addressed by the BRAC Cleanup Team. Also, EPA will need to see copies of the deeds for any parcels transferred in the future, to verify that the appropriate notifications, restrictions and covenants are present."

4.8.2 Follow-up Actions

EPA concerns with the Capehart FOST related to lead-based paint and the BX Gas Station plume have been addressed by the BRAC Cleanup Team. These areas of concern are part of parcels that have been transferred by deed. USAF provides copies of SEBS, FOSL, and FOST documents to EPA and NYSDEC for review to verify that the appropriate notifications, restrictions, and covenants are present.

5.0 FIVE-YEAR REVIEW PROCESS

5.1 Administrative Components/Community Notification

Members of the BRAC Cleanup Team (EPA and NYSDEC) were notified of the initiation of the five-year review in February 2004. URS Corporation (Buffalo, New York Office) conducted this five-year review under contract to USAF with the assistance of AFRPA personnel located at PAFB. Components of the five-year review process included: community involvement, document review, data review, site inspections, local interviews, and development and review of the Five-Year Review Report. EPA and NYSDEC representatives reviewed the Draft Five-Year Review Report and provided comments that were incorporated into this document.

Activities to involve the community were initiated with the announcement at the March 23, 2004 Restoration Advisory Board (RAB) public meeting that the five-year review was being conducted. The RAB was established for PAFB and the surrounding community in 1994 to provide a forum for interested stakeholders to express concerns regarding cleanup of the base and to obtain information regarding the cleanup. The RAB is composed of representatives of environmental groups, a nearby housing development, local utilities, local officials, PARC, concerned citizens, EPA, NYSDEC, and the New York State Department of Health (NYSDOH), and meets on a quarterly basis.

On May 11, 2004, a public notice was placed in the local newspaper (the *Press-Republican*) announcing that the five-year review being conducted and inviting public comment submittal to PAFB AFRPA.

5.2 Document Review

Relevant documents reviewed included the RODs for the various OUs, O&M monitoring reports, closure reports, EBS reports, FOSLs, FOSTs, and deeds. Most documents are part of the Administrative Record for PAFB, a copy of which is located at the Information Repository at the Feinburg Library on the campus of the State University of New York at Plattsburgh. ARARs listed in the RODs were evaluated and compared to current regulatory standards/guidance values. A listing of the documents reviewed is provided in the References section of this document,

5.3 Data Review

The following sections describe, summarize, and draw conclusions from the various data that were reviewed during the preparation of this Five-Year Review Report.

5.3.1 O&M Data Review

The previous five-year review report specifically recommended an evaluation of the monitoring data for the four former base landfills. O&M monitoring/groundwater sampling has been performed at landfills LF-021, LF-022, LF-023, and LF-024 subsequent to the landfill cap/cover installation at each site. O&M monitoring/groundwater sampling has also been performed at site SS-018/SS-028. URS maintains a database containing the analytical results for the O&M monitoring/sampling performed at PAFB. An evaluation of these sites' O&M groundwater sampling analytical data was performed. Detected analytes were tabulated, detected concentrations were statistically summarized, and the data were compared to applicable groundwater ARARs. Analytes that were frequently detected at concentrations exceeding their respective groundwater ARARs (i.e., more than ten-percent of the total samples

analyzed had ARAR exceedances for the compound) received further statistical trend analysis and/or analytical data were viewed graphically to identify trends. The data analyses are included in Appendix C. The results of the analyses are discussed below.

5.3.1.1 LF-023

Construction of the LF-023 remedy was completed in September 1994. Post-closure groundwater monitoring at the site began in December 1995 and has been completed quarterly since that time. [The four Group B wells were monitored for the first time in April 1996.] Analytical data from December 1995 through January 2004 were examined to evaluate contaminant concentrations in groundwater. Samples from 13 Group A monitoring wells (MW-23-001 through -013) were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), Target Analyte List (TAL) metals, and other miscellaneous compounds (some of the Group A parameters are only analyzed once per year). Groundwater samples collected from four Group B wells (MW-23-101 through -104) and two surface water locations (SW-23-001 and -002) were analyzed for a more limited list of VOCs, semivolatile organic compounds (SVOCs), and metals.

In the Group A wells, five petroleum-related VOCs (benzene, ethylbenzene, isopropylbenzene, toluene, and xylene), nine metals (antimony, arsenic, chromium, iron, manganese, nickel, selenium, sodium, and thallium), and two miscellaneous compounds (bromide, ammonia) have been frequently detected at concentrations that exceed their respective groundwater standards.

The petroleum-related VOCs that are present at concentrations exceeding their respective groundwater standards are detected primarily in an upgradient monitoring well cluster MW-23- 008, -009, and -010) near the southern end of LF-023 and are attributable to an off-base, upgradient gasoline spill source. Arsenic, iron, and manganese data indicate enrichment in wells downgradient of LF-023 and appear to be attributable to leaching from LF-023 fill. Ammonia- nitrogen in downgradient groundwater also appears to be landfill derived, but concentrations in downgradient wells have exhibited a notable downward trend since O&.M sampling began. Nickel, selenium, and thallium groundwater ARAR exceedances appear to occur sporadically in groups of upgradient and downgradient wells and then concentrations drop off to near non- detectable levels; the presence of these metals can not be conclusively attributed to LF-023. Antimony, chloride, chromium, and sodium concentrations appear to be higher in upgradient wells as compared to the downgradient wells. No bromide ARAR exceedances have occurred since the end of 1997.

The only groundwater ARAR exceedances in the Group B downgradient wells (MW-23- 103 and MW-23-104) have been sporadic bis(2-ethylhexyl)phthalate detections. Bis(2-ethylhexyl)phthalate is recognized as a common sampling/laboratory contaminant. The Group B sidegradient wells (MW-23-101 and MW-23-102), which were installed as sentry wells to monitor potential impacts to nearby residential groundwater users, have had sporadic chloroform (due to residual chlorinated drilling water), bis(2-ethylhexyl)phthalate, and arsenic ARAR exceedances. Arsenic exceedances have occurred in both sentry wells in two of the last three sampling events; arsenic concentrations in these wells will be watched closely in the future.

In the downgradient surface water samples (SW-23-001 and SW-23-002), bis(2-ethylhexyl)phthalate, copper, and nickel have been sporadically detected at concentrations exceeding their respective Class D surface water ARARs. Chromium, zinc, and phenols have been detected in a greater number of samples at concentration exceeding their respective ARARs and iron concentrations have exceeded ARARs in a11 samples collected. Most of the compounds exceeding ARARs in the surface water samples have not been identified as groundwater contaminants attributable to LF-023.

5.3.1.2 LF-022

Construction of the remedy at LF-022 was completed in September 1995. Post-closure groundwater monitoring at the site began in December 1995, was conducted quarterly through the end of 2002, and has been conducted semiannually (with NYSDEC Region V approval) since that time. Analytical data from December 1995 through December 2003 were examined to evaluate contaminant concentrations in groundwater. Groundwater samples from shallow wells were analyzed for a short list of metals during quarterly (1995-2002) or semiannual (2003) routine sampling events. Once per year, all site wells were sampled and analyzed for a larger list of parameters including: volatile organic compounds (VOCs), Target Analyte List (TAL) metals, and other miscellaneous parameters as specified in the post-closure monitoring and maintenance plan for the site.

One VOC (1,3-dichloropropene) and three miscellaneous parameters (chloride, nitrate-nitrogen, and ammonia-nitrogen) have been detected at concentrations exceeding their respective groundwater ARARs. However, these compounds have only been sporadically detected in only one or a few samples. The primary contaminants of concern, detected frequently in groundwater at concentrations exceeding ARARs, are metals.

Metals that have been detected at concentrations exceeding ARARs include: antimony, arsenic, iron, lead, magnesium, manganese, selenium, sodium, and thallium. Arsenic, lead, magnesium, and selenium ARAR exceedances have occurred only sporadically in a few samples. Iron and manganese data indicate enrichment in wells downgradient of LF-022, but these concentrations are not significantly elevated above levels noted in background groundwater wells at PAFB (URS 1996). Sodium concentrations are higher in upgradient wells as compared to downgradient wells, possibly due to nearby road salting.

Antimony, arsenic, and thallium exceedances appear to occur sporadically in groups of wells and then concentrations drop off to near non-detectable levels, Antimony and thallium concentrations were at historical highs in late 2002 and early 2003, but were below ARARs in all but one well in the December 2003 sampling event. All but one of the arsenic ARAR exceedances occurred in the December 2003 sampling event. The antimony, arsenic, and thallium concentrations were enriched in downgradient wells as compared to the upgradient wells, implying that they may be attributable to the landfill.

5.3.1.3 LF-021

Construction of the LF-021 remedy was completed in September 1998. Post-closure groundwater monitoring at the site began in November 1998 and has been conducted quarterly through November 2003. The ROD required that sampling be conducted quarterly for the first five years to establish baseline conditions, and annually thereafter. Annual sampling will commence in 2004. Analytical data from November 1998 through November 2003 were examined to evaluate contaminant concentrations in groundwater. The groundwater samples were analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and metals.

One VOC (acetone), one SVOC (bis(2-ethylhexyl)phthalate), and three pesticides have been detected at concentrations exceeding their respective groundwater ARARs. However, these compounds have only been sporadically detected in only one or a few samples. Also, acetone and bis(2-ethylhexyl)phthalate are common sampling/laboratory contaminants. PCBs have not been detected in any LF-021 groundwater samples. The primary contaminants of concern, detected frequently in groundwater at concentrations exceeding ARARs, are metals.

Metals that have been detected at concentrations exceeding their respective ARARs include: antimony, arsenic, iron, lead, magnesium, manganese, mercury, selenium, sodium, and thallium. Lead and mercury ARAR exceedances have occurred only sporadically in a few samples. Iron, magnesium, manganese, and sodium data indicate enrichment in wells downgradient of LF-021, but the concentrations of these analytes are not significantly elevated above levels noted in background groundwater wells at PAFB (URS 1996).

Antimony, arsenic, selenium, and thallium exceedances appear to occur sporadically in groups of wells and then concentrations drop off to near non-detectable levels. Antimony and thallium concentrations have been below ARARs in all wells for the last few sampling events. Arsenic and selenium concentrations have been above ARARs in most wells for the last few sampling events. Selenium and thallium concentrations are enriched in downgradient wells as compared to the upgradient well implying that they may be attributable to the landfill. Antimony and arsenic concentrations are as high or higher in the upgradient well as compared to the downgradient wells implying that they may be due to an unknown upgradient source.

5.3.1.4 LF-024

Construction of the remedy at LF-024 was completed in September 1998. O&M groundwater sampling began at the site in November 1998 and had been completed semiannually through November 2003. The ROD required that sampling be conducted semiannually for the first five years to establish baseline conditions, and annually thereafter. Annual sampling will commence in 2004. Analytical data from November 1998 through November 2003 were examined to evaluate contaminant concentrations in groundwater. The groundwater samples were analyzed for TAL metals.

Metals that have been detected at concentrations exceeding ARARs include: antimony, arsenic, cadmium, iron, lead, manganese, selenium, sodium, and thallium. Arsenic, cadmium, lead, and sodium ARAR exceedances have occurred only sporadically in a few samples. Iron data indicate enrichment in wells downgradient of LF-024, but the iron concentrations are not significantly elevated above levels noted in background groundwater wells at PAFB (URS 1996).

Antimony, manganese, selenium, and thallium concentrations are enriched in downgradient wells as compared to the upgradient well, implying that their presence in groundwater is due to leaching from the LF-024 fill. Antimony concentrations in groundwater were generally rising until mid-2002 and have been decreasing since that time. Manganese concentrations in groundwater have been decreasing, with the exception of MW-24-002R, since post-closure sampling began. Selenium and thallium ARAR exceedances appear to occur sporadically in groups of wells and then concentrations drop off to near non-detectable levels. Selenium concentrations have appeared to be increasing in downgradient wells for the last few sampling events while thallium concentrations have been decreasing in most wells for the last few sampling events.

5.3.1.5 SS-018 and SS-028

A removal action conducted from December 1998 through June 1999 at site SS-02S resulted in the removal of chlorinated hydrocarbon contaminated soil that constituted the principal threat wastes at these sites. The ROD for these sites, signed in September 2000, specified periodic monitoring of site groundwater and groundwater seeps for VOCs and MTBE until groundwater contaminant levels are below current regulatory standards. Semiannual O2M groundwater sampling began at the sites in May 2001. Four groundwater sampling events (November 1999, January 2000, April 2000, and June 2000) were performed, subsequent to the soil removal action but prior to the ROD

signing, in consultation with the NYSDEC Region 5 Bureau of Spill Prevention and Response to evaluate the potential source of MTBE contamination impacting the sites. Analytical data from November 1999 through October 2003 for onsite or downgradient wells and the two downgradient groundwater seeps were examined to evaluate if contaminant concentrations in groundwater were naturally attenuating, as predicted in the ROD.

Only seven VOCs have been detected in groundwater samples collected subsequent to the soil removal action and only PCE and MTBE have been detected at concentrations exceeding their respective groundwater standard values (ARARs). Detected PCE concentrations have decreased since the removal action and have been below ARARs since October 2001 (with the exception of one PCE detection at 5.05 µg/L in October 2002, which was slightly above the 5 µg/L ARAR value), indicating that the soil removal action has been effective in mitigating chlorinated hydrocarbon contamination in groundwater beneath the sites.

However, detected MTBE concentrations have fluctuated over time. The MTBE detected in site wells is believed to be attributable to an old (i.e., no BTEX has been detected in association with the MTBE) gasoline spill of unknown origin. MTBE is still being detected in groundwater at concentrations above ARARs, but recent concentrations appear to be trending downward.

5.3.2 SS-005 and SS-006 Human Health Risk Evaluations

Only minor soil contamination was detected at these sites. The RI human health risk assessments for these sites did not include evaluation of future residential reuse scenarios. Therefore, the remedies selected in the RODs for the Soil OUs at these sites was “Institutional Controls” and called for restrictions limiting development of the site to non-residential uses, prohibition of the installation of any wells that could result in the use of groundwater underlying the site, and evaluation of the institutional controls during five-year reviews of the remedy. The minor groundwater contamination detected at these sites was shown to be unrelated to soil contamination at the sites. The SS-005 and SS-006 RODs specified that groundwater remedial actions, including monitoring, would be specified in the preferred alternative for the FT-002/IA GW OU.

As part of this report, Human Health Risk Evaluations (HHREs) were completed for sites SS-005 and SS-006 that considered the adverse health effects that could result from exposure to site soils given a residential redevelopment scenario for the sites. The complete HHRE reports are included in Appendix D. The calculated HHRE risk values for sites SS-005 and SS-006 are summarized in Tables 1 and 2, respectively. The Health Risk Evaluations concluded that risks to future residents from soil exposure at both sites were within acceptable levels, which would allow for unlimited use and unrestricted exposure for the SS-005 and SS-006 Soil OUs. Therefore, deed and lease restrictions specified in the ROD should no longer apply to this site (this is discussed further in Sections 6 and 7). Implementation of these reuse restrictions is the only action specified in the SS-005 and SS-006 RODs. With removal of these restrictions, sites SS-005 and SS-006 could be closed via correspondence between USAF and the regulatory agencies.

5.3.3 ARARs Evaluation

The NCP requires that the selection of remedial actions at CERCLA sites meet applicable or relevant and appropriate requirements of federal and state environmental laws and regulations, ARARs are federal and state human-health and environmental-based requirements used: (1) to evaluate the appropriate extent of site cleanup; (2) to scope and formulate remedial action alternatives; and (3) to govern the implementation and operation of a selected remedial action. The process of identifying ARARs begins during the scoping of the RI/FS and continues through the remedial design phase. CERCLA and the NCP require that remedial actions comply with federal ARARs and with

state ARARs that are more stringent than federal regulations, are legally enforceable, and have been consistently enforced statewide. ARARs identification is always site-specific.

ARARs for individual IRP sites are specified in the investigative and decision documents for these sites, which are available in the PAFB Administrative Record. Since the implementation of remedies at PAFB, there have been no significant changes in the ARARs applicable to the various sites that would call into question the protectiveness of the remedies selected. For several IRP sites, attainment of current groundwater ARARs is a remedial action objective. In the routine monitoring reports issued for these sites, O&M groundwater monitoring data are compared to the most current groundwater ARAR values (updated as new standards or guidance values are issued).

5.3.4 Review of Real Property Lease Documents

Environmental remedial action obligations can prevent the immediate transfer by deed of property, but reuse of the property is possible by leasing the property in furtherance of conveyance. Within the EDC, property that cannot be transferred by deed is leased in furtherance of conveyance to PARC under USAF Lease No. BCA-PLA-12-00-1001. Hazardous substance notifications, access clauses, and reuse restrictions are found in this lease ("Main Lease") under Conditions 10 (Environmental Protection), 13 (Access and Inspection), 17 (Construction and Alterations), and 24 (Restrictions on Use of Leased Premises) and Exhibit F ("Areas of Special Notice", which details the locations of and restrictions applying to IRP sites and wetlands).

Within the PBC, property that cannot be transferred by deed is leased in furtherance of conveyance to Clinton County (Airport) under USAF Lease No. BCA-PLA-12-03-0101. Hazardous substance notifications, access clauses, and reuse restrictions are found in this lease ("Main Lease") under Conditions 11 (Environmental Protection), 14 (Access and Inspection), 18 (Construction and Alterations), and 25 (Restrictions on Use of Leased Premises) and Exhibit F ("Areas of Special Notice", which details the locations of and restrictions applying to IRP sites and wetlands).

Real property sublease agreements for property parcels containing or within IRP sites (SS-006, SS-011, and SS-018/SS-028 at the time of this report) were reviewed to verify that they contain the "Main Lease" notifications, access clauses, and restrictions. The notifications/restrictions were listed in the sublease agreements or were incorporated by reference to the "Main Leases."

5.4 Site Inspections

Five-year review-specific site inspections were conducted by URS and AFRPA personnel on April 7, 2004 at sites FT-002/IA GW OU, SS-005, SS-006, and SS-018/SS-028 and by URS personnel on September 16, 2004 at sites FT-002 Source OU, LF-021, LF-022, LF-023, and LF-024. The Site Inspection Reports are included in Appendix E. There were no observations made during the five-year review-specific site inspections or the most-recent routine O&M site inspections that would indicate any ROD restrictions are being violated or that would call into question the protectiveness of any of the various site remedies.

5.5 Interviews

Five-year review specific interviews were not conducted in preparation for this document since interviews had already been conducted during the "Records Search" phase of the IRP program. However, public commentary was solicited through the community notification process.

6.0 TECHNICAL ASSESSMENT

The Technical Assessment of OUs carried forward from Section 3 (i.e., those OUs where hazardous substances, pollutants, or contaminants are remaining at the site above levels that would allow for unlimited use and unrestricted exposure) evaluates the answers to three key questions for each OU:

- Is the remedy functioning as intended by the decision documents?
- Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?
- Has any other information come to light that could call into question the protectiveness of the remedy?

In general, access to IRP sites undergoing investigations and Removal and Remedial Actions is restricted through the use of fencing and appropriate signage. Also, the entire base perimeter is still substantially fenced, further restricting access.

6.1 LF-022 Source Control

According to the LF-022 ROD, the RAO for the site is to minimize potential current and future ecological risks associated with exposure to pesticides in surface soil. An RAO was not established for groundwater because contaminants were not found at levels warranting remedial action.

The Post-Closure Plan for this landfill is contained in the *Final Closure/Post-Closure Monitoring and Maintenance Operations Manual for Landfill LF-022* (URS 1992) and has been more recently incorporated into the *Basewide Operation and Maintenance Plan for Remedial Actions at the Former Plattsburgh Air Force Base, Volume I* (URS 1997). Post-closure groundwater monitoring at the site began in December 1995, was conducted quarterly through the end of 2002, and has been conducted semiannually (with NYSDEC Region V approval) since that time. Groundwater monitoring has been conducted in accordance with the LF-022 ROD and the LF-022 Post-Closure Operation and Maintenance Plans, with the exception of the approved reduction in sampling frequency to semiannually. As detailed in Section 5.3.1.2, the primary contaminants detected in groundwater at concentrations above groundwater standards are metals, Of the metals detected in groundwater at concentrations above groundwater standards, only antimony, arsenic, and thallium are present at concentrations above naturally occurring local background levels (URS 1996) and appear to be attributable to leaching from LF-022 fill. However, groundwater standard exceedances for these metals occur sporadically in groups of wells and then concentrations drop off to near non-detectable levels, Antimony and thallium concentrations were at historical highs in late 2002 and early 2003, but were below ARARs in all but one well in the December 2003 sampling event. All but one of the arsenic ARAR exceedances occurred in the December 2003 sampling event.

O&M inspections of the landfill cap have been conducted concurrently with Post-Closure groundwater sampling events. A site inspection was conducted on September 16, 2004 by URS personnel (see Appendix E for the Site Inspection Report). The integrity of the landfill soil cap, drainage system, access road, and monitoring wells was found to be acceptable. The soil cover appears to have achieved the RAO to minimize ecological risks associated with exposure to pesticides in surface soil. Site access is restricted by chain-link fencing around the landfill perimeter. “No Trespassing” signs are posted every few hundred feet along the fenceline.

The area encompassing this site is designated for "Aviation Support" reuse in the EA. Site LF-022 lies within the Flightline, Navigational Aids, and Miscellaneous Structures FOSL property. The *Finding of Suitability to Lease for Flightline, Navigational Aids, and Miscellaneous Structures, Former Plattsburgh Air Force Base, New York* (AFBCA 1998b) states that notice will be given in the lease documents of the type and quantity of hazardous substances and the time at which storage, spill, release or migration took place, and that the lessee will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities at the site without prior written approval from the Air Force. The FOSL also states that provisions wi11 be placed in the lease to allow the Air Force and regulatory agencies unrestricted access to the site to conduct any necessary investigation and/or cleanup activities. The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the EDC Property Lease (which includes site LF-022) agreement between PARC and USAF (see Section 5.3.4). The site is currently not being occupied. Deed restrictions will be placed on the property at the time of transfer. Land Use Controls and Institutional Controls, including the restrictions suggested in the previous Five-Year Review Report, also appear on the LF-022 Land Use Controls/Institutional Controls Map in the *Land Use Control/Institutional Control Management Plan* (see Appendix A).

Thus far, the remedy appears to be functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Although some metals have been detected in downgradient wells at concentrations exceeding groundwater standards, exposure pathways that could result in unacceptable risks are being controlled. There have been no significant changes in the toxicity factors for the contaminants of concern, risk assessment methodologies, or soil and groundwater ARARs that would affect the protectiveness of the remedy. The RAO appears to have been met and there is no other information that calls into question the protectiveness of the remedy.

6.2 LF-023 Source Control & Groundwater, Surface Water, and Sediment

According to the LF-023 Source Control ROD, the RAOs for the site are to minimize potential future human health and current and future ecological risks associated with exposure to polynuclear aromatic hydrocarbons (PAHs) in surface soil, minimize potential future human health risks associated with exposure to PAHs in dust emissions, minimize infiltration of precipitation into landfilled waste materials, minimize potential for contaminant migration from waste materials, and minimize erosion of existing cover soils.

According to the LF-023 Groundwater, Surface Water, and Sediment ROD, the RAOs for groundwater at the site are to prevent ingestion of water having carcinogens in excess of ARARs and a total cancer risk of greater than 1×10^{-4} and to prevent ingestion of water having noncarcinogens in excess of groundwater ARARs or having a total Hazard Index greater than one. RAOs were not developed for cleanup of surface water and sediment at the site because, based upon calculations performed using data collected during the RI and a supplemental investigation to the RI, those media appear to pose no unacceptable risk to human receptors or the environment.

The Post-Closure Monitoring and Maintenance Plan for this landfill is contained in the *Final Closure/ Post-Closure Monitoring and Maintenance Operations Manual for Landfill LF-023* (Malcolm Pirnie 1994) and has been more recently incorporated into the Basewide Operation and Maintenance Plan for Remedial Actions at the Former Plattsburgh Air Force Base, Volume I (URS 1997). Post-closure groundwater monitoring at the site began in December 1995 and has been conducted quarterly since that time. The four new wells called for in the Groundwater ROD ("Group B wells") were monitored for the first time in April 1996. Groundwater monitoring has been conducted in accordance with the LF-023 ROD and LF-023 Post-Closure Operation and Maintenance Plans with no significant changes.

Petroleum-related VOCs are present at concentrations exceeding groundwater standards in an upgradient monitoring well cluster near the southern end of LF-023 due to an off-base, upgradient gasoline spill source. Arsenic, iron, and manganese data indicate enrichment in wells downgradient of LF-023 and appear to be attributable to leaching from LF-023 fill. Ammonia- nitrogen in downgradient groundwater also appears to be landfill derived, but concentrations in downgradient wells have exhibited a notable downward trend since O&M sampling began. Other metals have been detected at concentrations above groundwater standards but do not appear to be landfill derived.

The only groundwater ARAR exceedances in the Group B downgradient wells (MW-23-103 and MW-23-104) have been sporadic bis(2-ethylhexyl)phthalate detections. Bis(2-ethylhexyl)phthalate is recognized as a common sampling/laboratory contaminant. The Group B downgradient wells (MW-23-101 and MW-23-102), which were installed as sentry wells to monitor potential impacts to nearby residential groundwater users, have had sporadic chloroform (due to residual chlorinated drilling water), bis(2-ethylhexyl)phthalate, and arsenic ARAR exceedances. Arsenic exceedances have occurred in both sentry wells in two of the last three sampling events; arsenic concentrations in these wells will be watched closely in the future.

In the downgradient surface water samples (SW-23-001 and SW-23-002), bis(2-ethylhexyl)phthalate, copper, and nickel have been sporadically detected at concentrations exceeding their respective Class D surface water ARARs. Chromium, zinc, and phenols have been detected in a greater number of samples at concentration exceeding their respective ARARs and iron concentrations have exceeded ARARs in all samples collected. Most of the compounds exceeding ARARs in the surface water samples have not been identified as groundwater contaminants attributable to LF-023.

Methane has not been detected in any of the seven perimeter landfill gas monitoring wells.

O&M inspections of the landfill cap have been conducted concurrently with Post-Closure groundwater sampling events. A site inspection was conducted on September 16, 2004 by URS personnel (see Appendix E for the Site Inspection Report). The integrity of the landfill soil cap, drainage system, access road, and monitoring wells was found to be acceptable. The landfill soil cap is well vegetated with no signs or erosion or vector activity. Site access is restricted by chain-link fencing around the landfill perimeter. “No Trespassing” signs are posted every few hundred feet along the fenceline. The landfill cap and perimeter fencing appear to accomplish the Source Control RAOs.

The area encompassing this OU is designated for “Commercial/Industrial/Aviation Support” reuse in the EA. As of the date of this Report, no portion of this OU has been included in any proposed leases. Site LF-023 lies within the Western Area FOSL property. The *Finding of Suitability to Lease for Western Area, Former Plattsburgh Air Force Base, New York* (AFBCA 2000a) states that notice will be given in the lease documents of the type and quantity of hazardous substances and the time at which storage, spill, release or migration took place, and that the lessee will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities at the site without prior written approval from the Air Force. The FOSL also states that provisions will be placed in the lease to allow the Air Force and regulatory agencies unrestricted access to the site to conduct any necessary investigation and/or cleanup activities. The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the EDC Property Lease (which includes site LF-023) agreement between PARC and USAF (see Section 5.3.4), The site is currently not being occupied. Deed restrictions will be placed on the property at the time of transfer. Land Use Controls and Institutional Controls, including the restrictions suggested in the previous Five-Year Review Report, also appear on the LF-023 Land Use Controls/Institutional Controls Map in the *Land Use Control/Institutional Control Management Plan* (see Appendix A).

Thus far, the remedy appears to be functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Although some compounds have been detected in site wells at concentrations exceeding groundwater standards, exposure pathways that could result in unacceptable risks are being controlled. There have been no significant changes in the toxicity factors for the contaminants of concern, risk assessment methodologies, or soil and groundwater ARARs that would affect the protectiveness of the remedy. The RAOs appear to have been met and there is no other information that calls into question the protectiveness of the remedy.

6.3 LF-021 Soil and Groundwater

According to the LF-021 ROD, the RAO for the site is to prevent direct contact with onsite soil/fill by human or ecological receptors. An RAO was not established for groundwater because the low-level contamination detected in this medium does not pose a significant risk to human health.

The Post-Closure Monitoring and Maintenance Plan for this landfill is contained in the *Basewide Operation and Maintenance Plan for Remedial Actions at the Former Plattsburgh Air Force Base, Volume I* (URS 1997). Post-closure groundwater monitoring at the site began in November 1998 and has been conducted quarterly through November 2003. In accordance with the ROD, the sampling frequency will be reduced to annually commencing in 2004. As detailed in Section 5.3.1.3, the primary contaminants detected in groundwater at concentrations above groundwater standards are metals. Of the metals detected in groundwater at concentrations above groundwater standards, only selenium and thallium are present at concentrations above naturally occurring local background levels and appear to be attributable to leaching from LF-021 fill. However, groundwater standard exceedances for selenium and thallium occur sporadically and thallium concentrations in all wells have been below its groundwater standard for the last few sampling events.

O&M inspections of the landfill cap have been conducted concurrently with Post-Closure groundwater sampling events. A site inspection was conducted on September 16, 2004 by URS personnel (see Appendix E for the Site Inspection Report). The integrity of the landfill soil cap, drainage system, access road, and monitoring wells was found to be acceptable. Site access is restricted by chain-link fencing around the landfill perimeter. “No Trespassing” signs are posted every few hundred feet along the fenceline, The soil cover and perimeter fence appear to have achieved the RAO to prevent direct contact with onsite soil/fill by human or ecological receptors.

The area encompassing this OU is designated for “Industrial” reuse in the EA. As of the date of this Report, no portion of the site has been included in any proposed leases. Site LF-021 lies within the Flightline, Navigational Aids, and Miscellaneous Structures FOSL property. The *Finding of Suitability to Lease for Flightline, Navigational Aids, and Miscellaneous Structures, Former Plattsburgh Air Force Base, New York* (AFBCA 1998b) states that notice will be given in the lease documents of the type and quantity of hazardous substances and the time at which storage, spill, release or migration took place, and that the lessee will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities at the site without prior written approval from the Air Force. The FOSL also states that provisions will be placed in the lease to allow the Air Force and regulatory agencies unrestricted access to the site to conduct any necessary investigation and/or cleanup activities. The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the PBC Airport Property Lease (which includes site LF-021) agreement between Clinton County and USAF (see Section 5.3.4). The site is currently not being occupied. Deed restrictions will be placed on the property at the time of transfer. Land Use Controls and Institutional Controls also appear on the LF-021 Land Use Controls/Institutional Controls Map in the *Land Use Control/Institutional Control Management Plan* (see Appendix A).

Thus far, the remedy appears to be functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Although some metals have been detected in downgradient wells at concentrations exceeding groundwater standards, exposure pathways that could result in unacceptable risks are being controlled. There have been no significant changes in the toxicity factors for the contaminants of concern, risk assessment methodologies, or soil and groundwater ARARs that would affect the protectiveness of the remedy. The RAO appears to have been met and there is no other information that calls into question the protectiveness of the remedy.

6.4 LF-024 Soil and Groundwater

According to the LF-024 ROD, the RAOs for soil/fill at the site are: to prevent construction workers from inhaling contaminated fugitive dust resulting from earth-moving activities during site remediation and post-closure maintenance operations; and to eliminate potential physical hazards to onsite workers and maintenance personnel. Appropriate health and safety measures were reportedly followed during remedial construction and the landfill cap eliminated the physical hazards associated with previously exposed C&D debris. The RAO for groundwater is to prevent human ingestion of contaminated groundwater on and immediately downgradient of the site.

The Post-Closure Monitoring and Maintenance Plan for this landfill is contained in the *Basewide Operation and Maintenance Plan for Remedial Actions at the Former Plattsburgh Air Force Base, Volume I* (URS 1997). Post-closure groundwater monitoring at the site began in November 1998 and has been conducted semi-annual through November 2003. In accordance with the ROD, the sampling frequency will be reduced to annually commencing in 2004. As detailed in Section 5.3.1.4, the primary contaminants detected in groundwater at concentrations above groundwater standards are metals. Of the metals detected in groundwater at concentrations above groundwater standards, only antimony, manganese, selenium, and thallium concentrations are present at concentrations above naturally occurring local background levels and appear to be attributable to leaching from LF-024 fill. Antimony concentrations in groundwater were generally rising until mid-2002 and have been decreasing since that time. Manganese concentrations in groundwater have generally been decreasing since post-closure sampling began. Selenium and thallium ARAR exceedances appear to occur sporadically in groups of wells and then concentrations drop off to near non-detectable levels. Selenium concentrations have appeared to be increasing in downgradient wells for the last few sampling events while thallium concentrations have been decreasing in most wells for the last few sampling events.

O&M inspections of the landfill cap have been conducted concurrently with Post-Closure groundwater sampling events. A site inspection was conducted on September 16, 2004 by URS personnel (see Appendix E for the Site Inspection Report). The integrity of the landfill soil cap, drainage system, and monitoring wells was found to be acceptable. Site access is restricted by chain-link fencing around the landfill perimeter. “No Trespassing” signs are posted every few hundred feet along the fenceline.

The area encompassing this OU is designated for “Commercial/Industrial/Aviation Support” reuse in the EA. The real property located at LF-024 is part of parcel A2.15, for which a FOST has recently been signed (March 25, 2004). The *Final Finding of Suitability to Transfer, Parcel A2.15, Northwest and Southwest Base Areas, Plattsburgh Air Force Base, New York* (AFBCA 2004a) contains the deed notifications and restrictions specified in the ROD for LF-024. The FOST was reviewed and commented upon by NYSDEC and EPA prior to being finalized and signed. Deed restrictions will be placed on the property at the time of transfer. Land Use Controls and Institutional Controls also appear on the LF-024 Land Use Controls/Institutional Controls Map in the *Land Use Control/ Institutional Control Management Plan* (see Appendix A).

Thus far, the remedy appears to be functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Although some metals have been detected in downgradient wells at concentrations exceeding groundwater standards, exposure pathways that could result in unacceptable risks are being controlled. There have been no significant changes in the toxicity factors for the contaminants of concern, risk assessment methodologies, or soil and groundwater ARARs that would affect the protectiveness of the remedy. The RAOs appear to have been met and there is no other information that calls into question the protectiveness of the remedy.

6.5 SS-005 Soil Operable Unit

According to the SS-005 Soil OU ROD, chemical contaminants present at relatively low levels in soils at site SS-005 at the time the ROD was signed did not pose a significant threat to human health or the environment, based on the industrial-use human health and ecological risk assessment results. The purpose of the institutional controls specified in the ROD were to address potential future threats that could result from increased contaminant concentrations in site groundwater (due to possible migration of the FT-002/Industrial Area plume underneath the site) and from an unevaluated potential risk from surface soil under land use conditions other than the current and planned non-residential use. Groundwater beneath site SS-005 is currently included in the FT-002/IA GW OU.

A site inspection was conducted on April 7, 2004 by URS and AFRPA personnel (see Appendix E for the Site Inspection Report). The site facilities are currently unoccupied. Areas surrounding the former NDI building are paved or grassy and are free of any equipment. No unauthorized groundwater usage was observed in the site vicinity. The flightline area, encompassing site SS-005, is fenced and access is available only through a manned security gate. Nearby facilities are being leased for airfield-related reuses.

The area encompassing this OU is designated as “Aviation Support” in the EA. Site SS-005 lies within the Flightline, Industrial, and Administrative Buildings FOSL property. The FOSL states that notice will be given in the lease documents of the type and quantity of hazardous substances stored/released on the property and the time at which storage/release took place. The lessee will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities without prior written approval from the USAF (and applicable federal and state regulatory agencies, as necessary). The FOSL also states that provisions will be placed in the lease to allow USAF and regulatory agencies unrestricted access to the property to conduct any necessary investigation and/or cleanup activities. The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the PBC Airport Property Lease (which includes site SS-005) agreement between Clinton County and USAF (see Section 5.3.4). The PBC Airport Lease allows only airfield-related reuses on the property, effectively disallowing residential reuse at site SS-005.

The HHRE performed as part of this report concluded that risks to future residents from soil exposure were within acceptable levels, which would allow unlimited use and unrestricted exposure for the SS-005 Soil OU. Therefore, the non-residential reuse restrictions specified in the ROD should no longer apply to this site. Implementation of these reuse restrictions is the only action specified in the SS-005 ROD. With removal of these restrictions, site SS-005 could be closed via correspondence between USAF and the regulatory agencies.

6.6 SS-006 Soil Operable Unit

According to the SS-006 Soil OU ROD, chemical contaminants present at relatively low levels in soils at site SS-006 at the time the ROD was signed did not pose a significant threat to human health or the environment, based on the

industria1-use human health and ecological risk assessment results. The purpose of the institutional controls specified in the ROD were to address potential future threats that could result from increased contaminant concentrations in site groundwater (due to possible migration of the FT-002/Industrial Area plume underneath the site) and from an unevaluated potential risk from surface soil under land use conditions other than the current and planned non-residential use. Groundwater beneath site SS-006 is currently included in the FT-002/IA GW OU.

A site inspection was conducted on April 7, 2004 by URS and AFRPA personnel (see Appendix E for the Site Inspection Report). Building 2815 and associated facilities are currently being leased by TransEd Assembly Plant, a company that produces wheel assemblies for subway railcars. Building 2801 is being leased by Exelon Power Labs and is being used as a calibration laboratory. No unauthorized groundwater usage was observed in the site vicinity, The flightline area, encompassing site SS-006, is fenced and access is available only through a manned security gate. Nearby facilities are being leased for airfield-related reuses.

The area encompassing this OU is designated as "Aviation Support" in the EA. Site SS- 006 lies within the Building 2815 and Building 2801 FOSL properties. These FOSLs state that notice will be given in the lease documents of the type and quantity of hazardous substances stored/released on the properties and the time at which storage/release took place. The lessees will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities without prior written approval from the USAF (and applicable federal and state regulatory agencies, as necessary). The FOSLs also state that provisions will be placed in the leases to allow USAF and regulatory agencies unrestricted access to the properties to conduct any necessary investigation and/or cleanup activities. The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the PBC Airport Property Lease (which includes site SS-006) agreement between Clinton County and USAF (see Section 5.3.4). The PBC Airport Lease allows only airfield-related reuses on the property, effectively disallowing residential reuse at site SS-006.

The HHRE performed as part of this report concluded that risks to future residents from soil exposure were within acceptable levels, which would allow unlimited use and unrestricted exposure for the SS-006 Soil OU. Therefore, the non-residential reuse restrictions specified in the ROD should no longer apply to this site. Implementation of these reuse restrictions is the only action specified in the SS-006 ROD. With removal of these restrictions, site SS-006 could be closed via correspondence between USAF and the regulatory agencies.

6.7 SS-018 and SS-028

According to the SS-018 & SS-028 ROD, chemical contaminants present in soils and groundwater at these sites at the time the ROD was signed did not pose a significant threat to human health or the environment, based on the industrial-use human health and ecological risk assessment results. However, institutional controls were specified in the ROD to address potential future threats that could result from an unevaluated potential risk from residual contaminants in soil and groundwater under land use conditions other than the current and planned non-residential use. The institutional controls restrict groundwater use and discharge and restrict site redevelopment to non-residential reuses.

The Groundwater Monitoring Plan for this site was completed in February 2001, as required by the ROD (URS 2001e). O&M groundwater monitoring at the site began in May 2001 and has been conducted semi-annual since that time. Only PCE and MTBE have been detected at concentrations exceeding their respective groundwater standard values (ARARs). Detected PCE concentrations have decreased since the removal action and have been below ARARs since October 2001 (with the exception of one PCE detection at 5.05 µg/L in October 2002, which was slightly above the 5 µg/L ARAR value), indicating that the soil removal action has been effective in mitigating chlorinated hydrocarbon contamination in groundwater beneath the sites.

However, detected MTBE concentrations have fluctuated over time. The MTBE detected in site wells is believed to be attributable to an old (i.e., no BTEX has been detected in association with the MTBE) gasoline spill of unknown origin. MTBE is still being detected in groundwater at concentrations above ARARs, but recent concentrations appear to be trending downward.

A site inspection was conducted on April 7, 2004 by URS personnel (see Appendix E for the Site Inspection Report). Building 508 is currently vacant and the open storage area associated with the building is empty and surrounded by a locked chain-link fence. Building 509 is being subleased and houses the Champlain Valley Transportation Museum. No unauthorized groundwater usage was observed in the vicinity of these sites. A community walking/bike path has been built just east of sites SS-018 and SS-028, but is separated from the sites by a chain-link fence.

The area encompassing this OU is designated as "Industrial" in the EA. The SS-018 and SS-028 source areas, including Buildings 508 and 509, lie within the Central Old Base Facilities and Base Communications Center FOSL property. The area where the downgradient SS-018/SS- 028 groundwater seeps emanate along the lakeshore scarp lies within the Lakefront Area (Parcel K-2) FOSL property.

The *Final Finding of Suitability to Lease, Lakefront Area, Plattsburgh Air Force Base, New York* (AFBCA 1997) states that notice wi11 be given in the lease documents of the type and quantity of hazardous substances stored/released on the properties and the time at which storage/release took place. The lessees will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities without prior written approval from the USAF (and applicable federal and state regulatory agencies, as necessary). The FOSL also states that provisions will be placed in the leases to allow USAF and regulatory agencies unrestricted access to the properties to conduct any necessary investigation and/or cleanup activities. Also, the institutional controls specified in the SS-018/SS-028 ROD restricting well installations and groundwater use are contained in this FOSL. However, the ROD restriction limiting site development to non-residential use is not discussed in the FOSL. This is due to the fact that the FOSL was finalized in early 1997 and the ROD was not signed until August 2000. A *Final Finding of Suitability to Transfer, Lakefront Area (Parcel K-2), Plattsburgh Air Force Base, New York* (AFBCA 2004b) has been recently been signed that includes all the above notifications and restrictions specified in the ROD, including the non-residential reuse restriction. Deed restrictions will be placed on the property at the time of transfer.

The *Final Finding of Suitability to Lease for Central Old Base Facilities and Base Communications Center, Former Plattsburgh Air Force Base, New York* (AFBCA 2000c) contained all the notifications and lease restrictions noted for the Lakefront Area FOSL and included the nonresidential reuse restriction. The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the EDC Property Lease (which includes site Buildings 508 and 509) agreement between PARC and USAF (see Section 5.3.4). PARC has subleased Building 509 and some surrounding property that is being operated as the Champlain Valley Transportation Museum. The hazardous substance notifications, access clauses, and reuse restrictions have been incorporated into the sublease agreement by way of reference to the "Main Lease" between PARC and USAF.

A FOST is currently being prepared for Parcel A2.9, which includes Buildings 508 and 509 and the SS-018/SS-028 source area (see Figure 6). The FOST will be submitted to NYSDEC and EPA for review and comment prior to being finalized and signed. Deed restrictions will be placed on the property at the time of transfer. Land Use Controls and Institutional Controls also appear on the SS-018/SS-028 Land Use Controls/Institutional Controls Map in the Land Use Control/Institutional Control Management Plan (see Appendix A).

Thus far, the remedy appears to be functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There have been no significant changes in the toxicity factors for the contaminants of concern, risk assessment methodologies, or soil and groundwater ARARs that would affect the protectiveness of the remedy. The RAOs appear to have been met and there is no other information that calls into question the protectiveness of the remedy.

6.8 FT-002 Source OU

According to the FT-002 Source Control ROD, the RAOs for the Source OU are: 1) to clean up contaminated soil and residual product located in the vadose zone and in the zone of water table fluctuation at the site to concentrations less than or equal to remediation goals set for the site; and 2) to recover floating free (pumpable) product at the site to the extent practicable.

The remedy involves a combination of soil vapor extraction and bioventing of the contaminated soil, free product collection, water table depression enabling remediation of residual product adhering to soil below the water table, hydraulic containment of the remaining source, institutional controls, progress monitoring and sampling, and five-year site reviews in accordance with CERCLA Section 121(c). The existing technological components of ongoing removal actions, with upgrade and expansion, were to be utilized by USAF in the execution of the selected remedy.

To meet the requirements of the ROD, an Initial Remediation Progress Soil Boring and Sampling Event was performed in 2001-2002 to characterize contamination remaining at the source area and to target areas for expansion of the existing remedial system components (URS 2003c). Contamination was detected at concentrations above remediation goals in only 7 of the 40 borings advanced at the site. Based on the results of the Remediation Progress Soil Boring and Sampling Event, a Remedial System Upgrade and Expansion Plan (URS 2003d) was developed and remedial system upgrades and expansion were performed in 2003. The upgrades consisted of the installation of 5 new groundwater recovery wells and one new bioventing well and minor modifications to the existing water treatment plant. The expansion of the site well field permits hydraulic containment of the remaining source. The upgrades were completed on December 15, 2003. It is anticipated that the remedial systems at the FT-002 source area will have to be operated on the order of 5 to 7 more years to achieve the RAOs.

A site inspection was conducted on September 16, 2004 by URS personnel (see Appendix E for the Site Inspection Report). The water treatment plant, remedial system components, and well field all appeared to be in good operating order. Site access is restricted by chain-link fencing around the source area perimeter, “No Trespassing” signs are posted every few hundred feet along the fenceline.

The area encompassing this site is designated for “Aviation Support” reuse in the EA. The FT-002 Source OU lies within both the Flightline, Navigational Aids, and Miscellaneous Structures FOSL property and the Western Area FOSL property. The *Finding of Suitability to Lease for Flightline, Navigational Aids, and Miscellaneous Structures, Former Plattsburgh Air Force Base, New York* (AFBCA 1998b) and the Finding of Suitability to Lease for Western Area, Former Plattsburgh Air Force Base, New York (AFBCA 2000a) both state that notice will be given in the lease documents of the type and quantity of hazardous substances and the time at which storage, spill, release or migration took place, and that the lessee will be restricted from conducting any subsurface excavation, digging, drilling, withdrawal of groundwater, or other ground-disturbing activities at the site without prior written approval from the Air Force. The FOSLs also state that provisions will be placed in the lease to allow the Air Force and regulatory agencies unrestricted access to the site to conduct any necessary investigation and/or cleanup activities.

The hazardous substance notifications, access clauses, and reuse restrictions noted in the FOSL were incorporated into the EDC Property Lease (which includes part of the FT-002 Source Area) agreement between PARC and USAF and the PBC Airport Property Lease (which also includes part of the FT-002 Source Area) agreement between Clinton County and USAF (see Section 5.3.4). The site is currently not being occupied, except for remedial operations. Deed restrictions will be placed on the property at the time of transfer. Land Use Controls and Institutional Controls also appear on the FT-002 Source OU Land Use Controls/Institutional Controls Map in the *Land Use Control/Institutional Control Management Plan* (see Appendix A).

Thus far, the remedy appears to be functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There have been no significant changes in the toxicity factors for the contaminants of concern, risk assessment methodologies, or soil and groundwater ARARs that would affect the protectiveness of the remedy. Progress is being made toward achieving the RAOs and there is no other information that calls into question the protectiveness of the remedy.

6.9 FT-002/IA GW OU

According to the FT-002/IA GW OU IROD, the interim RAOs for this OU are: 1) to prevent ingestion of groundwater containing contaminant concentrations above ARARs; 2) to restore groundwater to ARARs; 3) to prevent migration of groundwater with contaminant concentrations above ARARs beyond base boundaries; and 4) to prevent further impact to surface water that has been impacted by contaminated groundwater. The interim remedy selected in the IROD is expected to be consistent with the permanent solution that will serve as the final remedy in the final ROD. Subsequent actions, specifically finalization of final institutional controls and how they are implemented, will be addressed in the final ROD for the final response action. The Final ROD for this OU is in progress.

As of the date of this Report, the portions of the FT-002/IA GW OU remedy that have been constructed include: the collection trench located between the runway and flightline; a portion of the collection trench located along the eastern edge of the flightline; five extraction wells located in the plume core west of the runway; and a groundwater treatment plant to treat contaminated groundwater from the collection systems discharging to the WSA drainage system. There has currently been no known unauthorized usage of groundwater beneath PAFB and no groundwater with contaminant concentrations above ARARs is 1«own to have migrated beyond base boundaries. Upon construction completion, it is expected that the remedy will achieve the RAOs and be protective of human health and the environment.

7.0 ISSUES AND RECOMMENDATIONS

This section describes issues identified during this Five-Year Review and provides recommendations to address these issues.

7.1 FT-002 Source OU

Pursuant to the ROD, upgrades were constructed to the FT-002 Source OU remedial systems to target remaining areas of contamination. Construction was completed in December 2003; operations are ongoing. The next scheduled remediation progress soil boring and sampling event will occur in 2006. Based on the results of this event, modifications regarding operations and/or targeting contamination remaining above remediation goals will be made in 2006, prior to the next scheduled Five-Year Review (2009).

7.2 SS-005 and SS-006

Since the SS-005 and SS-006 HHREs concluded that soil contaminants remaining at these sites are at levels that allow for unlimited use and unrestricted exposure, it is recommended that five-year reviews for the SS-005 and SS-006 Soil OUs be discontinued until such time as all remedial construction is completed at PAFB and the final Type I Five-Year Review is conducted for the entire base. Land Use Controls/Institutional controls restricting groundwater usage and limiting development to non-residential uses are currently specified for sites SS-005 and SS-006 in the LUC/IC Management Plan (Appendix A). The SS-005 and SS-006 Use Restriction Maps should be removed from the LUC/IC Management Plan since the non-residential reuse land use controls/institutional controls are no longer necessary and the groundwater use restrictions are already covered under the FT-002/IA GW OU groundwater use restrictions. Implementation of the residential reuse restrictions are the only actions specified in the SS-005 and SS-006 RODs. With removal of these restrictions, sites SS-005 and SS-006 could be closed via correspondence between USAF and the regulatory agencies.

7.3 SS-018 and SS-028

The ROD for these sites specified periodic monitoring of site groundwater and groundwater seeps for VOCs and MTBE until groundwater contaminant levels are below current regulatory standards. Detected PCE concentrations have decreased since the removal action and have been below ARARs since October 2001 (with the exception of one PCE detection at 5.05 µg/L in October 2002, which was slightly above the 5 µg/L ARAR value), indicating that the soil removal action has been effective in mitigating chlorinated hydrocarbon contamination in groundwater beneath the sites. MTBE is the only compound that is commonly detected at concentrations exceeding groundwater standards. Therefore, it is recommended that site groundwater and groundwater seep samples be analyzed only for MTBE in future semi-annual sampling events.

7.4 LF-021

Post-Closure groundwater monitoring samples at LF-021 are analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and metals. The evaluation of post-closure O&M groundwater monitoring data performed for this report indicates that the only groundwater contaminants of particular concern for this site are metals.

Post-Closure groundwater monitoring samples at LF-021 are analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and metals. The evaluation of post-closure O&M groundwater monitoring data performed for this report indicates that the only groundwater contaminants of particular concern for this site are metals.

Organic compounds have only been sporadically detected in post-closure O&M monitoring groundwater samples at LF-021. Only one VOC detection (acetone in MW-21-002 in February 1999) has ever exceeded groundwater standards. The only SVOC to be detected at concentrations above its groundwater standard is bis(2-ethylhexyl)phthlate, but only in 7 of 126 samples. Both acetone and bis(2-ethylhexyl)phthlate are recognized as common sampling/laboratory contaminants. Three pesticides (Aldrin, alpha-BHC, and delta-BHC) have each been detected once (in approximately 120 samples) at concentrations exceeding their respective groundwater ARARs. PCBs have never been detected in any LF-021 groundwater samples. Therefore, it is recommended that the LF-021 Post-Closure groundwater monitoring samples no longer be analyzed for organic parameters (i.e., TCL VOCs, SVOCs, pesticides, and PCBs) and should only be analyzed for TAL metals and field parameters during annual sampling events in the future.

7.5 LF-022

Post-Closure groundwater monitoring samples at LF-022 are analyzed for TCL VOCs, metals, and miscellaneous parameters. During post-closure monitoring, only one VOC (1,3- dichloropropene) and three miscellaneous parameters (chloride, nitrate-nitrogen, and ammonia- nitrogen) have been sporadically detected at concentrations exceeding their respective groundwater ARARs. These ARAR exceedances have occurred in only one (1,3-dichloropropene and ammonia-nitrogen) or a few samples (chloride and nitrate-nitrogen). The evaluation of post-closure O&M groundwater monitoring data performed for this report indicates that the only groundwater contaminants of particular concern for this site are metals. Therefore, it is recommended that the LF-022 Post-Closure groundwater monitoring samples no longer be analyzed for TCL VOCs and miscellaneous parameters and should only be analyzed for TAL metals and field parameters in the future. Since no significant upward trends have been observed in contaminant concentrations over the period of monitoring, it is also recommended that post- closure monitoring at LF-022 be continued on an annual, rather than semiannual, basis.

7.6 LF-023

Post-Closure groundwater monitoring samples at LF-023 are analyzed on a quarterly basis. Given the large analytical database accumulated for LF-023, no significant upward trends have been observed in contaminant concentrations over the period of monitoring, except for the fuel-related contamination encroaching on the site from off-property. It is recommended that the current monitoring frequency be changed from four times per year (quarterly monitoring) to two times per year (semi-annual monitoring), with the exception of the downgradient sentry wells (MW-23-101 and -102) located near residential groundwater users (potentially impacted by the fuel-related contamination). Monitoring of MW-23-101 and MW-23-102 would still proceed on a quarterly basis.

One of the proposed semi-annual events would take place during the second-quarter of the year with sampling for routine parameter analyses and the second proposed semi-annual event would take place during the fourth-quarter of the year with sampling for baseline parameter analyses. Landfill inspections and real-time sampling of the seven perimeter gas monitoring wells would also be conducted during each of the proposed semi-annual events. The quarterly sampling results from wells MW-23-101 and -102 would be included in the two semi-annual event reports (unless analytical data warranted more immediate action).

8.0 PROTECTIVENESS STATEMENTS

Protectiveness statements are provided below for each OU at which a remedial action has been initiated.

8.1 LF-022

The remedy for LF-022 is currently protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. Threats at the site have been addressed by installing a soil cover over contaminated fill, the installation of fencing and warning signs around the landfill, and the implementation of land use controls/institutional controls. Long-term protectiveness of the remedy has been and will continue to be verified by O&M groundwater monitoring and site inspections.

8.2 LF-023

The remedy for LF-023 is currently protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. Threats at the site have been addressed by installing a cap over contaminated fill, the installation of fencing and warning signs around the landfill, and the implementation of land use controls/institutional controls. Long-term protectiveness of the remedy has been and will continue to be verified by O&M groundwater, surface water, and landfill gas monitoring and site inspections.

8.3 LF-021

The remedy for LF-021 is currently protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. Threats at the site have been addressed by installing a soil cover over contaminated fill, the installation of fencing and warning signs around the landfill, and the implementation of land use controls/institutional controls. Long-term protectiveness of the remedy has been and will continue to be verified by O&M groundwater monitoring and site inspections.

8.4 LF-024

The remedy for LF-024 is currently protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. Threats at the site have been addressed by installing a soil cover over contaminated fill, the installation of fencing and warning signs around the landfill, and the implementation of land use controls/institutional controls. Long-term protectiveness of the remedy has been and will continue to be verified by O&M groundwater monitoring and site inspections.

8.5 SS-005 Soil OU

The remedy for the site SS-005 Soil OU (institutional controls limiting development of the site to non-residential uses, prohibiting the installation of any wells that could result in the use of groundwater underlying the site, and evaluation of the institutional controls during five-year reviews of the remedy) has been protective of human health and the environment. However, the SS-005 HHRE performed as part of this report concluded that soil contaminants remaining at the site are at levels that allow for unlimited use and unrestricted exposure; therefore, the land use controls/institutional controls for the site are no longer necessary to protect human health and the environment. Use restrictions for groundwater beneath the site are covered under the FT-002/IA GW OU groundwater use restrictions.

8.6 SS-006 Soil OU

The remedy for the site SS-006 Soil OU (institutional controls limiting development of the site to non-residential uses, prohibiting the installation of any wells that could result in the use of groundwater underlying the site, and evaluation of the institutional controls during five-year reviews of the remedy) has been protective of human health and the environment. However, the SS-005 HHRE performed as part of this report concluded that soil contaminants remaining at the site are at levels that allow for unlimited use and unrestricted exposure; therefore, the land use controls/institutional controls for the site are no longer necessary to protect human health and the environment. Use restrictions for groundwater beneath the site are covered under the FT-002/IA GW OU groundwater use restrictions.

8.7 SS-018 and SS-028

The remedy for sites SS-018/SS-028 is currently protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. Threats at the site have been addressed through the implementation of land use controls/institutional controls and periodic monitoring of site groundwater and groundwater seeps for VOCs and MTBE until groundwater contaminant levels naturally attenuate with time and are below current regulatory standards. Long-term protectiveness of the remedy has been and will continue to be verified by O&M groundwater monitoring and site inspections.

8.8 FT-002 Source OU

The remedy for the FT-002 OU is currently protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. Threats at the site have been addressed by: expansion of the site well field, permitting hydraulic containment of the remaining source; fencing around the site; and the implementation of land use controls/institutional controls. Long-term protectiveness of the remedy has been and will continue to be verified by O&M monitoring, Remediation Progress Soil Boring and Sampling Events, and site inspections. It is anticipated that the remedial systems at the FT-002 source area will have to be operated for approximately 5 to 7 years to achieve the RAOs.

8.9 FT-002/IA GW OU

The remedy for the FT-002/IA GW OU is expected to be protective of human health and the environment upon construction completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled through the use of land use controls/institutional controls.

8.10 Entire Base

Based upon the review of the OUs at PAFB conducted by USAF, it has been determined that the remedies selected for PAFB remain protective of human health and the environment.

9.0 NEXT FIVE-YEAR REVIEW

The next five-year review for PAFB is required prior to September 30, 2009 – five years from the date of this review.

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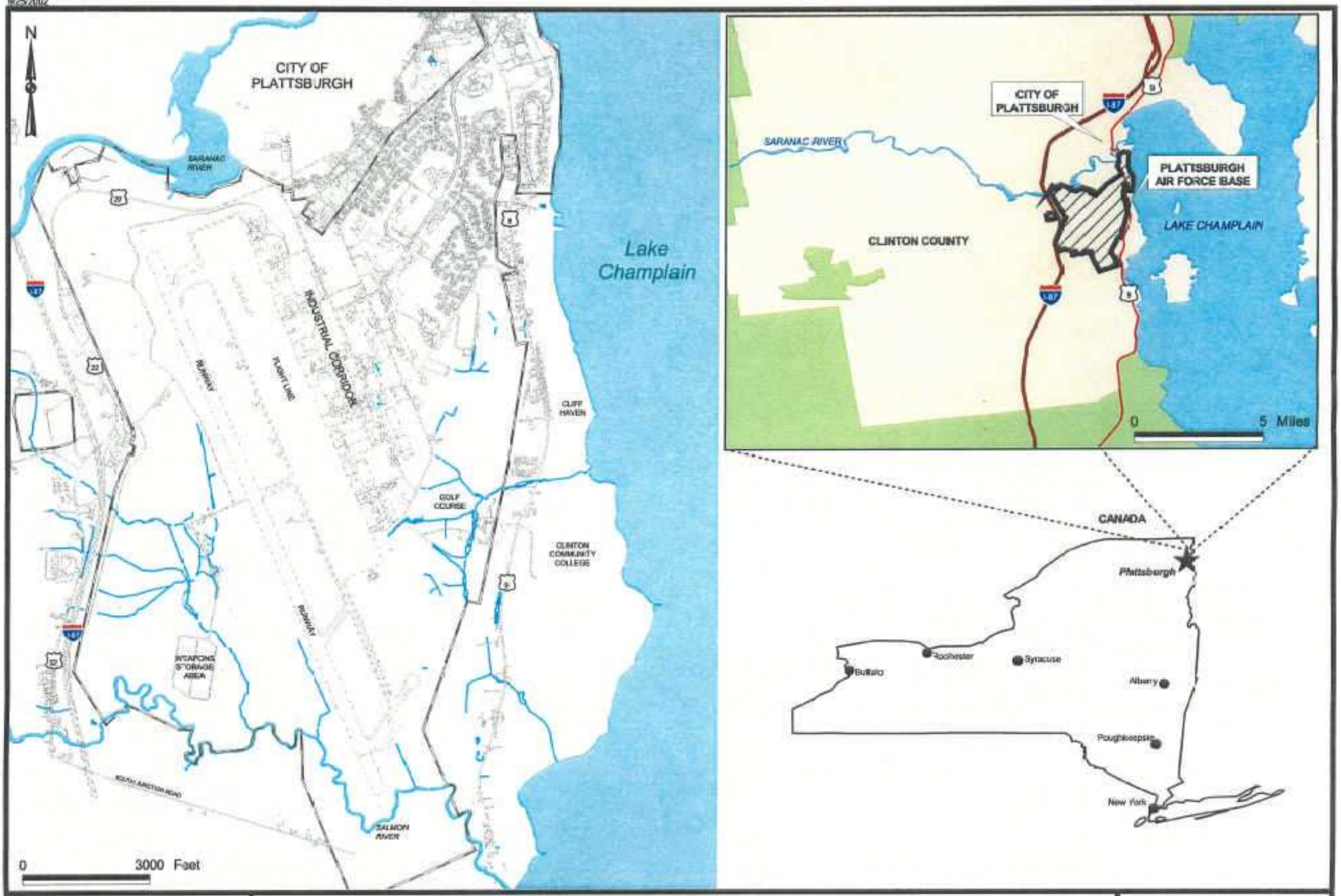
N:\11168476.00000\GIS\Applications\sitelocation.apr WELL ABANDONMENT PLAN
8/25/2002

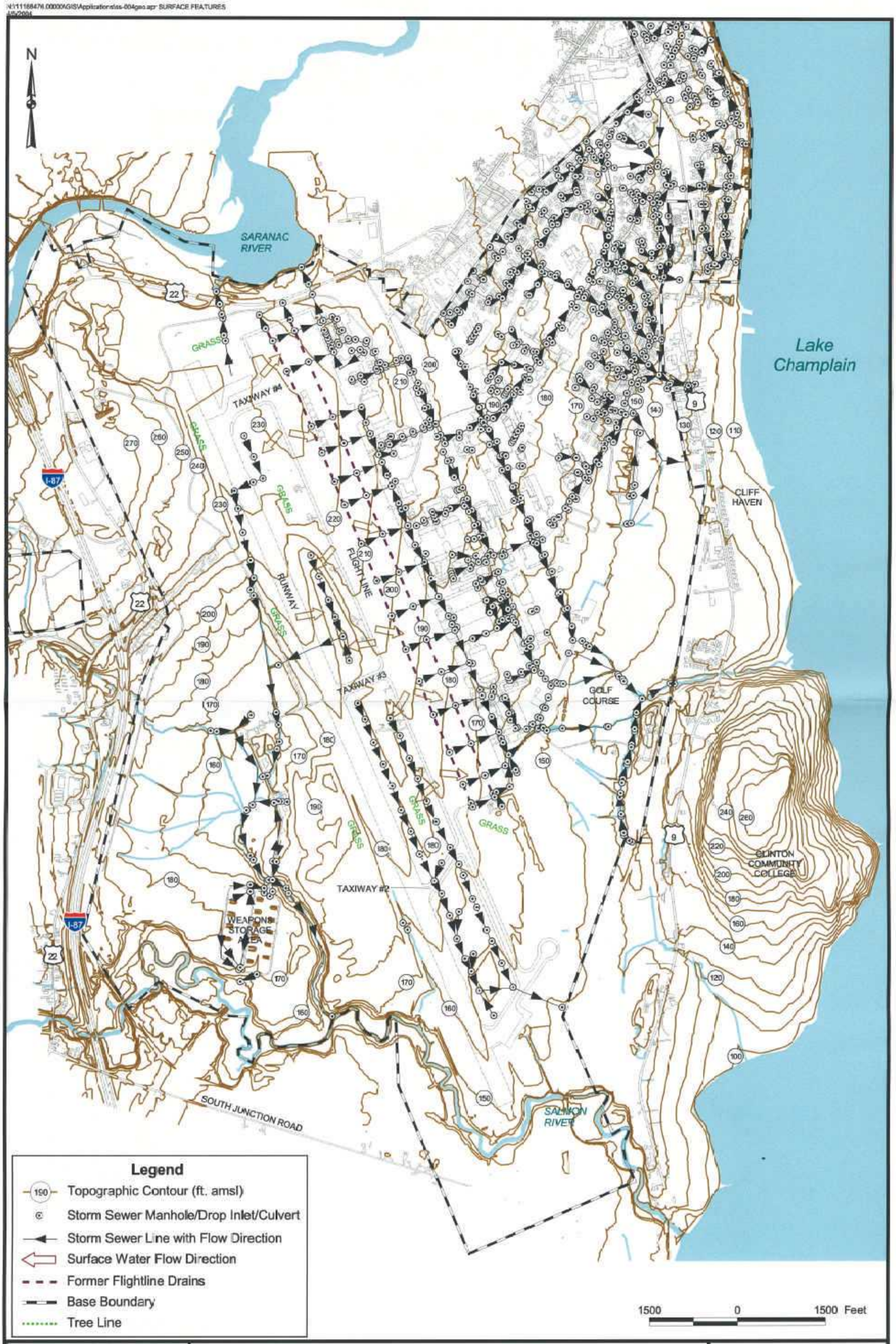


URS

PLATTSBURGH AIR FORCE BASE
LOCATION MAP

FIGURE 1

N:\11168476.00000\GIS\Applications\ss-004geo.apr SURFACE FEATURES
4/8/2004

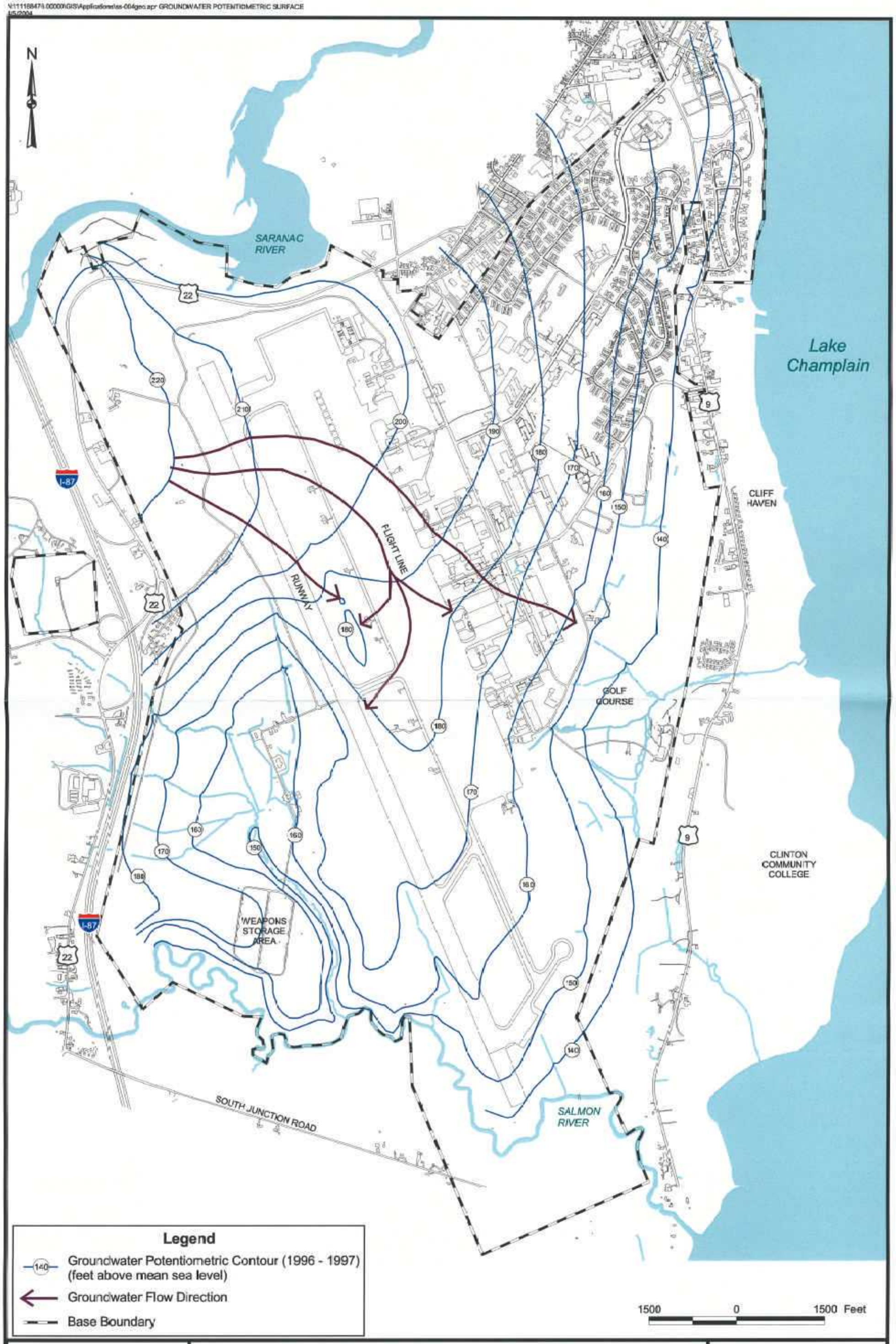


URS

PLATTSBURGH AIR FORCE BASE
TOPOGRAPHY AND STORM DRAINAGE

FIGURE 2

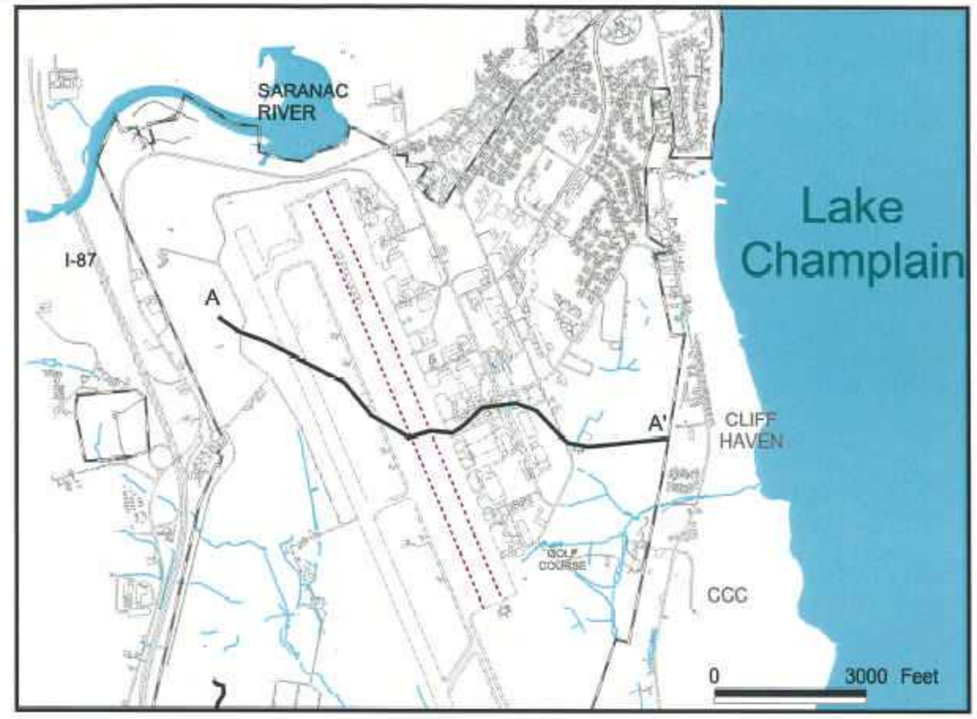
N:\11168479.00000\GIS\Applications\ss-004geo.apr GROUNDWATER POTENTIOMETRIC SURFACE
1/5/2004

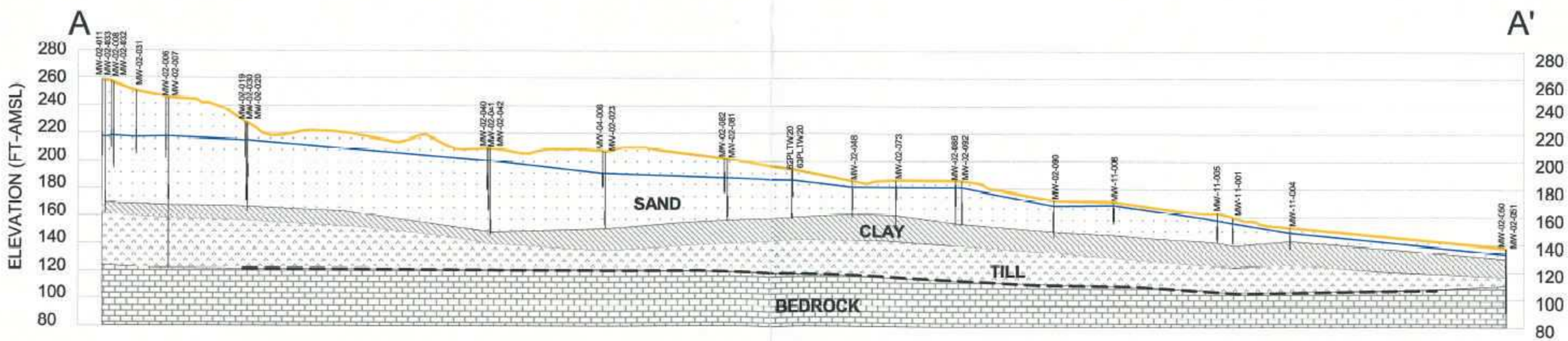


URS

PLATTSBURGH AIR FORCE BASE
TYPICAL GROUNDWATER POTENTIOMETRIC CONTOURS FOR THE UNCONFINED (WATER TABLE) AQUIFER

FIGURE 3





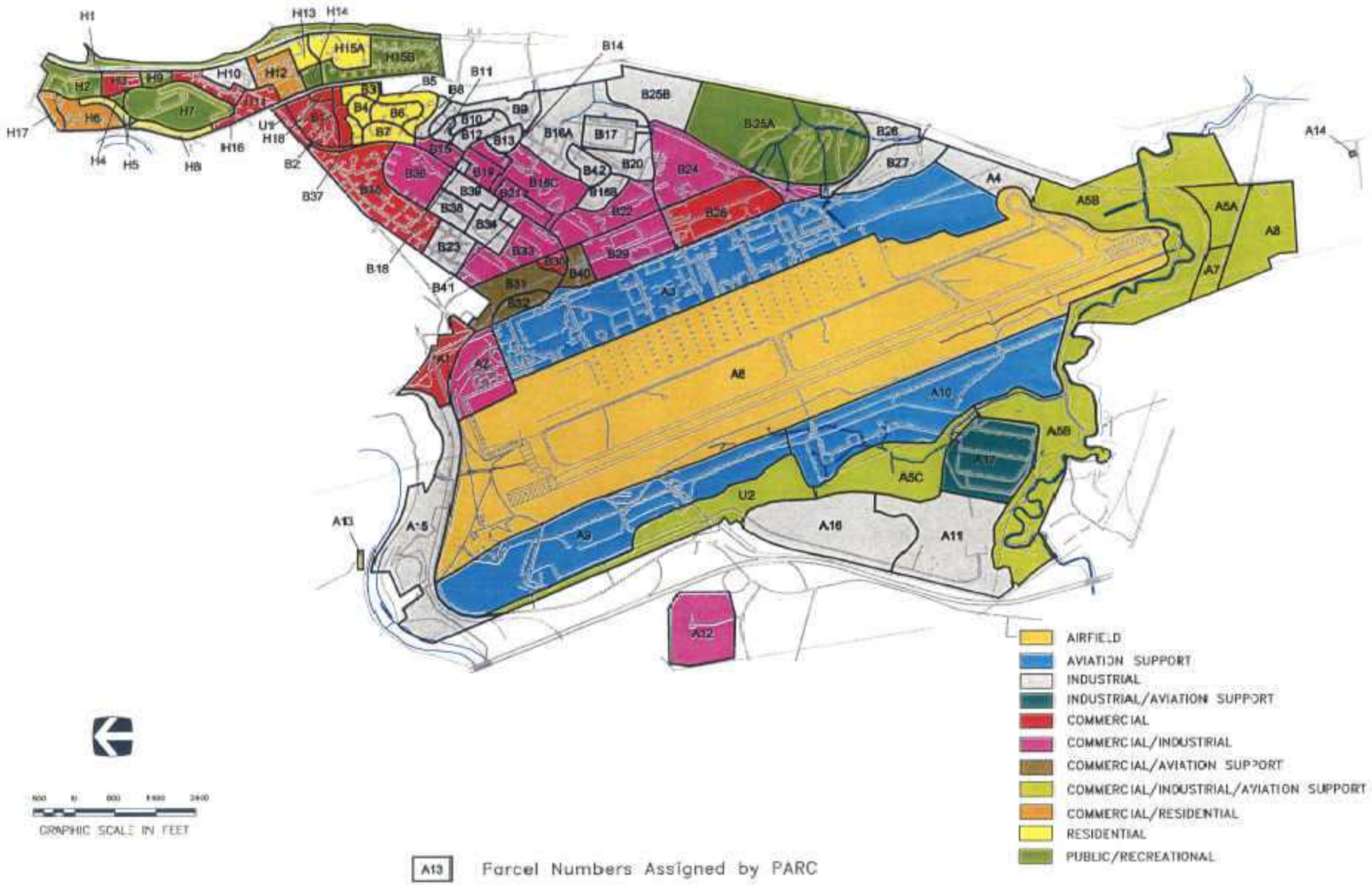
SOURCE: Final Fire Training Area (FT-002)/Industrial Area Groundwater Operable Unit Remedial Investigation/Feasibility Study (URS June 2001)

750 0 750 Feet

PLATTSBURGH AFB
GEOLOGIC CROSS SECTION

URS

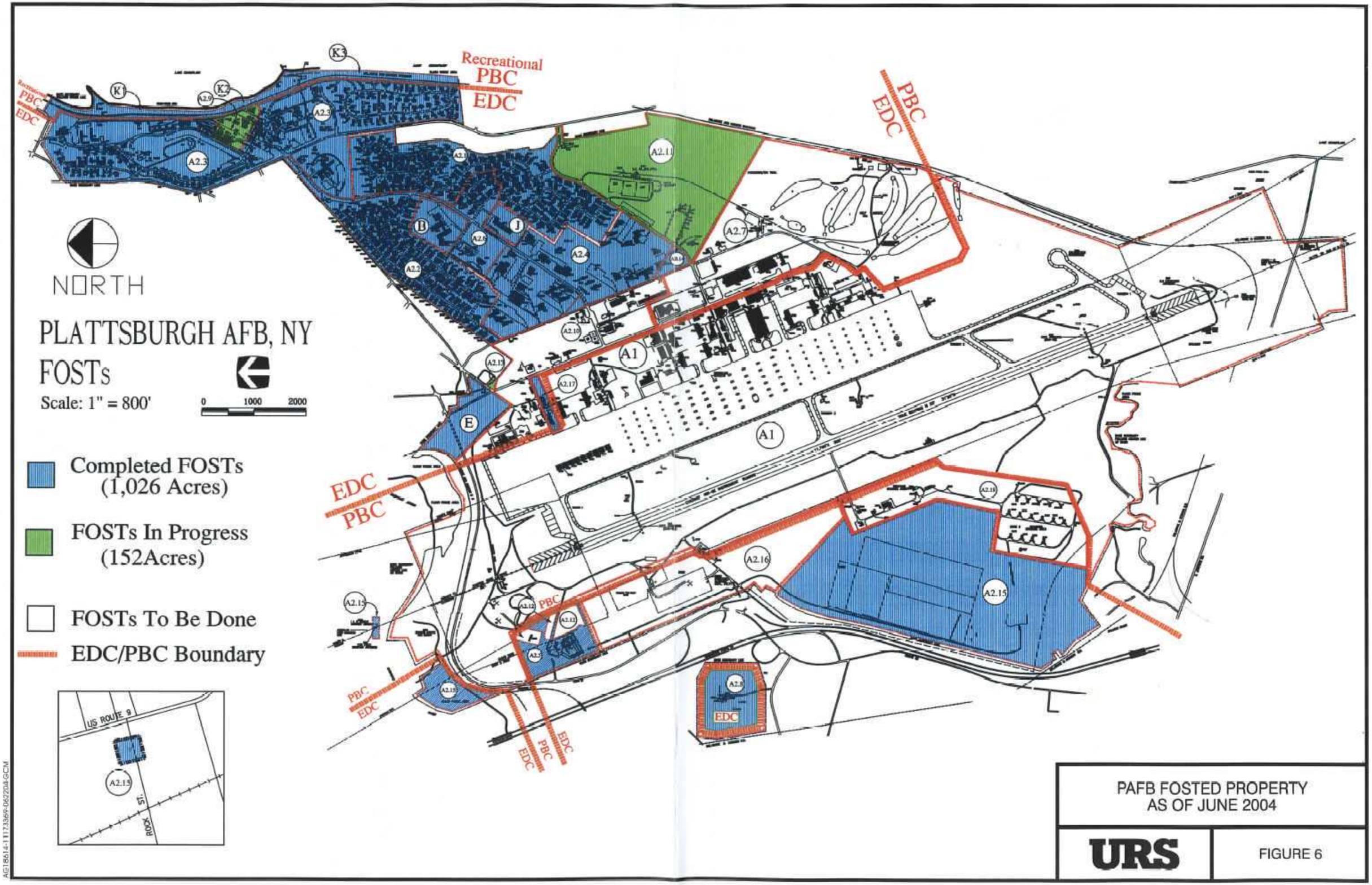
FIGURE 4



URS

PROPOSED ACTION FROM MAY 2000 ENVIRONMENTAL ASSESSMENT

FIGURE 5

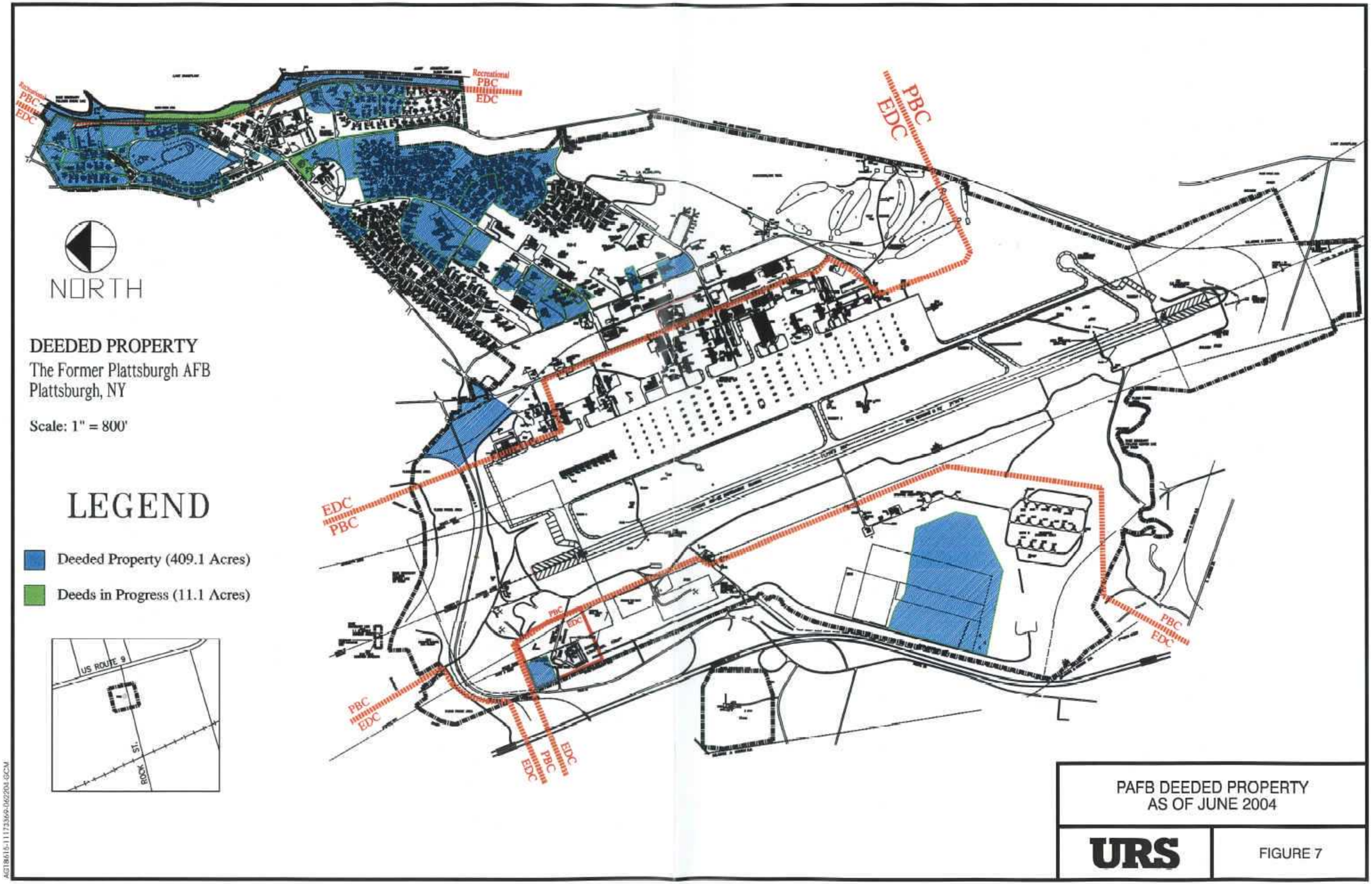


PAFB FOSTED PROPERTY
AS OF JUNE 2004

URS

FIGURE 6

AG18614-11733369-062204-GCM



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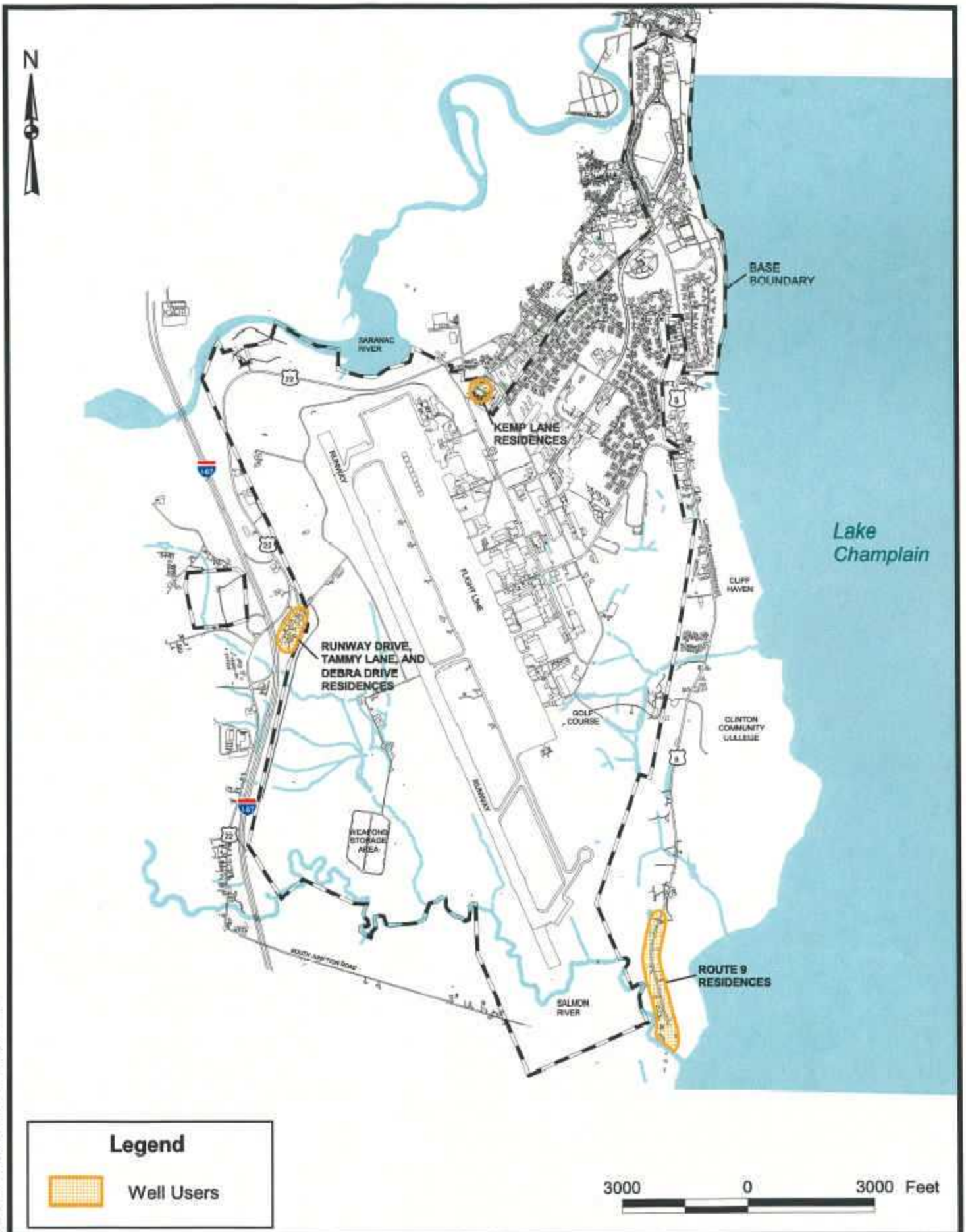


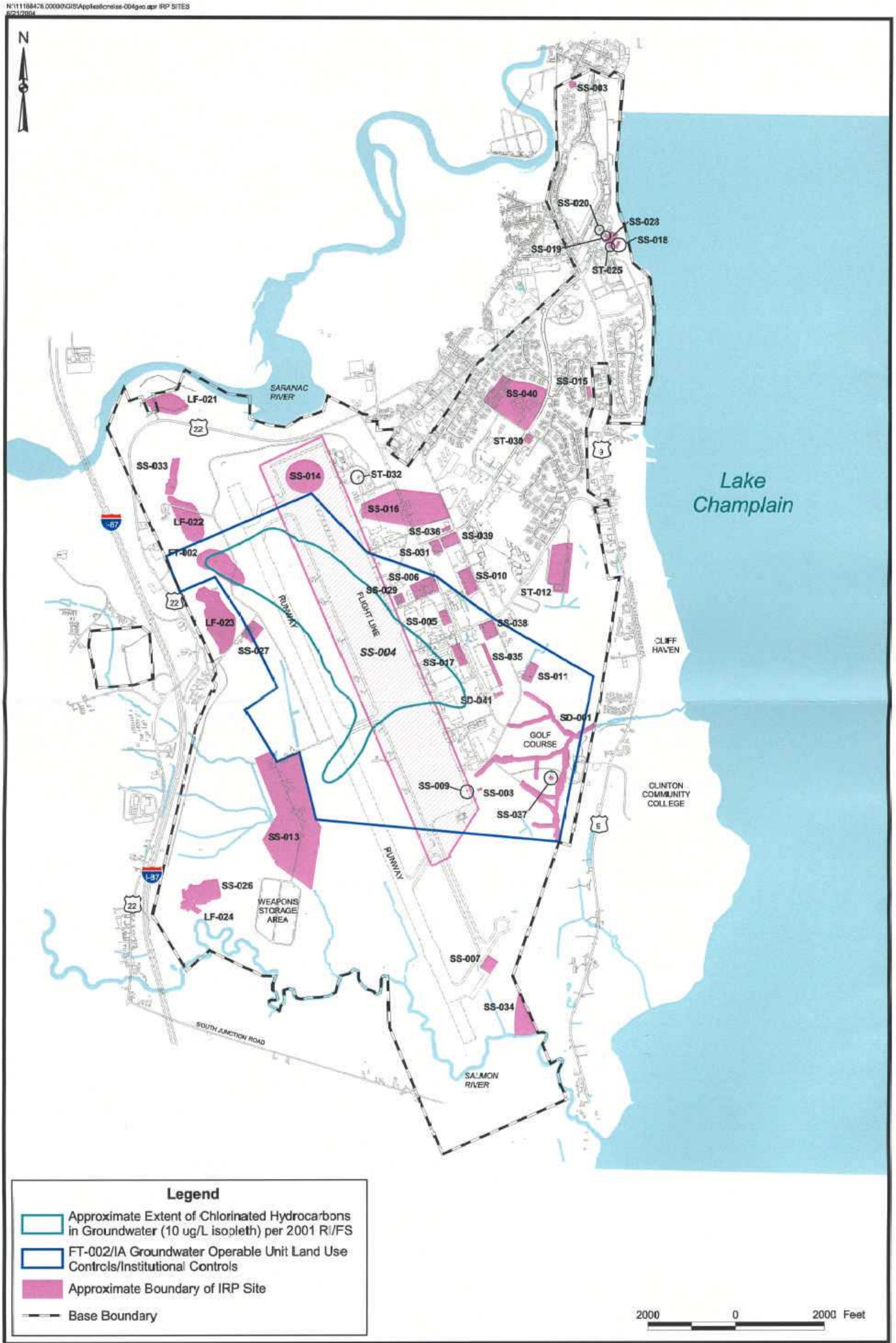
URS

PLATTSBURGH AIR FORCE BASE
LOCATION OF OFF-BASE RESIDENCES UTILIZING GROUNDWATER FOR POTABLE USE

FIGURE 8

N:\11168476.00000\GIS\Applications\ss-004geo.apr GROUNDWATER USE
1/28/2004

N:\11168476.00000\GIS\Appleatlcnelss-004geo.apr IRP SITES
8/21/2004



URS

PLATTSBURGH AIR FORCE BASE
IRP SITES

FIGURE 9

TABLE 1

SS-005 NON-DESTRUCTIVE INSPECTION FACILITY
HUMAN HEALTH RISK EVALUATION
RISK SUMMARY

Exposure Pathway	Resident[1]		Industrial Worker		Construction Worker	
	Cancer Risk	**Hazard Index**	**Cancer Risk**	**Hazard Index**	**Cancer Risk**	**Hazard Index**
Ingestion of Soil	2E-05	2E-01	2E-06	7E-03	2E-07	7E-02
Dermal Contact With Soil	6E-05	1E-01	1E-05	1E-02	3E-07	3E-02
Inhalation of Contaminated Air	6E-09	2E-04	2E-09	4E-05	5E-09	2E-02
Inhalation of Fugitive Dust	NA	NA	2E-06	2E-03	2E-08	2E-03
TOTAL ALL PATHWAYS	8E-05	3E-01	1E-05	2E-02	5E-07	1E-01

NA = Not Applicable

Notes:
1. The risk value for residents are combined values for child and adult residents.

TABLE 2

SS-006 AEROSPACE GROUND EQUIPMENT FACIL1TY
HUMAN HEALTH RISK EVALUATION
RISK SUMMARY

Exposure Pathway	Resident[1]		Industrial Worker		Construction Worker	
	Cancer Risk	**Hazard Index**	**Cancer Risk**	**Hazard Index**	**Cancer Risk**	**Hazard Index**
Ingestion of Soil	4E-07	1E-04	5E-08	6E-06	5E-09	3E-05
Dermal Contact With Soil	2E-06	3E-04	4E-07	4E-05	1E-08	5E-05
Inhalation of Contaminated Air	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
Inhalation of Fugitive Dust	NA	NA	Note 2	Note 2	Note 2	Note 2
TOTAL ALL PATHWAYS	2E-06	4E-04	5E-07	5E-05	2E-08	8E-05

NA = Not Applicable

Notes:
1. The risk value for residents are combined values for child and adult residents.
2. There are no inhalation toxicity values available for the CPCs for this site. Therefore, cancer risks and hazard indicies could not be calculated.

APPENDIX A

PAFB
LUC/IC LAYERING STRATEGY WORKSHEET AND LAND USE CONTROL/INSTITUTIONAL CONTROL MANAGEMENT PLAN

LUC/IC LAYERING STRATEGY WORKSHEET
FORMER PLATTSBURGH AFB, NY

1. Purpose

The environmental cleanup documents for the Former Plattsburgh AFB have identified land use controls/institutional controls (LUC/ICs) that support the remedial action. The goal of the LUC/ICs is to either protect the integrity of the remedial action or to prevent or manage exposure to the contamination through establishing use restrictions or controls on the property.

The purpose of this layering strategy worksheet is to identify the combination of mutually reinforcing mechanisms used to implement and establish the LUC/ICs needed to ensure that residual contamination at the sites under consideration do not present an unreasonable threat to human health and the environment until unrestricted use is appropriate. identifying the layers of overlapping mechanisms or vehicles that implement or establish the LUC/ICs can increase the number of parties involved, strengthen the network that maintains the remedy, strengthen the overall integrity of the system of the controls and, ultimately, ensure the protectiveness of the remedy. Once documented, the Air Force will use this information to develop the LUC/IC Management Plan for the Former Plattsburgh AFB.

This worksheet will identify planned reuses and characterize residual contamination above levels enabling unrestricted use as a first step in determining the risk factors that need to be specifically controlled (e.g., exposure to contaminated soi1). Once the risk factors have been identified, a strategy of mutually reinforcing mechanisms to establish the LUC/ICs for each parcel at the installation (e.g., a combination of use restrictions in deeds, physical barriers, and notice to interested parties) will be designed and described. The mechanisms that have been selected will be incorporated into an LUC/IC Management Plan, which will summarize the implementation, monitoring, and enforcement needed for each control.

Note: This Layering Strategy Worksheet is a living document that should be reevaluated periodically when information indicates the existing controls are not effective or changes in site conditions would lead to new or different controls.

2. Planned Reuses

Table 1 identifies the planned reuses at Former Plattsburgh AFB. Table 1 also identifies the sponsoring Federal agencies if any of the parcels are to be conveyed using a public benefit conveyance.

Table 1: Reuse Selection for Former Plattsburgh AFB

All Planned Reuses for Installation	Y/N	Public Benefit Conveyance Responsible Agency * (If Any)
Residential		
Housing	**Y**	
Daycare	**Y**	
Hospitals	**N**	
Schools	**N**	
Other	**N**	
Commercial	**Y**	
Industrial	**Y**	
Recreation	**Y**	**Department of Interior**
Agriculture	**N**	
Airport	**Y**	**Federal Aviation Administration**

* *Responsible Agency is only identified for public benefit conveyances*

3. Site Description

Former Plattsburgh AFB is comprised of 41 1nstallation Restoration Program (IRP) sites. Investigations and decision documents have been completed for 32 sites; responses have been completed at 27 sites and cleanup is in progress at five sites. Investigations and/or decision documents are in progress at 9 IRP sites. In addition, investigation, cleanup and/or closeout activities are being conducted at 12 locations initially identified as requiring further evaluation in the Basewide Environmental Baseline Survey (EBS) and are designated EBS Factors.

Table 2 identifies residual contamination remaining at the Former Plattsburgh AFB, and the LUC/IC goals and objectives that must be achieved to prevent exposure to that residual contamination. A map of Plattsburgh AFB showing the LUC/ICs and the environmental parcels (used for preparing individual Findings of Suitability to Transfer) is provided at Attachment A; maps showing the restrictive boundaries for each LUC/IC area are provided at Attachment B.

Table 2: Former Plattsburgh AFB Environmental Conditions and LUC/ICs*

Site(s)/ AOC(s)	Affected Parcel(s) **	Residual Contamination	LUC/IC Objective/Goal
FT-002 Source 0/U	A1	Chlorinated solvents and petroleum compounds in the soil and residual /floating free product.	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater.
			Prohibition of development or land use which interferes with remedial operations.
FT-002 Groundwater 0/U	Al, A2.7	Chlorinated solvent and petroleum contamination in the groundwater.	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater.
			Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the New York State Department of Environmental Conservation (NYSDEC).
			Prohibition of development or land use which interferes with remedial operations.
SS-005	A1	Semi volatile organic compounds (SVOCs) and metals in the surface soil; volatile organic compounds (VOCs), SVOCs and metals in the subsurface soil; groundwater from upgradient site (FT-002).	Limit development to non-residential use.
			Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater.
SS-006	A1	SVOCs and Metals in the surface and subsurface soil; groundwater from upgradient site (FT-002).	Limit development to non-residential use.
			Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater.

Site(s)/ AOC(s)	Affected Parcel(s) **	Residual Contamination	LUC/IC Objective/Goal
SS-018	A2.9, K-2	Polycyclic aromatic hydrocarbons (PAHs) and metals in the soil; VOCs and methyl tert-butyl ether (MTBE) in the groundwater	Restriction on development to facilities that support only non-residential use.
			Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater.
			Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the New York State Department of Environmental Conservation.
LF-021	A1	Landfill closed with waste in place, including PAHs, PCBs, pesticides and metals in the soil, and PAHs and pesticides in the groundwater.	Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation.
			Groundwater use restriction and prohibition of installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater.
LF-022	A 1, A2.12	Landfill closed with waste in place, including pesticides and metals.	Protection of the landfill cover integrity and all components, including the groundwater monitoring wells.
LF-023 Source O/U	A1	Landfill closed with waste in place, including PAHs and metals.	Protection of the landfill cover integrity and all components, including the groundwater monitoring wells.
LF-024	A1	Landfill closed with waste in place, including metals in the soil and groundwater.	Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation.
			Groundwater use restriction and prohibition of installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater.

Site(s)/ AOC(s)	Affected Parcel(s) **	Residual Contamination	LUC/IC Objective/Goal
SS-028	A2.9, K-2	Polycyclic aromatic hydrocarbons (PAHs) and metals in the soil; VOCs and methyl tert-butyl ether (MTBE) in the groundwater	Restriction on development to facilities that support only non-residential use.
			Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater.
			Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the New York State Department of Environmental Conservation.

* Only sites with residual contamination that prevent unrestricted use are to be listed in Table 2

**Parcels referred to are "Environmental Parcels" developed for purposes of evaluating the environmental condition of the property and development of Findings of Suitability to Transfer.

4. Objectives and Layering Strategy

Column A of Table 3 is a list of potential vehicle." for estab1ishing or implementing the LUC/ICs. Column B identifies those that are potentially available at the former Plattsburgh AFB given the environmental condition of the site. Column C identifies those that can actually be implemented at Former Plattsburgh AFB. (Note: Mechanisms establishing or implementing LUC/ICs identified in Column C will be carried forward to Table 4). Column D identifies Points of Contact (POC) for the federal, state, local, and private entities that will be involved in the design, implementation, operation, and/or enforcement of the LUC/ICs to be implemented at Former Plattsburgh AFB (Detailed Point of Contact information, including addresses, is contained in Appendix E of the Land Use Control/Institutional Control Management Plan).

Table 3: Former Plattsburgh AFB LUC/IC Layering Strategy Checklist

COLUMN A	B	C	D
Property Law /Proprietary Controls	**Potential**	**Confirmed**	**Points of Contact (Organization, Personnel, Phone Number) Type designator G=Grantee, K=Govt. or Key Stakeholder**
Use Restriction in Deed - Easements - Covenants - Reversionary Interests (e.g., public benefit conveyance for parks, education, airports, etc.)	**X**	**X**	• Clinton County Clerk's Office, (518) 565-4700, K • Federal Aviation Administration, NY Airports District Office, Mr. Robert Lanuza (516) 227-3805, K • County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Air Force Real Property Agency, Mr. Michael Sorel, (518)563-2871,K
Lease Restrictions	**X**	**X**	• County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Air Force Real Property Agency, Mr. Michael Sorel, (518)563-2871,K
Governmental Controls	**Potential**	**Confirmed**	**Points of Contact (Organization, Personnel, Phone Number) Type designator G=Grantee, K=Govt. or Key Stakeholder**
Zoning restrictions/ requirements	**X**	**X**	• City of Plattsburgh Engineering and Planning Department, Mr. Kevin Farrington, (518) 563-7730, K • Town of Plattsburgh Planning Office, Mr. Phil VonBargen, (518) 563-8l03, K • Clinton County Planning Department, Mr. Rodney Brown, (518) 565- 4709, K
Local Ordinances/Master Plans restricting use	**X**	**X**	• City of Plattsburgh Engineering and Planning Department, Mr. Kevin Farrington, (518) 563-7730, K • Town of Plattsburgh Planning Office, Mr. Phil VnnBargen, (518) 563-8103, K • Clinton County Planning Department, Mr. Rodney Brown, (518) 565-4709, K • Federal Aviation Administration, NY Airports District Office, Mr. Robert Lanuza, (516) 227-3805, K
State Environmental Land Use Restriction Covenants			
State NEPA Laws (e.g., State Environmental Quality Review – SEQR))	**X**	**X**	• City of Plattsburgh Engineering and Planning Department, Mr. Kevin Farrington, (518) 563-7730, K • Town of Plattsburgh Planning Office, Mr. Phil VonBargen, (518) 563-8103, K • Clinton County Planning Department, Mr. Rodney Brown, (518) 565-4709, K • New York State Department of Environmental Conservation Region V point of contact to be determined), K

Governmental Controls	Potential	Confirmed	Points of Contact (Organization, Personnel, Phone Number) Type designator G=Grantee, K=Govt. or Key Stakeholder
Groundwater use restrictions	X	X	• Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871,K • New York State Department of Environmental Conservation Bureau of Eastern Remedial Action, Mr. James Quinn, (518) 402-9697, K • United States Environmental Protection Agency, Federal Facilities Section, Mr. Robert Morse, (212) 637-4331, K
Well installation restrictions in zone of contamination	X	X	• Air Force Real Property Agency, Mr. Michael Sorel,(518) 563-2871,K • New York State Department of Environmental Conservation Bureau of Eastern Remedial Action, Mr. James Quinn (518) 402-9697, K • United States Environmental Protection Agency, Federal Facilities Section, Mr. Robert Morse, 212) 637-4331, K • Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871,K
Well installation restrictions in areas that may influence the remedia1 system	X	X	• Air Force Real Property Agency, Mr. Michael Sorel,(518) 563-2871,K • New York State Department of Environmental Conservation Bureau of Eastern Remedial Action, Mr. James Quinn (518) 402-9697, K • United States Environmental Protection Agency, Federal Facilities Section, Mr. Robert Morse, 212) 637-4331, K • Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871,K
Water use restrictions (e.g., irrigation, watering, livestock, recreational uses, including fishing)			
Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas. May consider depth depending on residual contamination.	X	X	• Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871,K • County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • New York State Department of Environmental Conservation Bureau of Eastern Remedial Action, Mr. James Quinn, (518) 402-9697, K • United States Environmental Protection Agency, Federal Facilities Section, Mr. Robert Morse, (212) 637-4331, K • Dig Safely New York, Ms, Theresa Benjack, (800) 309-8289, K • City of Plattsburgh Engineering and Planning Department, Mr. Kevin Farrington, (518) 563-7730, K • Town of Plattsburgh Planning Office, Mr. Phil VonBargen, (518) 563- 8103, K
Permitting to prevent reuse of im acted soil.			
Local/State ordinances requiring notice before disturbance of surface cover			

Governmental Controls	**Potential**	**Confirmed**	**Points of Contact (Organization, Personnel, Phone Number) Type designator G=Grantee, K=Govt. or Key Stakeholder**
Permitting to prevent construction activities (i.e,, utility lines, sewers, etc) in areas of contaminated groundwater that may impact the remedial strategy			
Discharge of contaminated groundwater	**X**	**X**	• Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-1968,K • New York State Department of Environmental Conservation Region V, Environmental Quality Division, Mr. Vincent Kavanaugh, (518) 897-1243, K • City of Plattsburgh Water Pollution Control Plant, Mr. David Powell, (518) 566-7172, K • County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 56I-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G
Site Controls	**Potential**	**Confirmed**	**Points of Contact (Organization, Personnel, Phone Number) Type designator G=Grantee, K=Govt. or Key Stakeholder**
Install fence or other physical barriers to restrict site access	**X**	**X**	• Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871,K • County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Deed Recipients, G
Maintain security (guards, monitoring/surveillance system) to restrict site access			
Install signage and warnings regarding residual contamination	**X**	**X**	• Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871,K • County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Deed Recipients, G
Monitor and inspect wells in impacted area regularly	**X**	**X**	• Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871,K • County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Deed Recipients, G

Other	Potential	Confirmed	Points of Contact (Organization, Personnel, Phone Number) Type designator G=Grantee, K=Govt. or Key Stakeholder
Inspect and monitor remedial systems (i.e., water treatment systems, SVE systems, landfill caps, etc.)	X	X	• Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871,K • County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Deed Recipients, G
Deed Notices	X	X	• Clinton County Clerk's Office, (518) 565-4700, K • Air Force Real Property Agency, Mr. Michael Sorel, 518) 563-2871,K
Incorporate use restrictions into Airport Layout Plan	X	X	• County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Federal Aviation Administration, NY Airports District Office, Mr. Robert Lanuza, (516) 227-3805, K
Health and Safety Program, PPE for any construction activities	X	X	• County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Deed Recipients, G
State hazardous waste site registries and other registry databases	X	X	• Air Force Real Property Agency, Mr. Michael Sorel, (518) 563-2871, K • New York State Department of Environmental Conservation (POC to be determined), K
Provide Public Notices/Advisories (e.g., fishing advisories)			
Notify utility purveyors and join "Dig-Safe" type programs	X	X	• Air Force Real Property Agency, Mr. Michael Sorel, (5 l8) 563-2871,K • County of Clinton Industrial Development Agency, Ms, Adore' Kurtz, (518) 563-3100, G • Plattsburgh Airbase Redevelopment Corporation, Mr. Daniel Wieneke, (518) 561-0232, G • Clinton County Airport, Mr. Ralph Hensel, (518) 565-4795, G • Dig Safely New York, Ms. Theresa Benjack, 1-800-309-7962, K
Co-op, Condo Association, and Homeowner Association use restrictions			

LUC/IC Layering Mechanism Prioritization Criteria:

Some mechanisms available to help establish and ensure compliance with the use restriction or land use control will be more effective than others and should receive more attention in order to ensure their usefulness is optimized. For example, if the use restriction is intended to prevent the development of wells and there is an active well permitting program, obtaining the cooperation of the well permitting agency would substantially improve the probability the use restriction would remain effective. In such cases, the Air Force may not only provide initial information to the well permitting agency but may choose to periodically reinforce the need for the agency's cooperation and regularly verify their notice of the restrictions affecting the property. The Air Force through this evaluation and prioritization process can design a program of reinforcement notices and information which focuses on the most effective mechanisms.

Priority 1: Strong correlation between the mechanism's effectiveness and the specific activity the use restriction is intended to address. Initial communication of appropriate materials (see communication strategy), followed by direct contact to ensure the appropriate office and /or individual received the information and understands their role in ensuring the continued effectiveness of the use restriction and /or land use control, Recommendation: Reinforcing notice and materials should be sent at least annually.

Priority 2: Moderate correlation between the mechanism's effectiveness and the types of activity the use restriction is intended to address. Initial communication of appropriate materials. Recommendation: Reinforcing notice sent every two years.

Priority 3: Some correlation between the mechanism's effectiveness and the types of activity the use restriction is intended to address. Initial communication of appropriate materials. Recommendation: Reinforcing notice sent every three years.

Table 4 – Former Plattsburgh AFB Layering Table

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	FT-002 Source O/U	Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority l** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions (in the zone of contamination and in areas that may influence the remedial systems) **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and "Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	FT-002 Source O/U	Soil & Groundwater	Protect remedial action system and associated monitoring wells	Prohibition of development or land use which interferes with remedial operations	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/ Master Plans restricting use **Priority 2** Well installation restrictions in the zone of contamination and areas that may influence the remedial system **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1** Discharge of contaminated groundwater **Priority 1** State NEPA laws (e.g. SEQR) **Priority 2**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells, in impacted area, and remedial systems regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and "Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	**F.2 Government/ Administrative**	**F.3 Site Controls**	**F.4 Other**
A1	FT-002 Source O/U	Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/ Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and "Dig Safe"
			Prevent exposure to contaminated groundwater without proper treatment	Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC				

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	**F.2 Government/ Administrative**	**F.3 Site Controls**	**F.4 Other**
A1	FT-002 Source O/U	Groundwater	Protect remedial action system and associated monitoring wells	Prohibition of development or land use which interferes with remedial operations	Use Restrictions in Deed **Priority 1** **Lease Restrictions Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/ Master Plans restricting use **Priority 2** Well installation restrictions in the zone of contamination and areas that may influence the remedial system **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1** Discharge of contaminated groundwater **Priority 1** State NEPA Laws (e.g. SEQR) **Priority 2**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells, in impacted area, and remedial systems regularly **Priority 1**	All **Priority 2** 1ncorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and "Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	SS-005, SS-006	Soil	Prevent exposure by residents to contaminated soil	Limit development to non-residential use	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/ Master Plans restricting use **Priority 2** State NEPA Laws (e.g. SEQR) **Priority 2**		All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and "Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Local Ordinances/ Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-021	Soil	Protect remedial action system and associated monitoring wells	Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/ Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Groundwater use restriction and prohibition of the installation of any well for drinking water or any other purposes which could result in the use of the underlying groundwater	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Local Ordinances/ Master Plans restricting use **Priority 2** Groundwater use restrictions Priority 1 Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-022	Soil	Protect remedial action system and associated monitoring wells	Protection of the landfill cover integrity and all components, including the groundwater monitoring wells	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe”

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					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-023 Source O/U	Soil	Protect remedial action system and associated monitoring wells	Protection of the landfill cover integrity and all components, including the groundwater monitoring wells	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe”

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-023 GW O/U	Groundwater	Prevent exposure to contaminated groundwater	Prohibition of groundwater withdrawal for all potable uses	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe”

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	**F.2 Government/ Administrative**	**F.3 Site Controls**	**F.4 Other**
A1	LF-024	Soil	Protect remedial action system and associated monitoring wells	Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/ Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Groundwater use restriction and prohibition of the installation of any well for drinking water or any other purposes which could result in the use of the underlying groundwater	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Local Ordinances/ Master Plans restricting use **Priority 2** Groundwater use restrictions Priority 1 Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A2.7	FT-002 GW O/U	Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
			Prevent exposure to contaminated groundwater without proper treatment	Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC				

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A2.7	FT-002 GW O/U	Groundwater	Protect remedial action system and associated monitoring wells	Prohibition of development or land use which interferes with remedial operations	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Well installation restrictions in the zone of contamination and areas that may influence the remedial system **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1** Discharge of contaminated groundwater **Priority 1** State NEPA Laws (e.g. SEQR) **Priority 2**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

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					F.1 Real Property/ Legal	**F.2 Government/ Administrative**	**F.3 Site Controls**	**F.4 Other**
A2.9	SS-018, SS-028	Soil	Prevent exposure by residents to contaminated soil	Restriction on development to facilities that support only non residential use	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** State NEPA Laws (e.g. SEQR) **Priority 2**		All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and "Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	
			Prevent exposure to contaminated groundwater without proper treatment	Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water without prior approval of the NYSDEC				

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A2.12	LF-022	Soil	Protect remedial action system and associated monitoring wells	Protection of the landfill cover integrity and al! components, including the groundwater monitoring wells	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	**F.2 Government/ Administrative**	**F.3 Site Controls**	**F.4 Other**
K-2	SS-018, SS-028	Soil	Prevent exposure by residents to contaminated soil	Restriction on development to facilities that support only non residential use	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** State NEPA Laws (e.g. SEQR) **Priority 2**		All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and "Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use restrictions in Deed **Priority 1** Lease Restrictions **Priority l**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	
			Prevent exposure to contaminated groundwater without proper treatment	Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water without prior approval of the NYSDEC				

LAND USE CONTROL/ INSTITUTIONAL CONTROL MANAGEMENT PLAN

Former Plattsburgh AFB
Plattsburgh NY

October 30, 2002

The procedures and processes established in this document provide guidance intended solely for use by Air Force personnel for the implementation and management of LUC/ICs at its BRAC bases. Additionally, this document serves as a vehicle by which the public and the regulatory community are provided information on how the Air Force intends to exercise its discretionary authority in the implementation and management of LUC/ICs. The procedures and processes established in this document are not intended, and cannot be relied upon to create any rights, substantive or procedural, enforceable by any party against the Air Force. The Air Force reserves the right to act at variance with these procedures and processes and to change them at any time as it may deem appropriate.

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FORMER PLATTSBURGH AIR FORCE BASE
INSTITUTIONAL CONTROL MANAGEMENT PLAN

1. Purpose

The Air Force Real Property Agency (AFRPA) has developed a Land Use Control/Institutional Control (LUC/IC) Management Strategy for implementing, monitoring and enforcing LUC/ICs. The emphasis of this strategy is on stakeholder education, stakeholder involvement and promoting LUC/IC compliance. A part of the LUC/IC management strategy is to develop base-specific tools to assist in implementing required LUC/ICs. One of these tools, the Layering Strategy Worksheet, identifies mutually reinforcing controls to ensure the effectiveness of the underlying use restriction or)and use control, The Layering Strategy Worksheet has been developed at the Former Plattsburgh Air Force Base (AFB) with the participation of the BRAC Cleanup Team (BCT) and the Local Redevelopment Authority (LRA). Information contained in this LUC/IC Management Plan for the Former Plattsburgh AFB has been taken from the Layering Strategy Worksheets developed specifically for the Former Plattsburgh AFB.

Note: This LUC/IC Management Plan is a living document that will be revised periodically when information indicates that changes in site conditions may lead to new or different controls.

2. General Description of the Former Plattsburgh AFB Property

The former Plattsburgh AFB is located in the City and Town of Plattsburgh, in Clinton County, within the State of New York. Plattsburgh AFB closed on September 30, 1995 as part of the third round of BRAC closures. Plattsburgh AFB was made up of 3,447 acres. The property is being conveyed to the City of Plattsburgh, Clinton County, and the County of Clinton Industrial Development Agency (CCIDA) as part of a Economic Development or Public Benefit Conveyance. Listed below (Table 1) are the Plattsburgh AFB environmental parcels, including information on parcel size, recipient, conveyance method, and current use or planned future use:

TABLE 1
FORMER PLATTSBURGH AFB PARCEL STATUS

Parcel ID*	Acres	Recipient	Conveyance Method**	Current Use or Planned Use***	Transferred? Y/N
A1a	1,708.9	Clinton County	PBC	Airfield and Aviation Support	N
A1b	745.0	CCIDA	EDC	Aviation Support, Commercial, Industrial, Public/ Recreation	N
A2.1	116.7	CCIDA	EDC	Residential	N
A2.2	91.6	CCIDA	EDC	Commercial, Industrial	N

Parcel ID*	Acres	Recipient	Conveyance Method**	Current Use or Planned Use***	Transferred? Y/N
A2.3	216.7	CCIDA	EDC	Commercial, Residential, Public/Recreation	N
A2.4	110.9	CCIDA	EDC	Commercial, Industrial	N
A2.5	31.7	CCIDA	EDC	Commercial, Industrial, Aviation Support	N
A2.6	31.4	CCIDA	EDC	Commercial, Industrial, Residential	N
A2.7	42	CCIDA	EDC	Commercial, Industrial	N
A2.8	40	CCIDA	EDC	Commercial, Industrial	N
A2.9	10.4	CCIDA	EDC	Commercial, Industrial	N
A2.10	75.2	CCIDA	EDC	Commercial, Industrial, Aviation Support	N
A2.11	124.4	CCIDA	EDC	Commercial, Industrial	N
A2.12	5.6	CCIDA	EDC	Commercial, Industrial, Aviation Support	N
A2.13	0.7	CCIDA	EDC	Commercial, Industrial, or Residential	N
A2.14	4.2	CCIDA	EDC	Commercial, Industrial	N
B	18.0	CCIDA	EDC	Commercial, Industrial	N
E	24.68	Lakeside Container Corp.	Public Sale	Commercial	Y
J-1	9.3	CCIDA	EDC	Commercial, Industrial	N
K-1	16.9	City	PBC	Public/Recreation	N
K-2	2.4	City	PBC	Public/Recreation	N
K-3	20.2	City	PBC	Public/Recreation	N
Total Acres	**3,447**				

*Parcels referred to are "Environmental Parcels" developed for purposes of evaluating environmental condition of the property and development of Findings of Suitability to Transfer.

** PBC = Public Benefit Conveyance

** EDC = Economic Development Conveyance

*** Planned Use is based on figure 2.2-1 of the May 2000 Environmental Assessment of Alternative Land Uses for Plattsburgh AFB, NY

3. Identification of Residual Contamination or Risk

Consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the National Contingency Plan (NCP), the Air Force is required to consider planned future uses along with other criteria in its environmental cleanup program. Cleanup levels are established and cleanup methods are designed to meet applicable standards or risk assessments that match reasonable expectations for the future use of the property. In some cases, the sites or operable units (OUs) have been closed with no further action based upon restricted future land use (e.g., commercial, industrial, recreational). This type of closure means that some level of residual contamination may exist at these sites (property) that is acceptable and safe for industrial, commercial or other limited propetty uses but not unrestricted use. Unrestricted (residential) use was not an overall goal, nor a legal obligation, for restoration of all environmental sites at the Former Plattsburgh AFB.

The Parcels listed Table 2A below contain sites and/or OUs where residual contamination is present (Reference Table 2 of the Layering Strategy Worksheet document) at levels that do not permit unrestricted use (e.g., use is restricted because the property is not yet or will not be cleaned up to the unrestricted use standard (in most cases the residential use standard)). As n result, some type or form of LUC/IC may be warranted for these sites and/or OUs. Table 2A also includes information on media affected (i.e, soil, groundwater, etc.) by the contamination which prevents unrestricted use and parcels that are affected by this media contamination.

TABLE 2A
Plattsburgh AFB Sites/Operable Units
Where Residual Contamination Precludes Unrestricted Use*

Plattsburgh AFB Site or Operable Unit(O/U)	Affected Parcels	Media Affected
FT-002 (s), Fire Training Area Source 0/U	Al	Soil
FT-002 (GW), Fire Training/Industrial Area Groundwater 0/U	Al, A2.7	Groundwater
SS-005, Non-Destructive Inspection Facility Soil 0/U	Al	Soil
SS-006, Aerospace Ground Equipment Facility Soil 0/U	Al	Soil
SS-018, Auto Hobby Shop	A2.9, K-2	Soil and Groundwater
LF-021, Former Landfill	Al	Soil and Groundwater
LF-022, Former Landfill	Al. A2.12	Soil
LF-023, Former Landfill, Source 0/U	Al	Soil
LF-023, Former Landfill, Groundwater, Surface Water 0/U	Al	Groundwater
LF-024, Former Landfill	Al	Soil and Groundwater
SS-028, 0pen Storage Area	A2.9, K-2	Soil and Groundwater

* *Remedial Action Objectives (RAOs) have been finalized*

Table 2B identifies Parcels where cleanup goals or objectives have not been finalized. It is, therefore, not known whether residual contamination will preclude unrestricted use at these Parcels.

TABLE 2B
Plattsburgh Sites/Operable Units
Where Not Known Whether Residual Contamination Will Preclude Unrestricted Use*

Plattsburgh AFB Site or Operable Unit(O/U)	Affected Parcels	Media Affected
SS-004, Flightline and Industrial Area Soil 0/U	Al	Soil
SS-012, Petroleum, Oil and Lubricant (POL) Storage Area	A2.11	Soil and Groundwater
SS-013, Munitions Maintenance Squadron	Al	Soil and Groundwater
SS-016, Nose Dock 8	A1, A2.10	Soil and Groundwater
SS-026, Explosives Ordnance Disposal Range	Al	Soil and Groundwater
SS-027, Liquid Oxygen Plant	Al	Soil and Groundwater
ST-030, Former Base Exchange Service Station	A2.6	Soil and Groundwater
SD-041, Building 2612	Al	Soil
Miscellaneous EBS Factors (OWS-2891, STW-426-2, SPL-428, OTH-2657, TF-2753, OTH-l700, TF-3250, 0TH-3308, TF-3584, OTH-3505-1)	Al, A2.9, A2.10	Soil and Groundwater

* *RAOs have not been finalized*

Table 3 summarizes the LUC/IC status of all Plattsburgh AFB Parcels.

TABLE 3
Plattsburgh AFB LUC/IC Requirements by Parcel

Parcels That Do Not Require LUC/ICs*
A2.1, A2.2, A2.3, A2.4, A2.5, A2.8, A2.13, A2,14, B, E, J-1, K-1, K-3
Parcels That Do Require LUC/ICs
A1, A2.7, A2.9, A2.12, K-2
Parcel where future LUC/IC requirements yet to be Determined+
Al, A2.6, A2.9, A2.10, A2.11

*These parcels require no special LUC/IC actions relative to property disposal activities and therefore require no additional discussion in this plan.
+ Once the future use of the parcel is determined, it will be moved to Table 2A or 2B as appropriate by revision to this document.

4. LUC/IC Implementation

Table 4 identifies specific LUC/IC land use restrictions (Column E) and layering mechanisms (Column F, items 1, 2, 3, or 4) for the Former Plattsburgh AFB. The Layering Strategy Worksheet document for the Former Plattsburgh AFB a feeder document for this LUC/IC Management Plan, provides the source of information for development of Table 4. Details on methods of implementation for each of the layering mechanisms listed in Column F of Table 4 are described below by layering category (i.e., item 1, 2, 3, or 4 of Column F). The communication plan found in Appendix A provides specific details on how each LUC/IC layering mechanism will be implemented. The LUC/IC Layering Mechanism Priorities are defined in Appendix B.

Table 4 – Former Plattsburgh AFB Layering Table

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	FT-002 Source O/U	Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions (in the zone of contamination. and in areas that may influence the remedial systems) **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	FT-002 Source O/U	Soil & Groundwater	Protect remedial action system and associated monitoring wells	Prohibition of development or land use which interferes with remedial operations	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Well installation restrictions in the zone of contamination and areas that may influence the remedial system **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1** Discharge of contaminated groundwater **Priority 1** State NEPA Laws (e.g. SEQR) **Priority 2**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells (in impacted area) and remedial systems regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	FT-002 GW O/U	Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
			Prevent exposure to contaminated groundwater without proper treatment	Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC				

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	FT-002 GW O/U	Groundwater	Protect remedial action system and associated monitoring wells	Prohibition of development or land use which interferes with remedial operations	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Well installation restrictions in the zone of contamination and areas that may influence the remedial system **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1** Discharge of contaminated groundwater **Priority 1** State NEPA Laws (e.g. SEQR) **Priority 2**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells, in impacted area, and remedial systems regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	SS-005, SS-006	Soil	Prevent exposure by residents to contaminated soil	Limit development to non-residential use	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** State NEPA Laws (e.g., SEQR) **Priority 2**		All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority I** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-021	Soil	Protect remedial action system and associated monitoring wells	Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Groundwater use restriction and prohibition of the installation of any well for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority I** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-022	Soil	Protect remedial action system and associated monitoring wells	Protection of the landfill cover integrity and all components, including the groundwater monitoring wells	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-023 Source O/U	Soil	Protect remedial action system and associated monitoring wells	Protection of the landfill cover integrity and all components, including the groundwater monitoring wells	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-023 GW O/U	Groundwater	Prevent exposure to contaminated groundwater	Prohibition of groundwater withdrawal for all potable uses	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A1	LF-024	Soil	Protect remedial action system and associated monitoring wells	Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Groundwater use restriction and prohibition of the installation of any well for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority I** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A2.7	FT-002 GW O/U	Groundwater	Prevent use of contaminated groundwater	Prohibition of '.he installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
			Prevent exposure to contaminated groundwater without proper treatment	Prohibition of discharge of. groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC				

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A2.7	FT-002 GW O/U	Groundwater	Protect remedial action system and associated monitoring wells	Prohibition oi development or land use which interferes with remedial operations	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Well installation restrictions in the zone of contamination and areas that may influence the remedial system **Priority 1** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted area **Priority 1** Discharge of contaminated groundwater **Priority 1** State NEPA Laws (e.g. SEQR) **Priority 2**	Monitor and inspect wells, in impacted area, and remedial systems regularly **Priority 1**	All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A2.9	SS-018, SS-028	Soil	Prevent exposure by residents to contaminated soil	Restriction on development to facilities that support only non residential use	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** State NEPA Laws (e.g. SEQR) **Priority 2**		All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority I** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	
			Prevent exposure to contaminated groundwater without proper treatment	Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water without prior approval of the NYSDEC				

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
A2.12	LF-022	Soil	Protect remedial action system and associated monitoring wells	Protection of the landfill cover integrity and all components, including the groundwater monitoring wells	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Install fence or other physical barriers to restrict site access **Priority 1** Install signage and warnings **Priority 1** Monitor and inspect wells and remedial system regularly **Priority 1**	All **Priority 2** Incorporate use restrictions into Airport Layout Plan Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"

A Affected Parcels	B IRP Site(s)/ AOC(s)	C Media Affected	D Goals/ Objectives of LUC/IC	E Use Restriction(s)	F LUC/IC LAYERS (LAYERING MECHANISMS)/PRIORITIES			
					F.1 Real Property/ Legal	F.2 Government/ Administrative	F.3 Site Controls	F.4 Other
K-2	SS-018, SS-028	Soil	Prevent exposure by residents to contaminated soil	Restriction on development to facilities that support only non residential use	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Zoning restrictions/ requirements **Priority 2** Local Ordinances/Master Plans restricting use **Priority 2** State NEPA Laws (e.g. SEQR) **Priority 2**		All **Priority 2** Health and Safety Program, PPE for any construction activities Register site in NYS Hazardous Waste Site Registry Deed Notices Notify utility purveyors and “Dig Safe"
		Groundwater	Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	Use Restrictions in Deed **Priority 1** Lease Restrictions **Priority 1**	Local Ordinances/Master Plans restricting use **Priority 2** Groundwater use restrictions **Priority 1** Well installation restrictions in the zone of contamination **Priority 1** Discharge of contaminated groundwater **Priority I** Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas **Priority 1**	Monitor and inspect wells in impacted area regularly **Priority 1**	
			Prevent exposure to contaminated groundwater without proper treatment	Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water without prior approval of the NYSDEC				

** Parcels referred to are "Environmental Parcels” developed for purposes of evaluating environmental condition of the property and development of Findings of Suitability to Transfer.

The use restrictions identified in Column E of Table 4 translate into specific methods, techniques or mechanisms for controlling use. These methods can take the form of controls on real property (deeds, facility use plans), controls implemented or managed by governmental institutions (permits, zoning, registries), controls associated with site management (markers, fences, monitoring) and other various controls (community notification). The specific methods identified for the Former Plattsburgh AFB are identified in Column F (items 1, 2, 3, and 4). Each method or technique functions as a new "layer" of protection. Each layer complements and reinforces the other layers, The sum of the layers contributes to the appropriate long-term use of the land.

Table 5 provides Points of Contact (POCs) for each of the confirmed layering mechanisms listed in Column F of Table 4 (Detailed Point of Contact information, including addresses, can be found in Attachment E). These POCs may be responsible for implementing the specific mechanism, or are to be contacted about the existence of the mechanism.

Tab1e 5
Layering Mechanism Points of Contact

Confirmed Layering Mechanism	Point of Contact (by name, organization, phone number, and type designator – G = Grantee, K=Govt. or Key Stakeholder)
Use Restrictions in Deed	• Clinton County Clerks Office, (518) 565-4700, K • Mr. Robert Lanuza, Federal Aviation Administration, NY Airports District Office, (516) 227-3805, K • Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100, G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) S65-4795, G • Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K
Lease Restrictions	• Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100, G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) S65-4795, G • Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K
Zoning restrictions/ requirements	• Mr. Kevin Farrington, City of Plattsburgh Engineering and Planing Department, (518) 563-7730, K • Mr. Phil VonBargen, Town of Plattsburgh Planning Office, (518) 563-8103, K • Mr. Rodney Brown, Clinton County Planning Department, (518) 565-4709, K
Local Ordinances/ Master Plans restricting use	• Mr. Kevin Farrington, City of Plattsburgh Engineering and Planing Department, (518) 563-7730, K • Mr. Phil VonBargen, Town of Plattsburgh Planning Office, (518) 563-8103, K • Mr. Rodney Brown, Clinton County Planning Department, (518) 565-4709, K • Mr. Robert Lanuza, Federal Aviation Administration, NY Airports District Office, (516) 227-3805, K
State NEPA Laws (e.g. SEQR)	• Mr. Kevin Farrington, City of Plattsburgh Engineering and Planing Department, (518) 563-7730, K • Mr. Phil VonBargen, Town of Plattsburgh Planning Office, (518) 563-8103, K • Mr. Rodney Brown, Clinton County Planning Department, (518) 565-4709, K • New York State Department of Environmental Conservation (point of contact to be determined), K
Groundwater use restrictions	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Mr. James Quinn, New York State Department of Environmental Conservation Bureau of Eastern Remedial Action, (518) 402-9697, K • Mr. Robert Morse, United States Environmental Protection Agency, Federal Facilities Section, (212) 637-4331, K

Well installation restrictions in zone of contamination	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Mr. James Quinn, New York State Department of Environmental Conservation Bureau of Eastern Remedial Action, (518) 402-9697, K • Mr. Robert Morse, United States Environmental Protection Agency, Federal Facilities Section, (212) 637-4331, K
Well installation restrictions in areas that may influence the remedial system	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Mr. James Quinn, New York State Department of Environmental Conservation Bureau of Eastern Remedial Action, (518) 402-9697, K • Mr. Robert Morse, United States Environmental Protection Agency, Federal Facilities Section, (212) 637-4331, K
Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Mr. James Quinn., New York State Department of Environmental Conservation Bureau of Eastern Remedial Action, (518) 402-9697, K • Mr. Robert Morse, United States Environmental Protection Agency, Federal Facilities Section, (212) 637-4331, K • Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100, G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Ms. Theresa Benjack, Dig Safely New York, (800)-309-8289, K • Mr. Kevin Farrington, City of Plattsburgh Engineering and Planning Department, (518) 563-7730, K • Mr. Phil VonBargen, Town of Plattsburgh Planning Office, (518) 563-8103, K
Discharge of Contaminated Groundwater	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100 G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Mr. Vincent Kavanaugh, New York State Department of Environmental Conservation Region V, Environmental Quality Division, (518) 897-1243, K • Mr. David Powell, City of Plattsburgh Water Pollution Control Plant (518) 563-7172, K
Install fence or other physical barriers to restrict site access	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100 G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Deed Recipients, G
Install signage and warnings	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100 G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Deed Recipients, G
Monitor and inspect wells in impacted area regularly	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100 G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Deed Recipients, G
Inspect and monitor remedial systems (i.e. water treatment systems, SVE systems, landfill caps, etc.)	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100 G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Deed Recipients, G
Deed Notices	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Clinton County Clerk's Office, (518) 565-4700, K

Incorporate use restrictions into Airport Layout Plan	• Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100 G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Mr. Robert Lanuza, Federal Aviation Administration, NY Airports District Office, (516) 227-3805, K
Health and Safety Program, and PPE, for any construction activities	• Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100 G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Deed Recipients, G
State hazardous waste site registry	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • New York State Department of Environmental Conservation (point of contact to be determined), K
Notify utility purveyors and join "Dig-Safe" type programs	• Mr. Michael Sorel, Air Force Real Property Agency, (518) 563-2871, K • Ms. Adore' Kurtz, County of Clinton Industrial Development Agency, (518) 563-3100 G • Mr. Daniel Wieneke, Plattsburgh Airbase Redevelopment Corporation, (518) 561-0232, G • Mr. Ralph Hensel, Clinton County Airport, (518) 565-4795, G • Ms. Theresa Benjack, Dig Safely New York, (800)-309-8289, K

5. LUC/IC Monitoring

Two separate "monitoring tracks" will be utilized for LUC/ICs: Reinforcement monitoring through letters and notices to entities responsible for implementing the specific layering mechanisms identified for the site, and AFRPA-implemented monitoring of the specific land use controls necessary at the site through visual site inspections (VSIs).

LUC/ICs compliance will be managed at the Former Plattsburgh AFB by use of existing and on going processes at the Former Plattsburgh AFB, such as periodic inspections already being conducted in conjunction with routine operation and maintenance activities at existing (and planned) remedial systems. LUC/ICs compliance will also be verified during the annual inventory/ inspections of wells on the Former Plattsburgh AFB, and in conjunction with the CERCLA Five-Year Review process.

Table 6A describes the frequency of reinforcement monitoring (e.g., letters, and notices) for the LUC/IC layering mechanisms. The points of contact for each mechanism are listed in Table above, and in Table 1 of the LUC/IC Communication Plan.

Table 6A LUC/IC
Layering Mechanism Reinforcement

LUC/IC Layering Mechanism	Priority*	Frequency
Use Restrictions in Deed	1	Annual
Lease Restrictions	1	Annual
Zoning restrictions/requirements	2	Every two years
Local Ordinances/Master Plans restricting use	2	Every two years
State NEPA Laws (e.g. SEQR)	2	Every two years
Groundwater use restrictions	1	Annual
Well installation restrictions in zone of contamination	1	Annual

Well installation restrictions in areas that may influence the remedial system	1	Annual
Permitting to prohibit excavation, construction, drilling, or disturbance of soil in impacted areas	1	Annual
Discharge of Contaminated Groundwater	1	Annual
Install fence or other physical barriers to restrict site access	1	Annual
Install signage and warnings	1	Annual
Monitor and inspect wells in impacted area regularly	1	Annual
Inspect and monitor remedial systems	1	Annual
Deed Notices	2	Every two years
Incorporate use restrictions into Airport Layout Plan	2	Every two years
Health and Safety Program, and PPE, for any construction activities	2	Every two years
State hazardous waste site registry	2	Every two years
Notify utility purveyors and join "Dig-Safe" type programs	2	Every two years

** LUC/IC layering mechanism priorities are defined in Appendix B and developed as part of the Layering Strategy Worksheet*

Table 6B describes the frequency of AFRPA-implemented VSI monitoring for the LUC/IC use restrictions. The listed classifications were developed in the IC Classification Worksheet for the Former Plattsburgh AFB, provided in Appendix C. This worksheet classification of the ICs is based on their importance to the integrity of the remedial action and the risk of exposure to residual contamination. The IC Classification definitions are also found in Appendix B.

Table 6B
Use Restriction VSI Monitoring Frequency

Use Restriction	Related IRP Site/OU	IC Classification*	Frequency
Prohibition of development or land use which interferes with remedial operations	FT-002 Source 0/U, FT-002 Groundwater 0/U	2	Annual
Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	FT-002 Source 0/U, FT-002 Groundwater 0/U, SS 005, SS-006, SS- 018, SS-028	1	Annual
Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	LF-021, LF-024	1	Annual
Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC	FT-002 Groundwater 0/U, SS-018, SS-028	1	Annual

Limit development to non-residential use	SS-005, SS-006	2	Annual
Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation	LF-021, LF-024	1	Annual
Protection of the landfill cover integrity and all components, including the groundwater monitoring wells	LF-022, LF-023 Source 0/U	1	Annual
Prohibition of groundwater withdrawal for all potable uses	LF-023 Groundwater 0/U	1	Annual
Restriction on development to facilities that support only non residential use	SS-018, SS-028	2	Annual

* Classifications are defined in Appendix B. The IC Classification Worksheet for Plattsburgh is found in Appendix C.

6. LUC/IC Enforcement a. Federal

a. Federal

Air Force deeds requiring institutional controls wi11 contain restrictive covenants which shall be deemed to "touch and concern" and shall "run" with the land thereby binding the grantee, and all subsequent successors in interest, to comply with the access provisions and the restrictions and prohibitions that constitute the institutional controls. In the event of a breach of the covenants, the Air Force would request enforcement by the Department of Justice. Available remedies would be both legal and equitable, such as an order requiring the grantee to cease or refrain from the activity giving rise to the violation, cr payment of monetary damages to compensate for mitigation or alternative performance undertaken by the Air Force as a result of the violation in order to maintain the same protectiveness of human health and the environment.

b. State and local Government

There are no known State or local regulatory requirements, however; the Governor of New York submitted a bill in 2001 to the State Legislature that would amend subdivision 3 of section 27-1301 of the State's environmental conservation law. This bill if passed, would impose a requirement on property owners to annually self-certify compliance with LUC/ICs to the New York State Department of Environmental Conservation for property where hazardous wastes were disposed and LUC/ICs are used for remediation. Although not yet law, the Air Force will levy this requirement in the form of a deed covenant on property recipients and future property owners of Former Plattsburgh AFB property containing LUC/ICs.

c. Response to Violations

Upon discovery of an IC violation or violations, the Air Force will take appropriate actions, to include advisory notifications to the appropriate regulatory agency, in a timely manner consistent with the severity of the IC violation.

Specific responses to IC violations will to be tailored to the classification of the IC (See Appendix B for IC classification definitions). The more likely the violation will lead to unacceptable levels of contamination, the more aggressive the Air Force's response will be to such violation. The following are typical IC violation responses, linked to specific IC classifications, which will be normally taken in response to an identified violation. Obviously, actual responses will be structured to address specifics factors or circumstances surrounding the violation, using the general conceptual response outlined below.

Class 1:

i) Immediate action will be taken to stop the violation and terminate any possible exposure to unacceptable levels of contamination. Immediate action can be face-to-face contact with the violator, use of law enforcement agencies (through referral to the AFRPA Legal Division), and/or use of environmental agency enforcement processes.
ii) Follow-up "immediate actions" with written correspondence(s) to document IC violation, document corrective actions taken, and to re-enforce the IC requirement that was violated,
iii) Notify regulatory agencies, via telephone, fax, or e-mail, concurrent with immediate action activities. Follow-up with documentation of notification action by written correspondence.
iv) Conduct follow-up inspections or surveillance activities with 30 days oi completion of corrective actions to confirm/verify compliance with IC. Continue follow-up inspections or surveillance activities at a frequency and time period as deemed appropriate based upon the specific circumstances surround the violation.

Class 2:

i) Timely action will be taken to stop violation and terminate any possible exposure to unacceptable levels of contamination. Timely action can be face-to-face contact with violator or by other means of communication such as telephone, e-mail, or fax based upon the potential risk to human health or the environment present as a result of the IC violation.
ii) Follow-up "timely action" with written correspondence to document IC violation, document corrective actions taken, and to provide a reminder of the IC requirement.
iii) Notify regulatory agencies, via telephone, fax, or e-mail, or at an appropriate time for the agency enforcement action activities. Follow-up with documentation of notification action by written correspondence.
iv) Conduct follow-up inspections or surveillance activities as deemed appropriate based upon the severity of potential risk to human health or the environment present as a result of the IC violation.

Class 3:

i) Take action, as appropriate, to notify the violator of the IC violation. Action can be face-to-face contact with violator or simply by written correspondence, telephone, e-mail or fax.
ii) Follow-up with written correspondence to document IC violation, document corrective actions taken if written correspondence isn't used as the vehicle for the corrective action above.
iii) Notify regulatory agencies by written correspondence at earliest convenient time, but within 30 days of violation if the violation is reoccurring or ongoing. This will be determined on a case-by-case basis.
iv) Follow-up inspections or surveillance activities may not be necessary or appropriate. Actual follow-up efforts, if any, to be developed on a case-by-case basis.

Class 4:

Class 4 ICs are IC that the Air Force has chosen to implement outside of its environmental program and outside of National Contingency Plan processes and therefore do not require specific actions under this LUC/IC Management Plan.

In the event that corrective measures described above are not effective, all continuing violations will be referred to Department of Justice via AFRPA/LD for legal action.

7. LUC/IC Termination

This section describes how the Air Force arrives at the determination that the LUC/IC can be terminated. This determination will depend on the criteria for the particular use restriction. Examples include the following: the clean up goals have been met, the regulatory criteria have been met, and the regulators have issued the necessary closure letter.

Table 7
Use Restriction Estimated Duration and Termination Decision

Use Restriction	Related IRP Sites/OUs	Estimated Duration	Termination Decision Criteria
Prohibition of development or land use which interferes with remedial operations	FT-002 Source 0/U	15 years	When operation of the remedial system is no longer required (based on results of treatment plant performance and process monitoring, and area sampling) and as specified in the Operations and Monitoring Plan (to be done)
	FT-002 GW 0/U	80 years	
Prohibition of the instal1ation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	FT-002 Source 0/U	15 years	When groundwater sampling indicates all analytes are below ARARs, and as specified in the applicable Operation and Monitoring Plan (to be done)
	FT-002 GW 0/U	80 years	
	SS-005 & SS-006	80 years	
	SS-018 & SS-028	6 years	
Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	LF-021 & LF-024	To be determined	To be done in consultation with NYSDEC and USEPA
Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC	FT-002 OW 0/U	80 years	When groundwater sampling indicates all analytes are below ARARs, and as specified in the applicable Operation and Monitoring Plan (to be done)
	SS-018 & SS-028	6 years	
Limit development to non-residential use	SS-005 & SS-006	To be determined	Pending health risk assessment for residential use (to be accomplished during next five year review)
Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation	LF-021 & LF-024	To be determined	To be determined in consultation with NYSDEC and USEPA
Protection of the landfill cover integrity and all components, including the groundwater monitoring wells	LF-022 & LF-023 Source 0/U	To be determined	To be determined in consultation with NYSDEC and USEPA
Prohibition of groundwater withdrawal for all potable uses	LF-023 GW 0/U	To be determined	To be determined in consultation with NYSDEC and USEPA
Restriction on development to facilities that support only non residential use	SS-018 & SS-028	To be determined	To be determined in consultation with NYSDEC and USEPA

Implementing the termination decision:

a. Removing use restrictions from deeds

Once the decision is made that the c1eanup criteria have been met, the use restrictions should be removed from the implementing legal instrument. The process necessary to remove or cancel, when no longer needed, restrictive covenants, negative easements, and other real property-based controls placed in the deed will be specified in the deed and shall be in conformance with state law.

b. Undoing the layering mechanisms

Parties that have been participating in the process of maintaining use restrictions must be provided notice that the layering mechanisms associated with the use restriction are no longer required. See the Communication Plan in Appendix A, for the form letters to be sent to Grantees and other stakeholders.

8. Plattsburgh AFB LUC/IC Communication Plan

The Air Force has developed a LUC/IC Communication Plan for the Former Plattsburgh AFB. This Plan describes how and when the Air Force will communicate information about LUC/ICs. It includes a description of roles, responsibilities, contact names, and phone numbers. The Plattsburgh AFB LUC/IC Communication Plan will be revised as necessary to ensure contact information remains current so that any changes in the LUC/IC objectives and requirements can be communicated to all stakeholders in a timely manner. Appendix A contains the LUC/IC Communication Plan to be implemented at the Former Plattsburgh AFB.

9. Plattsburgh AFB LUC/IC Database

AFRPA will maintain a LUC/IC database in accordance with the requirements of DoD's *Policy on Land Use Controls Associated with Environmental Restoration Activities, dated January l7, 2001* and AFRPA's IC Tracking Model (Appendix D). At a minimum, this database will contain the following: (1) relevant information on the property (parcels); (2) types of LUC/ICs established; (3) Air Force land use monitoring and management responsibilities; and (4) location of real estate records.

10. Documents Where LUC/ICs are discussed

Following is a list of documents where LUC/ICs are described and/or otherwise discussed.

IRP Site FT-002, Fire Training Area Source Operable Unit Record of Decision, March 2001

IRP Site FT-D02, Fire Training Area (FT-002)/Industrial Area Groundwater Operable Unit Draft Final Record of Decision, July 2002

IRP Site SS-005, Non-Destructive Inspection Facility, Soil Operable Unit, Record of Decision, March 1998

IRP Site SS-006, Aerospace Ground Equipment Facility, Soil Operable Unit, Record of Decision, March 1998

IRP Sites SS-018 and SS-028, Auto Hobby Shop and Open Storage Area, Record of Decision, August 2000

IRP Site LF-021, Former Landfill, Record of Decision, March 1997

IRP Site LF-022 Record of Decision, September 1992

IRP Site LF-022 Closure/Post Closure and maintenance Operation Manual, August 1992

IRP Site LF-023 Source Control Record of Decision, September 1992

IRP Site LF-023 Closure/Post Closure and maintenance Operation Manual, March 1994

IRP Site LF-023 (Groundwater, Surface Water and Sediment) Record of Decision, January 1995

IRP Site LF-024, Former Landfill, Record of Decision, March 1997

APPENDIX A – Plattsburgh AFB Communication Plan

Air Force Real Property Agency
FORMER PLATTSBURGH AFB LUC/IC Communication Plan

(Version 7.5a, 09 July 2002)

1. Purpose

This plan is an appendix to the Land Use Control/Institutional Control (LUC/IC) Management Plan and is the primary implementation vehicle for AFRPA's layering strategy at the Former Plattsburgh AFB as described in the LUC/IC Management Plan. The communication plan outlines how AFRPA will inform key stakeholders involved in LUC/IC issues at the Former Plattsburgh AFB of the importance of the LUC/ICs identified for the Former Plattsburgh AFB, and their role in maintaining those LUC/ICs. The primary audiences include the property grantees, government officials, and other key stakeholders who will make decisions affecting the use of the property. The plan also addresses ways to communicate relevant LUC/IC information to interested community stakeholders, so they can consider the information while making decisions about future property uses in their community.

2. What this Plan Does

In the Former Plattsburgh LUC/IC Management Plan, AFRPA has identified specific land use restrictions and controls necessary to protect the integrity of remedial actions or to prevent or manage exposure to residual contamination at the Former Plattsburgh AFB. This Communication Plan contains procedures and protocols for communicating initial and subsequent information about LUC/ICs requirements in the LUC/IC Management Plan. Specifically, this Communication Plan is designed to:

- Ensure the parties using and controlling the property understand the LUC/ICs and their responsibilities in relation to them, For example, new deed holders.

- Ensure government officials and key stakeholders who may make decisions affecting future use of the property are aware of the LUC/ICs and understand their responsibilities. For example, local land use planners.

- Identify steps to educate community stakeholders about the existence and importance of the LUC/ICs and the implications if they are breached or disrupted, using the community relations plan, the RAB, or existing environmental review forums.

3. Former Plattsburgh AFB Implementation: How We Will Communicate

Property Grantees

The Air Force, or its representative, will send initial and reinforcement notification letters to the property grantees. These letters will:

1. Identify the use restriction on the property
2. Inform the Grantee of the importance of observing that use restriction
3. Inform the Grantee of the CERCLA 120(h) covenant associated with the restriction

4. Request updated point of contact information, For example, when property changes hands or people move.
5. Contain attachments, including the AFRPA Grantee Pamphlet, the IC Fact Sheet, an Installation Map, and other relevant data.

Initial notification letters will be sent to Grantees on the deed execution date provided by the Portfolio Management System (PMS), or as soon thereafter as feasible. Reinforcement letters will be sent annually, bi-annually, or every five years, on the anniversary of the initial notification. The dates for initial and reinforcement letters are found in Table l.

The Air Force will also send termination letters to Grantees when the residual contamination has been reduced to such a level that restrictions on property use are no longer required.

Templates for Grantee notification letters are found in Appendix A. The Management Information System (MIS) will automatically generate these letters using the data found in Table 1.

Governmental Entities and Key Stakeholders

The Air Force, or its representative, will send initial and reinforcement notification letters to the governmental and key stakeholder points of contact. This will be done for each layering mechanism identified in the Former Plattsburgh AFB LUC/IC Management Plan. These letters will:

1. Identify the use restriction on the property
2. Identify the layering mechanism AFRPA is bringing to the recipient's attention
3. Inform the recipient of the importance of their role in AFRPA's layering strategy and implementation of the relevant layering mechanism
4. Request updated point of contact information
5. Contain attachments, including the IC Fact Sheet, Installation Map, and other relevant data.

Initial letters will be sent at the time that initial! Grantee letters are sent, or as soon thereafter as feasible. Reinforcement letters will be sent according to the schedule in Table 1.

The Air Force will also send termination letters to government agencies and key stakeholders when the residual contamination has been reduced to such a level that restrictions on property use are no longer required.

Templates for Government/Key Stakeholder notification letters are found in Appendix B. The MIS will automatically generate these letters using the data found in Table 1.

Notification Letters Data Inputs

Table 1 below provides a list of points of contact for Grantees, governmental entities, and key stakeholders for the Former Plattsburgh AFB as well as information on the parcel, associated IRP sites or Operable Units, layering mechanisms and priorities, and frequency of correspondence for each letter required by this communication plan (Detailed Point of Contact information, including addresses, is contained in Appendix E of the Land Use Control/Institutional Control Management Plan).

Table 1
Former Plattsburgh AFB LUC/IC – Grantee and Governmental/Key Stakeholder Notification Information

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Use Restriction in the deed	1	Al A2.7 A2.9 A2.12 K-2	Soil & Ground-water	A, AS, C, I, PR	Limit development to non residential use Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or larid use which interferes with remedial operations	2 1 1 1 2		Annual	TBD	Clinton County Clerk's Office, (518) 565-4700 Mr. Robert Lanuza, FAA, NY Airports District Office, (516) 227-3805 Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232, 22 U.S. Oval, Plattsburgh NY 12903 Mr. Michael Sorel, AFRPA, (518) 563-2871 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795	K K G G K G

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Lease Restriction	1	Al A2.7 A2.9 K-2	Soil & Ground-water	A, AS, C, I, PR	Limit development to non residential use Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or larid use which interferes with remedial operations	2 1 1 1 2		Annual	TBD	Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232, 22 U.S. Oval, Plattsburgh NY 12903 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795 Mr. Michael Sorel, AFRPA, (518) 563-2871	G G G K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Zoning Restrictions/ requirements	1	Al A2.7 A2.9 A2.12 K-2	Soil & Ground-water	A, AS, C, I, PR	Limit development to non residential use Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	2 1 2		Bi-Annual	TBD	Mr. Kevin Farrington, City Engineering and Planning Department, (518) 563-7730 Mr. Phil VonBargen, Town of Plattsburgh Planning Office, (518) 563-8103 Mr. Rodney Brown, Clinton County Planning Department, (518) 565-4709	K K K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Local Ordinances/ Master Plans restricting use	2	Al A2.7 A2.9 A2.12 K-2	Soil & Ground-water	A, AS, C, I, PR	Limit development to non residential use Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purpose which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	2 1 1 1 2		Bi-Annual	TBD	Mr. Kevin Farrington, City Engineering and Planning Department, (518) 563-7730 Mr. Phil VonBargen, Town of Plattsburgh Planning Office, (518) 563-8103 Mr. Rodney Brown, Clinton County Planning Department, (518) 565-4709 Mr. Robei1 Lanuza, FAA, NY Airports District Office, (516) 227-3805	K K K K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
State NEPA Laws (e.g. SEQR)	2	Al A2.7 A2.9 K-2	Soil & Ground-water	A, AS, C, I, PR	Limit development to non residential use Prohibition of development or land use which interferes with remedial operations	2 2		Bi-Annual	TBD	Mr. Kevin Farrington, City Engineering and Planning Department, (518) 563-7730 Mr. Phil VonBargen, Town of Plattsburgh Planning Office, (518) 563-8103 Mr. Rodney Brown, Clinton County Planning Department, (518) 565-4709 NYSDEC {point of contact to be determined)	K K K K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Groundwater use restrictions	1	Al A2.7 A2.9 K-2	Ground-water	A, AS, C, I, PR	Groundwater use restriction and prohibition of the installation of an y wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition o f discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC	1 1		Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Mr. James Quinn, NYSDEC Bureau of Eastern Remedial Action, (518) 402-9697 Mr. Robert Morse, USEPA, Federal Facilities Section, (212) 637-4331	K K K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Well installation restrictions (in zones of contaminatio n and in areas that may influence the remedial system)	1	Al A2.7 A2.9 K-2	Ground-water	A, AS, C, I, PR	Groundwater use restriction and prohibition of the installation of an y wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition o f discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	1 1 2		Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Mr. James Quinn, NYSDEC Bureau of Eastern Remedial Action, (518) 402-9697 Mr. Robert Morse, USEPA, Federal Facilities Section, (212) 637-4331	K K K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Permitting to prohibit excavation, construction, drilling,. or disturbance of soil in impacted areas (1 of 2)	1	Al A2.7 A2.9 A2.12 K-2	Soil & Ground-water	A, AS, C, I, PR	Groundwater use restriction and prohibition of the installation of any wells for drinking water o: any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection. of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	1 1 1 2		Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Mr. James Quinn, NYSDEC Bureau of Eastern Remedial Action, (518) 402-9697 Mr. Robert Morse, USEPA, Federal Facilities Section, (212) 637-4331 Ms. Adore' Kurtz. CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232	K K K G G

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Permitting to prohibit excavation, construction, drilling,. or disturbance of soil in impacted areas (2 of 2)	1	Al A2.7 A2.9 A2.12 K-2	Soil & Ground-water	A, AS, C, I, PR	Groundwater use restriction and prohibition of the installation of any wells for drinking water o: any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection. of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	1 1 1 2		Annual	TBD	Mr. Ralph Hensel Clinton County Airport, (518) 565-4795 Ms. Theresa Benjack, Dig Safely New York, (800) 309-8289 Mr. Kevin Farrington, City of Plattsburgh Engineering and Planning Department, (518) 563-7730 Mr. Phil VonBargen, Town of Plattsburgh Planning Office, (518) 563-8103	G K K K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Discharge of contaminated groundwater	1	Al A2.7 A2.9 A2.12 K-2	Soil & Ground-water	A, AS, C, I, PR	Groundwater use restriction and prohibition of the installation of any wells for drinking water o: any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	1 1 2		Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Mr. Vincent Kavanaugh, NYSDEC Region V, Environmental Quality Division (518) 897-1243 Mr. David Powell, City of Plattsburgh Water Pollution Control Plant (518) 563-7172 Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795	K K K G G G

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Install fence or other physical barriers to restrict site access	1	Al A2.12	Soil	A, AS, C, I, PR	Protection of the landfill cover integrity and ail components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	1 2		Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795	K G G G

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Install signage and warnings	1	Al A2.12	Soil	A, AS, C, I, PR	Protection of the landfill cover integrity and ail components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	1 2		Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795	K G G G

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Monitor and inspect wells in impacted area regularly	1	Al A2.7 A2.9 A2.12 K-2	Soil & Ground water	A, AS, C, I, PR	Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	1 1 1 2		Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795	K G G G

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Inspect and monitor remedial systems (i.e. water treatment systems, SVF, systems, landfill caps, etc.)	1	Al A2.7 A2.12	Soil & Ground water	A, AS, C, I, PR	Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	1 2		Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795	K G G G

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Deed Notices	2	Al A2.7 A2.9 A2.12 K-2	Soil & Ground water	A, AS, C, I, PR	Limit development to non residential use Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	2 1 1 1 2		Bi-Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Clinton County Clerk's Office, (518) 565-4700	K K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Incorporate use restrictions into Airport Layout Plan	2	Al A2.12	Soil & Ground water	A, AS, C, I, PR	Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	1		Bi-Annual	TBD	Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795 Mr. Robert Lanuza, FAA, NY Airports District Office, (516) 227-3805	G G G K
					Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC	1					
					Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC	1					
					Prohibition of development or land use which interferes with remedial operations	2					
					Limit development to non residential use	2					

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Health and Safety Program, and PPE, for any construction activities	2	Al A2.7 A2.9 A2.12 K-2	Soil & Ground water	A, AS, C, I, PR	Limit development to non residential use Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	2 1 1 1 2		Bi-Annual	TBD	Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795	G G G

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
State hazardous waste site registry	2	Al A2.7 A2.9 A2.12 K-2	Soil & Ground water	A, AS, C, I, PR	Limit development to non residential use Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	2 1 1 1 2		Bi-Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 New York State Department of Environmental Conservation (point of contact to be determined)	K K

Layering Mechanism	Layering Priority	Affected Parcel No. *	Media Affected	Planned Use**	Use Restriction	IC Classi-fication	Date for Initial Notice	Reinforce-ment Frequency	Termina-tion Date	Point of Contact***	Grantee (G) or Govt'l/ Key Stakeholder (K)?
Notify utility purveyors and join "Dig Safe" type programs	2	Al A2.7 A2.9 A2.12 K-2	Soil & Ground water	A, AS, C, I, PR	Limit development to non residential use Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC Protection of the landfill cover integrity and all components; prohibition of excavation of the landfill cap without prior approval of the NYSDEC Prohibition of development or land use which interferes with remedial operations	2 1 1 1 2		Bi-Annual	TBD	Mr. Michael Sorel, AFRPA, (518) 563-2871 Ms. Adore' Kurtz, CCIDA, (518) 563-3100 Mr. Daniel Wieneke, PARC, (518) 561-0232 Mr. Ralph Hensel Clinton County Airport, (518) 565-4795 Ms. Theresa Benjack, Dig Safely New York, (800) 309-8289	K G G G K

*Parcels, Description and Planned Use

AI, Aviation Support, Airfield and Western Area; Airfield and Aviation Support
A2.7, 5outh Central New Base; Commercial, Industrial
A2.9, Central Old Base; Commercial, Industrial
A2.12, Old Small Arms Range; Commercial, Industrial, Aviation Support
K-2, Lakefront Area -- Center; Public/Recreation

**'Planned Use Abbreviations

A – Airfield; AS – Aviation Support; C – Commercial; I – Industrial; PR – Public/Recreation

***Agency Abbreviations

AFBCA – Air Force Base Conversion Agency
FAA – Federal Aviation Administration
CCIDA – County of Clinton Industrial Development Agency
NYSDEC – New York State Department of Environmental Conservation
PARC – Plattsburgh Airbase Redevelopment Corporation
USEPA – United States Environmental Protection Agency

4. Communicating with Community Stakeholders

While the focus of this plan is on direct communication with Grantees, governmental representatives, and key stakeholders, other activities will educate community stakeholders. Specifically:

Inform the public through the Installation Restoration Program (IRP) Community Relations Program, as needed and appropriate.
Provide information to the Restoration Advisory Board (RAB) on use restrictions as appropriate. Tell RAB about any breeches and explain procedures for reporting them. Share information on how the Air Force resolved problems.
Continue to inform the Base Cleanup Team.
Continue to inform the Local Reuse Authority.
Maintain and advertise the 1-800-655-7200 contact line to appropriate groups or individuals.

5. Points of Contact for Questions about this Plan:

Mr. Michael Sorel, Base Environmental Coordinator	(518) 563-2871
Mr. John Corradetti, AFRPA Program Manager	(703) 696-5250
Mr. James Waldron, AFRPA Environmental Coordinator	(703) 696-5243
Ms. Claire Biunno, AFRPA Environmental Counsel	(703) 696-5360
Ms. Linda Geissinger, AFRPA Public Affairs Specialist	(916) 643-1164 x 109

6. Related web sites:

www.afbca.siteclose out.hq.af.mil
www.dtic.mil/envirodod/envbrac.html

APPENDIX A

GRANTEE NOTIFICAT1ON LETTER TEMPLATES

Initial Grantee Letter

AFRPA/DR
1700 North Moore Street, Suite 2300
Arlington VA 22209-2802

[Grantee name]
[Grantee Address]

Dear *[Grantee]:*

On *[date]*, the Air Force conveyed *[parcel description]* at *[installation name]* to you for use as *[planned use]*. The deed for this property included restrictions on its use ns part of an environmental remedy for the *[media type]* contamination on or underlying the property. A map of this parcel depicting the area(s) subject to restriction is attached. This restriction is required to protect human health and the environment. This letter serves as additional notice to ensure you continue to be aware of this use restriction.

The following use restriction(s) apply/applies to your property:

[describe use restriction(s)]

The use restrictions is/are a part of the remedial action affecting your property. The deed for your property has a covenant, required by Section 120(h)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The covenant provides protection in the event additional remedial action is found to be necessary in the future. Interference with the use restriction(s) described above on your property may be considered an act or omission that results in the loss of the covenant's protection, and your becoming a potentially responsible party. As a potentially responsible party you could be held responsible for the costs associated with completing any remedial action found to be necessary as a result of such interference.

If your property changes hands, or if your contact information changes, please send the following information to the address above, attention *[appropriate Air Force contact]*:

Name
Mailing Address
Telephone Number
Facsimile Number (if available)
Email Address (if available)

Sources of additional information on use restrictions are attached to this letter. If you have further questions concerning this matter, please contact *[appropriate Air Force contact]* at *XXX-XXX-XXXX*. The Air Force will continue to send letters every *[frequency]* years as a reminder o f this restriction. You will also receive a letter notifying you that the restriction is removed, when all actions to protect human health and the environment are deemed complete by the appropriate regulatory agencies.

Sincerely

ALBERT F. LOWAS, JR.
Director

cc:

AFRPA/D_
AFRPA/LD
AFRPA/EV

Attachments: Grantee Pamphlet
Map of Parcel and Use Restrictions
AFRPA Institutional Controls Fact Sheet
1-800 number Fact Sheet

Grantee Reinforcement Letter

AFRPA/DR
1700 North Moore Street, Suite 2300
Arlington VA 22209-2802

[Grantee name]
[Grantee Address]

Dear *[Grantee]:*

On *[date]*, the Air Force conveyed *[parcel description]* at *[installation name]* to you for use as *[planned use]*. The deed for this property included restrictions on its use as part of an environmental remedy for the *[media type]* contamination on or underlying the property. A map of this parcel depicting the area(s) subject to restriction is attached. This restriction is required to protect human health and the environment. This letter serves as a follow-up to our letter of *[initial letter date]*, to ensure you continue. to be aware of this use restriction.

The following use restriction(s) apply/applies to your property:

[describe use restriction(s)]

The use restrictions is/are a part of the remedial action affecting your property. The deed for your property has a covenant, required by Section 120(h)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The covenant provides protection in the event additional remedial action is found to be necessary in the future. Interference with the use restriction(s) described above on your property may be considered an act or omission that results in the loss of the covenant's protection, and your becoming a potentially responsible party. As a potentially responsible party you could be held responsible for the costs associated with completing any remedial action found to be necessary as a result of such interference.

If your property changes hands, or if your contact information changes, please send the following information to the address above, attention *[appropriate Air Force contact]*:

Name
Mailing Address
Telephone Number
Facsimile Number (if available)
Email Address (if available)

Sources of additional information on use restrictions are attached to this letter. If you have further questions concerning this matter, please contact *[appropriate Air Force contact]* at *XXX-XXX-XXXX*. The Air Force will continue to send letters every *[frequency]* years as a reminder o f this restriction. You will also receive a letter notifying you that the restriction is removed, when all actions to protect human health and the environment are deemed complete by the appropriate regulatory agencies.

Sincerely

ALBERT F. LOWAS, JR.
Director

cc:

AFRPA/D_
AFRPA/LD
AFRPA/EV

Attachments: Grantee Pamphlet
Map of Parcel and Use Restrictions
AFRPA Institutional Controls Fact Sheet
1-800 number Fact Sheet

Grantee - Use Restriction Termination Letter

AFRPA/DR
1700 North Moore Street, Suite 2300
Arlington VA 22209-2802

[Grantee name]
[Grantee Address]

Dear *[Grantee]:*

On *[date]*, the Air Force conveyed *[parcel description]* at *[installation name]* to you for use as *[planned use]*. The deed for this property included restrictions on its use as part of an environmental remedy for the *[media type]* contamination on or underlying the property. A map of this parcel depicting the area(s) subject to restriction is attached.

This restriction can now be removed, because the restrictions are no longer necessary. This letter serves as notice that the use restriction(s) will be terminated. A copy of the document terminating the use restrictions is attached.

The following restriction(s) on the use of the property are being terminated:

[Describe use restrictions]

If you have questions concerning this letter, please contact *[appropriate Air Force contact]* at *XXX-XXX-XXXX*.

Sincerely

ALBERT F. LOWAS, JR.
Director

cc:

AFRPA/D_
AFRPA/LD
AFRPA/EV

Attachments: *[Copy of Use Restriction Termination Document]*

APPENDIX B

GOVERNMENT/KEY STAKEHOLDERS NOTIFICATION LETTER TEMPLATES

Initial Governmental / Key Stakeholder Letter

AFRPA/DR
1700 North Moore Street, Suite 2300
Arlington VA 22209-2802

[Organization name]
[Organization Address]

Dear [Organization]:

The Air Force conveyed *[parcel name]* of the *[institution name]* to *[grantee name]* on *[date]* for use as *[planned use]*. The deed for this property restricted its use as part of an environmental remedy for the *[media type]* contamination on or underlying the property. The use restriction specific to this letter is identified below and shown on the attached map. This restriction must remain in place in order to protect human health and the environment. This letter serves as the notice to your organization of this restriction, so that you may consider it. in making decisions about this property.

The following use restriction(s) applies/apply to this property:

[describe use restriction(s)]

If your contact information changes, please send the following information to the address above, attention *[appropriate Air Force contact]*:

Organization Name
Mailing Address
General Telephone Number
Facsimile Number (if available)
Email Address (if available)

Sources of additional information on use restrictions are attached to this letter. If you have further questions concerning this matter, please contact *[appropriate Air Force contact]* at *XXX-XXX-XXXX* The Air Force wi11 continue to send letters every *[frequency]* years as a reminder of this restriction. You will also receive a 1etter notifying you that the restriction is removed, when all actions to protect human health and the environment are deemed complete by the appropriate regulatory agencies.

Sincerely

ALBERT F. LOWAS, JR.
Director

cc:
AFRPA/D_
AFRPA/LD
AFRPA/EV

Attachments: Grantee Pamphlet
Map of Parcel and Use Restrictions
AFRPA 1nstitutional Controls Fact Sheet
AFRPA Institutional Controls Tracking System Fact Sheet
1-800 number Fact Sheet

Government/Key Stakeholder - Use Restriction Termination Letter

AFRPA/DR
1700 North Moore Street, Suite 2300
Arlington VA 22209-2802

[Organization name]
[Organization Address]

Dear [Organization]:

The Air Force conveyed *[parcel name]* of the *[installation name]* to *[grantee name]* on *[date]* for use as *[planned use]*. The deed for this property restricted its use as part of an environmental remedy for the *[media type]* contamination on or underlying the property. The use restriction specific to this letter is identified below and shown on the attached map. This restriction can now be removed, as it is no longer necessary protect human health and the environment. This letter serves as the notice of termination of this restriction. A copy of the document terminating the use restrictions is attached.

The remedial action, which affected this property, included the following restriction(s) on the use of the property:

[describe use restriction(s)]

If you have questions concerning this letter, please contact *[appropriate Air Force contact]* at XXX-XXX-XXXX.

Sincerely

ALBERT F. LOWAS, JR.
Director

cc:
AFRPA/D_
AFRPA/LD
AFRPA/EV

Attachments: *[Copy of Use Restriction Termination Document]*

APPENDIX B – Definitions

The primary goal of institutional controls is the protection of human health and the environment, Definitions for the terms "Institutional Controls," "Site Controls" and "Land Use Controls" can be found in the AFRPA Institutional Control/Land Use Control Management Strategy document and are included here for ease of reference:

A. Land Use Controls /Institutional Controls (LUC/ICs)

The general term used by AFRPA to capture land use controls and institutional controls used to prevent exposure to residual contamination at remediation sites.

LUC is an overarching term that encompasses institutional controls, land use restrictions, and site controls. It means any type of physical, legal, or administrative mechanism that restricts the use of, and/or limits access to real property to prevent exposure to hazardous substances above permissible levels.

ICs are generally non-engineering, non-technical mechanisms used to prevent (or control) exposure to contaminants, as described in the National Contingency Plan. They are used to supplement and complement the engineering and/or technica1 process controls. They are part of a specific remedial action. Types of ICs include:

(1) Governmental (e.g., zoning, well permits)
(2) Real Property Based or Proprietary (e.g., deed restrictions).

Site Controls are physical or engineering controls to provide security for the physica1 structures and monitoring wells that are part of the remedial action and to ensure the safety of the public during and after construction of the remedial action These controls are intended to both protect the integrity of the engineering remedy (if present) and limit exposure of individuals by limiting land use.

B. IC Classification Worksheet Definitions

NCP ICs are classified in the IC Tracking Model according to the following criteria:

IC Classification Worksheet Definitions

Class 1

(a) Integral to the integrity of the Remedial Action.
(b) If the IC is not maintained, exposure to the levels of residual contaminants would present a definite risk to human health and the environment

Class 2

(a) Supports Remedial Action.

(b) If the IC is not maintained, exposure to the levels of residual contaminants would present some risk to human health and the environment.

Class 3

(a) Not integral and not necessary to support the Remedial Action.
(b) If the IC is not maintained, exposure to the levels of residual contaminants would present minimal or no risk to human health and the environment.

Class 4

(a) There is no Remedial Action under the National Contingency Plan,

C. LUC/IC Layering Mechanism

This term refers to the specific implementation mechanisms used to ensure the use restrictions are observed and preserved. Layering mechanisms include deed restrictions, governmental permitting programs,,zoning restrictions, etc. Layering mechanisms are prioritized in the Layering Strategy Worksheet according to the following criteria:

LUC/IC Layering Mechanism Prioritization Criteria

Some mechanisms available to help establish and ensure compliance wi th the use restriction or land use control will be more effective than others and should receive more attention in order to ensure their usefulness is optimized, For example, if the use restriction is intended to prevent the development of wells and there is an active well permitting program, obtaining the cooperation of the well permitting agency would substantially improve the probability the use restriction would remain effective. In such cases, the Air Force may not only provide initial information to the well permitting agency but may choose to periodically reinforce the need for the agency's cooperation and regularly verify their notice of the restrictions affecting the property. The Air Force through this evaluation and prioritization process can design a program of reinforcement notices and information that focuses on the most effective mechanisms.

Priority 1: Strong correlation between the mechanism's effectiveness and the specific activity the use restriction is intended to address. Initial communication of appropriate materials (see communication strategy), followed by direct contact to ensure the appropriate office and/or individual received the information and understands their role in ensuring the continued effectiveness of the use restriction and/or land use control. Recommendation: Reinforcing notice and materials should be sent at least annually.

Priority 2: Moderate correlation between the mechanism's effectiveness and the types of activity the use restriction is intended to address. Initial communication of appropriate materials. Recommendation: Reinforcing notice sent every two years.

Priority 3: Some correlation between the mechanism's effectiveness and the types of activity the use restriction is intended to address. Initial communication of appropriate materials. Recommendation: Reinforcing notice sent every three years.

APPENDIX C –

Plattsburgh AFB IC Classification Worksheet

IC CLASSIFICATION WORKSHEET
FORMER PLATTSBURGH AFB NY

LUC/IC GOAL/OBJECTIVE	USE RESTRICTION (SPECIFIC IC)	IC CLASSIFICATION	AFFECTED PARCEL(S)	RELATED IRP SITE/OU
Protect remedial action system and associated monitoring wells	Prohibition of development or land use which interferes with remedial operations	2	A1, A2.7	FT-002 Source 0/U, FT-002 GW 0/U
Prevent use of contaminated groundwater	Prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	1	A1, A2.7, A2.9, K-2	FT-002 Source 0/U, FT-002 GW 0/U, SS-005, SS-006, SS-018, SS-028
Prevent use of contaminated groundwater	Groundwater use restriction and prohibition of the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater	1	A1	LF-021, LF-024
Prevent exposure to contaminated groundwater without prop er treatment	Prohibition of discharge of groundwater withdrawn during construction dewatering to the ground or surface water, without prior approval of the NYSDEC	1	A1, A2.7, A2.9, K-2	FT-002 GW 0/U, SS-018, SS-028
Prevent exposure by residents to contaminated soil	Limit development to non-residential use	2	A1	SS-005, SS-006
Protect remedial action system and associated monitoring wells	Prohibition of excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation	1	A1	LF-021, LF-024
Protect remedial action system and associated monitoring wells	Protection of the landfill cover integrity and all components, including the groundwater monitoring wells	1	A1, A2.12	LF-022, LF-023 Source 0/U
Prevent exposure to contaminated groundwater	Prohibition of groundwater withdrawal for all potable uses	1	A1	LF-023 GW 0/U
Prevent exposure by residents to contaminated soil	Restriction on development to facilities that support only non residential use	2	A2.9, K-2	SS-018, SS-028

IC CLASSIFICATION WORKSHEET
FORMER PLATTSBURGH AFB NY

CLASSIFICATION CRITERIA

Class 1

(a) Integral to the integrity of the Remedial Action.
(b) If the IC is not maintained, exposure to the levels of residual contaminants would present a definite risk to human health and the environment.

Class 2

(a) Supports the Remedial Action.
(b) If the IC were not maintained, exposure to the levels of residual contaminants would present some risk to human health and the environment.

Class 3

(a) Not integral and not necessary to support the Remedial Action.
(b) If the IC is not maintained, exposure to the levels of residual contaminants would present minimal or no risk to human health and the environment.

Class 4

(a) There is no Remedial Action under the National Contingency Plan

APPENDIX D –

LUC/IC Tracking Model

IC Tracking Database/Document Field Descriptions
11 July 2002

Field	Choices and/or Content
LUC/IC ID	# This IC Identification code that follows the same format as the AFRPA MIS Parcel Ids. (e.g. BER-PBC-1997-001-D-7) The first code is the base, the second is the methodology, the third is the year of inception, the fourth code is the order of input into the system, a sequential number and the code for the Deed is at the end; e.g. D-7.
Environmental ID	# This ID plays an important part in recognizing the environmental type of use restriction the record is representing. The two codes that make up this identifier is the: BASE CODE and the Environmental Site Type CODE (Directly out of the AFRPA MIS).
LUC/IC Type	# Choose from one of the following on the pick list to describe what type of LUC/IC you are entering into the database (to select multiple choices hold shift down and click). # This list was created with the most commonly used controls for AFRPA Bases, but there is also an "Other" field in which unusual types can be captured as well.
Affected Property	# Affected parcel and/or description of the affected property (metes & bounds, landmarks, acreage, etc.) # Need to indicate whether entire parcel or only a portion is affected # Attach a map with the "Add Map" link on each record to show location and size of the property being addressed

Management Responsibility	# Agency/organization who is currently responsible for monitoring and management of restrictions or land use controls:
	  # AFRPA
	  # Other federal agency
	  # EPA/State environmental regulatory agency
	  # State/local governmental authority (e.g., zoning or permitting authority)
	  # Other

Monitoring Frequency	# Frequency at which LUC/ICs must be monitored/inspected # Pick the appropriate time frame from the drop-down list

Last Date Monitored/Inspected	# Last occasion on which this has occurred [important for monitoring/management purposes]
	  # Pick the date
	# Status indicating results of last inspection
	  # Choose whether action is required

Termination Date/Condition	# Conditions that, when met, would allow removal of the LUC/ICs, and the estimated date when such conditions might be met. These conditions are typically linked to a specific aspect of a remedial action, e.g., achieving groundwater MCLs, thereby negating the requirement for prohibition of groundwater use. # Alternatively, the expiration date for the LUC/ICs, if one has been established
Source Document(s)	# Attach to LUC/IC record any documents establishing and describing in greater detail the LUC/ICs and the rationale for them. May include ROD/decision document, FOST or conveyance document, etc.
Contact Name/Number	# Whom to contact with questions regarding ICs. Substantive questions about intent of and relief from LUC/ICs should generally be addressed to AFRPA; questions regarding operational effectiveness should be addressed to monitor/manager.
Add Map	# See "Affected Property"

Note: Database to be available Winter 2002-2003 at www.sitecloseout.org/luic/

APPENDIX E –

LUC/IC GRANTEES AND GOVERNMENT/ KEY STAKEHOLDERS

Former Plattsburgh AFB
Land Use Control/Institutional Control (LUC/IC)
Grantees and Governmental/Key Stakeholders

Air Force Real Property Agency (AFRPA), Mr. Michael Sorel, Site Manager and BRAC Environmental Coordinator, (518) 563-2871, 22 U.S. Oval Suite 2200, Plattsburgh NY 12903, msorel@afbda1.hq.af.mil

City of Plattsburgh Engineering and Planning Department, Mr. Kevin Farrington, City Engineer, (518) 563-7730, 41 City Hall Place, Plattsburgh NY 12901

City of Plattsburgh Water Pollution Control Plant, Mr. David Powell, (518) 566-8540, Green St., Plattsburgh NY 12901

Clinton County Airport, Mr. Ralph Hensel, Airport Manager, (518) 565-4795, 11 Airport Rd. Suite 101, Plattsburgh NY 12901, henselr@Co.Clinton.NY.US

Clinton County Clerk's Office, (518) 565-4700, Margaret St., Plattsburgh NY 12901

Clinton County Planning Department, Mr. Rodney Brown, (518) 565-4709, 137 Margaret St, Plattsburgh NY 12901

County of Clinton Industrial Development Agency, Ms. Adore' Kurtz, Executive Director, (518) 563-3100, 61 Area Development Dr., Plattsburgh NY 12901

Dig Safely New York, Ms. Theresa Benjack, (800) 309-8289, 5063 Brittonfield Parkway, East Syracuse NY 13057

Federal Aviation Administration (FAA), NY Airports District Office, Mr. Robert. Lanuza, (518) 227-3805, 600 Old Country Rd. Suite 446, Garden City NY 11530

New York State Department of Environmental Conservation (NYSDEC), Bureau of Eastern Remedial Action, Mr. James Quinn, (518) 402-9697, 625 Broadway, 11 Floor, Albany MY 12233-7015, jaquinn@gw.dec.state.ny.us

New York State Department of Environmental Conservation (NYSDEC), (Point of Contact for State Hazardous Waste Registry/Database to be determined)

New York State Department of Environmental Conservation (NYSDEC), Region V (Point of Contact State Environmental Quality Review [SEQR] to be determined), Rt. 86, Ray Brook NY 12977

New York State Department of Environmental Conservation (NYSDEC) Region V, Environmental Quality Division, Mr. Vincent Kavanaugh, (518) 897-1243, Rt. 86 – P.O. Box 296, Ray Brook NY 12977-0296

Plattsburgh Airbase Redevelopment Corporation (PARC), Mr. Daniel Wieneke, President and Chief Executive Officer, (518) 561-0232, 22 U.S. Oval Suite 1000, Plattsburgh NY 12903, danw@parc-usa.com

Former Plattsburgh AFB
Land Use Control/Institutional Control (LUC/IC)
Grantees and Governmental/Key Stakeholders

Town of Plattsburgh Planning Office, Mr. Phil VonBargen, (518) 563-8103, 152 Banker Rd,, Plattsburgh NY 12903

United States Environmental Protection Agency (USEPA), Federal Facilities Section, Mr. Robert Morse, (212) 637-4331, 290 Broadway, 18" Floor, New York NY 10007-1866, morse.bob@epamail.epa.gov

APPENDIX F - FORMER PLATTSBURGH AFB MAPS

Plattsburgh AFB LUC/IC Maps

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE FT-002 SOURCE OPERABLE UNIT RECORD OF DECISION DATED MARCH 2001:

(1) Installation of any wells is prohibited for drinking water or any other purposes which could result in the use of the underlying groundwater.

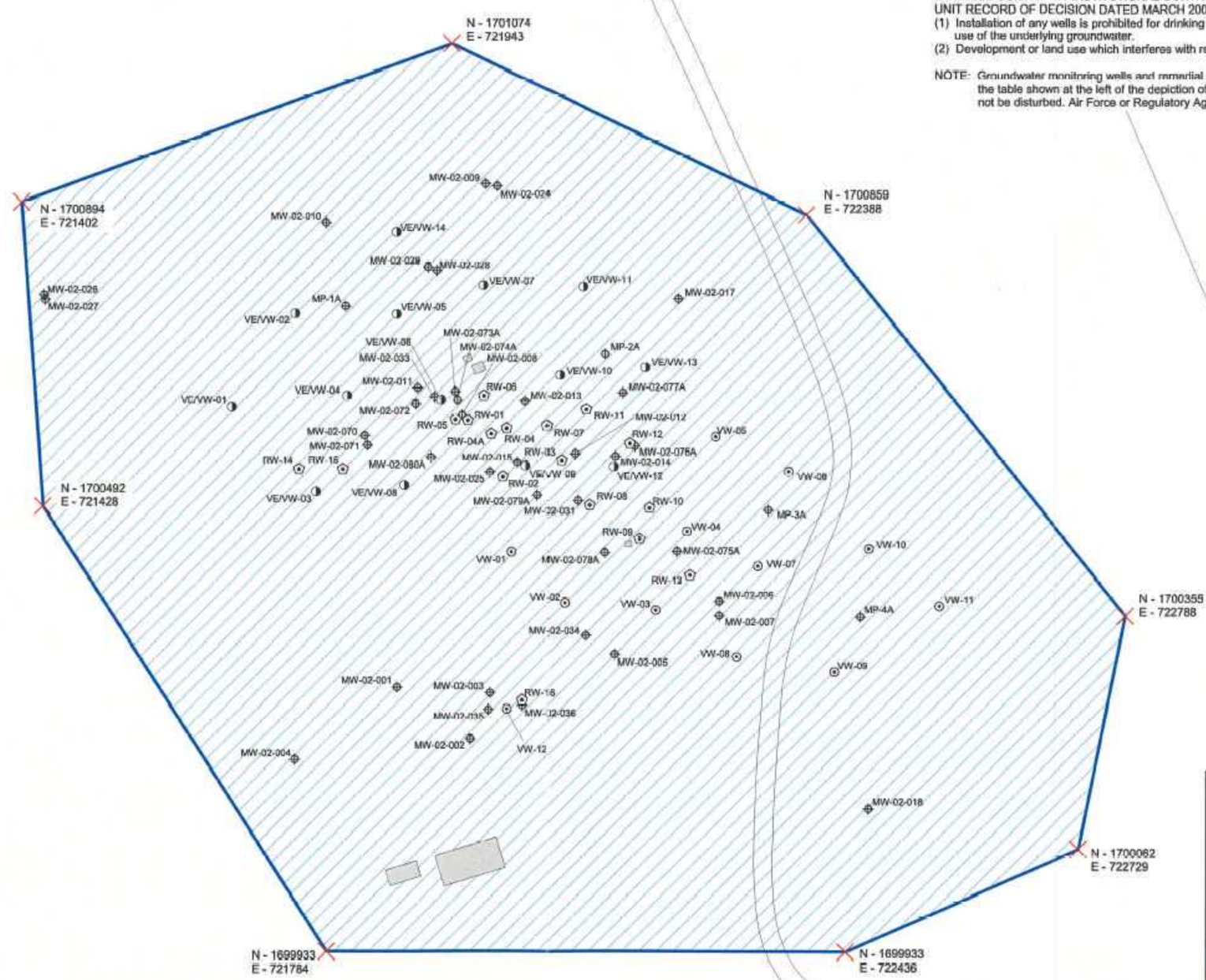
(2) Development or land use which interferes with remedial operations is prohibited.

NOTE: Groundwater monitoring wells and remedial system wells located at or near the locations listed in the table shown at the left of the depiction of the Groundwater and Land Use Restriction Area must not be disturbed. Air Force or Regulatory Agency access to these wells must be allowed at all times.

N

LOCATION OF MONITORING POINTS AND REMEDIAL SYSTEM WELLS

LOCATION ID	NORTHING	EASTING
44PLTW1	1700619.3	722799.2
45PLTW1	1700617.2	722800.0
48PLTW8	1700238.8	722964.8
MP-1A	1700743.2	721807.9
MP-2A	1700684.2	722133.7
MP-3A	1700487.0	722338.3
MP-4A	1700352.8	722454.0
MW-02-001	1700264.1	721871.7
MW-02-002	1700199.6	721963.8
MW-02-003	1700257.3	721988.5
MW-02-004	1700173.5	721743.2
MW-02-005	1700306.3	722144.4
MW-02-006	1700372.5	722275.9
MW-02-007	1700354.5	722276.2
MW-02-008	1700806.7	721954.1
MW-02-009	1700897.4	721984.0
MW-02-010	1700848.3	721783.9
MW-02-011	1700840.3	721898.8
MW-02-012	1700558.1	722095.6
MW-02-013	1700624.4	722033.0
MW-02-014	1700554.9	722146.2
MW-02-015	1700547.4	722023.5
MW-02-017	1700753.0	722225.1
MW-02-018	1700111.8	722464.1
MW-02-019	1700166.5	722797.9
MW-02-020	1700165.4	722806.7
MW-02-024	1700894.4	721999.2
MW-02-025	1700534.9	721988.8
MW-02-026	1700757.2	721429.0
MW-02-027	1700751.2	721430.8
MW-02-028	1700788.6	721922.9
MW-02-029	1700793.0	721911.8
MW-02-030	1700172.7	722806.7
MW-02-031	1700498.8	722098.9
MW-02-033	1700629.5	721919.3
MW-02-034	1700329.5	722108.4
MW-02-035	1700230.0	721900.0
MW-02-036	1700241.9	722029.2
MW-02-070	1700579.8	721831.5
MW-02-071	1700567.8	721834.9
MW-02-072	1700620.5	721890.1
MW-02-073A	1700638.1	721945.6
MW-02-074A	1700625.8	721948.5
MW-02-075A	1700435.3	722223.0
MW-02-076A	1700567.6	722170.8
MW-02-077A	1700634.8	722155.4
MW-02-078A	1700433.8	722132.4
MW-02-079A	1700505.6	722047.9
MW-02-080A	1700553.5	721915.0
RW-01	1700600.7	721961.8
RW-02	1700529.9	722005.3
RW-03	1700550.6	722078.4
RW-04	1700590.3	722010.2
RW-04A	1700583.7	721990.4
RW-05	1700601.4	721948.2
RW-06	1700632.0	721981.6
RW-07	1700593.3	722060.6
RW-08	1700494.0	722113.3
RW-09	1700452.0	722176.0
RW-10	1700490.7	722188.7
RW-11	1700615.1	722109.6
VE/VW-01	1700616.6	721664.7
VE/VW-02	1700733.5	721744.7
VE/VW-03	1700509.6	721770.2
VE/VW-04	1700630.2	721810.2
VE/VW-05	1700733.0	721871.9
VE/VW-06	1700626.0	721927.4
VE/VW-07	1700770.0	721981.3
VE/VW-08	1700518.0	721880.8
VE/VW-09	1700542.7	722033.7
VE/VW-10	1700656.6	722076.7
VE/VW-11	1700768.7	722106.0
VE/VW-12	1700542.0	722143.9
VE/VW-13	1700688.7	722183.4
VE/VW-14	1700836.6	721872.3
VW-01	1700434.4	722016.0
VW-02	1700370.5	722062.8
VW-03	1700361.7	722195.9
VW-04	1700460.2	722235.5
VW-05	1700578.9	722271.5
VW-06	1700535.2	722364.3
VW-07	1700416.3	722325.3
VW-08	1700302.7	722298.2
VW-09	1700284.2	722421.8
VW-10	1700438.5	722464.8
VW-11	1700366.5	722553.3
VW-12	1700237.2	722009.4
RW-12	1700571.5	722164.3
RW-13	1700406.0	722239.1
RW-14	1700538.9	721748.9
RW-15	1700538.8	721804.5
RW-16	1700248.0	722020.2



Legend

- Monitoring Well
- Vapor Extraction Well
- Recovery Well
- Gas Vent Well
- Groundwater and Land Use Restriction Area
- Above Ground Structures Associated With Onsite Remedial Systems

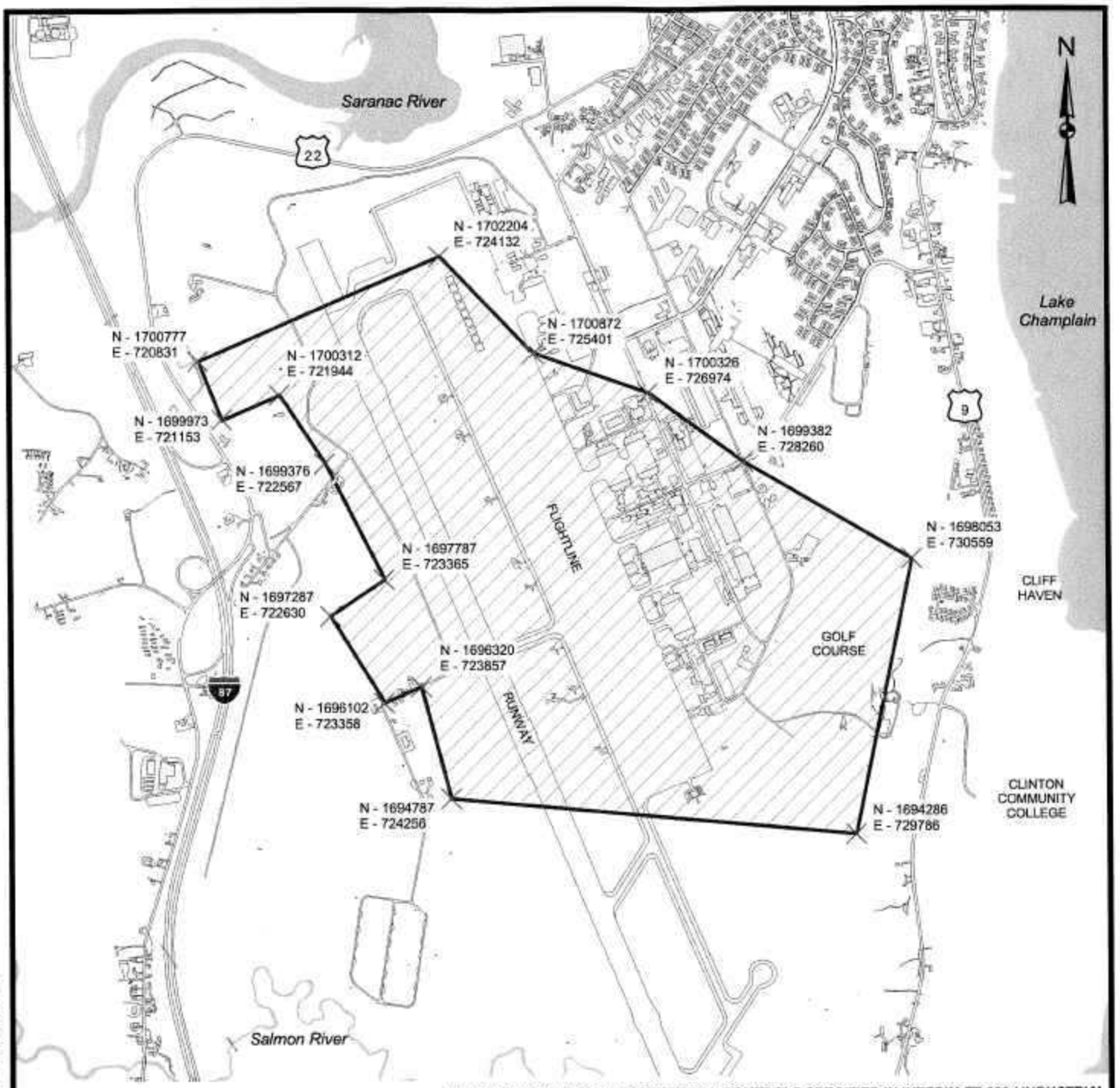
150 0 150 Feet

FORMER PLATTSBURGH AIR FORCE BASE, NY
FT-002 SOURCE OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

URS

FIGURE 1

N:\1168476.00000\GIS\Applications\restriction_area.apr (FT-002\SOURCE OU) LANDUSE\INSTITUTIONAL CONTROLS
6/23/2004



LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN INTERIM FT-002 / INDUSTRIAL AREA GROUNDWATER OPERABLE UNIT RECORD OF DECISION DATED JUNE 2003:

1) Prohibit the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater within the Groundwater Restriction Area shown above.
2) Except for environmental response actions conducted by the Air Force pursuant to CERCLA, prohibit discharge of groundwater that is withdrawn within the Groundwater Restriction Area shown above during construction dewatering to the ground or surface water, without prior approval of the New York State Department of Environmental Conservation (NYSDEC) through the State Pollution Discharge Elimination System (SPDES) permitting process.
3) Prohibit property development or land use that would interfere with the proper operation of the interim remedy selected in the IROD. This includes the prohibition of any development within 20 feet of any above-ground structure or underground structure (including but not limited to pumping wells, underground and overhead electrical wiring, collection drains, piping, permeable treatment walls, groundwater treatment facilities, aeration basins, manholes, and pump stations) constructed as part of the physical remedy, or within 5 feet of any monitoring point which will be used in the monitoring of the physical remedy, without pre-approval by the USAF. USAF approval shall be obtained through the dig permit sytem maintained by the Air Force Real Property Agency's (AFRPA's) Plattsburgh office.
NOTE: Air Force or Regulatory Agency access to wells and remedial systems within the restriction area must be allowed at all times.

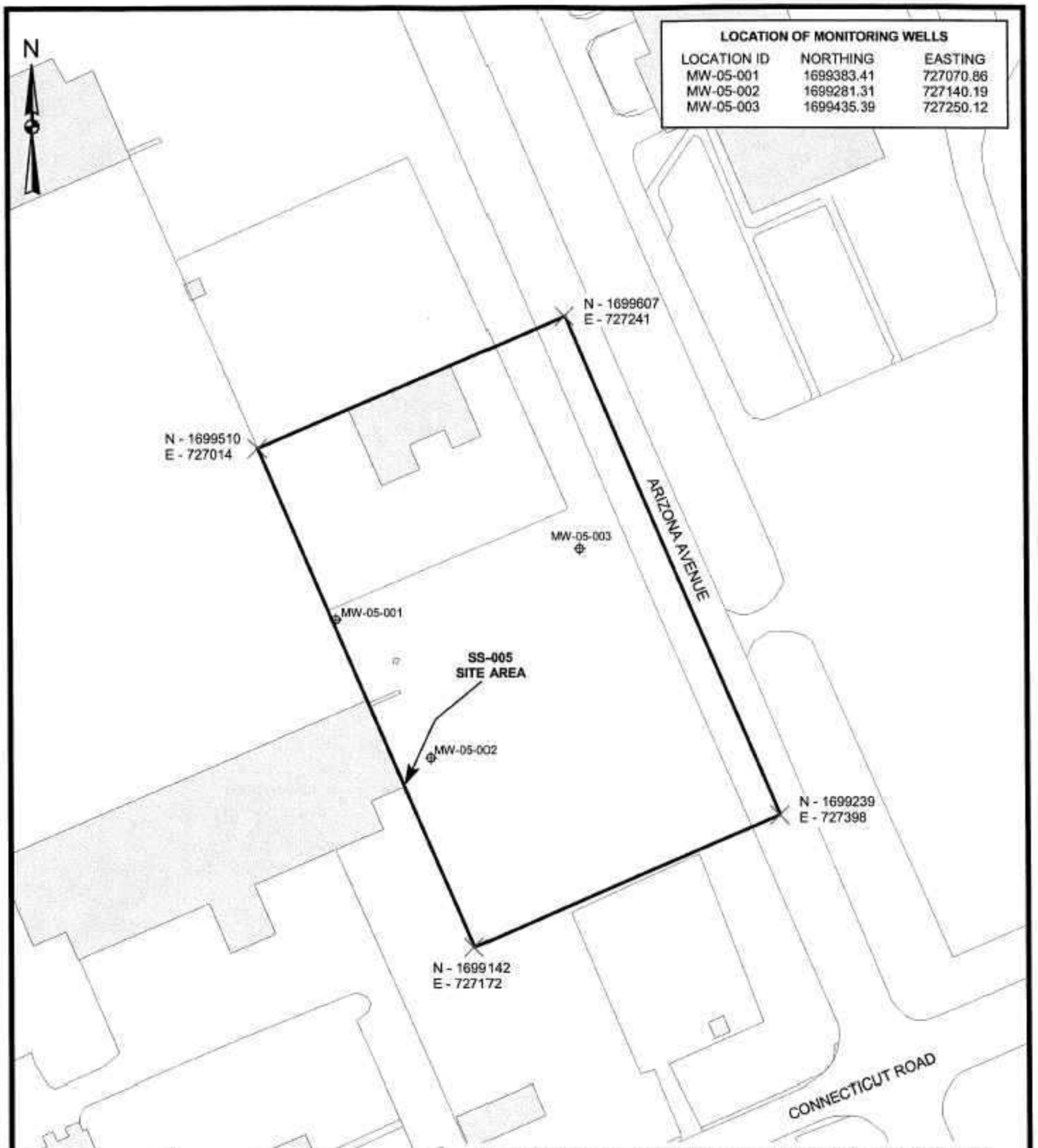
2000 0 2000 Feet

Legend

Groundwater Restriction Area

N:\11116847\6.00000\GIS\Application\restriction_area.apr (FT-002/IA CU) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004

URS	FORMER PLATTSBURGH AIR FORCE BASE, NY FT-002 /IA GROUNDWATER OPERABLE UNIT LAND USE CONTROLS / INSTITUTIONAL CONTROLS	FIGURE 1



LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-05-001	1699383.41	727070.86
MW-05-002	1699281.31	727140.19
MW-05-003	1699435.39	727250.12

Legend

⊕ Monitoring Well

100 0 100 Feet

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE SS-005 SOIL OPERABLE UNIT RECORD OF DECISION DATED APRIL 1998:

- Development of the site is limited to non-residential use.
- Installation of wells for use of the underlying groundwater is prohibited.

NOTE: Groundwater monitoring wells shown above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

N:\11168476.00000\GIS\Applications\restriction_area.apr (SS-005) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004

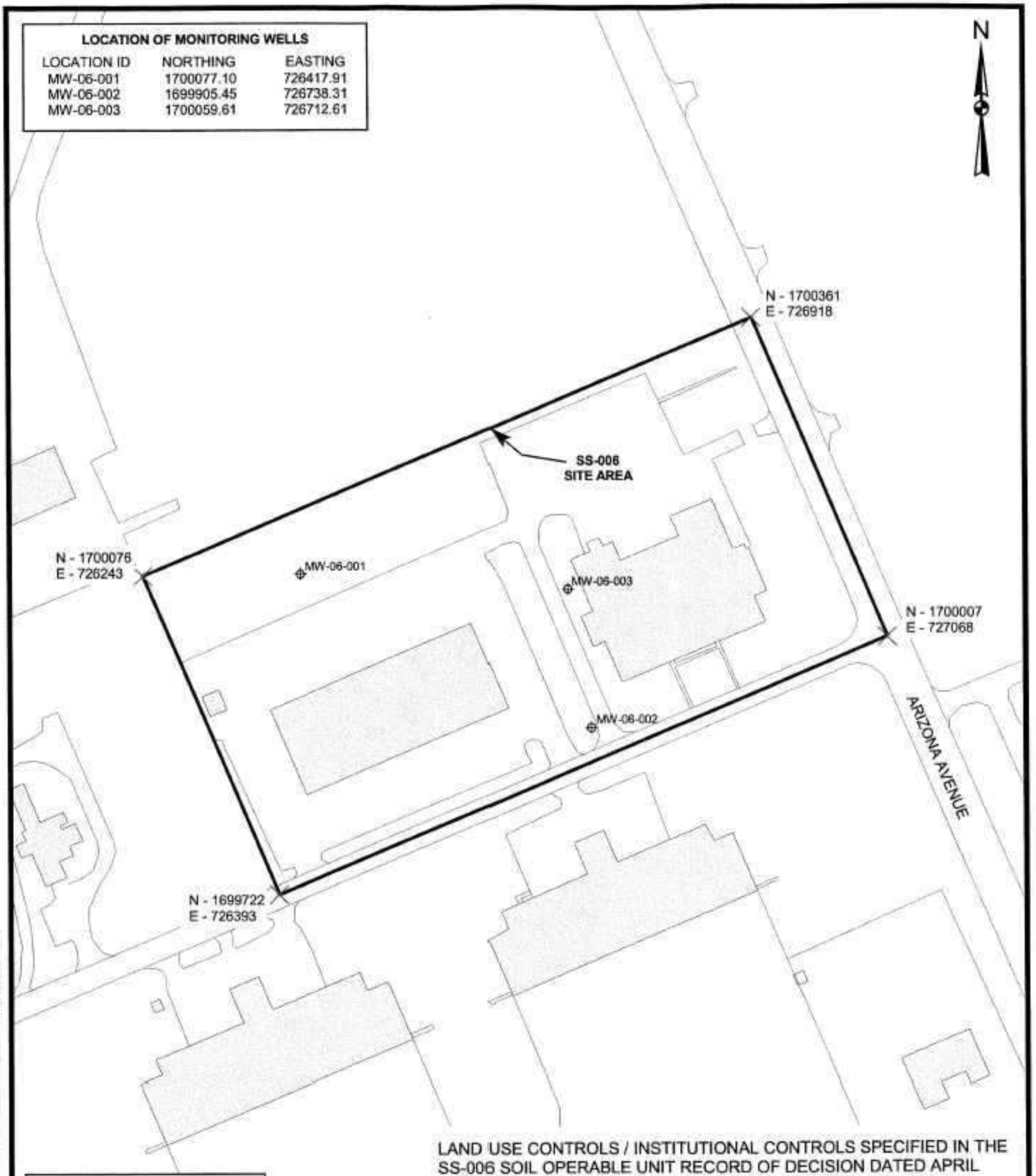
URS

FORMER PLATTSBURGH AIR FORCE BASE, NY
SS-005 SOIL OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

FIGURE 1

LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-06-001	1700077.10	726417.91
MW-06-002	1699905.45	726738.31
MW-06-003	1700059.61	726712.61



LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE SS-006 SOIL OPERABLE UNIT RECORD OF DECISION DATED APRIL 1998:

- Development of the site is limited to non-residential use.
- Installation of wells for use of the underlying groundwater is prohibited.

NOTE: Groundwater monitoring wells shown above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

Legend

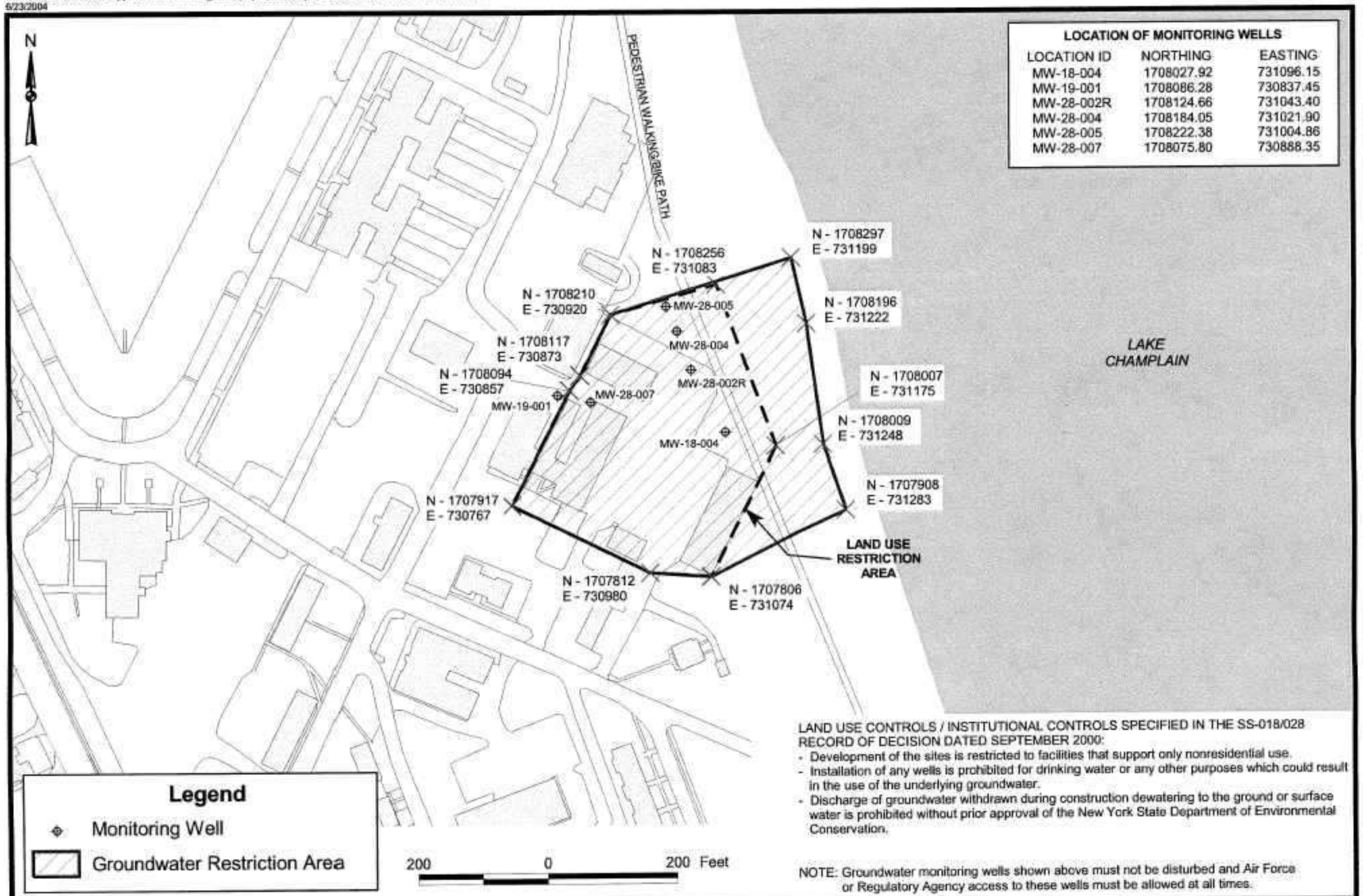
⊕ Monitoring Well

150 0 150 Feet

URS	FORMER PLATTSBURGH AIR FORCE BASE, NY SS-006 SOIL OPERABLE UNIT LAND USE CONTROLS / INSTITUTIONAL CONTROLS	FIGURE 1

N:\11116876.00000\GIS\Applications\restriction_area.apr (SS-006) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004

N:\11168476.00000\GIS\Applications\restriction_area.apr (SS-018-028) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004



LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-18-004	1708027.92	731096.15
MW-19-001	1708086.28	730837.45
MW-28-002R	1708124.66	731043.40
MW-28-004	1708184.05	731021.90
MW-28-005	1708222.38	731004.86
MW-28-007	1708075.80	730888.35

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE SS-018/028 RECORD OF DECISION DATED SEPTEMBER 2000:

- Development of the sites is restricted to facilities that support only nonresidential use.
- Installation of any wells is prohibited for drinking water or any other purposes which could result in the use of the underlying groundwater.
- Discharge of groundwater withdrawn during construction dewatering to the ground or surface water is prohibited without prior approval of the New York State Department of Environmental Conservation.

NOTE: Groundwater monitoring wells shown above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

URS

FORMER PLATTSURGH AIR FORCE BASE, NY
SS-018/028 LAND USE CONTROLS / INSTITUTIONAL CONTROLS

FIGURE 1

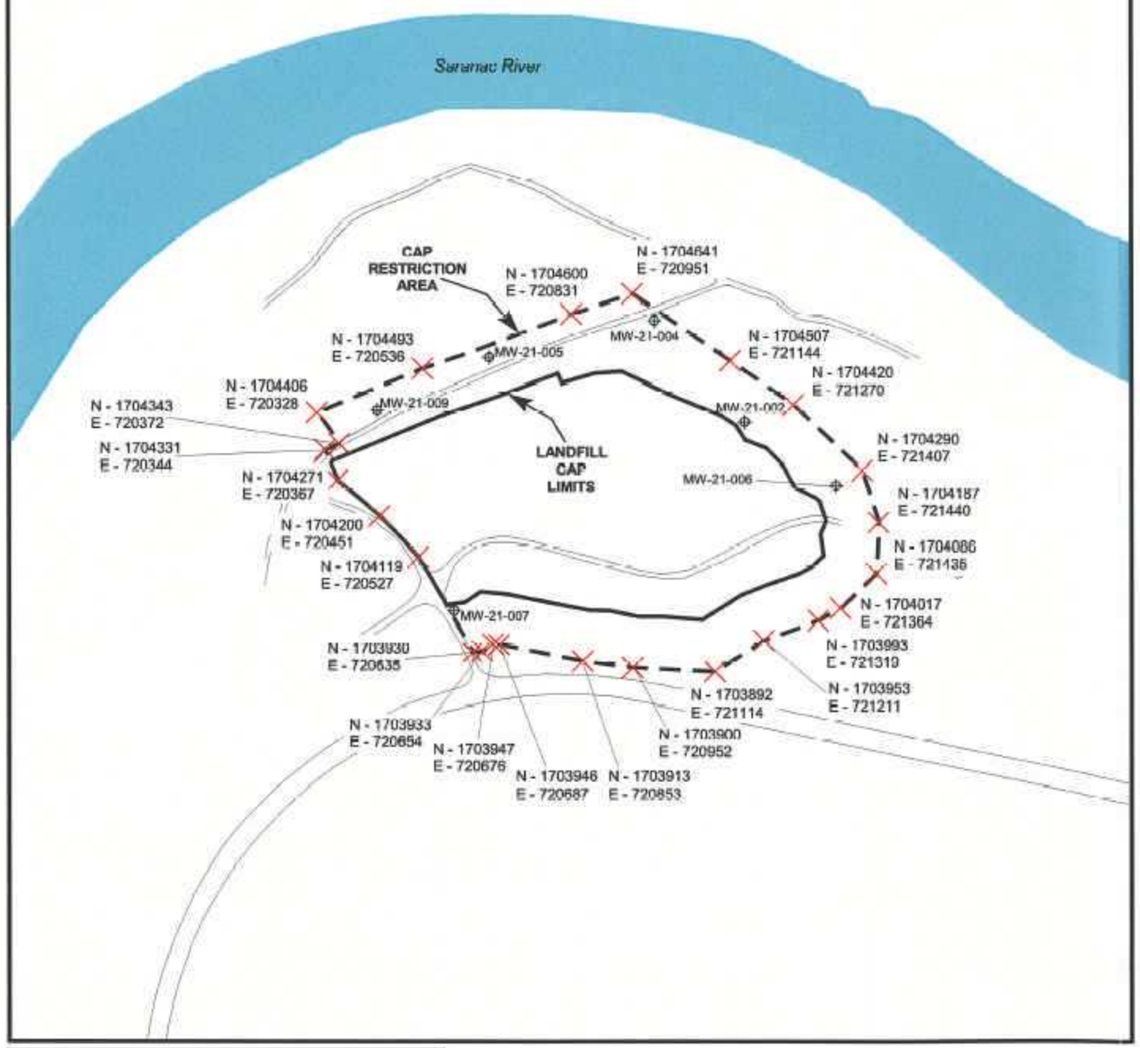
LOCATION OF MONITORING WELLS		
LOCATION ID	NORTHING	EASTING
MW-21-002	1704385.3	721171.0
MW-21-004	1704586.2	720992.5
MW-21-005	1704512.8	720666.6
MW-21-006	1704259.5	721353.2
MW-21-007	1704011.3	720595.3
MW-21-009	1704409.4	720443.5

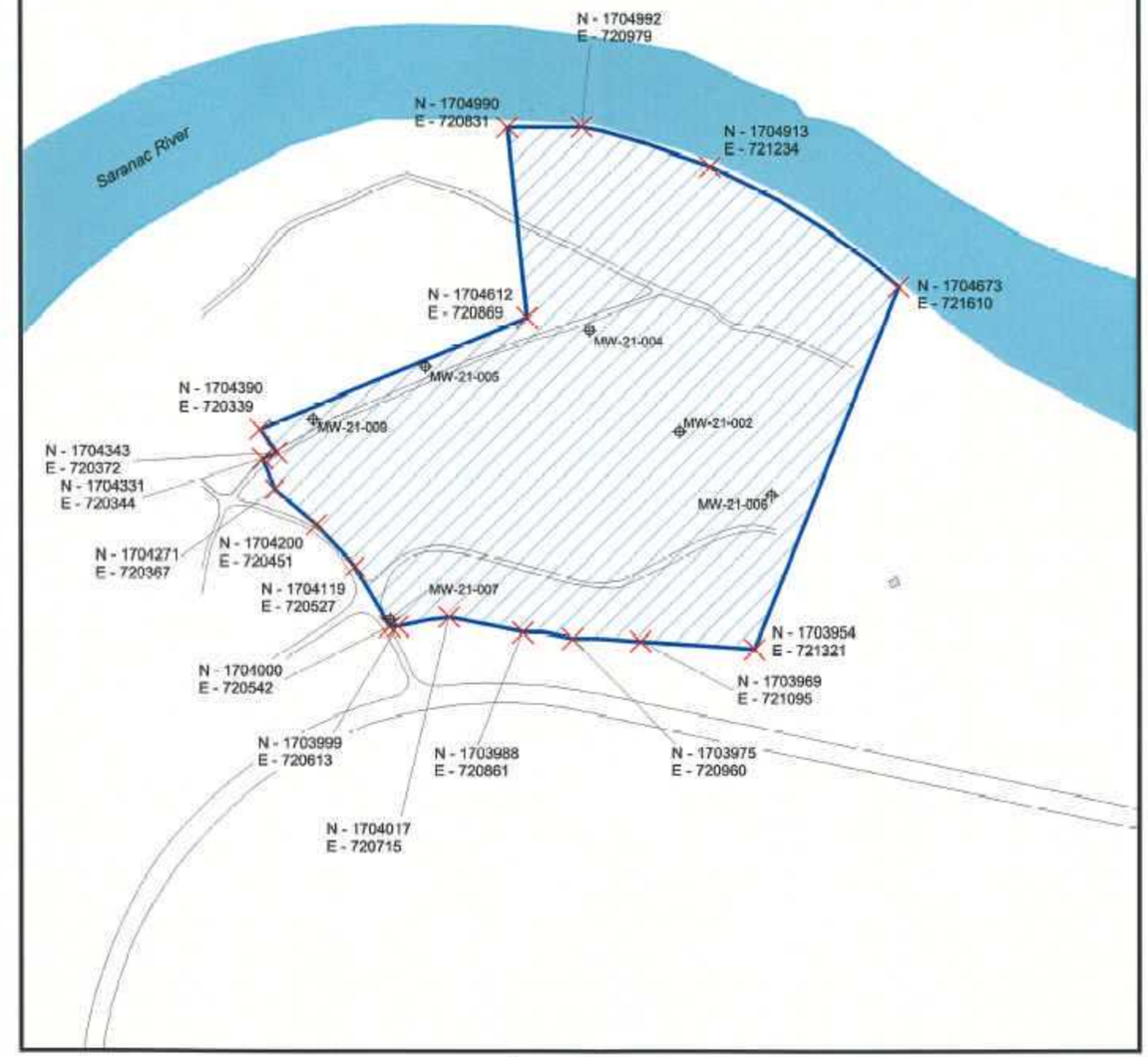
LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN LF-021 SOIL AND GROUNDWATER RECORD OF DECISION DATED MARCH 1997:

- Limit development of any structure on the landfill site which would adversely affect human health and safety.
- Prevent any adverse action leading to the deterioration of the cap.
- Excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation is prohibited.
- Wells for drinking water or any other purpose which could result in the use of the underlying groundwater is prohibited.

NOTES:

- Air Force or Regulatory Agency access to the cap restriction area must be allowed at all times.
- Groundwater monitoring wells located at or near the locations listed in the table to the left must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.





Legend

- Monitoring Well
- Groundwater Use Restriction Area

300 0 300 Feet

FORMER PLATTSBURGH AIR FORCE BASE, NY
LF-021 SOIL AND GROUNDWATER OPERABLE UNITS
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

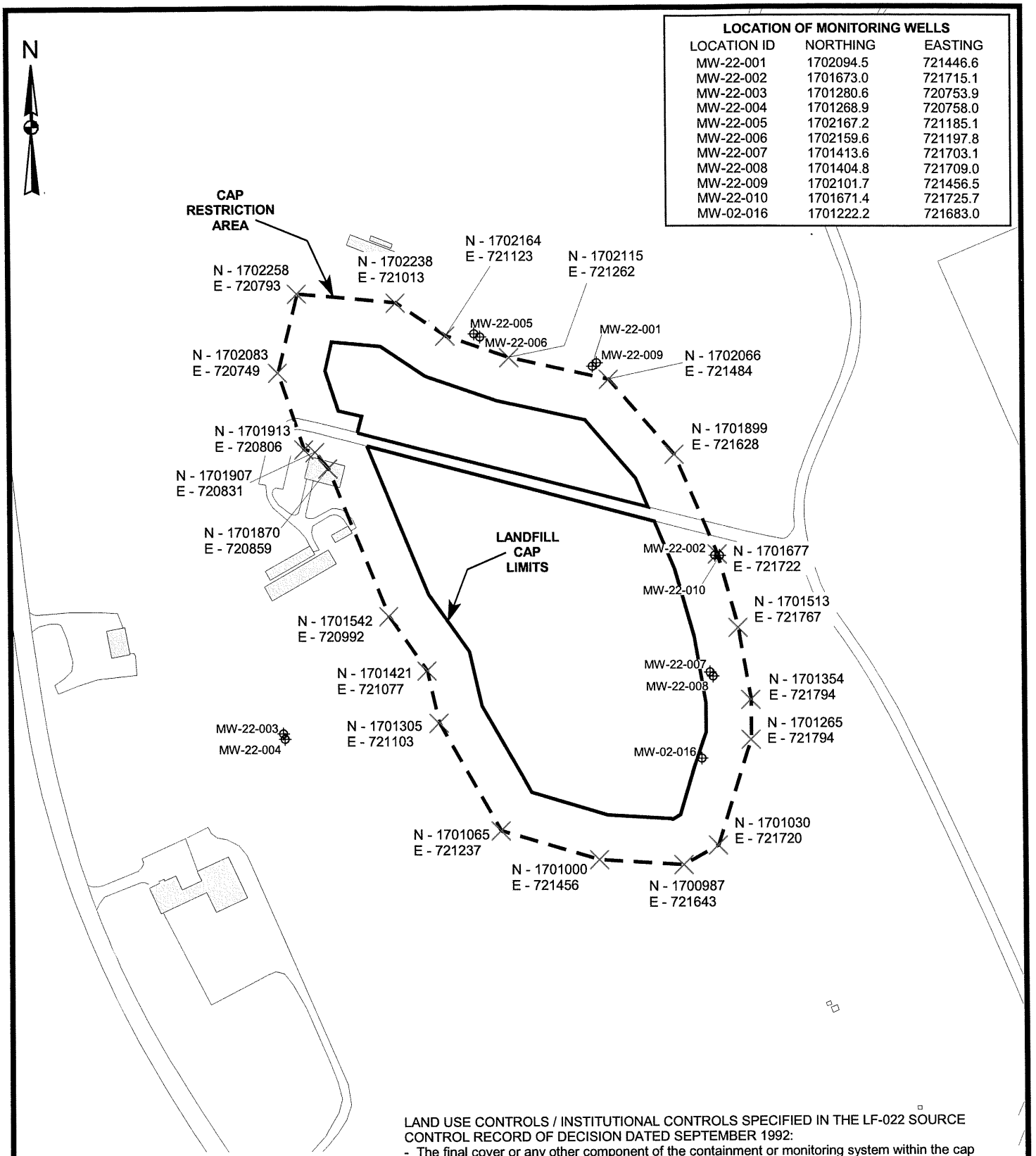
URS

FIGURE 1

N:\1116847\60000\GIS\Applications\restriction_areas.apr (LF-021) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004

LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-22-001	1702094.5	721446.6
MW-22-002	1701673.0	721715.1
MW-22-003	1701280.6	720753.9
MW-22-004	1701268.9	720758.0
MW-22-005	1702167.2	721185.1
MW-22-006	1702159.6	721197.8
MW-22-007	1701413.6	721703.1
MW-22-008	1701404.8	721709.0
MW-22-009	1702101.7	721456.5
MW-22-010	1701671.4	721725.7
MW-02-016	1701222.2	721683.0



LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE LF-022 SOURCE CONTROL RECORD OF DECISION DATED SEPTEMBER 1992:

- The final cover or any other component of the containment or monitoring system within the cap restriction area must not be compromised. This includes restriction from disturbing the groundwater monitoring wells shown in the table above.

Additional Restrictions (added by the USEPA during the PAFB Five-Year Review dated September 1999):

- Limit development of any structure on the landfill site which would adversely affect human health and safety.
- Prevent any adverse action leading to deterioration of the cap.
- Wells for drinking water or any other purpose which could result in use of the underlying groundwater is prohibited.
- Air Force or Regulatory Agency access to these wells must be allowed at all times.

Legend

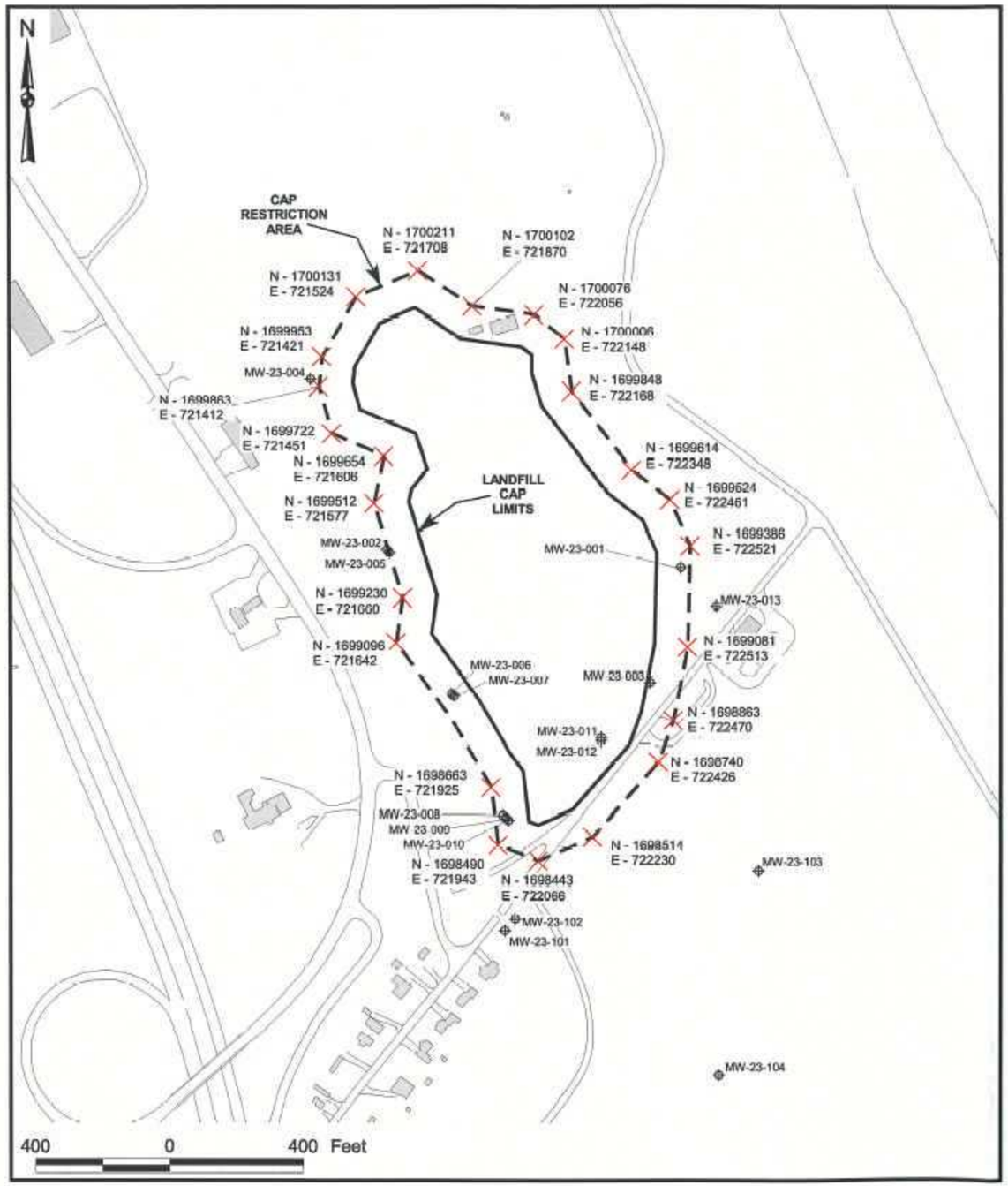
⌖ Monitoring Well

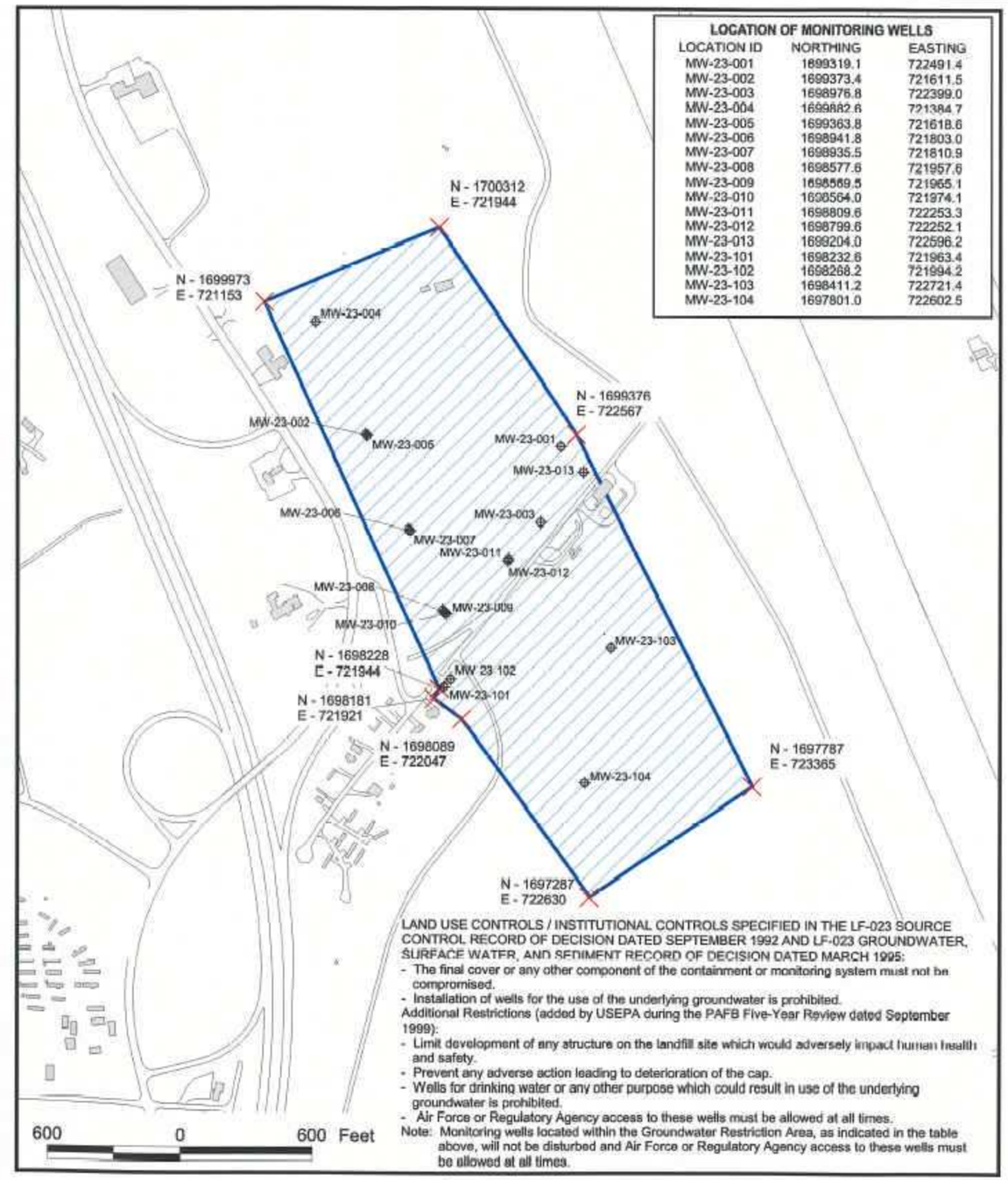
URS

FORMER PLATTSBURGH AIR FORCE BASE, NY
LF-022 SOURCE CONTROL OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

FIGURE 1

N:\11168476.00000\GIS\Applications\restriction_area.apr (LF-022) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004





LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-23-001	1699319.1	722491.4
MW-23-002	1699373.4	721611.5
MW-23-003	1698976.8	722399.0
MW-23-004	1699882.6	721384.7
MW-23-005	1699363.8	721618.6
MW-23-006	1698941.8	721803.0
MW-23-007	1698935.5	721810.9
MW-23-008	1698577.6	721957.6
MW-23-009	1698569.5	721965.1
MW-23-010	1698564.0	721974.1
MW-23-011	1698809.6	722253.3
MW-23-012	1698799.6	722252.1
MW-23-013	1699204.0	722596.2
MW-23-101	1698232.6	721963.4
MW-23-102	1698268.2	721994.2
MW-23-103	1698411.2	722721.4
MW-23-104	1697801.0	722602.5

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE LF-023 SOURCE CONTROL RECORD OF DECISION DATED SEPTEMBER 1992 AND LF-023 GROUNDWATER, SURFACE WATER, AND SEDIMENT RECORD OF DECISION DATED MARCH 1995:

- The final cover or any other component of the containment or monitoring system must not be compromised.
- Installation of wells for the use of the underlying groundwater is prohibited.

Additional Restrictions (added by USEPA during the PAFB Five-Year Review dated September 1999):

- Limit development of any structure on the landfill site which would adversely impact human health and safety.
- Prevent any adverse action leading to deterioration of the cap.
- Wells for drinking water or any other purpose which could result in use of the underlying groundwater is prohibited.
- Air Force or Regulatory Agency access to these wells must be allowed at all times.

Note: Monitoring wells located within the Groundwater Restriction Area, as indicated in the table above, will not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

Legend

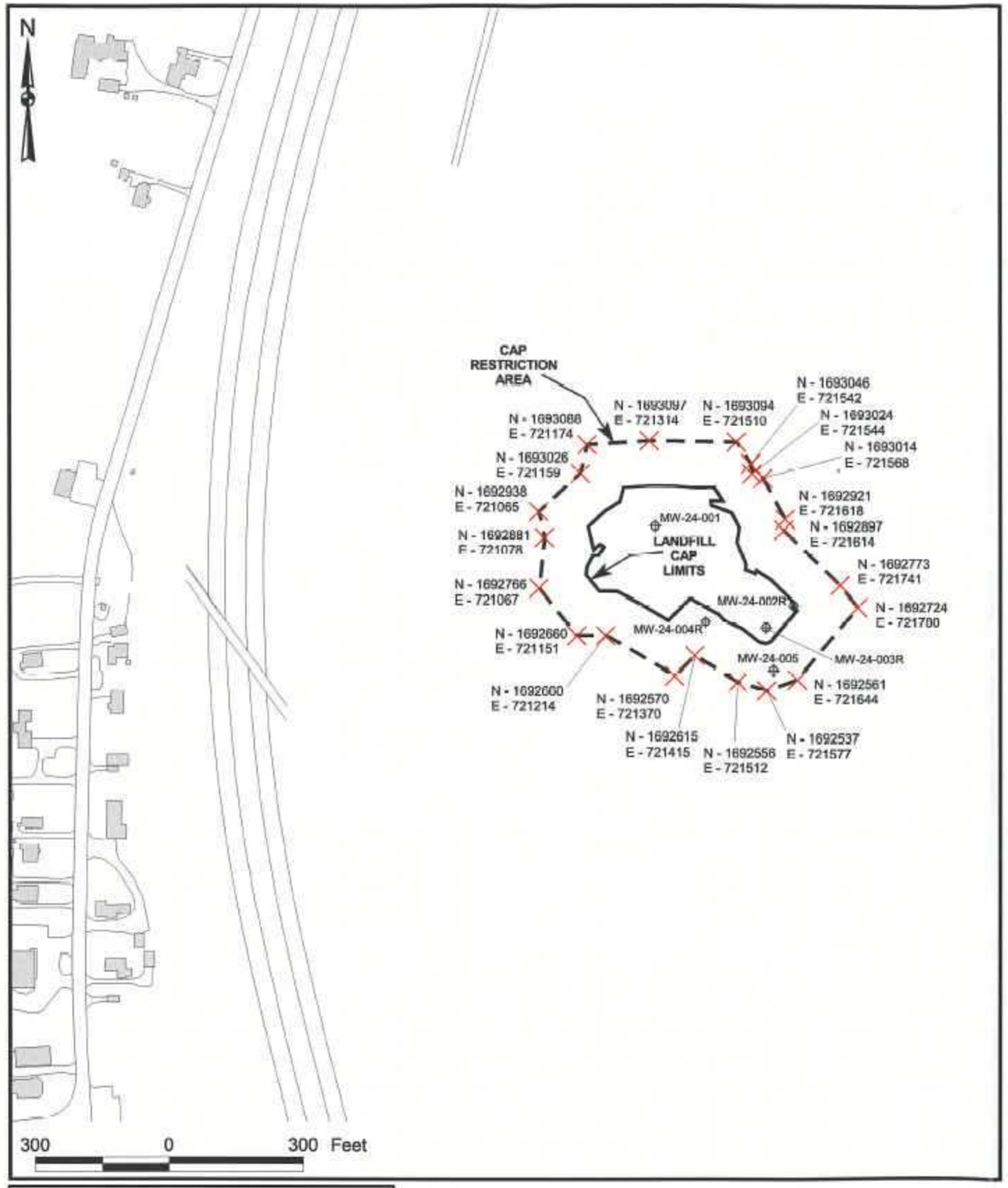
- Monitoring Well
- Groundwater Use Restriction Area

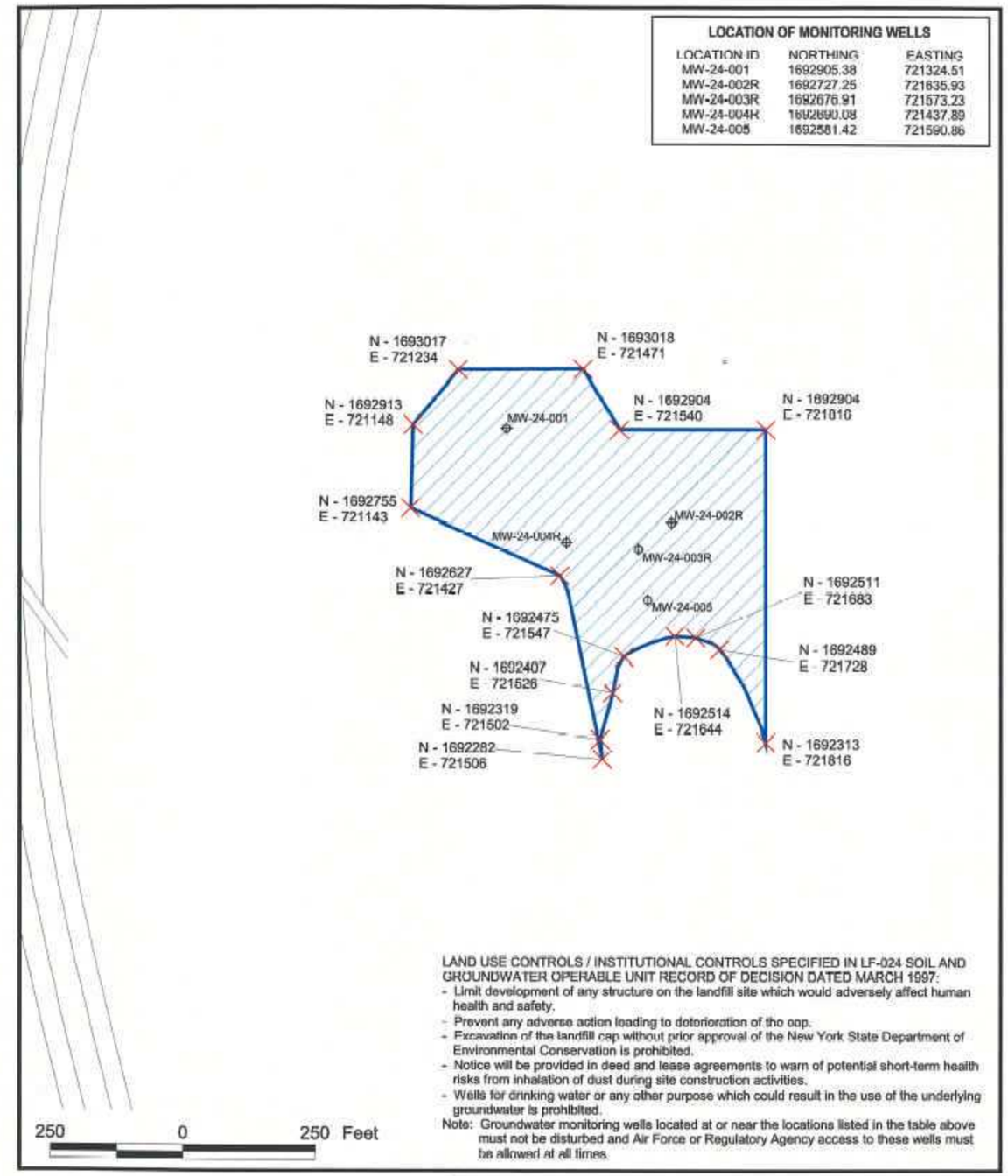
FORMER PLATTSBURGH AIR FORCE BASE, NY
LF-023 SOURCE CONTROL OPERABLE UNIT AND GROUNDWATER, SURFACE WATER, AND SEDIMENT OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

URS

FIGURE 1

H:\11186/78.00900\GIS\Applications\restriction_area.apr (LF-023) LANDUSE\INSTITUTIONAL CONTROLS
6/24/2004





LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-24-001	1692905.38	721324.51
MW-24-002R	1692727.25	721635.93
MW-24-003R	1692676.91	721573.23
MW-24-004R	1692690.08	721437.89
MW-24-005	1692581.42	721590.86

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN LF-024 SOIL AND GROUNDWATER OPERABLE UNIT RECORD OF DECISION DATED MARCH 1997:

- Limit development of any structure on the landfill site which would adversely affect human health and safety.
- Prevent any adverse action leading to deterioration of the cap.
- Excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation is prohibited.
- Notice will be provided in deed and lease agreements to warn of potential short-term health risks from inhalation of dust during site construction activities.
- Wells for drinking water or any other purpose which could result in the use of the underlying groundwater is prohibited.

Note: Groundwater monitoring wells located at or near the locations listed in the table above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

Legend

- Monitoring Well
- Groundwater Use Restriction Area

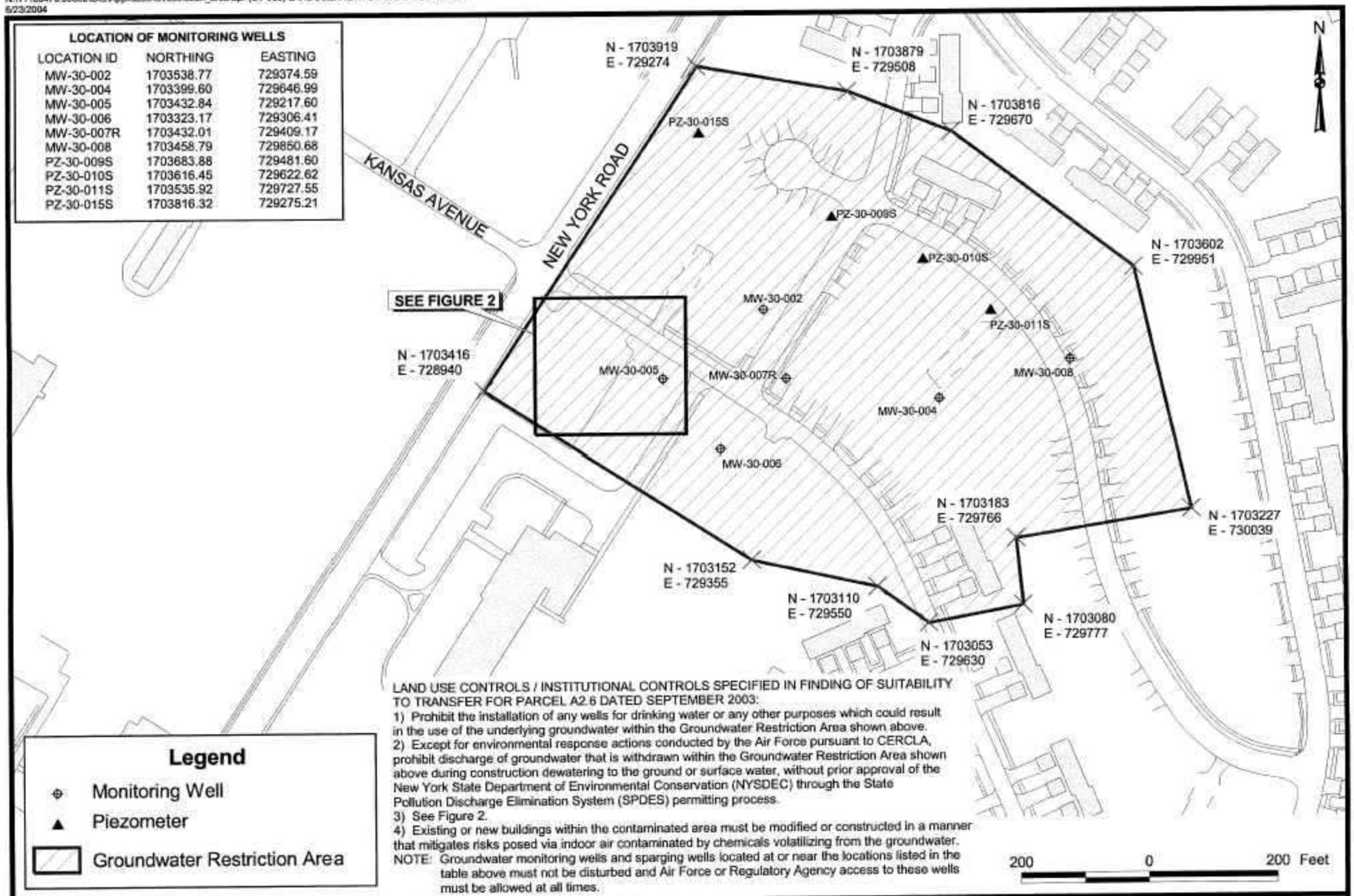
FORMER PLATTSBURGH AIR FORCE BASE, NY
LF-024 SOIL AND GROUNDWATER OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

URS

FIGURE 1

N:\11168476.00\GIS\Applications\restriction_area.apr (LF-024) LANDUSE/INSTITUTIONAL CONTROLS
5/24/2004

N:\11168476.00000\GIS\Applications\restriction_area.apr (ST-030) LANDUSE/INSTITUTIONAL CONTROLS 1
6/23/2004



LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-30-002	1703538.77	729374.59
MW-30-004	1703399.60	729646.99
MW-30-005	1703432.84	729217.60
MW-30-006	1703323.17	729306.41
MW-30-007R	1703432.01	729409.17
MW-30-008	1703458.79	729850.68
PZ-30-009S	1703683.88	729481.60
PZ-30-010S	1703616.45	729622.62
PZ-30-011S	1703535.92	729727.55
PZ-30-015S	1703816.32	729275.21

Legend

- Monitoring Well
- Piezometer
- Groundwater Restriction Area

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN FINDING OF SUITABILITY TO TRANSFER FOR PARCEL A2.6 DATED SEPTEMBER 2003:

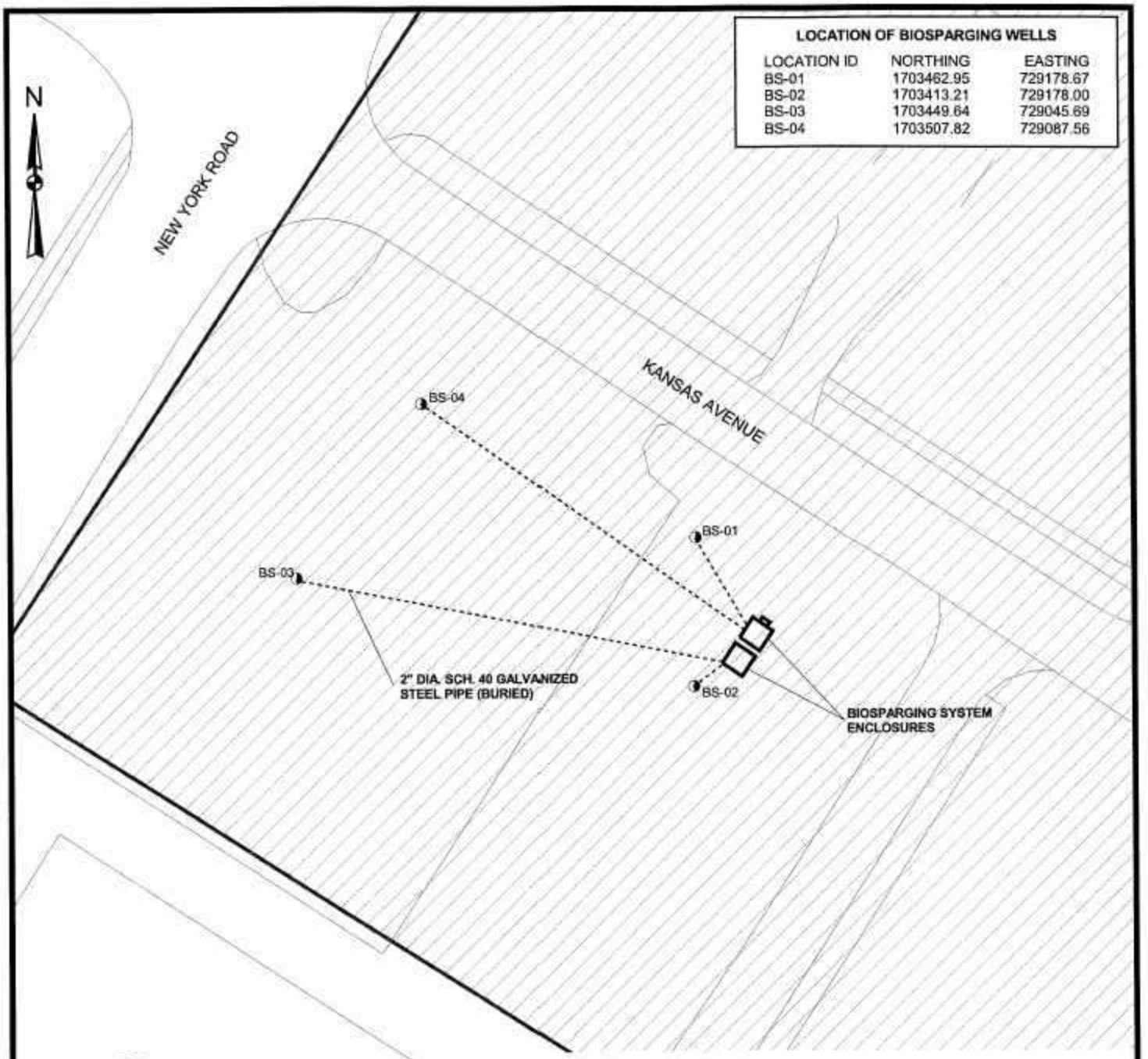
1) Prohibit the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater within the Groundwater Restriction Area shown above.
2) Except for environmental response actions conducted by the Air Force pursuant to CERCLA, prohibit discharge of groundwater that is withdrawn within the Groundwater Restriction Area shown above during construction dewatering to the ground or surface water, without prior approval of the New York State Department of Environmental Conservation (NYSDEC) through the State Pollution Discharge Elimination System (SPDES) permitting process.
3) See Figure 2.
4) Existing or new buildings within the contaminated area must be modified or constructed in a manner that mitigates risks posed via indoor air contaminated by chemicals volatilizing from the groundwater.

NOTE: Groundwater monitoring wells and sparging wells located at or near the locations listed in the table above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

URS

FORMER PLATTSBURGH AIR FORCE BASE, NY
ST-030
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

FIGURE 1



LOCATION OF BIOSPARGING WELLS

LOCATION ID	NORTHING	EASTING
BS-01	1703462.95	729178.67
BS-02	1703413.21	729178.00
BS-03	1703449.64	729045.69
BS-04	1703507.82	729087.56

LAND USE CONTROLS / INSTITUTIONAL CONTROLS (CONTINUED FROM FIGURE 1)

3) Except for utility improvements, surface paving, and modification of the grade established during construction of the physical remedy with USAF pre-approval, prohibit any development within 20 feet of any aboveground structure or underground structure (shown above) constructed as part of the active physical remedy (these structures include but are not limited to biosparging wells, underground and overhead electrical wiring, underground piping, and equipment enclosures). Except for utility improvements, surface paving, and modification of the grade established during construction of the physical remedy with USAF pre-approval, prohibit any development within 5 feet of any monitoring point that will be used in the monitoring of the physical remedy. Monitoring point locations are given in the table inset on Figure 1. "USAF pre-approval" means that any utility improvements, surface paving removal or construction, or modification of the grade established during construction of the physical remedy within 20 feet of any aboveground structure or underground structure constructed as part of the active physical remedy (as itemized above) shall be approved by the USAF prior to the initiation of such activities. "USAF pre-approval" also means that any utility improvements, surface paving removal or construction, or modification of the grade established during construction of the physical remedy within 5 feet of any monitoring point that will be used in the monitoring of the physical remedy shall be approved by the USAF prior to the initiation of such activities.

Legend

- Biosparging Well
- Groundwater Restriction Area

50 0 50 Feet

URS

FORMER PLATTSBURGH AIR FORCE BASE, NY
ST-030
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

FIGURE 2

N:\11168476.00000\GIS\Applications\restriction_area.apr (ST-030) LANDUSE\INSTITUTIONAL CONTROLS 2
6/23/2004

United States Air Force
Environmental Restoration Program

Second Five-Year Review Report for Plattsburgh Air Force Base Plattsburgh, Clinton County, New York

Volume II
Appendices B-F

Former Plattsburgh Air Force Base
Plattsburgh, New York

Final
September 2004

G3899A

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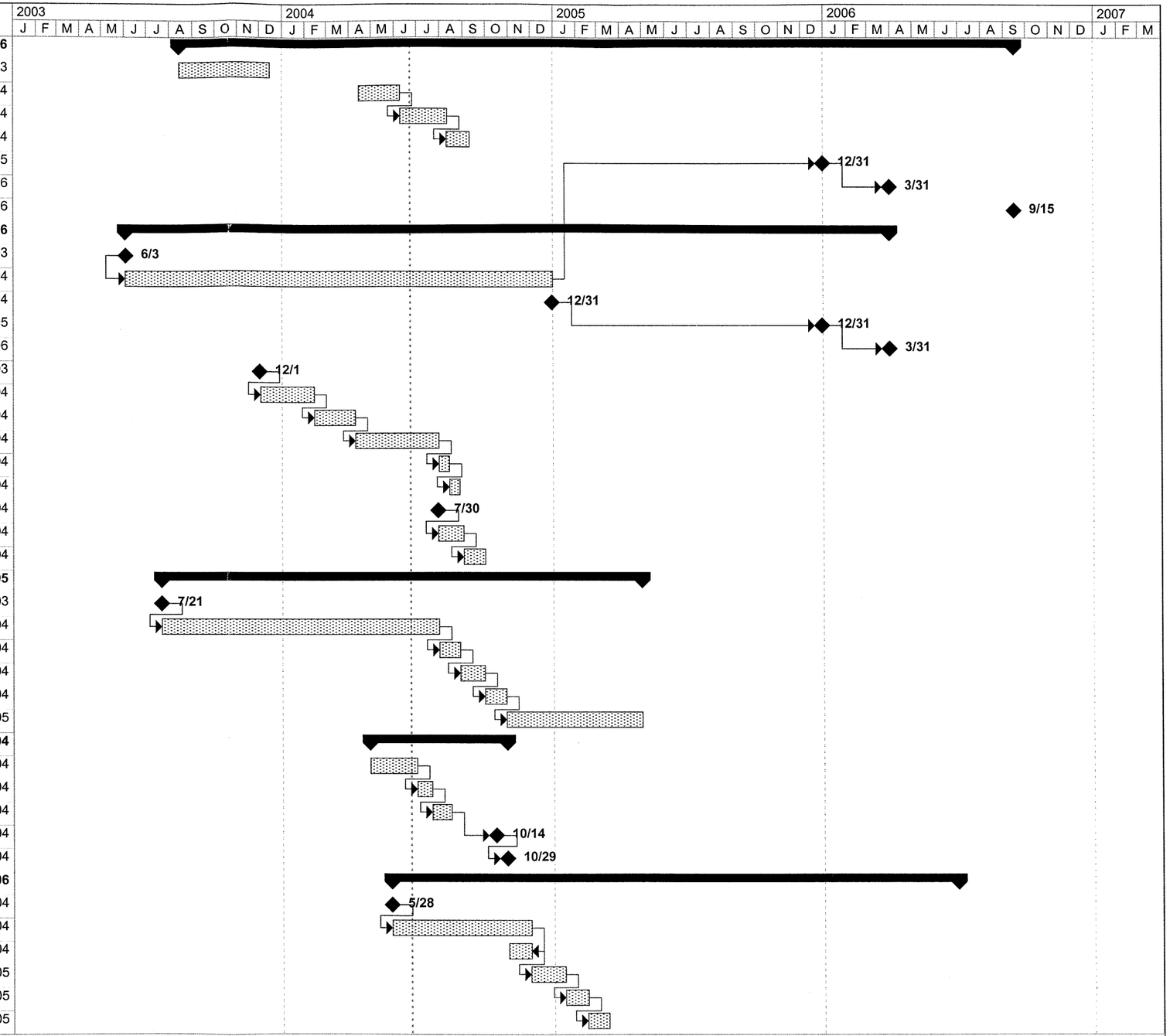
APPENDIX B

SCHEDULE OF REMAINING IRP SITE WORK

ID	Task Name	Duration	Start	Finish
1	**FT-002 (Source)**	**1128 days**	**8/15/03**	**9/15/06**
2	Remedial System Upgrade/Expansion	123 days	8/15/03	12/15/03
3	Draft Operation & Monitoring (O&M) Plan	56 days	4/15/04	6/9/04
4	Regulatory Review of Draft O&M Plan	63 days	6/10/04	8/11/04
5	Revised O&M Plan	31 days	8/11/04	9/10/04
6	Submit OPS Determination	0 days	12/31/05	12/31/05
7	USEPA Signs OPS Determination	0 days	3/31/06	3/31/06
8	2nd Remediation Progress Soil Boring & Sampling Event	0 days	9/15/06	9/15/06
9	**FT-002/IA (Groundwater)**	**1033 days**	**6/3/03**	**3/31/06**
10	Interim ROD Issued	0 days	6/3/03	6/3/03
11	Construction	578 days	6/3/03	12/31/04
12	Construction Completion	0 days	12/31/04	12/31/04
13	Submit OPS Determination	0 days	12/31/05	12/31/05
14	USEPA Signs Determination	0 days	3/31/06	3/31/06
15	2nd Revised Draft Final ROD Issued	0 days	12/1/03	12/1/03
16	Regulatory Review/Comments	73 days	12/3/03	2/13/04
17	Response to Regulatory Comments	56 days	2/14/04	4/9/04
18	Resolve Regulatory Issues, Finalize ROD, & Mail to HQ AFRPA	112 days	4/10/04	7/30/04
19	HQ AFBCA Sign & Mail Final ROD to USEPA	14 days	7/31/04	8/13/04
20	USEPA Signs ROD	14 days	8/14/04	8/27/04
21	Submit Draft O&M Plan	0 days	7/30/04	7/30/04
22	Regulatory Review	34 days	7/30/04	9/1/04
23	Revised O&M Plan	29 days	9/2/04	9/30/04
24	**SS-004**	**649 days**	**7/21/03**	**4/30/05**
25	Draft Revised RI Submitted	0 days	7/21/03	7/21/03
26	Regulatory Review/Comment & Discussion	375 days	7/22/03	7/30/04
27	Draft Final Revised RI	28 days	7/31/04	8/27/04
28	Regulatory Review/Comment	33 days	8/28/04	9/29/04
29	Final Revised RI & Draft Proposed Plan	29 days	9/30/04	10/28/04
30	Proposed Plan/Record of Decision	184 days	10/29/04	4/30/05
31	**SS-007**	**184 days**	**4/29/04**	**10/29/04**
32	USAF to Provide Summary of Activities & Regulatory Coordination	63 days	4/29/04	6/30/04
33	Regulatory Response & BCT Discussion	20 days	7/1/04	7/20/04
34	Prepare/Sign NFA DD	26 days	7/21/04	8/15/04
35	Brief RAB Meeting	0 days	10/14/04	10/14/04
36	Public Notice	0 days	10/29/04	10/29/04
37	**SS-013**	**764 days**	**5/28/04**	**6/30/06**
38	Submit Draft Proposed Plan	0 days	5/28/04	5/28/04
39	Proposed Plan/Record of Decision	187 days	5/28/04	11/30/04
40	Draft Work Plan	31 days	10/31/04	11/30/04
41	Regulatory Review	47 days	11/30/04	1/15/05
42	Revised Work Plan	31 days	1/16/05	2/15/05
43	Resolve Remaining Regulatory/Tech Issues	29 days	2/15/05	3/15/05



Project: Plattsburgh Schedule
As of: 6/21/04

Task | Progress | Milestone | Summary

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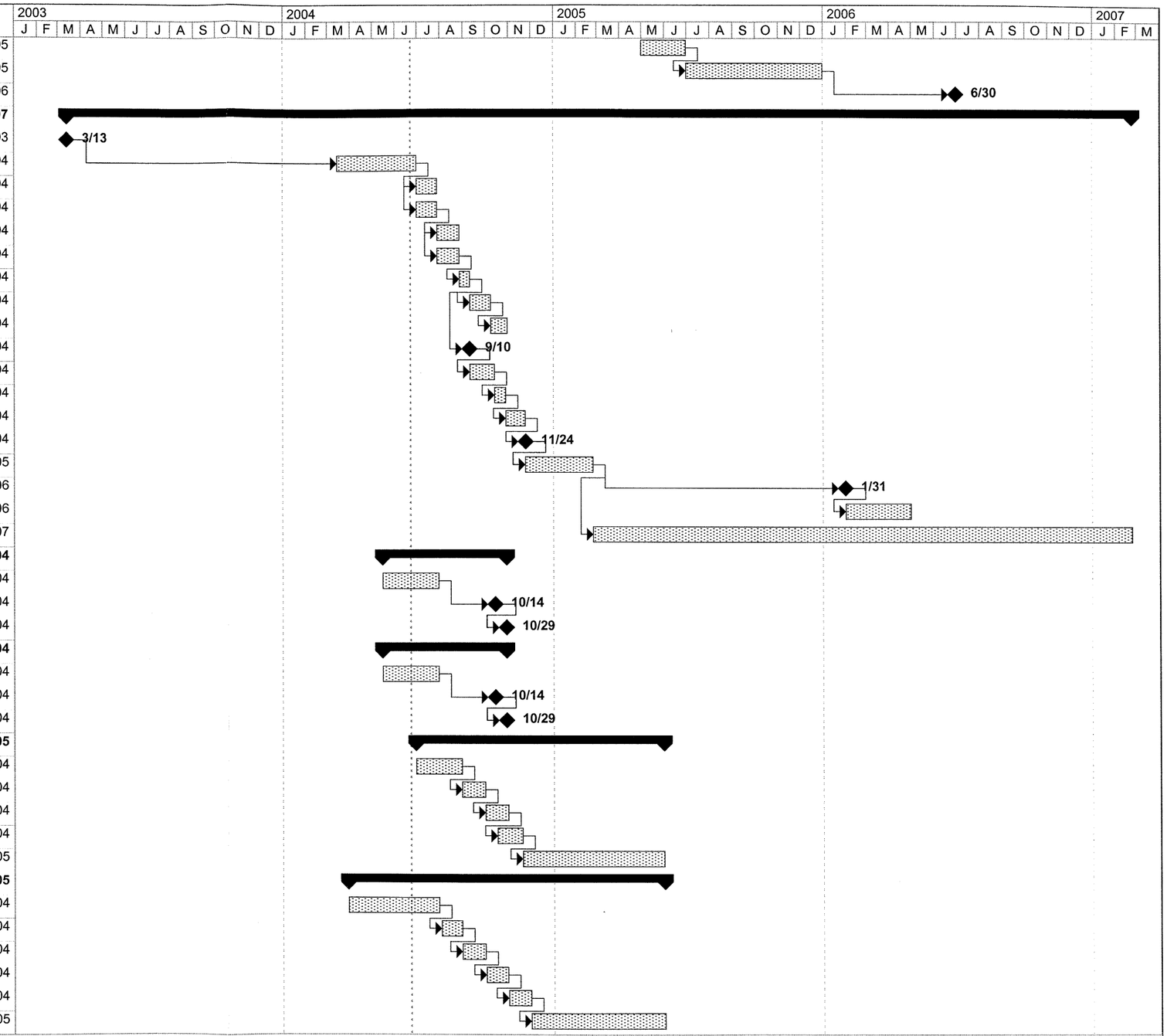
Appendix B, Table 1
Plattsburgh Air Force Base
Schedule of Remaining IRP Site Work

ID	Task Name	Duration	Start	Finish
44	Remedy Construction	61 days	5/1/05	6/30/05
45	Operate Remedial System	184 days	7/1/05	12/31/05
46	Site Close Out	0 days	6/30/06	6/30/06
47	**SS-016**	**1443 days**	**3/13/03**	**2/23/07**
48	Draft Final Proposed Plan - Submitted	0 days	3/13/03	3/13/03
49	Draft Final Proposed Plan Regulatory Review/Comment	108 days	3/15/04	6/30/04
50	Final Proposed Plan	28 days	7/1/04	7/28/04
51	Draft Record of Decision (ROD)	28 days	7/1/04	7/28/04
52	Public Comment Period	30 days	7/29/04	8/27/04
53	Draft ROD Regulatory Review/Comment	30 days	7/29/04	8/27/04
54	Responsiveness Summary & Draft Final ROD	14 days	8/28/04	9/10/04
55	Regulatory Review/Coordination	28 days	9/11/04	10/8/04
56	USEPA Signs ROD	22 days	10/9/04	10/30/04
57	Submit Draft Remedial Action Work Plan	0 days	9/10/04	9/10/04
58	Regulatory Review	33 days	9/11/04	10/13/04
59	Revised Remedial Action Work Plan	15 days	10/14/04	10/28/04
60	Resolve Regulatory Issues	26 days	10/29/04	11/23/04
61	Start Remedial Action Field Work	0 days	11/24/04	11/24/04
62	Complete Remedial Action Field Work; Remedial Action in Place	92 days	11/24/04	2/23/05
63	Submission of OPS Determination	0 days	1/31/06	1/31/06
64	USEPA Signs OPS Determination	89 days	2/1/06	4/30/06
65	Complete Long Term Monitoring	730 days	2/24/05	2/23/07
66	**SS-027**	**167 days**	**5/16/04**	**10/29/04**
67	Prepare/Sign NFA DD	76 days	5/16/04	7/30/04
68	Brief RAB Meeting	0 days	10/14/04	10/14/04
69	Public Notice	0 days	10/29/04	10/29/04
70	**SS-029**	**167 days**	**5/16/04**	**10/29/04**
71	Revise/Sign NFA DD	76 days	5/16/04	7/30/04
72	Brief RAB Meeting	0 days	10/14/04	10/14/04
73	Public Notice	0 days	10/29/04	10/29/04
74	**SD-041**	**335 days**	**6/30/04**	**5/30/05**
75	Complete Additional Field Work and Results	62 days	6/30/04	8/30/04
76	Response to Regulatory Comments	31 days	8/31/04	9/30/04
77	Regulatory Comments	31 days	10/1/04	10/31/04
78	Final RI Report & Draft Proposed Plan	34 days	10/17/04	11/19/04
79	Complete Proposed Plan/ROD	192 days	11/20/04	5/30/05
80	**Miscellaneous EBS Factors**	**428 days**	**3/30/04**	**5/31/05**
81	Draft Phase II Report	123 days	3/30/04	7/30/04
82	Regulatory Review & Comment	28 days	8/3/04	8/30/04
83	Draft Final Phase II Report	31 days	8/31/04	9/30/04
84	Regulatory Review & Comment	29 days	10/2/04	10/30/04
85	Final Phase II Report & Draft Proposed Plan	30 days	11/1/04	11/30/04
86	Complete Proposed Plan/Record of Decision	182 days	12/1/04	5/31/05



Project: Plattsburgh Schedule
As of: 6/21/04

Task | Progress | Milestone | Summary

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Appendix B, Table 1
Plattsburgh Air Force Base
Schedule of Remaining IRP Site Work

APPENDIX C

EVALUATION OF LANDFILLS LF-021, LF-022, LF-023, AND LF-024 AND SS-01S/SS-02S O&M MONITORING DATA

EVALUATION OF POST-CLOSURE O&M GROUNDWATER MONITORING DATA FOR LANDFILL LF-021

The previous Five-Year Review Report for PAFB specifically recommended an evaluation of the O&M monitoring data for former base landfill LF-021. This six-acre landfill was used from 1956 to 1959 for the disposal of municipal wastes, construction and demolition debris, and sludge from the PAFB wastewater treatment plant (Figure 1). Soil and fill are contaminated with volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and metals.

The ROD for this site was signed in March 1997. The remedy selected for the site was "Native Soil Cap and Institutional Controls." The remedy also included the installation of one additional groundwater monitoring well and monitoring of the new well and five existing wells for a period of thirty years. Construction of the remedy was completed in September 1998. Post-closure groundwater monitoring at the site began in November 1998 and has been conducted quarterly through November 2003. The ROD required that sampling be conducted quarterly for the first five years to establish baseline conditions, and annually thereafter, Annual sampling will commence in 2004. Analytical data from November 1998 through November 2003 were examined to evaluate contaminant concentrations in groundwater. The groundwater samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals.

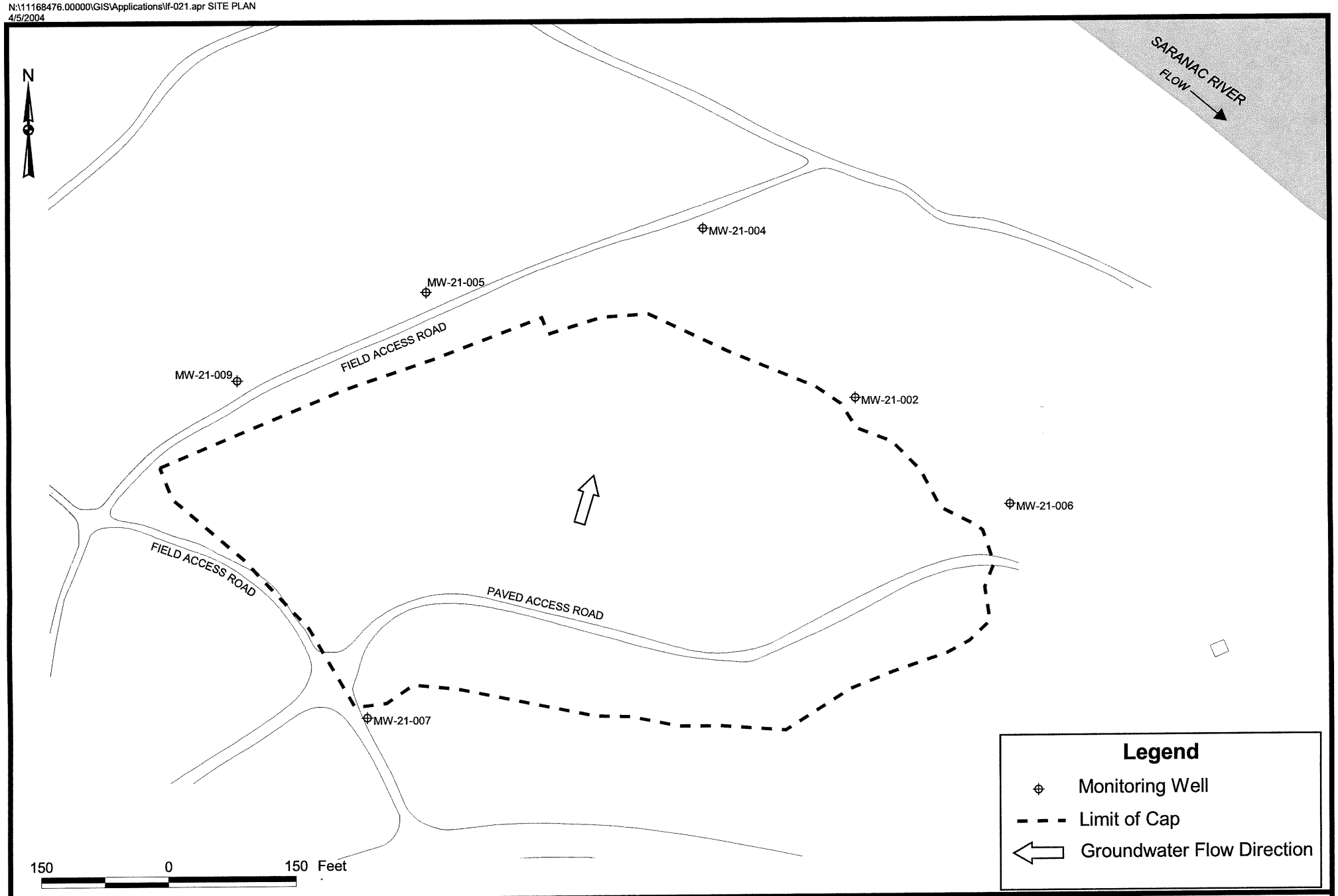
The evaluation of this sites' O&M groundwater sampling analytical data involved several steps. Detected analytes were tabulated, detected concentrations were statistically summarized, and the data were compared to applicable groundwater ARARs (see Table 1). Analytes that were frequently detected at concentrations exceeding their respective groundwater ARARs received further statistical trend analysis (see Table 2) and were also viewed graphically to verify the trend analyses (see attached Graphs). The results of the data evaluation are discussed below.

One VOC (acetone), one SVOC (bis(2-ethylhexyl)phthlate), and three pesticides have been detected at concentrations exceeding their respective groundwater ARARs. However, these compounds have only been sporadically detected in only one or a few samples. Also, acetone and bis(2-ethylhexyl)phthlate are common sampling/laboratory contaminants. PCBs have not been detected in any LF-021 groundwater samples. The primary contaminants of concern, detected frequently in groundwater at concentrations exceeding ARARs, are metals.

Metals that have been detected at concentrations exceeding ARARs include: antimony, arsenic, iron, lead, magnesium, manganese, mercury, selenium, sodium, and thallium (see Table 1). Lead and mercury ARAR exceedances have occurred only sporadically in a few samples. Iron, magnesium, manganese, and sodium data indicate enrichment in wells downgradient of LF-021, but the concentrations of these analytes are not significantly elevated above levels noted in background groundwater wells at PAFB (URS 1996).

Antimony, arsenic, selenium, and thallium exceedances appear to occur sporadically in groups of wells and then concentrations drop off to near non-detectable levels (see attached Graphs). Antimony and thallium concentrations have been below ARARs in all wells for the last few sampling events. Arsenic and selenium concentrations have been above ARARs in most wells for the last few sampling events, Selenium and thallium concentrations are enriched in downgradient wells as compared to the upgradient well implying that they may be attributable to the landfill. Antimony and arsenic concentrations are as high or higher in the upgradient well as compared to the downgradient wells implying that they may be due to an unknown upgradient source.

N:\11168476.00000\GIS\Applications\lf-021.apr SITE PLAN
4/5/2004



URS

PLATTSBURGH AFB - LF-021
SITE PLAN

FIGURE 1

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-021
NOVEMBER 1998 - NOVEMBER 2003

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Volatile Organic Compounds									
1,2-Dichloroethene (cis)	5	UG/L	66	3	0.06	0.08	0.07	0	MW-21-002
Acetone	50	UG/L	85	1	99	99	99	1	MW-21-002
Benzene	1	UG/L	126	2	0.28	5	0.39	0	MW-21-009
Chloromethane	5	UG/L	126	1	0.33	0.33	0.33	0	MW-21-002
Methyl ethyl ketone (2-Butanone)	50	UG/L	79	1	5.1	5.1	5.1	0	MW-21-002
Toluene	5	UG/L	126	20	0.07	0.69	0.212	0	MW-21-002
Semivolatile Organic Compounds									
Atrazine	7.5	UG/L	66	1	4	4	4	0	MW-21-007
bis(2-Ethylhexyl)phthalate	5	UG/L	126	11	2.3	38.09	10.45	7	MW-21-004
Butylbenzylphthalate	50	UG/L	125	1	3.5	3.5	3.5	0	MW-21-004
Caprolactam	–	UG/L	66	18	3.21	63.72	24.44	0	MW-21-004
Pesticide Organic Compounds									
Aldrin	ND	UG/L	120	1	0.02	0.02	0.02	1	MW-21-005
alpha-BHC	0.01	UG/L	112	1	0.041	0.041	0.041	1	MW-21-006
delta-BHC	0.04	UG/L	118	1	0.044	0.044	0.044	1	MW-21-006
Endrin aldehyde	5	UG/L	118	1	0.02	0.02	0.02	0	MW-21-006
Heptachlor	0.04	UG/L	123	1	0.003	0.003	0.003	0	MW-21-004
Heptachlor epoxide	0.03	UG/L	123	2	0.015	0.019	0.017	0	MW-21-002
Methoxychlor	35	UG/L	106	1	0.061	0.061	0.061	0	MW-21-007
Total Metals									
Aluminum	NS	UG/L	120	120	75.6	22000	4085	0	MW-21-005
Antimony	3	UG/L	120	39	1.4	14.3	6.46	33	MW-21-007
Arsenic	10	UG/L	126	44	2.6	20.5	9.22	17	MW-21-006
Barium	1000	UG/L	126	126	8.2	334	116.2	0	MW-21-005

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-021
NOVEMBER 1998 - NOVEMBER 2003

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Beryllium	3	UG/L	126	41	0.12	1.4	0.462	0	MW-21-009
Cadmium	5	UG/L	126	37	0.23	3.55	1.08	0	MW-21-006
Calcium	NS	UG/L	126	126	46900	304000	135000	0	MW-21-006
Chromium	50	UG/L	126	120	0.5	38.6	8.43	0	MW-21-005
Cobalt	NS	UG/L	126	106	0.7	20.7	6.01	0	MW-21-006
Copper	200	UG/L	126	80	1.1	43.1	10.19	0	MW-21-005
Iron	300	UG/L	126	126	1.92	36900	7839	125	MW-21-005
Lead	15	UG/L	126	73	2.4	117	10.27	9	MW-21-002
Magnesium	35000	UG/L	126	126	19000	115000	51000	107	MW-21-005
Manganese	300	UG/L	126	126	44.3	2820	1020	93	MW-21-006
Mercury	0.7	UG/L	126	19	0.12	1	0.427	5	MW-21-005
Nickel	100	UG/L	126	102	1.7	44.8	10.16	0	MW-21-007
Potassium	NS	UG/L	126	125	4.77	14500	5320	0	MW-21-006
Selenium	10	UG/L	120	34	5.5	37.9	16.49	24	MW-21-009
Silver	50	UG/L	126	13	1.5	5.4	3.12	0	MW-21-006
Sodium	20000	UG/L	126	126	4500	111000	31300	57	MW-21-006
Thallium	0.5	UG/L	126	24	4.2	24.8	9.65	24	MW-21-006
Vanadium	NS	UG/L	126	95	1.5	32.4	9.23	0	MW-21-005
Zinc	2000	UG/L	126	122	2.2	99.2	23.45	0	MW-21-006

ARAR = Applicable or Relevant and Appropriate Requirement
ND = Not detectable
NS = No standard
UG/L = Micrograms per liter

TABLE 2
LANDFILL 021 MANN-KENDALL TREND ANALYSIS
FOR SELECT ANALYTES (NOVEMBER 1998 - NOVEMBER 2003)

LOCID: MW-21-002

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	20	9	24	0.23	No Trend
Arsenic	WG	MET	21	5	8	0.417	No Trend
Iron	WG	MET	21	21	48	0.079	Upward Trend
Magnesium	WG	MET	21	21	-8	0.417	No Trend
Manganese	WG	MET	21	21	68	0.021	Upward Trend
Selenium	WG	MET	20	7	46	0.073	Upward Trend
Sodium	WG	MET	21	21	98	0.001	Upward Trend
Thallium	WG	MET	21	5	44	0.098	Upward Trend

LOCID: MW-21-004

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	20	5	7	0.436	No Trend
Arsenic	WG	MET	21	6	58	0.043	No Trend
Iron	WG	MET	21	21	-2	0.488	Upward Trend
Magnesium	WG	MET	21	21	-37	0.147	No Trend
Manganese	WG	MET	21	21	59	0.043	Upward Trend
Selenium	WG	MET	20	7	44	0.082	Upward Trend
Sodium	WG	MET	21	21	-57	0.049	Downward Trend
Thallium	WG	MET	21	3	25	0.246	No Trend

LOCID: MW-21-005

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	20	5	3	0.487	No Trend
Arsenic	WG	MET	21	9	47	0.088	Upward Trend
Iron	WG	MET	21	21	-10	0.394	No Trend
Magnesium	WG	MET	21	21	46	0.088	Upward Trend
Manganese	WG	MET	21	21	-12	0.371	No Trend
Selenium	WG	MET	20	3	36	0.13	No Trend
Sodium	WG	MET	21	21	28	0.21	No Trend
Thallium	WG	MET	21	3	29	0.21	No Trend

LOCID: MW-21-006

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	20	8	9	0.411	No Trend
Arsenic	WG	MET	21	7	4	0.464	No Trend
Iron	WG	MET	21	21	-87	0.005	Downward Trend
Magnesium	WG	MET	21	21	-74	0.013	Downward Trend
Manganese	WG	MET	21	21	50	0.07	Upward Trend
Selenium	WG	MET	20	7	33	0.159	No Trend
Sodium	WG	MET	21	21	-2	0.488	No Trend
Thallium	WG	MET	21	5	40	0.121	No Trend

LOCID: MW-21-007

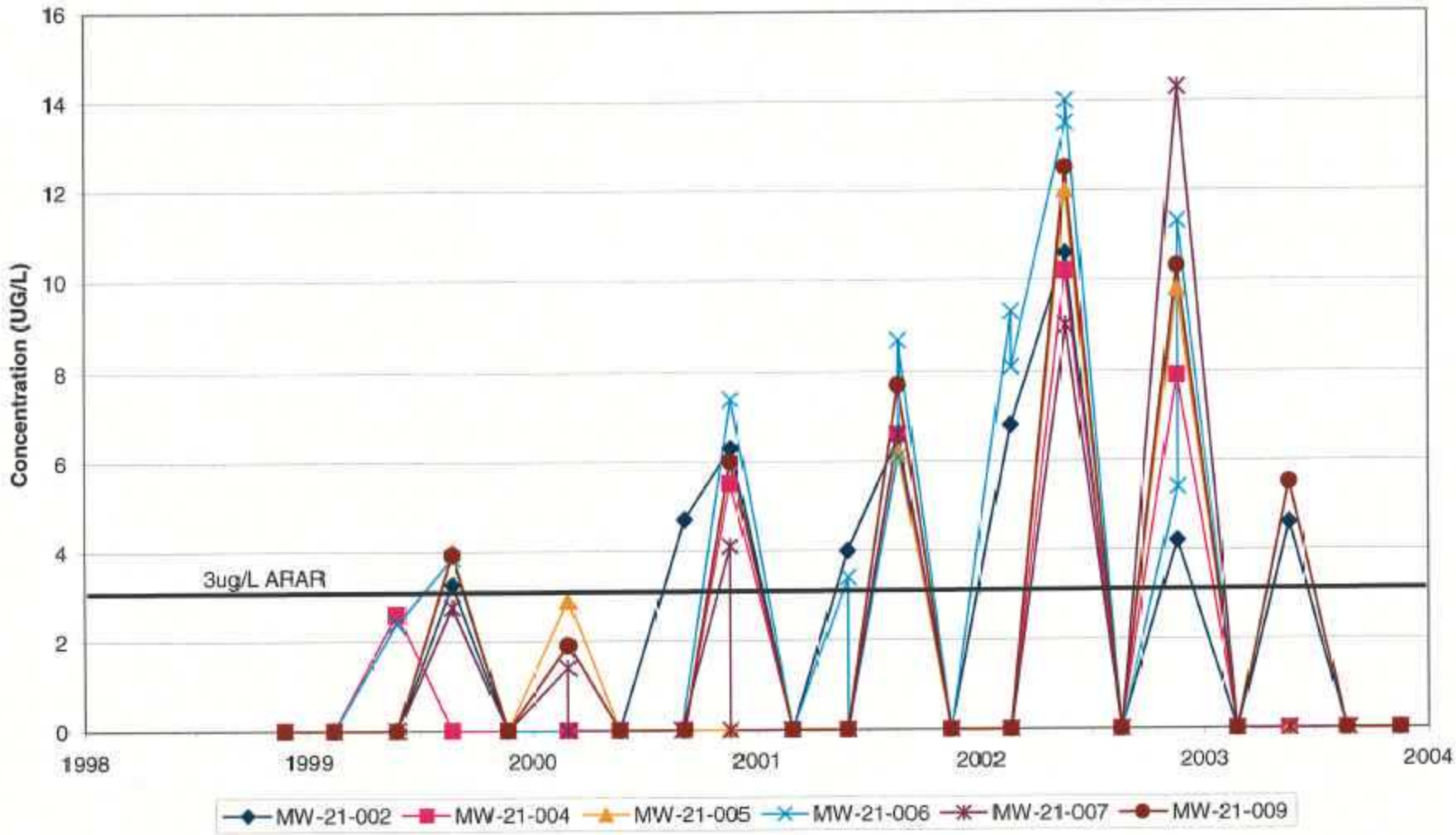
Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	20	6	5	0.462	No Trend
Arsenic	WG	MET	21	7	21	0.285	No Trend
Iron	WG	MET	22	22	-27	0.234	No Trend
Magnesium	WG	MET	21	21	-16	0.327	No Trend
Manganese	WG	MET	21	21	-118	No Value	
Selenium	WG	MET	20	7	22	0.25	No Trend
Sodium	WG	MET	21	21	-22	0.265	No Trend
Thallium	WG	MET	21	3	34	0.162	No Trend

LOCID: MW-21-009

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	20	7	17	0.315	No Trend
Arsenic	WG	MET	21	11	70	0.018	Upward Trend
Iron	WG	MET	21	21	30	0.193	No Trend
Magnesium	WG	MET	21	21	56	0.049	Upward Trend
Manganese	WG	MET	21	21	-58	0.043	Downward Trend
Selenium	WG	MET	20	5	47	0.073	Upward Trend
Sodium	WG	MET	21	21	7	0.441	No Trend
Thallium	WG	MET	21	5	40	0.121	No Trend

For multiple observations per time period, the Mann-Kendall test to the median was used.
Data reported as less than the detection limit were used by assigning a common value to the data that was smaller than the smallest measurement in the data set.
(1) - Probabilities for Mann-Kendall Nonparameteric Test for Trend (Gilbert R O. 1987, Table A18).
(2) - Assuming a probability of error of 10% in the analysis method and or data When the probability of no trend as calculated by the Mann-Kendall statistic is less than 10%, then it is assumed that there is a trend.

Landfill 021
Antimony Concentrations Over Time
Monitoring Wells



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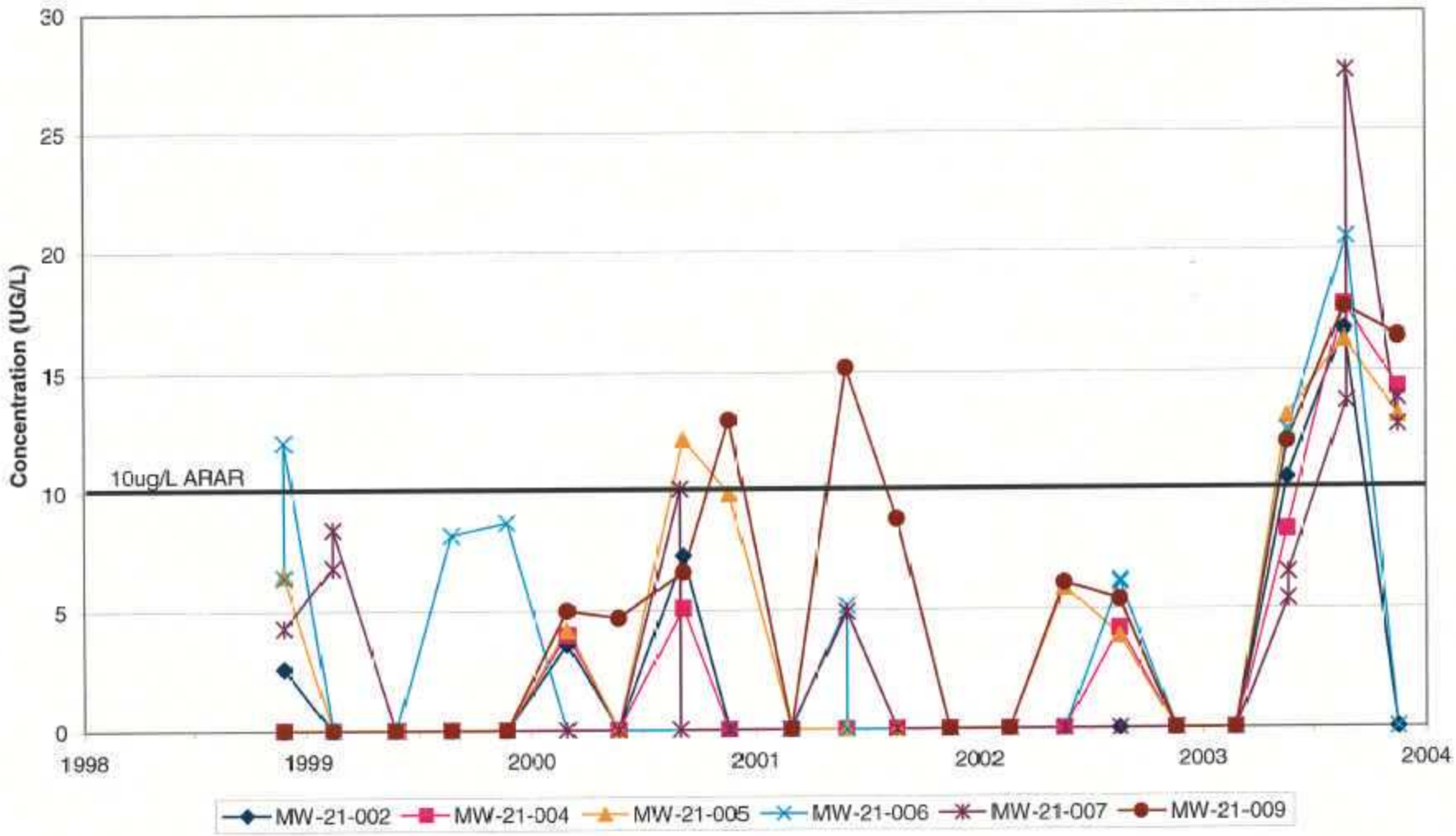
All_sites_antimony, Antimony plot, 6/29/2004

Landfill 021
Arsenic Concentrations Over Time
Monitoring Wells



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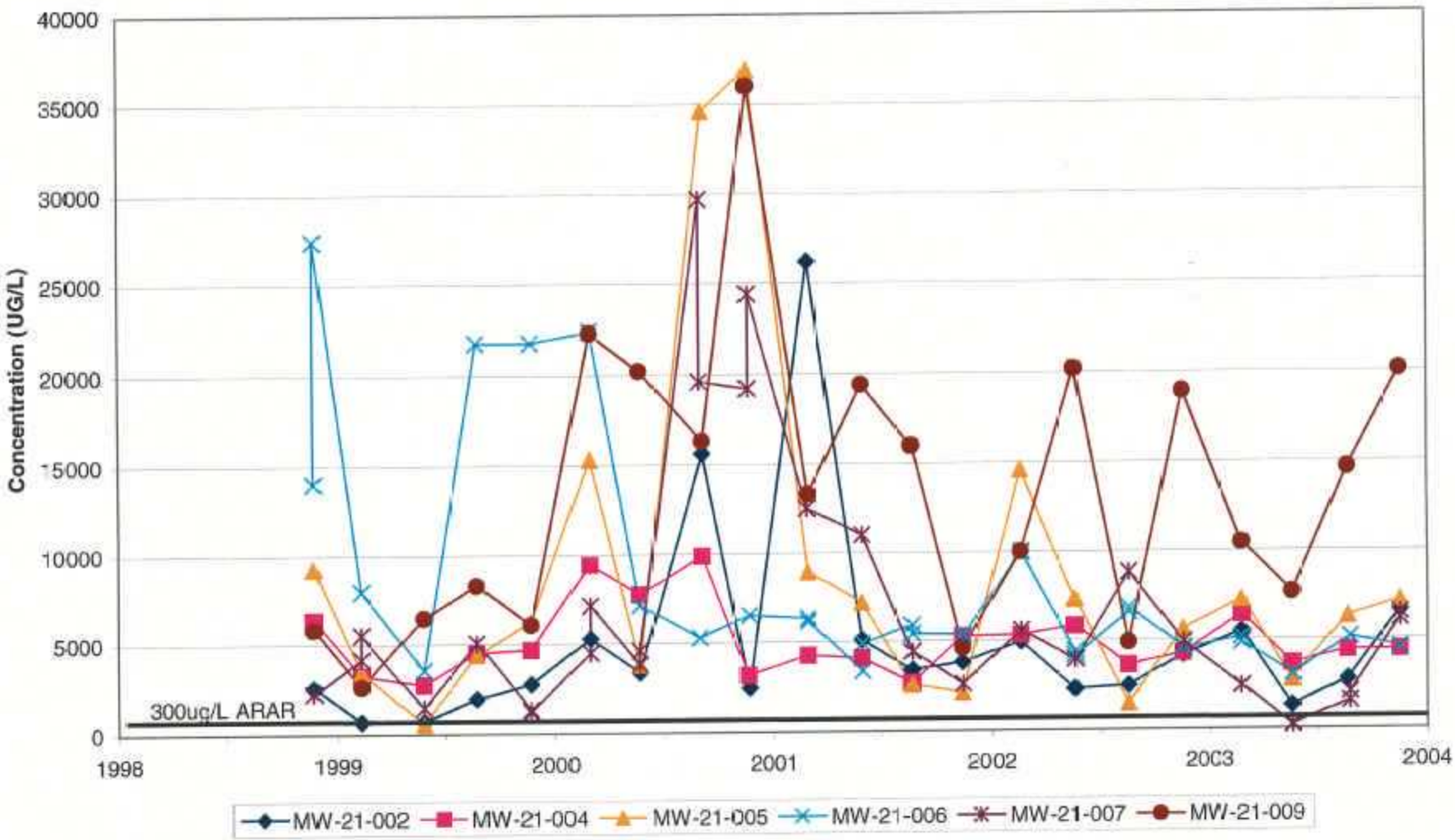
All_sites_arsenic, Arsenic-plot, 5/20/2004

Landfill 021
Iron Concentrations Over Time
Monitoring Wells



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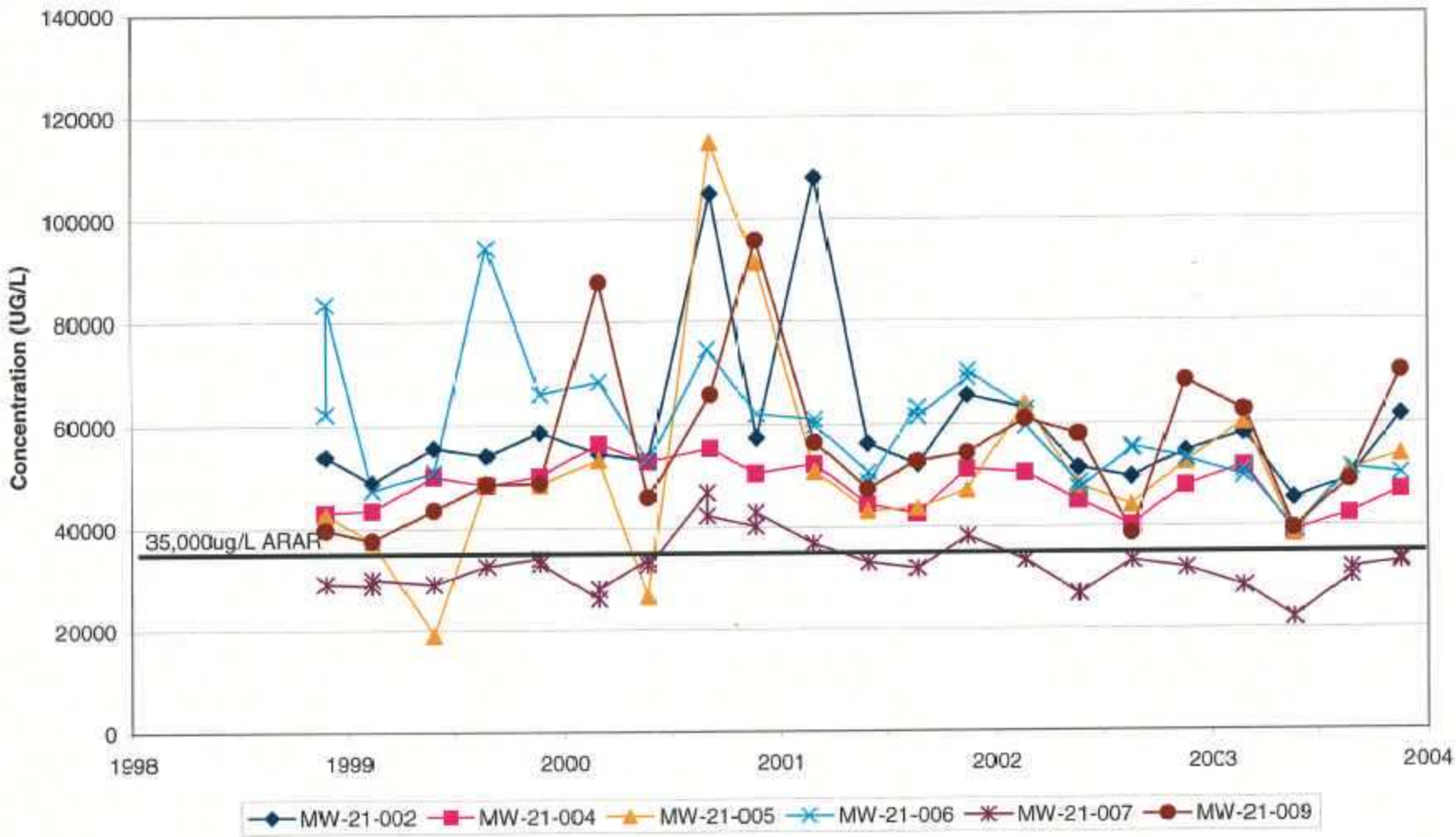
All_sites_iron, Iron-plot, 5/20/2004

Landfill 021
Magnesium Concentrations Over Time
Monitoring Wells



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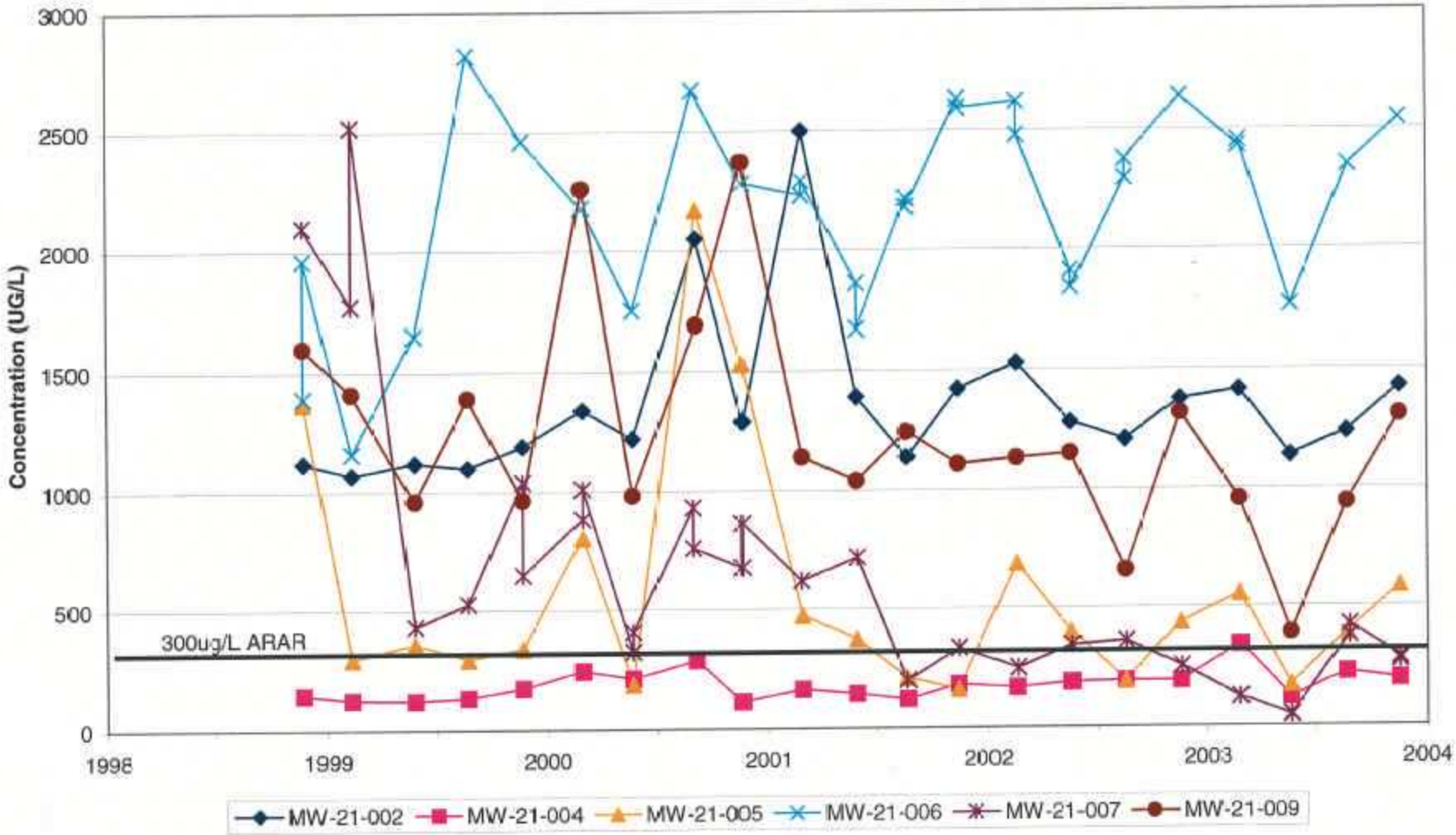
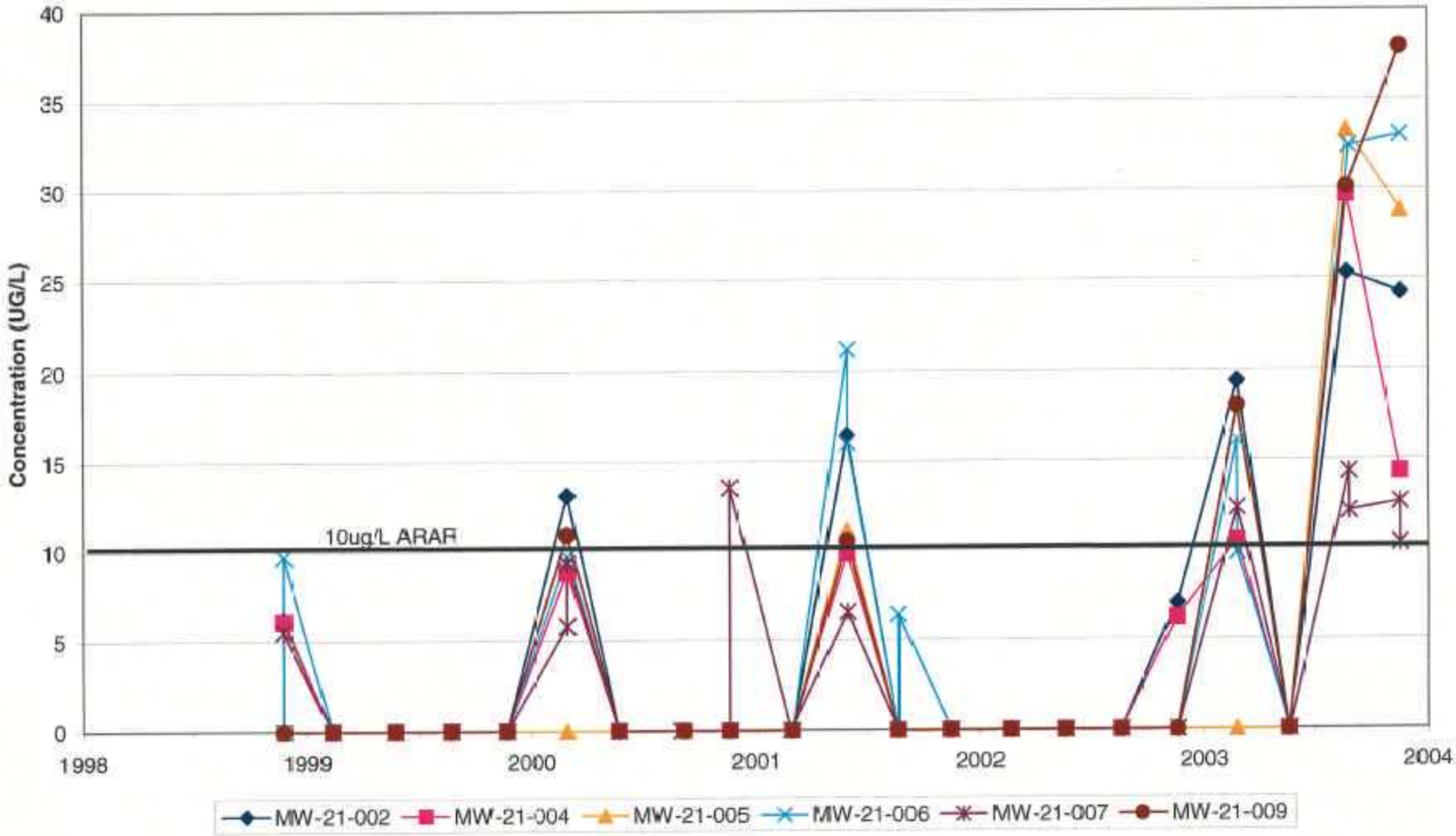
All_sites_magnesium, Magnesium-plot, 5/20/2004

Landfill 021
Manganese Concentrations Over Time
Monitoring Wells



N:\11684-1.000\DB\Program\Program.mdb
All_sites_manganese, Manganese-plot, 5/20/2004

Landfill 021
Selenium Concentrations Over Time
Monitoring Wells



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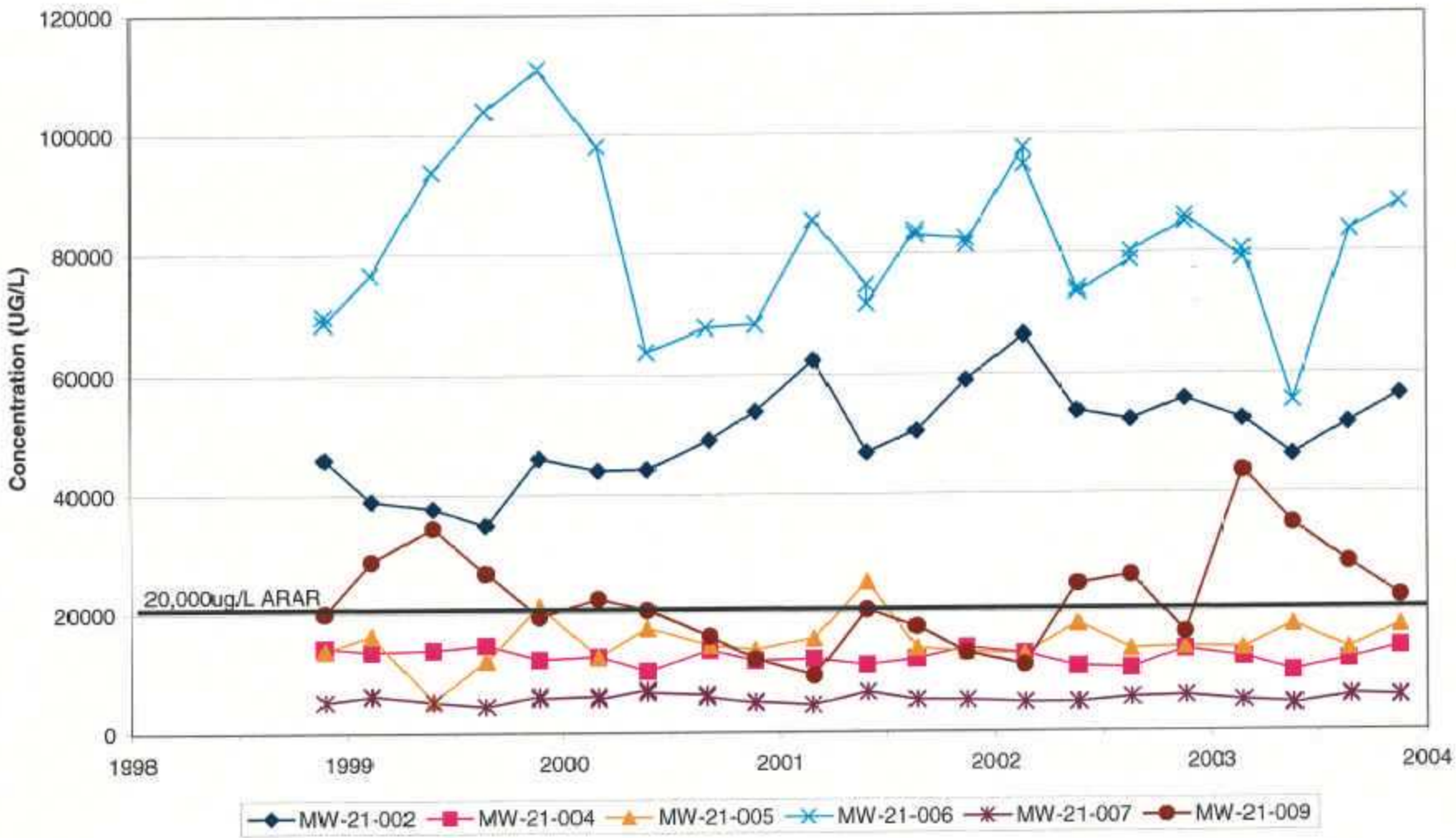
All_sites_selenium, Selenium-pilot, 5/20/2004

Landfill 021
Sodium Concentrations Over Time
Monitoring Wells



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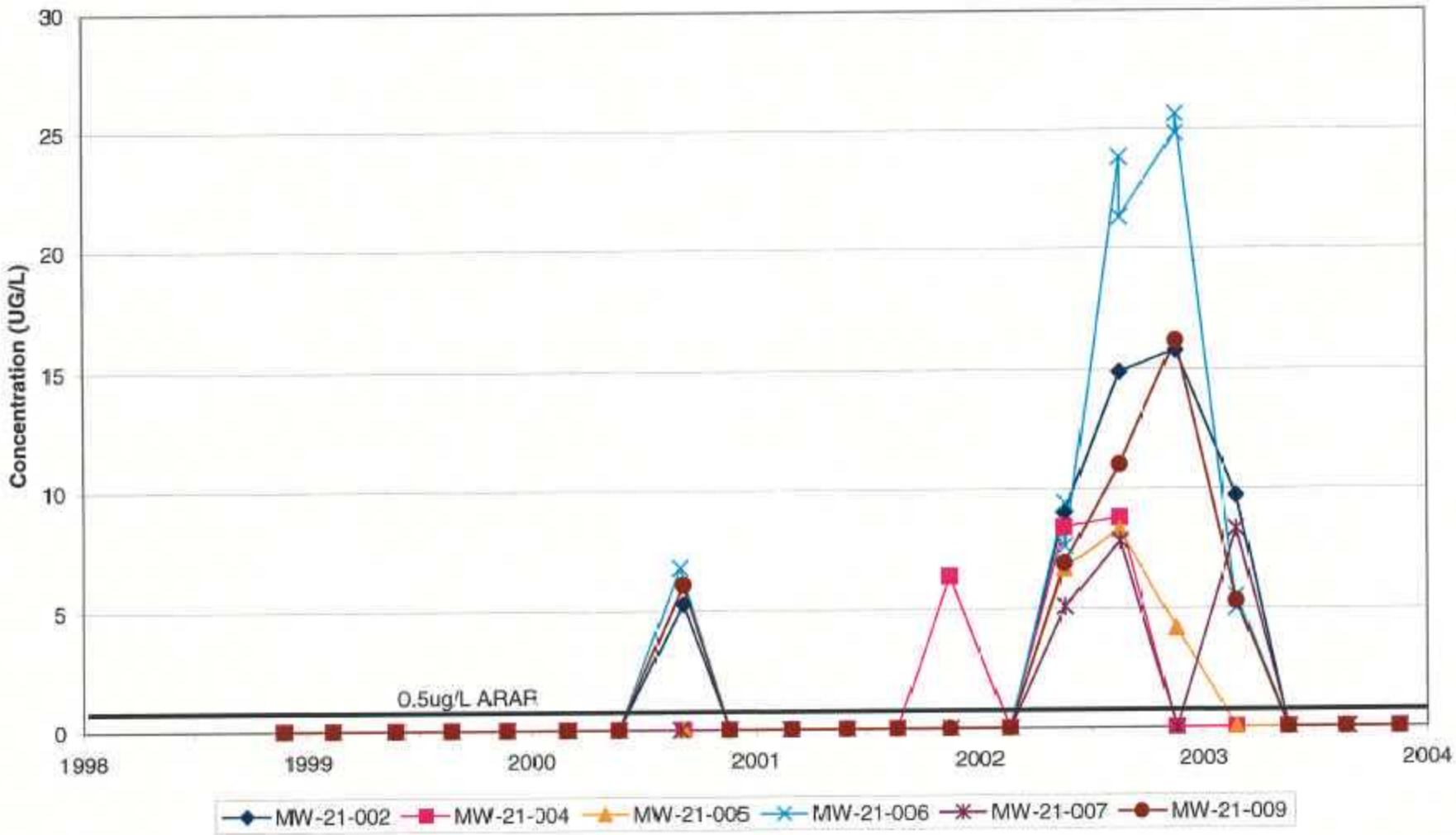
All_sites_sodium, Sodium-pkd, 5/20/2004

Landfill 021
Thallium Concentrations Over Time
Monitoring Wells



N:\111684-1.000\DB\Program\Program.mdb
All_sites_thallium, Thallium-plot, 6/20/2004

EVALUATION OF POST-CLOSURE O&M GROUNDWATER MONITORING DATA FOR LANDFILL LF-022

The previous Five-Year Review Report for PAFB specifically recommended an evaluation of the O&M monitoring data for former base landfill LF-022 (Figure 1). This landfill received domestic wastes from 1959 to 1966. Depth of fill was up to 30 feet. Soil and fill are contaminated with metals and organics.

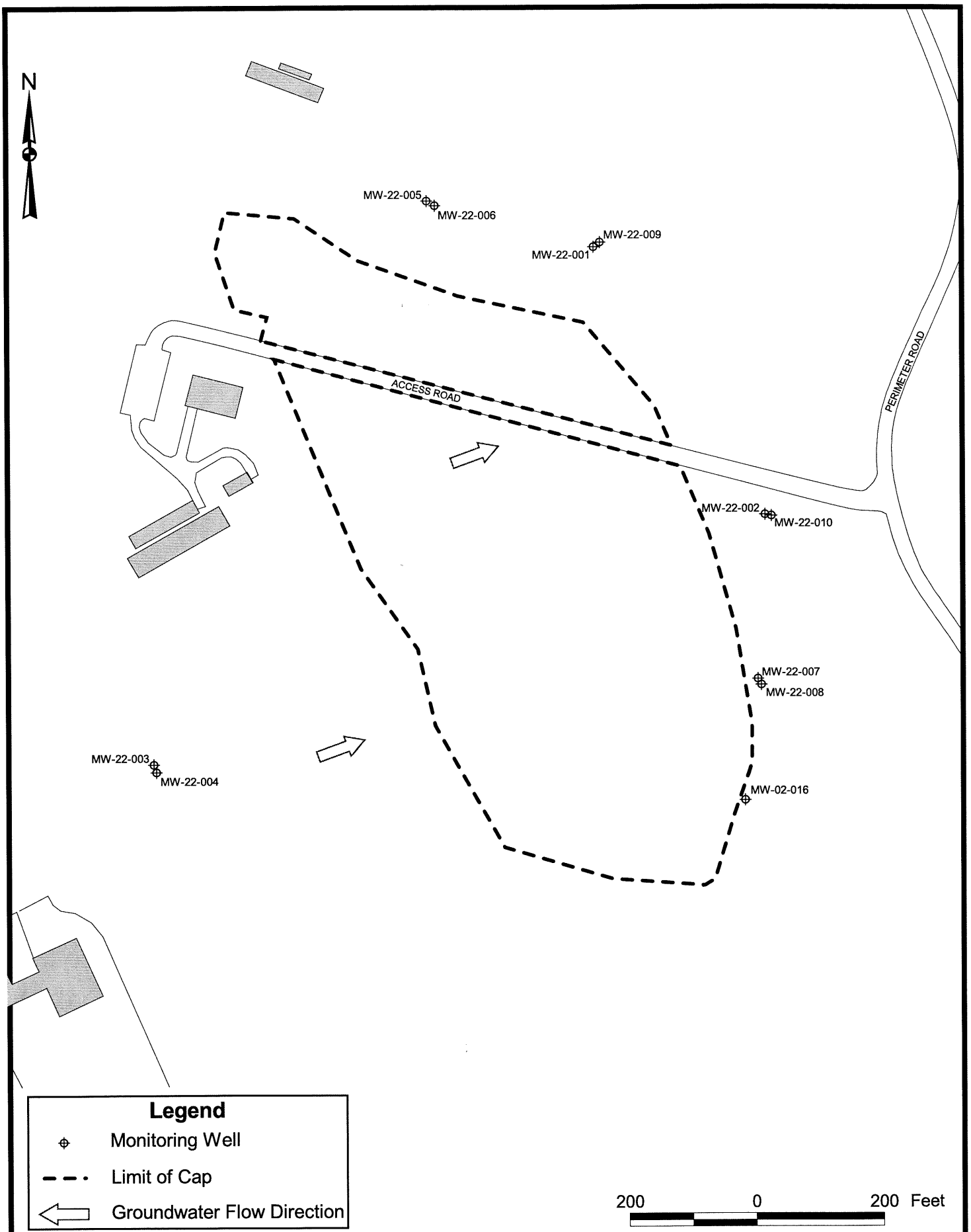
The ROD for this site was signed in September 1992. The remedy selected for the site was "Site Grading and Vegetation Establishment for Closure." The remedy also included groundwater monitoring for a period of thirty years. Construction of the remedy was completed in September 1995. Post-closure groundwater monitoring at the site began in December 1995, was conducted quarterly through the end of 2002, and has been conducted semiannually (with NYSDEC Region V approval) since that time. Analytical data from December 1995 through December 2003 were examined to evaluate contaminant concentrations in groundwater. Groundwater samples from shallow wells were analyzed for a short list of metals during quarterly (1995-2002) or semiannual (2003) routine sampling events. Once per year, all site wells were sampled and analyzed for a larger list of parameters including: volatile organic compounds (VOCs), Target Analyte List (TAL) metals, and other miscellaneous parameters as specified in the post-closure monitoring and maintenance plan for the site.

The evaluation of this sites' O&M groundwater sampling analytical data involved several steps. Detected analytes were tabulated, detected concentrations were statistically summarized, and the data were compared to applicable groundwater ARARs (see Table 1). Analytes that were frequently detected at concentrations exceeding their respective groundwater ARARs received further statistical trend analysis (see Table 2) and were also viewed graphically to verify the trend analyses (see attached Graphs). The results of the data evaluation are discussed below.

One VOC (1,3-dichloropropene) and three miscellaneous parameters (chloride, nitrate-nitrogen, and ammonia-nitrogen) have been detected at concentrations exceeding their respective groundwater ARARs. However, these compounds have only been sporadically detected in only one or a few samples. The primary contaminants of concern, detected frequently in groundwater at concentrations exceeding ARARs, are metals.

Metals that have been detected at concentrations exceeding ARARs include: antimony, arsenic, iron, lead, magnesium, manganese, selenium, sodium, and thallium (see Table 1). Arsenic, lead, magnesium, and selenium ARAR exceedances have occurred only sporadically in a few samples. Iron and manganese data indicate enrichment in wells downgradient of LF-022,
but these concentrations are not significantly elevated above levels noted in background groundwater wells at PAFB (URS 1996). Sodium concentrations are higher in upgradient wells as compared to downgradient wells, possibly due to nearby road salting.

Antimony, arsenic, and thallium exceedances appear to occur sporadically in groups of wells and then concentrations drop off to near non-detectable levels (see attached Graphs). Antimony and thallium concentrations were at historical highs in late 2002 and early 2003, but were below ARARs in all but one well in the December 2003 sampling event. All but one of the arsenic ARAR exceedances occurred in the December 2003 sampling event. The antimony, arsenic, and thallium concentrations were enriched in downgradient wells as compared to the upgradient wells, implying that they may be attributable to the landfill.



URS

PLATTSBURGH AFB - LF-022
SITE PLAN

FIGURE 1

N:\11168476.00000\GIS\Applications\lf-022.apr SITE PLAN
4/5/2004

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-022
DECEMBER 1995 - DECEMBER 2003

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Volatile Organic Compounds									
1,1,1-Trichloroethane	5	UG/L	88	3	0.1	0.12	0.113	0	MW-22-002
1,1,2-Trichloroethane	1	UG/L	88	2	0.26	.042	0.34	0	MW-22-002
1,1-Dichloroethene	5	UG/L	88	1	0.26	0.26	0.26	0	MW-22-010
1,2-Dichloroethene (cis)	5	UG/L	77	1	0.28	0.28	0.28	0	MW-22-007
1,3-Dichlorobenzene	3	UG/L	88	1	0.3	0.3	0.3	0	MW-22-002
1,3-Dichloropropene (trans)	0.4	UG/L	88	2	0.19	0.42	0.305	1	MW-22-002
Benzene	1	UG/L	88	1	0.81	0.81	0.81	0	MW-22-002
Bromodichloromethane	50	UG/L	88	2	0.34	0.56	0.45	0	MW-22-002
Bromoform	50	UG/L	88	1	0.44	0.44	0.44	0	MW-22-004
Bromomethane	5	UG/L	88	3	0.07	0.18	0.11	0	MW-22-009
Chlorobenzene	5	UG/L	88	1	0.1	0.1	0.1	0	MW-22-002
Chloroethane	5	UG/L	88	3	0.3	0.47	0.36	0	MW-22-002
Dichlorodifluoromethane	5	UG/L	88	5	0.13	0.34	0.216	0	MW-22-002
Ethylbenzene	5	UG/L	88	1	0.45	0.45	0.45	0	MW-22-002
Tetrachloroethene	5	UG/L	88	5	0.08	0.18	0.13	0	MW-22-007
Toluene	5	UG/L	88	10	0.07	0.54	0.177	0	MW-22-002
Trichloroethene	5	UG/L	88	9	0.08	0.44	0.241	0	MW-22-002
Trichlorofluoromethane	5	UG/L	88	1	0.24	0.24	0.24	0	MW-22-002
Vinyl chloride	2	UG/L	88	3	0.25	0.35	0.283	0	MW-22-002
Xylene (total)	5	UG/L	88	1	1.3	1.3	1.3	0	MW-22-002
Total Metals									
Aluminum	NS	UG/L	95	78	12.7	16000	1458	0	MW-22-005
Antimony	3	UG/L	95	33	3.2	18.5	7.99	33	MW-22-006
Arsenic	10	UG/L	95	13	4.4	24.8	11.95	7	MW-22-005

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-022
DECEMBER 1995 - DECEMBER 2003

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Barium	1000	UG/L	95	81	5	176	35.48	0	MW-22-008
Beryllium	3	UG/L	95	18	0.12	1.8	0.407	0	MW-22-008
Boron	NS	UG/L	85	45	9.8	194	52.92	0	MW-22-002
Cadmium	5	UG/L	227	32	0.28	3.5	1.02	0	MW-22-007
Calcium	NS	UG/L	220	220	21900	178000	85800	0	MW-22-002
Chromium	50	UG/L	95	62	0.5	28	4.2	0	MW-22-010
Cobalt	NS	UG/L	1	1	2	2	2	0	MW-22-008
Copper	200	UG/L	95	34	1.1	16	6.56	0	MW-22-005
Iron	300	UG/L	227	221	17.2	69.4	3550	184	MW-22-008
Lead	15	UG/L	216	65	1.1	35.4	4.78	1	MW-22-008
Magnesium	35000	UG/L	226	226	7250	39000	20700	11	MW-22-002
Manganese	300	UG/L	227	218	1.1	6600	659.7	80	MW-22-016
Mercury	0.7	UG/L	87	2	0.03	0.03	0.03	0	MW-22-010
Nickel	100	UG/L	95	29	1.1	21.4	4.38	0	MW-22-008
Potassium	NS	UG/L	227	225	594	23900	3815	0	MW-22-002
Selenium	10	UG/L	95	7	4.3	48.9	22.49	4	MW-22-009
Silver	50	UG/L	95	4	2.5	3.6	3.12	0	MW-22-009
Sodium	20000	UG/L	227	227	3800	150000	49400	164	MW-22-003
Thallium	0.5	UG/L	95	13	4.2	42.3	9.88	13	MW-22-016
Vanadium	NS	UG/L	2	1	6.3	6.3	6.3	0	MW-22-008
Zinc	2000	UG/L	84	74	1.9	593	22.39	0	MW-22-008
Miscellaneous Parameters									
Alkalinity	NS	MG/L	160	160	84	538	232.2	0	MW-22-002
Biochemical Oxygen Demand (BOD)	NS	MG/L	83	35	2	22.4	5.45	0	MW-22-010
Bromide	2	MG/L	84	12	0.06	0.49	0.173	0	MW-22-010

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-022
DECEMBER 1995 - DECEMBER 2003

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Chemical Oxygen Demand (COD)	NS	MG/L	156	70	2.8	60.6	15.24	0	MW-22-008
Chloride	250	MG/L	156	156	2.33	267	85.22	2	MW-22-003
Color	NS	C.U.	88	43	5	50	15.47	0	MW-22-004
Cyanide	0.2	MG/L	83	4	0.003	0.005	0.004	0	MW-22-004
Hardness	NS	MG/L	160	160	85	603000	12500	0	MW-22-002
Hexavalent Chromium	NS	MG/L	72	6	0.011	0.16	0.055	0	MW-22-004
Nitrate-Nitrogen	10	MG/L	160	156	0.098	12.8	2.03	3	MW-22-002
Ammonia, Nitrogen (As N)	2	MG/L	160	15	0.06	8.96	1.02	1	MW-22-003
Phenolics, Total Recoverable	NS	MG/L	140	35	0.001	0.03	0.01	0	MW-22-002
Sulfate (as SO4)	250	MG/L	160	157	0.43	98.2	33.28	0	MW-22-002
Total Dissolved Solids	NS	MG/L	160	159	27	700	435.9	0	MW-22-002
Total Kjeldahl Nitrogen	NS	MG/L	58	36	0.16	2.52	0.751	0	MW-22-008
Total Organic Carbon (TOC)	NS	MG/L	160	121	0.51	77.4	3.63	0	MW-22-003

ARAR = Applicable or Relevant and Appropriate Requirement
NS = No standard
UG/L = Micrograms per liter
MG/L = Milligrams per liter
C.U. = Color Units

TABLE 2
LANDFILL 022 MANN-KENDALL TREND ANALYSIS
FOR SELECTED ANALYTES (DECEMBER 1995 - DECEMBER 2003)

LOCID: MW-02-016

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	9	3	10	0.179	No Trend
Arsenic	WG	MET	9	2	-1	0.54	No Trend
Iron	WG	MET	31	31	-105	0.038	Downward Trend
Manganese	WG	MET	31	31	-46	0.229	No Trend
Sodium	WG	MET	31	31	111	0.031	Upward Trend
Thallium	WG	MET	9	2	9	0.238	No Trend

LOCID: MW-22-001

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	9	2	9	0.238	No Trend
Arsenic	WG	MET	9	2	11	0.179	No Trend
Iron	WG	MET	33	29	-90	0.085	Downward Trend
Manganese	WG	MET	32	30	-159	0.005	Downward Trend
Sodium	WG	MET	31	31	216	No Value	
Thallium	WG	MET	9	1	2	0.46	No Trend

LOCID: MW-22-002

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	9	4	8	0.238	No Trend
Arsenic	WG	MET	9	1	8	0.238	No Trend
Iron	WG	MET	32	31	-302	No Value	
Manganese	WG	MET	31	31	-298	No Value	
Sodium	WG	MET	31	31	144	0.007	Upward Trend
Thallium	WG	MET	9	3	9	0.238	No Trend

LOCID: MW-22-003

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	9	1	2	0.46	No Trend
Arsenic	WG	MET	9	1	4	0.381	No Trend
Iron	WG	MET	31	31	53	0.19	No Trend
Manganese	WG	MET	31	28	34	0.295	No Trend
Sodium	WG	MET	31	31	67	0.132	No Trend
Thallium	WG	MET	9	2	7	0.306	No Trend

TABLE 2
LANDFILL 022 MANN-KENDALL TREND ANALYSIS
FOR SELECTED ANALYTES (DECEMBER 1995 - DECEMBER 2003)

LOCID: MW-22-004

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	8	3	2	0.452	No Trend
Arsenic	WG	MET	8	0		No Detections	
Iron	WG	MET	8	8	6	0.274	No Trend
Manganese	WG	MET	8	8	-1	0.548	No Trend
Sodium	WG	MET	8	8	10	0.138	No Trend
Thallium	WG	MET	8	0		No Detections	

LOCID: MW-22-005

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	9	4	9	0.238	No Trend
Arsenic	WG	MET	9	1	8	0.238	No Trend
Iron	WG	MET	31	31	93	0.059	Upward Trend
Manganese	WG	MET	31	28	56	0.181	No Trend
Sodium	WG	MET	31	31	-57	0.172	No Trend
Thallium	WG	MET	9	1	6	0.306	No Trend

LOCID: MW-22-006

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	8	3	6	0.274	No Trend
Arsenic	WG	MET	8	1	7	0.274	No Trend
Iron	WG	MET	8	8	12	0.089	Upward Trend
Manganese	WG	MET	8	7	8	0.199	No Trend
Sodium	WG	MET	8	8	0	0.548	No Trend
Thallium	WG	MET	8	0		No Detections	

LOCID: MW-22-007

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	9	3	1	0.54	No Trend
Arsenic	WG	MET	9	2	-3	0.46	No Trend
Iron	WG	MET	31	31	-115	0.026	Downward Trend
Manganese	WG	MET	31	31	-2	0.5	No Trend
Sodium	WG	MET	31	31	53	0.19	No Trend
Thallium	WG	MET	9	2	7	0.306	No Trend

TABLE 2
LANDFILL 022 MANN-KENDALL TREND ANALYSIS
FOR SELECTED ANALYTES (DECEMBER 1995 - DECEMBER 2003)

LOCID: MW-22-008

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	9	4	14	0.09	Upward Trend
Arsenic	WG	MET	9	1	-6	0.306	No Trend
Iron	WG	MET	9	9	-12	0.13	No Trend
Manganese	WG	MET	9	9	-6	0.306	No Trend
Sodium	WG	MET	9	9	16	0.06	Upward Trend
Thallium	WG	MET	9	0		No Detections	

LOCID: MW-22-009

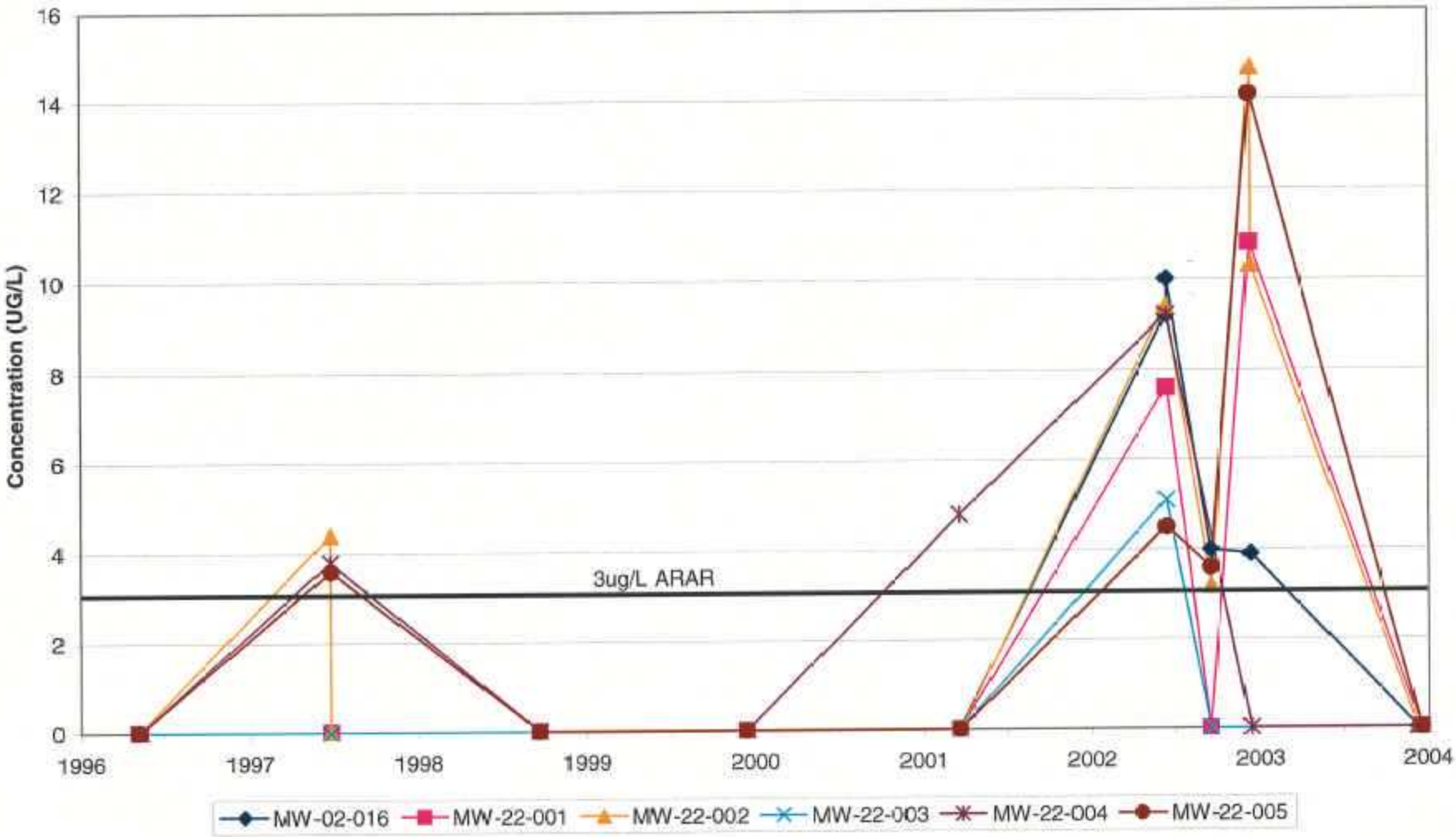
Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	8	3	5	0.36	No Trend
Arsenic	WG	MET	8	1	7	0.274	No Trend
Iron	WG	MET	8	8	14	0.054	Upward Trend
Manganese	WG	MET	8	8	10	0.138	No Trend
Sodium	WG	MET	8	8	16	0.031	Upward Trend
Thallium	WG	MET	8	0		No Detections	

LOCID: MW-22-010

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	8	3	4	0.36	No Trend
Arsenic	WG	MET	8	1	7	0.274	No Trend
Iron	WG	MET	8	8	6	0.274	No Trend
Manganese	WG	MET	8	8	16	0.138	Upward Trend
Sodium	WG	MET	8	8	14	0.054	Upward Trend
Thallium	WG	MET	8	2	8	0.199	No Trend

For multiple observations per time period, the Mann-Kendall test to the median was used.
Data reported as less than the detection limit were used by assigning a common value to the data that was smaller than the smallest measurement in the data set.
(1) - Probabilities for Mann-Kendall Nonparameteric Test for Trend (Gilbert R.O. 1987, Table A18).
(2) - Assuming a probability of error of 10% in the analysis method and or data, when the probability of no trend as calculated by the Mann-Kendall statistic is less than 10%, then it is assumed that there is a trend.

Landfill 022
Antimony Concentrations Over Time
Monitoring Wells



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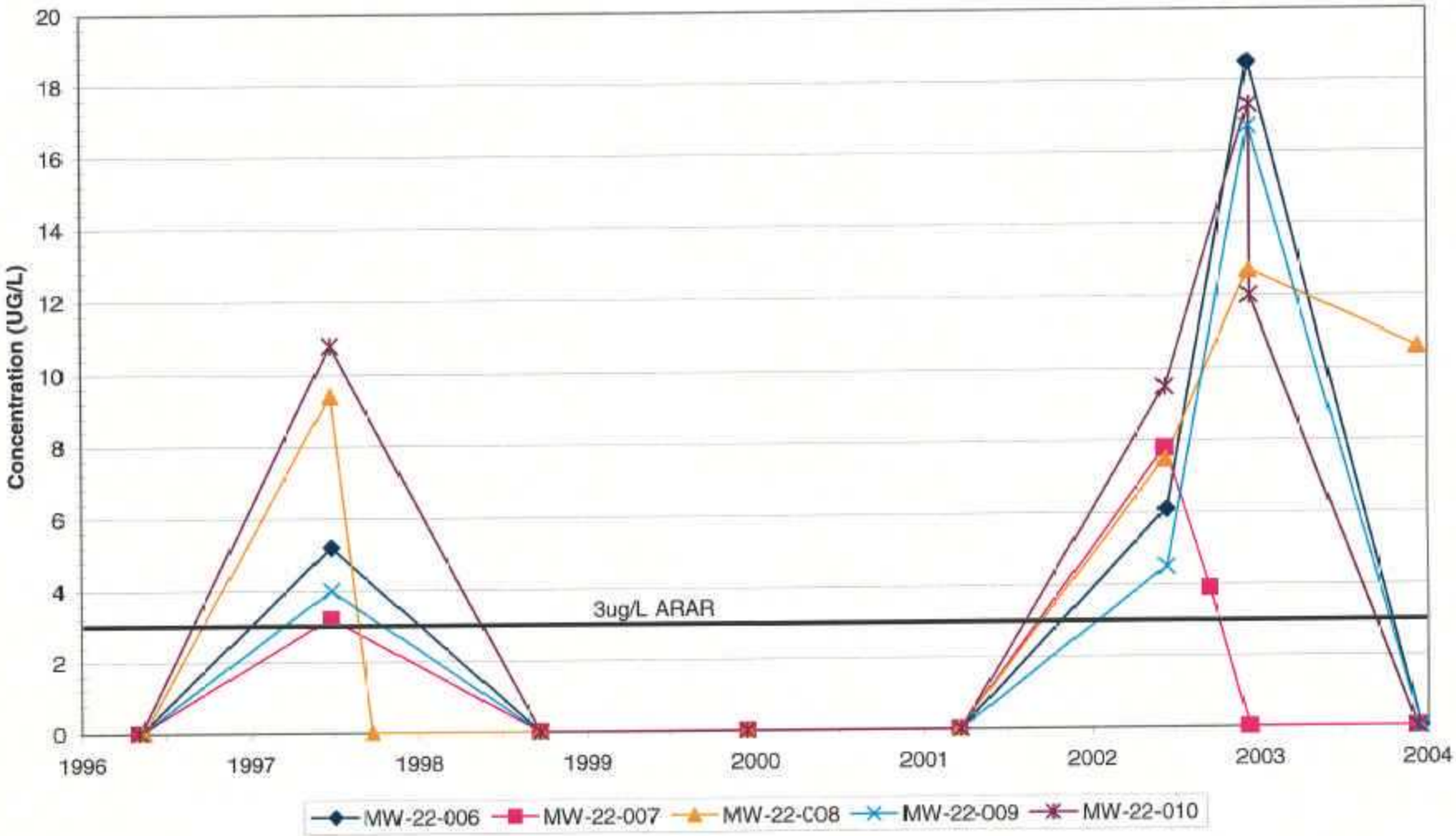
MW02-16-MW22-05_antimony_Dec_1996-2003, Antimony plot, 5/21/2004

Landfill 022
Antimony Concentrations Over Time
Monitoring Wells



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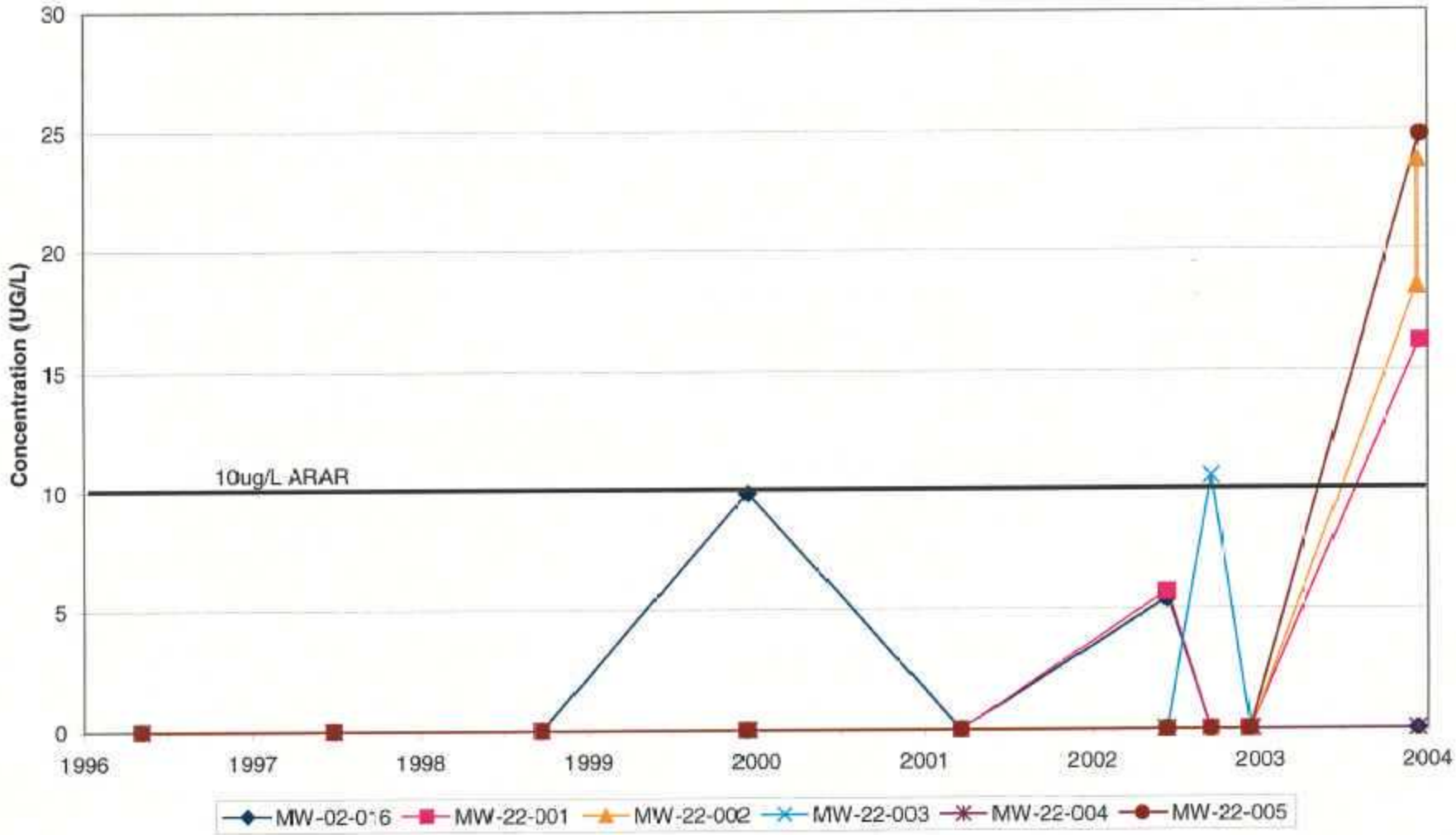
MW22-006-MW22-010_antimony_Dec_1995-2003, Antimony-plot, 5/21/2004

Landfill 022
Arsenic Concentrations Over Time
Monitoring Wells



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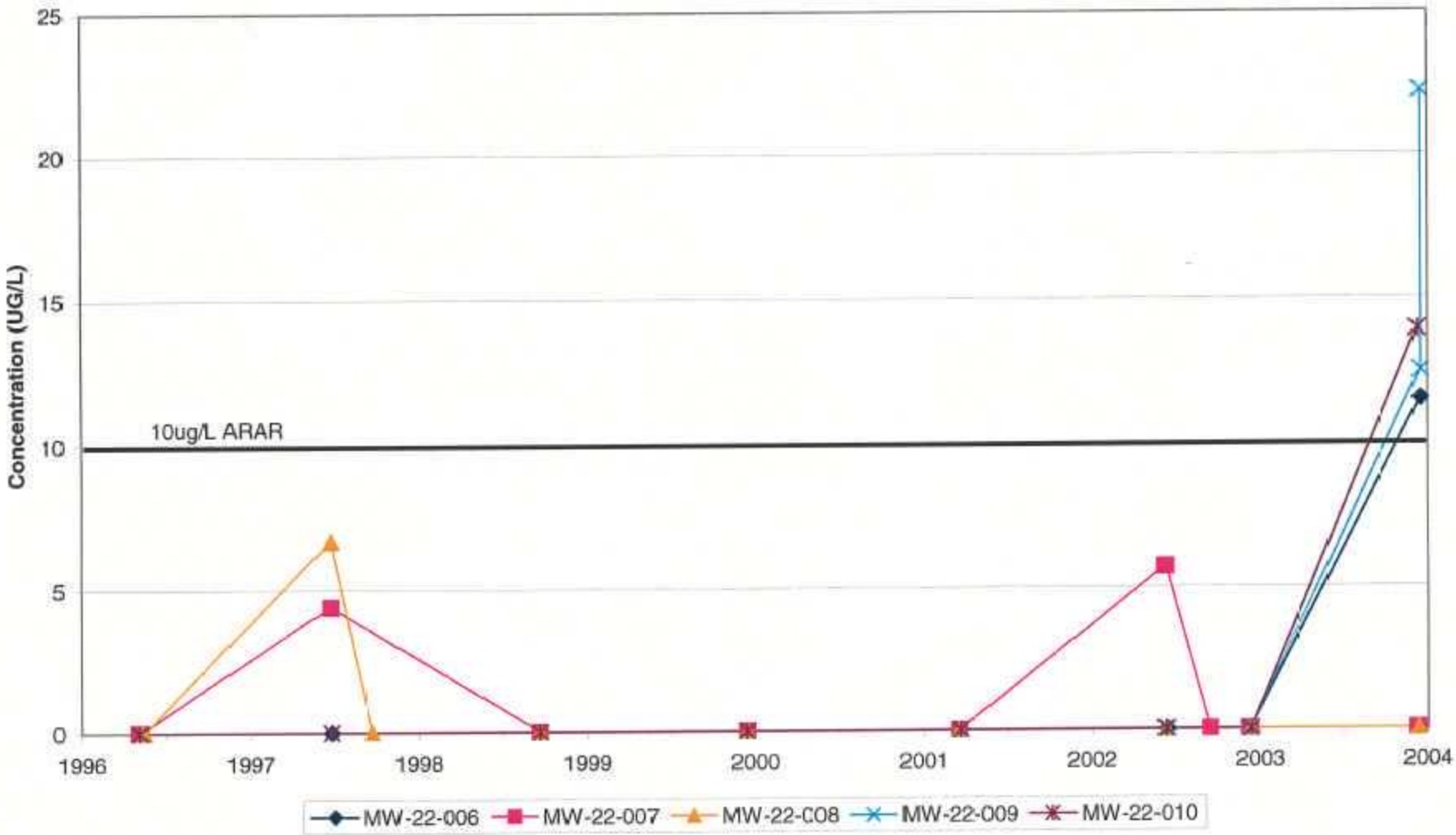
RIW02-16-MW22-05_arsenic_Dec_1995-2003, Arsenic-plot, 5/21/2004

Landfill 022
Arsenic Concentrations Over Time
Monitoring Wells



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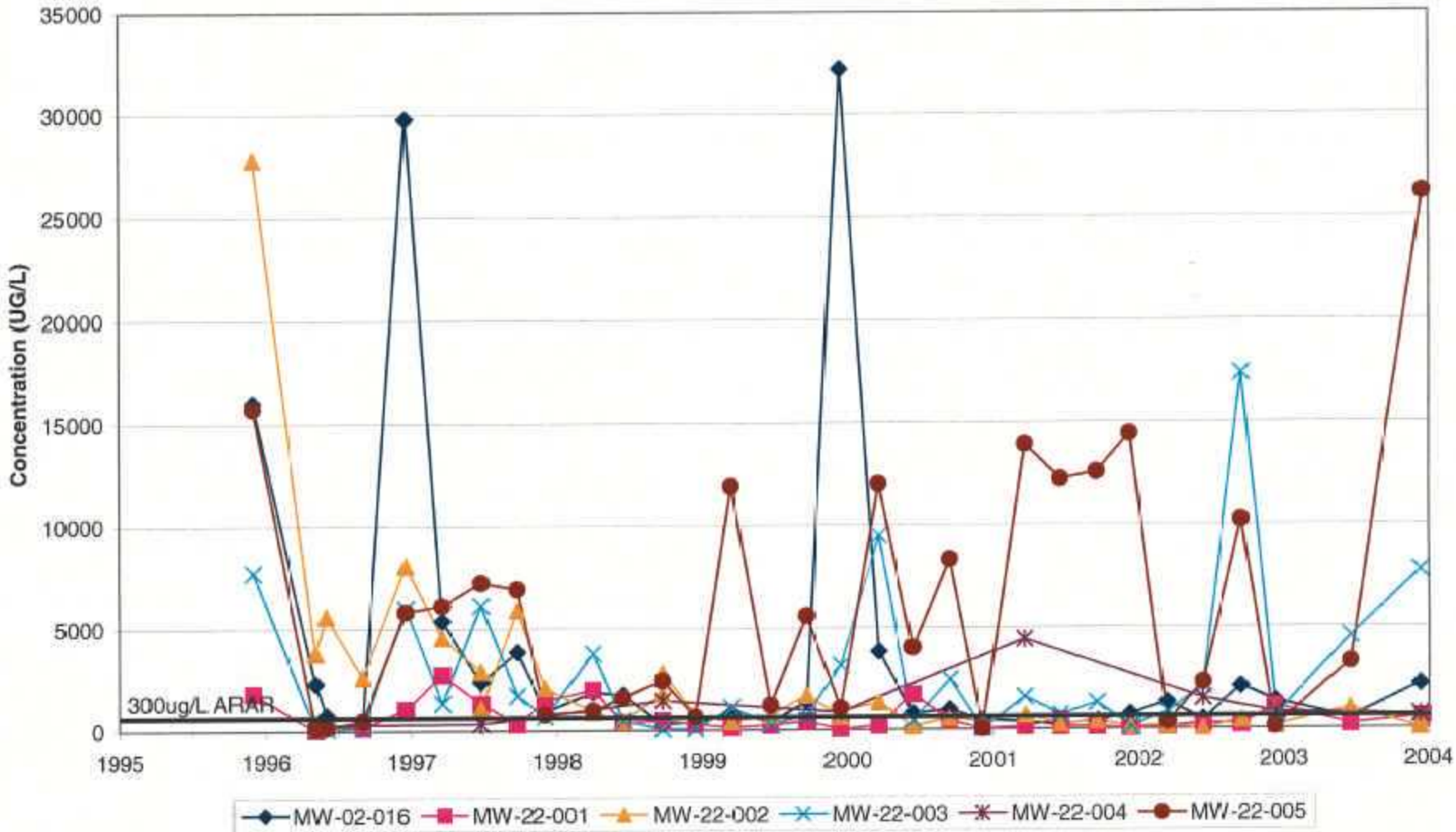
Landfill 022
Iron Concentrations Over Time
Monitoring Wells



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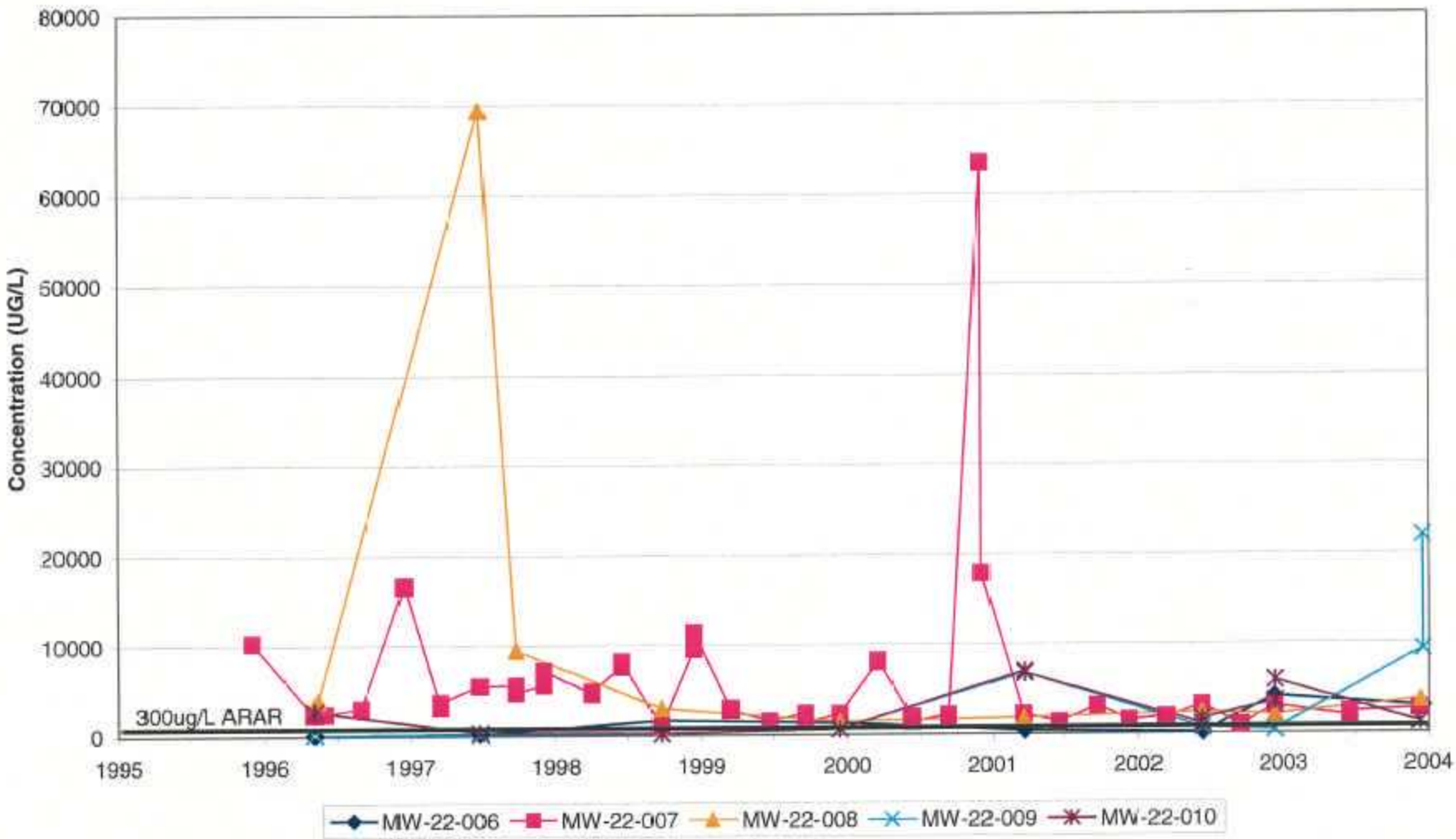
Landfill 022
Iron Concentrations Over Time
Monitoring Wells



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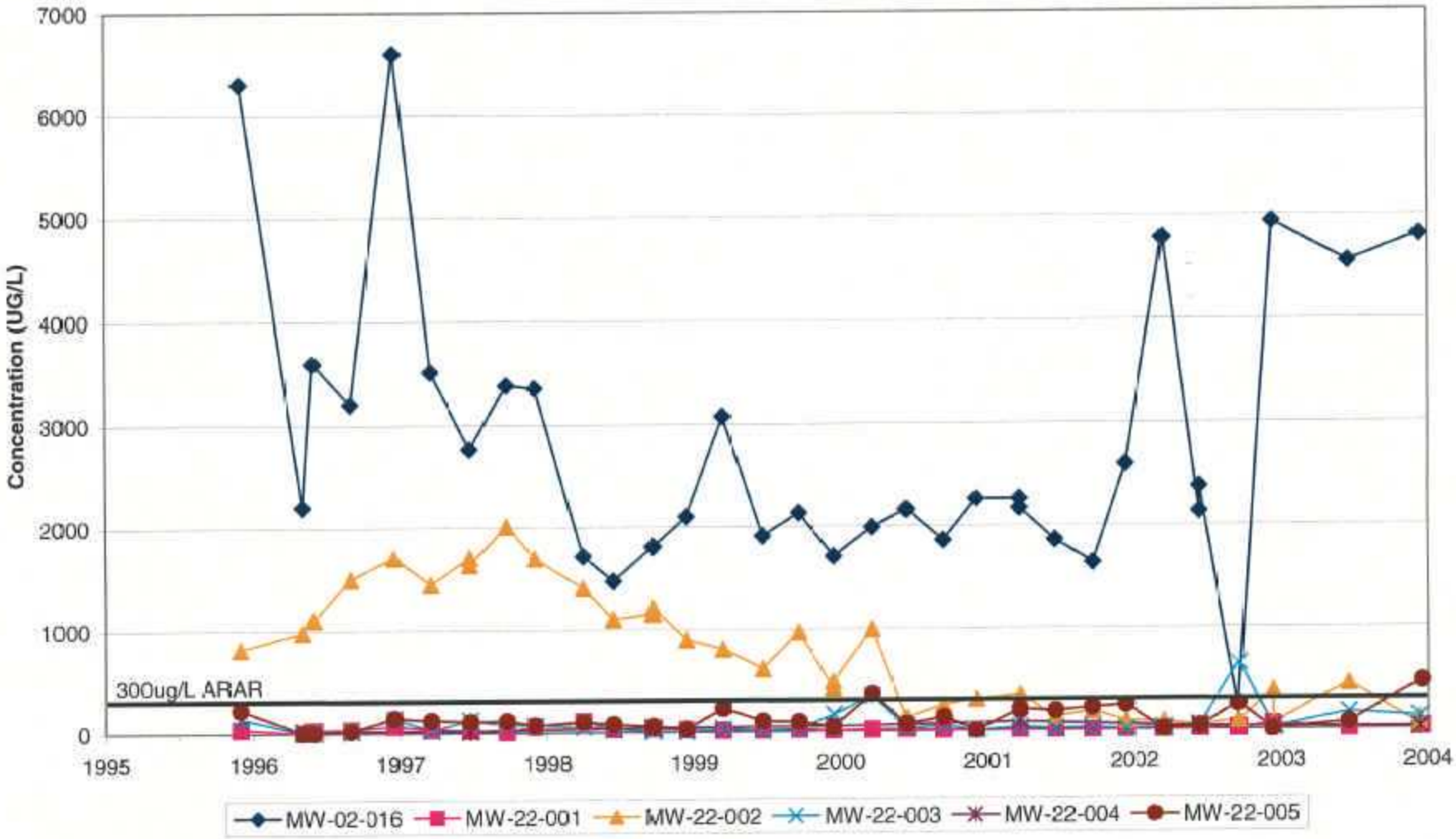
Landfill 022
Manganese Concentrations Over Time
Monitoring Wells



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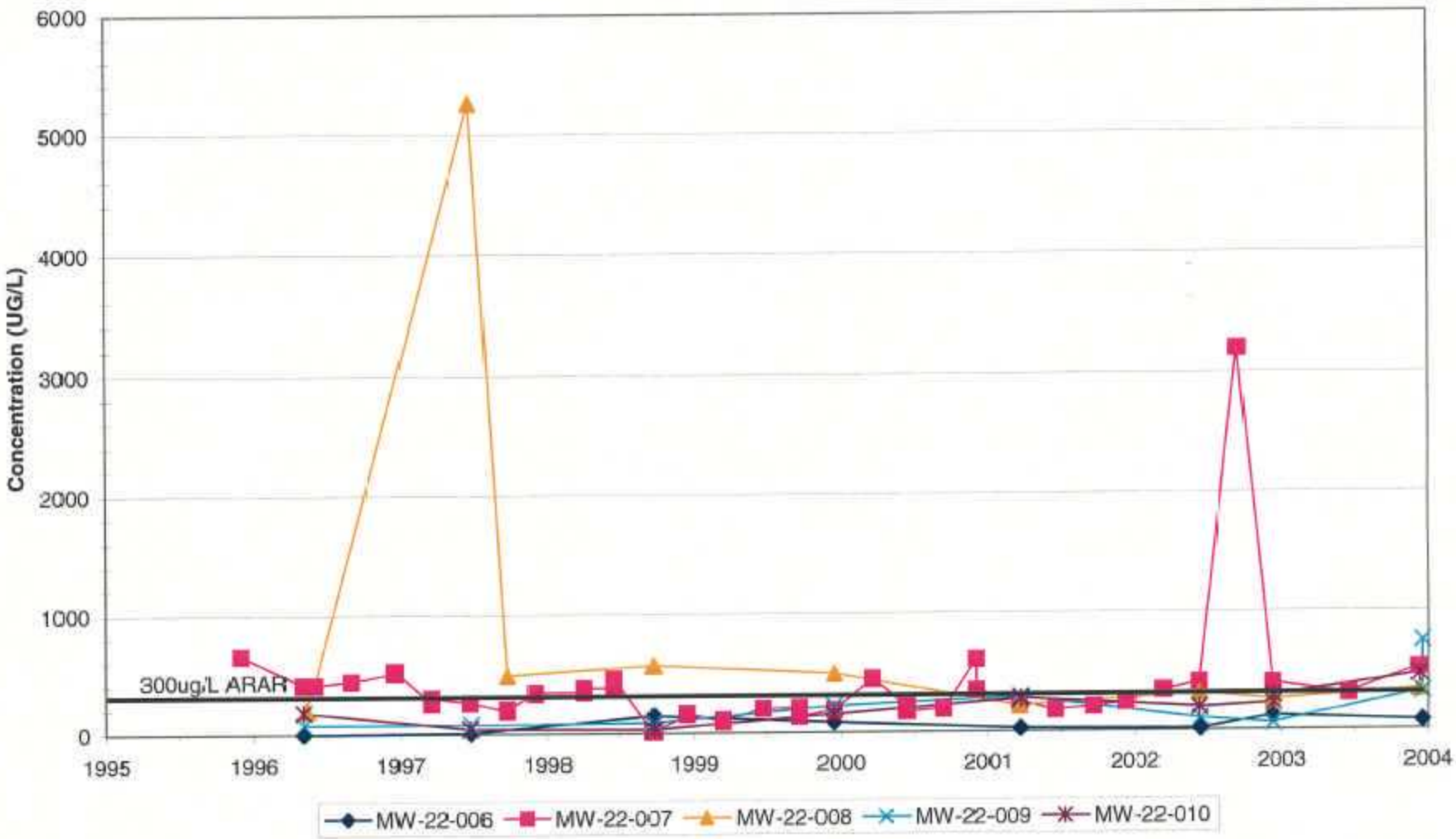
MW02-16-MW22-05, manganese_Dec_1995-2003, Manganese-plot, 5/21/2004

Landfill 022
Manganese Concentrations Over Time
Monitoring Wells



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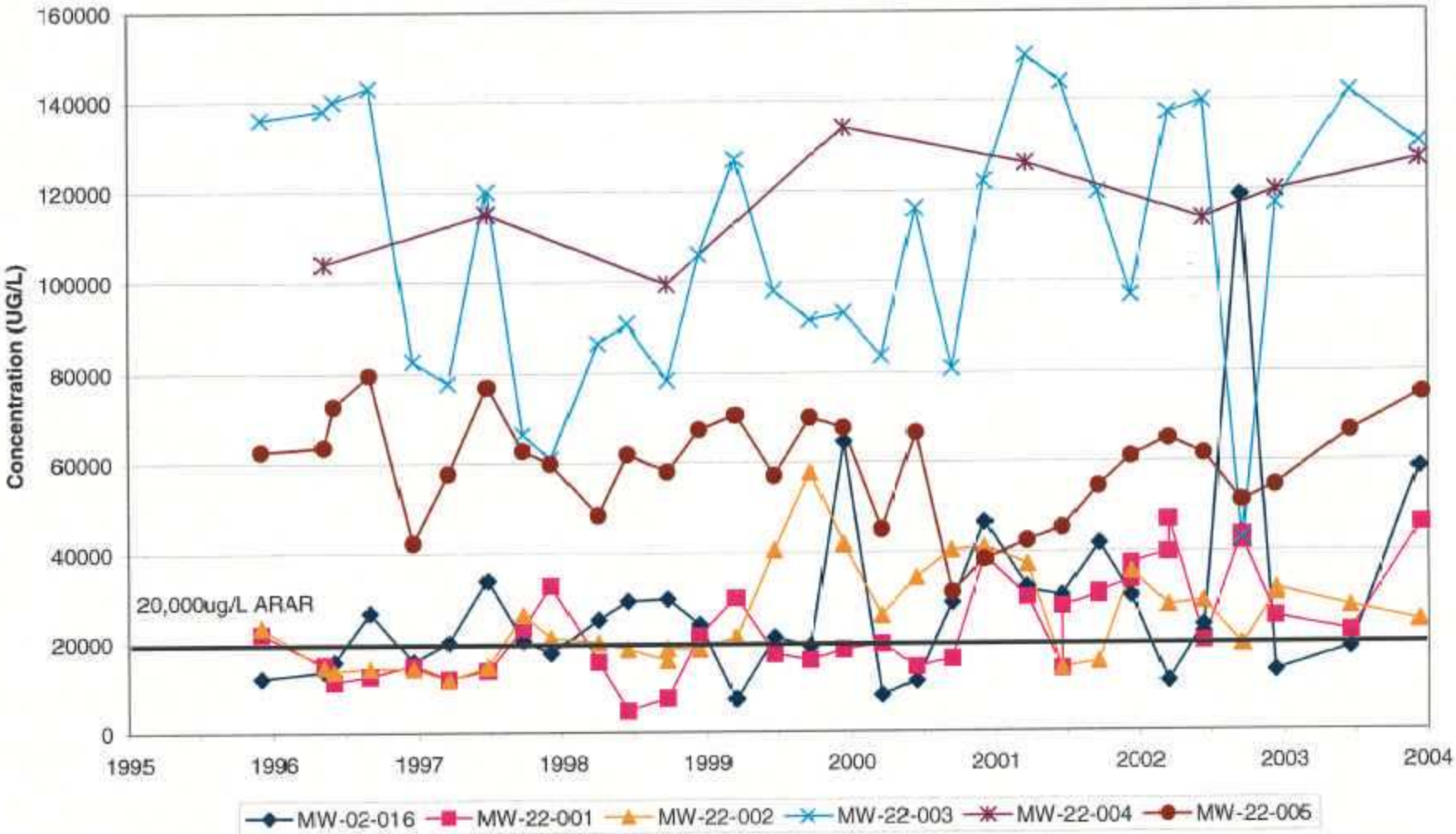
Landfill 022
Sodium Concentrations Over Time
Monitoring Wells



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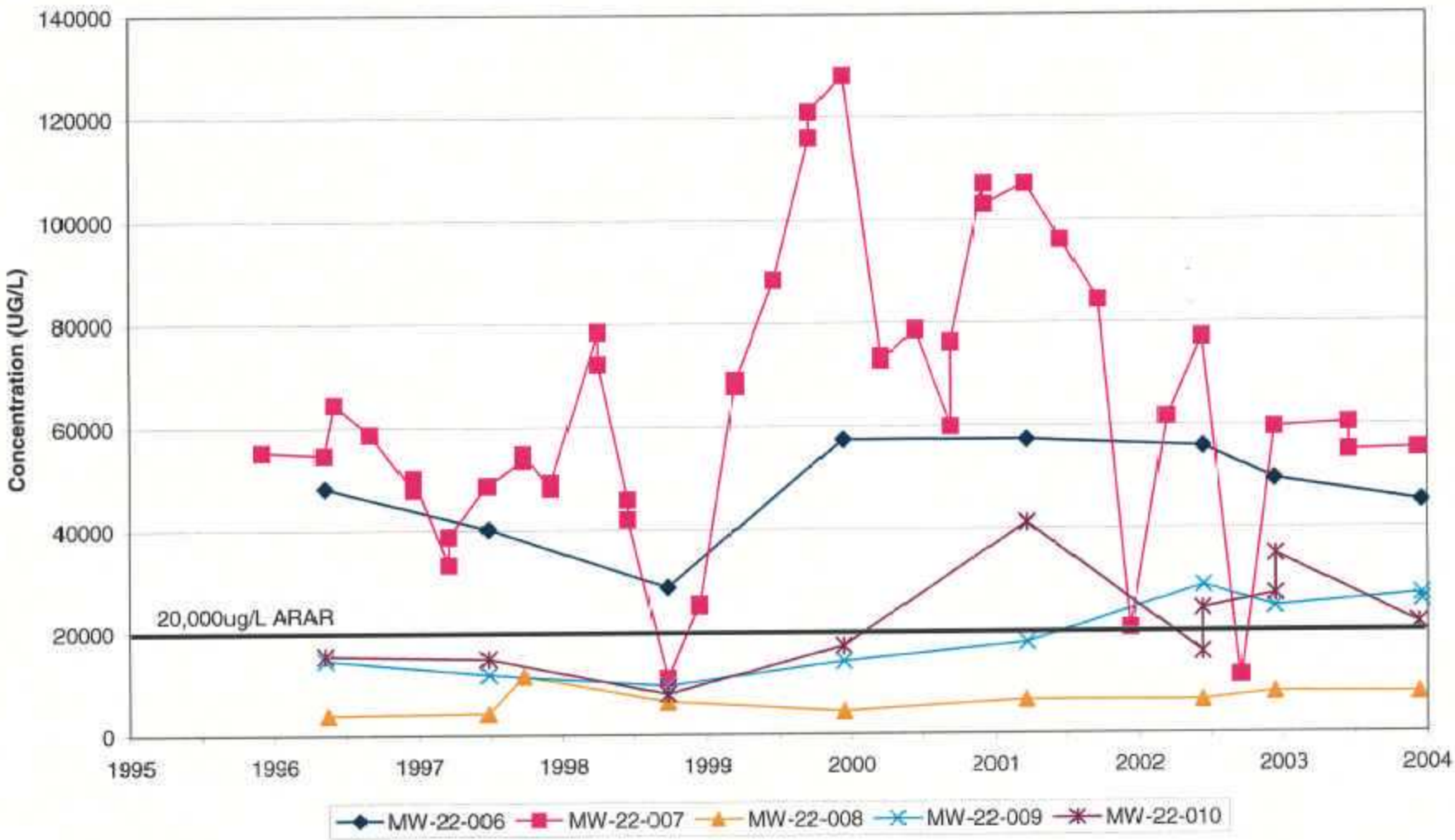
Landfill 022
Sodium Concentrations Over Time
Monitoring Wells



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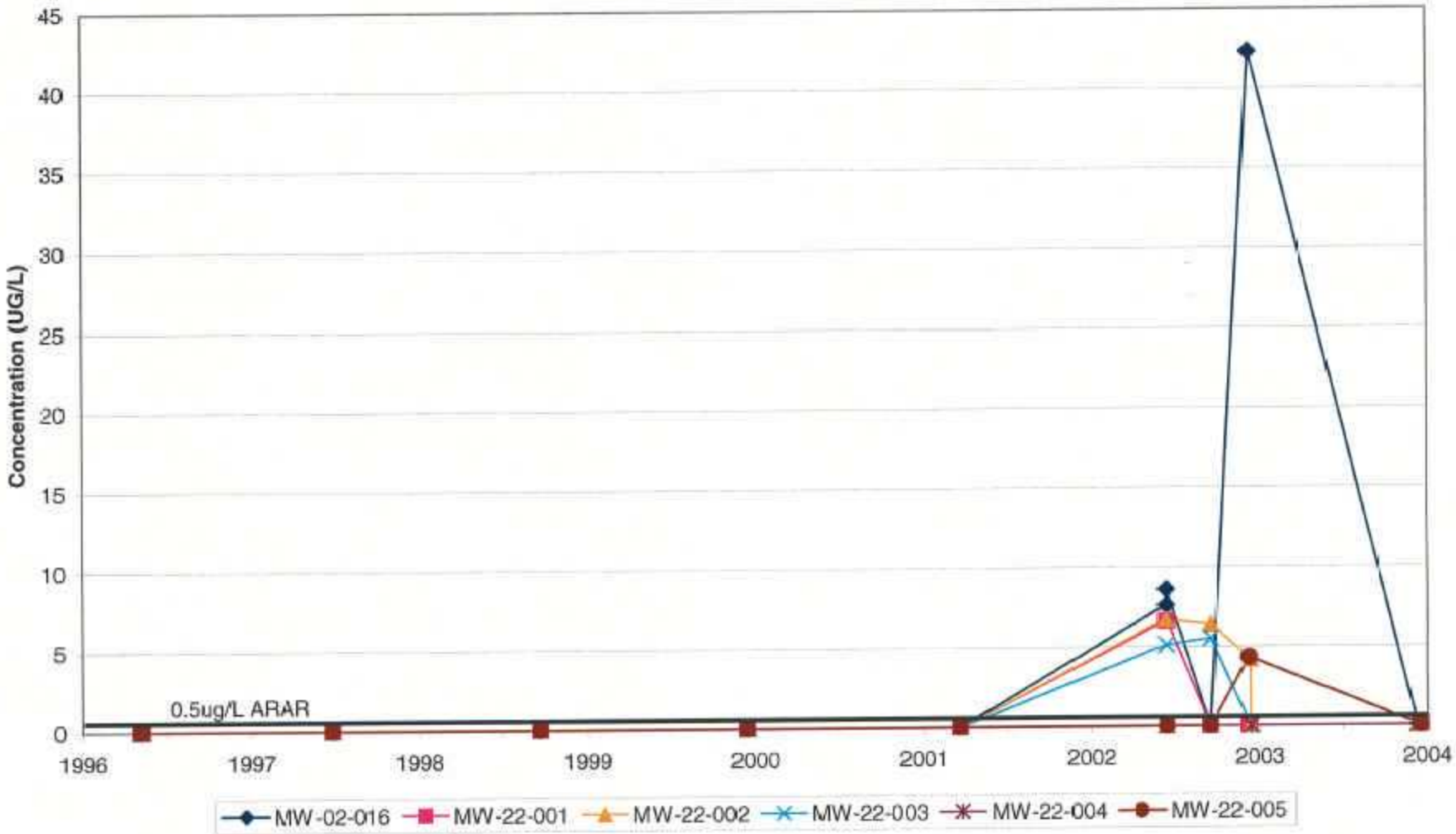
Landfill 022
Thallium Concentrations Over Time
Monitoring Wells



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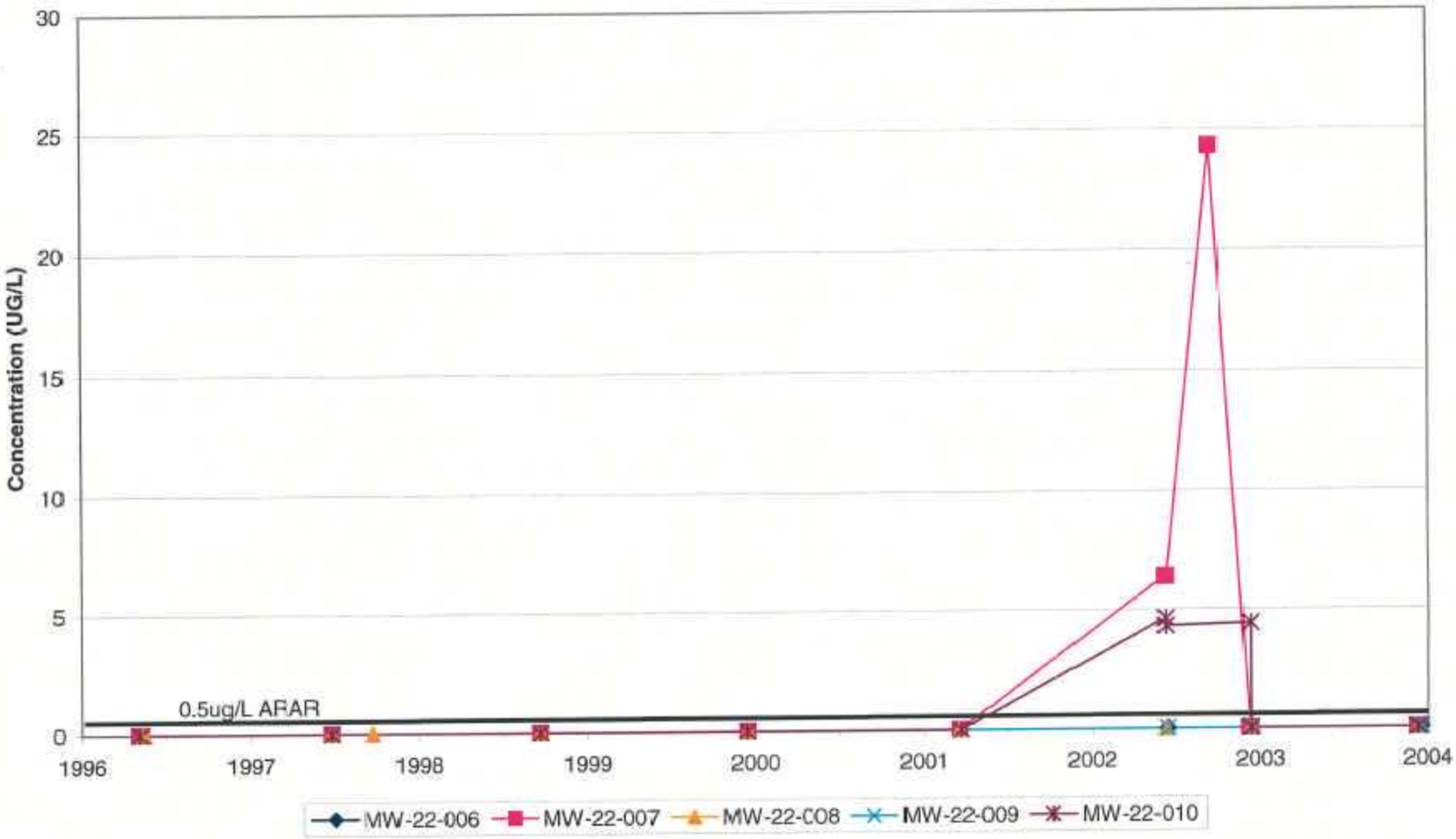
Landfill 022
Thallium Concentrations Over Time
Monitoring Wells



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MW22-006-MW22-010_thallium_Dec_1995-2003, Thallium-plot, 5/21/2004

EVALUATION OF POST-CLOSURE O&M GROUNDWATER MONITORING DATA FOR LANDFILL LF-023

The previous Five-Year Review Report for PAFB specifically recommended an evaluation of the O&M monitoring data for former base landfill LF-023 (Figure I). This landfill received domestic wastes and construction debris from 1966 to 1981. Depth of fill was up to 30 feet. Soil and fill are contaminated with metals, organics, and PCBs.

The ROD for this OU was signed in September 1992. The remedy selected was “Installation of a Low Permeability Barrier Cover System" meeting the requirements of 6 NYCRR Part 360. The remedy also included groundwater monitoring for a period of thirty years. Construction of the LF-023 remedy was completed in September 1994. Post-closure groundwater monitoring at the site began in December 1995 and has been completed quarterly since that time, [The four Group B wells were monitored for the first time in April 1996,] Analytical data from December 1995 through January 2004 were examined to evaluate contaminant concentrations in groundwater. Samples from 13 Group A monitoring wells (MW-23-001 through -013) were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), Target Analyte List (TAL) metals, and other miscellaneous compounds (some of the Group A parameters are only analyzed once per year). Groundwater samples collected from four Group B wells (MW-23-101 through -104) and two surface water locations (SW-23-001 and -002) were analyzed for a more limited list of VOCs, semivolatile organic compounds (SVOCs), and metals.

The evaluation of this sites’ O&M groundwater sampling analytical data involved several steps. Detected analytes were tabulated, detected concentrations were statistically summarized, and the data were compared to applicable groundwater ARARs (see Table 1). Analytes that were frequently detected at concentrations exceeding their respective groundwater ARARs were also viewed graphically to verify contaminant trends (see attached Graphs). The results of the data evaluation are discussed below.

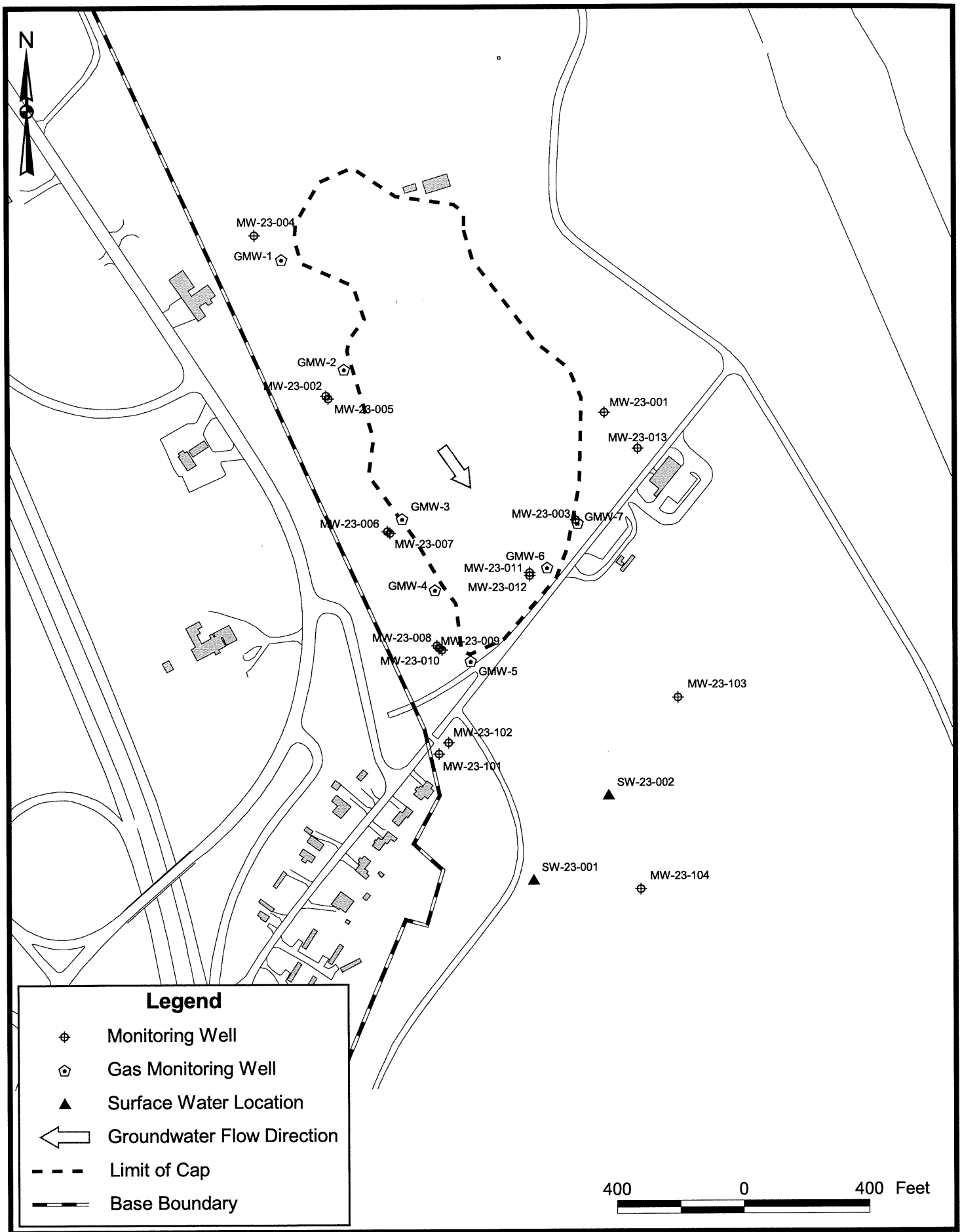
In the Group A wells, five petroleum-related VOCs (benzene, ethylbenzene, isopropylbenzene, toluene, and xylene), nine metals (antimony, arsenic, chromium, iron, manganese, nickel, selenium, sodium, and thallium), and two miscellaneous compounds (bromide, ammonia) have been frequently detected at concentrations that exceed their respective groundwater standards.

The petroleum-related VOCs that are present at concentrations exceeding their respective groundwater standards are detected primarily in an upgradient monitoring well cluster MW-23-008, -009, and -010) near the southern end of LF-023 and are attributable to an off-base, upgradient gasoline spill source. Arsenic, iron, and manganese data indicate enrichment in wells downgradient of LF-023 and appear to be attributable to leaching from LF-023 fill (see attached Graphs). Ammonia-nitrogen in downgradient groundwater also appears to be landfill derived, but concentrations in downgradient wells have exhibited a notable downward trend since O&M sampling began. Nickel, selenium, and thallium groundwater ARAR exceedances appear to occur sporadically in groups of upgradient and downgradient wells and then concentrations drop off to near non-detectable levels; the presence of these metals can not be conclusively attributed to LF-023. Antimony, chloride, chromium, and sodium concentrations appear to be higher in upgradient wells as compared to the downgradient wells. No bromide ARAR exceedances have occurred since the end of 1997.

The only groundwater ARAR exceedances in the Group B downgradient wells (MW-23-103 and MW-23-104) have been sporadic bis(2-ethylhexyl)phthalate detections. Bis(2-ethylhexyl)phthalate is recognized as a common sampling/laboratory contaminant. The Group B downgradient wells (MW-23-101 and MW-23-102), which were installed as sentry wells to monitor potential impacts to nearby residential groundwater users, have had sporadic

chloroform (due to residual chlorinated drilling water), bis(2-ethylhexyl)phthalate, and arsenic ARAR exceedances. Arsenic exceedances have occurred in both sentry wells in two of the last three sampling events; arsenic concentrations in these wells will be watched closely in the future.

In the downgradient surface water samples (SW-23-001 and SW-23-002), bis(2-ethylhexyl)phthalate, copper, and nickel have been sporadically detected at concentrations exceeding their respective Class D surface water ARARs. Chromium, zinc, and phenols have been detected m a greater number of samples at concentration exceeding their respective ARARs and iron concentrations have exceeded ARARs in all samples collected. Most of the compounds exceeding ARARs in the surface water samples have not been identified as groundwater contaminants attributable to LF-023.



URS

PLATTSBURGH AFB - LF-023
SITE PLAN

FIGURE 1

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4/5/2004

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-023 (GROUP A WELLS)
DECEMBER 1995 - JANUARY 2004

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Volatile Organic Compounds									
1,2-Dichlorobenzene	3	UG/L	112	8	0.12	1.3	0.33	0	MW-23-003
1,2-Dichloroethene (cis)	5	UG/L	98	5	0.11	0.46	0.282	0	MW-23-003
1,4-Dichlorobenzene	3	UG/L	112	12	0.45	5.6	1.69	2	MW-23-003
Acetone	50	UG/L	94	1	6.28	6.28	6.28	0	MW-23-009
Benzene	1	UG/L	112	19	0.32	22	2.77	10	MW-23-008
Chlorobenzene	5	UG/L	112	15	0.41	8	2.77	4	MW-23-011
Chloroethane	5	UG/L	112	6	0.42	1.6	0.758	0	MW-23-001
Chloroform	7	UG/L	112	1	3.46	3.46	3.46	0	MW-23-008
Chloromethane	5	UG/L	112	1	1.6	1.6	1.6	0	MW-23-008
Cyclohexane	NS	UG/L	42	19	0.09	94.2	41.61	0	MW-23-008
Dichlorodifluoromethane	5	UG/L	42	3	0.16	0.96	0.603	0	MW-23-003
Ethylbenzene	5	UG/L	112	32	0.28	3900	991	30	MW-23-008
Isopropylbenzene (Cumene)	5	UG/L	42	23	0.07	87.6	34.15	14	MW-23-008
Methyl tert-butyl ether	10	UG/L	55	3	0.46	3.2	1.44	0	MW-23-002
Methylcyclohexane	NS	UG/L	42	19	0.17	49.9	22.83	0	MW-23-008
Methylene chloride	5	UG/L	112	1	11	11	11	1	MW-23-009
Toluene	5	UG/L	112	331	0.17	3300	539.7	25	MW-23-008
Trichloroethene	5	UG/L	112	4	0.11	0.25	0.183	0	MW-23-001
Trichlorofluoromethane	5	UG/L	112	3	0.45	0.63	0.523	0	MW-23-010
Vinyl chloride	2	UG/L	112	10	0.37	3.8	1.78	5	MW-23-001
Xylene (total)	5	UG/L	112	29	0.22	9340	1856	27	MW-23-008
Total Metals									
Aluminum	NS	UG/L	112	83	9.6	6634	402.9	0	MW-23-013
Antimony	3	UG/L	117	27	2.6	44	7.55	24	MW-23-001

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-023 (GROUP A WELLS)
DECEMBER 1995 - JANUARY 2004

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Arsenic	10	UG/L	117	34	3.7	668	31.11	19	MW-23-001
Barium	1000	UG/L	117	109	5.9	741	29.09	0	MW-23-001
Beryllium	3	UG/L	117	18	0.1	16	1.41	1	MW-23-001
Boron	NS	UG/L	104	57	4.9	202	37.24	0	MW-23-001
Cadmium	5	UG/L	429	68	0.27	17	1.54	1	MW-23-001
Calcium	NS	UG/L	421	421	5680	150000	63800	0	MW-23-001
Chromium	50	UG/L	116	103	0.7	4811	240.6	40	MW-23-006
Cobalt	NS	UG/L	117	45	0.62	186	11.39	0	MW-23-001
Copper	200	UG/L	117	50	1.8	112	15.38	0	MW-23-006
Iron	300	UG/L	429	424	19.8	64800	8288	361	MW-23-003
Lead	15	UG/L	429	152	1	151	8.22	12	MW-23-004
Magnesium	35000	UG/L	429	429	2590	160000	19400	2	MW-23-002
Manganese	300	UG/L	428	417	1.1	21800	787.4	173	MW-23-008
Mercury	0.7	UG/L	91	4	0.16	1.6	0.565	1	MW-23-007
Nickel	100	UG/L	115	87	1.1	899	56.22	14	MW-23-010
Potassium	NS	UG/L	418	417	700	52400	5326	0	MW-23-007
Selenium	10	UG/L	110	25	45	537	35.44	18	MW-23-001
Silver	50	UG/L	117	8	1.2	14	4.69	0	MW-23-001
Sodium	20000	UG/L	427	427	2620	262000	70200	308	MW-23-008
Thallium	0.5	UG/L	117	38	4.1	624	30.61	38	MW-23-001
Vanadium	NS	UG/L	117	33	1.2	170	11.46	0	MW-23-001
Zinc	2000	UG/L	91	86	2.2	367	22.76	0	MW-23-009
Miscellaneous Parameters									
Alkalinity	NS	MG/L	247	245	40	583	187.2	0	MW-23-003
Biochemical Oxygen Demand (BOD)	NS	MG/L	228	131	2	228	9.29	0	MW-23-003

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-023 (GROUP A WELLS)
DECEMBER 1995 - JANUARY 2004

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Bromide	2	MG/L	232	47	0.06	8.1	2.64	24	MW-23-008
Chemical Oxygen Demand (COD)	NS	MG/L	241	125	2.3	140	23.18	0	MW-23-007
Chloride	250	MG/L	247	247	6	407	128.2	29	MW-23-008
Color	NS	C.U.	91	66	1	150	24.5	0	MW-23-003
Cyanide	0.2	MG/L	91	3	0.005	0.038	0.018	0	MW-23-006
Hardness	NS	MG/L	260	260	57.2	550	233.9	0	MW-23-008
Hexavalent Chromium	NS	MG/L	91	15	0.004	56.6	6.49	0	MW-23-002
Nitrate-Nitrogen	10	MG/L	247	149	0.03	6.9	1.01	0	MW-23-002
Ammonia, Nitrogen (As N)	2	MG/L	244	126	0.041	18.5	2.93	49	MW-23-003
Phenolics, Total Recoverable	NS	MG/L	219	85	0.001	0.64	0.014	0	MW-23-009
Sulfate (as SO4)	250	MG/L	247	227	2.26	105	20.24	0	MW-23-007
Total Dissolved Solids	NS	MG/L	243	243	115	1180	446.2	0	MW-23-009
Total Kjeldahl Nitrogen	NS	MG/L	163	224	0.05	18	2.38	0	MW-23-003
Total Organic Carbon (TOC)	NS	MG/L	171	243	0.56	27.4	4.07	0	MW-23-011

ARAR = Applicable or Relevant and Appropriate Requirement
NS = No standard
UG/L = Micrograms per liter
MG/L = Milligrams per liter
C.U. = Color Units

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-023 (GROUP B DOWNGRADIENT WELLS)
DECEMBER 1995 - JANUARY 2004

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Volatile Organic Compounds									
1,1-Dichloroethane	50	UG/L	63	6	0.09	0.16	0.122	0	MW-23-103
1,1-Dichloroethene	50	UG/L	63	1	2	2	2	0	MW-23-104
Benzene	60	UG/L	69	53	0.13	8	2.58	0	MW-23-103
Chlorobenzene	50	UG/L	69	32	2.25	15	6.22	0	MW-23-103
Chloroethane	50	UG/L	63	11	0.21	2	0.638	0	MW-23-103
Chloroform	70	UG/L	69	4	0.36	5	2.84	0	MW-23-103
Ethylbenzene	50	UG/L	69	12	0.08	6	1.45	0	MW-23-103
Methyl tert-butyl ether	100	UG/L	59	20	0.83	21.2	8.9	0	MW-23-103
Vinyl chloride	20	UG/L	63	21	0.84	7	2.8	0	MW-23-103
Xylene (total)	50	UG/L	69	18	0.31	13	3.61	0	MW-23-103
Semivolatile Organic Compounds									
bis(2-Ethylhexyl)phthalate	6	UG/L	65	10	0.3	13.2	5.48	5	MW-23-103
Naphthalene	100	UG/L	65	7	0.2	2	1.04	0	MW-23-103
Total Metals									
Arsenic	380	UG/L	65	35	3.5	102	20.01	0	MW-23-103
Chromium	412	UG/L	65	44	0.86	41.5	6.89	0	MW-23-104
Nickel	190	UG/L	65	47	1.1	35.7	11.47	0	MW-23-104
Potassium	NS	UG/L	2	2	1560	21200	11400	0	MW-23-103
Zinc	165	UG/L	62	52	4	117	26.54	0	MW-23-104
Filtered Metals									
Zinc	165	UG/L	5	5	17.5	29.4	23.06	0	MW-23-104

ARAR = Applicable or Relevant and Appropriate Requirement
NS = No standard
UG/L = Micrograms per liter

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-023 (GROUP B SIDEGRADIENT WELLS)
DECEMBER 1995 - JANUARY 2004

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Volatile Organic Compounds									
1,1-Dichloroethene	5	UG/L	62	1	0.13	0.13	0.13	0	MW-23-101
Chloroform	7	UG/L	68	4	0.24	25	11.31	3	MW-23-102
Methyl tert-butyl ether	10	UG/L	62	6	0.07	0.56	0.258	0	MW-23-101
Xylene (total)	5	UG/L	68	1	0.8	0.8	0.8	0	MW-23-101
Semivolatile Organic Compounds									
bis(2-Ethylhexyl)phthalate	5	UG/L	64	5	0.4	30.2	14.01	3	MW-23-102
Total Metals									
Arsenic	10	UG/L	64	7	5.1	25.5	13.87	4	MW-23-101
Chromium	50	UG/L	64	38	0.66	46.7	3.72	0	MW-23-101
Nickel	100	UG/L	64	17	1.4	24.9	4.88	0	MW-23-101
Zinc	2000	UG/L	61	46	2.4	72.7	17.26	0	MW-23-102
Filtered Metals									
Zinc	2000	UG/L	5	4	8.1	17.8	13.45	0	MW-23-102

ARAR = Applicable or Relevant and Appropriate Requirement
UG/L = Micrograms per liter

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL CLASS D SURFACE WATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-023 (SW-23-001 8 SW-23-002)
DECEMBER 1995 - JANUARY 2004

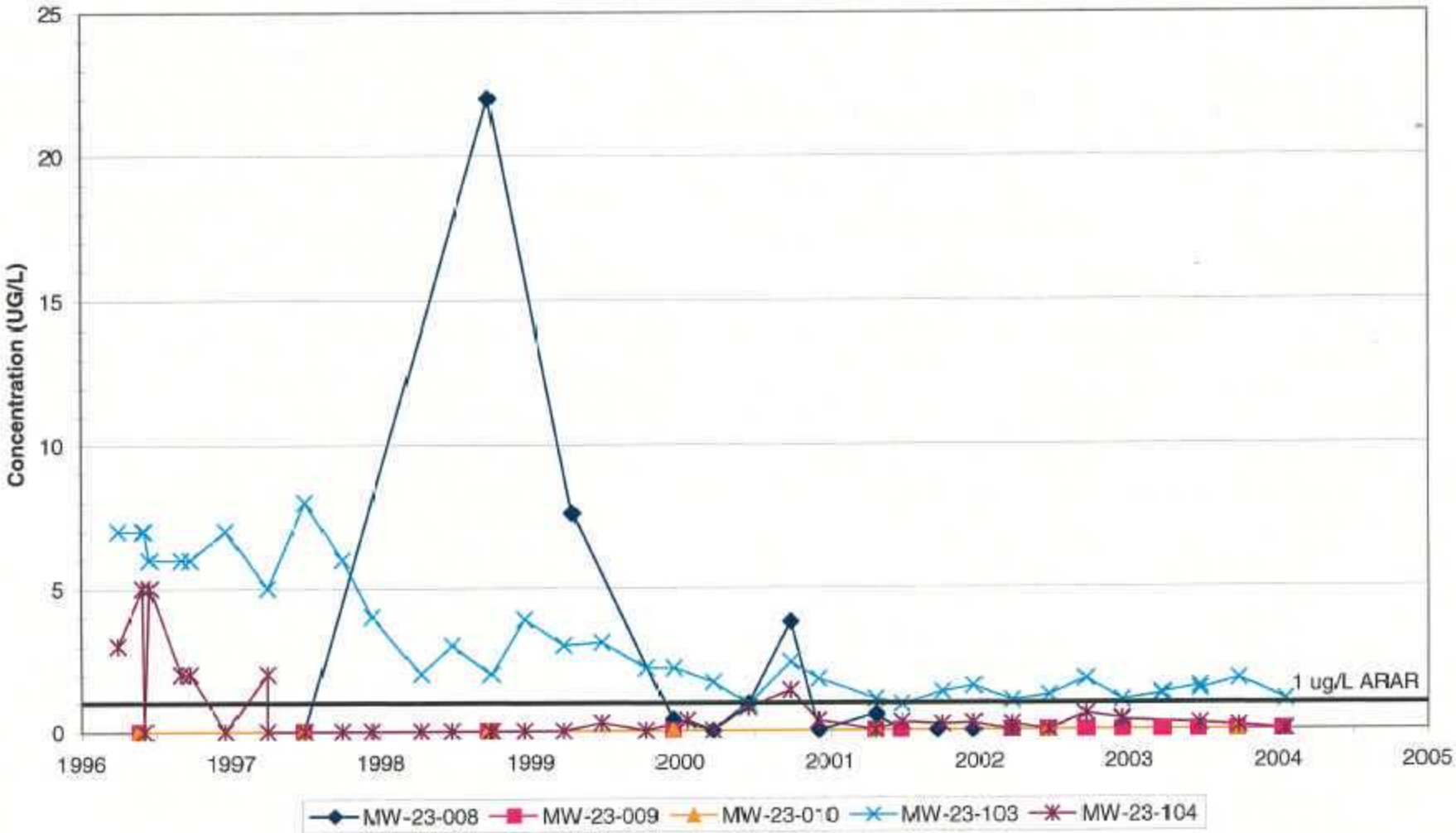
Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Volatile Organic Compounds									
Acetone	NS	UG/L	4	1	6	6	6	0	SW-23-002
Methyl tert-butyl ether	100	UG/L	19	1	0.06	0.06	0.06	0	SW-23-002
Semivolatile Organic Compounds									
bis(2-Ethylhexyl)phthalate	6	UG/L	20	3	2.88	33	16.36	2	SW-23-002
Total Metals									
Aluminum	NS	UG/L	5	5	62.2	675	268.4	0	SW-23-002
Arsenic	340	UG/L	25	5	4.7	17	8.4	0	SW-23-002
Barium	NS	UG/L	5	4	13	31.7	21.63	0	SW-23-001
Boron	NS	UG/L	5	5	48	310	156.6	0	SW-23-002
Cadmium	CALC	UG/L	25	3	0.58	2.4	1.23	0	SW-23-002
Calcium	NS	UG/L	25	25	13300	227000	76600	0	SW-23-001
Chromium	CALC	UG/L	25	15	1.5	69.4	7.29	12	SW-23-002
Copper	CALC	UG/L	5	4	5.8	12.2	9	3	SW-23-001
Iron	300	UG/L	25	25	359	318000	33700	25	SW-23-001
Lead	CALC	UG/L	25	13	2.7	230	40.95	0	SW-23-001
Magnesium	NS	UG/L	25	25	3100	27600	17600	0	SW-23-001
Manganese	NS	UG/L	25	25	69.1	80000	7285	0	SW-23-001
Nickel	CALC	UG/L	25	3	1.7	49.1	17.53	1	SW-23-002
Potassium	NS	UG/L	25	25	405	7700	3128	0	SW-23-001
Selenium	NS	UG/L	5	2	4.5	4.7	4.6	0	SW-23-002
Sodium	NS	UG/L	25	25	3520	95800	62800	0	SW-23-002
Vanadium	NS	UG/L	5	2	4.6	5.7	5.15	0	SW-23-001
Zinc	CALC	UG/L	25	17	3.6	39.9	14.76	12	SW-23-001

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL CLASS D SURFACE WATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-023 (SW-23-001 8 SW-23-002)
DECEMBER 1995 - JANUARY 2004

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Miscellaneous Parameters									
Alkalinity	NS	MG/L	24	24	110	336	202.8	0	SW-23-001
Biochemical Oxygen Demand (BOD)	NS	MG/L	21	15	2.2	10	5.95	0	SW-23-001
Bromide	2	MG/L	22	2	6.31	7.4	6.86	2	SW-23-002
Chemical Oxygen Demand (COD)	NS	MG/L	24	17	5.2	4800	329.7	0	SW-23-001
Chloride	NS	MG/L	24	24	75	173	127.8	0	SW-23-002
Color	NS	C.U.	5	4	15	40			
Hardness	NS	MG/L	41	41	51.4	710			
Nitrate-Nitrogen	NS	MG/L	24	18	0.13	1.22			
Ammonia, Nitrogen (As N)	CALC	MG/L	24	19	0.067	11.42			
Phenolics, Total Recoverable	0.001	MG/L	21	13	0.001	0.07			
Sulfate (as SO4)	NS	MG/L	24	23	2.19	36			
Total Dissolved Solids	NS	MG/L	22	22	300	598			
Total Kjeldahl Nitrogen	NS	MG/L	22	18	1	147			
Total Organic Carbon (TOC)	NS	MG/L	24	21	3.54	54			

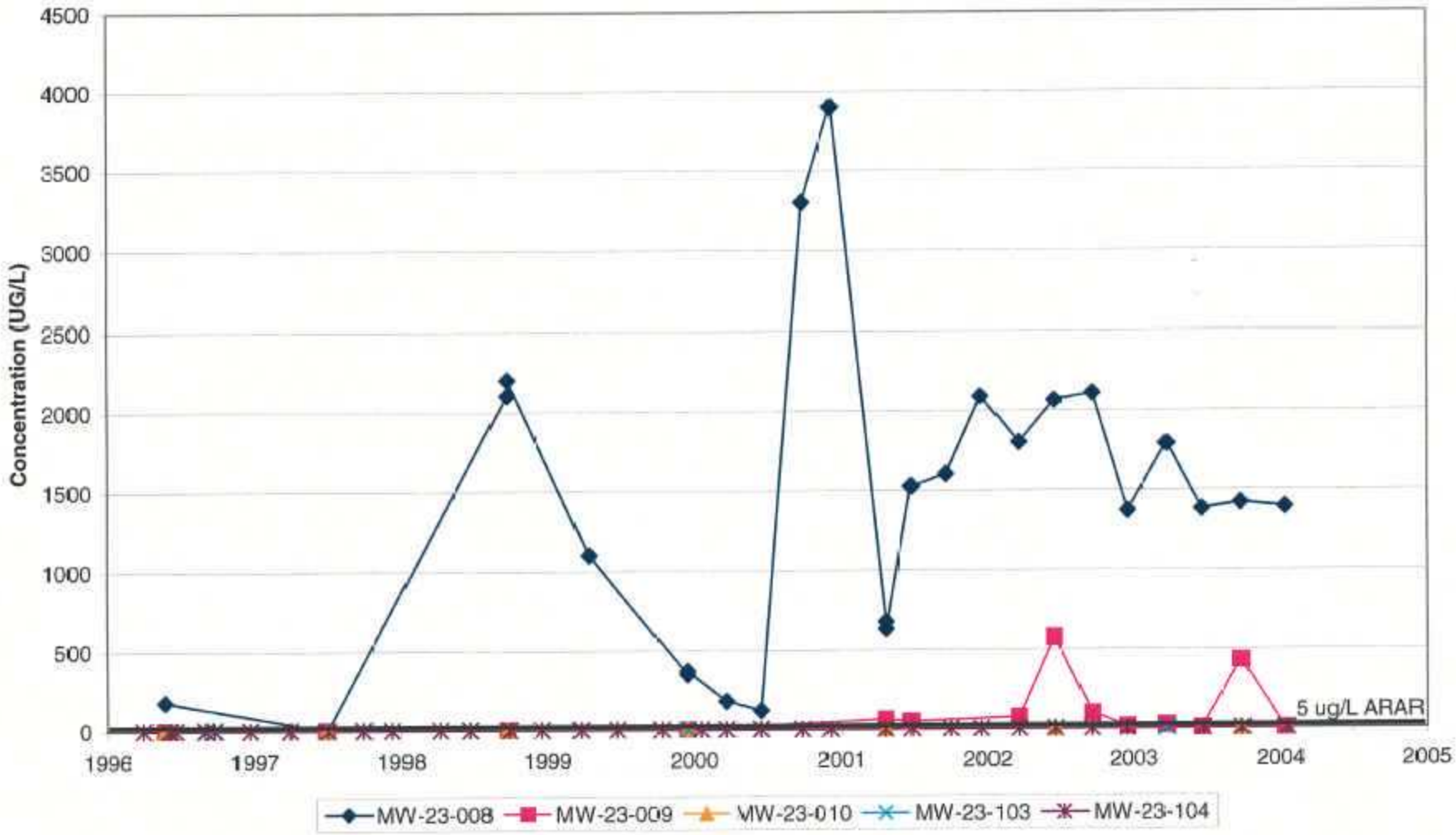
ARAR = Applicable or Relevant and Appropriate Requirement
NS = No standard
UG/L = Micrograms per liter
MG/L = Milligrams per liter
C.U. = Color Units
CALC = ARAR is calculated specifically for each sample

Landfill 023
Benzene Concentrations Over Time
Select Group A and B Monitoring Wells



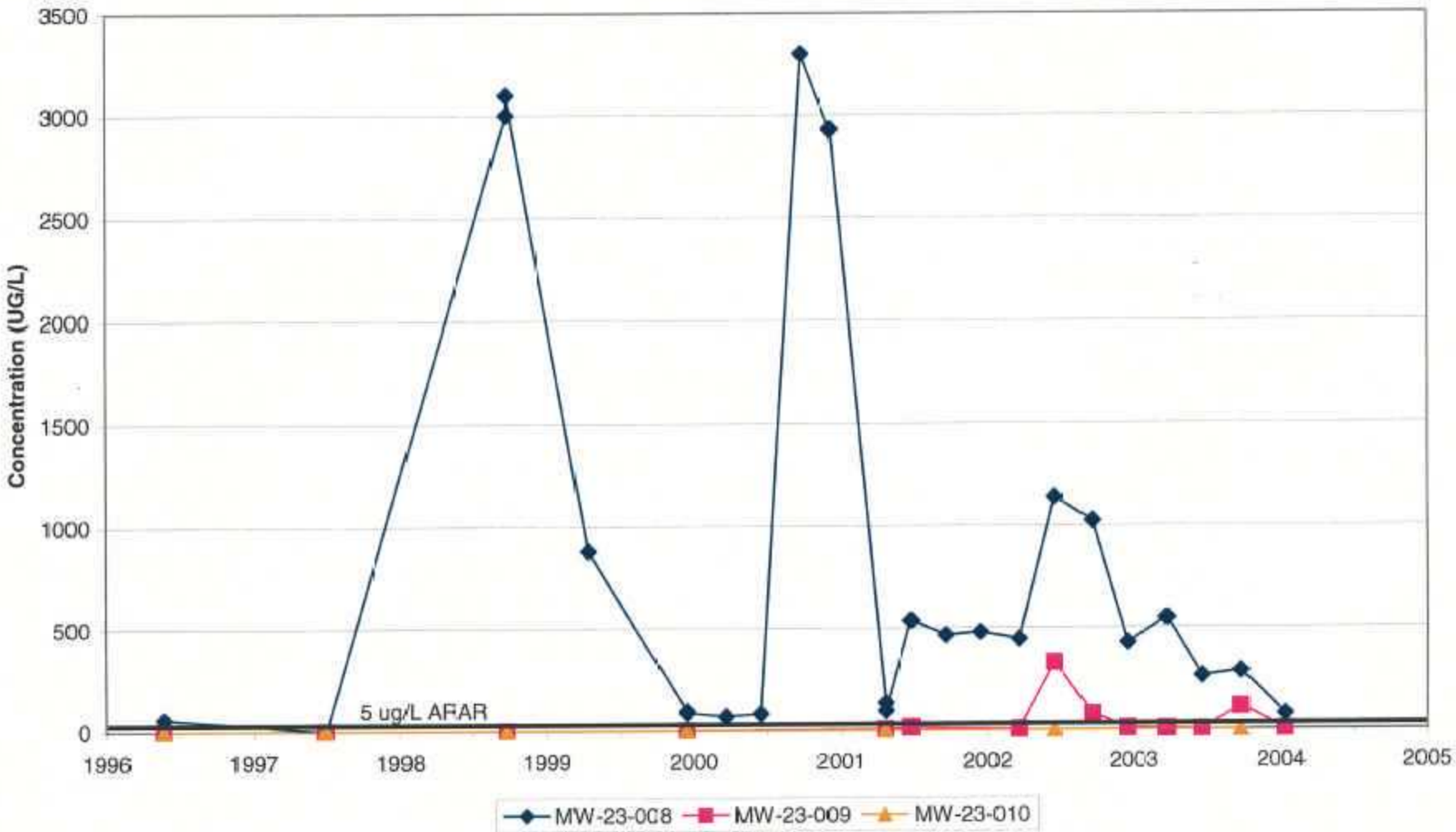
N:\111664-1.000\DB\Program\Program.mde
Select_GroupA_B_BTEX, Benzene-plot, 5/25/04

Landfill 023
Ethylbenzene Concentrations Over Time
Select Group A and B Monitoring Wells



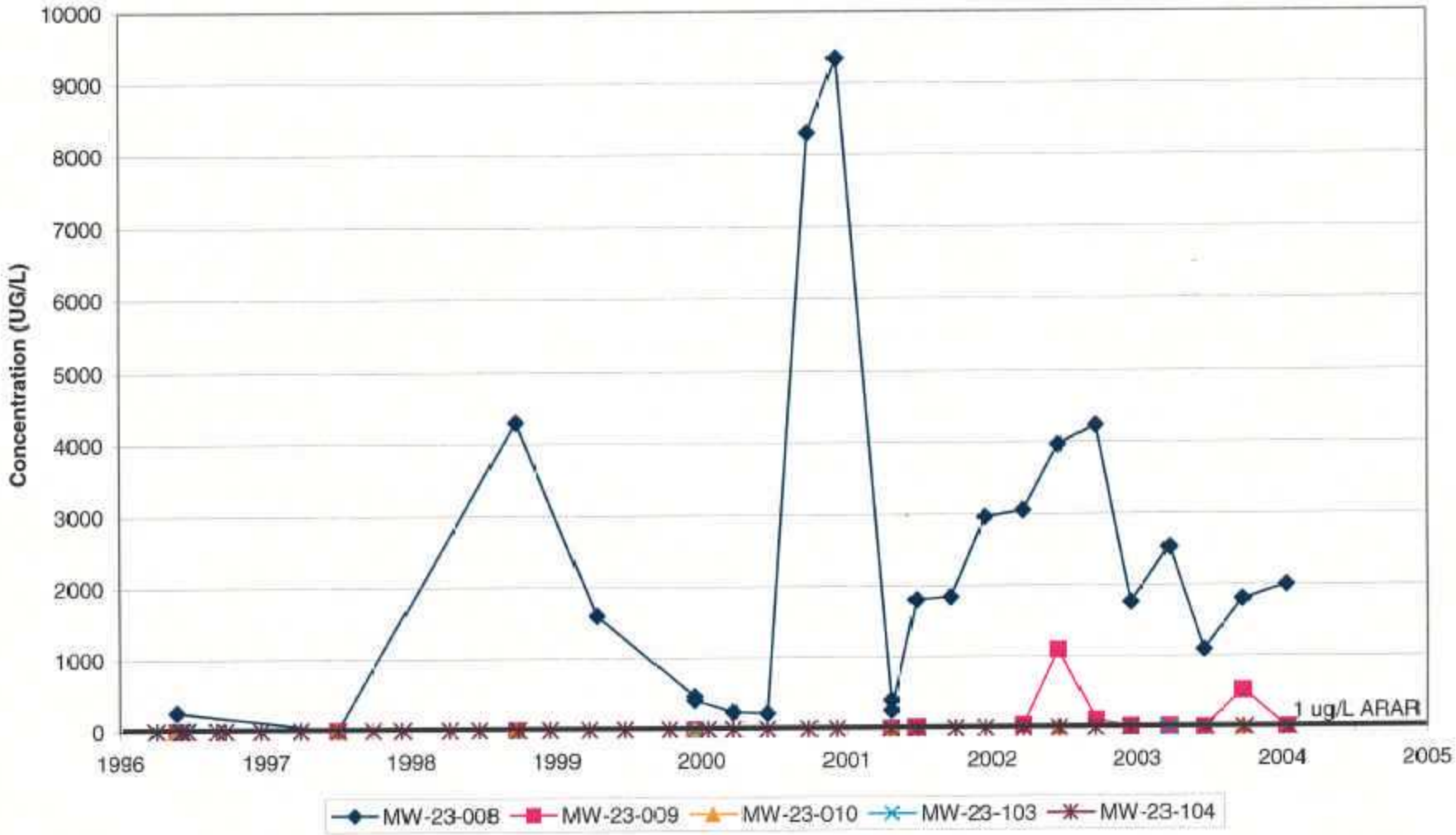
N:\111644-1.002\DB\Program\Program.mdb
Select_GroupA_B_BTEX Ethylbenzene plot, 6/25/2004

Landfill 023
Toluene Concentrations Over Time
Select Group A and B Monitoring Wells



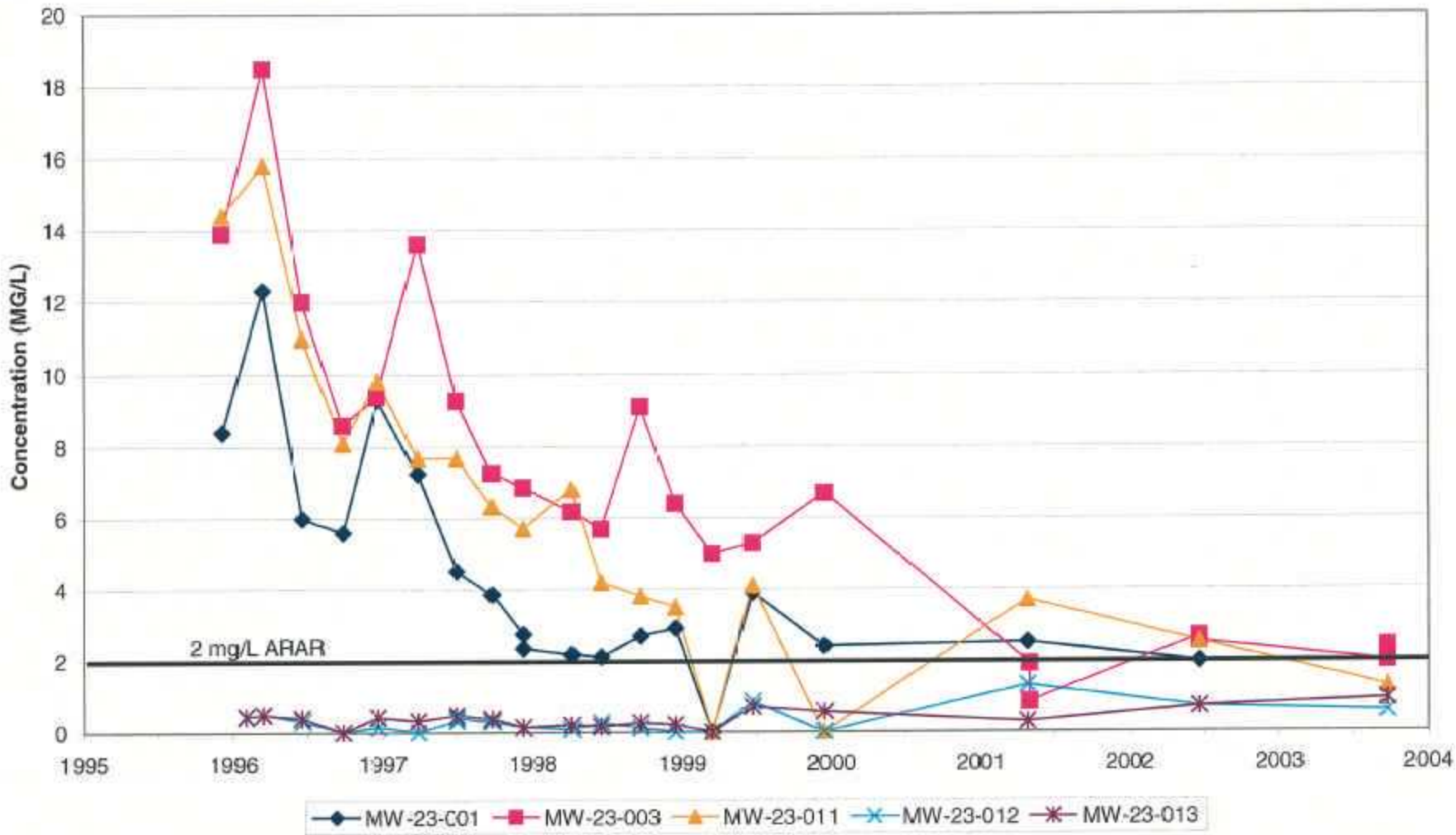
N:\111684-1.000\CB\Program\Program.mdb
Select_GroupA_B_BTEX, Toluene-plot, 5/25/2004

Landfill 023
Xylene (total) Concentrations Over Time
Select Group A and B Monitoring Wells



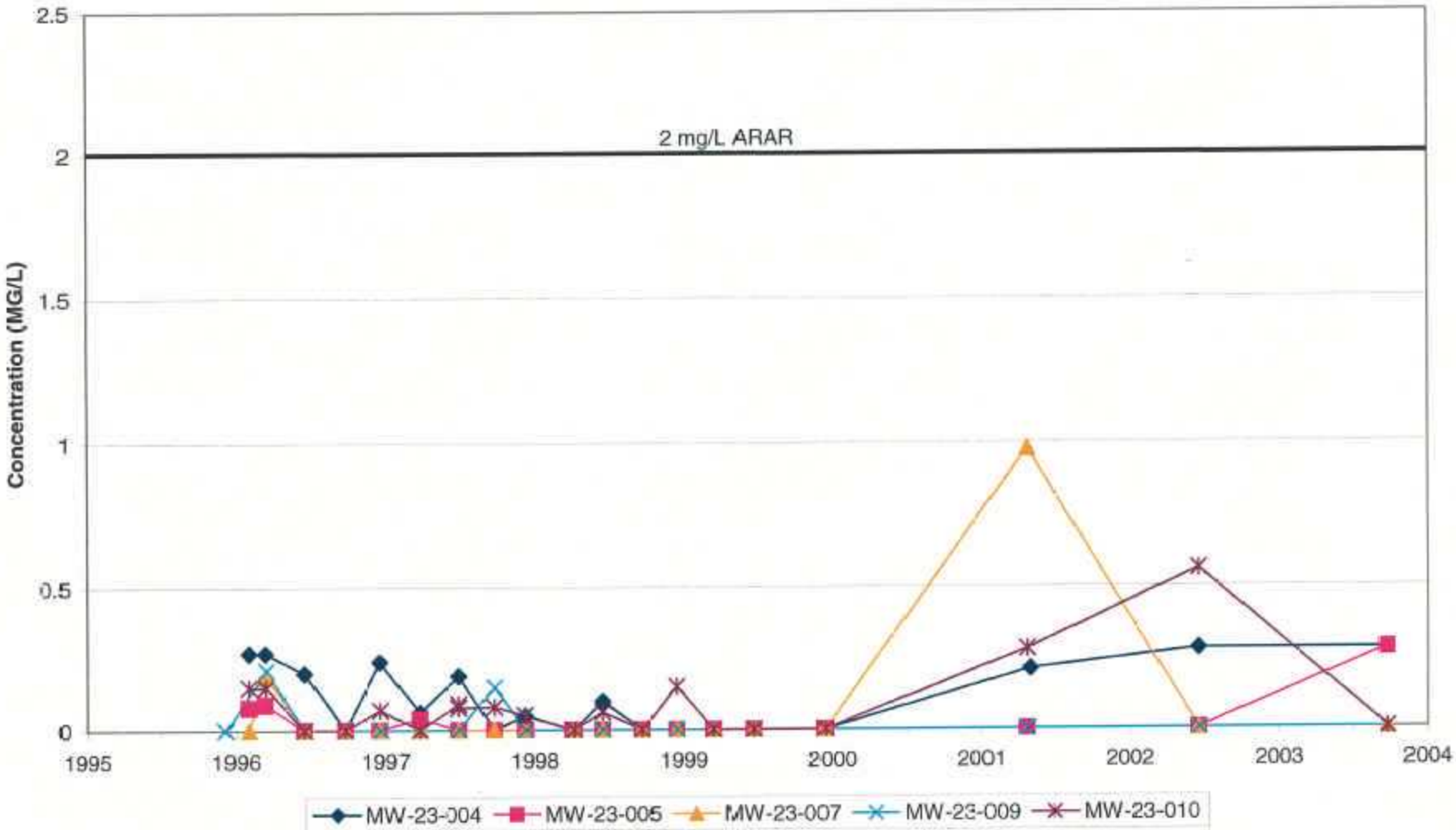
N:\111684-1.000\DB\Program\Program.mdb
Select_GroupA_B_BTEX_Xylene (total) plot, 6/25/2004

Landfill 023
Ammonia, Nitrogen (As N) Concentrations Over Time
Group A Monitoring Wells



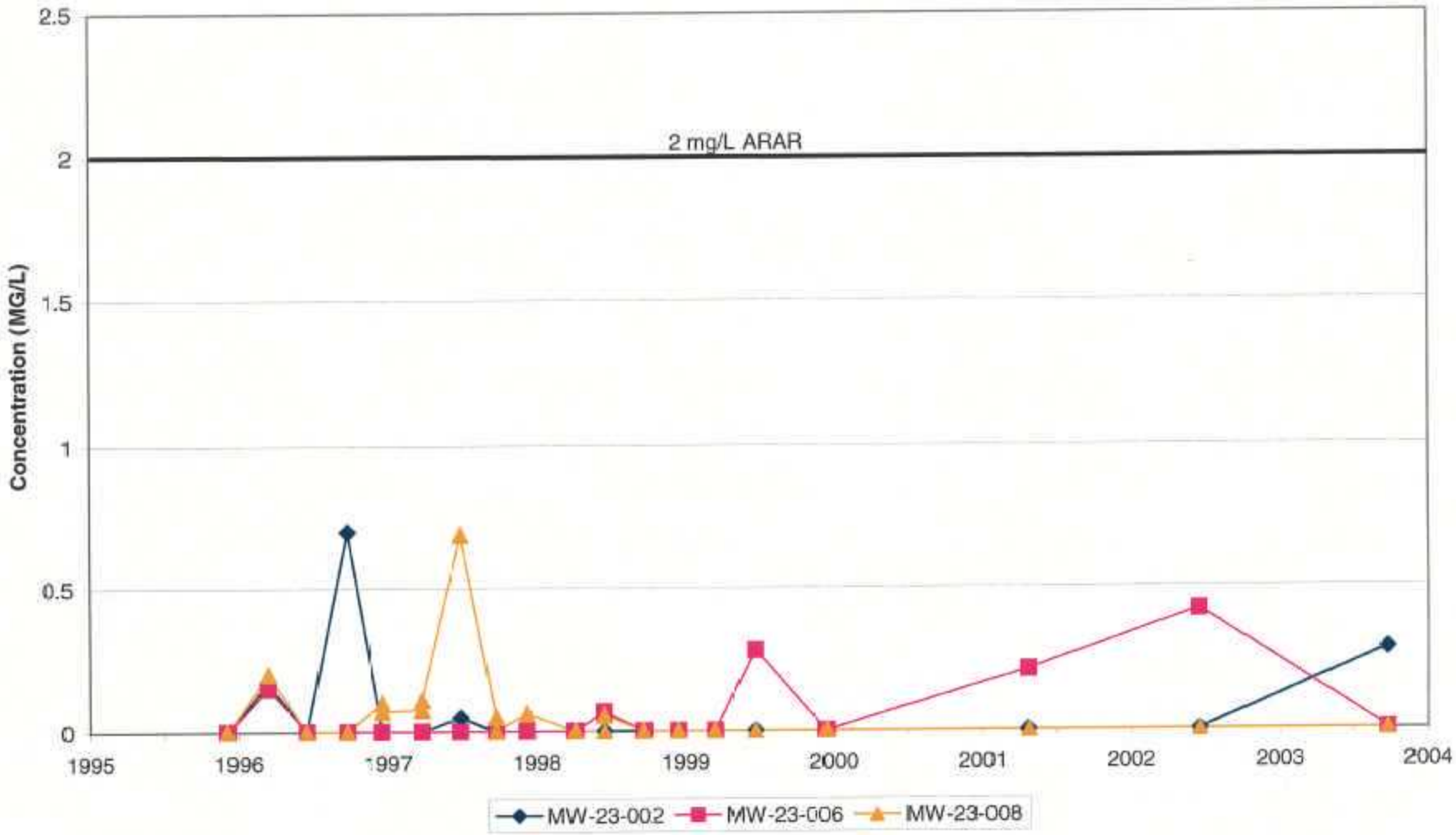
N:\111684-1.600\DB\Program\Program.mdb
GroupA_Downgradient_Dec95-Jan04, Ammonia, Nitrogen (As N)-plot, 5/25/2004

Landfill 023
Ammonia, Nitrogen (As N) Concentrations Over Time
Group A Monitoring Wells



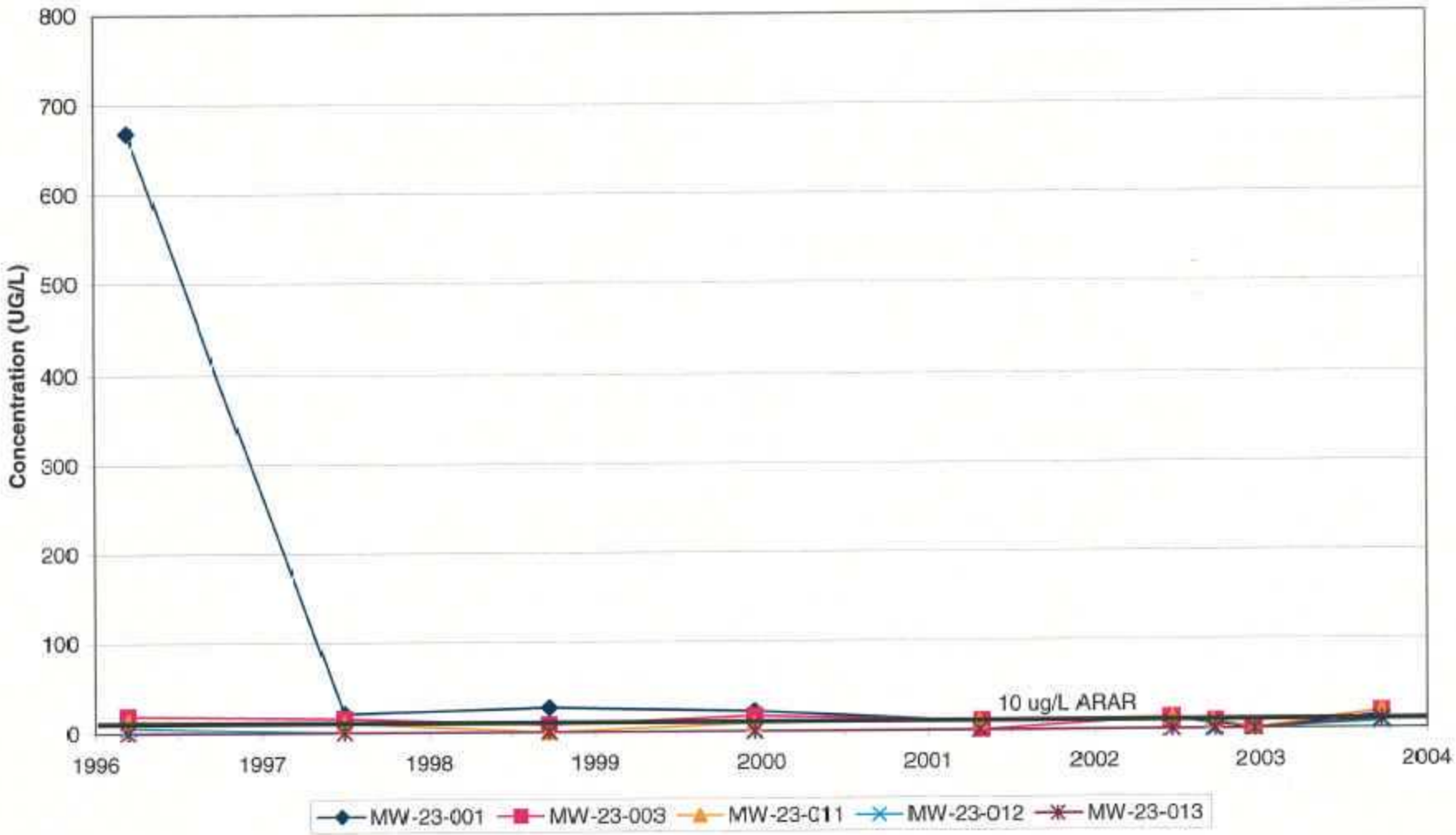
N:\11\684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Deep_Dec95-Jan04, Ammonia, Nitrogen (As N)-plot, 5/25/2004

Landfill 023
Ammonia, Nitrogen (As N) Concentrations Over Time
Group A Monitoring Wells



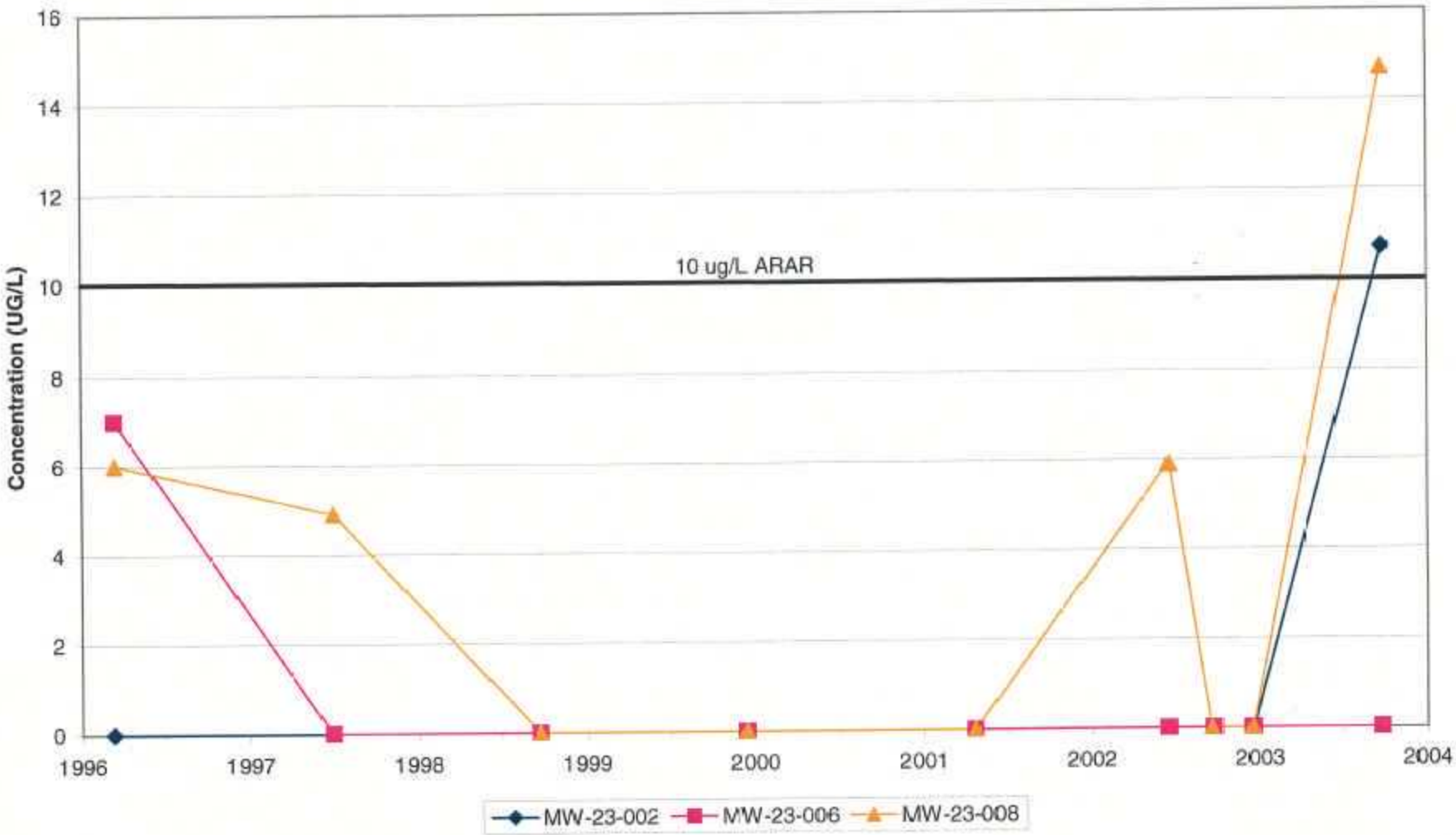
N:\11684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Shallow_Dec95-Jan04, Ammonia, Nitrogen (As N) plot, 5/25/04

Landfill 023
Arsenic Concentrations Over Time
Group A Monitoring Wells



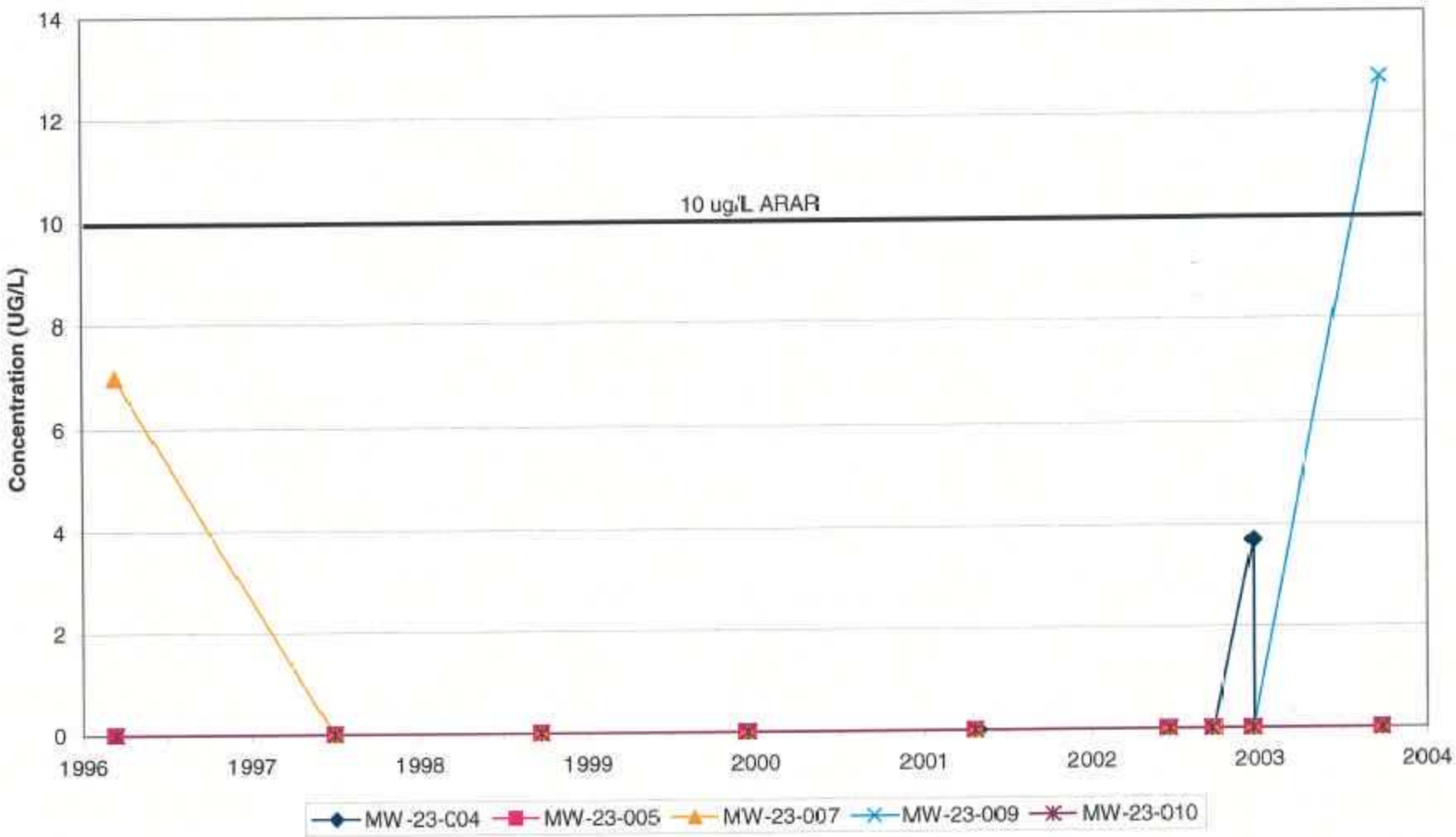
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Downgradient_Esc96-Jan04, Arsenic-plot, 5/25/2004

Landfill 023
Arsenic Concentrations Over Time
Group A Monitoring Wells



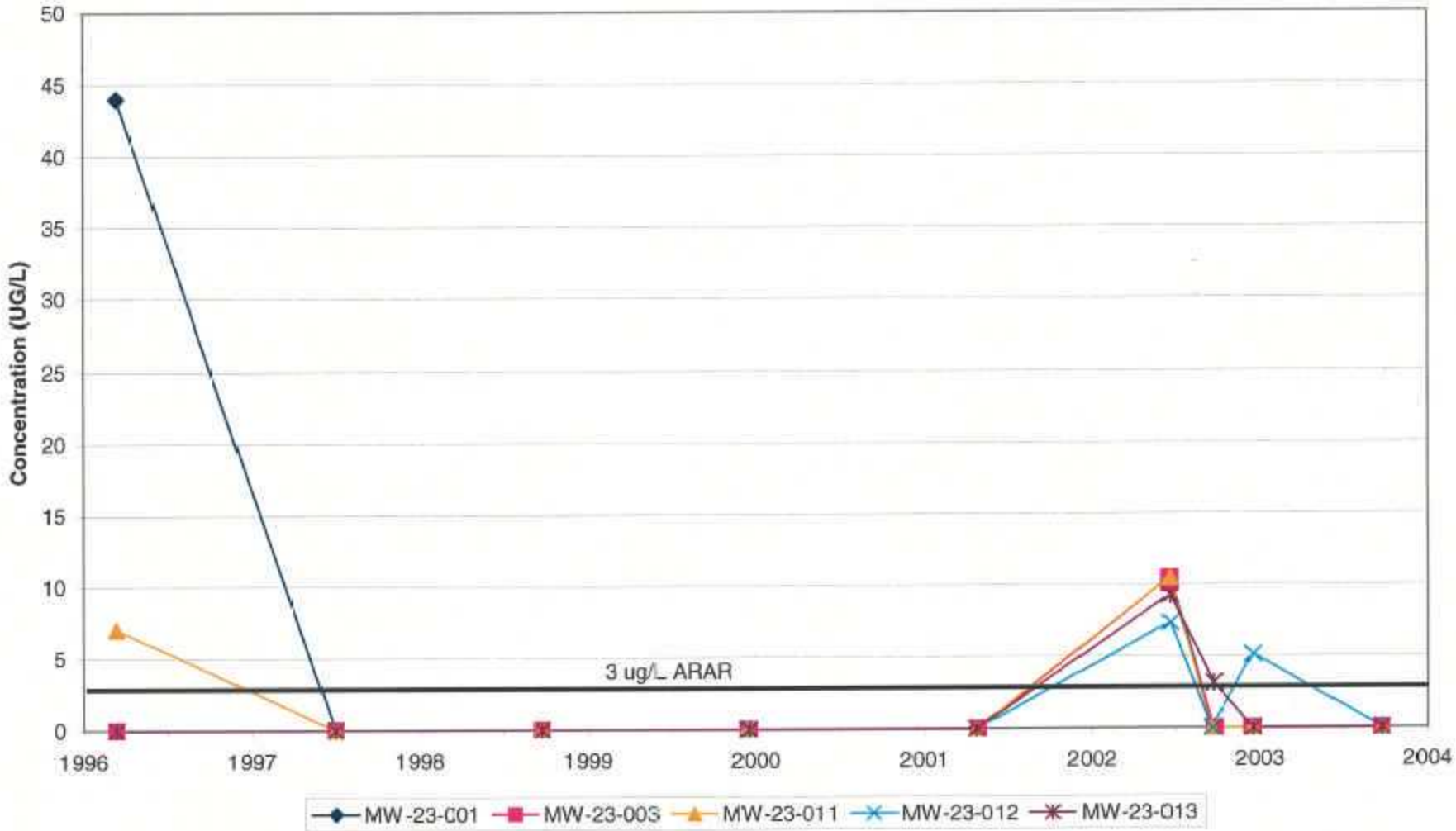
N:\111694-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Shallow_Dec95-Jan04, arsenic-plot, 5/25/04

Landfill 023
Arsenic Concentrations Over Time
Group A Monitoring Wells



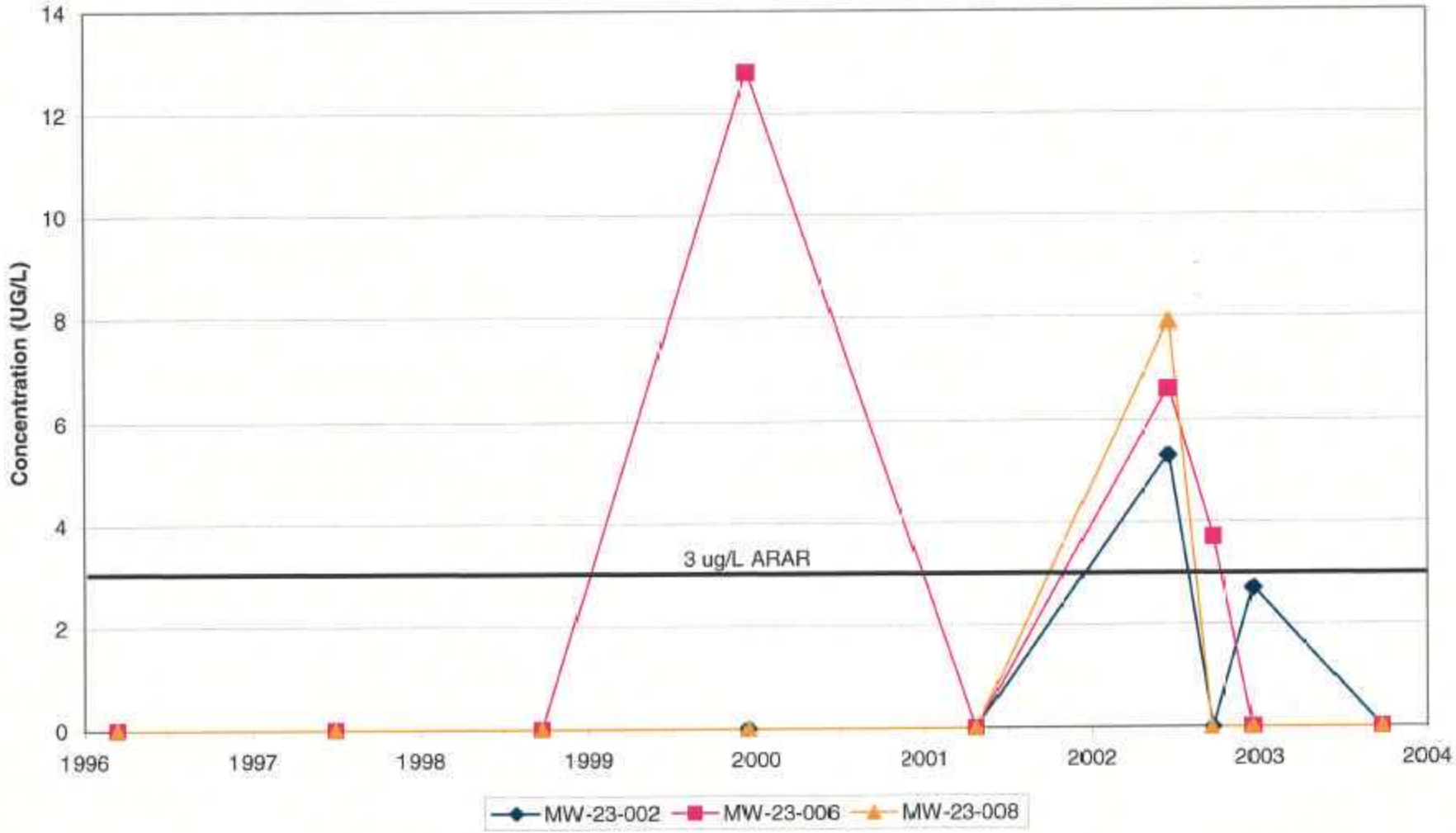
N:\111684-1.000\DB\Program\Program.mdb
\GroupA_Upgradient_Deep_Dec96-Jan04, Arsenic-plot, 5/25/2004

Landfill 023
Antimony Concentrations Over Time
Group A Monitoring Wells



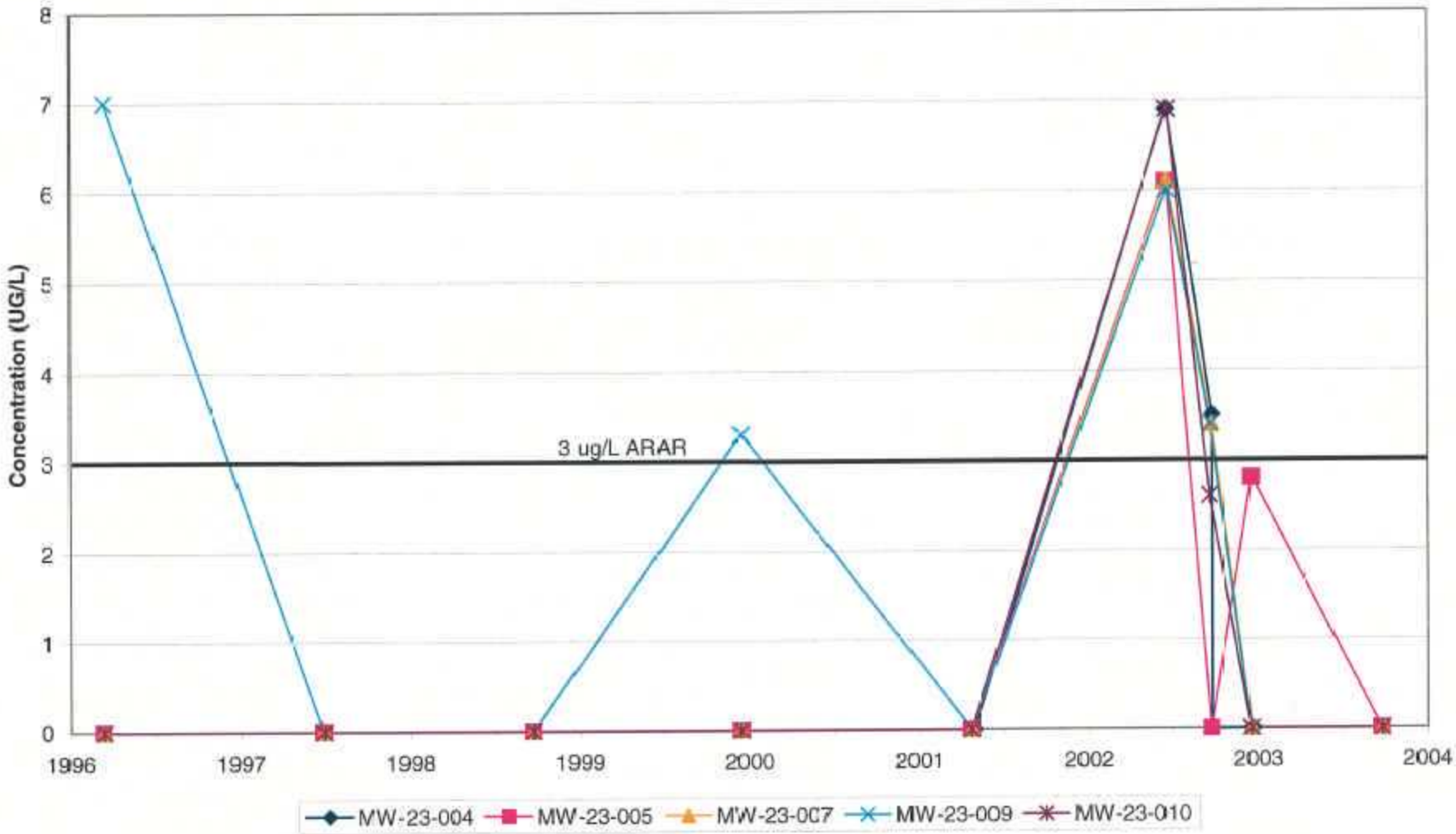
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Downgradient_Dec95-Jan04, Antimony-plot, 6/25/2004

Landfill 023
Antimony Concentrations Over Time
Group A Monitoring Wells



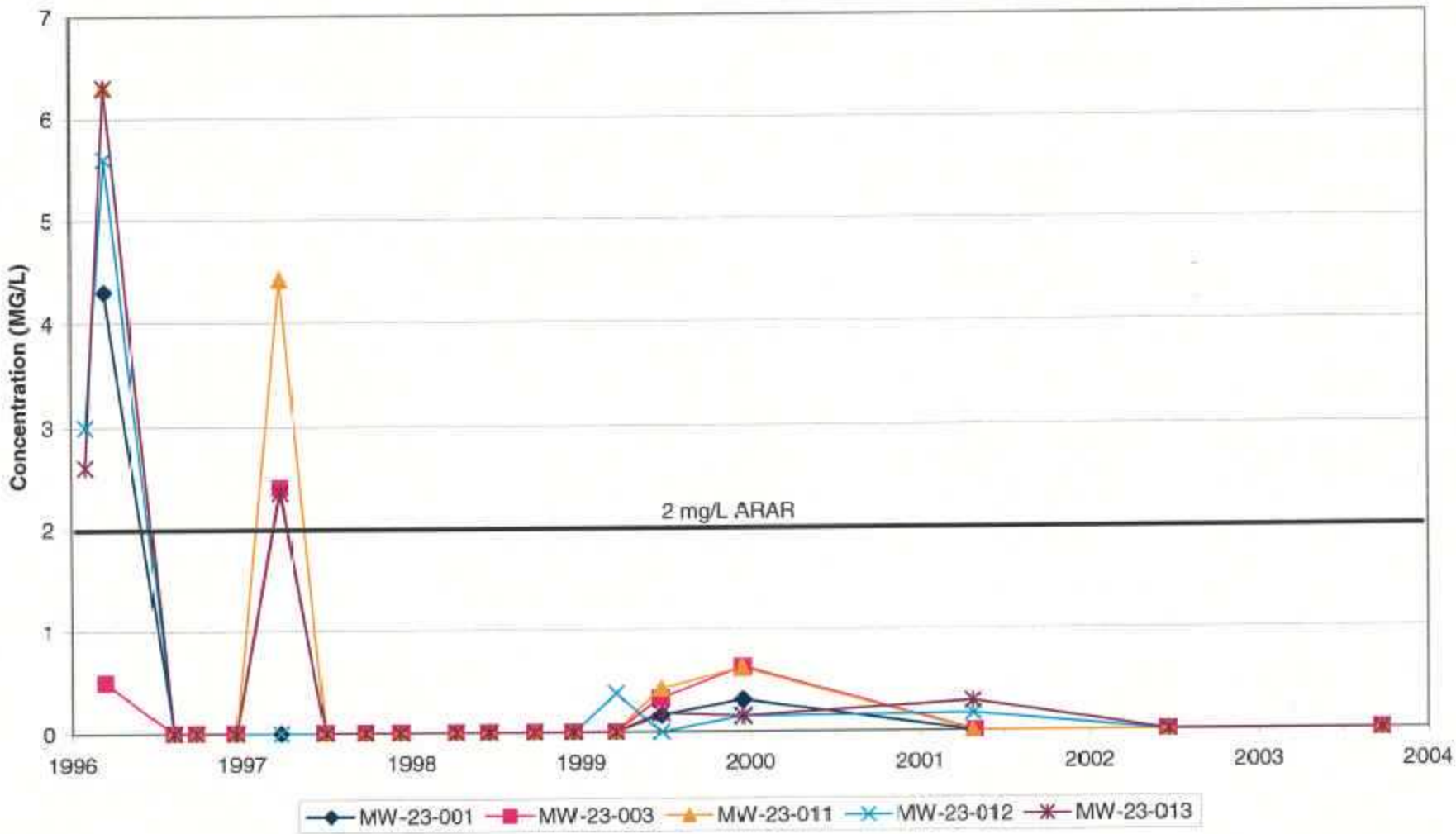
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Shallow_Dec96-Jan04, Antimony-plot, 5/25/04

Landfill 023
Antimony Concentrations Over Time
Group A Monitoring Wells



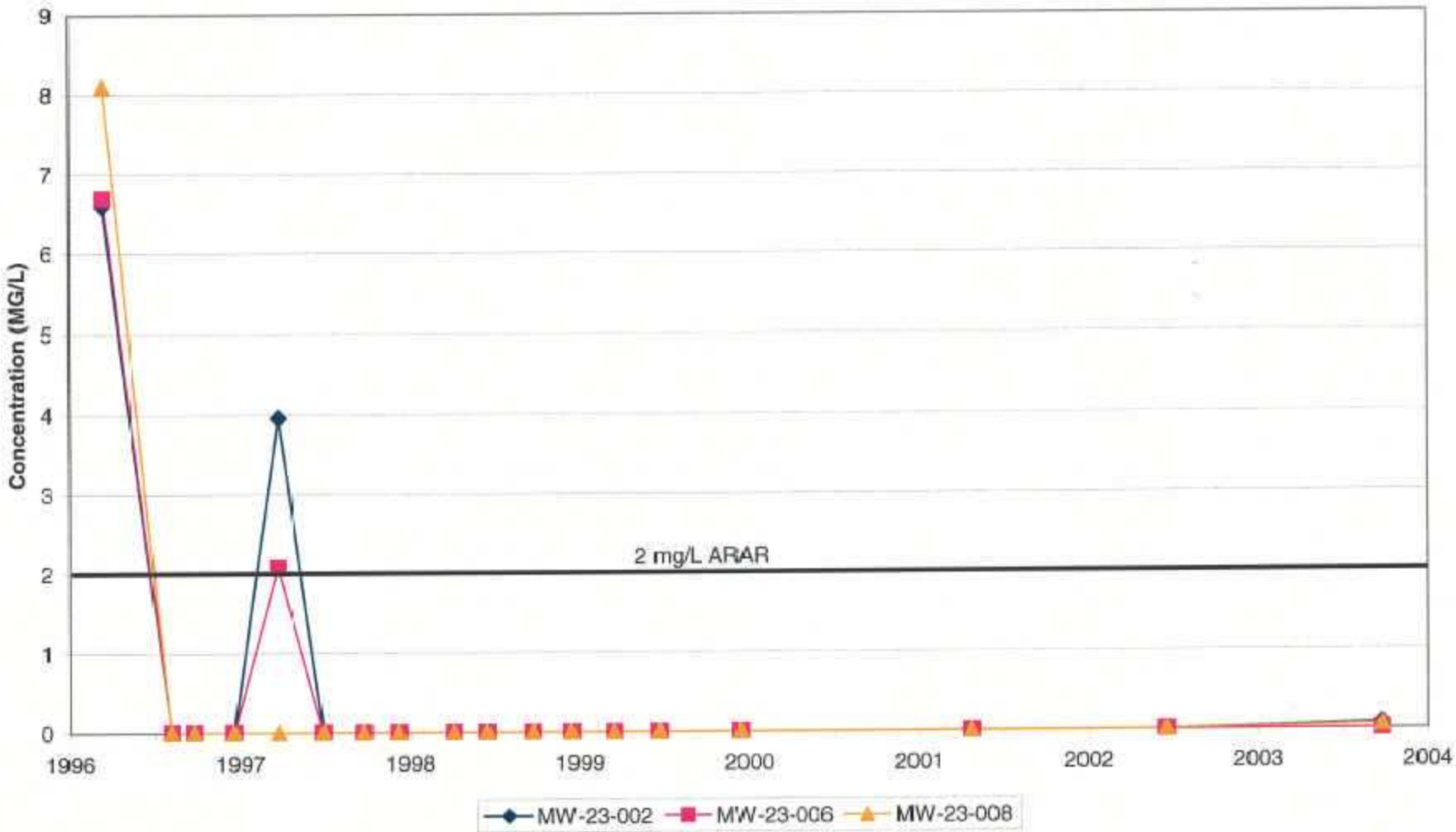
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Deep_Dec95-Jan04, Antimony-plot, 6/25/2004

Landfill 023
Bromide Concentrations Over Time
Group A Monitoring Wells



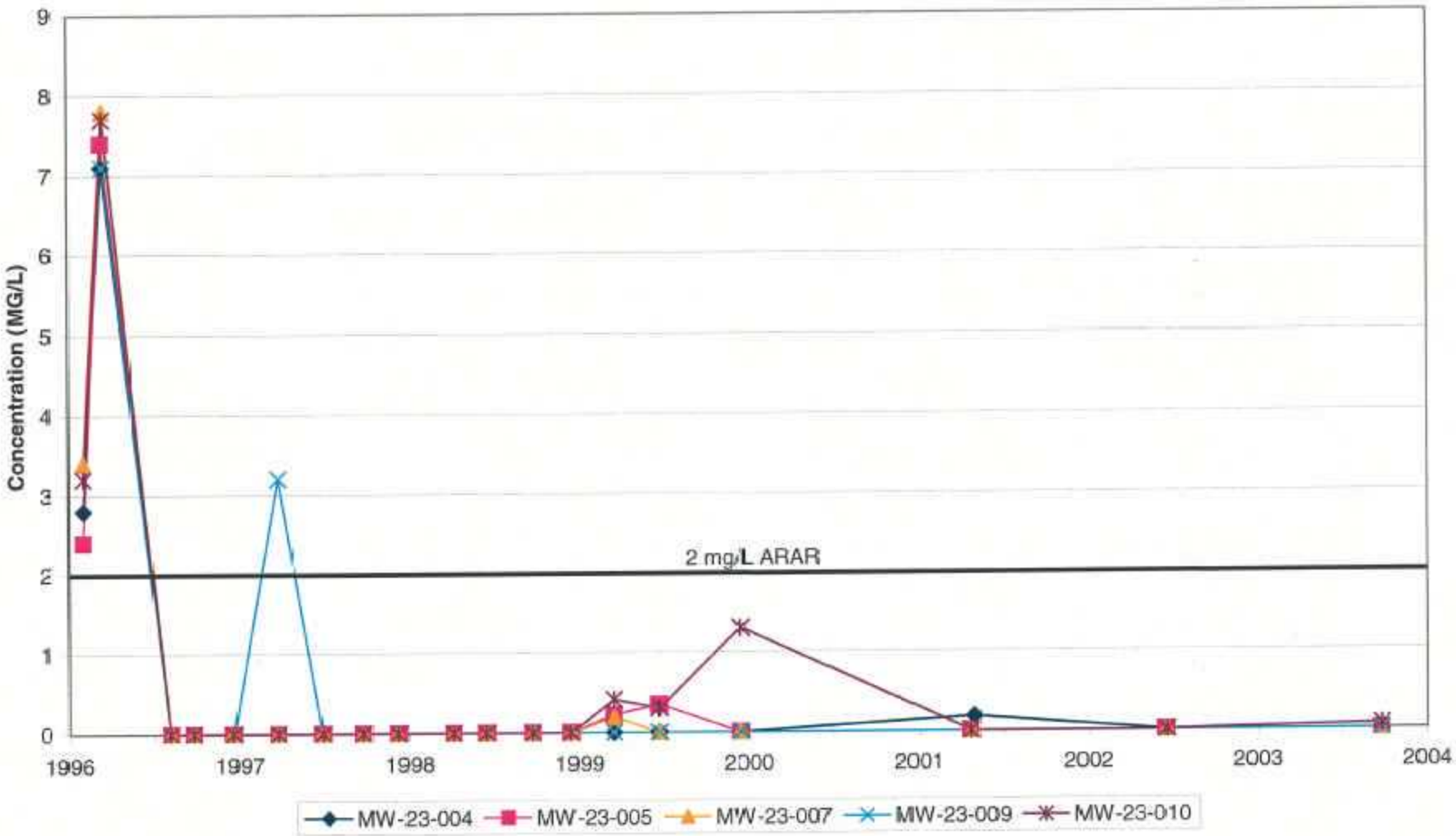
N:\111884-1.000\DB\Program\Program.mdb
GroupA_Downgradient_Dec95-Jan04, Bromide-plot, 5/25/2004

Landfill 023
Bromide Concentrations Over Time
Group A Monitoring Wells



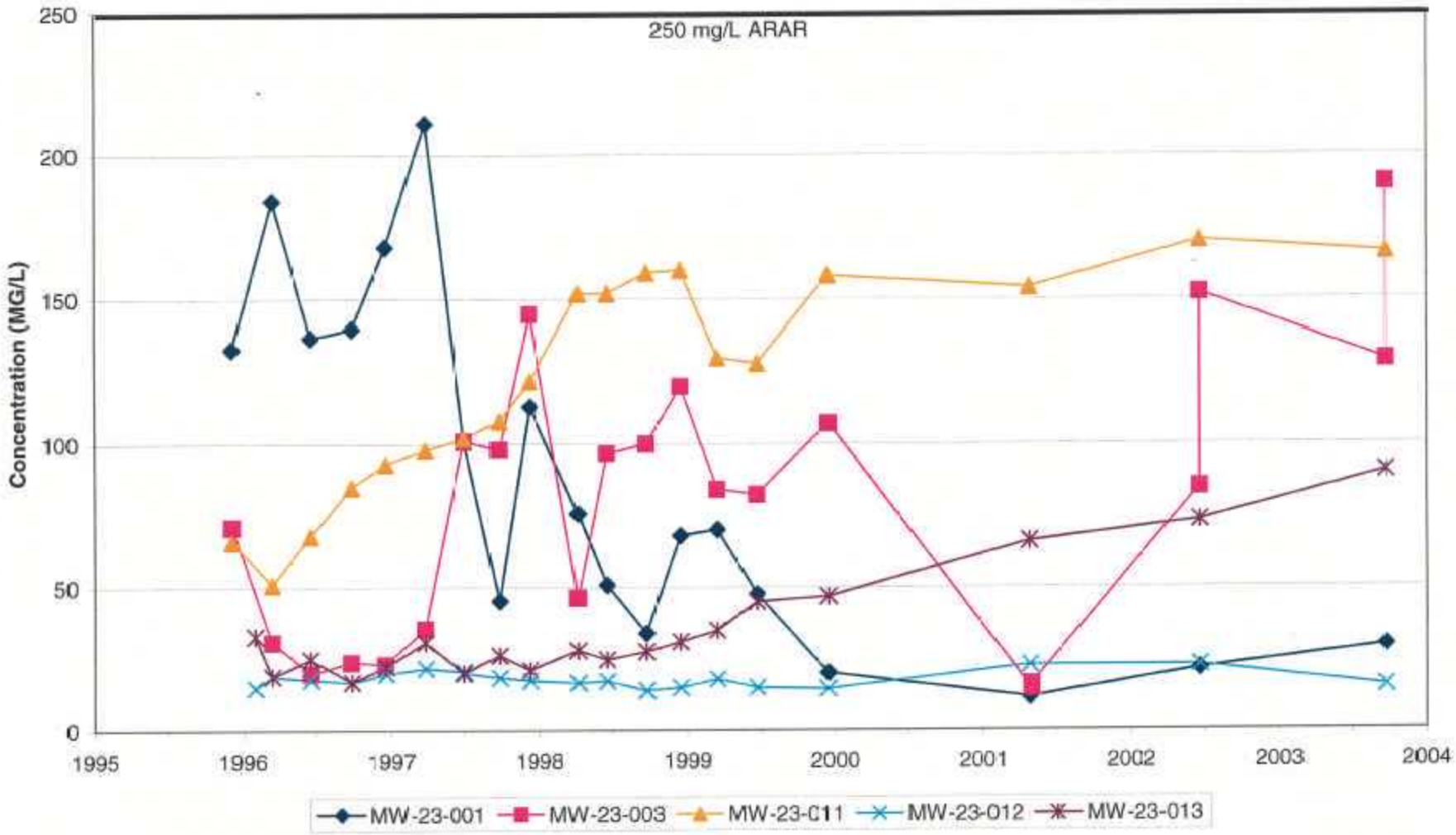
N:\111634-1.007DB\Program\Program.mdb
GroupA_Upgradient_Shallow_Dec95-Jan04_Bromide-plot, 5/25/04

Landfill 023
Bromide Concentrations Over Time
Group A Monitoring Wells



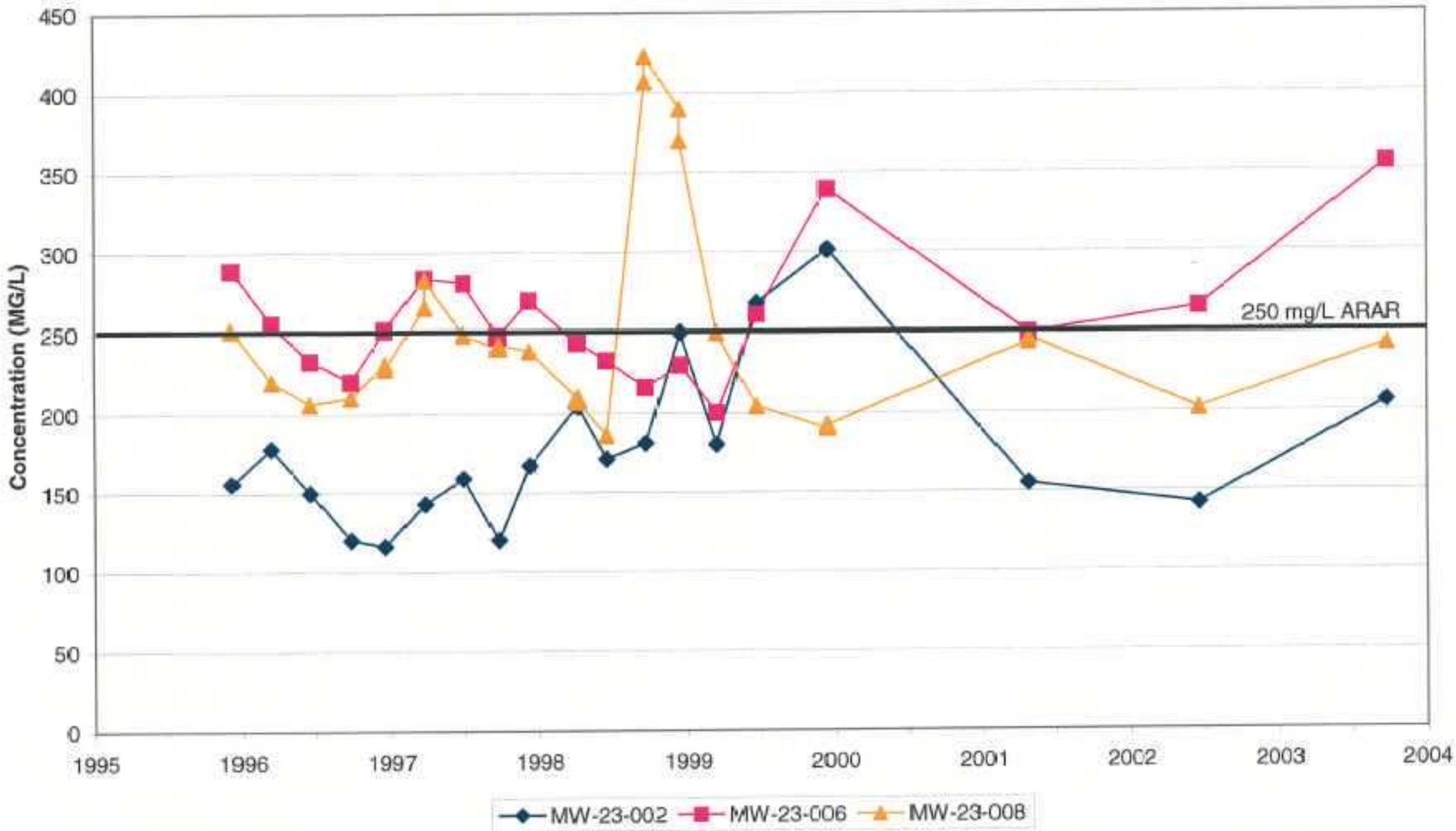
N:\111884-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Deep_Dec95-Jun04, Bromide-plot, 5/25/2004

Landfill 023
Chloride Concentrations Over Time
Group A Monitoring Wells



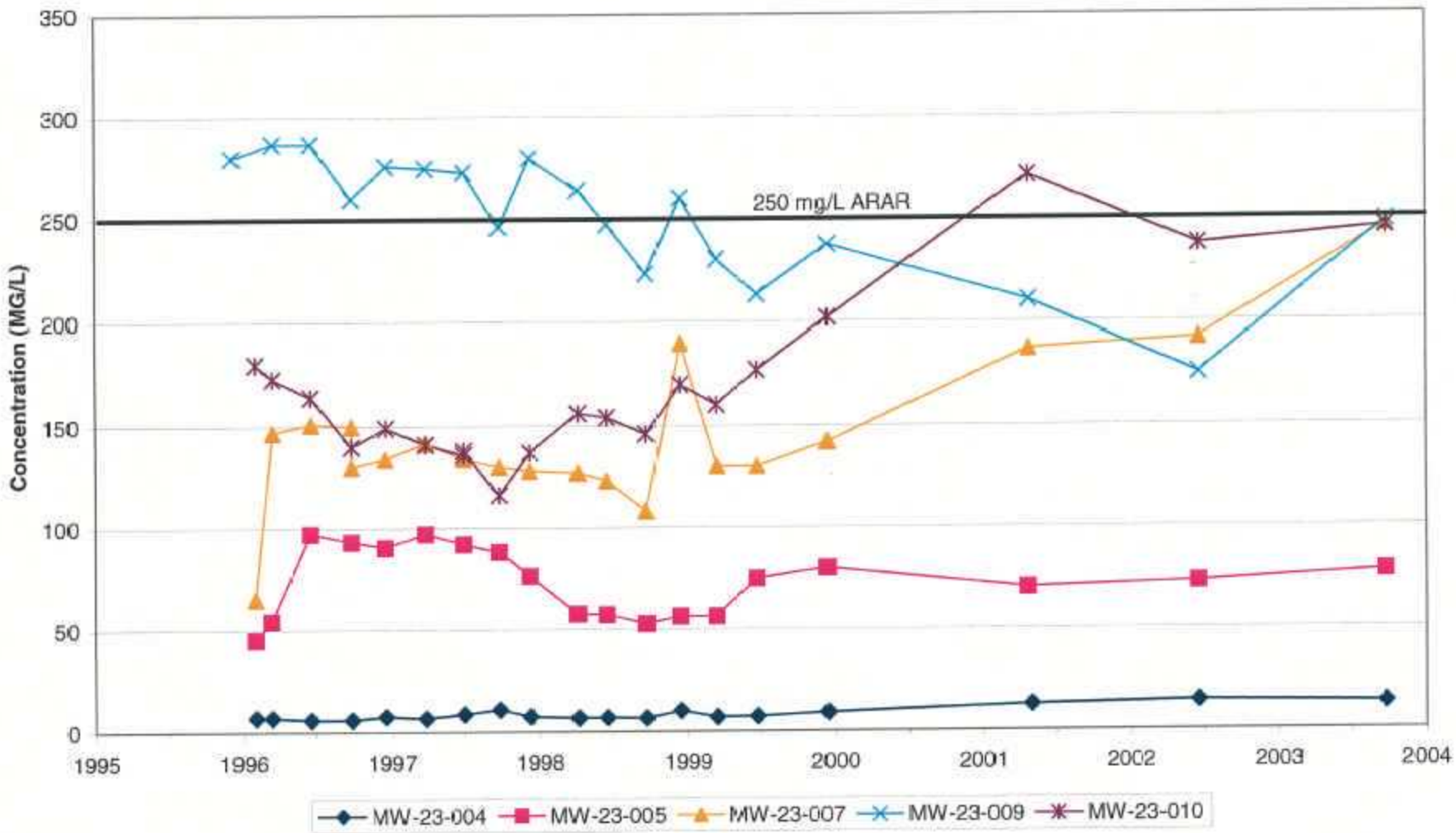
N:\111644-1.000\DB\Program\Program.mdb
GroupA_Downgradient_Dec95-Jan04_Chloride-plot, 5/25/2004

Landfill 023
Chloride Concentrations Over Time
Group A Monitoring Wells



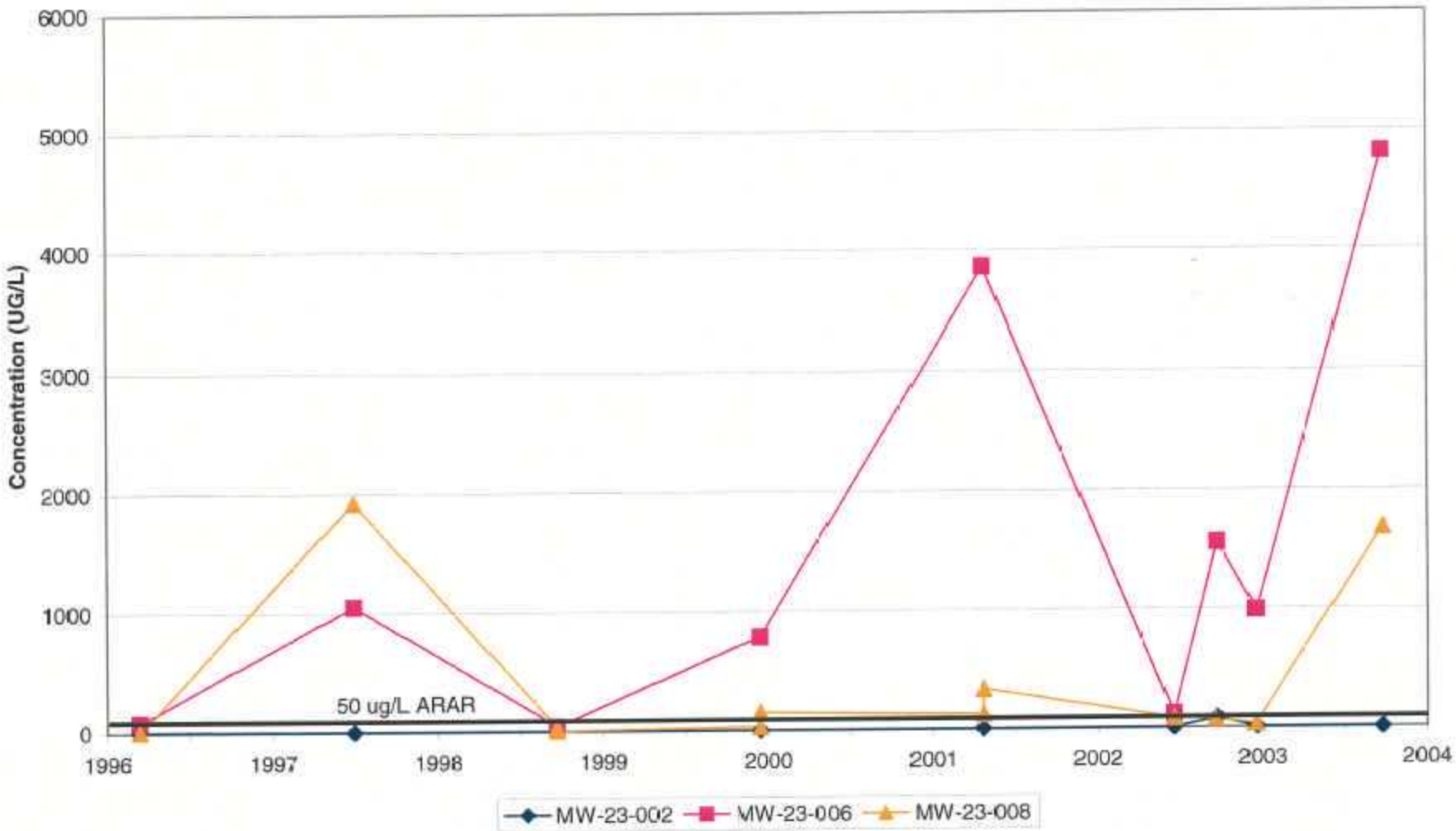
N:\11884-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Shallow_Dec96-Jan04, Chloride-plot, 5/25/04

Landfill 023
Chloride Concentrations Over Time
Group A Monitoring Wells



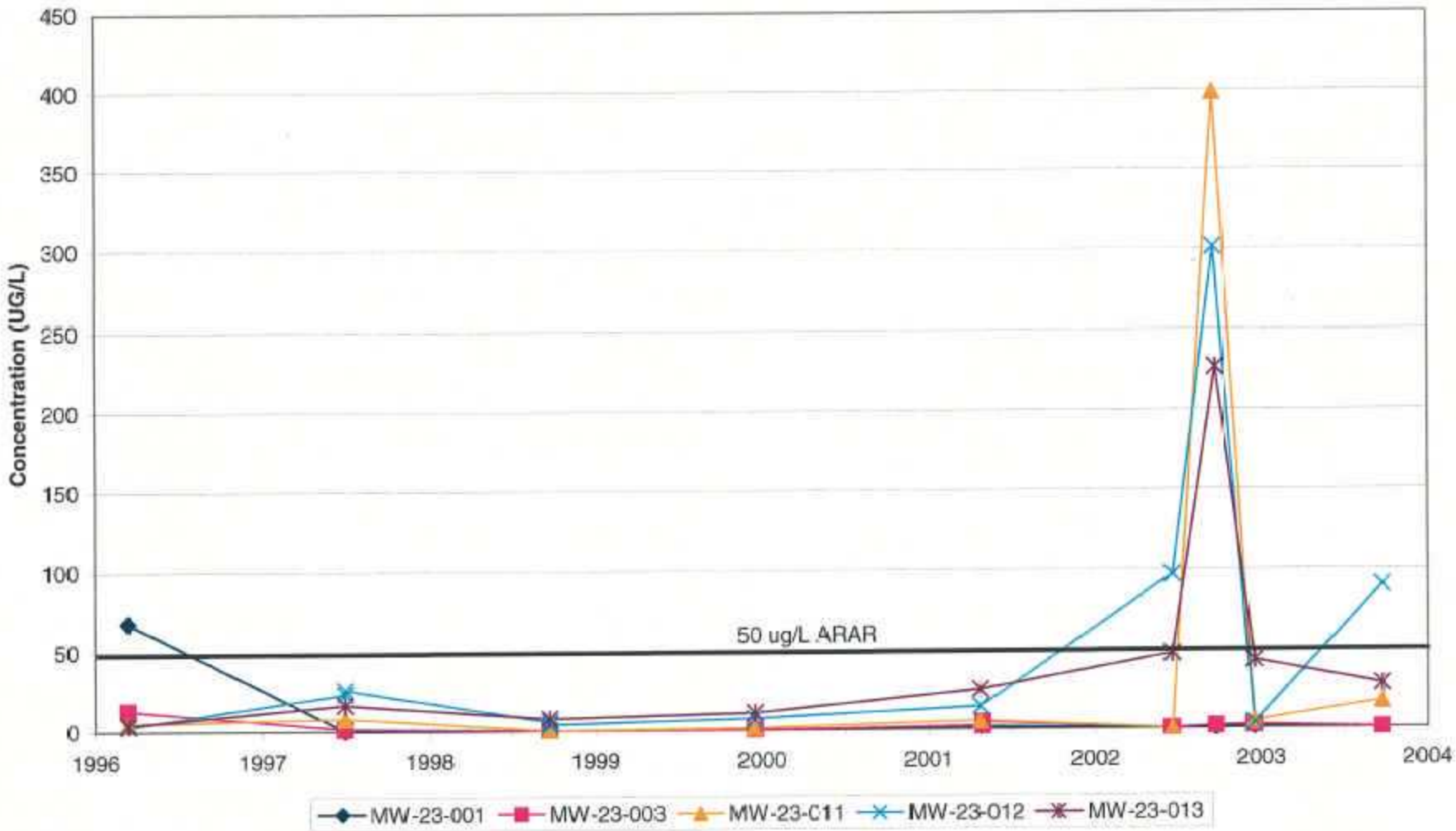
N:\111684-1 K00\DB\Program\Program.mde
GroupA_Upgradient_Deep_Dec96-Jan04, Chloride-plot, 5/25/2004

Landfill 023
Chromium Concentrations Over Time
Group A Monitoring Wells



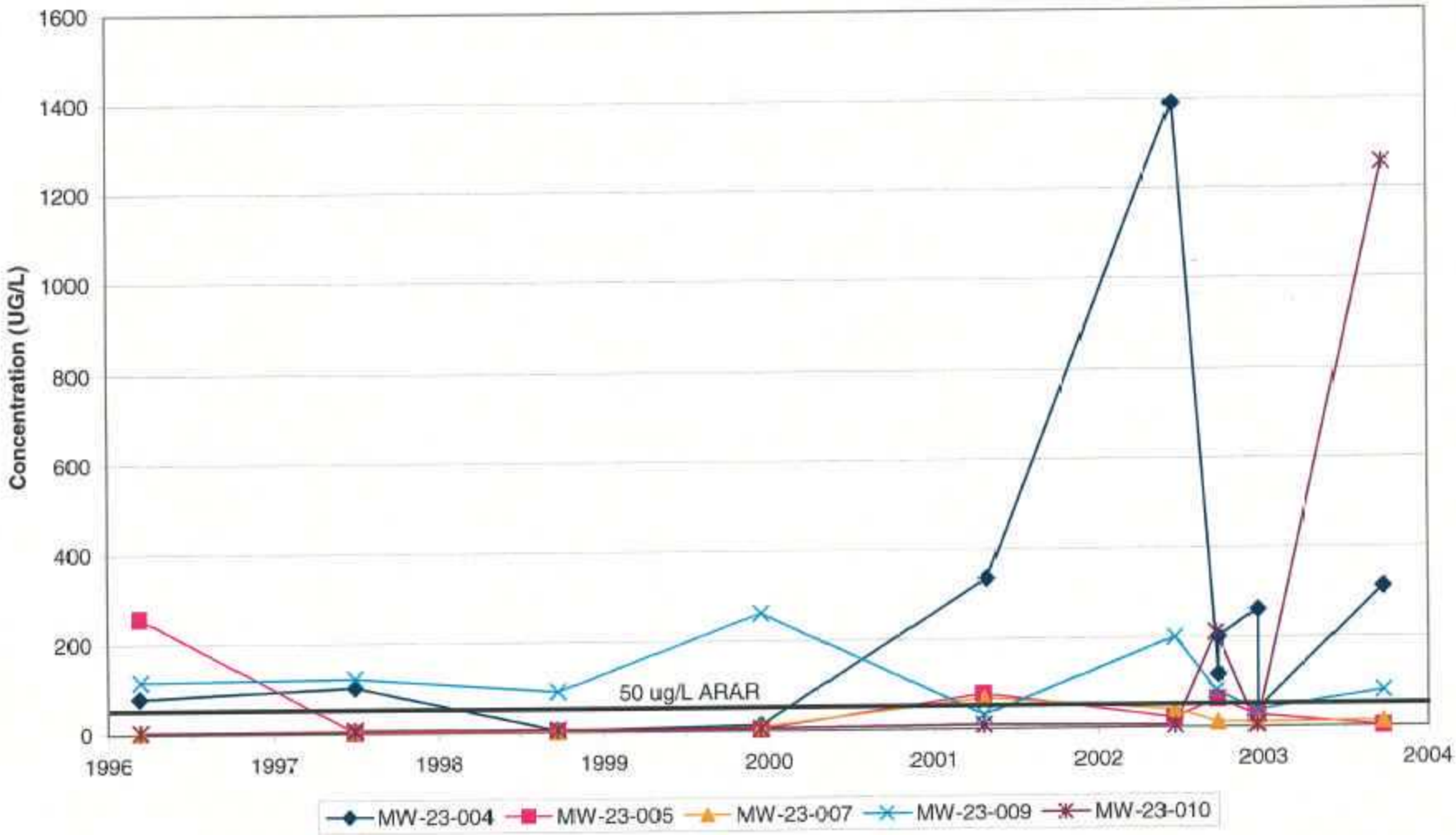
N:\11684-1.000\DB\Program Program.mdb
GroupA_Upgradient_Shallow_Dec95-Jan04, Chromium-plot, 5/25/04

Landfill 023
Chromium Concentrations Over Time
Group A Monitoring Wells



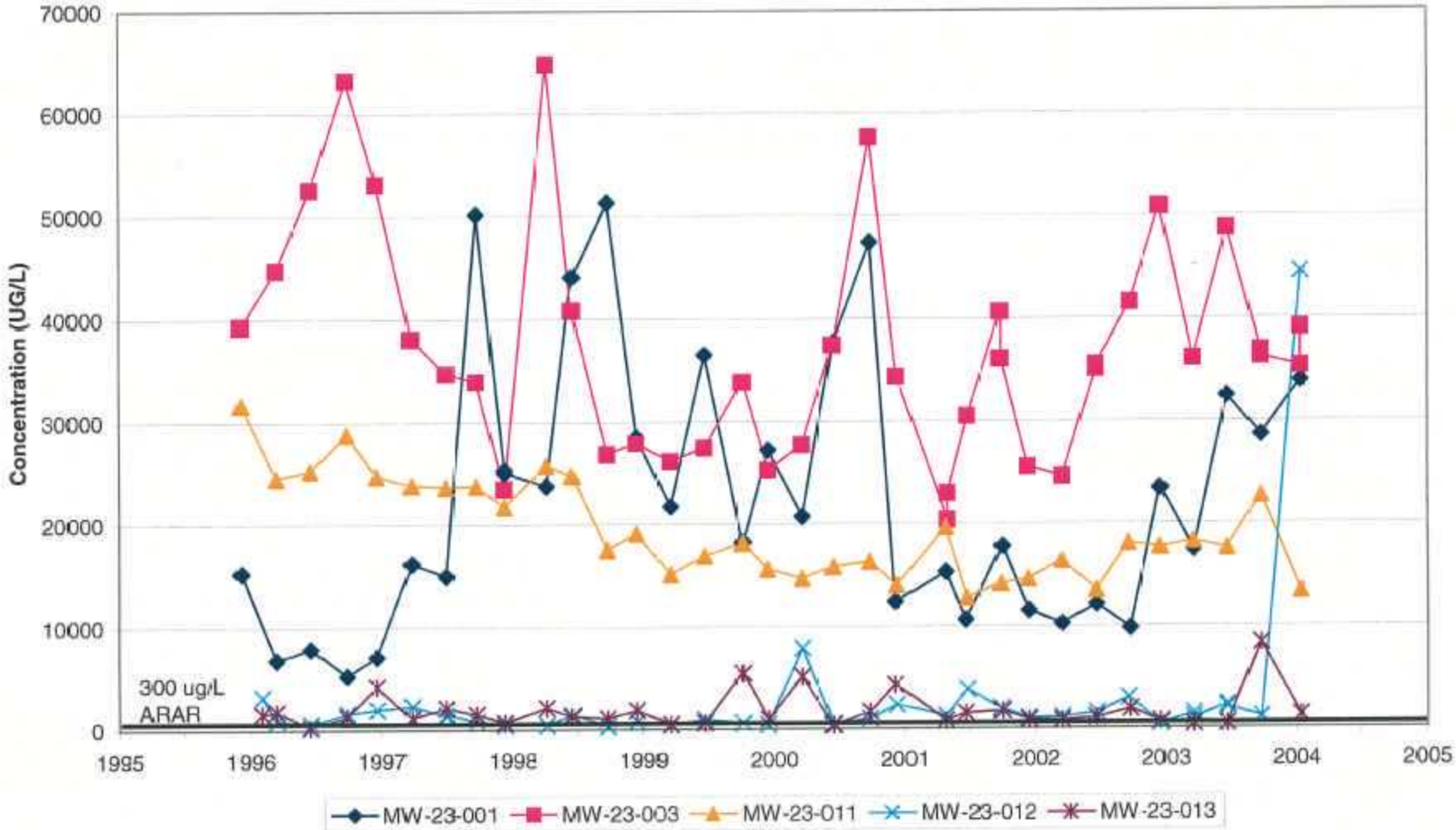
N:\11184-1.00\DB\Program\Program.mdb
GroupA_Downgradient_Dec95-Jan04, Chromium-plot, 5/25/2004

Landfill 023
Chromium Concentrations Over Time
Group A Monitoring Wells



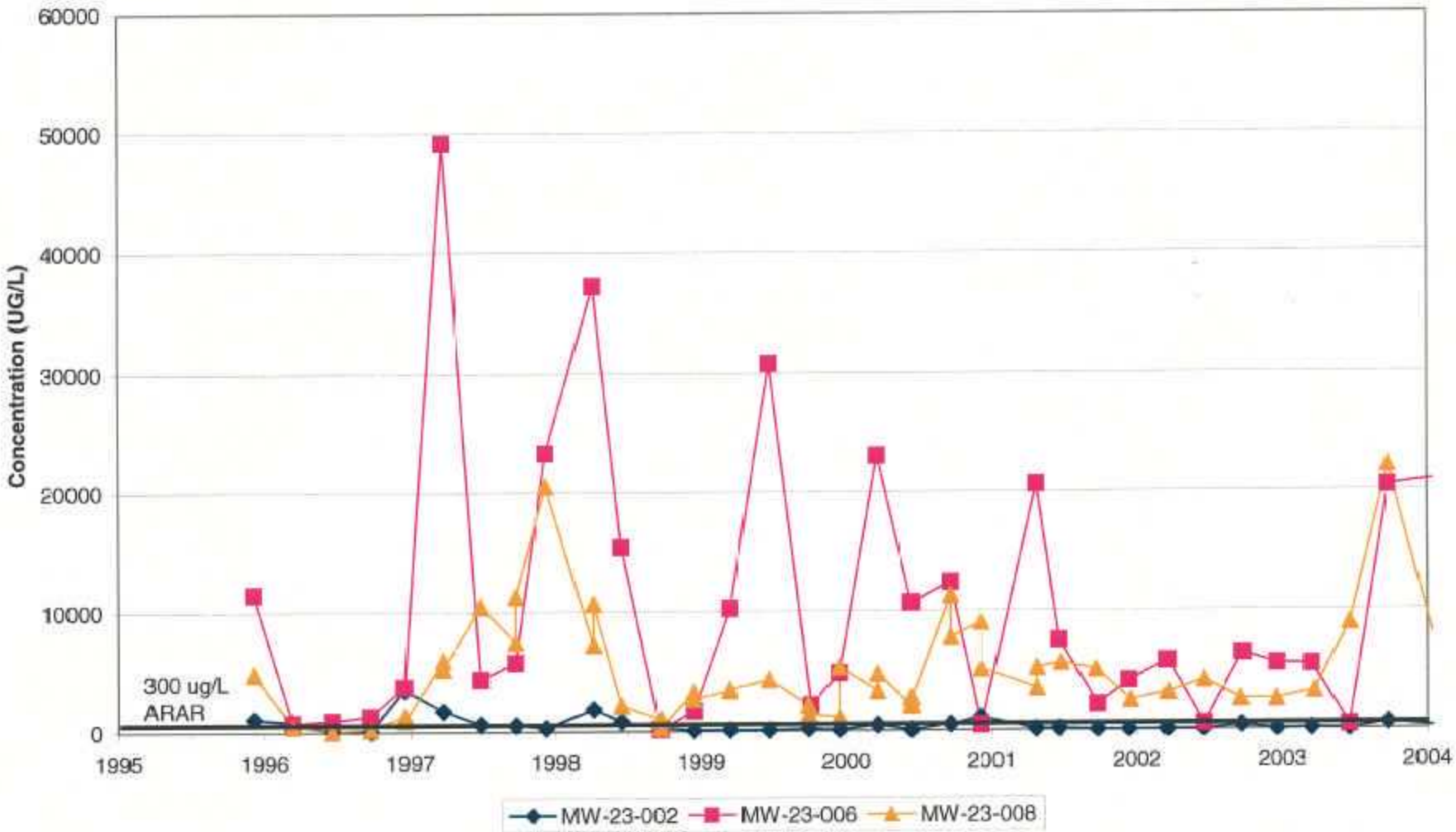
N:\11984-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Deep_Dec95-Jan04, Chromium-plot, 5/25/2004

Landfill 023
Iron Concentrations Over Time
Group A Monitoring Wells



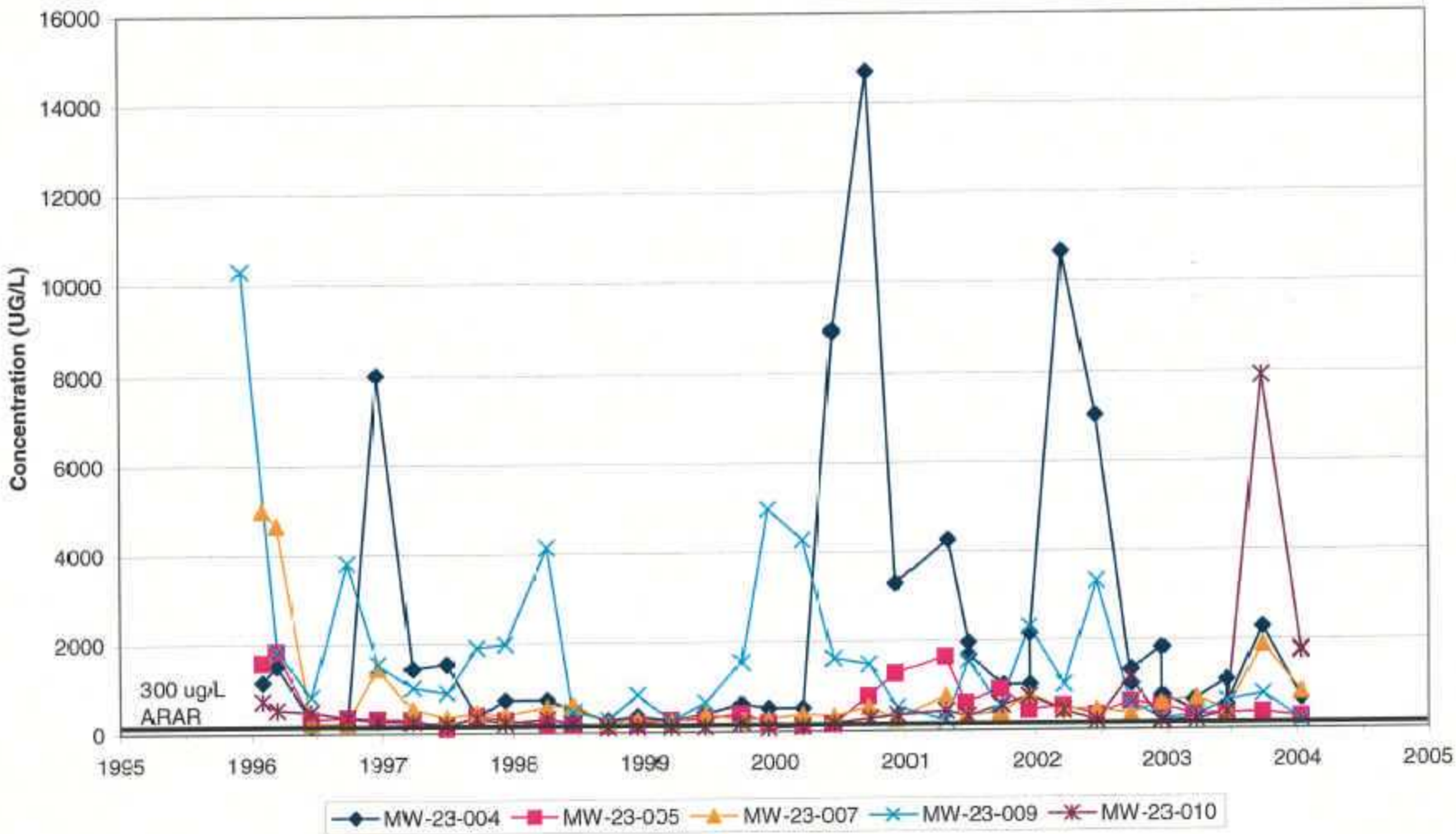
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Downgradient_Dec95-Jan04, Iron-plot, 5/25/2004

Landfill 023
Iron Concentrations Over Time
Group A Monitoring Wells



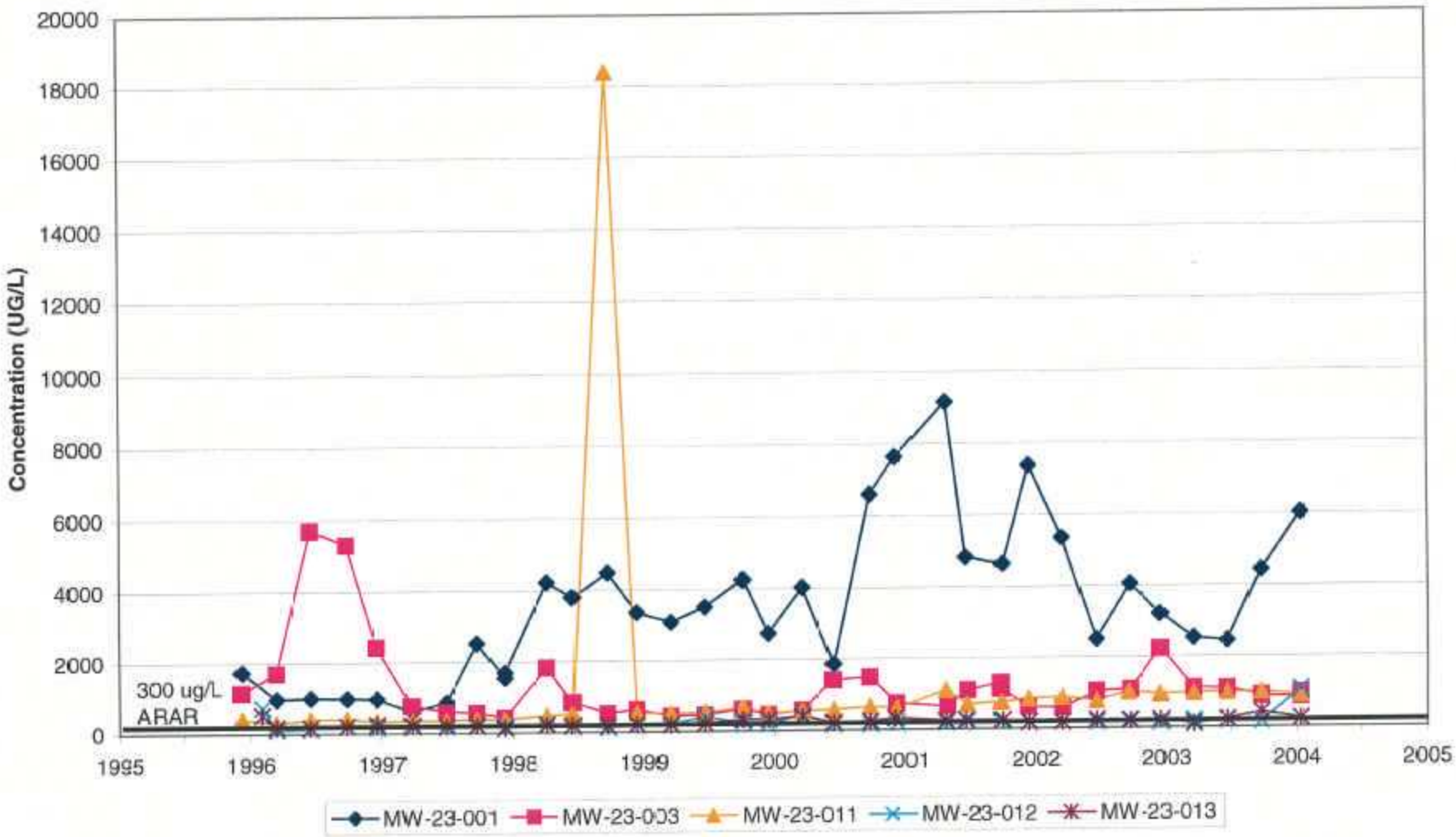
N:\11684-1.000\DB\Program\Program.rdb
GroupA_Upgradient_Shallow_Dec96-Jan04_Iron-plot, 5/25/04

Landfill 023
Iron Concentrations Over Time
Group A Monitoring Wells



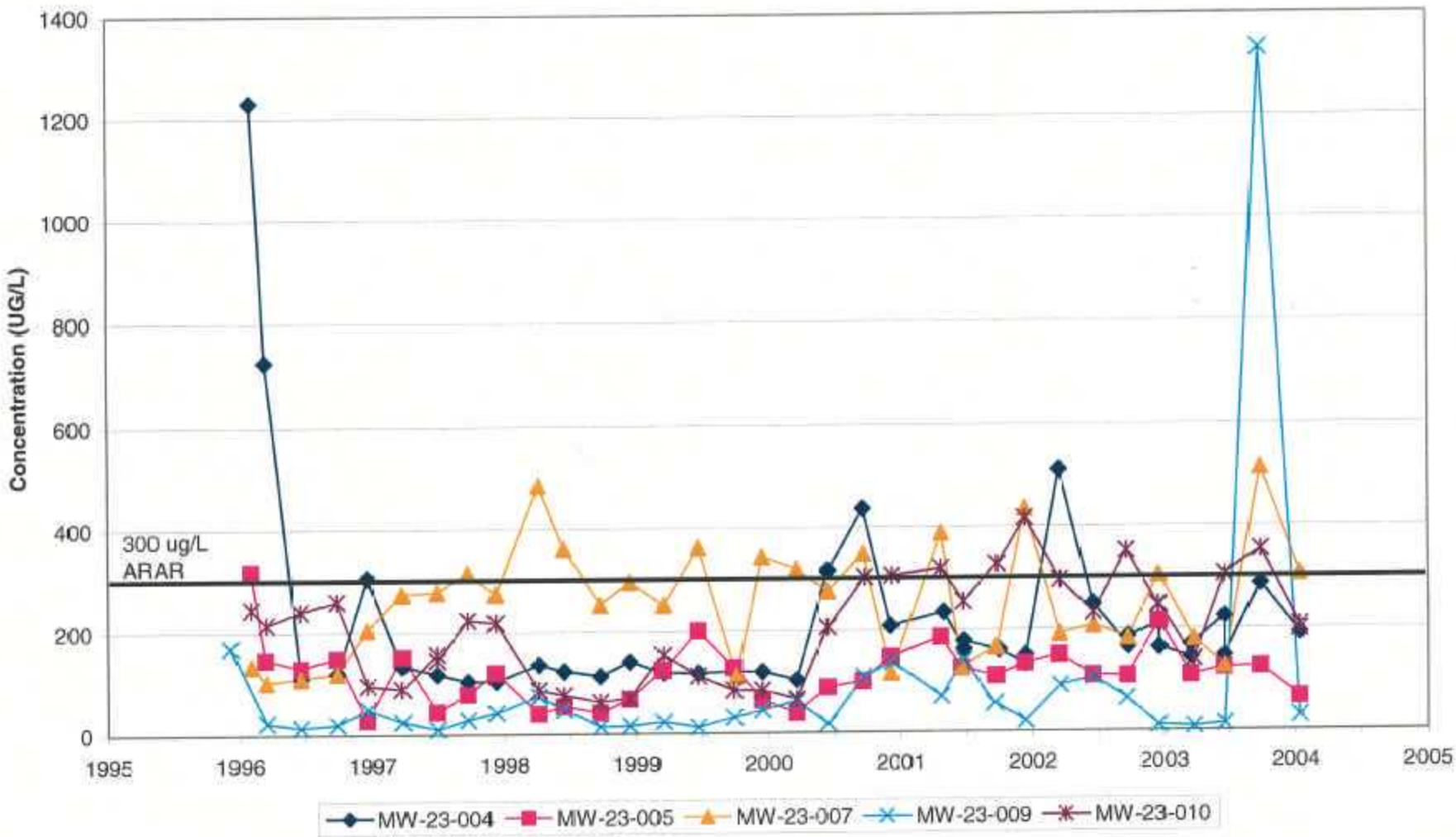
N:\11184-1\000\DB\Program\Program.mdb
GroupA_Upgradient_Deep_Dec96-Jan04: Iron-plot, 5/25/2004

Landfill 023
Manganese Concentrations Over Time
Group A Monitoring Wells



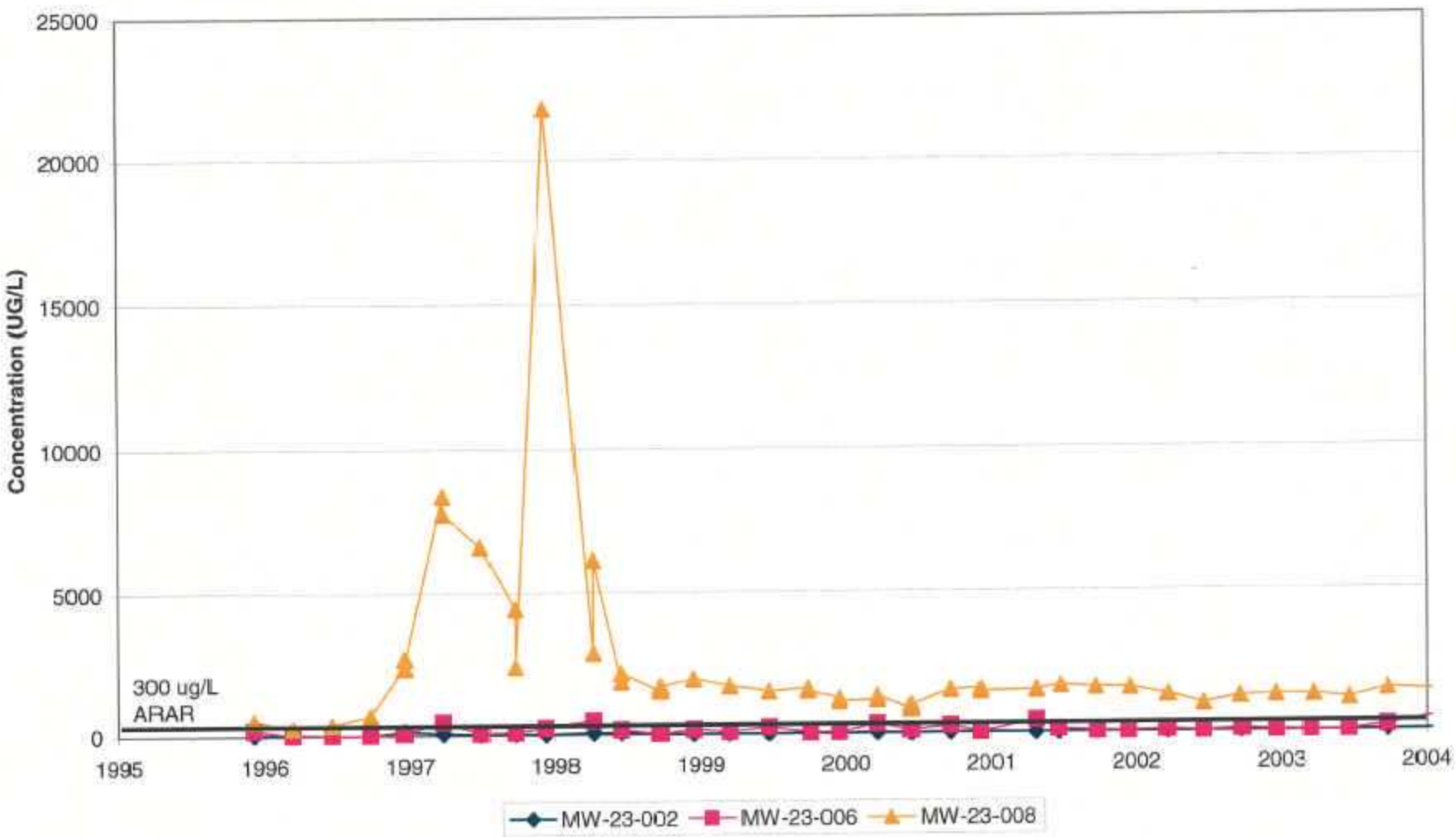
N:\111684-1.000\DB\Programs\Program mdb
GroupA_Downgradient_Dec95-Jan04, Manganese plot, 5/25/2004

Landfill 023
Manganese Concentrations Over Time
Group A Monitoring Wells



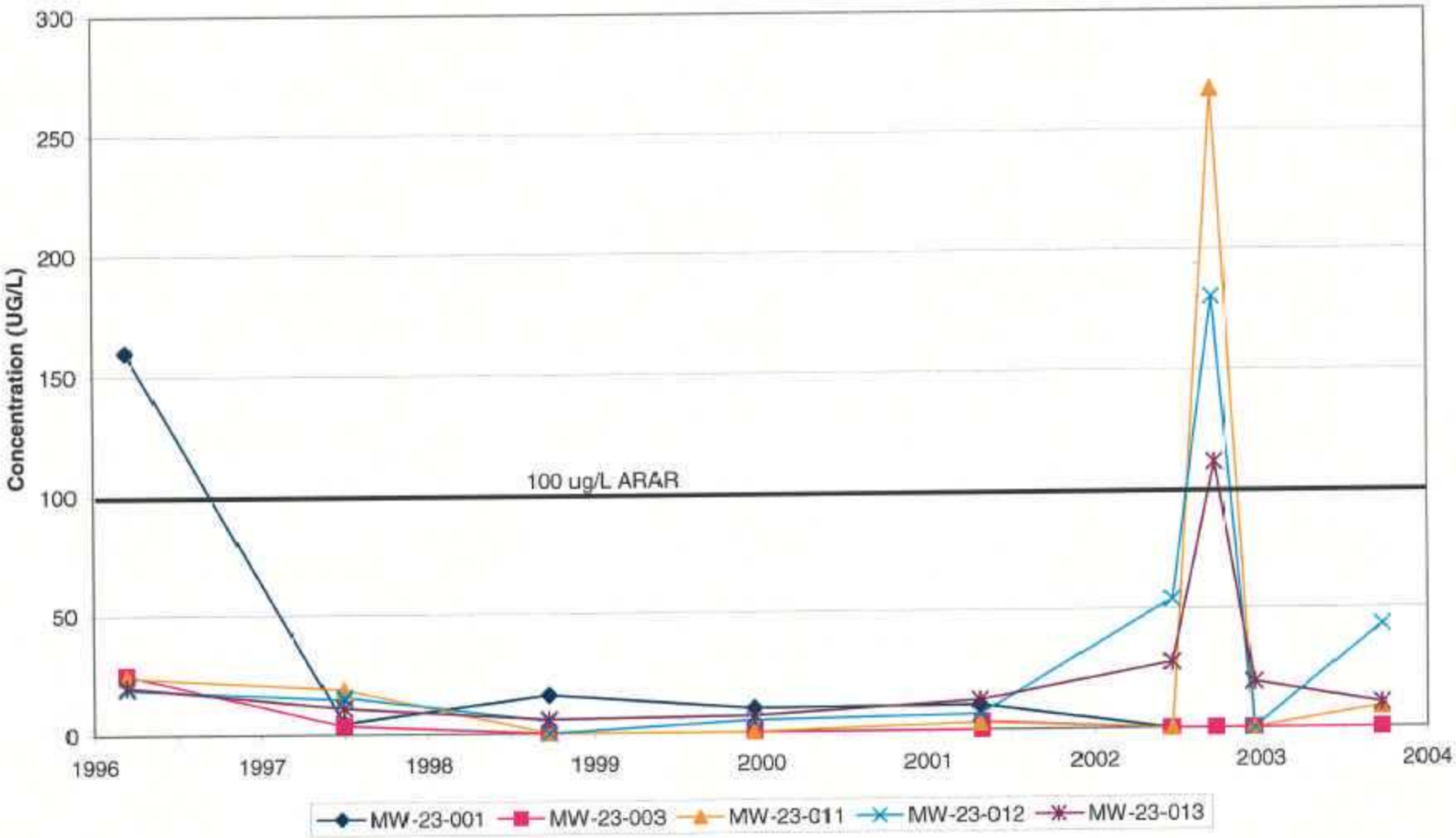
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Disp_Dec05-Jan04, Manganese-plot, 5/25/2004

Landfill 023
Manganese Concentrations Over Time
Group A Monitoring Wells



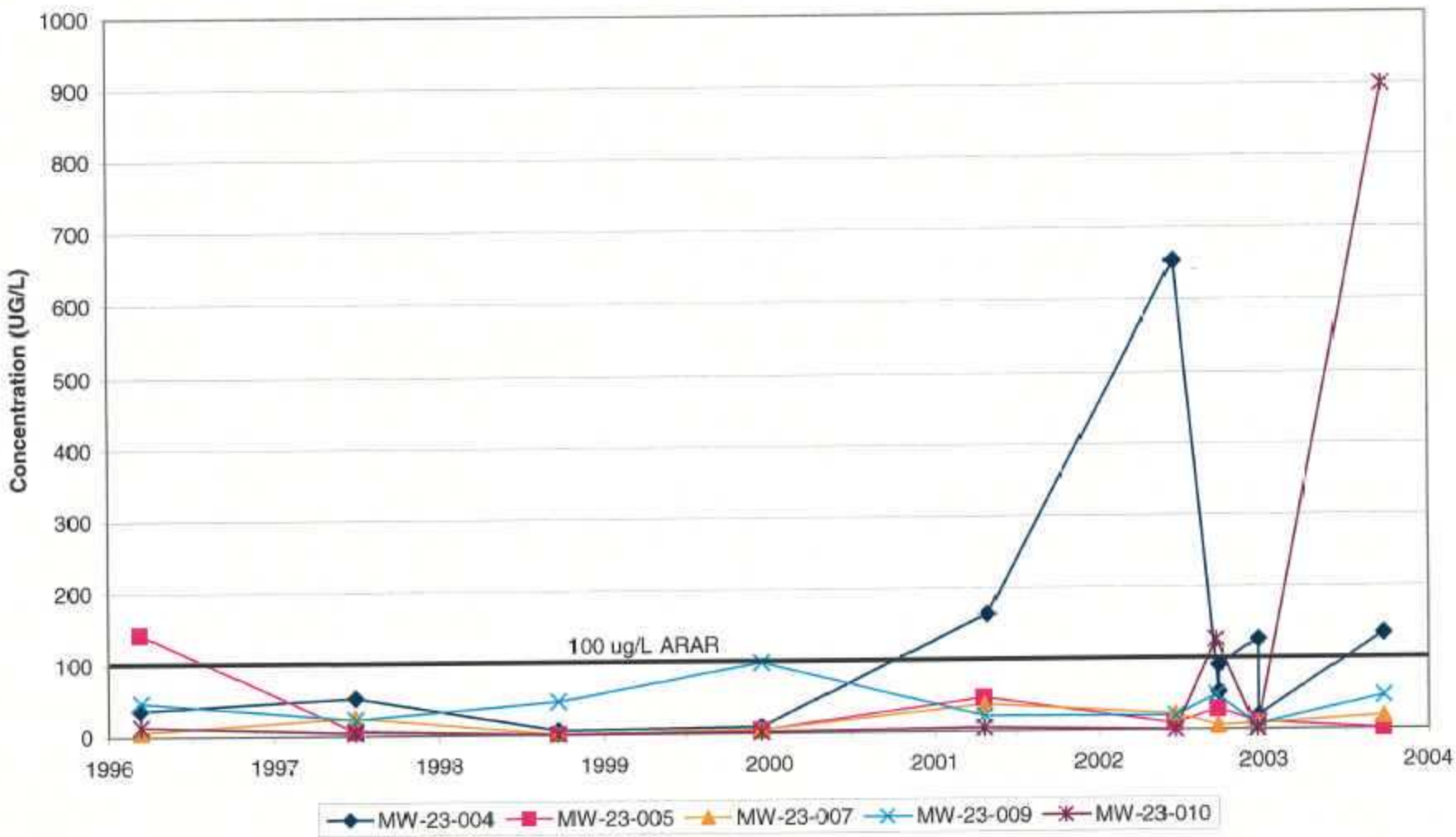
N:\111634-1.000\DB\Program\-Program.mdb
GroupA_Upgradient_Shallow_Dec95-Jan04, Manganese-plot, 5/25/04

Landfill 023
Nickel Concentrations Over Time
Group A Monitoring Wells



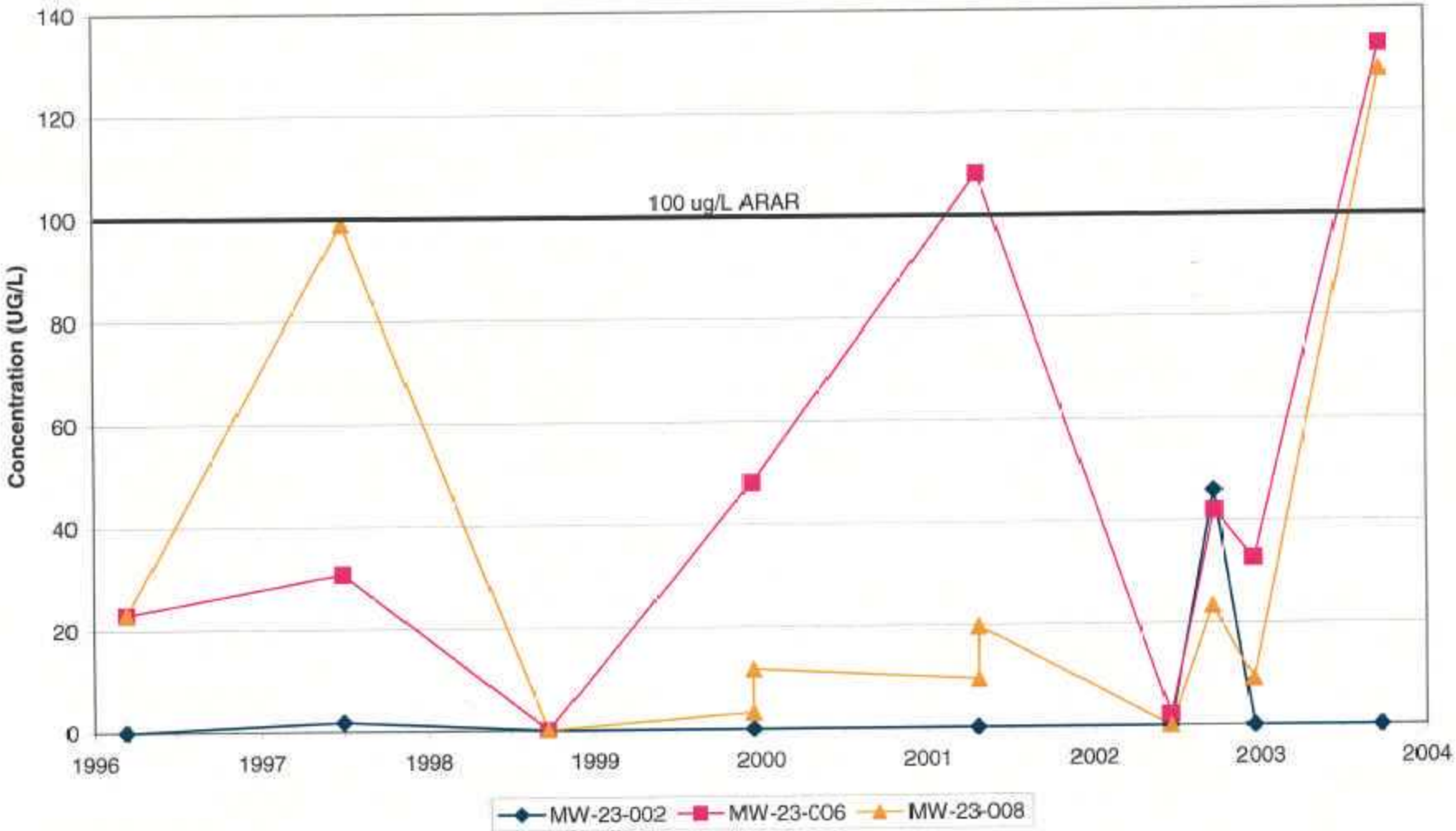
N:\111634-1.000\DB\Program\Program.mdb
Group_Downgradient_Dec95-Jan04, Nickel-plot, 5/25/2004

Landfill 023
Nickel Concentrations Over Time
Group A Monitoring Wells



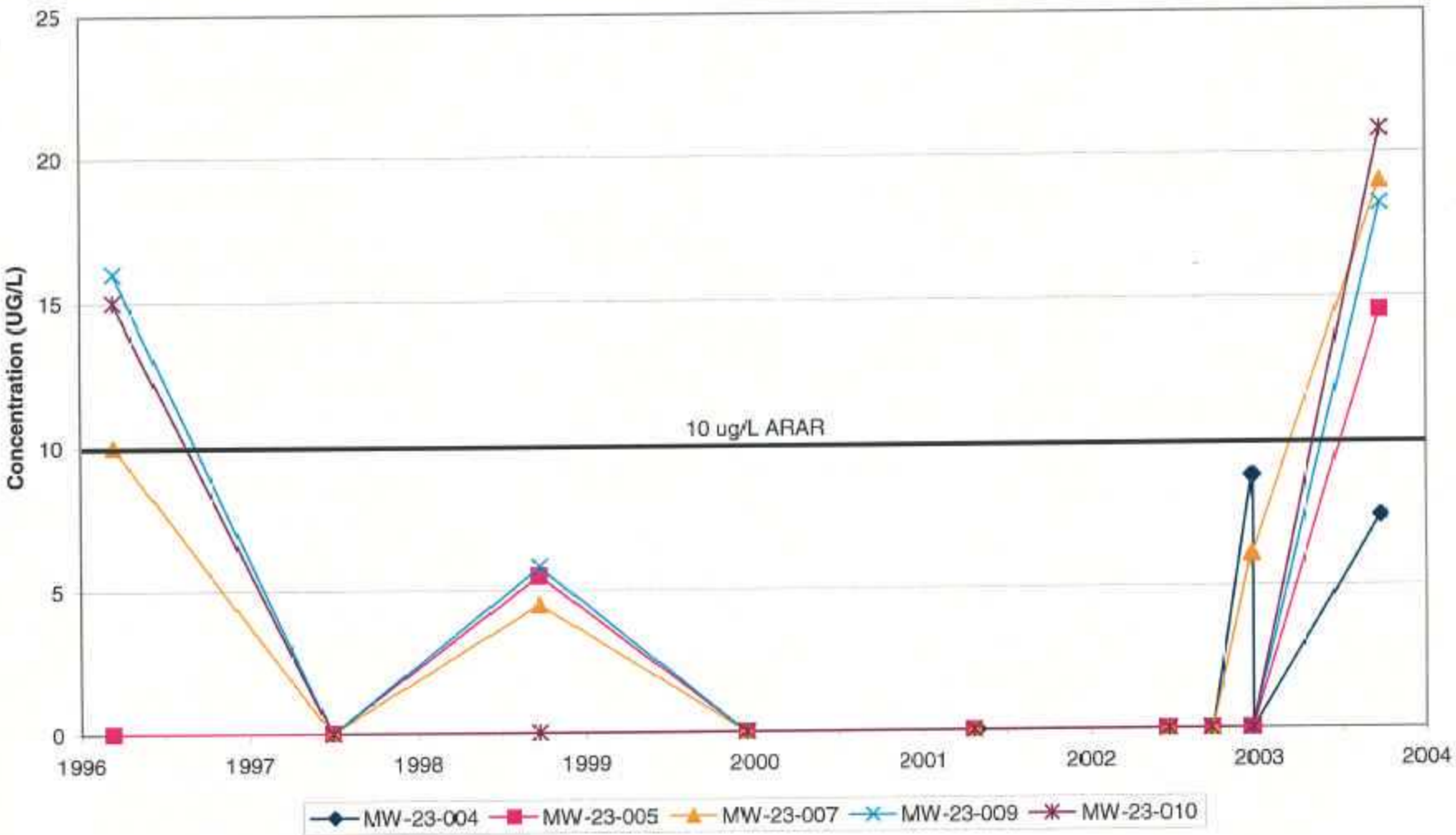
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Deep_Dec95-Jan04, Nickel-plot, 5/25/2004

Landfill 023
Nickel Concentrations Over Time
Group A Monitoring Wells



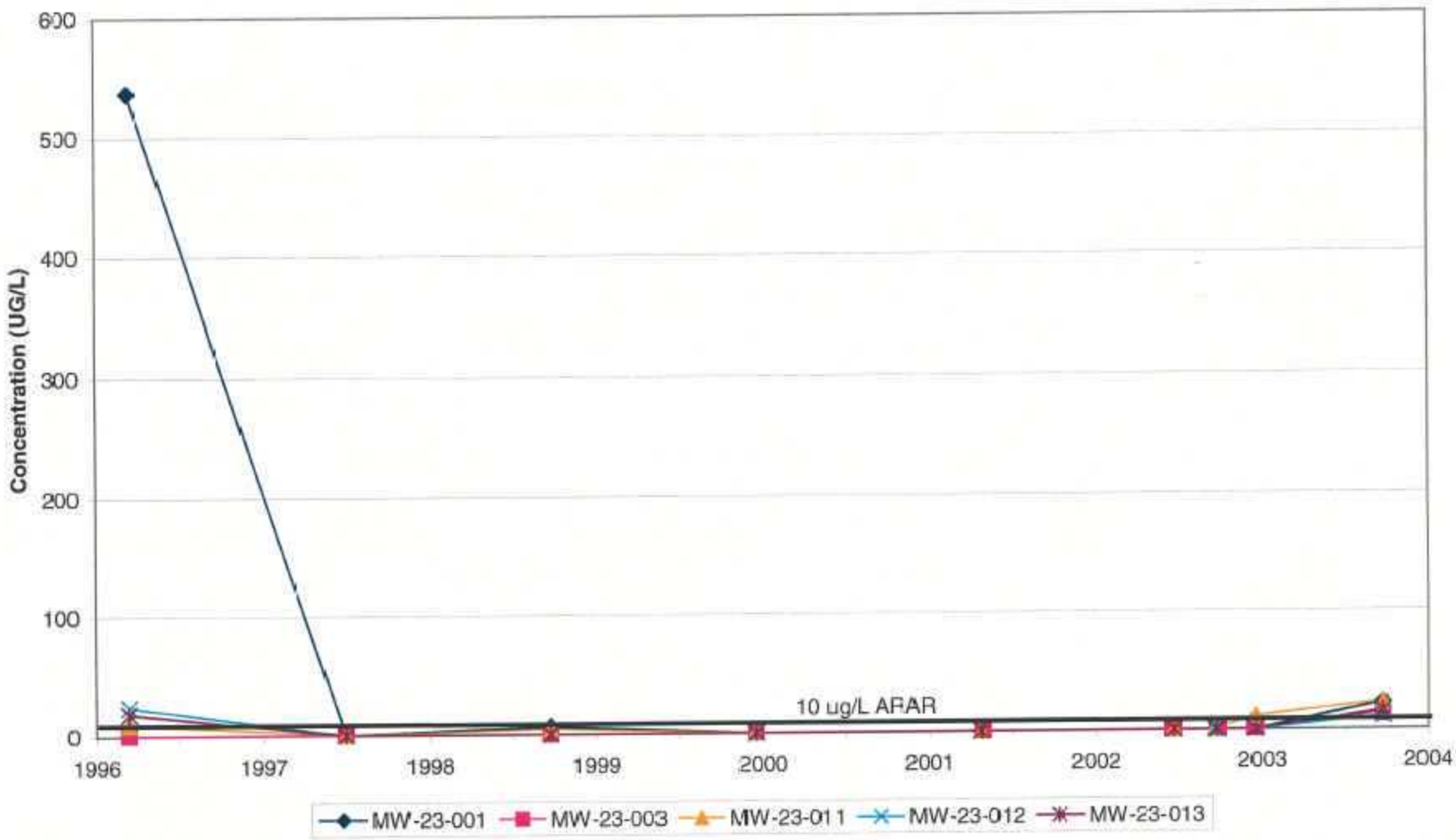
N:\111684-1.000\DB\Program Program.mdb
GroupA_Upgradient_Shallow_Dec95-Jan04, Nickel-plot, 5/25/04

Landfill 023
Selenium Concentrations Over Time
Group A Monitoring Wells



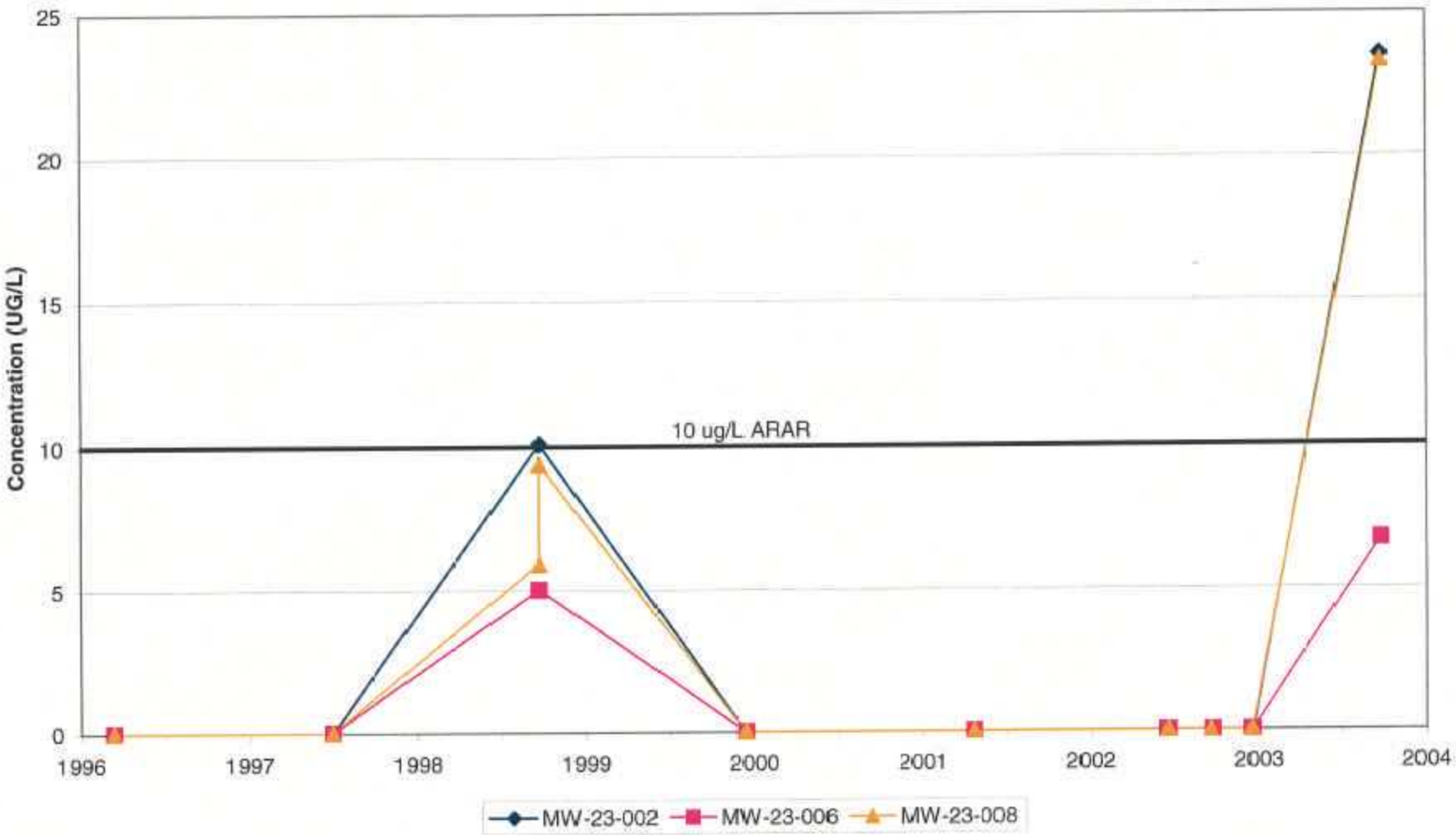
N:\111684-1.000C6\Program\Program.mde
GroupA_Upgradient_Deep_Dec95-Jan04_Selenium-plot, 5/25/2004

Landfill 023
Selenium Concentrations Over Time
Group A Monitoring Wells



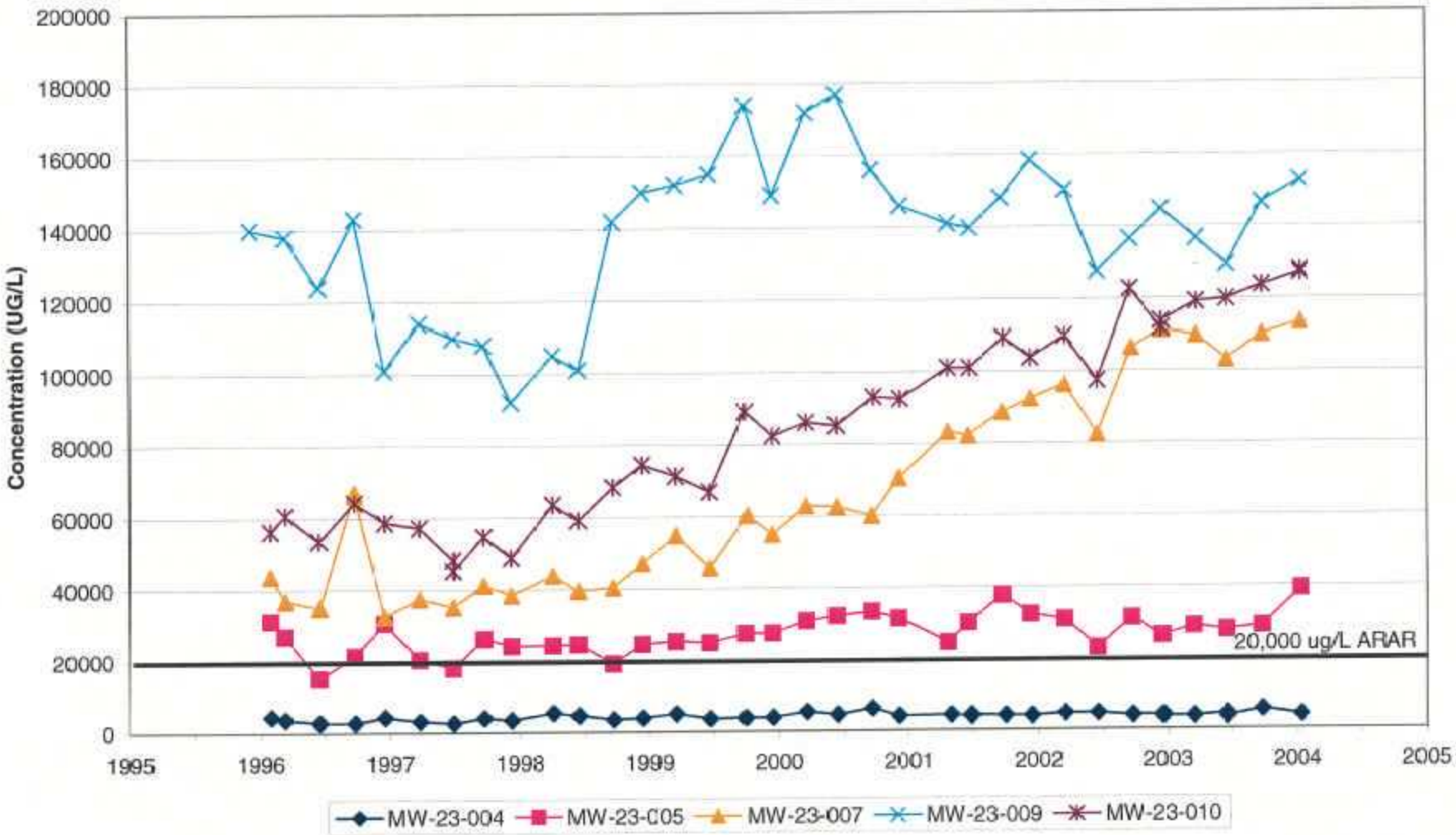
N:\111684-1.000\DB\Program\Program.mde
GroupA_Downgradient_Dec95-Jan04_Selenium-plot, 5/25/2004

Landfill 023
Selenium Concentrations Over Time
Group A Monitoring Wells



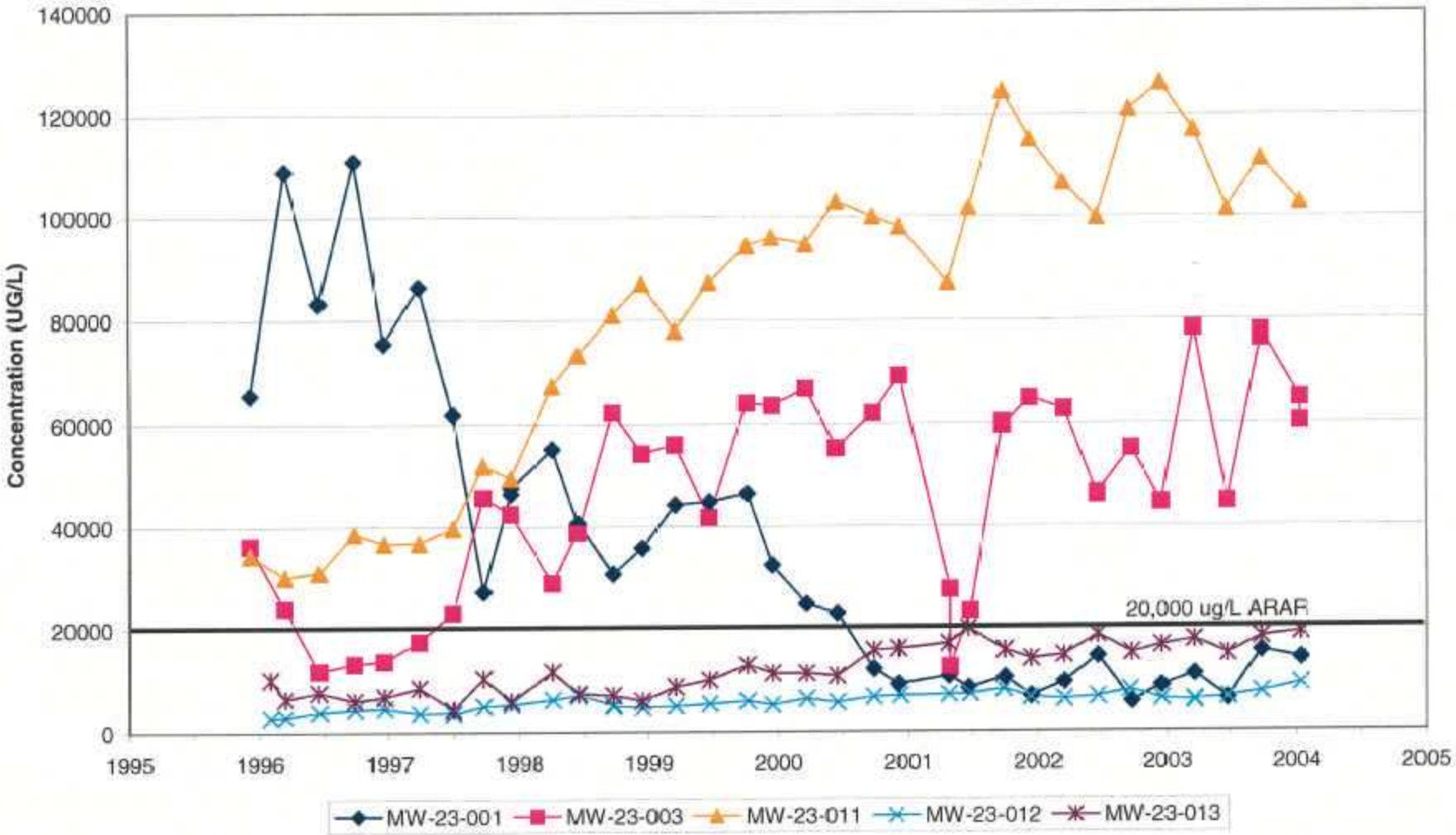
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Shallow_Dec96-Jan04, Selenium-plot, 5/25/04

Landfill 023
Sodium Concentrations Over Time
Group A Monitoring Wells



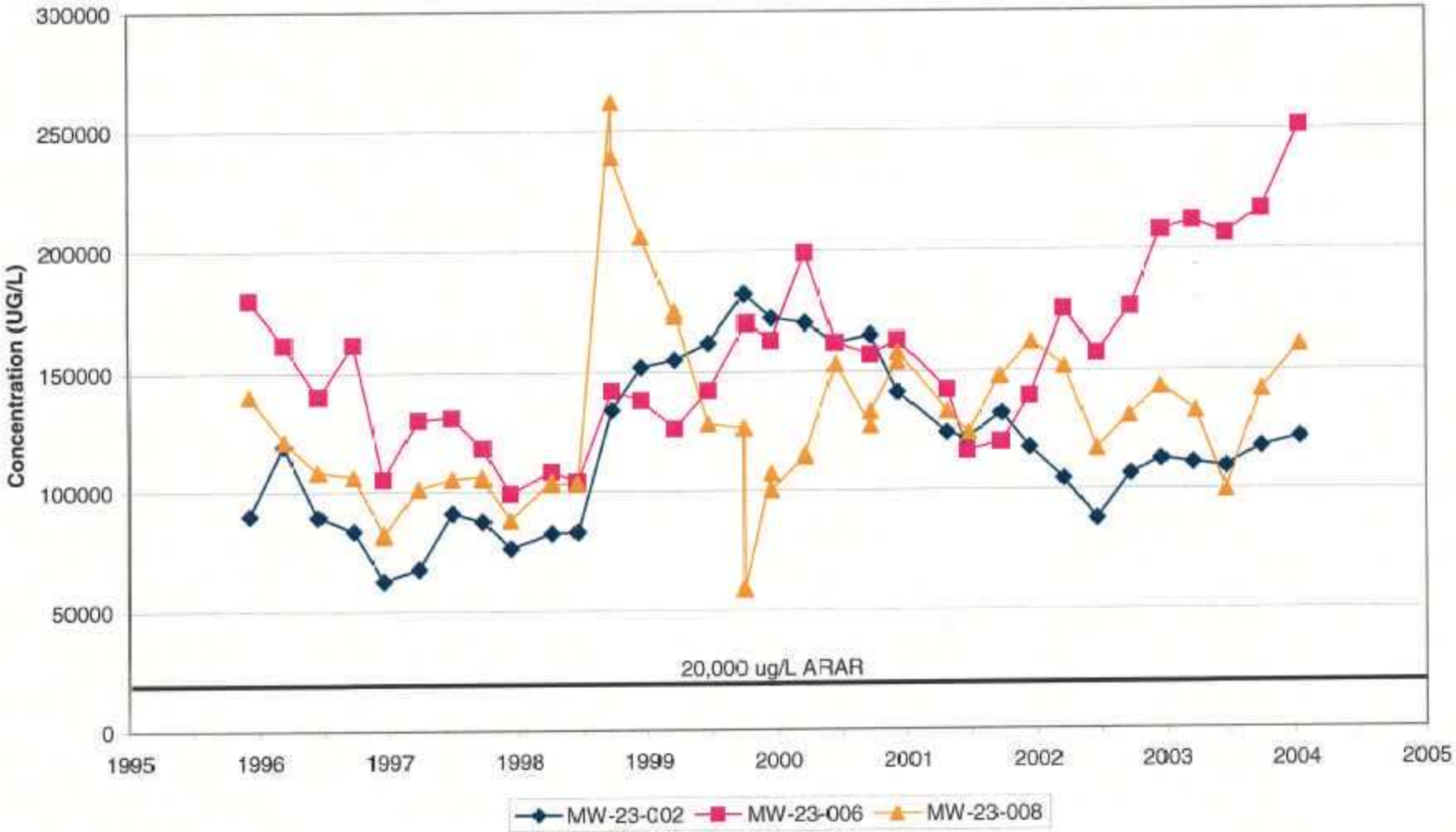
N:\111684-1.000\06\Program\Program.mde
GroupA_Upgradient_Deep_Dec95-Jan04, Sodium-pilot, 5/25/2004

Landfill 023
Sodium Concentrations Over Time
Group A Monitoring Wells



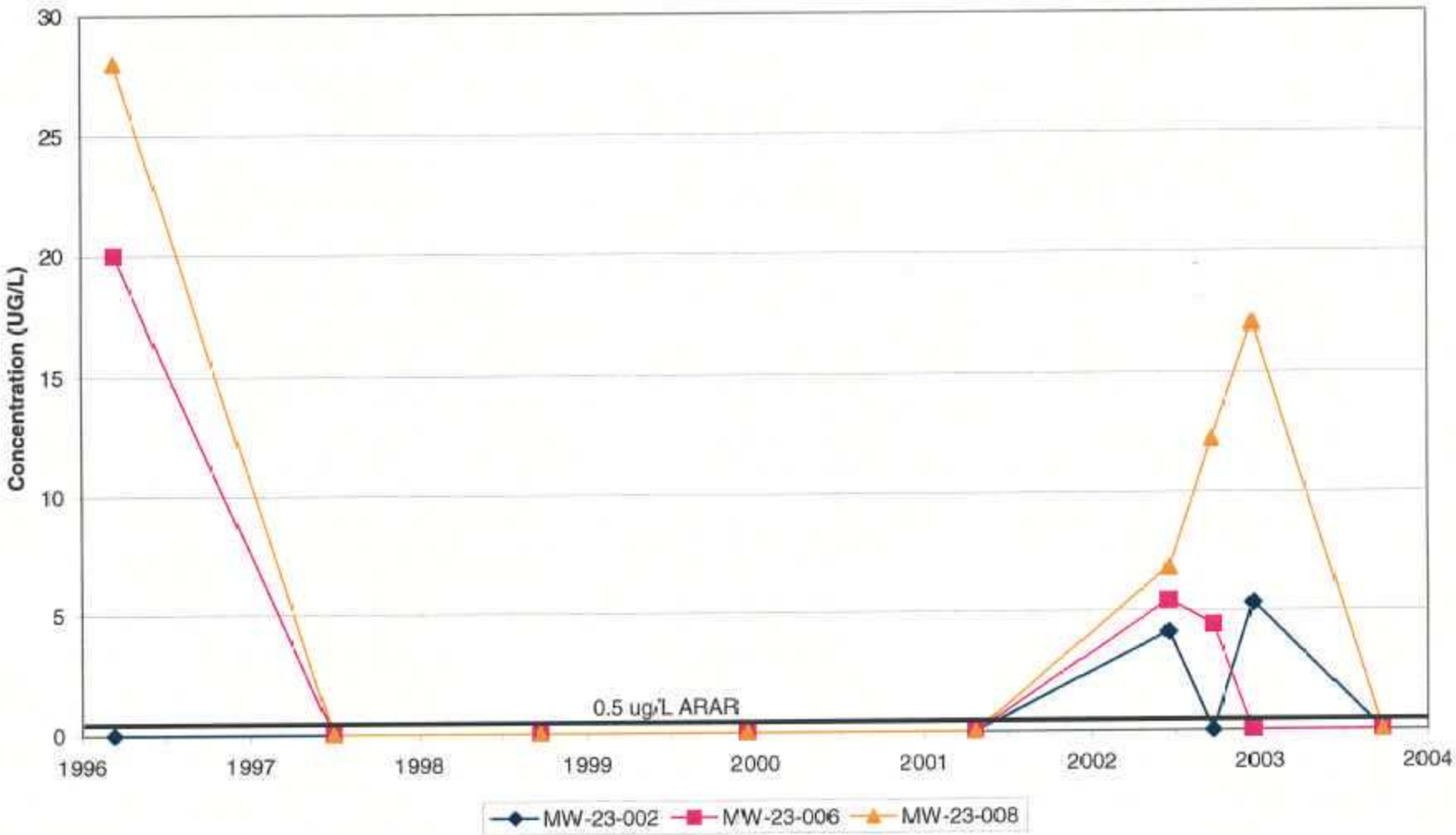
N:\111684-1.002\DB\Program\Program.mde
GroupA_Downgradient_Dec95-Jan04, Sodium-plot, 5/25/2004

Landfill 023
Sodium Concentrations Over Time
Group A Monitoring Wells



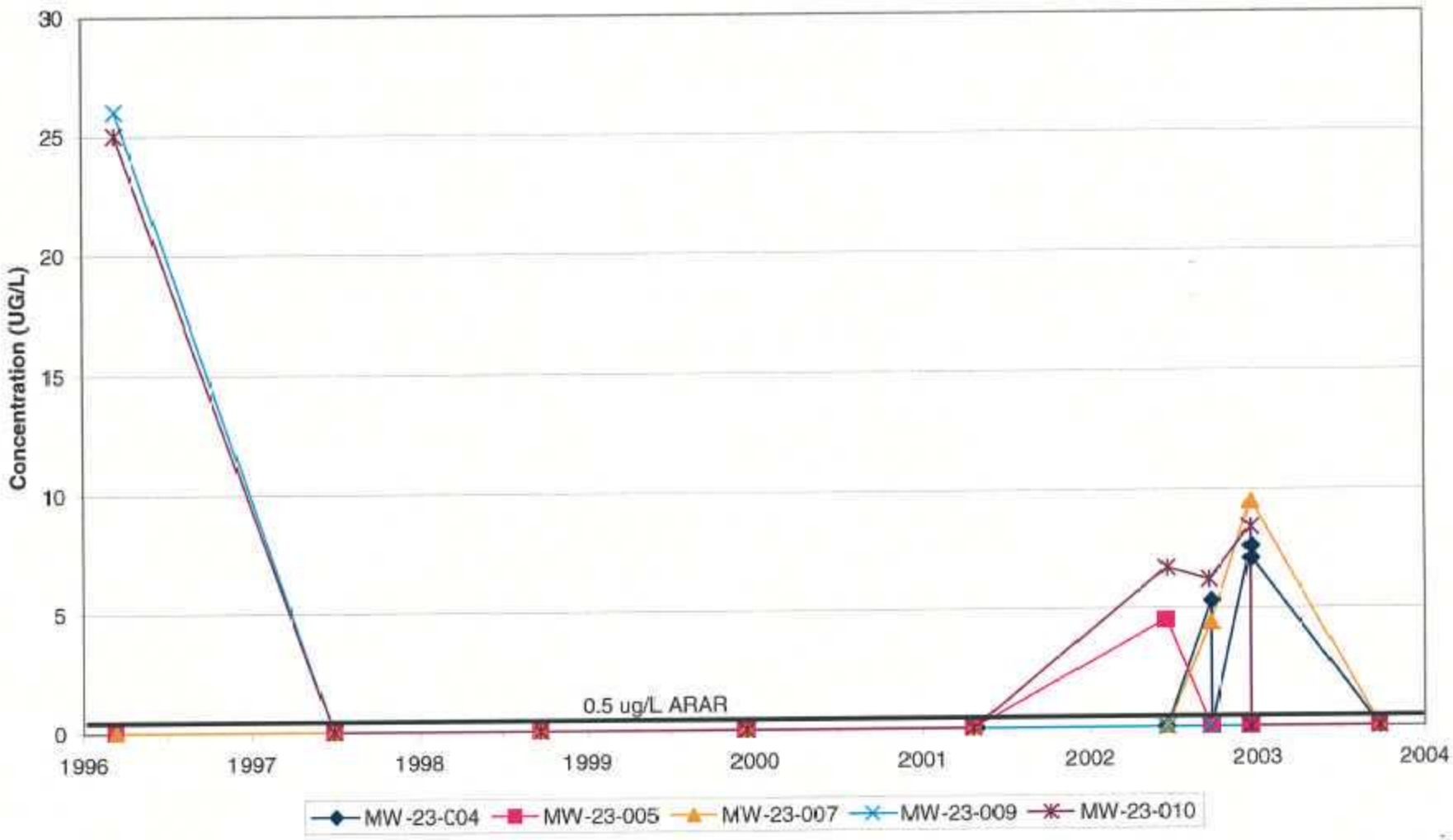
N:\111684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Shallow_Dec96-Jan04, Sodium-plot, 5/25/04

Landfill 023
Thallium Concentrations Over Time
Group A Monitoring Wells



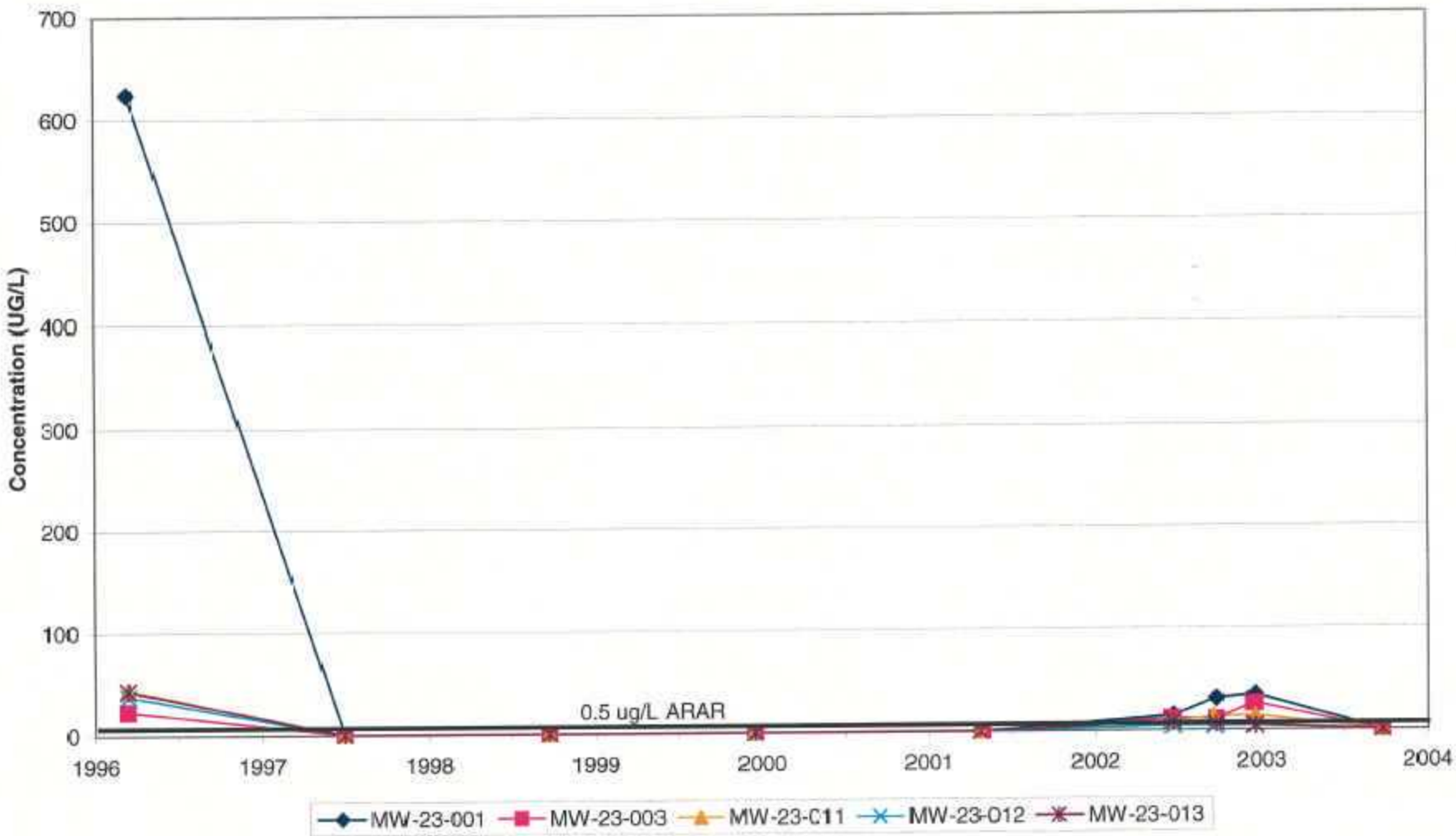
N:\111884-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Shallow_Dec95-Jan04, Thallium.plot, 9/25/04

Landfill 023
Thallium Concentrations Over Time
Group A Monitoring Wells



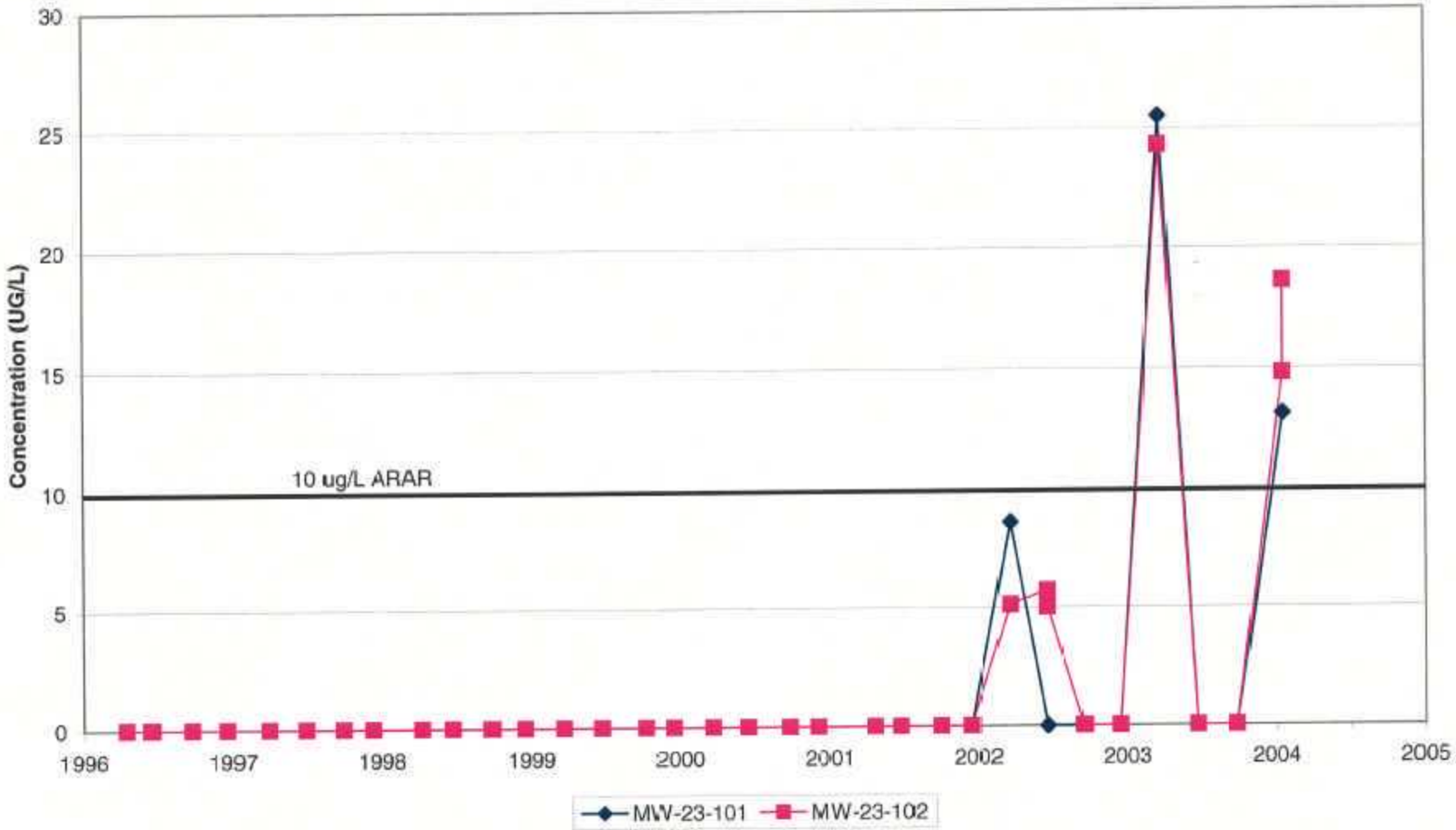
N:\11684-1.000\DB\Program\Program.mdb
GroupA_Upgradient_Deep_Dec95-Jan04, Thallium-plot, 5/25/2004

Landfill 023
Thallium Concentrations Over Time
Group A Monitoring Wells



N:\111684-1.000\DB\Program\Program.mdb
GroupA_Downgradient_Dec95-Jan04, Thallium-plot, 5/25/2004

Landfill 023
Arsenic Concentrations Over Time
Group B Side Gradient Monitoring Wells MW-23-101 and MW-23-102



N:\11684-1.000\DB\Program\Program.mde
MW-23-101_MW-23-102_Arsenic, Arsenic plot, 5/25/2004

EVALUATION OF POST-CLOSURE O&M GROUNDWATER MONITORING DATA FOR LANDFILL LF-024

The previous Five-Year Review Report for PAFB specifically recommended an evaluation of the O&M monitoring data for former base landfill LF-024 (Figure 1). This one-acre construction/demolition (C&D) debris landfill was used from 1980 to 1986. Soil and fill are contaminated with metals.

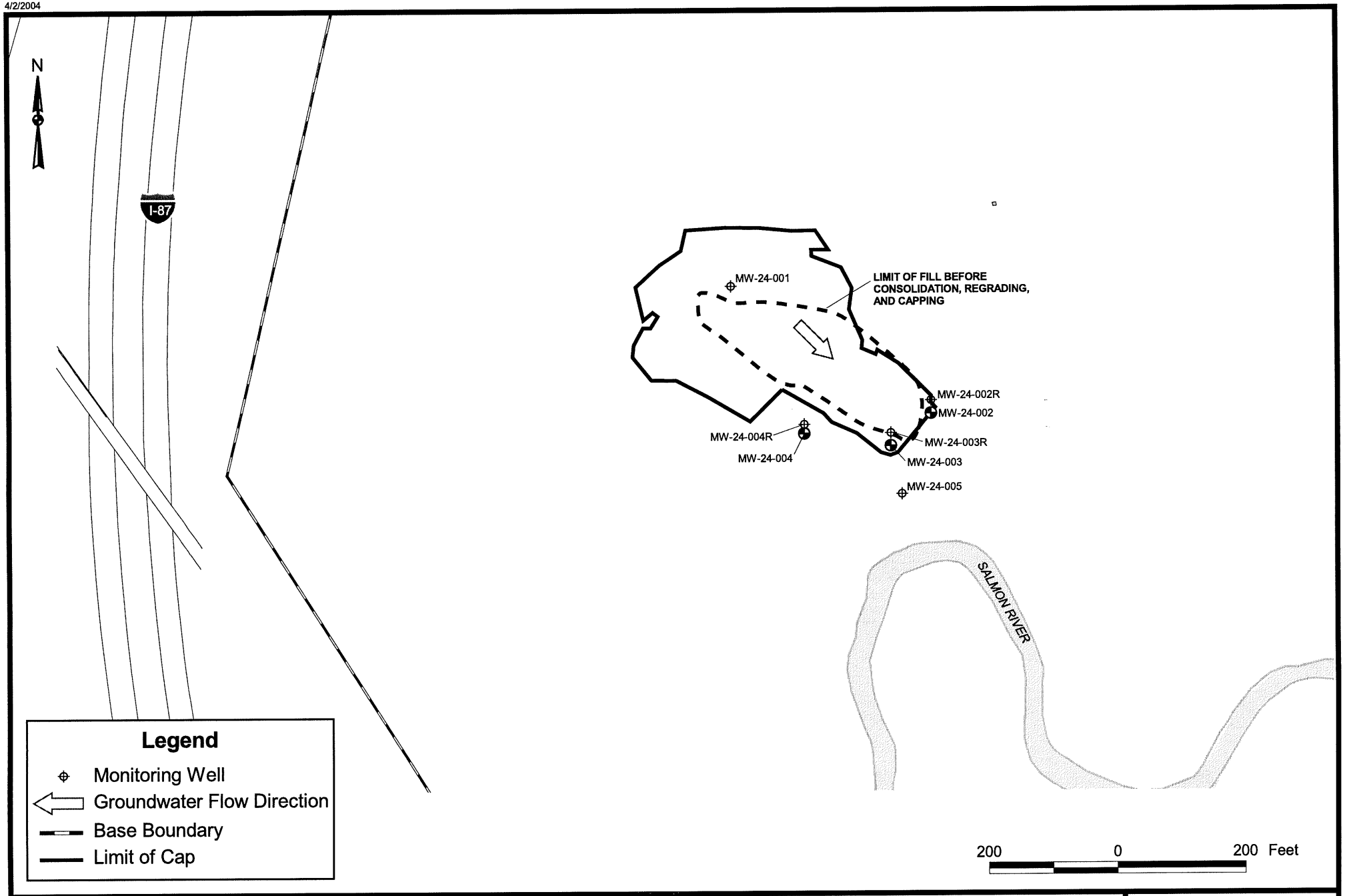
The ROD for this site was signed in March 1997. The remedy selected for the site, based on EPA's Presumptive Remedy for Military Landfills, was "Containment with a Native Soil Cap and Institutional Controls." The remedy also included: the installation of three groundwater monitoring wells (MW-24-002R through MW-24-004R) near the locations of three existing well points; installation of an additional new well (MW-24-005) downgradient of the landfill to serve as a sentry well to monitor plume containment; and monitoring of the four new wells and an existing upgradient well (MW-24-001) for a period of thirty years. Construction of the remedy was completed in September 1998. O&M groundwater sampling began at the site in November 1998 and had been completed semiannually through November 2003, The ROD required that sampling be conducted semiannually for the first five years to establish baseline conditions, and annually thereafter. Annual sampling will commence in 2004. Analytical data from November 1998 through November 2003 were examined to evaluate contaminant concentrations in groundwater. The groundwater samples were analyzed for Target Analyte List (TAL) metals only.

The evaluation of this sites' O&M groundwater sampling analytical data involved several steps. Detected analytes were tabulated, detected concentrations were statistically summarized, and the data were compared to applicable groundwater ARARs (see Table 1). Analytes that were frequently detected at concentrations exceeding their respective groundwater ARARs received further statistical trend analysis (see Table 2) and were also viewed graphically to verify the trend analyses (see attached Graphs). The results of the data evaluation are discussed below.

Metals that have been detected at concentrations exceeding ARARs include: antimony, arsenic, cadmium, iron, lead, manganese, selenium, sodium, and thallium (see Table 1). Arsenic, cadmium, lead, and sodium ARAR exceedances have occurred only sporadically in a few samples. Iron data indicate enrichment in wells downgradient of LF-024, but the iron concentrations are not significantly elevated above levels noted in background groundwater wells at PAFB (URS 1996).

Antimony, manganese, selenium, and thallium concentrations are enriched in downgradient wells as compared to the upgradient well, implying that their presence in groundwater is due to leaching from the LF-024 fill (see attached Graphs). Antimony concentrations in groundwater were generally rising until mid-2002 and have been decreasing since that time. Manganese concentrations in groundwater have been decreasing, with the exception of MW-24-002R, since post-closure sampling began. Selenium and thallium ARAR exceedances appear to occur sporadically in groups of wells and then concentrations drop off to near non-detectable levels. Selenium concentrations appear to be increasing in downgradient wells for the last few sampling events while thallium concentrations have been decreasing in most wells for the last few sampling events.

N:\11168476.00000\GIS\Applications\lf-024.apr SITE PLAN
4/2/2004



URS

PLATTSBURGH AFB - LF-024
SITE PLAN

FIGURE 1

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-024
NOVEMBER 1998 - NOVEMBER 2003

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Total Metals									
Aluminum	NS	UG/L	55	53	16.8	10500	1171	0	MW-24-004R
Antimony	3	UG/L	55	17	3.46	16.4	7.25	17	MW-24-005
Arsenic	10	UG/L	55	13	4	15.3	8.77	3	MW-24-002R
Barium	1000	UG/L	55	55	3.6	166	65.37	0	MW-24-003R
Cadmium	5	UG/L	55	9	0.25	12.2	2.33	1	MW-24-001
Calcium	NS	UG/L	55	55	8722	226000	108000	0	MW-24-005
Chromium	50	UG/L	55	34	0.4	15.3	2.9	0	MW-24-004R
Cobalt	NS	UG/L	55	40	0.5	10.5	3.5	0	MW-24-003R
Copper	200	UG/L	55	17	1	11.4	4.66	0	MW-24-004R
Iron	300	UG/L	55	55	56.7	42800	9720	50	MW-24-003R
Lead	15	UG/L	55	19	2	29.5	6.11	1	MW-24-004R
Magnesium	35000	UG/L	55	55	1150	33800	19000	0	MW-24-004R
Manganese	300	UG/L	55	55	2.55	32900	6313	44	MW-24-005
Nickel	100	UG/L	55	28	1	16.8	5.2	0	MW-24-004R
Potassium	NS	UG/L	55	55	502	15800	5503	0	MW-24-005
Selenium	10	UG/L	55	14	4.4	24.7	12.01	6	MW-24-002R
Silver	50	UG/L	45	13	1	7.4	4.11	0	MW-24-005
Sodium	20000	UG/L	55	55	908	25600	9663	3	MW-24-002R
Thallium	0.5	UG/L	55	23	3.5	164	22.91	23	MW-24-005
Vanadium	NS	UG/L	55	22	0.83	19.2	5.45	0	MW-24-004R
Zinc	2000	UG/L	53	44	3.5	675	35.42	0	MW-24-001
Filtered Metals									
Aluminum	NS	UG/L	15	10	11.1	1340	284.4	0	MW-24-004R
Antimony	3	UG/L	15	1	8.9	8.9	8.9	1	MW-24-004R

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE - LANDFILL-024
NOVEMBER 1998 - NOVEMBER 2003

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Barium	1000	UG/L	15	15	6	133	65.37	0	MW-24-003R
Beryllium	3	UG/L	15	1	1.2	1.2	1.2	0	MW-24-003R
Cadmium	5	UG/L	15	2	12	1.2	1.2	0	MW-24-003R
Calcium	NS	UG/L	15	15	7990	208000	100000	0	MW-24-005
Chromium	50	UG/L	15	4	1.6	14.6	5.45	0	MW-24-004R
Cobalt	NS	UG/L	15	10	0.48	6.2	3.24	0	MW-24-003R
Copper	200	UG/L	15	3	1.1	1.6	1.43	0	MW-24-002R
Iron	300	UG/L	15	14	28.2	19300	47.44	12	MW-24-003R
Lead	15	UG/L	15	7	2.7	6.5	3.67	0	MW-24-005
Magnesium	35000	UG/L	15	15	1190	29400	20400	0	MW-24-004R
Manganese	300	UG/L	14	13	3.5	274300	7428	12	MW-24-005
Nickel	100	UG/L	15	12	1.7	10.7	4.78	0	MW-24-004R
Potassium	NS	UG/L	15	15	1170	14800	4921	0	MW-24-005
Selenium	10	UG/L	15	1	4.9	4	4.9	0	MW-24-003R
Silver	50	UG/L	5	4	1.3	9	1.45	0	MW-24-003R
Sodium	20000	UG/L	15	15	1020	22500	10900	1	MW-24-005
Thallium	0.5	UG/L	15	6	3.1	33.5	12.25	6	MW-24-005
Vanadium	NS	UG/L	15	2	1	1.3	1.15	0	MW-24-001
Zinc	2000	UG/L	13	13	7	55.8	25.15	0	MW-24-003R

ARAR = Applicable or Relevant and Appropriate Requirement
NS = No standard
UG/L = Micrograms per liter

TABLE 2
LANDFILL 024 MANN-KENDALL TREND ANALYSIS
FOR SELECT ANALYTES (NOVEMBER 1998 - NOVEMBER 2003)

LOCID: MW-24-001

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	11	2	9	0.271	No Trend
Iron	WG	MET	11	11	-7	0.324	No Trend
Manganese	WG	MET	11	11	-11	0.223	No Trend
Selenium	WG	MET	11	1	-4	0.44	No Trend

LOCID: MW-24-002R

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	11	5	17	0.109	No Trend
Iron	WG	MET	11	11	9	0.271	No Trend
Manganese	WG	MET	11	11	27	0.02	Upward Trend
Selenium	WG	MET	11	4	7	0.324	No Trend
Thallium	WG	MET	11	6	21	0.06	Upward Trend

LOCID: MW-24-003R

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	11	4	16	0.141	No Trend
Iron	WG	MET	11	11	13	0.179	No Trend
Manganese	WG	MET	11	11	-9	0.271	No Trend
Selenium	WG	MET	11	4	-3	0.44	No Trend
Thallium	WG	MET	11	4	-7	0.324	No Trend

LOCID: MW-24-004R

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	11	4	16	0.141	No Trend
Iron	WG	MET	11	11	-13	0.179	No Trend
Manganese	WG	MET	11	11	-19	0.082	Downward Trend
Selenium	WG	MET	11	2	-11	0.223	No Trend
Thallium	WG	MET	11	5	-1	0.5	No Trend

For multiple observations per time period, the Mann-Kendall test to the median was used.
Data reported as less than the detection limit were used by assigning a common value to the data that was smaller than the smallest measurement in the data set.
(1) - Probabilities for Mann-Kendall Nonparameteric Test for Trend (Gilbert R.O. 1987, Table A18).
(2) - Assuming a probability of error of 10% in the analysis method and or data, when the probability of no trend as calculated by the Mann-Kendall statistic is less than 10%, then it is assumed that there is a trend.
Only Detected Results Reported.

TABLE 2
LANDFILL 024 MANN-KENDALL TREND ANALYSIS
FOR SELECT ANALYTES (NOVEMBER 1998 - NOVEMBER 2003)

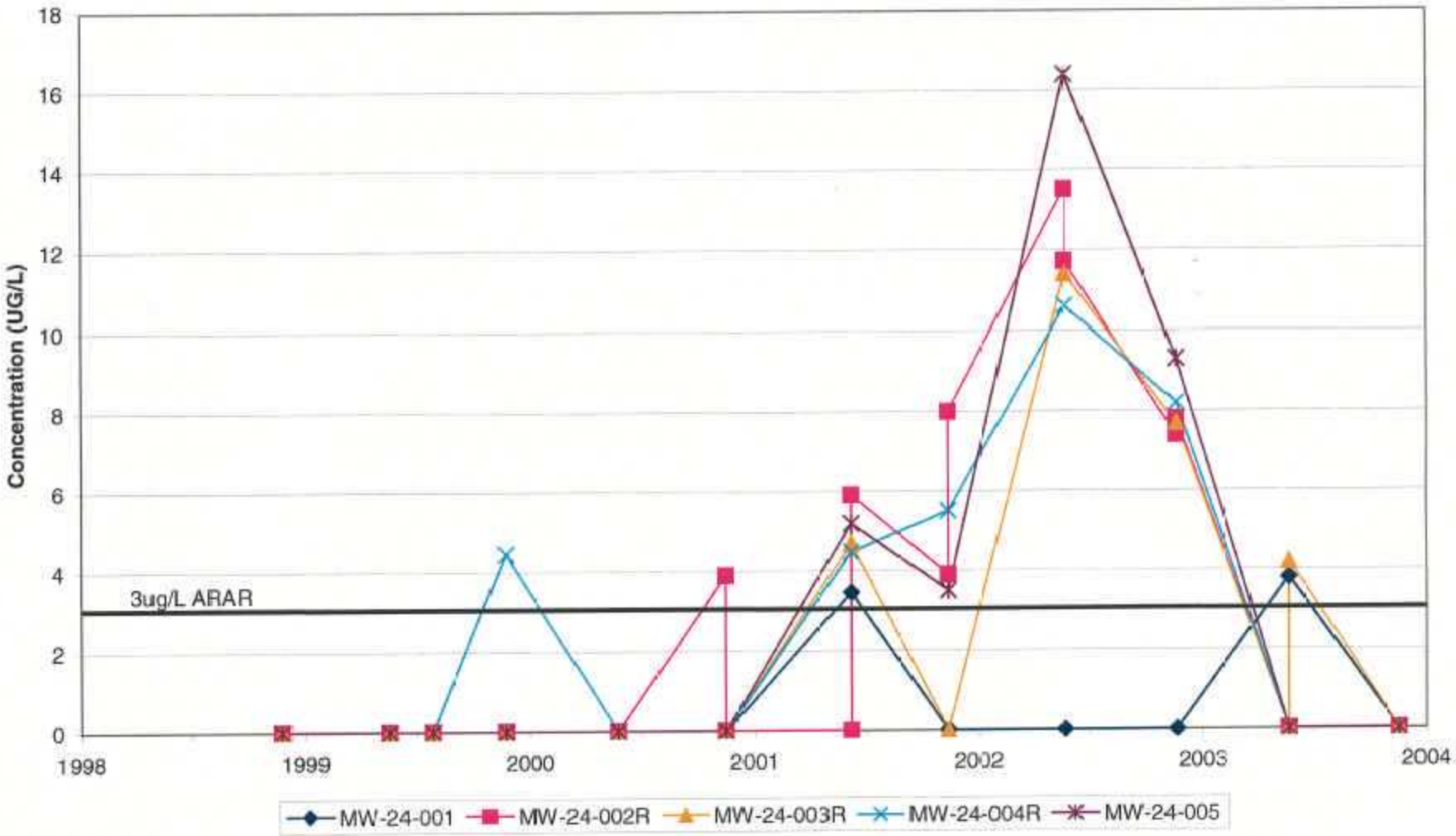
LOCID: MW-24-005

Parameter	Matrix	Class	Num of Data Points	Num of Data Point Detections	Mann-Kendall Statistic S	Probabilities (1)	Trend (2)
Antimony	WG	MET	11	4	14	0.179	No Trend
Iron	WG	MET	11	11	1	0.5	No Trend
Manganese	WG	MET	11	11	5	0.381	No Trend
Selenium	WG	MET	11	3	9	0.271	No Trend
Thallium	WG	MET	11	8	-5	0.381	No Trend

For multiple observations per time period, the Mann-Kendall test to the median was used.
Data reported as less than the detection limit were used by assigning a common value to the data that was smaller than the smallest measurement in the data set.
(1) - Probabilities for Mann-Kendall Nonparameteric Test for Trend (Gilbert R.O. 1987, Table A18).
(2) - Assuming a probability of error of 10% in the analysis method and or data, when the probability of no trend as calculated by the Mann-Kendall statistic is less than 10%, then it is assumed that there is a trend.

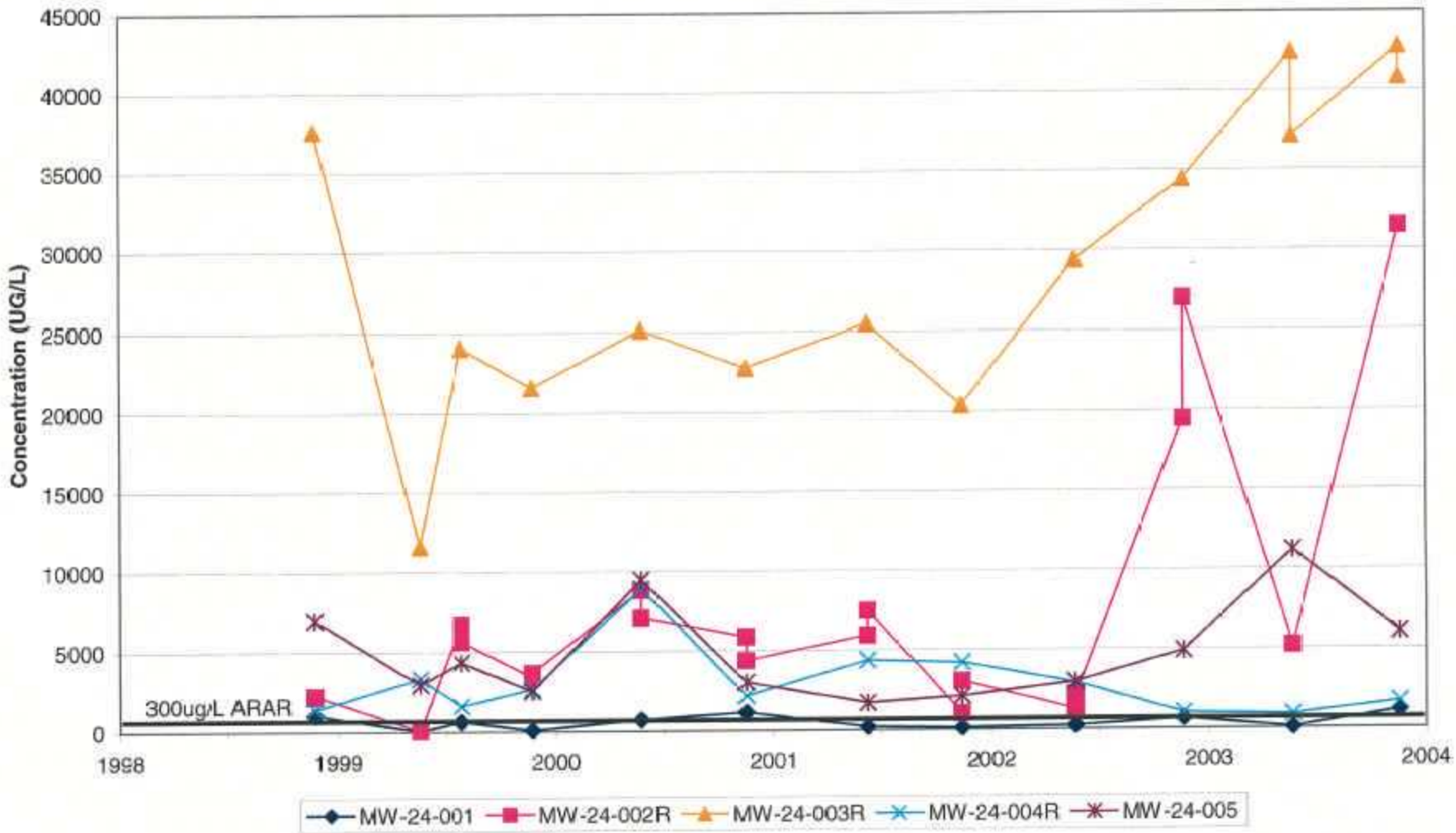
Only Detected Results Reported.

Landfill 024
Antimony Concentrations Over Time
Monitoring Wells



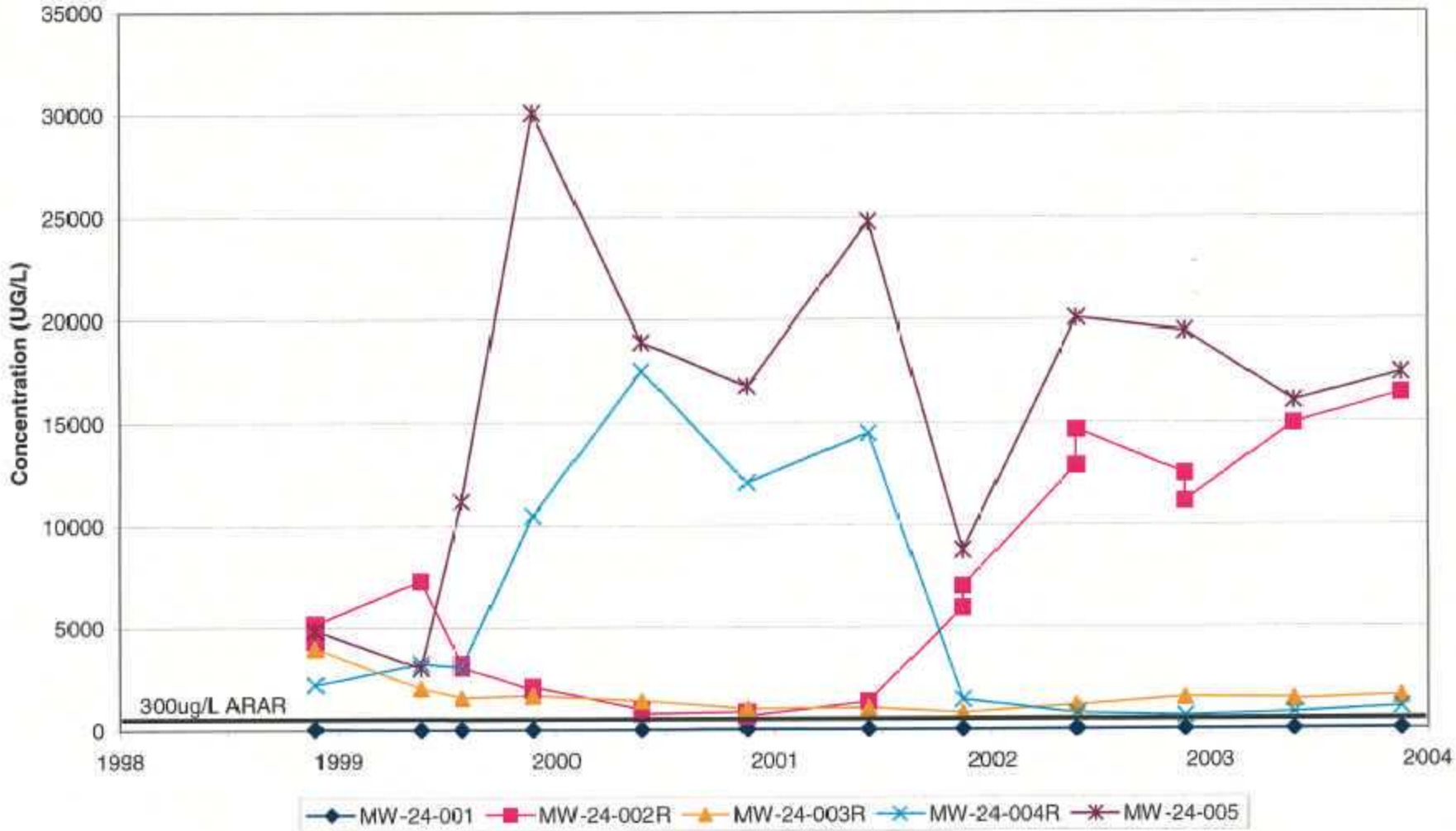
N:\111684-1.002\DB\Program\Program.mdb
All_sites_antimony, Antimony-jl-cl, 5/21/2004

Landfill 024
Iron Concentrations Over Time
Monitoring Wells



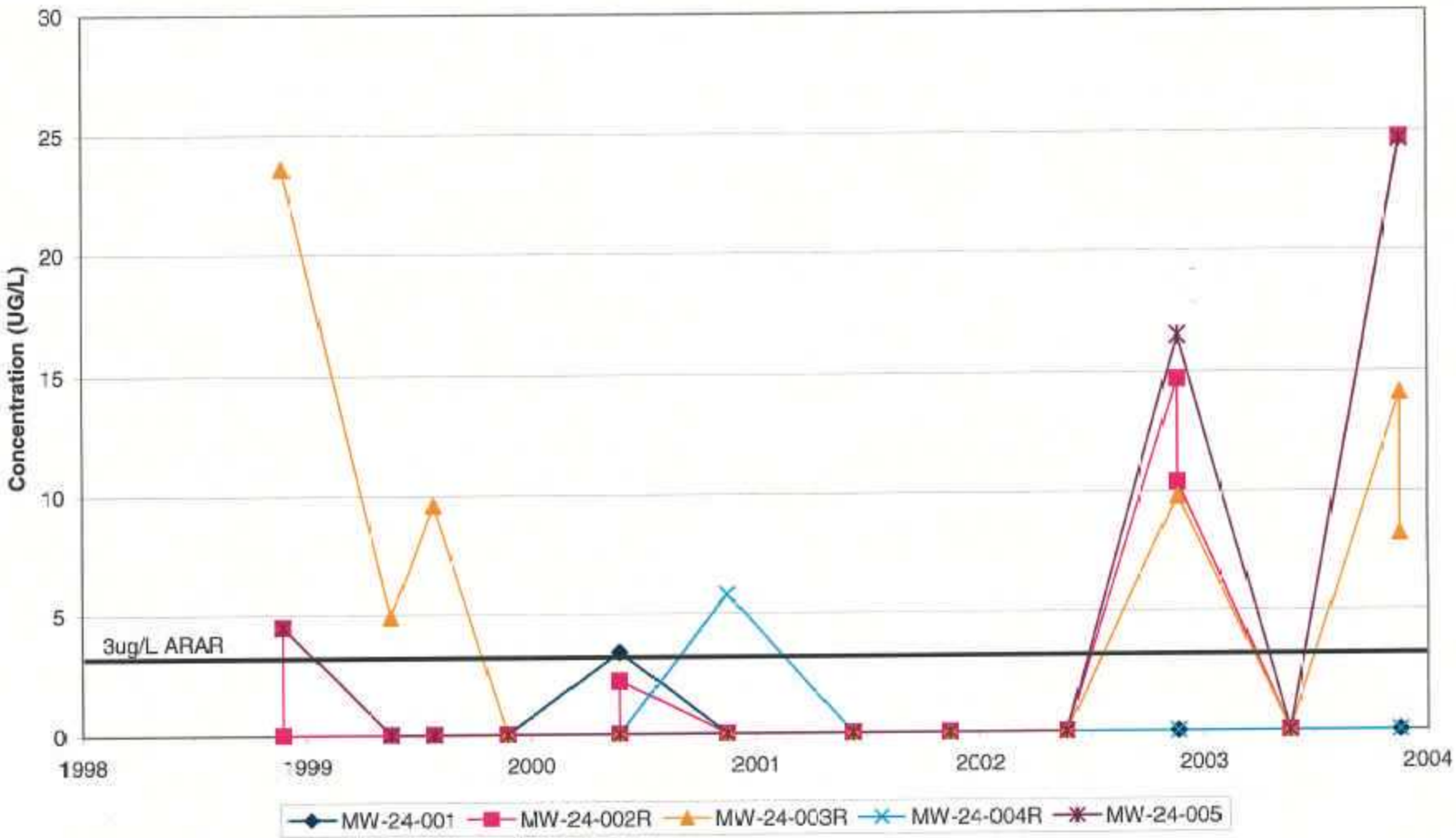
N:\11684-1.000\DB\Program\Program.mdb
Book1, Iron-plot, 5/21/2004

Landfill 024
Manganese Concentrations Over Time
Monitoring Wells



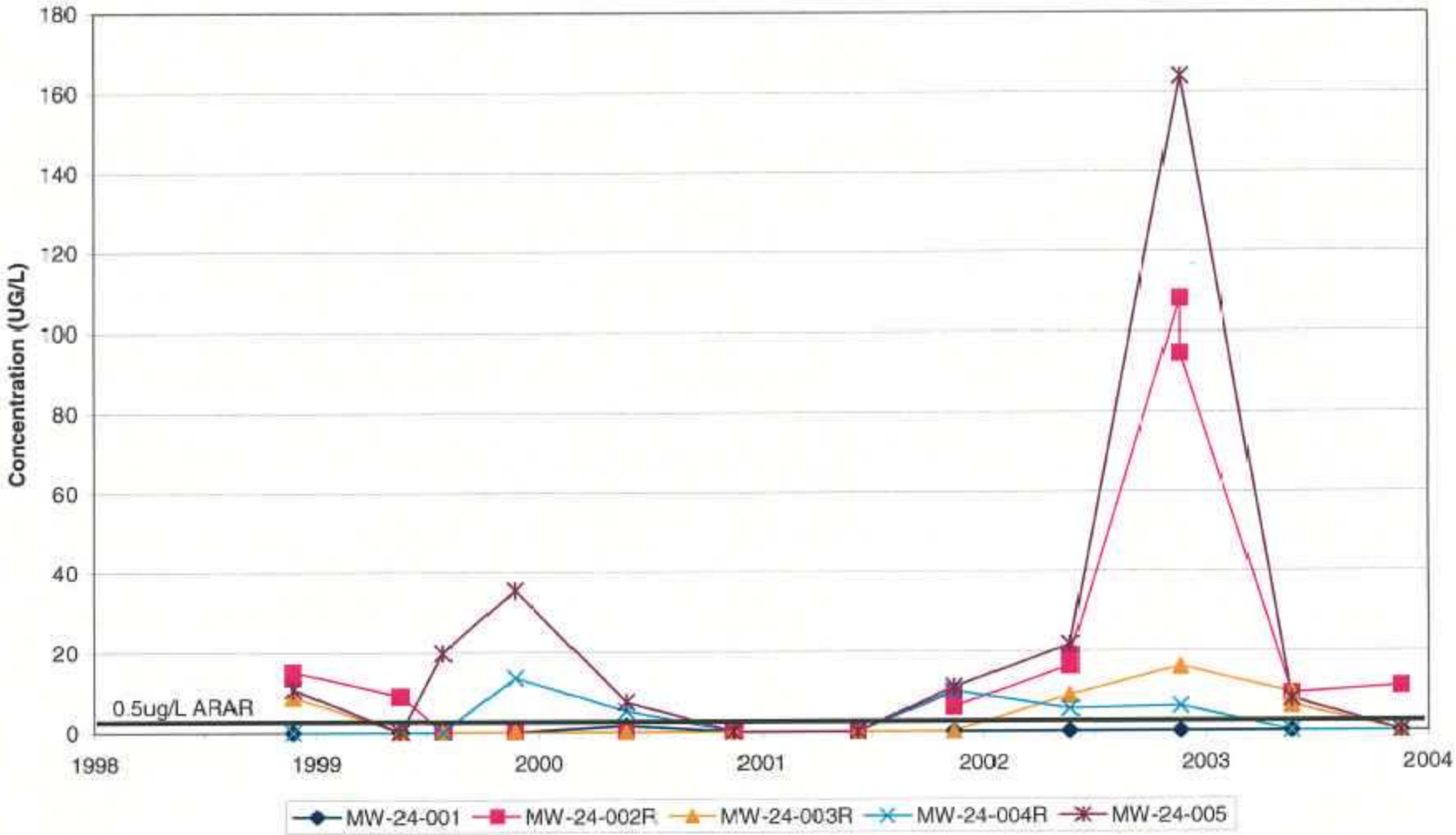
N:\111684-1.000\DB\Program\Program.mdb
All_sites_manganese, Manganese-plot, 5/21/2004

Landfill 024
Selenium Concentrations Over Time
Monitoring Wells



N:\111684-1.000\DB\Program\Program.mdb
Book1, Selenium plot, 5/21/2004

Landfill 024
Thallium Concentrations Over Time
Monitoring Wells



N:\111684-1.000\DB\Program\Program.mdb
All_wbx_thallium, Thallium-plot, 5/21/2004

EVALUATION OF POST-REMOVAL ACTION O&M GROUNDWATER MONITORING DATA FOR SITES SS-018 (AUTO HOBBY SHOP) AND SS-028 (BLDG. 508 OPEN STORAGE AREA)

The previous Five-Year Review Report for PAFB specifically recommended an evaluation of the O&M monitoring data for the four former base landfills. O&M monitoring/groundwater sampling has also been performed at sites SS-018/SS-028 (Figure 1). Therefore, an evaluation of the SS-018/SS-028 O&M groundwater monitoring data was also per formed.

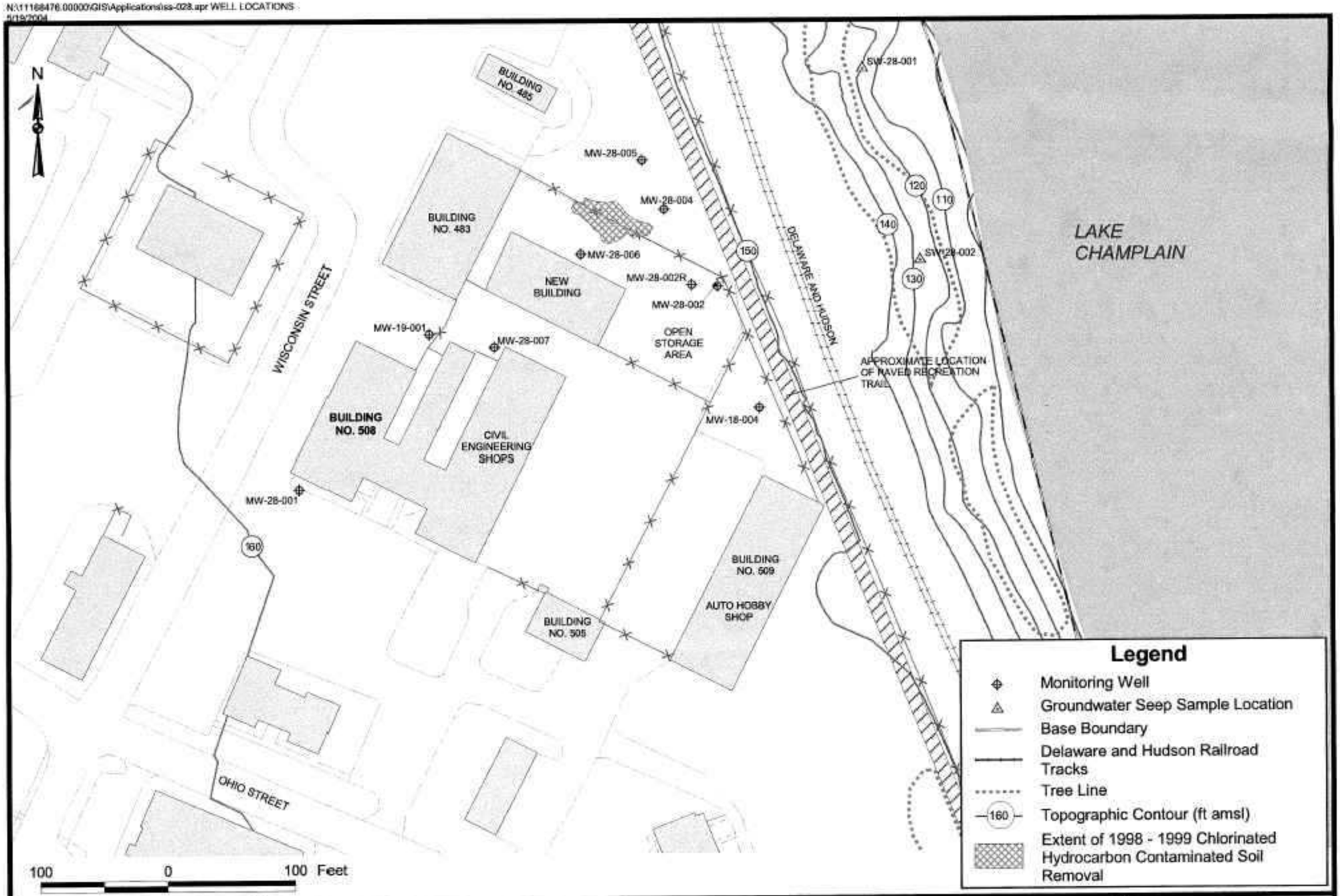
A removal action was conducted from December 1998 through June 1999 at site SS-028 to remove chlorinated hydrocarbon contaminated soil that constituted the principal threat wastes for sites SS-018/SS-028. The ROD for these sites, signed in September 2000, specified periodic monitoring of site groundwater and groundwater seeps for volatile organic compounds (VOCs) and methyl tert-butyl ether (MTBE) until groundwater contaminant levels are below current regulatory standards. Semiannual O&M groundwater sampling began at the sites in May 2001. Four groundwater sampling events (November 1999, January 2000, April 2000, and June 2000) were performed, subsequent to the soil removal action but prior to the ROD signing, in consultation with the NYSDEC Region 5 Bureau of Spill Prevention and Response to evaluate the potential source o f MTBE contamination impacting the sites. Analytical data from November 1999 through October 2003 for onsite or downgradient wells and the two downgradient groundwater seeps were examined to evaluate if contaminant concentrations in groundwater were naturally attenuating, as predicted in the ROD. The groundwater samples were analyzed for VOCs and MTBE.

The evaluation of this site's O&M groundwater sampling analytical data involved several steps. Detected analytes were tabulated, detected concentrations were statistically summarized, and the data were compared to applicable groundwater ARARs (see Table 1). Analytes that were detected at concentrations exceeding their respective groundwater ARARs (tetrachloroethene [PCE] and MTBE) were then viewed graphically to identify any trends. The results of the data evaluation are discussed below.

Only seven VOCs have been detected in groundwater samples collected subsequent to the soil removal action and only PCE and MTBE have been detected at concentrations exceeding their respective groundwater standard values (ARARs). Detected PCE concentrations in groundwater have decreased since the soil removal action and have been below ARARs since October 2001 (with the exception of one PCE detection at 5.05 ug/L in October 2002, which was slightly above the 5 ug/L ARAR value), indicating that the soil removal action has been effective in mitigating chlorinated hydrocarbon contamination in groundwater beneath the sites (see attached Tetrachlorethene Concentration Graphs).

However, detected MTBE concentrations have fluctuated over time. The MTBE detected in site wells is believed to be attributable to an old (i.e., no BTEX has been detected in association with the MTBE) gasoline spill of unknown origin. MTBE is still being detected in groundwater at concentrations above ARARs, but recent concentrations appear to be trending downward (see attached MTBE Concentration Graphs).

N:\11168476.00000\GIS\Applications\ss-028.apr WELL LOCATIONS
5/19/2004



URS

PLATTSBURGH AIR FORCE BASE - SS-018/SS-028
SITE FEATURES

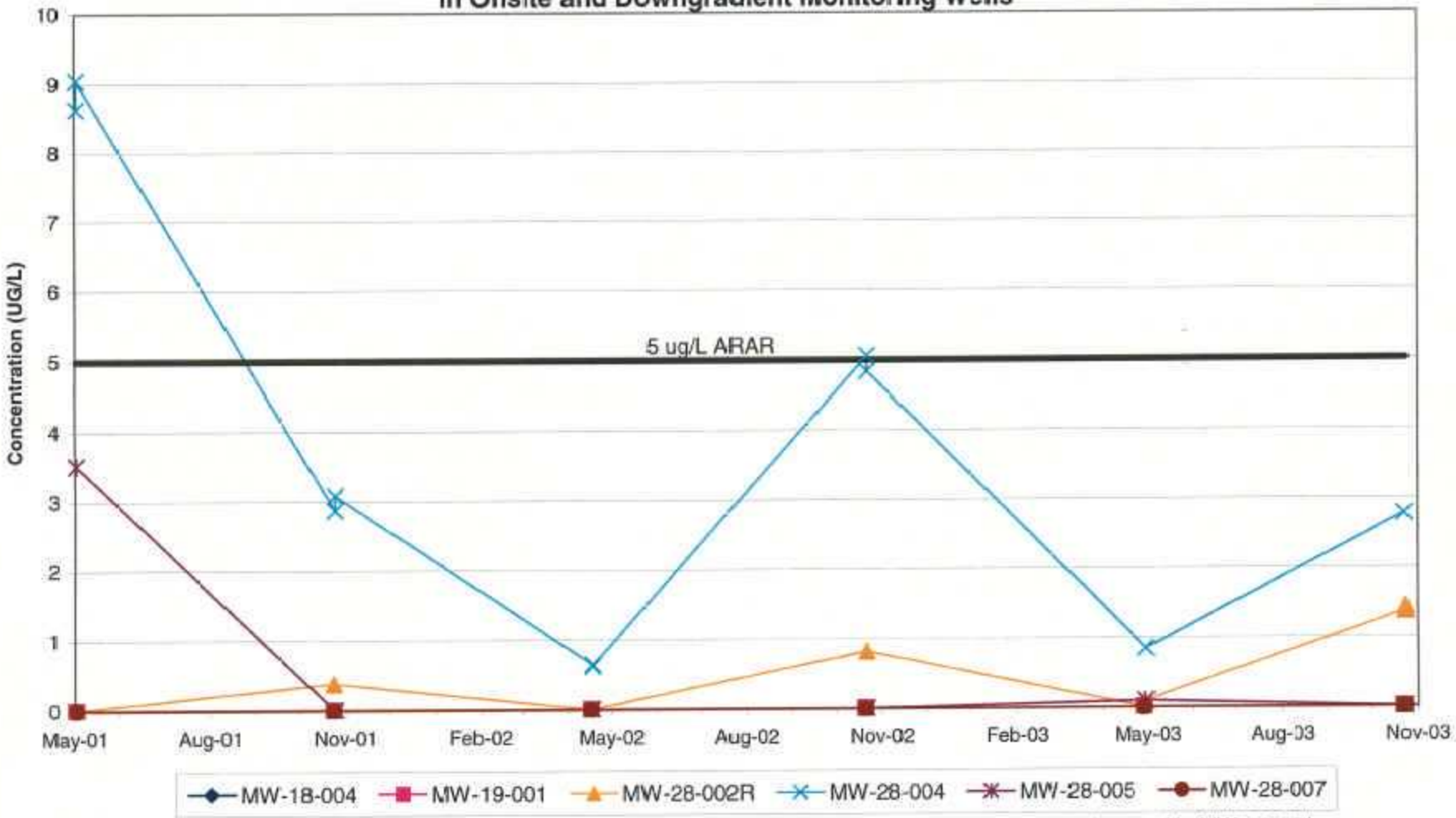
FIGURE 1

TABLE 1
STATISTICAL SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
PLATTSBURGH AIR FORCE BASE SITES SS-018 AND SS-028
NOVEMBER 1999 - OCTOBER 2003

Parameter	ARAR	Units	No. of Samples	No. of Detections	Range of Detections			No. of ARAR Exceedances	Location of Max. Value
					Minimum	Maximum	Average		
Volatile Organic Compounds									
1,1,1-Trichloroethane	5	UG/L	47	2	0.13	0.21	0.17	0	MW-28-004
Benzene	1	UG/L	64	1	0.32	0.32	0.32	0	MW-28-005
Chloroform	7	UG/L	47	1	0.39	0.39	0.39	0	MW-28-001
Methyl tert-butyl ether	10	UG/L	63	59	0.26	580	107.3	43	MW-28-007
Tetrachloroethene	5	UG/L	47	21	0.09	8.62	1.57	2	MW-28-004
Toluene	5	UG/L	64	1	0.33	0.33	0.33	0	MW-28-004
Trichloroethene	5	UG/L	47	9	0.12	1.59	0.568	0	MW-28-004

ARAR = Applicable or Relevant and Appropriate Requirement
UG/L = Micrograms per liter

SS-018/SS-028
Tetrachloroethene Concentrations Over Time in Onsite and Downgradient Monitoring Wells

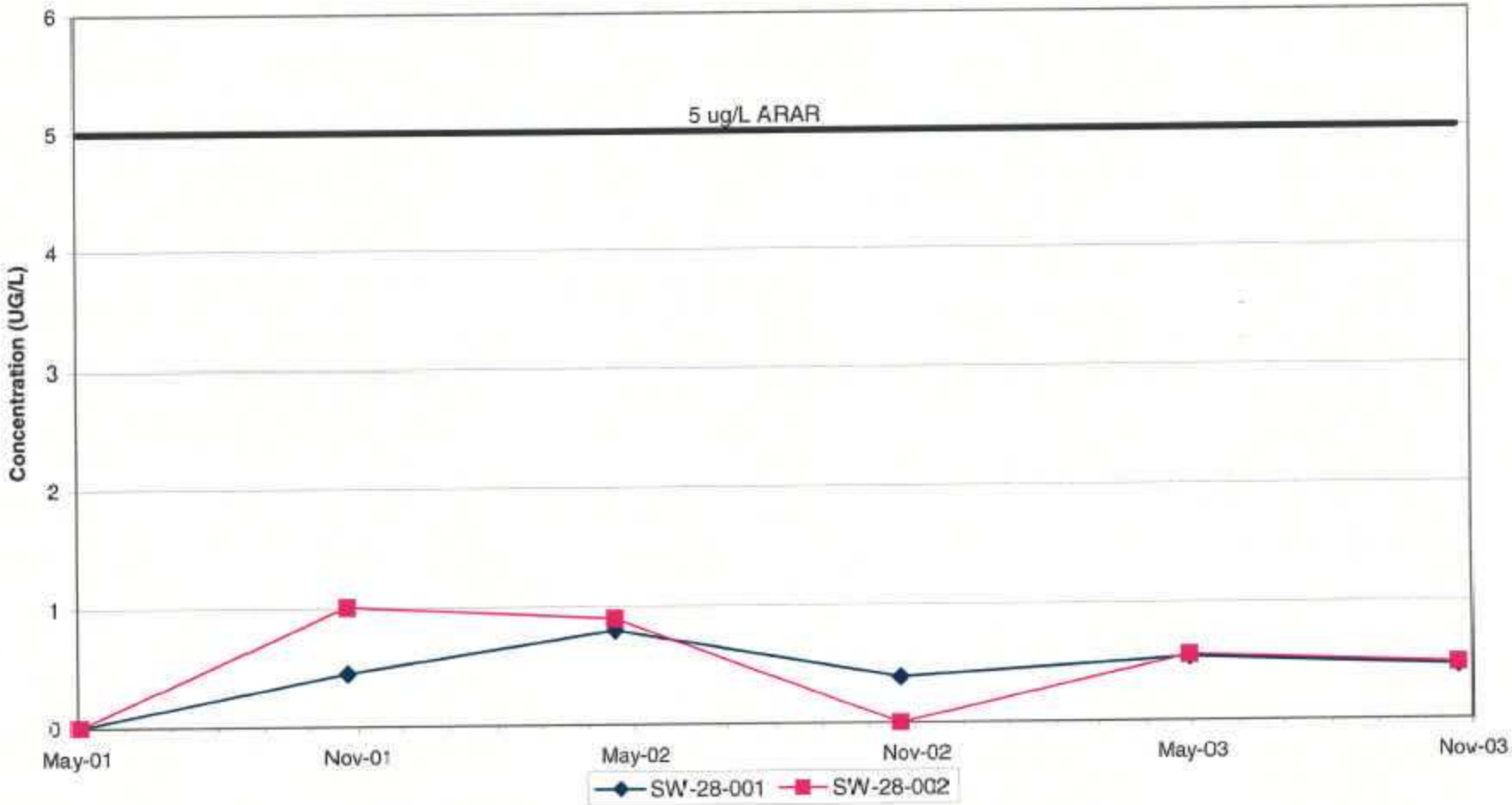


June 1999 - remedial action soil removal
September 2000 - ROD executed

Notes: 1) Tetrachloroethene was not detected in MW-28-001 or MW-28-002 during the above time period.
2) MW-28-002R is a replacement for MW-28-002.

N:\111884-1.000\DB\Program\Programs.mdb
SS-018_SS-028_TETRACHLOROETHENE, Tetrachloroethene-plot, 6/22/2004

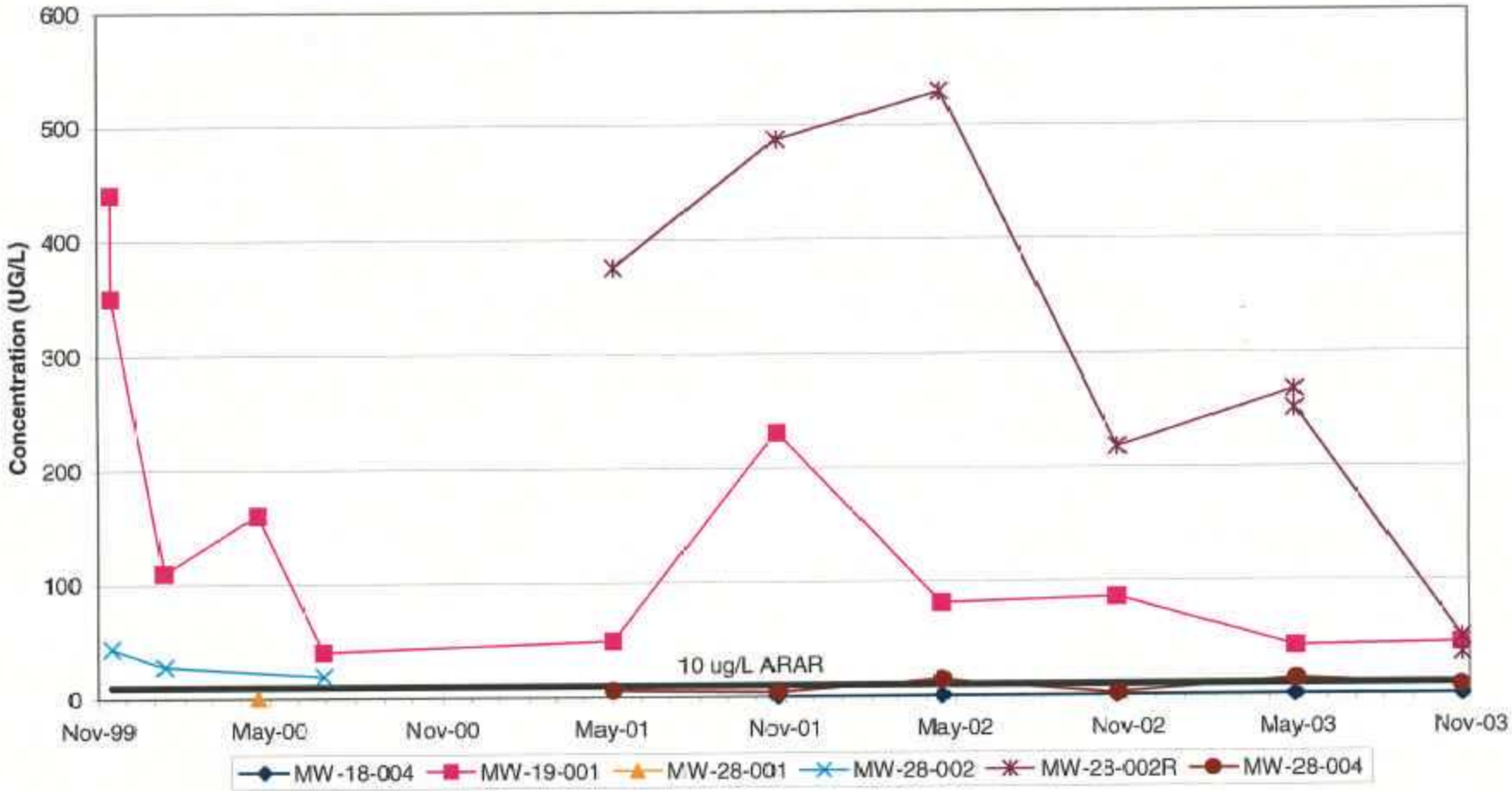
SS-018/SS-028
Tetrachloroethene Concentrations Over Time in Groundwater Seeps



June 1999 - remedial action soil removal
September 2000 - ROD executed

N:\111684-1.000\DB\Programs\Program.mde
SW-028-001_002_TETRACHLOROETHENE_Tetrachloroethene-pilot, 6/22/2004

SS-018/SS-028
Methyl tert-butyl ether Concentrations Over Time in Onsite and Downgradient Monitoring Wells

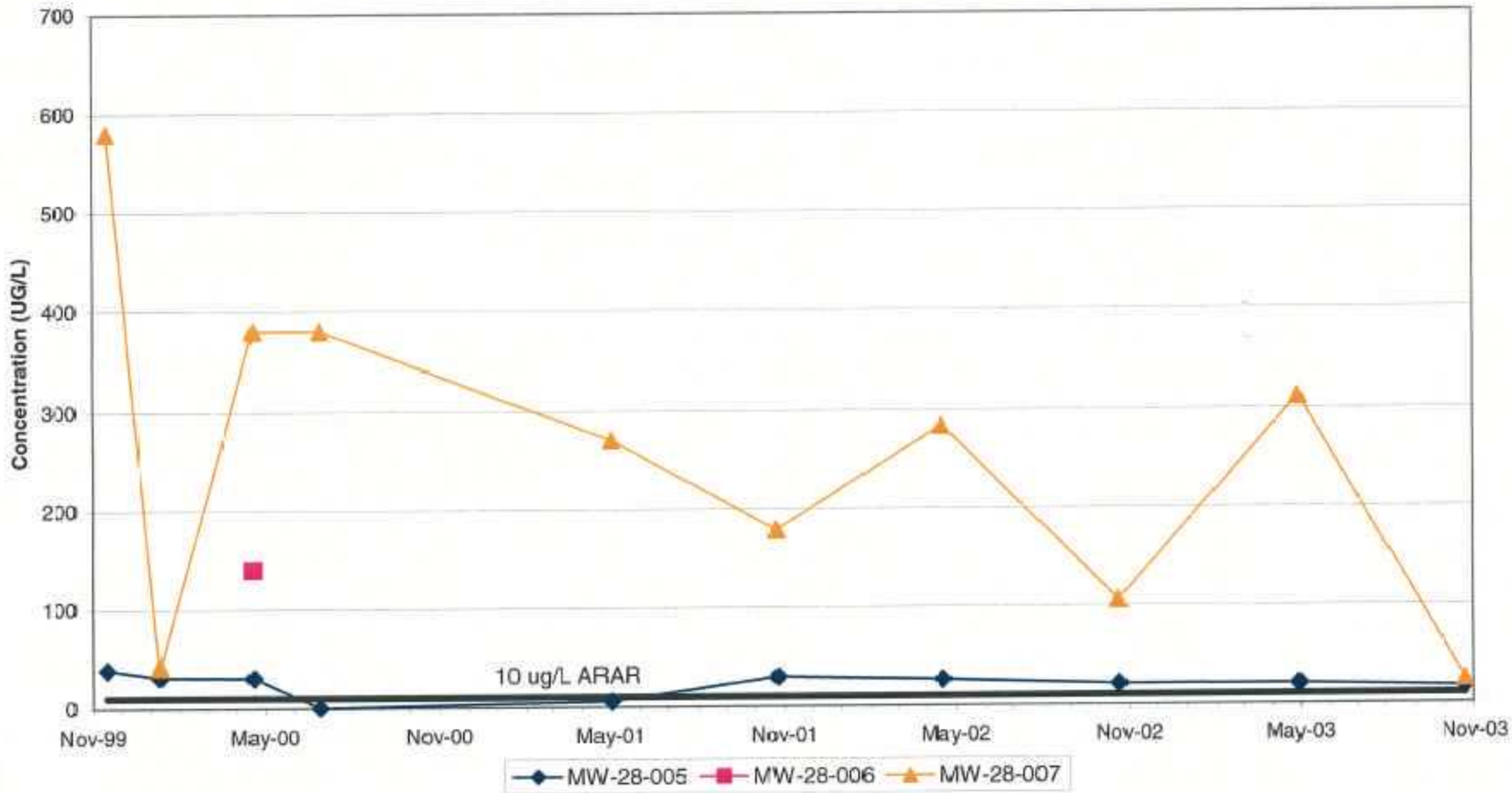


June 1999 - remedial action soil removal
September 2000 - ROD executed

Note: MW-28-002R is a replacement for MW-28-002

N:\11684-1.000\DD\Program\Program.mdb
SS-018_SS-028_MTBE_Methyl tert-butyl ether-plot, 8/22/2004

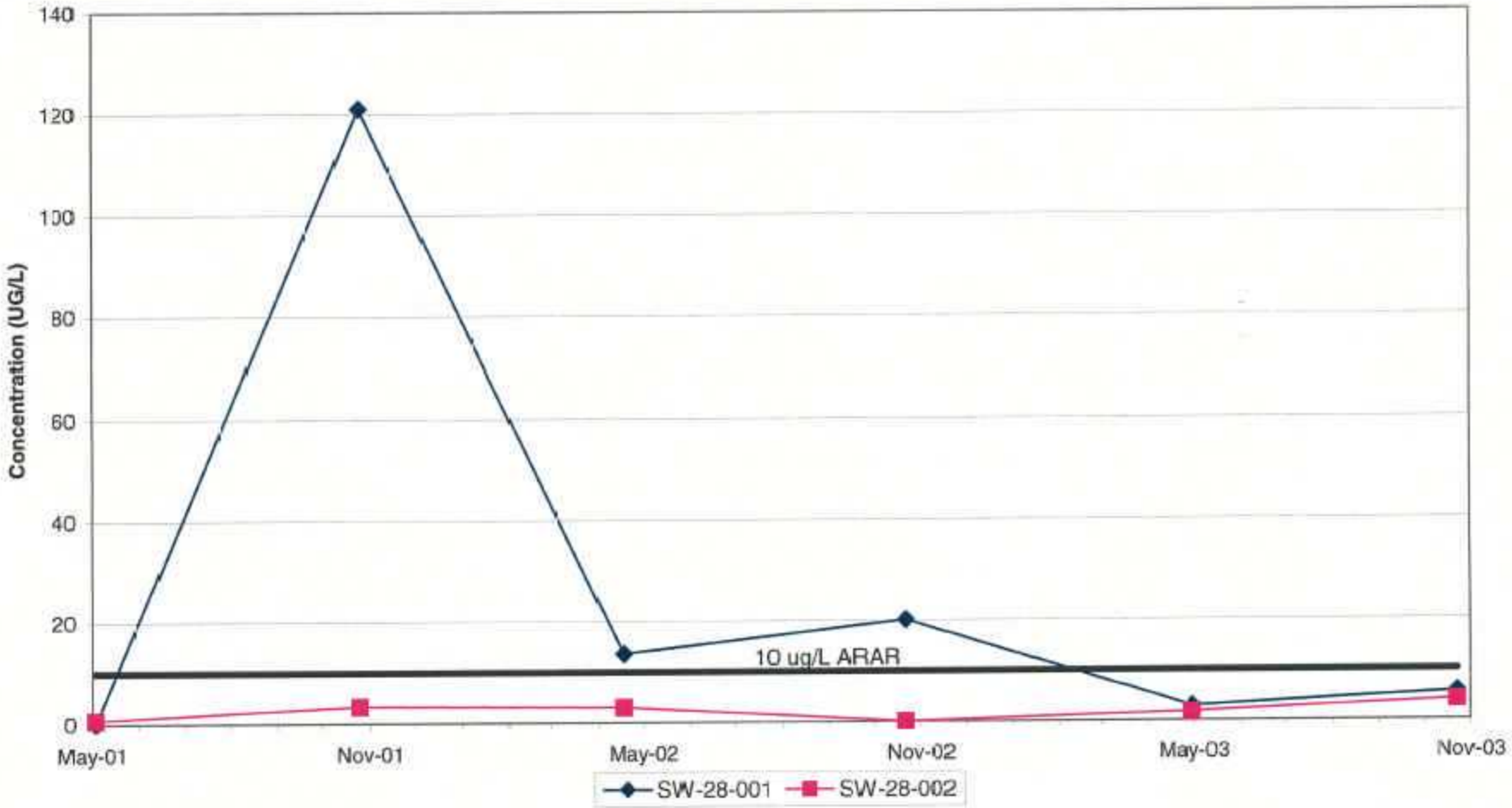
SS-018/SS-028
Methyl tert-butyl ether Concentrations Over Time in Onsite and Downgradient Monitoring Wells



June 1999 - remedial action soil removal
September 2000 - ROD executed

N:\111684-1.000\DB\Program\Program.mdb
MW-28-005_006_007_MTBE_Methyl tert-butyl ether plot, 5/20/2004

SS-018/SS-028
Methyl tert-butyl ether Concentrations Over Time in Groundwater Seeps



June 1999 - remedial action soil removal
September 2000 - ROD executed

N:\111664-1.000\DB\Program\Program.mde
SW-028-008_002_MTBE, Methyl tert-butyl ether plot, 5/20/2004

APPENDIX D

SS-005 AND SS-006

HUMAN HEALTH RISK EVALUATIONS

NON-DESTRUCTIVE INSPECTION FACILITY

SITE SS-005

HUMAN HEALTH RISK EVALUATION
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)

1.0 INTRODUCTION

This human health risk evaluation (HHRE) considers the potential adverse health effects that could result from exposure to contaminated soil at the Non-Destructive Inspection Facility (SS-005) site. The HHRE generally follows procedures set forth in USEPA's Risk Assessment Guidance for Superfund (RAGS) (USEPA 1989a).

2.0 CHEMICALS OF POTENT1AL CO3CERN

Chemicals of potential concern (CPCs) for this HHRE were selected as follows:

- All detected organic chemicals were considered CPCs.
- Metals were eliminated from screening by a statistical screening process. In the first step, metal detections were compared to the statistical basewide background concentrations. If none of the detections exceeded the background concentration, the metal was screened out. In the second step, surviving metals were evaluated using the Wilcoxon Rank Sum Test which compares the onsite mean to the background mean concentration. Only metals surviving both screening steps were considered CPCs. For the SS-005 site, metals of concern include arsenic, barium, beryllium, cadmium, chromium, nickel, and zinc.

The complete data set of site SS-005 soil analytical results used for CPC selection is contained in Attachment A-6.

3.0 EXPOSURE ASSESSMENT

3.1 <u>Exposure Pathways</u>

Exposure pathways are similar to those used for the Flightline (SS-004) site that is in the same vicinity as the Non-Destructive Inspection Facility (SS-005) site. Exposure pathways utilized for this HHRE include the following:

- Ingestion of contaminated soil by an onsite resident.
- Dermal contact and absorption of contaminants from soil by an onsite resident.
- Inhalation of contaminated indoor air by an onsite resident.
- Ingestion of contaminated soil by an onsite industrial worker.
- Dermal contact and absorption of contaminants from soil by an onsite industrial worker.
- Inhalation of contaminated indoor air by an onsite resident.
- Inhalation of contaminated fugitive dust by an industrial worker.
- Ingestion of contaminated soil by an onsite construction worker.

- Dermal contact and absorption of contaminants from soil by an onsite construction worker.

- Inhalation of contaminated outdoor air by an onsite construction worker,

- Inhalation of contaminated fugitive dust by an onsite construction worker.

3.2 Exposure Concentrations

Methodologies used to calculate exposure concentrations for all exposure pathways are summarized below.

- For all pathways, the baseline exposure concentration for each CPC is either the 95th percentile upper confidence limit (UCL) on the arithmetic mean or the maximum concentration, whichever is less. (In calculating in the UCL_{95}, one-half the Contract Required Detection Limit (CRDL) was used for non-detects).

- For the ingestion pathways, the baseline exposure concentration for each CPC was used.

- For the dermal absorption pathways, the baseline exposure concentration was multiplied by chemical-specific Dermal Absorption Factor (ABS) to obtain an absorbed does for each CPC.

- For the indoor air inhalation pathways, the baseline exposure concentrations were used in a model that estimates exposure concentrations resulting from vapors penetrating through cracks in building foundations. The model is based on standard guidance (ASTM 1993).

- For the inhalation of fugitive dust pathways, the baseline concentrations were used with a standard USEPA model to estimate contaminant dust concentrations (See Attachment A-1),

- For the outdoor air inhalation pathways, the baseline concentrations were also modeled using USEPA and NYSDEC guidance (See Attachment A-2).

3.3 Exposure Parameters

Equations utilized to calculate the chemical intake resulting from exposure to contaminated soil were obtained from USEPA guidance (USEPA 1989a, 1989b and 1991). Equation parameters that express the frequency, duration, and magnitude of exposure were also generally obtained from USEPA guidance. Parameters used were default values unless otherwise noted, as discussed below. The equations and parameters are presented on the tables included in this appendix.

Significant exposure parameters not obtained from standard USEPA guidance or parameters that needed derivation (not default values) include the following:

- Dermal Absorption Factors: These factors were obtained from the USEPA's Region 2 Health Risk Assessment Group.

- Absorption Efficiency: These values were obtained from the USEPA's Region 2 Health Risk Assessment Group.

- Skin Surface Area: The skin surface area for industrial workers is the sum of the surface area of the hands and arms. The reported value for a male adult is 3,120 cm^2. The value used for child residents is 3,520 cm^2 based on the 50th percentile values of surface area for arms, hands, and legs (USEPA 2002).

- Inhalation Rate: The inhalation rate for a construction worker was developed from USEPA guidance (USEPA 2002). It is assume that the worker would spend 50% of the time at heavy activity and 50% of the time at moderate activity. A value of $20m^3$/day was used.

- Exposure Duration: The exposure duration for residents (30 years) is divided into two periods represented by six years of exposure for a child (6 to 12) and 24 years of exposure for an adult. These are USEPA's default values for the residential scenario, and are considered conservative. The exposure duration for the construction worker is 3 months since construction would be expected to be completed in this time and is based on professional judgment.

4.0 TOXICITY ASSESSMENT

Toxicity data used in this HHRE were obtained from USEPA's Integrated Risk Information System (IRIS) and the Health Effects Assessment Tables (HEAST) via computer linkage with the toxicity database Smarttox.

For the dermal exposure route, toxicity values for cancer and noncancer effects were adjusted by using absorption efficiencies. These absorption efficiencies convert toxicity values used for the oral route to toxicity values appropriate for the dermal route. Toxicity data is presented in the tables included in this appendix.

5.0 RISK CHARACTERIZATION

Health risk is a function of exposure (Section 3.0) and chemical toxicity (Section 4.0). Risks are quantified for both carcinogenic (cancer causing) and noncarcinogenic (noncancer causing) health effects. Uncertainty analysis for calculating the risk from the detected chemicals is presented in Attachment A-3. Risks are summarized in Table A-l.

Cancer risks are calculated by multiplying the exposure dose by the cancer slope factor (cancer toxicity value). According to USEPA guidance, for remediation, acceptable exposure levels for know or suspected carcinogens are concentration levels that produce a cancer risk between $1x10^{-6}$ and $1x10^{-4}$.

Noncancer risks are evaluated by calculating a "hazard index." The hazard index is the sum of hazard quotients. A hazard quotient for each CPC is obtained of dividing the exposure does (intake) by the reference dose (noncancer toxicity value). According to USEPA guidance, potential noncancer health impacts are possible if the hazard index exceeds 1.

As shown on Table A-l, the cancer risk for a resident and an industrial worker are within the acceptable range; whereas, the cancer risk for a construction worker is below the acceptable range. Hazard indicies for all receptors are below the level of concern. Based on these values, site remediation does not appear to be required, and unrestricted site reuse should be considered.

6.0 REFERENCES

American Society for Testing and Materials (ASTM) 1993. Standard Guide for Risk Based Corrective Action at Petroleum Release Sites. Philadelphia, PA.

United States Environmental Protection Agency (USEPA). 1989a. *Risk Assessment Guidance for Superfund, Vol. I: Human Health Evaluation Manual (Part A), Interim Final*, EPA/540/1-89/002. Cincinnati, OH: USEPA.

_____ 1989b. *Exposure Factors Handbook*, EPA/600/9-89/043. Cincinnati, OH: USEPA.

_____ 1991. *Standard Default Exposure Factors. Human Health Evaluation Manual, Supplemental Guidance*. OSWER Directive 9285.6-03. Cincinnati, OH: USEPA.

_____ 2002. Exposure Factors Handbook, EPA/600/P-95/00Fa.

_____ 2004. Integrated Risk Information System (IRIS). Accessed through Smarttox database.

_____ 2004. Health Effects Assessment Summary Tables. Accessed through Smarttox database.

TABLE A-1
NON DESTRUCTIVE INSPECTION FACILITY (SS-005)
RISK SUMMARY

Exposure Pathway	Resident [1]		Industrial Worker		Construction Worker	
	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index
Ingestion of Soil	2E-05	2E-01	2E-06	7E-03	2E-07	7E-02
Dermal Contact With Soil	6E-05	1E-01	1E-05	1E-02	3E-07	3E-02
Inhalation of Contaminated Air	6E-09	2E-04	2E-09	4E-05	5E-09	2E-02
Inhalation of Fugitive Dust	NA	NA	2E-06	2E-03	2E-08	2E-03
TOTAL ALL PATHWAYS	8E-05	3E-01	1E-05	2E-02	5E-07	1E-01

NA = Not Applicable

Notes:

1. The risk value for residents are combined values for child and adult residents.

TABLE 1
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
EXPOSURE CONCENTRATION OF SOIL CHEMICALS

Parameter	Units	Maximum Concentration	Location of Maximum Detection	UCL95	Distribution	Background 95% UTL (metals)	Site Detections Exceeding Background 95% UTL (metals)	Wilkoxon Rank Sum Test Chemical of Potential Concern (yes/no, metals)	Exposure Concentration
2-Hexanone	UG/KG	27	SS-05-011-02	5.83	Log				5.83
4-Methyl-2-pentanone	UG/KG	24	SS-05-011-02	5.75	Log				5.75
Acetone	UG/KG	40	SS-05-011-02	7.39	Log				7.39
Methylene chloride	UG/KG	4900	NS-05-003-04	16.49	Log				16.49
Tetrachloroethene	UG/KG	1	SS-05-011-02	5.33	Log				1.00
Toluene	UG/KG	8	BS-05-001-02	5.16	Log				5.16
Trichloroethene	UG/KG	1	SS-05-011-02	5.33	Log				1.00
Xylene (total)	UG/KG	8559	NS-05-003-04	19.57	Log				19.57
2,4-Dinitrotoluene	UG/KG	200	NS-05-003-04	167.2	Log				167.20
2-Methylnaphthalene	UG/KG	440	NS-05-003-04	195.9	Log				195.90
4-Methylphenol (p-cresol)	UG/KG	26	SS-05-011-02	178.6	Log				26.00
Acenaphthene	UG/KG	157	SS-05-015-02	198.7	Log				157.00
Acenaphthylene	UG/KG	2036	SS-05-010-02	381.5	Log				381.50
Anthracene	UG/KG	1286	SS-05-010-02	307.4	Log				307.40
Benzo(a)anthracene	UG/KG	3537	SS-05-010-02	609.1	Log				609.10
Benzo(a) pyrene	UG/KG	5681	SS-05-010-02	940.6	Log				940.60
Benzo(b)fluoranthene	UG/KG	4394	SS-05-010-02	794.7	Log				794.70
Benzo(g,h,i)perylene	UG/KG	2358	SS-05-010-02	553.8	Log				553.80
Benzo(k)fluoranthene	UG/KG	5573	SS-05-010-02	726.3	Log				726.30
Benzoic acid	UG/KG	104	SS-05-016-02	129.5	Normal				104.00

TABLE 1
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
EXPOSURE CONCENTRATION OF SOIL CHEMICALS

Parameter	Units	Maximum Concentration	Location of Maximum Detection	UCL95	Distribution	Background 95% UTL (metals)	Site Detections Exceeding Background 95% UTL (metals)	Wilkoxon Rank Sum Test Chemical of Potential Concern (yes/no, metals)	Exposure Concentration
bis(2-Ethylhexyl) phthalate	UG/KG	401	SS-05-001-02	192.6	Normal				192.60
Carbazole	UG/KG	1363	SS-05-015-02	299.8	Log				299.80
Chrysene	UG/KG	4823	SS-05-010-02	717.9	Log				717.90
Dibenz(a, h)anthracene	UG/KG	638	SS-05-000-02	231.9	Log				231.90
Dibenzofuran	UG/KG	41	SS-05-011-02	178.3	Log				41.00
Diethylphthalate	UG/KG	20	NS-05-004-02	182.1	Log				20.00
Di-n-butylphthalate	UG/KG	16	SS-05-017-02	185.5	Log				16.00
Di-n-octylphthalate	UG/KG	13	NS-05-003-04	260.8	Log				13.00
Fluoranthene	UG/KG	4612	SS-05-015-02	896	Log				896.00
Fluorene	UG/KG	130	SS-05-011-02	194.8	Log				130.00
Indeno(1,2,3-cd) pyrene	UG/KG	2787	SS-05-010-02	565.4	Log				565.40
Naphthalene	UG/KG	34	SS-05-011-02	216	Log				34.00
Phenanthrene	UG/KG	1572	SS-05-015-02	583.5	Log				583.50
Phenol	UG/KG	423	NS-05-003-02	177.9	Log				177.90
Pyrene	UG/KG	5145	SS-05-010-02	901.1	Log				901.10
4,4'-DDD	UG/KG	3.1	SS-05-020-02	2.17	Log				2.17
4,4'-DDT	UG/KG	24	SS-05-001-02	24.44	Log				24.00
Endosulfan II	UG/KG	3.5	NS-05-004-02	2.2	Log				2.20
Methoxychlor	UG/KG	2.5	NS-05-005-02	11.02	Log				2.50
Aroclor 1254	UG/KG	7	NS-05-005-02	19.16	Log				7.00

TABLE 1
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
EXPOSURE CONCENTRATION OF SOIL CHEMICALS

Parameter	Units	Maximum Concentration	Location of Maximum Detection	UCL95	Distribution	Background 95% UTL (metals)	Site Detections Exceeding Background 95% UTL (metals)	Wilkoxon Rank Sum Test Chemical of Potential Concern (yes/no, metals)	Exposure Concentration
Aroclor 1260	UG/KG	76	SS-05-011-02	56.71	Log				56.71
Aluminum	UG/KG	7453	SS-05 017 02	2838	Log	8510	No		2838.00
Arsenic	UG/KG	55	SS- 05-014-02	2. 99	Log	3.44	Yes	Yes	2.99
Barium	UG/KG	721	SS-05-011-02	79.39	Log	101	Yes	Yes	79.39
Beryllium	UG/KG	1	SS-05-020-02	0.546	Log	0.74	Yes	Yes	0.55
Cadmium	UG/KG	10	SS-05-010-02	2.14	Log	1.3	Yes	Yes	2.14
Calcium	UG/KG	14500	SS-05-001-02	3397	Log	30200	No		3397.00
Chromium	UG/KG	44	SS-05-015-02	20.71	Log	19.5	Yes	Yes	20.71
Cobalt	UG/KG	2.2	SS-05-001-02	5.14	Log	9.2	No		2.20
Copper	UG/KG	27	SS-05-021-02	6.26	Log	44.1	No		6.26
Iron	UG/KG	10600	SS-05-017-02	5094	Log	36700	No		5094.00
Lead	UG/KG	209	SS-05-010-02	1917	Log	79.4	Yes	No	209.00
Magnesium	UG/KG	2366	SS-05-001-02	822.7	Log	3340	No		822.70
Manganese	UG/KG	125	SS-05-001-02	53.98	Log	474	No		53.98
Nickel	UG/KG	83	NS-05-003-06	8.19	Log	12.6	Yes	Yes	8.19
Potassium	UG/KG	415	SS-05-001-02	494.8	Log	929	No		415.00
Sodium	UG/KG	45.6	SS-05-001-02	804. 7	Log	520	No		45.60
Vanadium	UG/KG	34	SS-05-006-02	13.45	Log	90.2	No		13.45
Zinc	UG/KG	433	NS-05-003-06	118.6	Log	63.4	Yes	Yes	118.60

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Arsenic

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-05-001-02	11/07/92	--	Onsite	4.00	37	52.5
BS-05-001-06	11/07/92	--	Onsite	4.00	38	52.5
BS-05-002-02	11/08/92	--	Onsite	4.00	39	52.5
BS-05-002-07	11/08/92	--	Onsite	4.00	40	52.5
BS-05-003-02	11/10/92	--	Onsite	**0.34**	5	5
NS-05-001-02	11/09/92	--	Onsite	4.00	41	52.5
NS-05-001-04	11/09/92	--	Onsite	4.00	42	52.5
NS-05-002-02	11/09/92	--	Onsite	4.00	43	52.5
NS-05-002-04	11/09/92	--	Onsite	4.00	44	52.5
NS-05-003-02	11/09/92	--	Onsite	4.00	45	52.5
NS-05-003-04	11/09/92	--	Onsite	4.00	46	52.5
NS-05-003-06	11/09/92	--	Onsite	4.00	47	52.5
NS-05-004-02	11/09/92	--	Onsite	**0.81**	25	25
NS-05-004-04	11/09/92	--	Onsite	4.00	48	52.5
NS-05-005-02	11/09/92	--	Onsite	**0.40**	6	6
NS-05-005-04	11/09/92	--	Onsite	4.00	49	52.5
NS-05-006-02	11/09/92	--	Onsite	4.00	50	52.5
NS-05-006-04	11/09/92	--	Onsite	4.00	51	52.5
NS-05-007-02	11/09/92	--	Onsite	4.00	52	52.5
SS-05-001-02	11/03/92	--	Onsite	**1.30**	34	34
SS-05-002-02	11/03/92	--	Onsite	4.00	53	52.5
SS-05-003-02	11/03/92	--	Onsite	4.00	54	52.5
SS-05-004-02	11/03/92	--	Onsite	4.00	55	52.5
SS-05-005-02	11/03/92	--	Onsite	4.00	56	52.5
SS-05-006-02	11/03/92	--	Onsite	4.00	57	52.5
SS-05-007-02	11/03/92	--	Onsite	4.00	58	52.5
SS-05-008-02	11/03/92	--	Onsite	4.00	59	52.5
SS-05-009-02	11/03/92	--	Onsite	4.00	60	52.5
SS-05-010-02	11/03/92	--	Onsite	4.00	61	52.5

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Arsenic

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-05-011-02	11/03/92	--	Onsite	**0.85**	26	71
SS-05-012-02	11/03/92	--	Onsite	4.00	62	52.5
SS-05-013-02	11/03/92	--	Onsite	4.00	63	52.5
SS-05-014-02	11/03/92	--	Onsite	**55.00**	71	26.5
SS-05-015-02	11/03/92	--	Onsite	4.00	64	52.5
SS-05-016-02	11/03/92	--	Onsite	4.00	65	52.5
SS-05-017-02	11/03/92	--	Onsite	4.00	66	52.5
SS-05-018-02	11/03/92	--	Onsite	4.00	67	52.5
SS-05-019-02	11/03/92	--	Onsite	**0.43**	7	7
SS-05-020-02	11/03/92	--	Onsite	**0.66**	22	21.5
SS-05-021-02	11/03/92	--	Onsite	4.00	68	52.5
SS-04-029	08/19/93	0-0.5	Background	**1.10**	31	31
SS-04-029	08/19/93	3-3.5	Background	**0.66**	21	21.5
SS-10-008	09/24/93	0-0.5	Background	**7.15**	69	69.5
SS-10-008	09/24/93	2.5-3	Background	**0.00**	1	1
SS-10-008	10/26/94	--	Background	**7.15**	70	69.5
SS-10-009	09/24/93	0-0.5	Background	**0.29**	3	3.5
SS-10-009	09/24/93	2.5-3	Background	0.19	2	28
SS-10-009	10/26/94	--	Background	**0.23**	4	32
SS-13-009	09/21/93	0-0.5	Background	**0.90**	28	28
SS-BKD-001	10/26/94	--	Background	**1.15**	32	32
SS-BKD-002	10/26/94	--	Background	**1.70**	36	36
SS-BKD-003	10/26/94	--	Background	0.55	11	11.5
SS-BKD-004	10/26/94	--	Background	0.55	12	11.5
SS-BKD-005	10/26/94	--	Background	**0.95**	29	29
SS-BKD-006	10/26/94	--	Background	0.56	13	14
SS-BKD-007	10/26/94	--	Background	0.57	16	16.5
SS-BKD-008	10/26/94	--	Background	0.54	8	9
SS-BKD-009	10/26/94	--	Background	**0.60**	18	8

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Arsenic

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-010	10/26/94	--	Background	0.62	20	20
SS-BKD-011	10/26/94	--	Background	**1.20**	33	33
SS-BKD-012	10/26/94	--	Background	0.56	14	14
SS-BKD-013	10/26/94	--	Background	**0.85**	27	26.5
SS-BKD-014	10/26/94	--	Background	**0.80**	24	24
SS-BKD-015	10/26/94	--	Background	**1.60**	35	35
SS-BKD-016	10/26/94	--	Background	**0.72**	23	23
SS-BKD-017	10/26/94	--	Background	**0.90**	30	30
SS-BKD-018	10/26/94	--	Background	0.54	9	9
SS-BKD-019	10/26/94	--	Background	0.54	10	9
SS-BKD-020	10/26/94	--	Background	0.61	19	19
SS-BKD-021	10/26/94	--	Background	0.56	15	14
SS-BKD-022	10/26/94	--	Background	**0.57**	17	16.5

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Arsenic

Compliance Data (n)	40
Background Data (n)	31
Mean Onsite Data	4.6948
Mean Background Data	1.1265
Standard Deviation Onsite Data	8.2576
Standard Deviation Background Data	1.6495
Sum of Sample Ranks Onsite Date	1,876.0000
Sum of Sample Ranks Background Data	680.0000
Wilcoxon Statistic W	1,056.0000
Expected Value E(W)	620
Standard Deviation SD(W)	86.2554
Standard Deviation (Ties) SD^(W)	82.2048
Approximate Z-score Z	5.2977
Significance Level A	0.05
ZA	1.6448
Potential Concern	**YES**

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE 1NSPECTION FACILITY (SS-005)
SOILS
Barium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-05-001-02	11/07/92	--	Onsite	**101.00**	63	63
BS-05-001-06	11/07/92	--	Onsite	40.00	33	44.5
BS-05-002-02	11/08/92	--	Onsite	**10.60**	9	9
BS-05-002-07	11/08/92	--	Onsite	40.00	34	44.5
BS-05-003-02	11/10/92	--	Onsite	**7.90**	6	6.5
NS-05-001-02	11/09/92	--	Onsite	40.00	35	44.5
NS-05-001-04	11/09/92	--	Onsite	40.00	36	44.5
NS-05-002-02	11/09/92	--	Onsite	40.00	37	44.5
NS-05-002-04	11/09/92	--	Onsite	40.00	38	44.5
NS-05-003-02	11/09/92	--	Onsite	40.00	39	44.5
NS-05-003-04	11/09/92	--	Onsite	**14.50**	15	15
NS-05-003-06	11/09/92	--	Onsite	40.00	40	44.5
NS-05-004-02	11/09/92	--	Onsite	**412.50**	70	70
NS-05-004-04	11/09/92	--	Onsite	40.00	41	44.5
NS-05-005-02	11/09/92	--	Onsite	**8.10**	8	8
NS-05-005-04	11/09/92	--	Onsite	40.00	42	44.5
NS-05-006-02	11/09/92	--	Onsite	40.00	43	44.5
NS-05-006-04	11/09/92	--	Onsite	40.00	44	44.5
NS-05-007-02	11/09/92	--	Onsite	**73.00**	62	62
SS-05-001-02	11/03/92	--	Onsite	**126.00**	66	66
SS-05-002-02	11/03/92	--	Onsite	40.00	45	44.5
SS-05-003-02	11/03/92	--	Onsite	40.00	46	44.5
SS-05-004-02	11/03/92	--	Onsite	40.00	47	44.5
SS-05-005-02	11/03/92	--	Onsite	40.00	48	44.5
SS-05-006-02	11/03/92	--	Onsite	**121.00**	65	65
SS-05-007-02	11/03/92	--	Onsite	40.00	49	44.5
SS-05-008-02	11/03/92	--	Onsite	**50.00**	59	59
SS-05-009-02	11/03/92	--	Onsite	40.00	50	44.5
SS-05-010-02	11/03/92	--	Onsite	40.00	51	44.5

TABLE 2
NON-DESTRUCTIVE 1NSPECTION FACILITY (SS-005)
SOILS
Barium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-05-011-02	11/03/92	--	Onsite	**721.00**	71	71
SS-05-012-02	11/03/92	--	Onsite	40.00	52	44.5
SS-05-013-02	11/03/92	--	Onsite	**138.00**	68	68
SS-05-014-02	11/03/92	--	Onsite	40.00	53	44.5
SS-05-015-02	11/03/92	--	Onsite	40.00	54	44.5
SS-05-016-02	11/03/92	--	Onsite	**48.00**	58	58
SS-05-017-02	11/03/92	--	Onsite	40.00	55	44.5
SS-05-018-02	11/03/92	--	Onsite	40.00	56	44.5
SS-05-019-02	11/03/92	--	Onsite	**14.60**	16	16.5
SS-05-020-02	11/03/92	--	Onsite	**238.00**	69	69
SS-05-021-02	11/03/92	--	Onsite	**110.00**	64	64
SS-04-029	08/19/93	0-0.5	Background	**22.90**	26	26
SS-04-029	08/19/93	3-3.5	Background	**7.90**	7	6.5
SS-10-008	09/24/93	0-0.5	Background	**25.45**	27	27.5
SS-10-008	09/24/93	2.5-3	Background	**0.00**	1	1
SS-10-008	10/26/93	--	Background	**25.45**	28	27.5
SS-10-009	09/24/93	0-0.5	Background	**7.50**	4	4.5
SS-10-009	09/24/93	2.5-3	Background	**0.00**	2	2
SS-10-009	10/26/93	--	Background	**7.50**	5	4.5
SS-13-009	09/21/93	0-0.5	Background	**26.40**	29	29
SS-BKD-001	10/26/94	--	Background	**22.55**	25	25
SS-BKD-002	10/26/94	--	Background	**72.30**	61	61
SS-BKD-003	10/26/94	--	Background	**15.90**	21	21
SS-BKD-004	10/26/94	--	Background	**14.60**	17	16.5
SS-BKD-005	10/26/94	--	Background	**31.20**	31	31
SS-BKD-006	10/26/94	--	Background	**17.90**	22	22
SS-BKD-007	10/26/94	--	Background	**15.20**	19	19
SS-BKD-008	10/26/94	--	Background	**129.00**	67	67
SS-BKD-009	10/26/94	--	Background	**67.50**	60	60

TABLE 2
NON-DESTRUCTIVE 1NSPECTION FACILITY (SS-005)
SOILS
Barium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-010	10/26/94	--	Background	**38.00**	32	32
SS-BKD-011	10/26/94	--	Background	**44.10**	57	57
SS-BKD-012	10/26/94	--	Background	**12.30**	11	11
SS-BKD-013	10/26/94	--	Background	**12.80**	12	12
SS-BKD-014	10/26/94	--	Background	**13.40**	13	13
SS-BKD-015	10/26/94	--	Background	**13.50**	14	14
SS-BKD-016	10/26/94	--	Background	**15.10**	18	18
SS-BKD-017	10/26/94	--	Background	**15.40**	20	20
SS-BKD-018	10/26/94	--	Background	**19.70**	23	23
SS-BKD-019	10/26/94	--	Background	**10.80**	10	10
SS-BKD-020	10/26/94	--	Background	**28.30**	30	30
SS-BKD-021	10/26/94	--	Background	**6.60**	3	3
SS-BKD-022	10/26/94	--	Background	**21.40**	24	24

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE 1NSPECTION FACILITY (SS-005)
SOILS
Barium

Compliance Data (n)	40
Background Data (n)	31
Mean Onsite Data	78.8580
Mean Background Data	24.5373
Standard Deviation Onsite Data	125.9808
Standard Deviation Background Data	25.3569
Sum of Sample Ranks Onsite Date	1,838.0000
Sum of Sample Ranks Background Data	718.0000
Wilcoxon Statistic W	1,018.0000
Expected Value E(W)	620
Standard Deviation SD(W)	86.2554
Standard Deviation (Ties) SD^(W)	84.5729
Approximate Z-score Z	4.7001
Significance Level A	0.05
ZA	1.6449
Potential Concern	**YES**

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE 1NSPECTION FACILITY (SS-005)
SOILS
Beryllium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-05-001-02	11/07/92	--	Onsite	1.00	30	49.5
BS-05-001-06	11/07/92	--	Onsite	1.00	31	49.5
BS-05-002-02	11/08/92	--	Onsite	1.00	32	49.5
BS-05-002-07	11/08/92	--	Onsite	1.00	33	49.5
BS-05-003-02	11/10/92	--	Onsite	1.00	34	49.5
NS-05-001-02	11/09/92	--	Onsite	1.00	35	49.5
NS-05-001-04	11/09/92	--	Onsite	1.00	36	49.5
NS-05-002-02	11/09/92	--	Onsite	1.00	37	49.5
NS-05-002-04	11/09/92	--	Onsite	1.00	38	49.5
NS-05-003-02	11/09/92	--	Onsite	1.00	39	49.5
NS-05-003-04	11/09/92	--	Onsite	1.00	40	49.5
NS-05-003-06	11/09/92	--	Onsite	1.00	41	49.5
NS-05-004-02	11/09/92	--	Onsite	1.00	42	49.5
NS-05-004-04	11/09/92	--	Onsite	1.00	43	49.5
NS-05-005-02	11/09/92	--	Onsite	1.00	44	49.5
NS-05-005-04	11/09/92	--	Onsite	1.00	45	49.5
NS-05-006-02	11/09/92	--	Onsite	1.00	46	49.5
NS-05-006-04	11/09/92	--	Onsite	1.00	47	49.5
NS-05-007-02	11/09/92	--	Onsite	1.00	48	49.5
SS-05-001-02	11/03/92	--	Onsite	1.00	49	49.5
SS-05-002-02	11/03/92	--	Onsite	1.00	50	49.5
SS-05-003-02	11/03/92	--	Onsite	1.00	51	49.5
SS-05-004-02	11/03/92	--	Onsite	1.00	52	49.5
SS-05-005-02	11/03/92	--	Onsite	1.00	53	49.5
SS-05-006-02	11/03/92	--	Onsite	1.00	54	49.5
SS-05-007-02	11/03/92	--	Onsite	1.00	55	49.5
SS-05-008-02	11/03/92	--	Onsite	1.00	56	49.5
SS-05-009-02	11/03/92	--	Onsite	1.00	57	49.5
SS-05-010-02	11/03/92	--	Onsite	1.00	58	49.5

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE 1NSPECTION FACILITY (SS-005)
SOILS
Beryllium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-05-011-02	11/03/92	--	Onsite	1.00	59	49.5
SS-05-012-02	11/03/92	--	Onsite	1.00	60	49.5
SS-05-013-02	11/03/92	--	Onsite	1.00	61	49.5
SS-05-014-02	11/03/92	--	Onsite	1.00	62	49.5
SS-05-015-02	11/03/92	--	Onsite	1.00	63	49.5
SS-05-016-02	11/03/92	--	Onsite	1.00	64	49.5
SS-05-017-02	11/03/92	--	Onsite	1.00	65	49.5
SS-05-018-02	11/03/92	--	Onsite	1.00	66	49.5
SS-05-019-02	11/03/92	--	Onsite	**1.00**	67	49.5
SS-05-020-02	11/03/92	--	Onsite	**1.00**	68	49.5
SS-05-021-02	11/03/92	--	Onsite	1.00	69	49.5
SS-10-008	09/24/93	0-0.5	Background	**0.74**	28	28.5
SS-10-008	09/24/93	2.5-3	Background	0.23	17	18.5
SS-10-008	10/26/93	--	Background	**0.74**	29	28.5
SS-10-009	09/24/93	0-0.5	Background	0.20	15	15.5
SS-10-009	09/24/93	2.5-3	Background	0.23	18	18.5
SS-10-009	10/26/93	--	Background	0.20	16	15.5
SS-13-009	09/21/93	0-0.5	Background	**0.27**	23	23
SS-BKD-001	10/26/94	--	Background	**0.27**	22	22
SS-BKD-002	10/26/94	--	Background	**0.48**	27	27
SS-BKD-003	10/26/94	--	Background	**0.25**	21	21
SS-BKD-004	10/26/94	--	Background	**0.13**	6	6
SS-BKD-005	10/26/94	--	Background	**0.35**	26	26
SS-BKD-006	10/26/94	--	Background	**0.15**	10	10
SS-BKD-007	10/26/94	--	Background	**0.18**	13	13
SS-BKD-008	10/26/94	--	Background	**0.14**	8	8.5
SS-BKD-009	10/26/94	--	Background	**0.23**	19	18.5

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE 1NSPECTION FACILITY (SS-005)
SOILS
Beryllium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-010	10/26/94	--	Background	**0.32**	25	25
SS-BKD-011	10/26/94	--	Background	**0.31**	24	24
SS-BKD-012	10/26/94	--	Background	**0.12**	5	5
SS-BKD-013	10/26/94	--	Background	**0.23**	20	18.5
SS-BKD-014	10/26/94	--	Background	**0.16**	11	11.5
SS-BKD-015	10/26/94	--	Background	**0.11**	4	4
SS-BKD-016	10/26/94	--	Background	**0.14**	7	7
SS-BKD-017	10/26/94	--	Background	**0.19**	14	14
SS-BKD-018	10/26/94	--	Background	**0.14**	9	8.5
SS-BKD-019	10/26/94	--	Background	**0.07**	3	3
SS-BKD-020	10/26/94	--	Background	**0.16**	12	11.5
SS-BKD-021	10/26/94	--	Background	0.04	1	1.5
SS-BKD-022	10/26/94	--	Background	0.04	2	1.5

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE 1NSPECTION FACILITY (SS-005)
SOILS
Beryllium

Compliance Data (n)	40
Background Data (n)	29
Mean Onsite Data	1.0000
Mean Background Data	0.2348
Standard Deviation Onsite Data	0.0000
Standard Deviation Background Data	0.1686
Sum of Sample Ranks Onsite Date	1,980.0000
Sum of Sample Ranks Background Data	435.0000
Wilcoxon Statistic W	1,160.0000
Expected Value E(W)	580
Standard Deviation SD(W)	82.2598
Standard Deviation (Ties) SD^(W)	73.8043
Approximate Z-score Z	7.8518
Significance Level A	0.05
ZA	1.6449
Potential Concern	**YES**

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Cadmium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-05-001-02	11/07/92	--	Onsite	1.00	31	41
BS-05-001-06	11/07/92	--	Onsite	1.00	32	41
BS-05-002-02	11/08/92	--	Onsite	**1.10**	53	53
BS-05-002-07	11/08/92	--	Onsite	**1.00**	33	41
BS-05-003-02	11/10/92	--	Onsite	1.00	34	41
NS-05-001-02	11/09/92	--	Onsite	1.00	35	41
NS-05-001-04	11/09/92	--	Onsite	1.00	36	41
NS-05-002-02	11/09/92	--	Onsite	1.00	37	41
NS-05-002-04	11/09/92	--	Onsite	1.00	38	41
NS-05-003-02	11/09/92	--	Onsite	**2.00**	57	60
NS-05-003-04	11/09/92	--	Onsite	**1.05**	52	52
NS-05-003-06	11/09/92	--	Onsite	1.00	39	41
NS-05-004-02	11/09/92	--	Onsite	**1.55**	56	56
NS-05-004-04	11/09/92	--	Onsite	1.00	40	41
NS-05-005-02	11/09/92	--	Onsite	1.00	41	41
NS-05-005-04	11/09/92	--	Onsite	1.00	42	41
NS-05-006-02	11/09/92	--	Onsite	1.00	43	41
NS-05-006-04	11/09/92	--	Onsite	1.00	44	41
NS-05-007-02	11/09/92	--	Onsite	1.00	45	41
SS-05-001-02	11/03/92	--	Onsite	**4.35**	68	68
SS-05-002-02	11/03/92	--	Onsite	1.00	46	41
SS-05-003-02	11/03/92	--	Onsite	**2.00**	58	60
SS-05-004-02	11/03/92	--	Onsite	**2.00**	59	60
SS-05-005-02	11/03/92	--	Onsite	**2.00**	60	60
SS-05-006-02	11/03/92	--	Onsite	**5.00**	69	69
SS-05-007-02	11/03/92	--	Onsite	1.00	47	41
SS-05-008-02	11/03/92	--	Onsite	**6.00**	70	70
SS-05-009-02	11/03/92	--	Onsite	**2.00**	61	60
SS-05-010-02	11/03/92	--	Onsite	**10.00**	71	71

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Cadmium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-05-011-02	11/03/92	--	Onsite	**2.40**	65	65
SS-05-012-02	11/03/92	--	Onsite	**1.00**	48	41
SS-05-013-02	11/03/92	--	Onsite	**2.00**	62	60
SS-05-014-02	11/03/92	--	Onsite	1.00	49	41
SS-05-015-02	11/03/92	--	Onsite	**3.00**	66	66.5
SS-05-016-02	11/03/92	--	Onsite	1.00	50	41
SS-05-017-02	11/03/92	--	Onsite	**3.00**	67	66.5
SS-05-018-02	11/03/92	--	Onsite	1.00	51	41
SS-05-019-02	11/03/92	--	Onsite	**0.59**	28	28.5
SS-05-020-02	11/03/92	--	Onsite	**2.10**	64	64
SS-05-021-02	11/03/92	--	Onsite	**2.00**	63	60
SS-04-029	08/19/93	0-0.5	Background	0.57	25	25.5
SS-04-029	08/19/93	3-3.5	Background	0.58	23	23.5
SS-10-008	09/24/93	0-0.5	Background	**1.30**	54	54.5
SS-10-008	09/24/93	2.5-3	Background	0.46	3	3.5
SS-10-008	10/26/93	--	Background	**1.30**	55	54.5
SS-10-009	09/24/93	0-0.5	Background	0.40	1	1.5
SS-10-009	09/24/93	2.5-3	Background	0.46	4	3.5
SS-10-009	10/26/93	--	Background	0.40	2	1.5
SS-13-009	09/21/93	0-0.5	Background	**0.55**	21	21.5
SS-BKD-001	10/26/94	--	Background	0.56	24	23.5
SS-BKD-002	10/26/94	--	Background	0.57	26	25.5
SS-BKD-003	10/26/94	--	Background	0.53	10	12.5
SS-BKD-004	10/26/94	--	Background	.053	11	12.5
SS-BKD-005	10/26/94	--	Background	.054	16	18
SS-BKD-006	10/26/94	--	Background	0.54	17	18
SS-BKD-007	10/26/94	--	Background	0.54	18	18
SS-BKD-008	10/26/94	--	Background	0.52	5	7
SS-BKD-009	10/26/94	--	Background	0.53	12	12.5

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Cadmium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-010	10/26/94	--	Background	0.59	29	28.5
SS-BKD-011	10/26/94	--	Background	0.55	22	21.5
SS-BKD-012	10/26/94	--	Background	0.53	13	12.5
SS-BKD-013	10/26/94	--	Background	0.54	19	18
SS-BKD-014	10/26/94	--	Background	0.53	14	12.5
SS-BKD-015	10/26/94	--	Background	0.52	6	7
SS-BKD-016	10/26/94	--	Background	0.61	30	30
SS-BKD-017	10/26/94	--	Background	0.52	7	7
SS-BKD-018	10/26/94	--	Background	0.52	8	7
SS-BKD-019	10/26/94	--	Background	0.52	9	7
SS-BKD-020	10/26/94	--	Background	0.58	27	27
SS-BKD-021	10/26/94	--	Background	0.54	20	18
SS-BKD-022	10/26/94	--	Background	0.53	15	12.5

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Cadmium

Compliance Data (n)	40
Background Data (n)	31
Mean Onsite Data	1.8785
Mean Background Data	0.5787
Standard Deviation Onsite Data	1.7614
Standard Deviation Background Data	0.1979
Sum of Sample Ranks Onsite Date	2,010.5000
Sum of Sample Ranks Background Data	545.5000
Wilcoxon Statistic W	1,190.5000
Expected Value E(W)	620
Standard Deviation SD(W)	86.2554
Standard Deviation (Ties) SD^(W)	85.0326
Approximate Z-score Z	6.7033
Significance Level A	0.05
ZA	1.6449
Potential Concern	**YES**

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Chromium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-05-001-02	11/07/92	--	Onsite	**4.00**	17	17
BS-05-001-06	11/07/92	--	Onsite	**11.00**	49	49
BS-05-002-02	11/08/92	--	Onsite	**6.90**	38	38
BS-05-002-07	11/08/92	--	Onsite	**5.00**	25	25
BS-05-003-02	11/10/92	--	Onsite	**2.95**	9	9
NS-05-001-02	11/09/92	--	Onsite	**36.00**	68	68
NS-05-001-04	11/09/92	--	Onsite	**3.00**	10	10
NS-05-002-02	11/09/92	--	Onsite	2.00	3	3
NS-05-002-04	11/09/92	--	Onsite	**3.00**	11	11
NS-05-003-02	11/09/92	--	Onsite	**16.00**	54	54
NS-05-003-04	11/09/92	--	Onsite	**5.15**	28	28.5
NS-05-003-06	11/09/92	--	Onsite	**3.00**	12	12
NS-05-004-02	11/09/92	--	Onsite	**18.60**	59	59
NS-05-004-04	11/09/92	--	Onsite	**4.00**	18	18
NS-05-005-02	11/09/92	--	Onsite	**2.75**	8	8
NS-05-005-04	11/09/92	--	Onsite	**4.00**	19	19
NS-05-006-02	11/09/92	--	Onsite	**7.00**	39	39
NS-05-006-04	11/09/92	--	Onsite	**3.00**	13	13
NS-05-007-02	11/09/92	--	Onsite	**4.00**	20	20
SS-05-001-02	11/03/92	--	Onsite	**34.05**	67	67
SS-05-002-02	11/03/92	--	Onsite	**9.00**	45	45
SS-05-003-02	11/03/92	--	Onsite	**39.00**	69	69.5
SS-05-004-02	11/03/92	--	Onsite	**18.00**	57	57.5
SS-05-005-02	11/03/92	--	Onsite	**17.00**	55	55.5
SS-05-006-02	11/03/92	--	Onsite	**18.00**	58	57.5
SS-05-007-02	11/03/92	--	Onsite	**5.00**	26	26
SS-05-008-02	11/03/92	--	Onsite	**31.00**	66	66
SS-05-009-02	11/03/92	--	Onsite	**5.00**	27	26
SS-05-010-02	11/03/92	--	Onsite	**29.00**	65	65

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Chromium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-05-011-02	11/03/92	--	Onsite	**28.10**	64	64
SS-05-012-02	11/03/92	--	Onsite	**8.00**	42	42
SS-05-013-02	11/03/92	--	Onsite	**39.00**	70	69.5
SS-05-014-02	11/03/92	--	Onsite	**4.00**	21	19
SS-05-015-02	11/03/92	--	Onsite	**44.00**	71	71
SS-05-016-02	11/03/92	--	Onsite	**10.00**	47	47
SS-05-017-02	11/03/92	--	Onsite	**17.00**	56	55.5
SS-05-018-02	11/03/92	--	Onsite	**3.00**	14	12
SS-05-019-02	11/03/92	--	Onsite	**4.50**	22	22
SS-05-020-02	11/03/92	--	Onsite	**19.75**	62	62
SS-05-021-02	11/03/92	--	Onsite	**25.00**	63	63
SS-04-029	08/19/93	0-0.5	Background	**4.70**	23	23
SS-04-029	08/19/93	3-3.5	Background	**3.70**	16	16
SS-10-008	09/24/93	0-0.5	Background	**19.45**	61	61
SS-10-008	09/24/93	2.5-3	Background	**0.00**	2	2
SS-10-008	10/26/93	--	Background	**19.45**	60	60
SS-10-009	09/24/93	0-0.5	Background	**2.00**	4	4
SS-10-009	09/24/93	2.5-3	Background	**0.00**	1	1
SS-10-009	10/26/93	--	Background	**2.00**	5	5
SS-13-009	09/21/93	0-0.5	Background	**9.10**	46	46
SS-BKD-001	10/26/94	--	Background	**8.40**	43	43.5
SS-BKD-002	10/26/94	--	Background	**15.30**	53	53
SS-BKD-003	10/26/94	--	Background	**7.50**	41	41
SS-BKD-004	10/26/94	--	Background	**5.60**	31	31
SS-BKD-005	10/26/94	--	Background	**11.40**	50	50
SS-BKD-006	10/26/94	--	Background	**6.30**	34	34
SS-BKD-007	10/26/94	--	Background	**10.30**	48	48
SS-BKD-008	10/26/94	--	Background	**5.20**	30	30
SS-BKD-009	10/26/94	--	Background	**8.40**	44	43.5

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Chromium

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-010	10/26/94	--	Background	**11.50**	51	51
SS-BKD-011	10/26/94	--	Background	**12.70**	52	52
SS-BKD-012	10/26/94	--	Background	**4.90**	24	24
SS-BKD-013	10/26/94	--	Background	**7.30**	40	40
SS-BKD-014	10/26/94	--	Background	**6.40**	35	35
SS-BKD-015	10/26/94	--	Background	**6.60**	36	36
SS-BKD-016	10/26/94	--	Background	**5.15**	29	28.5
SS-BKD-017	10/26/94	--	Background	**6.80**	37	37
SS-BKD-018	10/26/94	--	Background	**5.90**	32	32
SS-BKD-019	10/26/94	--	Background	**3.40**	15	15
SS-BKD-020	10/26/94	--	Background	**6.10**	33	33
SS-BKD-021	10/26/94	--	Background	**2.30**	6	6
SS-BKD-022	10/26/94	--	Background	**2.50**	7	7

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Chromium

Compliance Data (n)	40
Background Data (n)	31
Mean Onsite Data	13.7188
Mean Background Data	7.1082
Standard Deviation Onsite Data	12.4751
Standard Deviation Background Data	4.8502
Sum of Sample Ranks Onsite Date	1,568.5000
Sum of Sample Ranks Background Data	987.5000
Wilcoxon Statistic W	748.5000
Expected Value E(W)	620
Standard Deviation SD(W)	86.2554
Standard Deviation (Ties) SD^(W)	86.2171
Approximate Z-score Z	1.4846
Significance Level A	0.05
ZA	1.6449
Potential Concern	**YES**

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Lead

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-05-001-02	11/07/92	--	Onsite	0.60	3	10.5
BS-05-001-06	11/07/92	--	Onsite	0.60	4	10.5
BS-05-002-02	11/08/92	--	Onsite	**21.00**	42	42
BS-05-002-07	11/08/92	--	Onsite	**20.00**	38	39
BS-05-003-02	11/10/92	--	Onsite	**2.20**	22	22
NS-05-001-02	11/09/92	--	Onsite	0.60	5	10.5
NS-05-001-04	11/09/92	--	Onsite	0.60	6	10.5
NS-05-002-02	11/09/92	--	Onsite	0.60	7	10.5
NS-05-002-04	11/09/92	--	Onsite	0.60	8	10.5
NS-05-003-02	11/09/92	--	Onsite	**75.00**	60	60
NS-05-003-04	11/09/92	--	Onsite	**5.00**	25	25
NS-05-003-06	11/09/92	--	Onsite	0.60	9	10.5
NS-05-004-02	11/09/92	--	Onsite	**104.80**	62	62
NS-05-004-04	11/09/92	--	Onsite	0.60	10	10.5
NS-05-005-02	11/09/92	--	Onsite	**2.10**	21	21
NS-05-005-04	11/09/92	--	Onsite	0.60	11	10.5
NS-05-006-02	11/09/92	--	Onsite	0.60	12	10.5
NS-05-006-04	11/09/92	--	Onsite	0.60	13	10.5
NS-05-007-02	11/09/92	--	Onsite	0.60	14	10.5
SS-05-001-02	11/03/92	--	Onsite	**186.00**	68	668.5
SS-05-002-02	11/03/92	--	Onsite	0.60	15	10.5
SS-05-003-02	11/03/92	--	Onsite	**39.00**	52	52
SS-05-004-02	11/03/92	--	Onsite	**34.00**	49	49
SS-05-005-02	11/03/92	--	Onsite	**31.00**	48	48
SS-05-006-02	11/03/92	--	Onsite	**110.00**	63	63
SS-05-007-02	11/03/92	--	Onsite	0.60	16	10.5
SS-05-008-02	11/03/92	--	Onsite	**175.00**	67	67
SS-05-009-02	11/03/92	--	Onsite	**20.00**	39	39
SS-05-010-02	11/03/92	--	Onsite	**209.00**	71	71

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Lead

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-05-011-02	11/03/92	--	Onsite	**187.00**	70	70
SS-05-012-02	11/03/92	--	Onsite	**45.00**	55	55
SS-05-013-02	11/03/92	--	Onsite	**186.00**	69	68.5
SS-05-014-02	11/03/92	--	Onsite	0.60	17	10.5
SS-05-015-02	11/03/92	--	Onsite	**146.00**	65	65
SS-05-016-02	11/03/92	--	Onsite	**51.00**	57	57
SS-05-017-02	11/03/92	--	Onsite	**53.00**	58	58
SS-05-018-02	11/03/92	--	Onsite	0.60	18	10.5
SS-05-019-02	11/03/92	--	Onsite	**13.95**	33	33
SS-05-020-02	11/03/92	--	Onsite	**140.75**	64	64
SS-05-021-02	11/03/92	--	Onsite	**167.00**	66	66
SS-04-029	08/19/93	0-0.5	Background	**22.30**	43	43
SS-04-029	08/19/93	3-3.5	Background	**1.70**	20	20
SS-10-008	09/24/93	0-0.5	Background	**27.75**	44	44.5
SS-10-008	09/24/93	2.5-3	Background	**0.00**	1	1
SS-10-008	10/26/93	--	Background	**27.75**	45	44.7
SS-10-009	09/24/93	0-0.5	Background	**6.00**	27	27.5
SS-10-009	09/24/93	2.5-3	Background	**0.00**	2	2
SS-10-009	10/26/93	--	Background	**6.00**	28	27.5
SS-13-009	09/21/93	0-0.5	Background	**28.40**	46	46
SS-BKD-001	10/26/94	--	Background	**19.05**	37	37
SS-BKD-002	10/26/94	--	Background	**72.70**	59	59
SS-BKD-003	10/26/94	--	Background	**9.10**	30	30
SS-BKD-004	10/26/94	--	Background	**41.70**	54	54
SS-BKD-005	10/26/94	--	Background	**20.00**	40	40
SS-BKD-006	10/26/94	--	Background	**30.80**	47	47
SS-BKD-007	10/26/94	--	Background	**20.40**	41	41
SS-BKD-008	10/26/94	--	Background	**14.00**	34	34
SS-BKD-009	10/26/94	--	Background	**14.70**	35	35

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Lead

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-010	10/26/94	--	Background	**37.80**	51	51
SS-BKD-011	10/26/94	--	Background	**37.50**	50	50
SS-BKD-012	10/26/94	--	Background	**11.20**	32	32
SS-BKD-013	10/26/94	--	Background	**5.10**	26	26
SS-BKD-014	10/26/94	--	Background	**4.80**	24	24
SS-BKD-015	10/26/94	--	Background	**17.60**	36	36
SS-BKD-016	10/26/94	--	Background	**48.30**	56	56
SS-BKD-017	10/26/94	--	Background	**41.50**	53	53
SS-BKD-018	10/26/94	--	Background	**79.40**	61	61
SS-BKD-019	10/26/94	--	Background	**4.70**	23	23
SS-BKD-020	10/26/94	--	Background	**9.50**	31	31
SS-BKD-021	10/26/94	--	Background	**1.60**	19	19
SS-BKD-022	10/26/94	--	Background	**6.90**	29	29

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Lead

Compliance Data (n)	40
Background Data (n)	31
Mean Onsite Data	50.8350
Mean Background Data	21.5565
Standard Deviation Onsite Data	68.9428
Standard Deviation Background Data	20.0015
Sum of Sample Ranks Onsite Date	1,433.0000
Sum of Sample Ranks Background Data	1,123.0000
Wilcoxon Statistic W	613.0000
Expected Value E(W)	620
Standard Deviation SD(W)	86.2554
Standard Deviation (Ties) SD^(W)	85.7572
Approximate Z-score Z	-0.0875
Significance Level A	0.05
ZA	1.6449
Potential Concern	**NO**

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Nickel

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-05-001-02	11/07/92	--	Onsite	8.00	33	45.5
BS-05-001-06	11/07/92	--	Onsite	8.00	34	45.5
BS-05-002-02	11/08/92	--	Onsite	**3.50**	11	11
BS-05-002-07	11/08/92	--	Onsite	8.00	35	45.5
BS-05-003-02	11/10/92	--	Onsite	**2.10**	4	4
NS-05-001-02	11/09/92	--	Onsite	8.00	36	45.5
NS-05-001-04	11/09/92	--	Onsite	8.00	37	45.5
NS-05-002-02	11/09/92	--	Onsite	8.00	38	45.5
NS-05-002-04	11/09/92	--	Onsite	8.00	39	45.5
NS-05-003-02	11/09/92	--	Onsite	8.00	40	45.5
NS-05-003-04	11/09/92	--	Onsite	**3.10**	10	10
NS-05-003-06	11/09/92	--	Onsite	**83.00**	69	69
NS-05-004-02	11/09/92	--	Onsite	**4.45**	18	18
NS-05-004-04	11/09/92	--	Onsite	8.00	41	45.5
NS-05-005-02	11/09/92	--	Onsite	**2.60**	9	9
NS-05-005-04	11/09/92	--	Onsite	8.00	42	45.5
NS-05-006-02	11/09/92	--	Onsite	8.00	43	45.5
NS-05-006-04	11/09/92	--	Onsite	8.00	44	45.5
NS-05-007-02	11/09/92	--	Onsite	**58.00**	68	68
SS-05-001-02	11/03/92	--	Onsite	**9.70**	60	60
SS-05-002-02	11/03/92	--	Onsite	8.00	45	45.5
SS-05-003-02	11/03/92	--	Onsite	8.00	46	45.5
SS-05-004-02	11/03/92	--	Onsite	8.00	47	45.5
SS-05-005-02	11/03/92	--	Onsite	8.00	48	45.5
SS-05-006-02	11/03/92	--	Onsite	**8.00**	49	45.5
SS-05-007-02	11/03/92	--	Onsite	8.00	50	45.5
SS-05-008-02	11/03/92	--	Onsite	**9.00**	59	59
SS-05-009-02	11/03/92	--	Onsite	8.00	51	45.5
SS-05-010-02	11/03/92	--	Onsite	**8.00**	52	45.5

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Nickel

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-05-011-02	11/03/92	--	Onsite	**7.40**	30	30.5
SS-05-012-02	11/03/92	--	Onsite	8.00	53	45.5
SS-05-013-02	11/03/92	--	Onsite	**5.00**	20	20.5
SS-05-014-02	11/03/92	--	Onsite	8.00	54	45.5
SS-05-015-02	11/03/92	--	Onsite	8.00	55	45.5
SS-05-016-02	11/03/92	--	Onsite	8.00	56	45.5
SS-05-017-02	11/03/92	--	Onsite	**8.00**	57	45.5
SS-05-018-02	11/03/92	--	Onsite	8.00	58	45.5
SS-05-019-02	11/03/92	--	Onsite	**2.00**	3	3
SS-05-020-02	11/03/92	--	Onsite	**4.30**	14	14.5
SS-05-021-02	11/03/92	--	Onsite	**10.00**	61	61
SS-10-008	09/24/93	0-0.5	Background	**11.20**	64	64.5
SS-10-008	09/24/93	2.5-3	Background	2.50	7	7.5
SS-10-008	10/26/93	--	Background	**11.20**	65	64.5
SS-10-009	09/24/93	0-0.5	Background	2.20	5	5.5
SS-10-009	09/24/93	2.5-3	Background	2.50	8	7.5
SS-10-009	10/26/93	--	Background	2.20	6	5.5
SS-13-009	09/21/93	0-0.5	Background	**7.40**	31	30.5
SS-BKD-001	10/26/94	--	Background	**7.00**	29	29
SS-BKD-002	10/26/94	--	Background	**12.90**	67	67
SS-BKD-003	10/26/94	--	Background	**4.30**	15	14.5
SS-BKD-004	10/26/94	--	Background	**4.20**	13	13
SS-BKD-005	10/26/94	--	Background	**11.50**	66	66
SS-BKD-006	10/26/94	--	Background	**4.40**	16	16.5
SS-BKD-007	10/26/94	--	Background	**7.50**	32	32
SS-BKD-008	10/26/94	--	Background	**4.60**	19	19
SS-BKD-009	10/26/94	--	Background	**6.20**	28	28

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Nickel

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-010	10/26/94	--	Background	**10.30**	62	62
SS-BKD-011	10/26/94	--	Background	**10.70**	63	63
SS-BKD-012	10/26/94	--	Background	**4.40**	17	16.5
SS-BKD-013	10/26/94	--	Background	**5.90**	26	26.5
SS-BKD-014	10/26/94	--	Background	**5.00**	21	20.5
SS-BKD-015	10/26/94	--	Background	**5.50**	23	23.5
SS-BKD-016	10/26/94	--	Background	**5.20**	22	22
SS-BKD-017	10/26/94	--	Background	**5.50**	24	23.5
SS-BKD-018	10/26/94	--	Background	**5.90**	27	26.5
SS-BKD-019	10/26/94	--	Background	**4.10**	12	12
SS-BKD-020	10/26/94	--	Background	**5.80**	25	25
SS-BKD-021	10/26/94	--	Background	1.80	1	1.5
SS-BKD-022	10/26/94	--	Background	1.80	2	1.5

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Nickel

Compliance Data (n)	40
Background Data (n)	29
Mean Onsite Data	10.3037
Mean Background Data	5.9897
Standard Deviation Onsite Data	14.4120
Standard Deviation Background Data	3.1929
Sum of Sample Ranks Onsite Date	1,620.5000
Sum of Sample Ranks Background Data	794.5000
Wilcoxon Statistic W	800.5000
Expected Value E(W)	580
Standard Deviation SD(W)	82.2598
Standard Deviation (Ties) SD^(W)	80.0241
Approximate Z-score Z	2.7492
Significance Level A	0.05
ZA	1.6449
Potential Concern	**YES**

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Zinc

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-05-001-02	11/07/92	--	Onsite	**34.00**	37	37
BS-05-001-06	11/07/92	--	Onsite	**19.00**	25	25
BS-05-002-02	11/08/92	--	Onsite	**48.60**	48	48
BS-05-002-07	11/08/92	--	Onsite	**21.00**	26	26
BS-05-003-02	11/10/92	--	Onsite	**10.00**	9	9
NS-05-001-02	11/09/92	--	Onsite	**11.00**	10	11.5
NS-05-001-04	11/09/92	--	Onsite	**9.00**	8	8
NS-05-002-02	11/09/92	--	Onsite	4.00	3	3.5
NS-05-002-04	11/09/92	--	Onsite	**7.00**	5	5.5
NS-05-003-02	11/09/92	--	Onsite	**51.00**	53	53
NS-05-003-04	11/09/92	--	Onsite	**35.00**	38	38
NS-05-003-06	11/09/92	--	Onsite	**433.00**	69	69
NS-05-004-02	11/09/92	--	Onsite	**88.90**	61	61
NS-05-004-04	11/09/92	--	Onsite	**26.00**	31	31
NS-05-005-02	11/09/92	--	Onsite	**7.70**	7	7
NS-05-005-04	11/09/92	--	Onsite	4.00	4	3.5
NS-05-006-02	11/09/92	--	Onsite	**50.00**	51	51.5
NS-05-006-04	11/09/92	--	Onsite	**7.00**	6	5.5
NS-05-007-02	11/09/92	--	Onsite	**350.00**	68	68
SS-05-001-02	11/03/92	--	Onsite	**99.00**	62	62
SS-05-002-02	11/03/92	--	Onsite	**28.00**	33	33
SS-05-003-02	11/03/92	--	Onsite	**37.00**	40	40.5
SS-05-004-02	11/03/92	--	Onsite	**37.00**	41	40.5
SS-05-005-02	11/03/92	--	Onsite	**47.00**	47	47
SS-05-006-02	11/03/92	--	Onsite	**67.00**	58	58
SS-05-007-02	11/03/92	--	Onsite	**12.00**	18	18
SS-05-008-02	11/03/92	--	Onsite	**140.00**	66	66
SS-05-009-02	11/03/92	--	Onsite	**38.00**	42	42
SS-05-010-02	11/03/92	--	Onsite	**124.00**	64	64

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Zinc

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-05-011-02	11/03/92	--	Onsite	**131.50**	65	65
SS-05-012-02	11/03/92	--	Onsite	**31.00**	35	35
SS-05-013-02	11/03/92	--	Onsite	**76.00**	60	60
SS-05-014-02	11/03/92	--	Onsite	**11.00**	11	11.5
SS-05-015-02	11/03/92	--	Onsite	**50.00**	52	51.5
SS-05-016-02	11/03/92	--	Onsite	**73.00**	59	59
SS-05-017-02	11/03/92	--	Onsite	**58.00**	56	56
SS-05-018-02	11/03/92	--	Onsite	**11.00**	12	11.5
SS-05-019-02	11/03/92	--	Onsite	**38.20**	43	43
SS-05-020-02	11/03/92	--	Onsite	**153.50**	67	67
SS-05-021-02	11/03/92	--	Onsite	**107.00**	63	63
SS-10-008	09/24/93	0-0.5	Background	**58.70**	49	49.5
SS-10-008	09/24/93	2.5-3	Background	**0.01**	1	1
SS-10-008	10/26/93	--	Background	**48.70**	50	49.5
SS-10-009	09/24/93	0-0.5	Background	**11.40**	15	15.5
SS-10-009	09/24/93	2.5-3	Background	**0.01**	2	2
SS-10-009	10/26/93	--	Background	**11.40**	16	15.5
SS-13-009	09/21/93	0-0.5	Background	**43.80**	46	46
SS-BKD-001	10/26/94	--	Background	**17.00**	23	23
SS-BKD-002	10/26/94	--	Background	**56.20**	55	55
SS-BKD-003	10/26/94	--	Background	**11.80**	17	17
SS-BKD-004	10/26/94	--	Background	**27.80**	32	32
SS-BKD-005	10/26/94	--	Background	**30.60**	34	34
SS-BKD-006	10/26/94	--	Background	**64.40**	57	57
SS-BKD-007	10/26/94	--	Background	**23.00**	27	27
SS-BKD-008	10/26/94	--	Background	**14.50**	21	21
SS-BKD-009	10/26/94	--	Background	**39.10**	44	44

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Zinc

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-010	10/26/94	--	Background	**25.40**	28	28
SS-BKD-011	10/26/94	--	Background	**33.00**	36	36
SS-BKD-012	10/26/94	--	Background	**16.00**	22	22
SS-BKD-013	10/26/94	--	Background	**11.10**	14	14
SS-BKD-014	10/26/94	--	Background	**12.30**	19	19.5
SS-BKD-015	10/26/94	--	Background	**25.90**	30	30
SS-BKD-016	10/26/94	--	Background	**35.55**	39	39
SS-BKD-017	10/26/94	--	Background	**53.70**	54	54
SS-BKD-018	10/26/94	--	Background	**42.50**	45	45
SS-BKD-019	10/26/94	--	Background	**11.00**	13	11.5
SS-BKD-020	10/26/94	--	Background	**25.50**	29	29
SS-BKD-021	10/26/94	--	Background	**17.70**	24	24
SS-BKD-022	10/26/94	--	Background	**12.30**	20	19.5

Detected Concentrations are Shown in **Bold.**

TABLE 2
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOILS
Zinc

Compliance Data (n)	40
Background Data (n)	29
Mean Onsite Data	64.6362
Mean Background Data	26.5646
Standard Deviation Onsite Data	86.3975
Standard Deviation Background Data	17.2103
Sum of Sample Ranks Onsite Date	1,554.5000
Sum of Sample Ranks Background Data	860.5000
Wilcoxon Statistic W	734.5000
Expected Value E(W)	580
Standard Deviation SD(W)	82.2598
Standard Deviation (Ties) SD^(W)	82.2470
Approximate Z-score Z	1.8724
Significance Level A	0.05
ZA	1.6449
Potential Concern	**YES**

Detected Concentrations are Shown in **Bold.**

TABLE 3
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
TOXICITY VALUES: CARCINOGENIC EFFECTS

Compound	USEPA Weight-of-Evidence Classification	Slope Factor (mg/kg/day)^-1		Basis for Carcinogenicity Classification
		Inhalation	Oral	
Methylene chloride	B1 (2)	0.002 (1)	0.007 (1)	Inadequate human data and sufficient evidence of carcinogenicity in animals: increased incidence of hepatocellular neoplasms and alveolar/bronchiolar neoplasms in male and female mice, and increased incidence of benign mammary tumors in both sexes .
Trichloroethene	C (5)	0.006 (4)	0.011 (4)	--
4-Methylphenol (p-cresol)	C (1)	NV(1)	NV(1)	Increased incidence of skin papillomas in mice in an initiation-promotion study. The three cresol isomers produced positive results in genetic toxicity studies both alone an in combination.
Benzo(a)anthracene	B1 (2)	NV(1)	NV(1)	No human data from animal bioassays. B(a)A produced tumors in mice exposed by gavage, i.p., subcutaneous, or intramuscular injection & topical application. B(a)A produced mutations in bacteria and mammalian cells, 5 transformed mammalian cells...
Benzo(a) pyrene	B1 (2)	NV(1)	7.3(l)	Human data specifically linking BAP to a carcinogenic effect are lacking. There are, however, multiple animal studies in many species demonstrating BAP to be carcinogenic following administration by numerous routes. BAP has produced positive...
Benzo(b)fluoranthene	B1 (2)	NV(1)	NV(1)	No human and sufficient data from animal bioassays. B(b)F produced tumors in mice after lung implantation, i.p. or subcutaneous injection and skin painting.
Benzo(k)fluoranthene	B1 (2)	NV(1)	NV(1)	No human data & sufficient data from animal bioassays. B(k)F produced tumors after lung implantation in mice and when administered with a promoting agent in skin-painting studies. Equivocal results have been found in a lung adenoma assay in mice.
bis(2-Ethylhexyl) phthalate	B1 (2)	NV(1)	0.014 (1)	Orally administered DEHP produced significant dose-related increases in liver tumor responses in rats and mice of both sexes.
Carbazole	B1 (2)	NV(1)	0.02 (1)	–

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum
6 IRIS

NV - No Value Available

USEPA Weight-of-Evidence Classification

A - Human Carcinogen
B1 or B2 - Probable Human Carcinogen
C - Possible Human Carcinogen

TABLE 3
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
TOXICITY VALUES: CARCINOGENIC EFFECTS

Compound	USEPA Weight-of-Evidence Classification	Slope Factor (mg/kg/day)^-1		Basis for Carcinogenicity Classification
		Inhalation	Oral	
Chrysene	B2 (1)	NV(1)	NV(1)	No human data and sufficient data from animal bioassays. Produced carcinomas and malignant lymphoma in mice after intraperitoneal injection and skin carcinomas in mice following dermal exposure. Produced chromosomal abnormalities in hamster....
Dibenz(a,h)anthracene	B2 (1)	NV(1)	NV(1)	No human data & sufficient data from animal bioassays. Produced carcinomas in mice following oral or dermal exposure & injection site tumors in several species following subcutaneous or intramuscular administration. Has induced DNA damage.....
Indeno(1,2,3-cd) pyrene	B2 (1)	NV(1)	NV(1)	No human data and sufficient data from animal bioassays. Produced tumors in mice following lung implants, subcutaneous injection and dermal exposure. Tested positive in bacterial gene mutation assays.
Naphthalene	C (1)	NV(1)	NV(1)	Inadequate data of carcinogenicity in humans exposed to naphthalene via the oral and inhalation routes, and the limited evidence of carcinogenicity in animals via the inhalation route.
4,4'-DDD	B2 (1)	NV(1)	NV(1)	Increased incidence of lung tumors in male and female mice, liver tumors in male mice and thyroid tumors in male rats. DDD is structurally similar to, and is a known metabolite of DDT, a probable human carcinogen.
4,4‘-DDT	B2 (1)	0.34 (1)	0.34 (1)	Observation of tumors (generally of the liver) in seven studies in various mouse strains and three in rats. DDT is structurally similar to other probable carcinogens, such as ODD and DDE.
Aroclor 1254	A (1)	2.0 (6)	2.0 (6)	--
Aroclor 1260	A (1)	2.0 (6)	2.0 (6)	--
Arsenic	A (1)	15.05 (1)	1.5 (1)	Based on sufficient evidence from human data. An increased lung cancer mortality was observed in multiple human populations exposed primarily through inhalation. Also, increased mortality from multiple internal organ cancers (liver, kidney, ...

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum
6 IRIS

NV - No Value Available

USEPA Weight-of-Evidence Classification

A - Human Carcinogen
B1 or B2 - Probable Human Carcinogen
C - Possible Human Carcinogen

TABLE 3
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
TOXICITY VALUES: CARCINOGENIC EFFECTS

Compound	USEPA Weight-of-Evidence Classification	Slope Factor (mg/kg/day)^-1		Basis for Carcinogenicity Classification
		Inhalation	Oral	
Beryllium	B1 (1)	8.4 (1)	NV(1)	Limited evidence of carcinogenicity in humans exposed to airborne beryllium (lung cancer) and sufficient evidence of carcinogenicity in animals.
Cadmium	B1 (1)	6.3 (1)	NV(1)	Limited evidence from occupational epidemiologic studies of cadmium is consistent across investigators and study populations. There is sufficient evidence of carcinogenicity in rats and mice by inhalation and intramuscular and subcutaneous....

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum
6 IRIS

NV - No Value Available

USEPA Weight-of-Evidence Classification

A - Human Carcinogen
B1 or B2 - Probable Human Carcinogen
C - Possible Human Carcinogen

TABLE 4
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
TOXIC VALUES: POTENTIAL NONCARCINOGENIC EFFECTS

Compound	Reference Dose (mg/kg-day)				Critical Effects			
	Inhalation		Oral		Inhalation		Oral	
	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic
2-Hexanone	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
4-Methyl-2-pentanone	0.023 (1)	0.228 (4)	0.08 (1)	0.8 (1)	---	---	--	--
Acetone	NV(1)	NV(1)	0.1 (1)	1.0 (1)	---	---	Increased liver and kidney weights and nephrotoxicity	Liver - Increased weight; Kidney - Increased weight; Kidney - Nephrotoxicity
Methylene chloride	0.857 (1)	0 857(1)	0.06 (1)	0.06 (1)	Liver - Toxicity	Liver - Toxicity	Liver - Toxicity	Liver - Toxicity
Naphthalene	8.57E-04 (1)	8.57E-04 (3)	0.02 (1)	0.02 (3)	Nasal effects: hyperplasia and metaplasia in respiratory and olfactory epithelium, respectively	---	Decreased mean terminal body weight in males	--
Toluene	0.114 (1)	0.114 (3)	0.2 (1)	0.2 (1)	Neurological effects	---	Changes in liver and kidney weights	Liver- Altered weight; Kidney - Altered weight
Xylene (total)	0.029 (1)	0.029 (3)	0.2 (1)	0.2 (1)	Impaired motor coordination (decreased rotariod performance).	---	Decreased body weight; increased mortality	--
Tetrachloroethene	NV (1)	NV (1)	0.01 (1)	0.01 (1)	---	---	Hepatotoxicity in mice, weight gain in rats	Liver - Hepatotoxicity
Trichloroethene	NV (1)	NV (1)	0.06 (1)	0.06 (1)	---	---	--	--
2-Methylnaphthalene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
4-Methylphenol (p-cresol)	NV (1)	NV (1)	0.005 (1)	0.005 (1)	---	---	Central Nervous system - hypoactivity. Respiratory system - distress. While body - maternal death	

TABLE 4
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
TOXIC VALUES: POTENTIAL NONCARCINOGENIC EFFECTS

Compound	Reference Dose (mg/kg-day)				Critical Effects			
	Inhalation		Oral		Inhalation		Oral	
	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic
Acenaphthene	NV (1)	NV (1)	0.06 (1)	0.6 (1)	---	---	Hepatotoxicity	Liver - Hepatotoxicity
Acenaphthylene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Anthracene	NV (1)	NV (1)	0.3 (1)	3.0 (1)	---	---	No observed effects	None observed
Benzo(a) anthracene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	---	---
Benzo(a) pyrene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	---	---
Benzo(b)fluoranthene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	---	---
Benzo(g,h,i) perylene	NV (1)	NV (1)	0.03 (4)	0.4 (4)	---	---	---	---
Benzo(k) fluoranthene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	---	---
Benzoic acid	NV (1)	NV (1)	4.0 (1)	4.0 (1)	---	---	No adverse effects observed	None observed
bis(2-Ethylhexyl) phthalate	NV (1)	NV (1)	0.02 (1)	0.02 (3)	---	---	Increased relative liver weight	--
Carbazole	NV (1)	NV (1)	NV (1)	NV (1)	---	---	---	—

TABLE 4
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
TOXIC VALUES: POTENTIAL NONCARCINOGENIC EFFECTS

Compound	Reference Dose (mg/kg-day)				Critical Effects			
	Inhalation		Oral		Inhalation		Oral	
	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic
Chrysene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Dibenz(a,h)anthracene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Dibenzofuran	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Diethylphthalate	NV (1)	NV (1)	0.8 (1)	8.0 (1)	---	---	Decreased growth rate, food consumption, and altered organ weights	Whole body - decreased growth; Organs - decreased weight
Di-n-butylphthalate	NV (1)	NV (1)	0.1 (1)	1.0 (1)	---	---	Increased mortality	Whole body - increased mortality
Di-n-octylphthalate	NV (1)	NV (1)	0.02 (1)	0.02 (1)	---	---	Kidney - increased weight; Liver - increased weight; Liver - increased SGOT activity; Liver- increased SPGT activity	Kidney - increased weight; Liver - increased weight; Liver - increased SGOT activity; Liver- increased SPGT activity
Fluoranthene	NV (1)	NV (1)	0.04 (1)	0.4 (1)	---	---	Nephropathy - increased liver weights, hematological alterations and clinical effects	Kidney - Nephropathy; Liver - Weight change; Blood - Neamtological changes
Fluorene	NV (1)	NV (1)	0.04 (1)	0.4 (1)	---	---	Decrease RBC, packet cell volume and hemoglobin	Erythrocytes - decreased counts
Indeno(1,2,3-cd) pyrene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Phenanthrene	NV (1)	NV (1)	0-.03 (4)	0.3 (4)	---	---	--	--
Phenol	NV (1)	NV (1)	0.3 (1)	0.6 (1)	---	---	Decreased maternal weight gain in rat developmental study	Fetus - decreased weight

TABLE 4
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
TOXIC VALUES: POTENTIAL NONCARCINOGENIC EFFECTS

Compound	Reference Dose (mg/kg-day)				Critical Effects			
	Inhalation		Oral		Inhalation		Oral	
	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic
Pyrene	NV (1)	NV (1)	0.03 (1)	0.3 (1)	---	---	Kidney effects (renal tubular pathology, decreased kidney weights)	Kidney - effects
4,4'-DDD	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
4,4'-DDT	NV (1)	NV (1)	5.00E-04 (1)	5.00E-04 (1)	---	---	Liver lesions	Liver - lesions
Endosulfan II	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Methoxychlor	NV (1)	NV (1)	0.005 (1)	0.005 (1)	---	---	Excessive loss of litters	Reproduction - loss of litters
Aroclor 1254	NV (1)	NV (1)	2.00E-05 (1)	5.00E-05 (1)	---	---	Ocular exudate; prominent Meibomian glands; distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	Immune system - toxicity
Aroclor 1260	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
2,4-Dinitrotoluene	NV (1)	NV (1)	0.002 (1)	0.002 (1)	---	---	Neurotoxicity; Heinz bodies and bilary tract hyperplasia	CNS- Neurotoxicity; Blood- Heinz bodies; Bilary tract - Hyperplasia
Beryllium	5.71E-06 (1)	5.71E-06 (1)	0.002 (1)	0.005 (1)	Beryllium sensitization and pregression to CBD	---	Small intestine lesions	None observed
Nickel	NV (1)	NV (1)	0.02 (1)	0.02 (1)	---	---	Decreased body and organ weights	Whole body - decreased weight; major organs- decreased weight
Barium	1.43E-04 (1)	0.001 (1)	0.07 (1)	0.07 (1)	Fetus - Fetotoxicity	Fetus - Fetotoxicity	None. RfD is based on NOAEL.	Cardiovascular system - increased blood pressure

TABLE 4
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
TOXIC VALUES: POTENTIAL NONCARCINOGENIC EFFECTS

Compound	Reference Dose (mg/kg-day)				Critical Effects			
	Inhalation		Oral		Inhalation		Oral	
	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic
Cadmium	NV (1)	NV (1)	0.001 (1)	0.001 (3)	---	---	Human studies involving chronic exposures	--
Chromium	NV (1)	NV (1)	1.5 (1)	1.0 (1)	---	---	No effects observed	NOEL
Zinc	NV (1)	NV (1)	0.3 (1)	0.3 (3)	---	---	47% decrease in erythrocyte superoxide dismulase (ESOD) concentration in adult females after ten weeks of zinc exposure	Blood- decreased blood enzyme
Arsenic	NV (1)	NV (1)	3.00E-04 (1)	3.00E-04 (1)	---	---	Hyperpygmentation, keratosis and possible vascular complications	Skin - Keratosis; Skin - Hyperpygmen

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

NV - No Values Available
NOEL - No Observed Effects Level

TABLE 5
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - CARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Oral Slope Factor (mg/kg-day)^-1	Cancer Risk (unitless)
Methylene chloride	0.01649	7.74E-09	0.0075 (1)	5.81E-11
Trichloroethene	1	4.70E-07	0.011 (4)	5.17E-09
4-Methylphenol (p-cresol)	0.026	1.22E-08	NV (1)	NV
Benzo(a) anthracene	0.6091	2.86E-07	NV (1)	NV
Benzo(a) pyrene	0.9406	4.42E-07	7.3 (1)	3.22E-06
Benzo(b) fiuoranthene	0.7947	3.73E-07	NV (1)	NV
Benzo(k) fluoranthene	0.7263	3.41E-07	NV (1)	NV
bis(2-Ethylhexyl) phthalate	0.1926	9.05E-08	0.014 (1)	1.27E-09
Carbazole	0.2998	1.41E-07	0.02 (1)	2.82E-09
Chrysene	0.7179	3.37E-07	NV (1)	NV
Dibenz(a,h)anthracene	0.2319	1.09E-07	NV (1)	NV
Indeno(1,2,3-cd) pyrene	0.56540	2.66E-07	NV (1)	NV
Naphthalene	0.0340	1.60E-08	NV (1)	NV
4,4'-DDD	0.00217	1.02E-09	0.24 (1)	2.45E-10
4,4'-DDT	0.024	1.13E-08	0.34 (1)	3.83E-09
Aroclor 1254	0.007	3.29E-09	2.0 (6)	6.58E-09
Aroclor 1260	0.05671	2.66E-08	2.0 (6)	5.33E-08
Arsenic	2.99	1.40E-06	1.5 (1)	2.11E-06
Beryllium	0.55	2.58E-07	NV (1)	NV
Cadmium	2.14	1.01 E-06	NV (1)	NV
	TOTAL CANCER RISK			**5E-06**

Intake (mg/kg/day) $= \frac{CS \times IR \times CF \times Fl \times EF \times ED}{BW \times AT}$

Cancer Risk = Intake x Slope Factor

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	100
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source	FI	unitless	1
Exposure Frequency	EF	days/year	350
Exposure Duration	ED	years	24
Body Weight	BW	kg	70
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 6
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
2-Hexanone	0.00583	7.99E-09	NV(1)	NV
4-Methyl-2-pentanone	0.00575	7.88E-09	0.08 (1)	9.85 E-08
Acetone	0.00739	1.01E-08	0.1 (1)	1.01E-07
Methylene chloride	0.01649	2.26E-08	0.06 (1)	3.76E-07
Toluene	0.00516	7.07E-09	0.2 (1)	3.53E-08
Xylene (total)	0.001	1.37E-06	0.2 (1)	6.85E-09
Tetrachloroethene	0.001	1.37E-06	0.01 (1)	1.37E-07
Trichloroethene	1	1.37E-06	0.06 (1)	2.28E-05
2-Methylnaphthalene	0. 1959	2.68E-07	NV (1)	NV
4-Methylphenol (p-cresol)	0.026	3.56E-08	0.005 (1)	7.12E-06
Acenaphthene	0.157	2.15E-07	0.06 (1)	3.58E-06
Acenaphthylene	0.3815	5.23E-07	NV (1)	NV
Anthracene	0.3074	4.21E-07	0.3 (1)	1.40E-06
Benzo(a) anthracene	0.6091	8. 34E-07	NV (1)	NV
Benzo(a) pyrene	0.9406	1.29E-06	NV (1)	NV
Benzo(b) fluoranthene	0.7947	1.09E-06	NV (1)	NV
Benzo(g,h,i)perylene	0.5538	7. 59E-07	0.03 (4)	2.53E-05
Benzo(k) fluoranthene	0.7263	9. 95 E-07	NV (1)	NV
Benzoic acid	0.104	1.42E-07	4 (1)	3.56E-08
bis(2-Ethylhexyl) phthalate	0.1926	2.64E-07	0.02 (1)	1.32E-05
Carbazole	0.2998	4.11E-07	NV (1)	NV
Chrysene	0.7179	9.83E-07	NV (1)	NV
Dibenz(a,h) anthracene	0.2319	3.18E-07	NV (1)	NV
Dibenzofuran	0.041	5.62E-08	NV (1)	NV
Diethylphthalate	0.02	2.74E-08	0.8 (1)	3.42E-08
Di-n-butylphthalate	0.016	2.19E-08	0.1 (1)	2.19E-07
Di-n-octylphthalate	0.013	1.78E-08	0.02 (1)	8.90E-07
Fluoranthene	0.896	1.23E-06	0.04 (1)	3.07E-05
Fluorene	0.13	1.78E-07	0.04 (1)	4.45E-06
Indeno(1,2,3-cd) pyrene	0.5654	7.75E-07	NV (1)	NV

TABLE 6
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
Naphthalene	0.034	4.66E-08	0.02 (1)	2.33E-06
Phenanthrene	0.5835	7. 99E-07	0.03 (4)	2.66E-05
Phenol	0.1779	2. 44E-07	0.3 (1)	8.12E-07
Pyrene	0.9011	1.23E-06	0.03 (1)	4.11 E-05
4,4'-DDD	0.00217	2.97E-09	NV (1)	NV
4,4'-DDT	0.024	3.29E-08	0.0005 (1)	6.58E-05
Endosulfan II	0.0022	3.01E-09	NV (1)	NV
Methoxychlor	0.0025	3.42E-09	0.005 (1)	6.85E-07
Aroclor 1254	0.007	9.59E-09	0.00002 (1)	4.79E-04
Aroclor 1260	0.05671	7.77E-08	NV (1)	NV
2,4-Dinitrotoluene	0.1672	2.29E-07	0.002 (1)	1.15E-04
Arsenic	2.99	4.10E-06	0.0003 (1)	0.014
Barium	79.39	1.09E-04	0 07 (1)	0.002
Beryllium	0 55	7.53E-07	0.002 (1)	3.77E-04
Cadmium	2.14	2. 93E-06	0.001 (1)	0.003
Chromium	20.71	2.84E-05	1.5 (1)	1.89E-05
Nickel	8.19	1.12E-05	0.02 (1)	5.61E-04
Zinc	118.6	1.62E-04	0.3 (1)	5.42E-04
		TOTAL HAZARD INDEX		**2E-02**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Intake}}{\text{Reference Dose}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	100
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source	FI	unitless	1
Exposure Frequency	EF	days/year	350
Exposure Duration	ED	years	24
Body Weight	BW	kg	70
Averaging Time	AT	days	8760

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 7
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - CARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Oral Slope Factor (mg/kg-day)^-1	Cancer Risk (unitless)
Methylene chloride	0.01649	1.81E-08	0.0075 (1)	1.36E-10
Trichloroethene	1	1.10E-06	0.011 (4)	1.21E-08
4-Methylphenol (p-cresol)	0.026	2.85E-08	NV (1)	NV
Benzo(a) anthracene	0.6091	6.68 E-07	NV (1)	NV
Benzo(a) pyrene	0 9406	1.03E-06	7.3 (1)	7.52E-06
Benzo(b) fiuoranthene	0.7947	8.71E-07	NV (1)	NV
Benzo(k) fluoranthene	0.7263	7.96E-07	NV (1)	NV
bis(2-Ethylhexyl) phthalate	0.1926	2.11E-07	0.014 (1)	2.95E-09
Carbazole	0.2998	3.29E-07	0.02 (1)	6.57E-09
Chrysene	0.7179	7.87E-07	NV (1)	NV
Dibenz(a,h)anthracene	0.2319	2.54E-07	NV (1)	NV
Indeno(1,2,3-cd) pyrene	0.5654	6.20E-07	NV (1)	NV
Naphthalene	0.034	3.73E-08	NV (1)	NV
4,4'-DDD	0.00217	2.38E-09	0.24 (1)	5.71E-10
4,4'-DDT	0 024	2.63E-08	0.34 (1)	8.94E-09
Aroclor 1254	0.007	7.67E-09	2.0 (6)	1.53E-08
Aroclor 1260	0.05671	6.21 E-08	2.0 (6)	1.24E-07
Arsenic	2.99	3.28E-06	1.5 (1)	4.92E-06
Beryllium	0.55	6.03E-07	NV (1)	NV
Cadmium	2.14	2.35E-06	NV (1)	NV
	TOTAL CANCER RISK			**1E-05**

Intake (mg/kg/day) $= \frac{CS \times IR \times CF \times Fl \times EF \times ED}{BW \times AT}$ **Cancer Risk = Intake x Slope Factor**

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	200
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source	FI	unitless	1
Exposure Frequency	EF	days/year	350
Exposure Duration	ED	years	6
Body Weight	BW	kg	15
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 8
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
2-Hexanone	0.00583	7 45E-08	NV(1)	NV
4-Methyl-2-pentanone	0.00575	7.35E-08	0.8 (1)	9.19E-08
Acetone	0.00739	9.45E-08	1 (1)	9.45E-08
Methylene chloride	0.01649	2.11E-07	0.06 (1)	3.51E-06
Toluene	0.00516	6.60E-08	2 (1)	3.30E-08
Xylene (total)	0.001	1.28E-08	0.2 (3)	6.39E-08
Tetrachloroethene	0.001	1.28E-08	0.1 (1)	1.28E-07
Trichloroethene	1	1.28E-05	0.6 (1)	2.13E-05
2-Methylnaphthalene	0.1959	2.50E-06	NV (1)	NV
4-Methylphenol (p-cresol)	0.026	3.32E-07	0.005 (1)	6.65E-05
Acenaphthene	0.157	2.01 E-06	0.6 (1)	3. 35 E-06
Acenaphthylene	0.3815	4.88E-06	NV (1)	NV
Anthracene	0.3074	3.93E-06	3 (I)	1.31E-06
Benzo(a) anthracene	0. 6091	7.79E-06	NV (1)	NV
Benzo(a) pyrene	0.9406	1.20E-05	NV (1)	NV
Benzo(b) fluoranthene	0.7947	1.02E-05	NV (1)	NV
Benzo(g,h,i)perylene	0.5538	7.08E-06	0.3 (4)	2.36E-05
Benzo(k) fluoranthene	0.7263	9.29E-06	NV(1)	NV
Benzoic acid	0.104	1.33E-06	4 (1)	3.32E-07
bis(2-Ethylhexyl) phthalate	0.1926	2.46E-06	0.02 (3)	1.23E-04
Carbazole	0.2998	3.83E-06	NV(1)	NV
Chrysene	0.7179	9.18E-06	NV(1)	NV
Dibenz(a,h) anthracene	0.2319	2.96E-06	NV(1)	NV
Dibenzofuran	0.041	5.24E-07	NV(1)	NV
Diethylphthalate	0.02	2.56E-07	8 (1)	3.20E-08
Di-n-butylphthalate	0.016	2.05E-07	1 (1)	2.05E-07
Di-n-octylphthalate	0.013	1.66E-07	0.02 (1)	8.31E-06
Fluoranthene	0.896	1.15E-05	0.4 (1)	2.86E-05
Fluorene	0.13	1.66E-06	0.4 (1)	4.16E-06
Indeno(1,2,3-cd) pyrene	0.5654	7.23E-06	NV(1)	NV

TABLE 8
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
Naphthalene	0.034	4.35E-07	0.02 (3)	2.17E-05
Phenanthrene	0.5835	7.46E-06	0.3 (4)	2.49E-05
Phenol	0.1779	2.27E-06	0.6 (1)	3.79E-06
Pyrene	0.9011	1.15E-05	0.3 (1)	3.84E-05
4,4'-DDD	0.00217	2.77E-08	NV (1)	NV
4,4'-DDT	0.024	3.07E-07	0.0005 (1)	6.14E-04
Endosulfan II	0.0022	2.81E-08	NV (1)	NV
Methoxychlor	0.0025	3.20E-08	0.005 (1)	6.39E-06
Aroclor 1254	0.007	8.95E-08	0.00005 (1)	0.002
Aroclor 1260	0.05671	7.25E-07	NV (1)	NV
2,4-Dinitrotoluene	0.1672	2.14E-06	0.002 (1)	0.001
Arsenic	2.99	3.82 E-05	0.0003 (1)	0.127
Barium	79.39	1.02E-03	0.07 (1)	0.015
Beryllium	0.55	7.03E-06	0.005 (1)	0.001
Cadmium	2.14	2.74E-05	0.001 (3)	0.027
Chromium	20.71	2.65E-04	1 (1)	2.65E-04
Nickel	8.19	1.05E-04	0.02 (1)	0.005
Zinc	118.6	1.52E-03	0.3 (3)	0.005
		TOTAL HAZARD INDEX		**2E-01**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Intake}}{\text{Reference Dose}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	**IR**	**mg soil/day**	**200**
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Fraction Ingested from Contaminated Source	**FI**	**unitless**	**1**
Exposure Frequency	**EF**	**days/year**	**350**
Exposure Duration	**ED**	**years**	**6**
Body Weight	**BW**	**kg**	**15**
Averaging Time	**AT**	**days**	**2190**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 9
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - CARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Oral Slope Factor (mg/kg-day)^-1	Absorption Efficiency	CANCER RISK (unitless)
Methylene chloride	0.01649	NV	NV	0.0075 (1)	100.00%	NV
Trichloroethene	1	NV	NV	0.011 (4)	100.00%	NV
4-Methylphenol (p-cresol)	0.026	0.1	9.71E-08	NV (1)	100.00%	NV
Benzo(a) anthracene	0.6091	0.13	2.96E-06	NV (1)	100.00%	NV
Benzo(a) pyrene	0 9406	0.13	4.56E-06	7.3 (1)	100.00%	3.33E-05
Benzo(b) fiuoranthene	0.7947	0.13	3.86E-06	NV (1)	100.00%	NV
Benzo(k) fluoranthene	0.7263	0.13	3.52E-06	NV (1)	100.00%	NV
bis(2-Ethylhexyl) phthalate	0.1926	0.1	7.19E-07	0.014 (1)	100.00%	1.01E-08
Carbazole	0.2998	0.1	1.12E-06	0.02 (1)	100.00%	2.24E-08
Chrysene	0.7179	0.13	3.48E-06	NV (1)	100.00%	NV
Dibenz(a,h)anthracene	0.2319	0.13	1.13E-06	NV (1)	100.00%	NV
Indeno(1,2,3-cd) pyrene	0.5654	0.13	2.74E-06	NV (1)	100.00%	NV
Naphthalene	0.034	0.13	1.65E-07	NV (1)	100.00%	NV
4,4'-DDD	0.00217	0.1	8.10E-09	0.24 (1)	100.00%	1.94E-09
4,4'-DDT	0 024	0.13	2.69E-08	0.34 (1)	100.00%	9.14E-09
Aroclor 1254	0.007	0.14	3.66E-08	2.0 (6)	100.00%	7.32E-08
Aroclor 1260	0.05671	0.14	2.96E-07	2.0 (6)	100.00%	5.93E-07
Arsenic	2.99	0.03	3.35E-06	1.5 (1)	100.00%	5.02E-06
Beryllium	0.55	NV	NV	NV (1)	100.00%	NV
Cadmium	2.14	0.001	7. 99E-08	NV (1)	100.00%	NV
			TOTAL CANCER RISK			**4E-05**

Absorbed Dose (mg/kg/day) $= \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Cancer Risk = Absorbed Dose x $\frac{\text{Slope Factor}}{\text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**7948**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**350**
Exposure Duration	**ED**	**years**	**24**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**25550**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 10
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Chronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
2-Hexanone	0.00583	NV	NV	NV(1)	100.00%	NV
4-Methyl-2-pentanone	0.00575	NV	NV	0.8 (1)	100.00%	NV
Acetone	0.00739	NV	NV	1 (1)	100.00%	NV
Methylene chloride	0.01649	NV	NV	0.06 (1)	100.00%	NV
Toluene	0.00516	NV	NV	2 (1)	100.00%	NV
Xylene (total)	0.001	NV	NV	0.2 (3)	100.00%	NV
Tetrachloroethene	0.001	NV	NV	0.1 (1)	100.00%	NV
Trichloroethene	1	NV	NV	0.6 (1)	100.00%	NV
2-Methylnaphthalene	0.1959	0.1	2.13E-06	NV (1)	100.00%	NV
4-Methylphenol (p-cresol)	0.026	0.1	2.83E-07	0.005 (1)	100.00%	5.66E-05
Acenaphthene	0.157	0.13	2. 22 E-06	0.6 (1)	100.00%	3.70E-05
Acenaphthylene	0.3815	0.13	5.40E-06	NV (1)	100.00%	NV
Anthracene	0.3074	0.13	4.35E-06	3 (I)	100.00%	1.45E-05
Benzo(a) anthracene	0. 6091	0.13	8.62E-06	NV (1)	100.00%	NV
Benzo(a) pyrene	0.9406	0.13	1.33E-05	NV (1)	100.00%	NV
Benzo(b) fluoranthene	0.7947	0.13	1.12E-05	NV (1)	100.00%	NV
Benzo(g,h,i)perylene	0.5538	0.13	7.84E-06	0.3 (4)	100.00%	2.61E-04
Benzo(k) fluoranthene	0.7263	0.13	1.03E-05	NV(1)	100.00%	NV
Benzoic acid	0.104	0.1	1.13E 06	4 (1)	100.00%	2.83E-07
bis(2-Ethylhexyl) phthalate	0.1926	0.1	2.10E-06	0.02 (3)	100.00%	1.05E-04
Carbazole	0.2998	0.1	3.26E-06	NV(1)	100.00%	NV
Chrysene	0.7179	0.13	1.02E-05	NV(1)	100.00%	NV
Dibenz(a,h) anthracene	0.2319	0.13	3.28E-06	NV(1)	100.00%	NV
Dibenzofuran	0.041	0.1	4.46E-07	NV(1)	100.00%	NV
Diethylphthalate	0.02	0.1	2.18E-07	8 (1)	100.00%	2.72E-07
Di-n-butylphthalate	0.016	0.1	1.74E-07	1 (1)	100.00%	1.74E-06
Di-n-octylphthalate	0.013	0.1	1.42E-07	0.02 (1)	100.00%	7.08E-06
Fluoranthene	0.896	0.13	1.27E-05	0.4 (1)	100.00%	3.17E-04
Fluorene	0.13	0.13	1.84E-06	0.4 (1)	100.00%	4.60E-05
Indeno(1,2,3-cd) pyrene	0.5654	0.13	8.00E-06	NV(1)	100.00%	NV

TABLE 10
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Chronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
Naphthalene	0.034	0.13	4.81E-07	0.02 (1)	100.00%	2.41E-05
Phenanthrene	0.5835	0.13	8.26E-06	0.03 (4)	100.00%	2.75E-04
Phenol	0.1779	0.1	1.94E-06	0.3 (1)	100.00%	6.46E-06
Pyrene	0.9011	0.13	1.28E-05	0.03 (1)	100.00%	4.25E-04
4,4'-DDD	0.00217	0.1	2.36E-08	NV (1)	100.00%	NV
4,4'-DDT	0.024	0.03	7.84E-08	0.0005 (1)	100.00%	1.57E-04
Endosulfan II	0.0022	0.1	2.40E-08	NV (1)	100.00%	NV
Methoxychlor	0.0025	0.1	2.72E-08	0.005 (1)	100.00%	5.44E-06
Aroclor 1254	0.007	0.14	1.07E-07	0.00002 (1)	100.00%	0.005
Aroclor 1260	0.05671	0.14	8.64E-07	NV (1)	100.00%	NV
2,4-Dinitrotoluene	0.1672	0.1	1.82E-06	0.002 (1)	100.00%	9.10E-04
Arsenic	2.99	0.03	9.77E-06	0.0003 (1)	100.00%	0.033
Barium	79.39	NV	NV	0.07 (1)	100.00%	NV
Beryllium	0.55	NV	NV	0.002 (1)	100.00%	NV
Cadmium	2.14	0.001	2.33E-07	0.001 (1)	100.00%	2.33E-04
Chromium	20.71	NV	NV	1.5 (1)	100.00%	NV
Nickel	8.19	NV	NV	0.02 (1)	100.00%	NV
Zinc	118.6	NV	NV	0.3 (1)	100.00%	NV
				TOTAL HAZARD INDEX		**4E-02**

Absorbed Dose (mg/kg/day) = $\frac{\text{CS x CF x SA x AF x ABS x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Absorbed Dose}}{\text{Reference Dose x Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**7948**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**350**
Exposure Duration	**ED**	**years**	**24**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**8760**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 11
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - CARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Oral Slope Factor (mg/kg-day)^-1	Absorption Efficiency	CANCER RISK (unitless)
Methylene chloride	0.01649	NV	NV	0.0075 (1)	100.00%	NV
Trichloroethene	1	NV	NV	0.011 (4)	100.00%	NV
4-Methylphenol (p-cresol)	0.026	0.1	5.01E-08	NV (1)	100.00%	NV
Benzo(a) anthracene	0.6091	0.13	1.53E-06	NV (1)	100.00%	NV
Benzo(a) pyrene	0 9406	0.13	2.36E-06	7.3 (1)	100.00%	1.72E-05
Benzo(b) fiuoranthene	0.7947	0.13	1.99E-06	NV (1)	100.00%	NV
Benzo(k) fluoranthene	0.7263	0.13	1.82E-06	NV (1)	100.00%	NV
bis(2-Ethylhexyl) phthalate	0.1926	0.1	3.71E-07	0.014 (1)	100.00%	5.20E-09
Carbazole	0.2998	0.1	5.78E-07	0.02 (1)	100.00%	1.16E-08
Chrysene	0.7179	0.13	1.80E-06	NV (1)	100.00%	NV
Dibenz(a,h)anthracene	0.2319	0.13	5.81E-07	NV (1)	100.00%	NV
Indeno(1,2,3-cd) pyrene	0.5654	0.13	1.42E-06	NV (1)	100.00%	NV
Naphthalene	0.034	0.13	8.53E-08	NV (1)	100.00%	NV
4,4'-DDD	0.00217	0.1	4.19E-09	0.24 (1)	100.00%	1.00E-09
4,4'-DDT	0 024	0.13	1.39E-08	0.34 (1)	100.00%	4.72E-09
Aroclor 1254	0.007	0.14	1.89E-08	2.0 (6)	100.00%	3.78E-08
Aroclor 1260	0.05671	0.14	1.53E-07	2.0 (6)	100.00%	3.06E-07
Arsenic	2.99	0.03	1.73E-06	1.5 91)	100.00%	2.60E-06
Beryllium	0.55	NV	NV	NV (1)	100.00%	NV
Cadmium	2.14	0.001	4.13E-08	NV (1)	100.00%	NV
			TOTAL CANCER RISK			**2E-05**

Absorbed Dose (mg/kg/day) = $\frac{\text{CS x CF x SA x AF x ABS x EF x ED}}{\text{BW x AT}}$

Cancer Risk = Absorbed Dose x $\frac{\text{Slope Factor}}{\text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**3250**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**350**
Exposure Duration	**ED**	**years**	**6**
Body Weight	**BW**	**kg**	**15**
Averaging Time	**AT**	**days**	**25550**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 12
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Subchronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
2-Hexanone	0.00583	NV	NV	NV(1)	100.00%	NV
4-Methyl-2-pentanone	0.00575	NV	NV	0.8 (1)	100.00%	NV
Acetone	0.00739	NV	NV	1 (1)	100.00%	NV
Methylene chloride	0.01649	NV	NV	0.06 (1)	100.00%	NV
Toluene	0.00516	NV	NV	2 (1)	100.00%	NV
Xylene (total)	0.001	NV	NV	0.2 (3)	100.00%	NV
Tetrachloroethene	0.001	NV	NV	0.1 (1)	100.00%	NV
Trichloroethene	1	NV	NV	0.6 (1)	100.00%	NV
2-Methylnaphthalene	0.1959	0.1	4.41E-06	NV (1)	100.00%	NV
4-Methylphenol (p-cresol)	0.026	0.1	5.85E-07	0.005 (1)	100.00%	1.17E-04
Acenaphthene	0.157	0.13	4.59E-06	0.6 (1)	100.00%	7.65E-06
Acenaphthylene	0.3815	0.13	1.12E-05	NV (1)	100.00%	NV
Anthracene	0.3074	0.13	8.99E-06	3 (I)	100.00%	3.00E-06
Benzo(a) anthracene	0. 6091	0.13	1.78E-05	NV (1)	100.00%	NV
Benzo(a) pyrene	0.9406	0.13	2.75E-05	NV (1)	100.00%	NV
Benzo(b) fluoranthene	0.7947	0.13	2.32 E-05	NV (1)	100.00%	NV
Benzo(g,h,i)perylene	0.5538	0.13	1.62E-05	0.3 (4)	100.00%	5.40E-05
Benzo(k) fluoranthene	0.7263	0.13	2.12E-05	NV(1)	100.00%	NV
Benzoic acid	0.104	0.1	2.34E-06	4 (1)	100.00%	5.85E-07
bis(2-Ethylhexyl) phthalate	0.1926	0.1	4.33E-06	0.02 (3)	100.00%	2.17E-04
Carbazole	0.2998	0.1	6.75E-06	NV(1)	100.00%	NV
Chrysene	0.7179	0.13	2.10E-05	NV(1)	100.00%	NV
Dibenz(a,h) anthracene	0.2319	0.13	6.78 E-06	NV(1)	100.00%	NV
Dibenzofuran	0.041	0.1	9.23E-07	NV(1)	100.00%	NV
Diethylphthalate	0.02	0.1	4.50E-07	8 (1)	100.00%	5.63E-08
Di-n-butylphthalate	0.016	0.1	3.60 E-07	1 (1)	100.00%	3.60E-07
Di-n-octylphthalate	0.013	0.1	2.93E-07	0.02 (1)	100.00%	1.46E-05
Fluoranthene	0.896	0.13	2.62E-05	0.4 (1)	100.00%	6.55E-05
Fluorene	0.13	0.13	3.80E-06	0.4 (1)	100.00%	9.51E-06
Indeno(1,2,3-cd) pyrene	0.5654	0.13	1.65E-05	NV(1)	100.00%	NV

TABLE 12
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Chronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
Naphthalene	0.034	0.13	9.95E-07	0.02 (1)	100.00%	4.97E-05
Phenanthrene	0.5835	0.13	1.71E-05	0.03 (4)	100.00%	5.69E-05
Phenol	0.1779	0.1	4.00E-06	0.6 (1)	100.00%	6.67E-06
Pyrene	0.9011	0.13	2.64E-05	0.3 (1)	100.00%	8.79E-05
4,4'-DDD	0.00217	0.1	4.88E-08	NV (1)	100.00%	NV
4,4'-DDT	0.024	0.03	1.62E-07	0.0005 (1)	100.00%	3.24E-04
Endosulfan II	0.0022	0.1	4.95E-08	NV (1)	100.00%	NV
Methoxychlor	0.0025	0.1	5.63E-08	0.005 (1)	100.00%	1.13E-05
Aroclor 1254	0.007	0.14	2.21 E-07	0.00005 (1)	100.00%	0.004
Aroclor 1260	0.05671	0.14	1.79E-06	NV (1)	100.00%	NV
2,4-Dinitrotoluene	0.1672	0.1	3.76E-06	0.002 (1)	100.00%	0.002
Arsenic	2.99	0.03	2.02E-05	0.0003 (1)	100.00%	0.067
Barium	79.39	NV	NV	0.07 (1)	100.00%	NV
Beryllium	0.55	NV	NV	0.005 (1)	100.00%	NV
Cadmium	2.14	0.001	4.82E-07	0.001 (1)	100.00%	4.82E-04
Chromium	20.71	NV	NV	1 (1)	100.00%	NV
Nickel	8.19	NV	NV	0.02 (1)	100.00%	NV
Zinc	118.6	NV	NV	0.3 (1)	100.00%	NV
				TOTAL HAZARD INDEX		**8E-02**

Absorbed Dose (mg/kg/day) = $\frac{\text{CS x CF x SA x AF x ABS x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Absorbed Dose}}{\text{Reference Dose x Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**3520**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**350**
Exposure Duration	**ED**	**years**	**6**
Body Weight	**BW**	**kg**	**15**
Averaging Time	**AT**	**days**	**2190**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 13
NON-DESTRUCTIVE INSPECTION FACILITY(SS-005)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - CARCINOGENIC EVALUATION
FUTURE USE - RESIDENTIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor Vfsesp mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) mg/m³ air	Intake (mg/kg-day) Resident		Inhalation Slope Factor (mg/kg-day)⁻¹	Cancer Risk (Unitless) Resident	
				Adult	Child		Adult	Child
Methylene chloride	0.01649	1.18E-03	1.94E-05	1.37E-06	1.59E-06	0.001645	2.E-09	3.E-09
Trichloroethene	0.00100	4.48E-04	4.48E-07	3.16E-08	3.68E-08	0.006	2.E-10	2.E-10
4-Methylphenol (p-cresol)	0.02600	4.91E-08	1.28E-09	9.00E-11	1.05E-10	NV	NV	NV
Benzo(a)anthracene	0.60910	4.70E-11	2.86E-11	2.02E-12	2.35E-12	NV	NV	NV
Benzo(a)pyrene	0.94060	6.39E-12	6.01E-12	4.23E-13	4.94E-13	NV	NV	NV
Benzo(b)fluoranthene	0.79470	2.12E-11	1.68E-11	1.19E-12	1.38E-12	NV	NV	NV
Benzo(k)fluoranthene	0.72630	2.36E-12	1.71E-12	1.21E-13	1.41E-13	NV	NV	NV
bis(2-Ethylhexyl) phthalate	0.19260	6.87E-14	1.32E-14	9.32E-16	1.09E-15	NV	NV	NV
Carbazole	0.29980	4.02E-10	1.20E-10	8.49E-12	9.90E-12	NV	NV	NV
Chrysene	0.71790	5.87E-10	4.21E-10	2.97E-11	3.46E-11	NV	NV	NV
Dibenz(a,h)anthracene	0.23190	2.58E-12	5.98E-13	4.21E-14	4.91E-14	NV	NV	NV
Indeno(1,2,3-cd)pyrene	0.56540	1.18E-12	6.65E-13	4.69E-14	5.47E-14	NV	NV	NV
Naphthalene	0.03400	1.42E-06	4.82E-08	3.39E-09	3.96E-09	NV	NV	NV
4,4'-DDD	0.00217	1.55E-10	3.37E-13	2.37E-14	2.77E-14	NV	NV	NV
4,4'-DDT	0.02400	3.76E-10	9.02E-12	6.35E-13	7.41E-13	0.3395	2.E-13	3.E-13
Aroclor 1254	0.00700	5.29E-08	3.70E-10	2.61E-11	3.04E-11	2.0	5.E-11	6.E-11
Aroclor 1260	0.05671	2.23E-09	1.27E-10	8.91E-12	1.04E-11	2.0	2.E-11	2.E-11
				TOTAL CANCER RISK			**3E-09**	**3E-09**

PARAMETER	SYMBOL	UNITS	RESIDENT	
			ADULT	CHILD
Inhalation rate	IR	m³/day	15	15
Exposure frequency	EF	days/year	350	350
Exposure duration	ED	years	24	6
Body weight	BW	kg	70	15
Averaging time	AT	days	25550	25550

NOTES:
NV - No Value
NA - Not Available

EQUATIONS.
Intake = (CA x IR x EF x ED) / (BW x AT)
Cancer Risk = (Intake) x (Slope Factor)
CA = VF sesp (Table 15) x CS

TABLE 14
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - RESIDENTIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor Vfsesp mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) mg/m³ air	Intake (mg/kg-day)		Inhalation Reference Dose (mg/kg-day)		Cancer Risk (Unitless)	
				Resident		Chronic	Subchronic	Resident	
				Adult	Child			Adult	Child
2-Hexanone	0.00583	3.69E-05	2.15E-07	4.42E-08	2.06E-07	NV	NV	NV	NV
4-Methyl-2-pentanone	0.00575	5.72E-05	3.29E-07	6.76E-08	3.16E-07	0.023	0.2280	3.E-06	1.E-06
Acetone	0.00739	6.29E-05	4.65E-07	9.56E-08	4.46E-07	NV	NV	NV	NV
Methylene chloride	0.01649	1.18E-03	1.94E-05	3.98E-06	1.86E-05	0.857	0.857	5.E-06	2.E-05
Tetrachloroethene	0.00100	7.61E-04	7.63E-07	1.56E-07	7.30E-07	NV	NV	NV	NV
Toluene	0.00516	2.98E-04	1.54E-06	3.16E-07	1.48E-06	0.114	0.114	3.E-06	1.E-05
Trichloroethene	0.00100	4.48E-04	4.48E-07	9.20E-08	4.29E-07	NV	NV	NV	NV
Xylene(total)	0.01957	1.31E-04	2.57E-06	5.28E-07	2.46E-06	0.0286	0.029	2.E-05	9.E-05
2,4-Dinitrotoluene	0.16720	6.48E-09	1.08E-09	2.22E-10	3.04E-09	NV	NV	NV	NV
2-Methylnaphthalene	0.19590	8.32E-07	1.63E-07	3.35E-08	1.56E-07	NV	NV	NV	NV
4-Methylphenol (p-cresol)	0.02600	4.91E-08	1.28E-09	2.62E-10	3.22E-09	NV	NV	NV	NV
Acenaphthene	0.15700	9.20E-08	1.44E-08	2.97E-09	1.39E-08	NV	NV	NV	NV
Acenanhthylene	0.38150	3.40E-06	1.30E-06	2.66E-07	1.24E-06	NV	NV	NV	NV
Anthracene	0.30740	7.17E-09	2.20E-09	4.53E-10	2.11E-09	NV	NV	NV	NV
Benzo(a)anthracene	0.60910	4.70E-11	2.86E-11	5.88E-32	2.75E-11	NV	NV	NV	NV
Benzo(a)pyrene	0.94060	6.39E-12	6.01E-12	1.23E-12	5.76E-12	NV	NV	NV	NV
Benzo(b)fluoranthene	0.79470	2.12E-11	1.68E-11	3.46E-12	1.61E-11	NV	NV	NV	NV
Benzo(g,h,i)perlene	0.55380	4.95E-13	2.74E-13	5.64E-14	2.63E-13	NV	NV	NV	NV
Benzo(k)fluoranthene	0.72630	2.36E-12	1.71E-12	3.52E-13	1.64E-12	NV	NV	NV	NV
Benzoic acid	0.10400	1.70E-04	1.77E-05	3.64E-06	1.70E-05	NV	NV	NV	NV
bis(2-Ethylhexyl)phthalate	0.19260	6.87E-14	1.32E-14	2.72E-15	1.27E-14	NV	NV	NV	NV

TABLE 14
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - RESIDENTIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor Vfsesp mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) mg/m³ air	Intake (mg/kg-day)		Inhalation Reference Dose (mg/kg-day)		Cancer Risk (Unitless)	
				Resident		Chronic	Subchronic	Resident	
				Adult	Child			Adult	Child
Carbazole	0.29980	4.02E-10	1.20E-10	2.48E-11	1.16E-10	NV	NV	NV	NV
Chrysene	0.71790	5.87E-10	4.21E-10	8.66E-11	4.04E-10	NV	NV	NV	NV
Dibenz(a,h)anthracene	0.23190	2.58E-12	5.98E-13	1.23E-13	5.73E-13	NV	NV	NV	NV
Dibenzofuran	0.04100	1.50E-07	6.14E-09	3.26E-09	5.89E-09	NV	NV	NV	NV
Diethylphthalate	0.02000	4.28E-08	8.56E-10	1.76E-10	8.23 E-10	NV	NV	NV	NV
Di-n-butylphthalate	0.01600	4.32E-11	6.91E-13	1.42E-13	6.62E-13	NV	NV	NV	NV
Di-n-octylphthalate	0.01300	6.59E-16	856E-18	1.76E-18	8.21E-18	NV	NV	NV	NV
Fluoranthene	0.89600	4.64E-10	4.16E-10	8.55E-11	3.99E-10	NV	NV	NV	NV
Fluorene	0.13000	1.68E-08	2.18E-09	4.48E-10	2.09E-09	NV	NV	NV	NV
Indeno(1,2,3-cd)pyrene	0.56540	1.18E-12	6.65E-13	1.37E-13	6.38E-13	NV	NV	NV	NV
Naphthalene	0.03400	1.42E-06	4.82E-08	9.90E-09	4.62E-08	0.000857	0.000857	1.E-05	5.E-05
Phenanthrene	0.58350	3.73E-06	2.18E-06	4.47E-07	2.09E-06	NV	NV	NV	NV
Phenol	0.17790	1.57E-08	2.80E-09	5.76E-10	2.69E-09	NV	NV	NV	NV
Pyrene	0.90110	2.97E-10	2.68E-l 0	5.50E-11	2.57E-10	NV	NV	NV	NV
4,4'-DDD	0.00217	1.55E-10	3.37E-13	6.92E-14	3.23E-13	NV	NV	NV	NV
4,4'-DDT	0.02400	3.76E-10	9.02E-12	1.85E-12	8.65E-12	NV	NV	NV	NV
Endosulfan II	0.00220	3.39E-09	7.47E-12	1.53E-12	7.16E-12	NV	NV	NV	NV
Methoxychlor	0.00250	3.20E-10	7.99E-13	1.64E-13	7.66E-13	NV	NV	NV	NV
Aroclor 1254	0.00700	5.29E-08	3.70E-10	7.61E-11	3.55E-10	NV	NV	NV	NV
Aroclor 1260	0.05671	2.23E-09	1.27E-10	2.60E-11	1.21E-10	NV	NV	NV	NV

TOTAL HAZARD INDEX	**4E-05**	**2E-04**

PARAMETER	**SYMBOL**	**UNITS**	**RESIDENT**	
			ADULT	**CHILD**
Inhalation rate	IR	m^3/day	15	15
Exposure frequency	EF	days/year	350	350
Exposure duration	ED	years	24	6
Body weight	BW	kg	70	15
Averaging time	AT	days	8760	2190

NOTES:

NV - No Value
NA - Not Available

EQUATIONS:

Intake = (CA x IR x EF x ED) / (BW x AT)
Hazard Quotient = (Intake) / (Reference Dose)
CA = VF sesp (Table15) x CS

TABLE 15
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
CALCULATION OF VOLATILIZATION FACTOR TO INDOOR AIR FROM SOIL DETECTIONS

Parameter	Contaminant-Specific Properties						Effective Diffusion Coefficient in Soil	Effective Diffusion Coefficient through Foundation Cracks	Volatilization Factor	
	Diffusion Coefficient in Air	Diffusion Coefficient in Water	Henry's Law Constant		Carbon-Water Sorption Coefficient	Soil-Water Sorption Coefficient				
	D_{air}	D_{wat}	H	H'	k_{oc}	K_d	$D_{eff,s}$	$D_{eff,crack}$	VF_{sesp}	VF_{samb}
	cm²/s	cm²/s	atm-m³/mol	cm³ water/cm³ air	cm³ water/g carbon	cm³ water/g soil	cm²/s	cm²/s	mg/m³ air / mg/kg soil	mg/m³ air / mg/kg soil
2-Hexanone	8.00E-02	7.80E-06	9.29E-05	3.80E-03	13	0.1302	6.26E-03	6.26E-03	3.69E-05	3.93E-05
4-Methyl-2-pentanone	7.50E-02	7.80E-06	1.38E-04	5.64E-03	11	0.1091	5.86E-03	5.86E-03	5.72E-05	6.11E-05
Acetone	1.24E-01	1.14E-05 F	3.88E-05 F	1.59E-03	1 F	0.00575	9.72E-03	9.72E-03	6.29E-05	6.71E-05
Methylene chloride	1.01E-01	1.17E-05	2.40E-03	9.81E-02	12	0.12	7.88E-03	7.88E-03	1.18E-03	1.25E-03
Tetrachloroethene	7.20E-02	8.20E-06	1.84E-02	7.52E-01	155	1.55	5.62E-03	5.62E-03	7.61E-04	8.12E-04
Toluene	8.70E-02	8.60E-06	6.64E-03	2.72E-01	182	1.82	6.79E-03	6.79E-03	2.98E-04	3.18E-04
Trichloroethene	7.90E-02	9.10E-06 F	1.02E-02 F	4.17E-01	166 F	1.66	6.16E-03	6.16E-03	4.48E-04	4.78E-04
Xylene (total)	7.80E-02	3.21E-05	6.04E-03	2.47E-01	347	3.47	6.09E-03	6.09E-03	1.31E-04	1.40E-04
2,4-Dinitrotoluene	2.03E-01	7.06E-06	5.39E-08	2.20E-06	364	3.64	3.49E-02	3.49E-02	6.48E-09	6.91E-09
2-Methylnaphthalene	4.80E-02	7.84E-06	5.18E-04	2.12E-02	2976	29.76	3.75E-03	3.75E-03	8.32E-07	8.87E-07
4-Methylphenol (p-cresol)	7.40E-02	7.70E-05	9.97E-07	4.08E-05	434	4.34	1.70E-02	1.70E-02	4.91E-08	5.24E-08
Acenaphthene	4.21E-02	7.69E-06	1.55E-04	6.34E-03	7080	70.8	3.29E-03	3.29E-03	9.20E-08	9.82E-08
Acenaphthylene	8.00E-02	8.00E-06	1.48E-03	6.05E-02	3467	34.67	6.24E-03	6.24E-03	3.40E-06	3.62E-06
Anthracene	3.24E-02	7.74E-06	6.50E-05	2.66E-03	29500	295	2.55E-03	2.55E-03	7.17E-09	7.64E-09
Benzo(a)anthracene	5.10E-02	9.00E-06	3.35E-06	1.37E-04	398000	3980	4.37E-03	4.37E-03	4.70E-11	5.01E-11
Benzo(a)pyrene	4.30E-02	9.00E-06	1.13E-06	4.62E-05	1020000	10200	4.51E-03	4.51E-03	6.39E-12	6.82E-12
Benzo(b)fluoranthene	2.26E-02	5.56E-06	1.11E-05	4.54E-04	1230000	12300	1.84E-03	1.84E-03	2.12E-11	2.26E-11
Benzo(g,h,i)perylene	8.00E-02	8.00E-06	5.34E-08	2.18E-06	3860000	38600	2.80E-02	2.80E-02	4.95E-13	5.28E-13
Benzo(k)fluoranthene	2.26E-02	5.56E-06	8.29E-07	3.39E-05	1230000	12300	2.74E-03	2.74E-03	2.36E-12	2.52E-12
Benzoic acid	5.36E-02	7.97E-06	7.00E-04	2.86E-02	15	0.145	4.18E-03	4.18E-03	1.70E-04	1.82E-04
bis(2-Ethylhexyl)phthalate	3.51E-02	3.66E-06	1.02E-07	4.17E-06	15100000 F	151000	7.95E-03	7.95E-03	6.87E-14	7.32E-14
Carbazole	3.90E-02	7.03E-06	1.53E-08	6.26E-07	3390	33.9	6.98E-02	6.98E-02	4.02E-10	4.29E-10
Chrysene	2.48E-02	6.21E-06	9.40E-05	3.84E-03	398000 F	3980	1.94E-03	1.94E-03	5.87E-10	6.26E-10
Dibenz(a,h)anthracene	2.02E-02 B	4.60E-06 F	1.70E-06 F	6.95E-05	1659587	16595.87	1.97E-03	1.97E-03	2.58E-12	2.75E-12
Dibenzofuran	8.00E-02	8.00E-06	2.12E-04	8.67E-03	11300	113	6.25E-03	6.25E-03	1.50E-07	1.60E-07
Diethylphthalate	2.56E-02 B	5.90E-06 F	8.46E-07 F	3.46E-05	69 F	0.69	3.01E-03	3.01E-03	4.28E-08	4.57E-08
Di-n-butylphthalate	4.38E-02	7.86E-06	9.38E-10	3.84E-08	33900	339	1.22E+00	1.22E+00	4.32E-11	4.60E-11
Di-n-octylphthalate	0.0151 B	3.90E-06 F	1.41E-12 F	5.77E-11	977237221 F	9772372	4.02E+02	4.02E+02	6.59E-16	6.97E-16
Fluoranthene	3.02E-02	6.35E-06	1.61E-05	6.58E-04	107000	1070	2.41E-03	2.41E-03	4.64E-10	4.95E-10
Fluorene	3.63E-02	7.88E-06	6.36E-05	2.60E-03	13800	138	2.85E-03	2.85E-03	1.68E-08	1.79E-08
Indeno(1,2,3-cd)pyrene	1.90E-02	5.66E-06	1.60E-06	6.54E-05	3470000	34700	2.00E-03	2.00E-03	1.18E-12	1.26E-12
Naphthalene	5.90E-02	7.50E-06	4.83E-04	1.98E-02	2000	20	4.61E-03	4.61E-03	1.42E-06	1.51E-06
Phenanthrene	8.00E-02	8.00E-06	6.61E-03	2.70E-01	14125	141.25	6.24E-03	6.24E-03	3.73E-06	3.98E-06
Phenol	8.20E-02	8.70E-06	3.32E-07	1.36E-05	268	2.68	1.02E-02	1.02E-02	1.57E-08	1.68E-08
Pyrene	2.72E-02	7.24E-06	1.10E-05	4.50E-04	105000	1050	2.22E-03	2.22E-03	2.97E-10	3.17E-10
4,4'-DDD	1.69E-02 B	4.50E-06 F	2.16E-05 F	8.83E-04	239883 F	2398.833	1.35E-03	1.35E-03	1.55E-10	1.66E-10
4,4'-DDT	1.37E-02 B	3.70E-06 F	3.80E-05 F	1.55E-03	139959 F	1399.587	1.08E-03	1.08E-03	3.76E-10	4.01E-10

TABLE 15
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
CALCULATION OF VOLATILIZATION FACTOR TO INDOOR AIR FROM SOIL DETECTIONS

Parameter	Contaminant-Specific Properties						Effective Diffusion Coefficient in Soil	Effective Diffusion Coefficient through Foundation Cracks	Volatilization Factor	
	Diffusion Coefficient in Air	Diffusion Coefficient in Water	Henry's Law Constant		Carbon-Water Sorption Coefficient	Soil-Water Sorption Coefficient				
	D_{air}	D_{wat}	H	H'	k_{oc}	K_d	$D_{eff,s}$	$D_{eff,crack}$	VF_{sesp}	VF_{samb}
	cm²/s	cm²/s	atm-m³/mol	cm³ water/cm³ air	cm³ water/g carbon	cm³ water/g soil	cm²/s	cm²/s	mg/m³ air / mg/kg soil	mg/m³ air / mg/kg soil
Endosulfan II	1.15E-02	4.55E-06	6.50E-05	2.66E-03	22200	222	9.08E-04	9.08E-04	3.39E-09	3.62E-09
Methoxychlor	1.56E-02	4.40E-06 F	1.58E-05 F	6.46E-04	79433 F	794.3282	1.26E-03	1.26E-03	3.20E-10	3.41E-10
Aroclor 1254	8.00E-02	5.60E-06 F	2.70E-03 F	1.10E-01	407380 F	4073.803	6.24E-03	6.24E-03	5.29E-08	5.64E-08
Aroclor 1260	1.38E-02	4.32E-06	3.35E-04 F	1.37E-02	207000 F	2070	1.08E-03	1.08E-03	2.23E-09	2.38E-09
Arsenic	–	–	–	–	–	–	NA	NA	NA	NA
Barium	–	–	–	–	–	–	NA	NA	NA	NA
Beryllium	–	–	–	–	–	–	NA	NA	NA	NA
Cadmium	–	–	–	–	–	–	NA	NA	NA	NA
Chromium (total)	–	–	–	–	–	–	NA	NA	NA	NA
Lead	–	–	–	–	–	–	NA	NA	NA	NA
Nickel	–	–	–	–	–	–	NA	NA	NA	NA
Zinc	–	–	–	–	–	–	NA	NA	NA	NA

SYSTEM-SPECIFIC DATA

Enclosed space volume/infiltration area ratio	L_B =	200	cm
Enclosed space air exchange rate	ER =	0.01	1/s
Volumetric air content in foundation/wall cracks	θ_{acrack} =	0.26	cm³ air/ cm³ tot. volume
Volumetric water content in foundation/wall cracl	θ_{wcrack} =	0.12	cm³ water/ cm³ tot. volume
Total soil porosity	θ_T =	0.38	cm³/ cm³ soil
Volumetric air content in vadose zone soil	θ_{as} =	0.26	cm³ air/ cm³ soil
Volumetric water content in vadose zone soil	θ_{ws} =	0.12	cm³ water/ cm³ soil
Enclosed space foundation or wall thickness	L_{crack} =	15	cm
Areal fraction of cracks in foundation/walls	η =	0.01	cm² cracks/ cm² total area
Depth to subsurface soil sources	L_S =	100	cm
Soil bulk density	ρ_s =	1.7	g soil/ cm³ soil
Fraction of organic carbon in soil	f_{oc} =	0.01	g C/ g soil

$$VFsesp = \frac{\dfrac{H \times \rho s}{\theta ws + kd \times \rho s + H \times \theta as} \times \dfrac{D_{eff,s}/L_s}{ER \times L_B} \times 1000}{1 + \dfrac{D_{eff,s}/L_s}{ER \times L_B} + \dfrac{D_{eff,s}/L_s}{(D_{eff,crack}/L_{crack}) \times \eta}}$$

REFERENCES

Standard Guide for Risk-Based Corrective Action at Petroleum Release Sites, American Society for Testing and Materials, E 1739 - 95

All data are from MDEQ's "Toxicological and Chemical-Physical Data for Part 201 Cleanup Criteria" August 1998, except as noted.

C - EPA. 1986. Superfund Public Health Evaluation Manual. OSWER Directive 9285.4-1. EPA 540/1-86/060

F - J.H.Montgomery. 1996. Groundwater Chemicals. CRC Lewis, Boca Raton, Florida.

B - Risk Assessment Information System *http://risk.lsd.ornl.gov/cgi-bin/tox/TOX_9801*, 3/23/01

NA Not available.

TABLE 16
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - CARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Oral Slope Factor (mg/kg-day)^1	CANCER RISK (unitless)
Methylene chloride	0.01649	2.88E-09	0.0075 (1)	2.16E-11
Trichloroethene	1	1.75E-07	0.011 (4)	1.92E-09
4-Methylphenol (p-cresol)	0.026	4.54E-09	NV (1)	NV
Benzo(a) anthracene	0.6091	1.06E-07	NV (1)	NV
Benzo(a) pyrene	0.9406	1.64E-07	7.3 (1)	1.20E-06
Benzo(b)fluoranthene	0.7947	1.39E-07	NV (1)	NV
Benzo(k) fluoranthene	0.7263	1.27E-07	NV (1)	NV
bis(2-Ethylhexyl) phthalate	0.1926	3.37E-08	0.014 (1)	4.71E-10
Carbazole	0.2998	5.24E-08	0.02 (1)	1.05E-09
Chrysene	0.7179	1.25E-07	NV (1)	NV
Dibenz(a, h) anthracene	0.2319	4.05E-08	NV (1)	NV
Indeno(1,2,3-cd) pyrene	0.5654	9.88E-08	NV (1)	NV
Naphthalene	0.034	5.94E-09	NV (1)	NV
4,4'-DDD	0.00217	3.79E-10	0.24 (1)	9.10E-11
4,4'-DDT	0.024	4.19E-09	0.34 (1)	1.43E-09
Aroclor 1254	0.007	1.22E-09	2.0 (6)	2.45E-09
Aroclor 1260	0.05671	9.91E-09	2.0 (6)	1.98E-08
Arsenic	2.99	5.22E-07	1.5 (1)	7.84E-07
Beryllium	0.55	9.61E-08	NV (1)	NV
Cadmium	2.14	3.74E-07	NV (1)	NV
		TOTAL CANCER RISK		**2E-06**

Intake (mg/kg/day) $= \frac{CS \times IR \times CF \times Fl \times EF \times ED}{BW \times AT}$

Cancer Risk = Intake x Slope Factor

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	200
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source Exposure	FI	unitless	1
Frequency	EF	days/year	250
Exposure Duration	ED	years	25
Body Weight	BW	kg	70
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 17
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
2-Hexanone	0.00583	2.85E-09	NV(1)	NV
4-Methyl-2-pentanone	0.00575	2.81E-09	0.8 (1)	3.52E-08
Acetone	0.00739	3.62E-09	1 (1)	3.62E-08
Methylene chloride	0.01649	8.07E-09	0.06 (1)	1.34E-07
Toluene	0.00516	2.52E-09	0. 2 (1)	1.26E-08
Xylene (total)	0.001	4. 89E-10	0.2 (1)	2.45E-09
Tetrachloroethene	0.001	4.89E-10	0.01 (1)	4. 89E-08
Trichloroethene	1	4.89E-07	0.6 (1)	8.15 E-06
2-Methylnaphthalene	0.1959	9.58E-08	NV (1)	NV
4-Methylphenol (p-cresol)	0.026	1.27E-08	0.005 (1)	2.54E-06
Acenaphthene	0.157	7.68E-08	0.6 (1)	1.28E-06
Acenaphthylene	0.3815	1.87E-07	NV (1)	NV
Anthracene	0.3074	1.50E-07	0.3 (I)	5.01E-07
Benzo(a) anthracene	0. 6091	2.98E-07	NV (1)	NV
Benzo(a) pyrene	0.9406	4.60E-07	NV (1)	NV
Benzo(b) fluoranthene	0.7947	3.89E-07	NV (1)	NV
Benzo(g,h,i)perylene	0.5538	2.71E-07	0.3 (4)	9.03E-06
Benzo(k) fluoranthene	0.7263	3.55 E-07	NV(1)	NV
Benzoic acid	0.104	5.09E-08	4 (1)	1.27E-08
bis(2-Ethylhexyl) phthalate	0.1926	9.42E-08	0.02 (1)	4.71E-06
Carbazole	0.2998	1.47E-07	NV(1)	NV
Chrysene	0.7179	3.51E-07	NV(1)	NV
Dibenz(a,h) anthracene	0.2319	1.13E-07	NV(1)	NV
Dibenzofuran	0.041	2.01E-08	NV(1)	NV
Diethylphthalate	0.02	9.78E-09	0.8 (1)	1.22E-08
Di-n-butylphthalate	0.016	7.83E-09	0.1 (1)	7.83E-08
Di-n-octylphthalate	0.013	6.36E-09	0.02 (1)	3.18E-07
Fluoranthene	0.896	4.38E-07	0.04 (1)	1.10E-05
Fluorene	0.13	6.36E-08	0.04 (1)	1.59E-06
Indeno(1,2,3-cd) pyrene	0.5654	2.77E-07	NV(1)	NV

TABLE 17
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
Naphthalene	0.034	1.66E-08	0.02 13)	8.32E-07
Phenanthrene	0.5835	2. 85E-07	0.03 (4)	9.52E-06
Phenol	0.1779	8.70E-08	0.3 (1)	2.90E-07
Pyrene	0.9011	4.41E-07	0.03 (1)	1.47E-05
4,4'-DDD	0.00217	1.06E-09	NV (1)	NV
4,4'-DDT	0.024	1.17E-08	0.0005 (1)	2.35E-05
Endosulfan II	0.0022	1.08E-09	NV (1)	NV
Methoxychlor	0.0025	1.22E-09	0.005 (1)	2.45E-07
Aroclor 1254	0.007	3.42E-09	0.00002 (1)	1.71E-04
Aroclor 1260	0.05671	2.77E-08	NV (1)	NV
2,4-Dinitrotoluene	0.1672	8.18E-08	0.002 (1)	4.09E-05
Arsenic	2.99	1.46E-06	0.0003 (1)	0.005
Barium	79.39	3.88E-05	0.07 (1)	5.55E-04
Beryllium	0.55	2.69E-07	0.002 (1)	1.35E-04
Cadmium	2.14	1.05E-06	0.001 (3)	0.001
Chromium	20.71	1.01E-05	1.5 (1)	6.75E-06
Nickel	8.19	4.01E-06	0.02 (1)	2.00E-04
Zinc	118.6	5.80E-05	0.3 (1)	1.93E-04
		TOTAL HAZARD INDEX		**2E-01**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Intake}}{\text{Reference Dose}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	**IR**	**mg soil/day**	**50**
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Fraction Ingested from Contaminated Source	**FI**	**unitless**	**1**
Exposure Frequency	**EF**	**days/year**	**250**
Exposure Duration	**ED**	**years**	**25**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**9125**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 18
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - CARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Oral Slope Factor (mg/kg-day)^-1	Absorption Efficiency	CANCER RISK (unitless)
Methylene chloride	0.01649	NV	NV	0.0075 (1)	100.00%	NV
Trichloroethene	1	NV	NV	0.011 (4)	100.00%	NV
4-Methylphenol (p-cresol)	0.026	0.1	2.83E-08	NV (1)	100.00%	NV
Benzo(a) anthracene	0.6091	0.13	8.63E-07	NV (1)	100.00%	NV
Benzo(a) pyrene	0 9406	0.13	1.33E-06	7.3 (1)	100.00%	973E-06
Benzo(b) fiuoranthene	0.7947	0.13	1.13E-06	NV (1)	100.00%	NV
Benzo(k) fluoranthene	0.7263	0.13	1.03E-06	NV (1)	100.00%	NV
bis(2-Ethylhexyl) phthalate	0.1926	0.1	2.10E-07	0.014 (1)	100.00%	2.94E-09
Carbazole	0.2998	0.1	3.27E-07	0.02 (1)	100.00%	6.54E-09
Chrysene	0.7179	0.13	1.02E-06	NV (1)	100.00%	NV
Dibenz(a,h)anthracene	0.2319	0.13	3.29E-07	NV (1)	100.00%	NV
Indeno(1,2,3-cd) pyrene	0.5654	0.13	8.01E-07	NV (1)	100.00%	NV
Naphthalene	0.034	0.13	4.82E-08	NV (1)	100.00%	NV
4,4'-DDD	0.00217	0.1	2.37E-09	0.24 (1)	100.00%	5.68E-10
4,4'-DDT	0 024	0.13	7.85E-09	0.34 (1)	100.00%	2.67E-09
Aroclor 1254	0.007	0.14	1.07E-08	2.0 (6)	100.00%	2.14E-08
Aroclor 1260	0.05671	0.14	8.66E-08	2.0 (6)	100.00%	1.73E-07
Arsenic	2.99	0.03	9.78E-07	1.5 91)	100.00%	1.47E-06
Beryllium	0.55	NV	NV	NV (1)	100.00%	NV
Cadmium	2.14	0.001	2.33E-08	NV (1)	100.00%	NV
			TOTAL CANCER RISK			**2E-05**

Absorbed Dose (mg/kg/day) = $\frac{\text{CS x CF x SA x AF x ABS x EF x ED}}{\text{BW x AT}}$

Cancer Risk = Absorbed Dose x $\frac{\text{Slope Factor}}{\text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**3120**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**250**
Exposure Duration	**ED**	**years**	**25**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**25550**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 19
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Subchronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
2-Hexanone	0.00583	NV	NV	NV(1)	100.00%	NV
4-Methyl-2-pentanone	0.00575	NV	NV	0.8 (1)	100.00%	NV
Acetone	0.00739	NV	NV	1 (1)	100.00%	NV
Methylene chloride	0.01649	NV	NV	0.06 (1)	100.00%	NV
Toluene	0.00516	NV	NV	0.2 (1)	100.00%	NV
Xylene (total)	0.001	NV	NV	0.2 (3)	100.00%	NV
Tetrachloroethene	0.001	NV	NV	0.01 (1)	100.00%	NV
Trichloroethene	1	NV	NV	0.06 (1)	100.00%	NV
2-Methylnaphthalene	0.1959	0.1	5.98E-07	NV (1)	100.00%	NV
4-Methylphenol (p-cresol)	0.026	0.1	7.94E-08	0.005 (1)	100.00%	1.59E-05
Acenaphthene	0.157	0.13	6.23E-07	0.06 (1)	100.00%	1.04E-05
Acenaphthylene	0.3815	0.13	1.51E-06	NV (1)	100.00%	NV
Anthracene	0.3074	0.13	1.22E-06	0.3 (I)	100.00%	4.07E-06
Benzo(a) anthracene	0. 6091	0.13	2.42E-06	NV (1)	100.00%	NV
Benzo(a) pyrene	0.9406	0.13	3.73E-06	NV (1)	100.00%	NV
Benzo(b) fluoranthene	0.7947	0.13	3.15E-06	NV (1)	100.00%	NV
Benzo(g,h,i)perylene	0.5538	0.13	2.20E-06	0.03 (4)	100.00%	7.33E-05
Benzo(k) fluoranthene	0.7263	0.13	2.88E-06	NV(1)	100.00%	NV
Benzoic acid	0.104	0.1	3.17E-07	4 (1)	100.00%	7.94E-08
bis(2-Ethylhexyl) phthalate	0.1926	0.1	5.88E-07	0.02 (1)	100.00%	2.94E-05
Carbazole	0.2998	0.1	9.15E-07	NV(1)	100.00%	NV
Chrysene	0.7179	0.13	2.85E-06	NV(1)	100.00%	NV
Dibenz(a,h) anthracene	0.2319	0.13	9.20E-07	NV(1)	100.00%	NV
Dibenzofuran	0.041	0.1	1.25E-07	NV(1)	100.00%	NV
Diethylphthalate	0.02	0.1	6.11 E-08	0.8 (1)	100.00%	7.63E-08
Di-n-butylphthalate	0.016	0.1	4.88E-08	0.1 (1)	100.00%	4.88E-07
Di-n-octylphthalate	0.013	0.1	3.97E-08	0.02 (1)	100.00%	1.98E-06
Fluoranthene	0.896	0.13	3.56E-06	0.04 (1)	100.00%	8.89E-05
Fluorene	0.13	0.13	5.16E-07	0.04 (1)	100.00%	1.29E-05
Indeno(1,2,3-cd) pyrene	0.5654	0.13	2.24E-06	NV(1)	100.00%	NV

TABLE 19
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Chronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
Naphthalene	0.034	0.13	1.35E-07	0.02 (1)	100.00%	6.75E-06
Phenanthrene	0.5835	0.13	2.32E-06	0.03 (4)	100.00%	7.72E-05
Phenol	0.1779	0.1	5.43E-07	0.3 (1)	100.00%	1.81E-06
Pyrene	0.9011	0.13	3.58E-06	0.03 (1)	100.00%	1.19E-04
4,4'-DDD	0.00217	0.1	6.62E-09	NV (1)	100.00%	NV
4,4'-DDT	0.024	0.03	2.20E-08	0.0005 (1)	100.00%	4.40E-05
Endosulfan II	0.0022	0.1	6.72E-09	NV (1)	100.00%	NV
Methoxychlor	0.0025	0.1	7.63E-09	0.005 (1)	100.00%	1.53E-06
Aroclor 1254	0.007	0.14	2.99E-08	0.00002 (1)	100.00%	0.001
Aroclor 1260	0.05671	0.14	2.42E-07	NV (1)	100.00%	NV
2,4-Dinitrotoluene	0.1672	0.1	5.10E-07	0.002 (1)	100.00%	2.55E-04
Arsenic	2.99	0.03	2.74E-06	0.0003 (1)	100.00%	0.009
Barium	79.39	NV	NV	0.07 (1)	100.00%	NV
Beryllium	0.55	NV	NV	0.002 (1)	100.00%	NV
Cadmium	2.14	0.001	6.54E-08	0.001 (1)	100.00%	6.53E-05
Chromium	20.71	NV	NV	1.5 (1)	100.00%	NV
Nickel	8.19	NV	NV	0.02 (1)	100.00%	NV
Zinc	1l8.6	NV	NV	0.3 (1)	100.00%	NV
				TOTAL HAZARD INDEX		**8E-02**

Absorbed Dose (mg/kg/day) $= \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Hazard Quotient $= \frac{\text{Absorbed Dose}}{\text{Reference Dose} \times \text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**3120**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**250**
Exposure Duration	**ED**	**years**	**25**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**9125**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 20
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - CARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor VFseap mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) (mg/m³ air)	Intake (mg/kg-day) Industrial Worker	Inhalation Slope Factor (mg/kg-day)$^{-1}$	Cancer Risk (Unitless) Industrial Worker
4-Methyl-2-pentanone	0.00575	5.72E-05	3.29E-07	2.30E-08	NV	NV
Methylene chloride	0.01649	1.18E-03	1.94E-05	1.36E-06	0.001645	2.E-09
Trichloroethene	0.00100	4.48E-04	4.48E-07	3.13E-08	0.006	2.E-10
4-Methylphenol (p-cresol)	0.02600	4.91E-08	1.28E-09	8.92E-11	NV	NV
Benzo(a)anthracene	0.60910	4.70E-11	2.86E-11	2.00E-12	NV	NV
Benzo(a)pyrene	0.94060	6.39E-12	6.01E-12	4.20E-13	NV	NV
Benzo(b)fluoranthene	0.79470	2.12E-11	1.68E-11	1.18E-12	NV	NV
Benzo(g,h,i)perylene	0.55380	4.95E-13	2.74E-13	1.92E-14	NV	NV
Benzo(k)fluoranthene	0.72630	2.36E-12	1.71E-12	1.20E-13	NV	NV
bis(2-Ethylhexyl) phthalate	0.19260	6.87E-14	1.32E-14	9.24E-16	NV	NV
Carbazole	0.29980	4.02E-10	1.20E-10	8.42E-12	NV	NV
Chrysene	0.71790	5.87E-10	4.21E-10	2.95E-11	NV	NV
Dibenz(a,h)anthracene	0.23190	2.58E-12	5.98E-13	4.18E-14	NV	NV
Indeno(1,2,3-cd)pyrene	0.56540	1.18E-12	6.65E-13	4.65E-14	NV	NV
Naphthalene	0.03400	1.42E-06	4.82E-08	3.37E-09	NV	NV
4,4'-DDD	0.00217	1.55E-10	3.37E-13	2.35E-14	NV	NV
4,4'-DDT	0.02400	3.76E-10	9.02E-12	6.30E-13	0.3395	2.E-13
Aroclor 1254	0.00700	5.29E-08	3.70E-10	2.59E-11	2	5.E-11
Aroclor 1260	0.05671	2.23E-09	1.27E-10	8.84E-12	2	2.E-11
				TOTAL CANCER RISK		**2E-09**

TABLE 20
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - CARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL

PARAMETER	SYMBOL	UNITS	INDUSTRIAL WORKER
Inhalation rate	IR	m^3/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	25
Body weight	BW	kg	70
Averaging time	AT	days	25550

NOTES:
NV - No Value
NA - Not Available

EQUATIONS.
Intake = (CA x IR x EF x ED) / (BW x AT)
Cancer Risk = (Intake) x (Slope Factor)
CA = VF sesp (Table 15) x CS

TABLE 21
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor VFseap mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) (mg/m³ air)	Intake (mg/kg-day) Industrial Worker	Inhalation Slope Factor (mg/kg-day)$^{-1}$	Cancer Risk (Unitless) Industrial Worker
2-Hexanone	0.00583	3.69E-05	2.15E-07	4.21E-08	NV	NV
4-Methyl-2-pentanone	0.00575	5.72E-05	3.29E-07	6.44E-08	0.023	3.E-06
Acetone	0.00739	6.29E-05	4.65E-07	9.10E-08	NV	NV
Methylene chloride	0.01649	1.18E-03	1.94E-05	3.79E-06	0.857	4.E-06
Tetrachloroethene	0.00100	7.61E-04	7.63E-07	1.49E-07	NV	NV
Toluene	0.00516	2.98E-04	1.54E-06	3.01E-07	0.114	3.E-06
Trichloroethene	0.00100	4.48E-04	4.48E-07	8.76E-08	NV	NV
Xylene(total)	0.01957	1.31E-04	2.57E-06	5.03E-07	0.0286	2.E-05
2,4-Dinitrotoluene	0.16720	6.48E-09	1.08E-09	2.12E-10	NV	NV
2-Methylnaphthalene	0.19590	8.32E-07	1.63E-07	3.19E-08	NV	NV
4-Methylphenol (p-cresol)	0.02600	4.91E-08	1.28E-09	2.50E-10	NV	NV
Acenaphthene	0.15700	9.20E-08	1.44E-08	2.83E-09	NV	NV
Acenanhthylene	0.38150	3.40E-06	1.30E-06	2.54E-07	NV	NV
Anthracene	0.30740	7.17E-09	2.20E-09	4.31E-10	NV	NV
Benzo(a)anthracene	0.60910	4.70E-11	2.86E-11	5.60E-12	NV	NV
Benzo(a)pyrene	0.94060	6.39E-12	6.01E-12	1.18E-12	NV	NV
Benzo(b)fluoranthene	0.79470	2.12E-11	1.68E-11	3.29E-12	NV	NV
Benzo(g,h,i)perlene	0.55380	4.95E-13	2.74E-13	5.37E-14	NV	NV
Benzo(k)fluoranthene	0.72630	2.36E-12	1.71E-12	3.35E-13	NV	NV
Benzoic acid	0.10400	1.70E-04	1.77E-05	3.46E-06	NV	NV
bis(2-Ethylhexyl)phthalate	0.19260	6.87E-14	1.32E-14	2.59E-15	NV	NV

TABLE 21
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor VFseap mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) (mg/m³ air)	Intake (mg/kg-day) Industrial Worker	Inhalation Slope Factor (mg/kg-day)$^{-1}$	Cancer Risk (Unitless) Industrial Worker
Carbazole	0.29980	4.02E-10	1.20E-10	2.36E-11	NV	NV
Chrysene	0.71790	5.87E-10	4.21E-10	8.25E-11	NV	NV
Dibenz(a,h)anthracene	0.23190	2.58E-12	5.98E-13	1.17E-13	NV	NV
Dibenzofuran	0.04100	1.50E-07	6.14E-09	1.20E-09	NV	NV
Diethylphthalate	0.02000	4.28E-08	8.56E-10	1.68E-10	NV	NV
Di-n-butylphthalate	0.01600	4.32E-11	6.91E-13	1.35E-13	NV	NV
Di-n-octylphthalate	0.01300	6.59E-16	856E-18	1.68E-18	NV	NV
Fluoranthene	0.89600	4.64E-10	4.16E-10	8.14E-11	NV	NV
Fluorene	0.13000	1.68E-08	2.18E-09	4.27E-10	NV	NV
Indeno(1,2,3-cd)pyrene	0.56540	1.18E-12	6.65E-13	1.30E-13	NV	NV
Naphthalene	0.03400	1.42E-06	4.82E-08	9.42E-09	0.000857	1.E-05
Phenanthrene	0.58350	3.73E-06	2.18E-06	4.26E-07	NV	NV
Phenol	0.17790	1.57E-08	2.80E-09	5.48E-10	NV	NV
Pyrene	0.90110	2.97E-10	2.68E-l 0	5.24E-11	NV	NV
4,4'-DDD	0.00217	1.55E-10	3.37E-13	6.59E-14	NV	NV
4,4'-DDT	0.02400	3.76E-10	9.02E-12	1.77E-12	NV	NV
Endosulfan II	0.00220	3.39E-09	7.47E-12	3.46E-12	NV	NV
Methoxychlor	0.00250	3.20E-10	7.99E-13	1.56E-13	NV	NV
Aroclor 1254	0.00700	5.29E-08	3.70E-10	7.24E-11	NV	NV
Aroclor 1260	0.05671	2.23E-09	1.27E-10	2.48E-11	NV	NV
				TOTAL HAZARD INDEX		**4E-05**

TABLE 21
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL

PARAMETER	SYMBOL	UNITS	INDUSTRIAL WORKER
Inhalation rate	IR	m^3/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	25
Body weight	BW	kg	70
Averaging time	AT	days	9125

NOTES:
NV - No Value
NA - Not Available

EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Hazard Quotient = (Intake) /(Reference Dose)

TABLE 22
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF FUGITIVE DUST FROM SOIL - CARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Slope Factor (mg/kg-day)$^{-1}$	Cancer Risk (unitless)
		Industrial Worker		Industrial Worker
Methylene chloride	1.04E-08	7.26E-10	0.001645	1.19E-12
Trichloroethene	6.30E-10	4.40E-11	0.006	2.64E-13
4-Methylphenol (p-cresol)	1.64E-08	1.14E-09	NV	NV
Benzo(a)anthracene	3.84E-07	2.68E-08	NV	NV
Benzo(a)pyrene	5.93E-07	4.14E-08	NV	NV
Benzo(b)fluoranthene	5.01E-07	3.50E-08	NV	NV
Benzo(k)fluoranthene	4.58E-07	3.20E-08	NV	NV
bis(2-Ethylhexyl)phthalate	1.21E-07	8.48E-09	NV	NV
Carbazole	1.89E-07	1.32E-08	NV	NV
Chrysene	4.52E-07	3.16E-08	NV	NV
Dibenz(a,h)anthracene	1.46E-07	1.02E-08	NV	NV
Indeno(1,2,3-cd)pyrene	3.56E-07	2.49E-08	NV	NV
Naphthalene	2.14E-08	1.50E-09	NV	NV
4,4'-DDD	1.37E-09	9.55E-11	NV	NV
4,4'-DDT	1.51E-08	1.06E-09	0.3395	3.59E-10
Aroclor 1254	4.41E-09	3.08E-10	2	6.16E-10
Aroclor 1260	3.57E-08	2.50E-09	2	4.99E-09
Arsenic	1.79E-06	1.25E-07	15.05	1.88E-06
Beryllium	5.00E-08	3.50E-09	8.4	2.94E-08
Cadmium	3.44E-10	2.40E-11	6.3	1.51E-10
		TOTAL CANCER RISK		**2.E-06**

PARAMETER	SYMBOL	UNITS	INDUSTRIAL WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	25
Body weight	BW	kg	70
Averaging time	AT	days	25550

NOTES:
NV - No Value

EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Cancer Risk = (Intake) x (Slope Factor)
CA is taken from Attachment A-1

TABLE 23
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF FUGITIVE DUST FROM SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Reference Dose (mg/kg-day) Subchronic	hazard Quotient (unitless)
		Industrial Worker		Industrial Worker
2-Hexanone	3.67E-09	7.19E-10	NV	NV
4-Methyl-2-pentanone	3.62E-09	7.09E-10	0.228	3.11E-09
Acetone	4.66E-09	9.11E-10	NV	NV
Methylene chloride	1.04E-08	2.03E-09	0.857	2.37E-09
Tetrachloroethene	6.30E-10	1.23E-10	NV	NV
Toluene	3.25E-09	6.36E-10	0.114	5.58E-09
Trichloroethene	6.30E-10	1.23E-10	NV	NV
Xylene (total)	1.23E-08	2.41E-09	0.0286	8.44E-08
2,4-Dinitrotoluene	1.05E-07	2.06E-08	NV	NV
2-Methylnaphthalene	1.23E-07	2.42E-08	NV	NV
4-Methylphenol (p-cresol)	1.64E-08	3.21E-09	NV	NV
Acenaphthene	9.89E-08	1.94E-08	NV	NV
Acenaphthylene	2.40E-07	4.70E-08	NV	NV
Anthracene	1.94E-07	3.79E-08	NV	NV
Benzo(a) anthracene	3.84E-07	7.51E-08	NV	NV
Benzo(a) pyrene	5.93E-07	1.16E-07	NV	NV
Benzo(b) fluoranthene	5.01E-07	9.80E-08	NV	NV
Benzo(g,h,i)perylene	3.49E-07	6.83E-08	NV	NV
Benzo(k) fluoranthene	4.58E-07	8.95E-08	NV	NV
Benzoic acid	6.55E-08	1.28E-08	NV	NV
bis(2-Ethylhexyl) phthalate	1.21E-07	2.37E-08	NV	NV
Carbazole	1.89E-07	3.70E-08	NV	NV
Chrysene	4.52E-07	8.85E-08	NV	NV
Dibenz(a,h) anthracene	1.46E-07	2.86E-08	NV	NV
Dibenzofuran	2.58E-08	5.05E-09	NV	NV
Diethylphthalate	1.26E-08	2.47E-09	NV	NV
Di-n-butylphthalate	1.01E-08	1.97E-09	NV	NV
Di-n-octylphthalate	8.19E 09	1.60E-09	NV	NV
Fluoranthene	5.64E-07	3.10E-07	NV	NV
Fluorene	8.19E-08	1.60E-08	NV	NV

TABLE 23
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF FUGITIVE DUST FROM SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (unitless)
		Industrial Worker		Industrial Worker
Indeno(1,2,3-cd) pyrene	3.56E-07	6.97E-08	NV	NV
Naphthalene	2.14E-08	4.19E-09	0.000857	4.89E-06
Phenanthrene	3.68E-07	7.19E-08	NV	NV
Phenol	1.12E-07	2.19E-08	NV	NV
Pyrene	5.68E-07	1.11E-07	NV	NV
4,4'-DDD	1.37E-09	2.68E-10	NV	NV
4,4'-DDT	1.51E-08	2.96E-09	NV	NV
Endosulfan II	1.39E-09	2.71E-10	NV	NV
Methoxychlor	1.58E-09	3.08E-10	NV	NV
Aroclor 1254	4.41E-09	8.63E-10	NV	NV
Aroclor 1260	3.57E-08	6.99E-09	NV	NV
Arsenic	1.79E-06	3.50E-07	NV	NV
Barium	1.88E-09	3.69E-10	0.00143	2.58E-07
Beryllium	5.00E-08	9.79E-09	0.00000571	1,71E-03
Cadmium	3.44E-10	6.73E-11	NV	NV
Chromium (total)	1.35E-09	2.64E-10	NV	NV
Lead	2.14E-06	4.19E-07	NV	NV
Nickel	1.30E-08	2.55E-09	NV	NV
Zinc	1.39E-09	2.71E-10	NV	NV
		TOTAL HAZARD INDEX		**2E-03**

PARAMETER	SYMBOL	UNITS	INDUSTRIAL WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	25
Body weight	BW	kg	70
Averaging time	AT	days	9125

NOTES:
NV - No Value

EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Hazard Quotient = (Intake) /(Reference Dose)
CA is from Attachment A-1

TABLE 24
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - CARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Oral Slope Factor (mg/kg-day)^-1	CANCER RISK (unitless)
Methylene chloride	0.01649	2.77E-10	0.0075 (1)	2.07E-12
Trichloroethene	1	1.68E-08	0.011 (4)	1.85E-10
4-Methylphenol (p-cresol)	0.026	4.36E-10	NV (1)	NV
Benzo(a)anthracene	0.6091	1.02E-08	NV (1)	NV
Benzo(a)pyrene	0.9406	1.58E-08	7.3 (1)	1.15E-07
Benzo(b)fluoranthene	0.7947	1.33E-08	NV (1)	NV
Benzo(k)fluoranthene	0.7263	1.22E-08	NV (1)	NV
bis(2-Ethylhexyl)phthalate	0.1926	3.23E-09	0.014 (1)	4.52E-11
Carbazole	0.2998	5.03E-09	0.02 (1)	1.01E-10
Chrysene	0.7179	1.20E-08	NV (1)	NV
Dibenz(a,h)anthracene	0.2319	3.89E-09	NV (1)	NV
Indeno(1,2,3-cd)pyrene	0.5654	9.48E-09	NV (1)	NV
Naphthalene	0.034	5.70E-10	NV (1)	NV
4,4'-DDD	0.00217	3.64E-11	0.24 (1)	8.74E-12
4,4'-DDT	0.024	4.03E-10	0.34 (1)	1.37E-10
Aroclor 1254	0.007	1.17E-10	2.0 (6)	2.35E-10
Aroclor 1260	0.05671	9.51E-10	2.0 (6)	1.90E-09
Arsenic	2.99	5.02E-08	1.5 (1)	7.52E-08
Beryllium	0.55	9.23E-09	NV (1)	NV
Cadmium	2.14	3.59E-08	NV (1)	NV
		TOTAL CANCER RISK		**2E-07**

Intake (mg/kg/day) $= \frac{CS \times IR \times CF \times Fl \times EF \times ED}{BW \times AT}$

Cancer Risk = Intake x Slope Factor

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	**IR**	**mg soil/day**	**480**
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Fraction Ingested from Contaminated Source	**FI**	**unitless**	**1**
Exposure Frequency	**EF**	**days/year**	**250**
Exposure Duration	**ED**	**years**	**0.25**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**25550**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 25
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
2-Hexanone	0.00583	2.75E-08	NV(1)	NV
4-Methyl-2-pentanone	0.00575	2.71E-08	0.8 (1)	3.39E-07
Acetone	0.00739	3.48E-08	0.1 (1)	3.48E-07
Methylene chloride	0.01649	7.77E-08	0.06 (1)	1.29E-06
Toluene	0.00516	2.43E-08	0.2 (1)	1.22E-07
Xylene (total)	0.001	4.71E-09	0.2 (1)	2.35E-08
Tetrachloroethene	0.001	4.71E-09	0.1 (1)	4.71E-07
Trichloroethene	1	4.71E-06	0.06 (1)	7.85E-05
2-Methylnaphthalene	0.1959	9.23E-07	NV (1)	NV
4-Methylphenol (p-cresol)	0.026	1. 22E-07	0.005 (1)	2.45E-05
Acenaphthene	0.157	7.39E-07	0.06 (1)	1.23E-05
Acenaphthylene	0.3815	1.80E-06	NV (1)	NV
Anthracene	0.3074	1.45E-06	0.3 (I)	4.83E-06
Benzo(a) anthracene	0. 6091	2. 87E-06	NV (1)	NV
Benzo(a) pyrene	0.9406	4.43E-06	NV (1)	NV
Benzo(b) fluoranthene	0.7947	3.74E-06	NV (1)	NV
Benzo(g,h,i)perylene	0.5538	2.61E-06	0.03 (4)	8.69E-05
Benzo(k) fluoranthene	0.7263	3.42E-06	NV(1)	NV
Benzoic acid	0.104	4.90E-07	4 (1)	1.22E-07
bis(2-Ethylhexyl) phthalate	0.1926	9.07E-07	0.02 (1)	4.54E-05
Carbazole	0.2998	1.41E-06	NV(1)	NV
Chrysene	0.7179	3.38E-06	NV(1)	NV
Dibenz(a,h) anthracene	0.2319	1.09E-06	NV(1)	NV
Dibenzofuran	0.041	1.93E-07	NV(1)	NV
Diethylphthalate	0.02	9.42E-08	0.8 (1)	1.18E-07
Di-n-butylphthalate	0.016	7.54E-08	0.1 (1)	7.54E-07
Di-n-octylphthalate	0.013	6.12E-08	0.02 (1)	3.06E-06
Fluoranthene	0.896	4.22E-06	0.4 (1)	1.05E-04
Fluorene	0.13	6.12E-07	0.4 (1)	1.53E-05
Indeno(1,2,3-cd) pyrene	0.5654	2.66E-06	NV(1)	NV

TABLE 25
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
Naphthalene	0.034	1.60E-07	0.02 (1)	8.01E-06
Phenanthrene	0.5835	2.75E-06	0.03 (4)	9.16E-05
Phenol	0.1779	8.38E-07	0.3 (1)	2.79E-06
Pyrene	0.9011	4.24E-06	0.03 (1)	1.41E-04
4,4'-DDD	0.00217	1.02E-08	NV (1)	NV
4,4'-DDT	0.024	1.13E-07	0.0005 (1)	2.26E-04
Endosulfan II	0.0022	1.04E-08	NV (1)	NV
Methoxychlor	0.0025	1.18E-08	0.005 (1)	2.35E-06
Aroclor 1254	0.007	3.30E-08	0.00002 (1)	0.002
Aroclor 1260	0.05671	2.67E-07	NV (1)	NV
2,4-Dinitrotoluene	0.1672	7.87E-07	0.002 (1)	3.94E-04
Arsenic	2.99	1.41E-05	0.0003 (1)	0.047
Barium	79.39	3.74E-04	0 07 (1)	0.005
Beryllium	0 55	2.59E-06	0.002 (1)	0.001
Cadmium	2.14	1.01E-05	0.001 (1)	0.01
Chromium	20.71	9.75E-05	1.5 (1)	6.50E-05
Nickel	8.19	3.86E-05	0.02 (1)	0.002
Zinc	118.6	5.59E-04	0.3 (1)	0.002
		TOTAL HAZARD INDEX		**7E-02**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Intake}}{\text{Reference Dose}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	480
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source Exposure	FI	unitless	1
Frequency	EF	days/year	250
Exposure Duration	ED	years	0.25
Body Weight	BW	kg	70
Averaging Time	AT	days	91

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 26
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - CARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Oral Slope Factor (mg/kg-day)^-1	Absorption Efficiency	CANCER RISK (unitless)
Methylene chloride	0.01649	NV	NV	0.0075 (1)	100.00%	NV
Trichloroethene	1	NV	NV	0.011 (4)	100.00%	NV
4-Methylphenol (p-cresol)	0.026	0.1	7.22E-10	NV (1)	100.00%	NV
Benzo(a) anthracene	0.6091	0.13	2.20E-08	NV (1)	100.00%	NV
Benzo(a) pyrene	0 9406	0.13	3.40E-08	7.3 (1)	100.00%	2.48E-07
Benzo(b) fiuoranthene	0.7947	0.13	2.87E-08	NV (1)	100.00%	NV
Benzo(k) fluoranthene	0.7263	0.13	2.62E-08	NV (1)	100.00%	NV
bis(2-Ethylhexyl) phthalate	0.1926	0.1	5.35E-09	0.014 (1)	100.00%	7.49E-11
Carbazole	0.2998	0.1	8.33E-09	0.02 (1)	100.00%	1.67E-10
Chrysene	0.7179	0.13	2.59E-08	NV (1)	100.00%	NV
Dibenz(a,h)anthracene	0.2319	0.13	8.37E-09	NV (1)	100.00%	NV
Indeno(1,2,3-cd) pyrene	0.5654	0.13	2.04E-08	NV (1)	100.00%	NV
Naphthalene	0.034	0.13	1.23E-09	NV (1)	100.00%	NV
4,4'-DDD	0.00217	0.1	6.03E-11	0.24 (1)	100.00%	1.45E-11
4,4'-DDT	0 024	0.13	2.00E-10	0.34 (1)	100.00%	6.80E-11
Aroclor 1254	0.007	0.14	2.72E-10	2.0 (6)	100.00%	5.44E-10
Aroclor 1260	0.05671	0.14	2.21E-09	2.0 (6)	100.00%	4.41E-09
Arsenic	2.99	0.03	2.49E-08	1.5 (1)	100.00%	3.74E-08
Beryllium	0.55	NV	NV	NV (1)	100.00%	NV
Cadmium	2.14	0.001	5.94E-10	NV (1)	100.00%	NV
			TOTAL CANCER RISK			**3E-07**

Absorbed Dose (mg/kg/day) = $\frac{\text{CS x CF x SA x AF x ABS x EF x ED}}{\text{BW x AT}}$

Cancer Risk = Absorbed Dose x $\frac{\text{Slope Factor}}{\text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	CF	kg/mg	0.000001
Skin Surface Area Available for Contact	SA	cm^2/event	7948
Soil to Skin Adherence Factor	AF	mg/cm^2	1
Exposure Frequency	EF	events/year	250
Exposure Duration	ED	years	0.25
Body Weight	BW	kg	70
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 27
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Subchronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
2-Hexanone	0.00583	NV	NV	NV(1)	100.00%	NV
4-Methyl-2-pentanone	0.00575	NV	NV	0.8 (1)	100.00%	NV
Acetone	0.00739	NV	NV	1 (1)	100.00%	NV
Methylene chloride	0.01649	NV	NV	0.06 (1)	100.00%	NV
Toluene	0.00516	NV	NV	2 (1)	100.00%	NV
Xylene (total)	0.001	NV	NV	0.2 (3)	100.00%	NV
Tetrachloroethene	0.001	NV	NV	0.1 (1)	100.00%	NV
Trichloroethene	1	NV	NV	0.6 (1)	100.00%	NV
2-Methylnaphthalene	0.1959	0.1	1.53E-06	NV (1)	100.00%	NV
4-Methylphenol (p-cresol)	0.026	0.1	2.03E-07	0.005 (1)	100.00%	4.06E-05
Acenaphthene	0.157	0.13	1.59E-06	0.6 (1)	100.00%	2.65E-06
Acenaphthylene	0.3815	0.13	3.87E-06	NV (1)	100.00%	NV
Anthracene	0.3074	0.13	3.12E-06	3 (I)	100.00%	1.04E-06
Benzo(a) anthracene	0. 6091	0.13	6.17E-06	NV (1)	100.00%	NV
Benzo(a) pyrene	0.9406	0.13	9.54E-06	NV (1)	100.00%	NV
Benzo(b) fluoranthene	0.7947	0.13	8.06E-06	NV (1)	100.00%	NV
Benzo(g,h,i)perylene	0.5538	0.13	5.61E-06	0.3 (4)	100.00%	1.87E-05
Benzo(k) fluoranthene	0.7263	0.13	7.36E-06	NV(1)	100.00%	NV
Benzoic acid	0.104	0.1	8.11E-07	4 (1)	100.00%	2.03E-07
bis(2-Ethylhexyl) phthalate	0.1926	0.1	1.50E-06	0.02 (3)	100.00%	7.51E-05
Carbazole	0.2998	0.1	2.34E-06	NV(1)	100.00%	NV
Chrysene	0.7179	0.13	7.28E-06	NV(1)	100.00%	NV
Dibenz(a,h) anthracene	0.2319	0.13	2.35E-06	NV(1)	100.00%	NV
Dibenzofuran	0.041	0.1	3.20E-07	NV(1)	100.00%	NV
Diethylphthalate	0.02	0.1	1.56E-07	8 (1)	100.00%	1.95E-08
Di-n-butylphthalate	0.016	0.1	1.25E-07	1 (1)	100.00%	1.25E-07
Di-n-octylphthalate	0.013	0.1	1.01E-07	0.02 (1)	100.00%	5.07E-06
Fluoranthene	0.896	0.13	9.08E-06	0.4 (1)	100.00%	2.27E-05
Fluorene	0.13	0.13	1.32E-06	0.4 (1)	100.00%	3.29E-06
Indeno(1,2,3-cd) pyrene	0.5654	0.13	5.73E-06	NV(1)	100.00%	NV

TABLE 27
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Chronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
Naphthalene	0.034	0.13	3.45E-07	0.02 (3)	100.00%	1.72E-05
Phenanthrene	0.5835	0.13	5.92E-06	0.3 (4)	100.00%	1.97E-05
Phenol	0.1779	0.1	1.39E-06	0.6 (1)	100.00%	2.31E-06
Pyrene	0.9011	0.13	9.14E-06	0.3 (1)	100.00%	3.04E-05
4,4'-DDD	0.00217	0.1	1.69E-08	NV (1)	100.00%	NV
4,4'-DDT	0.024	0.03	5.61 E-08	0.0005 (1)	100.00%	1.12E-04
Endosulfan II	0.0022	0.1	1.72E-08	NV (1)	100.00%	NV
Methoxychlor	0.0025	0.1	1.95E-08	0.005 (1)	100.00%	3.90E-06
Aroclor 1254	0.007	0.14	7.64E-08	0.00005 (1)	100.00%	0.002
Aroclor 1260	0.05671	0.14	6.19E-07	NV (1)	100.00%	NV
2,4-Dinitrotoluene	0.1672	0.1	1.30E-06	0.002 (1)	100.00%	6.52E-04
Arsenic	2.99	0.03	7.00 E-06	0.0003 (1)	100.00%	0.023
Barium	79.39	NV	NV	0.07 (1)	100.00%	NV
Beryllium	0.55	NV	NV	0.005 (1)	100.00%	NV
Cadmium	2.14	0.001	1.67E-07	0.001 (3)	100.00%	1.67E-04
Chromium	20.71	NV	NV	1 (1)	100.00%	NV
Nickel	8.19	NV	NV	0.02 (1)	100.00%	NV
Zinc	1l8.6	NV	NV	0.3 (1)	100.00%	NV
				TOTAL HAZARD INDEX		**3E-02**

Absorbed Dose (mg/kg/day) = $\frac{\text{CS x CF x SA x AF x ABS x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Absorbed Dose}}{\text{Reference Dose x Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	CF	kg/mg	0.000001
Skin Surface Area Available for Contact	SA	cm^2/event	7948
Soil to Skin Adherence Factor	AF	mg/cm^2	1
Exposure Frequency	EF	events/year	250
Exposure Duration	ED	years	0.25
Body Weight	BW	kg	70
Averaging Time	AT	days	91

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 28
NON-DESTRUCTIVE INSPECTION FACILITY {SS-005)
INHALATION OF SOIL VAPORS - CARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Slope Factor (mg/kg-day)$^{-1}$	Cancer Risk (unitless) Construction Worker
Methylene chloride	1.16E-03	8.10E-07	0.001645	1.33E-09
Trichloroethene	3.13E-05	2.19E-08	0.006	1.31E-10
4-Methylphenol (p-cresol)	4.58E-06	3.20E-09	NV	NV
Benzo(a)anthracene	5.39E-06	3.77E-09	NV	NV
Benzo(a)pyrene	1.46E-15	1.02E-18	NV	NV
Benzo(b)fluoranthene	5.77E-14	4.04E-17	NV	NV
Benzo(k)fluoranthene	1.01E-17	7.07E-21	NV	NV
bis(2-Ethylhexyl)phthalate	4.00E-08	2.80E-11	NV	NV
Carbazole	1.70E-06	1.19E-09	NV	NV
Chrysene	7.21E-16	5.04E-19	NV	NV
Dibenz(a,h)anthracene	4.50E-07	3.15E-10	NV	NV
Indeno(1,2,3-cd)pyrene	6.98E-18	4.88E-21	NV	NV
Naphthalene	5.48E-05	3.83E-08	NV	NV
4,4'-DDD	3.61E-08	2.53E-11	NV	NV
4,4'-DDT	6.25E-07	4.37E-10	0.3395	1.48E-10
Aroclor 1254	2.18E-06	1.52E-09	2	3.04E-09
Aroclor 1260	2.04E-13	1.42E-16	2	2.85E-16
		TOTAL CANCER RISK		**5.E-09**

PARAMETER	SYMBOL	UNITS	CONSTRUCTION WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	0.25
Body weight	BW	kg	70
Averaging time	AT	days	25550

NOTES:
NV - No Value
EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Cancer Risk = (Intake) x (Slope Factor)

TABLE 29
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF SOIL VAPORS - NONCARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (unitless) Construction Worker
2-Hexanone	5.98E-05	1.17E-05	NV	NV
4-Methyl-2-pentanone	7.64E-05	1.50E-05	0.228	6.58E-05
Acetone	3.05E-04	5.98E-05	NV	NV
Methylene chloride	1.16E-03	2.27E-04	0.857	2.65E-04
Tetrachloroethene	4.33E-05	8.49E-06	NV	NV
Toluene	1.28E-04	2.51E-05	0.114	2.20E-04
Trichloroethene	3.13E-05	6.14E-06	NV	NV
Xylene (total)	3.12E-04	6.13E-05	0.0286	2.14E-03
2,4-Dinitrotoluene	1.24E-05	2.43E-06	NV	NV
2-Methylnaphthalene	2.02E-04	3.97E-05	NV	NV
4-Methylphenol (p-cresol)	4.58E-06	8.99E-07	NV	NV
Acenaphthene	6.44E-05	1.26E-05	NV	NV
Acenaphthylene	9.52E-04	1.87E-04	NV	NV
Anthracene	3.51E-05	6.88E-06	NV	NV
Benzo(a) anthracene	5.39E-06	1.06E-06	NV	NV
Benzo(a) pyrene	1.46E-15	2.86E-16	NV	NV
Benzo(b) fluoranthene	5.77E-14	1.13E-14	NV	NV
Benzo(g,h,i)perylene	2.88E-17	5.65E-18	NV	NV
Benzo(k) fluoranthene	1.01E-17	1.99E-18	NV	NV
Benzoic acid	2.35E-03	4.61E-04	NV	NV
bis(2-Ethylhexyl) phthalate	4.00E-08	7.86E-09	NV	NV
Carbazole	1.70E-06	3.33E-07	NV	NV
Chrysene	7.21E-16	1.42E-16	NV	NV
Dibenz(a,h) anthracene	4.50E-07	8.84E-08	NV	NV
Dibenzofuran	2.14E-05	4.21E-06	NV	NV
Diethylphthalate	4.78E-06	9.39E-07	NV	NV
Di-n-butylphthalate	7.52E-09	1.48E-09	NV	NV
Di-n-octylphthalate	8.19E-13	1.61E-13	NV	NV
Fluoranthene	2.58E-05	5.06E-06	NV	NV
Fluorene	2.27E-05	4.46E-06	NV	NV

TABLE 29
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF SOIL VAPORS - NONCARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (unitless) Construction Worker
Indeno(1,2,3-cd) pyrene	6.98E-18	1.37E-18	NV	NV
Naphthalene	5.48E-05	1.08E-05	0.000857	126E-02
Phenanthrene	1.53E-03	2.99E-04	NV	NV
Phenol	2.42E-05	4.75E-06	NV	NV
Pyrene	2.05E-05	4.03E-06	NV	NV
4,4'-DDD	3.61E-08	7.09E-09	NV	NV
4,4'-DDT	6.25E-07	1.23E-07	NV	NV
Endosulfan II	NV	NV	NV	NV
Methoxychlor	5.95E-08	1.17E-08	NV	NV
Aroclor 1254	2.18E-06	4.27E-07	NV	NV
Aroclor 1260	2.04E-13	4.00E-14	NV	NV
		TOTAL HAZARD INDEX		**2.E-02**

PARAMETER	SYMBOL	UNITS	CONSTRUCTION WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	0.25
Body weight	BW	kg	70
Averaging time	AT	days	91

NOTES:
NV - No Value
EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Hazard Quotient = (Intake) /(Reference Dose)

TABLE 30
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF FUGITIVE DUST FROM SOIL VOLATILIZATION - CARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Exposure Soil Concentration (CSD) (mg/kg)	Modeling Exposure Factor (MEF) (mg/m^3)	Respirable Concentration (CA) (mg/m^3 air)	Intake (mg/kg-day) Construction Worker	Inhalation Slope Factor $(mg/kg\text{-}day)^{-1}$	Cancer Risk (Unitless) Construction Worker
Methylene chloride	0.01649	1.65E-08	6.03E-01	1.04E-08	7.26E-12	0.001645	1.E-14
Trichloroethene	0.00100	1.00E-09	6.03E-01	6.30E-10	4.40E-13	0.006	2.6E-15
4-Methylphenol (p-cresol)	0.02600	2.60E-08	6.03E-01	1.64E-08	1.14E-11	NV	NV
Benzo(a)anthracene	0.60910	6.09E-07	6.03E-01	3.84E-07	2.68E-10	NV	NV
Benzo(a)pyrene	0.94060	9.41E-07	6.03E-01	5.93E-07	4.14E-10	NV	NV
Benzo(b)fluoranthene	0.79470	7.95E-07	6.03E-01	5.01E-07	3.50E-10	NV	NV
Benzo(k)fluoranthene	0.72630	7.26E-07	6.03E-01	4.58E-07	3.20E-10	NV	NV
bis(2-Ethylhexyl) phthalate	0.19260	1.93E-07	6.03E-01	1.21E-07	8.48E-l1	NV	NV
Carbazole	0.29980	3.00E-07	6.03E-01	1.89E-07	1.32E-10	NV	NV
Chrysene	0.71790	7.18E-07	6.03E-01	4.52E-07	3.16E-10	NV	NV
Dibenz(a,h)anthracene	0.23190	2.32E-07	6.03E-01	1.46E-07	1.02E-10	NV	NV
Indeno(1,2,3-cd)pyrene	0.56540	5.65E-07	6.03E-01	3.56E-07	2.49E-10	NV	NV
Naphthalene	0.03400	3.40E-08	6.03E-01	2.14E-08	1.50E-11	NV	NV
4,4'-DDD	0.00217	2.17E-09	6.03E-01	1.37E-09	9.55E-13	NV	NV
4,4'-DDT	0.02400	2.40E-08	6.03E-01	1.51E-08	1.06E-11	0.3395	4.E-12
Aroclor 1254	0.00700	7.00E-09	6.03E-01	4.41E-09	3.08E-12	2	6.E-12
Aroclor 1260	0.05671	5.67E-08	6.03E-01	3.57E-08	2.50E-11	2	5.0E-11
Arsenic	2.83800	2.84E-06	6.03E-01	1.79E-06	1.25E-09	15.05	1.9E-08
Beryllium	0.07939	7.94E-08	6.03E-01	5.00E-08	3.50E-11	8.4	3.E-10
Cadmium	0.00055	5.46E-10	6.03E-01	3.44E-10	2.40E-13	6.3	2.E-12
					TOTAL CANCER RISK		**2.E-08**

TABLE 30
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF FUGITIVE DUST FROM SOIL VOLATILIZATION - CARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION

PARAMETER	SYMBOL	UNITS	CONSTRUCTION WORKER
Inhalation rate	IR	m^3/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	0.25
Body weight	BW	kg	70
Averaging time	AT	days	25550

NOTES:
NV - No Value
NA - Not Available

EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Cancer Risk = (Intake) x (Slope Factor)
CA = CSD x MEF (Attachment A-1)

TABLE 31
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF FUGITIVE DUST FROM SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Exposure Soil Concentration (CSD) (mg/kg)	Modeling Exposure Factor (MEF) (mg/m^3)	Respirable Concentration (CA) (mg/m^3 air)	Intake (mg/kg-day) Construction Worker	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (Unitless) Construction Worker
2-Hexanone	0.00583	5.83E-09	6.03E-01	3.67E-09	7.21E-10	NV	NV
4-Methyl-2-pentanone	0.00575	5.75E-09	6.03E-01	3.62E-09	7.11E-10	0.228	3.E-09
Acetone	0.00739	7.39E-09	6.03E-01	4.66E-09	9.34E-10	NV	NV
Methylene chloride	0.01649	1.65E-08	6.03E-01	1.04E-08	2.04E-09	0.857	2.E-09
Tetrachloroethene	0.001	1.00E-09	6.03E-01	6.30E-10	1.24E-10	NV	NV
Toluene	0.00516	5.16E-09	6.03E-01	3.25E-09	6.38E-10	0.114	6.E-09
Trichloroethene	0.001	1.00E-09	6.03E-01	6.30E-10	1.24E-10	NV	NV
Xylene (total)	0.01957	3.96E-08	6.03E-01	1.23E-08	2.42E-09	0.0286	8.E-08
2,4-Dinitrotoluene	0.1672	1.67E-07	6.03E-01	1.05E-07	2.07E-08	NV	NV
2-Methylnaphthalene	0.1959	1.96E-07	6.03E-01	1.23E-07	2.42E-08	NV	NV
4-Methylphenol (p-cresol)	0.026	2.60E-08	6.03E-01	1.64E-08	3.21E-09	NV	NV
Acenaphthene	0.157	1.57E-07	6.03E-01	9.89E-08	1.94E-08	NV	NV
Acenaphthylene	0.3815	3.82E-07	6.03E-01	2.40E-07	4.72E-08	NV	NV
Anthracene	0.3074	3.07E-07	6.03E-01	1.94E-07	3.80E-08	NV	NV
Benzo(a) anthracene	0.6091	6.09E-07	6.03E-01	3.84E-07	7.53E-08	NV	NV
Benzo(a) pyrene	0.9406	9.41E-07	6.03E-01	5.93E-07	1.16E-07	NV	NV
Benzo(b) fluoranthene	0.7947	7.95E-07	6.03E-01	5.01E-07	9.82E-08	NV	NV
Benzo(g,h,i)perylene	0.5538	5.54E-07	6.03E-01	3.49E-07	6.85E-08	NV	NV
Benzo(k) fluoranthene	0.7263	7.26E-07	6.03E-01	4.58E-07	8.98E-08	NV	NV
Benzoic acid	0.104	1.04E-07	6.03E-01	6.55E-08	3.29E-08	NV	NV
bis(2-Ethylhexyl) phthalate	0.1926	1.93E-07	6.03E-01	1.21E-07	2.38E-08	NV	NV
Carbazole	0.2998	3.00E-07	6.03E-01	3.89E-07	3.71E-08	NV	NV

TABLE 31
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF FUGITIVE DUST FROM SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Exposure Soil Concentration (CSD) (mg/kg)	Modeling Exposure Factor (MEF) (mg/m^3)	Respirable Concentration (CA) (mg/m^3 air)	Intake (mg/kg-day) Construction Worker	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (Unitless) Construction Worker
Chrysene	0.7179	7.18E-07	6.03E-01	4.52E-07	8.88E-08	NV	NV
Dibenz(a,h) anthracene	0.2319	2.32E-07	6.03E-01	1.46E-07	2.87E-08	NV	NV
Dibenzofuran	0.041	4.10E-08	6.03E-01	2.58E-08	5.07E-09	NV	NV
Diethylphthalate	0.02	2.00E-08	6.03E-01	1.26E-08	2.47E-09	NV	NV
Di-n-butylphthalate	0.016	1.60E-08	6.03E-01	1.01E-08	1.98E-09	NV	NV
Di-n-octylphthalate	0.013	1.30E-08	6.03E-01	8.19E-09	1.61E-09	NV	NV
Fluoranthene	0.896	8.96E-07	6.03E-01	5.64E-07	1.11E-07	NV	NV
Fluorene	0.13	1.30E-07	6.03E-01	8.19E-08	1.61E-08	NV	NV
Indeno(1,2,3-cd) pyrene	0.5654	5.65E-07	6.03E-01	3.56E-07	6.99E-08	NV	NV
Naphthalene	0.034	3.40E-08	6.03E-01	2.14E-08	4.20E-09	0.000857	5.E-06
Phenanthrene	0.5835	5.84E-07	6.03E-01	3.68E-07	7.21E-08	NV	NV
Phenol	0.1779	1.78E-07	6.03E-01	1.12E-07	2.20E-08	NV	NV
Pyrene	0.9011	9.01E-07	6.03E-01	5.68E-07	1.11E-07	NV	NV
4,4'-DDD	0.00217	2.17E-09	6.03E-01	1.37E-09	2.68E-10	NV	NV
4,4'-DDT	0.024	2.40E-08	6.03E-01	3.51E-08	2.97E-09	NV	NV
Endosulfan II	0.0022	2.20E-09	6.03E-01	1.39E-09	2.72E-10	NV	NV
Methoxychlor	0.0025	2.50E-09	6.03E-01	1.58E-09	3.09E-10	NV	NV
Aroclor 1254	0.007	7.00E-09	6.03E-01	4.41E-09	8.65E-10	NV	NV
Aroclor 1260	0.05673	5.67E-08	6.03E-01	3.57E-08	7.01E-09	NV	NV
Arsenic	2 838	2.84E-06	6.03E-01	1.79E-06	3.51E-07	NV	NV
Barium	0.00299	2.99E-09	6.03E-01	1.88E-09	3.70E-10	0.00143	3.E-07
Beryllium	0.07939	7.94E-08	6.03E-01	5.00E-08	9.81E-09	0.00000571	2.E-03
Cadmium	0.000546	5.46E-10	6.03E-01	3.44E-10	6.75E-11	NV	NV

TABLE 31
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
INHALATION OF FUGITIVE DUST FROM SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Exposure Soil Concentration (CSD) (mg/kg)	Modeling Exposure Factor (MEF) (mg/m^3)	Respirable Concentration (CA) (mg/m^3 air)	Intake (mg/kg-day) Construction Worker	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (Unitless) Construction Worker
Chromium (total)	0.00214	2.14E-09	6.03E-01	1.35E-09	4.20E-07	NV	NV
Lead	3.397	3.40E-06	6.03E-01	2.14E-06	2.56E-09	NV	NV
Nickel	0.02071	2.07E-08	6.03E-01	1.30E-08	2.72E-10	NV	NV
Zinc	0 0022	2.20E-09	6.03E-01	1.39E-09	2.72E-10	NV	NV
					TOTAL HAZARD INDEX		**2.E-03**

PARAMETER	SYMBOL	UNITS	CONSTRUCTION WORKER
Inhalation rate	IR	m^3/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	0.25
Body weight	BW	kg	70
Averaging time	AT	days	91

NOTES:
NV - No Value

EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Hazard Quotient = (Intake) /(Reference Dose)
CA = CSD x MEF (Attachment A-1)

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)

SITE SS-006

HUMAN HEALTH RISK EVALUATION
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)

1.0 INTRODUCTION

This human health risk evaluation (HHRE) considers the potential adverse health effects that could result from exposure to contaminated soil at the Aerospace Ground Equipment Facility (SS-006) site. The HHRE generally follows procedures set forth in USEPA's Risk Assessment Guidance for Superfund (RAGS) (USEPA 1989a).

2.0 CHEMICALS OF POTENTIAL CONCERN

Chemicals of potential concern (CPCs) for this HHRE were selected as follows:

- All detected organic chemicals were considered CPCs.

- Metals were eliminated from screening by a statistical screening process. In the first step, metal detections were compared to the statistical basewide background concentrations. If none of the detections exceeded the background concentration, the metal was screened out. In the second step, surviving metals were evaluated using the Wilcoxon Rank Sum Test which compares the onsite mean to the background mean concentration. Only metals surviving both screening steps were considered as CPCs. For the SS-006 site, no metals are considered CPCs.

The complete data set of site SS-006 soil analytical results used for CPC selection is contained in Attachment A-6.

3.0 EXPOSURE ASSESSMENT

3.1 <u>Exposure Pathways</u>

Exposure pathways are similar to those used for the Flightline (SS-004) site that is in the same vicinity as the Aerospace Ground Equipment Facility (SS-006) site. Exposure pathways utilized for this HHRE include the following:

- Ingestions of contaminated soil by an onsite resident.

- Dermal contact and absorption of contaminants from soil by an onsite resident.

- Inhalation of contaminated indoor air by an onsite resident.

- Ingestion of contaminated soil by an onsite industrial worker.

- Dermal contact and absorption of contaminants from soil by an onsite industrial worker.

- Inhalation of contaminated indoor air by an onsite resident.

- Inhalation of contaminated fugitive dust by an industrial worker.

- Ingestion of contaminated soil by an onsite construction worker.

- Dermal contact and absorption of contaminants from soil by an onsite construction worker.

- Inhalation of contaminated outdoor air by an onsite construction worker.

- Inhalation of contaminated fugitive dust by an onsite construction worker.

3.4 Exposure Concentrations

Methodologies used to calculate exposure concentrations for all exposure pathways are summarized below.

- For all pathways, the baseline exposure concentration for each CPC is either the 95th percentile upper confidence limit (UCL_{95}) on the arithmetic mean or the maximum concentration, whichever is less. (In calculating in the UCL_{95} one half the Contract Required Detection Limit (CRDL) was used for non-detects).

- For the ingestion pathways, the baseline exposure concentration for each CPC was used.

- For the dermal absorption pathways, the baseline exposure concentration was multiplied by chemical-specific Dermal Absorption Factor (ABS) to obtain an absorbed does for each CPC,

- For the indoor air inhalation pathways, the baseline exposure concentrations were used in a model that estimates exposure concentrations resulting from vapors penetrating through cracks in building foundations. The model is based on standard guidance (ASTM 1993).

- For the inhalation of fugitive dust pathways, the baseline concentrations were used with a standard USEPA model to estimate contaminant dust concentrations (See Attachment A-4).

- For the outdoor air inhalation pathways, the baseline concentrations were also modeled using USEPA and NYSDEC guidance (See Attachment A-5).

3.5 Exposure Parameters

Equations utilized to calculate the chemical intake resulting from exposure to contaminated soil were obtained from USEPA guidance (USEPA 1989a, 1989b and 1991). Equation parameters that express the frequency, duration, and magnitude of exposure were also generally obtained from USEPA guidance. Parameters used were default values unless otherwise noted, as discussed below. The equations and parameters are presented on the tables included in this appendix.

Significant exposure parameters not obtained from standard USEPA guidance or parameters that needed derivation (not default values) include the following:

- Dermal Absorption Factors: These factors were obtained from the USEPA's Region 2 Health Risk Assessment Group.

- Absorption Efficiency: These values were obtained from the USEPA's Region 2 Health Risk Assessment Group.

- Skin Surface Area: The skin surface area for industrial workers is the sum of the surface area of the hands and arms. The reported value for a male adult is 3,120 cm^2. The value used for child residents is 3,520 cm^2 based on the 50th percentile values of surface area for arms, hands, and legs (USEPA 2002).

- Inhalation Rate: The inhalation rate for a construction worker was developed from USEPA guidance (USEPA 2002). It is assume that the worker would spend 50% of the time at heavy activity and 50% of the time at moderate activity. A value of $20m^3$/day was used.

- Exposure Duration: The exposure duration for residents (30 years) is divided into two periods represented by six years of exposure for a child (6 to 12) and 24 years of exposure for an adult. These are USEPA's default values for the residential scenario, and are considered conservative. The exposure duration for the construction worker is 3 months since construction would be expected to be completed in this time and is based on professional judgment.

4.0 TOXICITY ASSESSMENT

Toxicity data used in this HHRE were obtained from USEPA's Integrated Risk Information System (IRIS) and the Health Effects Assessment Tables (HEAST) via computer linkage with the toxicity database Smarttox.

For the dermal exposure route, toxicity values for cancer and noncancer effects were adjusted by using absorption efficiencies. These absorption efficiencies convert toxicity values used for the oral route to toxicity values appropriate for the dermal route. Toxicity data is presented in the tables included in this appendix.

5.0 RISK CHARACTERIZATION

Health risk is a function of exposure (Section 3.0) and chemical toxicity (Section 4.0). Risks are quantified for both carcinogenic (cancer causing) and noncarcinogenic (noncancer causing) health effects. Uncertainty analysis for calculating the risk from the detected chemicals is presented in Attachment A-3. Risks are summarized in Table A-2.

Cancer risks are calculated by multiplying the exposure dose by the cancer slope factor (cancer toxicity value). According to USEPA guidance, for remediation, acceptable exposure levels for know or suspected carcinogens are concentration levels that produce a cancer risk between $1x10^{-6}$ and $1x10^{-4}$.

Noncancer risks are evaluated by calculating a "hazard index." The hazard index is the sum of hazard quotients. A hazard quotient for each CPC is obtained of dividing the exposure dose (intake) by the reference dose (noncancer toxicity value). According to USEPA guidance, potential noncancer health impacts are possible if the hazard index exceeds 1.

As shown on Table A-2, the cancer risk for a resident is within the acceptable cancer risk range; whereas, the cancer risks for industrial and construction workers are below the acceptable range. Hazard indicies for all receptors are below the level of concern. Based on these values, site remediation does not appear to be required, and unrestricted site reuse should be considered.

6.0 REFERENCES

American Society for Testing and Materials (ASTM) 1993. Standard Guide for Risk Based Corrective Action at Petroleum Release Sites, Philadelphia, PA.

United States Environmental Protection Agency (USEPA). 1989a. *Risk Assessment Guidance for Superfund, Vol. I: Human Health Evaluation Manual (Part 3), Interim Final*, EPA/540/1-89/002. Cincinnati, OH: USEPA.

_____1989b. *Exposure Factors Handbook*, EPA/600/9-89/043. Cincinnati, OH: USEPA.

_____1991. *Standard Default Exposure Factors, Human Health Evaluation Manual, Supplemental Guidance*. OSWER Directive 9285.6-03. Cincinnati, OH: USEPA.

_____2002. Exposure Factors Handbook, EPA/600/P-95/00Fa.

_____2004. Integrated Risk Information System (IRIS). Accessed through Smarttox database.

_____ 2004. Health Effects Assessment Summary Tables. Accessed through Smarttox database.

TABLE A-2
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
RISK SUMMARY

Exposure Pathway	Resident [1]		Industrial Worker		Construction Worker	
	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index
Ingestion of Soil	4E-07	1E-04	5E-08	6E-06	5E-09	3E-05
Dermal Contact With Soil	2E-06	3E-04	4E-07	4E-05	1E-08	5E-05
Inhalation of Contaminated Air	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
Inhalation of Fugitive Dust	NA	NA	Note 2	Note 2	Note 2	Note 2
TOTAL ALL PATHWAYS	2E-06	4E-04	5E-07	5E-05	2E-08	8E-05

NA = Not Applicable

Notes:

1. The risk value for residents are combined values for child and adult residents.

2. There are no inhalation toxicity values available for the CPCs for this site. Therefore, cancer risks and hazard indicies could not be calculated.

TABLE 1
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
EXPOSURE CONCENTRATION OF SOIL CHEMICALS

Parameter	Units	Maximum Concentration	Location of Maximum Detection	UCL95	Distribution	Background 95% UTL (metals)	Site Detections Exceeding Background 95% UTL (metals)	Wilkoxon Rank Sum Test Chemical of Potential Concern (yes/no, metals)	Exposure Concentration
Acetone	UG/KG	17	BS-06-002-06	7.04	Log				7.04
Acenaphthylene	UG/KG	1	SS-06-003-02	1347	Log				1
Benzo(a)anthracene	UG/KG	35	SS-06-008-02	258.1	Log				35.00
Benzo(a) pyrene	UG/KG	41	SS-06-008-02	146.7	Normal				41.00
Benzo(b)fluoranthene	UG/KG	45	SS-06-008-02	147.3	Normal				45.00
Benzo(g,h,i)perylene	UG/KG	20	SS-06-006-02	342	Log				20.00
Benzo(k)fluoranthene	UG/KG	42	SS-06-008-02	146.8	Normal				42.00
Benzoic acid	UG/KG	88	SS-06-008-02	256.5	Log				88
bis(2-Ethylhexyl) phthalate	UG/KG	99	SS-06-006-02	132.7	Normal				99.00
Carbazole	UG/KG	25	SS-06-006-02	476.8	Log				25
Chrysene	UG/KG	42	SS-06-006-02	147	Normal				42.00
Di-n-octylphthalate	UG/KG	6.5	BS-06-002-06	385.9	Log				6.50
Fluoranthene	UG/KG	69	SS-06-006-02	130	Normal				69
Indeno(1,2,3-cd) pyrene	UG/KG	24	SS-06-006-02	329.3	Log				24.0
Phenanthrene	UG/KG	60	SS-06-008-02	147.1	Normal				60.0
Pyrene	UG/KG	67	SS-06-008-02	129	Normal				67.00
4,4'-DDD	UG/KG	0.71	SS-06-005-02	12.56	Log				0.7
Aluminum	MG/KG	4274	SS-06-004-02	2890	Normal	8510	No		2890.0
Arsenic	MG/KG	0.84	SS-06-003-02	2.48	Log	3.44	No		0.8
Barium	MG/KG	10.4	SS-06-003-02	23.79	Log	101	No		10.4
Cadmium	MG/KG	0.58	SS-06-003-02	0.517	Log	1.3	No		0.5

TABLE 1
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
EXPOSURE CONCENTRATION OF SOIL CHEMICALS

Calcium	MG/KG	10300	BS-06-001-02	3379	Log	30200	No		3379
Chromium	MG/KG	11.75	SS-06-005-02	5.71	Log	19.5	No		5.7
Cobalt	MG/KG	1.5	SS-06-003-02	6.47	Log	9.2	No		1.5
Copper	MG/KG	5	SS-06-003-02	3.38	Log	44.1	No		3.4
Iron	MG/KG	23500	SS-06-004-02	7886	Log	36700	No		7886.0
Lead	MG/KG	29	SS-06-004-02	163.8	Log	79.4	No		29
Magnesium	MG/KG	1122	SS-06-004-02	803.9	Normal	3340	No		803.9
Manganese	MG/KG	160	SS-06-004-02	84.13	Log	474	No		84.1
Nickel	MG/KG	7	SS-06-001-02	4.63	Log	12.6	No		4.63
Potassium	MG/KG	254	BS-06-002-06	562.4	Log	929	No		254.0
Sodium	MG/KG	28.9	SS-06-003-02	1969	Log	520	No		28.9
Vanadium	MG/KG	36	SS-06-004-02	14.43	Log	90.2	No		14.4
Zinc	MG/KG	213	SS-06-002-02	58.09	Log	63.4	Yes	No	58.1

TABLE 2
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOILS
Zinc

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
BS-06-001-02	11/10/92	--	Onsite	**12.00**	13	13.5
BS-06-001-04	11/10/92	--	Onsite	**9.00**	5	5
BS-06-002-02	11/16/92	--	Onsite	**213.00**	42	42
BS-06-002-04	11/16/92	--	Onsite	**16.00**	18	18.5
BS-06-002-06	11/16/92	--	Onsite	**5.65**	4	4
SS-06-001-02	11/02/92	--	Onsite	**21.00**	22	22
SS-06-002-02	11/02/92	--	Onsite	**5.00**	3	3
SS-06-003-02	11/02/92	--	Onsite	**22.00**	23	23
SS-06-004-04	11/02/92	--	Onsite	**37.00**	33	33
SS-06-005-02	11/02/92	--	Onsite	**30.25**	29	29
SS-06-006-02	11/02/92	--	Onsite	**10.50**	7	7
SS-06-007-02	11/02/92	--	Onsite	**10.00**	6	6
SS-06-008-02	11/02/92	--	Onsite	**12.00**	14	13.5
SS-10-008	09/24/93	0-0.5	Background	**48.70**	37	37.5
SS-10-008	09/24/93	2.5-3	Background	**0.01**	1	1
SS-10-008	10/26/94	--	Background	**48.70**	38	37.5
SS-10-009	09/24/93	0-0.5	Background	**11.40**	10	10.5
SS-10-009	09/24/93	2.5-3	Background	**0.01**	2	2
SS-10-009	10/26/93	--	Background	**11.40**	11	10.5
SS-13-009	09/21/93	0-0.5	Background	**43.80**	36	36
SS-BKD-01	10/26/94	--	Background	**17.00**	20	20
SS-BKD-02	10/26/94	--	Background	**56.20**	40	40
SS-BKD-03	10/26/94	--	Background	**11.80**	12	12
SS-BKD-04	10/26/94	--	Background	**27.80**	28	28
SS-BKD-05	10/26/94	--	Background	**30.60**	30	30
SS-BKD-06	10/26/94	--	Background	**64.40**	41	41
SS-BKD-07	10/26/94	--	Background	**23.00**	24	24
SS-BKD-08	10/26/94	--	Background	**14.50**	17	17
SS-BKD-09	10/26/94	--	Background	**39.10**	34	34
SS-BKD-10	10/26/94	--	Background	**25.40**	25	25
SS-BKD-11	10/26/94	--	Background	**33.00**	31	31

TABLE 2
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOILS
Zinc

LOCID	LOG DATE	DEPTH INTERVAL (ft)	TYPE	CONCENTRATION (MG/KG)	RANK	RANK (Ties)
SS-BKD-12	10/26/94	--	Background	**16.00**	19	18.5
SS-BKD-13	10/26/94	--	Background	**11.10**	9	9
SS-BKD-14	10/26/94	--	Background	**12.30**	15	15.5
SS-BKD-15	10/26/94	--	Background	**25.90**	27	27
SS-BKD-16	10/26/94	--	Background	**35.55**	32	32
SS-BKD-17	10/26/94	--	Background	**53.70**	39	39
SS-BKD-18	10/26/94	--	Background	**42.50**	35	35
SS-BKD-19	10/26/94	--	Background	**11.00**	8	8
SS-BKD-20	10/26/94	--	Background	**25.50**	26	26
SS-BKD-21	10/26/94	--	Background	**17.70**	21	21
SS-BKD-22	10/26/94	--	Background	**12.30**	16	15.5

Detected Concentrations are Shown in Bold.

TABLE 2
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOILS
Zinc

Compliance Data (n)	13
Background Data (n)	29
Mean Onsite Data	31.0308
Mean Background Data	26.5646
Standard Deviation Onsite Data	55.4921
Standard Deviation Background Data	17.2103
Sum of Sample Ranks Onsite Date	219.5000
Sum of Sample Ranks Background Data	683.5000
Wilcoxon Statistic W	128.5000
Expected Value E(W)	188.5
Standard Deviation SD(W)	36.7548
Standard Deviation (Ties) SD^(W)	36.7474
Approximate Z-score Z	-1.6464
Significance Level A	0.05
ZA	1.6449
Potential Concern	**NO**

Detected Concentrations are Shown in Bold.

TABLE 3
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
TOXICITY VALUES: CARCINOGENIC EFFECTS

Compound	USEPA Weight-of-Evidence Classification	Slope Factor (mg/kg/day)^-1		Basis for Carcinogenicity Classification
		Inhalation	Oral	
Benzo(a) anthracene	B2 (1)	NV(1)	NV(1)	No human data from animal bioassays. B(a)A produced tumors in mice exposed by gavage, i p., subcutaneous, or intramuscular injection & topical application. B(a)A produced mutations in bacteria and mammalian cells, & transformed mammalian cells ...
Benzo(a)pyrene	B2 (1)	NV(1)	7.3 (1)	Human data specifically linking BAP to a carcinogenic effect are lacking. There are, however, multiple animal studies in many species demonstrating BAP to be carcinogenic following administration by numerous routes. BAP has produced positive...
Benzo(b)fluoranthene	B2 (1)	NV(1)	NV(1)	No human and sufficient data from animal bioassays. B(b)F produced tumors in mice after lung implantation, i.p. or subcutaneous injection and skin painting.
Benzo(k) fluoranthene	B2 (1)	NV(1)	NV(1)	No human data & sufficient data from animal bioassays. B(k)F produced tumors after lung implantation in mice and when administered with a promoting agent in skin-painting studies. Equivocal results have been found in a lung adenoma assay in mice.
bis(2-Ethylhexyl)phthalate	B2 (1)	NV(1)	0.014 (1)	Orally administered DEHP produced significant dose-related increases in liver tumor responses in rats and mice of both sexes.
Carbazole	B2 (1)	NV(1)	0.02 (1)	--
Chrysene	B2 (1)	NV(1)	NV(1)	No human data and sufficient data from animal bioassays. Produced carcinomas and malignant lymphoma in mice after intraperitoneal injection and skin carcinomas in mice following dermal exposure. Produced chromosomal abnormalities in hamster....
Indeno(1,2,3-cd) pyrene	B2 (1)	NV(1)	NV(1)	No human data and sufficient data from animal bioassays. Produced tumors in mice following lung implants, subcutaneous injection and dermal exposure. Tested positive in bacterial gene mutation assays.
4,4'-DDD	B2 (1)	NV(1)	0.24 (1)	Increased incidence of lung tumors in male and female mice, liver tumors in male mice and thyroid tumors in male rats. DDD is structurally similar to, and is a known metabolite of DDT, a probable human carcinogen.

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

NV - No Value Available

USEPA Weight-of-Evidence Classification

A - Human Carcinogen
Bl or B2 - Probable Human Carcinogen
C - Possible Human Carcinogen

TABLE 4
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
TOXICITY VALUES: POTENTIAL NONCARCINOGENIC EFFECTS

Compound	Reference Dose (mg/kg-day)				Critical Effects			
	Inhalation		Oral		Inhalation		Oral	
	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic
Acetone	NV (1)	NV (1)	0.1 (1)	0.1 (1)	---	---	Increased liver and kidney weights and nephrotoxicity	Liver - increased weight; Kidney - increased weight; Kidney - Nephrotoxicity
Acenaphthylene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Benzo(a) anthracene	NV(1)	NV(1)	NV (1)	NV (1)	---	---	--	--
Benzo(a)pyrene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Benzo(b) fluoranthene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Benzo(g,h,i) perylene	NV (1)	NV (1)	0.03 (4)	0.3 (4)	---	---	--	--
Benzo(k)fiuoranthene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--
Benzoic acid	NV (1)	NV (1)	4.0 (1)	4.0 (1)	---	---	No adverse effects observed	None observed
bis(2-Ethylhexyl)phthalate	NV (1)	NV (1)	0.02 (1)	0.02 (3)	---	---	Increased relative liver weight	--
Carbazole	NV (1)	NV (1)	NV (1)	NV (1)	---	---	---	---
Chrysene	NV (1)	NV (1)	NV (1)	NV (1)	---	---	---	---

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

NV - No Values Available
NOEL - No Observed Effects Level

TABLE 4
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
TOXICITY VALUES: POTENTIAL NONCARCINOGENIC EFFECTS

Compound	Reference Dose (mg/kg-day)				Critical Effects			
	Inhalation		Oral		Inhalation		Oral	
	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic	Chronic	Subchronic
Di-n-octylphthalate	NV (1)	NV (1)	0.02 (1)	0.02 (1)	---	---	Kidney - increased weight; Liver - increased weight; Liver - increased SGOT activity; Liver- increase SGPT activity	Kidney - increased weight; Liver- increased weight; Liver - increased SGOT activity; Liver- increase SGPT activity
Fluoranthene	NV (1)	NV (1)	0.04 (1)	0.4 (1)	---	---	Nephropathy, increased liver weights, hematological alterations and clinical effects	Kidney - Nephropathy; Liver- Weight change; Blood - Hematological changes
Indeno(1,2,3-cd)pyrene	NV(1)	NV(1)	NV (1)	NV (1)	---	---	--	--
Phenanthrene	NV (1)	NV (1)	0.03 (4)	0.3 (4)	---	---	--	--
Pyrene	NV (1)	NV (1)	0.03 (1)	0.3 91)	---	---	Kidney effects (renal tubular pathology, decreased kidney weights)	Kidney - Effects
4,4'-DDD	NV (1)	NV (1)	NV (1)	NV (1)	---	---	--	--

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

NV - No Values Available
NOEL - No Observed Effects Level

TABLE 5
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INGESTION OF SOIL - CARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Oral Slope Factor (mg/kg-day)^-1	Cancer Risk (unitless)
Benzo(a) anthracene	0.035	1.64E-08	NV (1)	NV
Benzo(a) pyrene	0.041	1.93E-08	7.3 (1)	1.41E-07
Benzo(b) fiuoranthene	0.045	2.11E-08	NV (1)	NV
Benzo(k) fluoranthene	0.042	1.97E-08	NV (1)	NV
bis(2-Ethylhexyl) phthalate	0.099	4.65E-08	0.014 (1)	6.51E-10
Carbazole	0.025	1.17E-08	0.02 (1)	2.35E-10
Chrysene	0.042	1.97E-08	NV (1)	NV
Indeno(1,2,3-cd) pyrene	0.024	1.13E-08	NV (1)	NV
4,4'-DDD	0.00071	3.33E-10	0.24 (1)	8.00E-11
	TOTAL CANCER RISK			**1E-07**

Intake (mg/kg/day) $= \frac{CS \times IR \times CF \times Fl \times EF \times ED}{BW \times AT}$

Cancer Risk = Intake x Slope Factor

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	**IR**	**mg soil/day**	**100**
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Fraction Ingested from Contaminated Source	**FI**	**unitless**	**1**
Exposure Frequency	**EF**	**days/year**	**350**
Exposure Duration	**ED**	**years**	**24**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**25550**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 6
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
Acetone	0.00704	9.64E-09	0.1 (1)	9.64E-08
Acenaphthylene	0.001	1.37E-09	NV (1)	NV
Benzo(a) anthracene	0.035	4.79E-08	NV (1)	NV
Benzo(a) pyrene	0.041	5.62E-08	NV (1)	NV
Benzo(b) fluoranthene	0.045	6.16E-08	NV (1)	NV
Benzo(g,h,i)perylene	0.02	2.74E-08	0.03 (4)	9.13E-07
Benzo(k) fluoranthene	0.042	5.75E-08	NV (1)	NV
Benzoic acid	0.088	1.21E-07	4 (1)	3.01E-08
bis(2-Ethylhexyl) phthalate	0.099	1.36E-07	0.02 (1)	6.78E-06
Carbazole	0.025	3.42E-08	NV (1)	NV
Chrysene	0.042	5.75E-08	NV (1)	NV
Di-n-octylphthalate	0.0065	8.90E-09	0.02 (1)	4.45E-07
Fluoranthene	0.069	9.45E-08	0.04 (1)	2.36E-06
Indeno(1,2,3-cd) pyrene	0.024	3.29E-08	NV (1)	NV
Phenanthrene	0.06	8.22E-08	0.03 (1)	2.74E-06
Pyrene	0.067	9.18E-08	0.03 (1)	3.06E-06
4,4'-DDD	0.00071	9.73E-10	NV (1)	NV
		TOTAL HAZARD INDEX		**2E-05**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Intake}}{\text{Reference Dose}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	100
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source Exposure	FI	unitless	1
Frequency	EF	days/year	350
Exposure Duration	ED	years	24
Body Weight	BW	kg	70
Averaging Time	AT	days	8760

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 7
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INGESTION OF SOIL - CARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Oral Slope Factor (mg/kg-day)^-1	Cancer Risk (unitless)
Benzo(a) anthracene	0.035	3.84E-08	NV (1)	NV
Benzo(a) pyrene	0.041	4.49E-08	7.3 (1)	3.28E-07
Benzo(b) fiuoranthene	0.045	4.93E-08	NV (1)	NV
Benzo(k) fluoranthene	0.042	4.60E-08	NV (1)	NV
bis(2-Ethylhexyl) phthalate	0.099	l.08E-07	0.014 (1)	1.52E-09
Carbazole	0.025	2.74E-08	0.02 (1)	5.48-E10
Chrysene	0.042	4.60E-08	NV (1)	NV
Indeno(1,2,3-cd) pyrene	0.024	2.63E-08	NV (1)	NV
4,4'-DDD	0.00071	7.78E-10	0.24 (1)	1.87E-10
	TOTAL CANCER RISK			**1E-05**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$ **Cancer Risk = Intake x Slope Factor**

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	200
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source Exposure	FI	unitless	1
Frequency	EF	days/year	350
Exposure Duration	ED	years	6
Body Weight	BW	kg	15
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 8
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
Acetone	0.00704	9.00E-08	1 (1)	9.00E-08
Acenaphthylene	0.001	1.28E-08	NV (1)	NV
Benzo(a) anthracene	0.035	4.47E-07	NV (1)	NV
Benzo(a) pyrene	0.041	5.24E-07	NV (1)	NV
Benzo(b) fluoranthene	0.045	5.75E-07	NV (1)	NV
Benzo(g,h,i)perylene	0.02	2.56E-07	0.3 (4)	8.52E-07
Benzo(k) fluoranthene	0.042	5.37E-07	NV(1)	NV
Benzoic acid	0.088	1.13E-06	4 (1)	2.81E-07
bis(2-Ethylhexyl) phthalate	0.099	1.27E-06	0.02 (3)	6.33E-05
Carbazole	0.025	3.20E-07	NV(1)	NV
Chrysene	0.042	5.37E-07	NV(1)	NV
Di-n-octylphthalate	0.0065	8.31E-08	0.02 (1)	4.16E-06
Fluoranthene	0.069	8.82E-07	0.4 (1)	2.21E-06
Indeno(1,2,3-cd) pyrene	0.024	3.07E-07	NV(1)	NV
Phenanthrene	0.06	7.67E-07	0.3 (4)	2.56E-06
Pyrene	0.067	8.57E-07	0.3 (1)	2.86E-06
4,4'-DDD	0.00071	9.08E-09	NV (1)	NV
		TOTAL HAZARD INDEX		**8E-05**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Intake}}{\text{Reference Dose}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	**IR**	**mg soil/day**	**200**
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Fraction Ingested from Contaminated Source	**FI**	**unitless**	**1**
Exposure Frequency	**EF**	**days/year**	**350**
Exposure Duration	**ED**	**years**	**6**
Body Weight	**BW**	**kg**	**15**
Averaging Time	**AT**	**days**	**2190**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 9
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
DERMAL CONTACT WITH SOIL - CARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Oral Slope Factor (mg/kg-day)^-1	Absorption Efficiency	CANCER RISK (unitless)
Benzo(a) anthracene	0.035	0.13	1.70E-07	NV (1)	100.00%	NV
Benzo(a) pyrene	0.041	0.13	1.99E-07	7.3 (1)	100.00%	1.45E-06
Benzo(b) fiuoranthene	0.045	0.13	2.18E-07	NV (1)	100.00%	NV
Benzo(k) fluoranthene	0.042	0.13	2.04E-07	NV (1)	100.00%	NV
bis(2-Ethylhexyl) phthalate	0.099	0.1	3.70E-07	0.014 (1)	100.00%	5.17E-09
Carbazole	0.025	0.1	9.33E-08	0.02 (1)	100.00%	1.87E-09
Chrysene	0.042	0.13	2.04E-07	NV (1)	100.00%	NV
Indeno(1,2,3-cd) pyrene	0.024	0.13	1.16E-07	NV (1)	100.00%	NV
4,4'-DDD	0.00071	0.1	2.65E-09	0.24 (1)	100.00%	6.36E-10
			TOTAL CANCER RISK			**1E-06**

Absorbed Dose (mg/kg/day) $= \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Cancer Risk = Absorbed Dose x $\frac{\text{Slope Factor}}{\text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**7948**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**350**
Exposure Duration	**ED**	**years**	**24**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**25550**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 10
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (ADULT)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Chronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
Acetone	0.00704	NV	NV	1 (1)	100.00%	NV
Acenaphthylene	0.001	0.13	1.42E-08	NV (1)	100.00%	NV
Benzo(a) anthracene	0.035	0.13	4.95E-07	NV (1)	100.00%	NV
Benzo(a) pyrene	0.041	0.13	5.80E-07	NV (1)	100.00%	NV
Benzo(b) fluoranthene	0.045	0.13	6.37 E-07	NV (1)	100.00%	NV
Benzo(g,h,i)perylene	0.02	0.13	2.83E-07	0.3 (4)	100.00%	9.44E-06
Benzo(k) fluoranthene	0.042	0.13	5.94E-07	NV(1)	100.00%	NV
Benzoic acid	0.088	0.1	9.58E-07	4 (1)	100.00%	2.40E-07
bis(2-Ethylhexyl) phthalate	0.099	0.1	1.08E-06	0.02 (3)	100.00%	5.39E-05
Carbazole	0.025	0.1	2.72E-07	NV(1)	100.00%	NV
Chrysene	0.042	0.13	5.94E-07	NV(1)	100.00%	NV
Di-n-octylphthalate	0.0065	0.1	7.08E-08	0.02 (1)	100.00%	3.54E-06
Fluoranthene	0.069	0.13	9.77E-07	0.4 (1)	100.00%	2.44E-05
Indeno(1,2,3-cd) pyrene	0.024	0.13	3.40E-07	NV(1)	100.00%	NV
Phenanthrene	0.06	0.13	8.49E-07	0.03 (4)	100.00%	2.83E-05
Pyrene	0.067	0.13	9.48E-07	0.03 (1)	100.00%	3.16E-05
4,4'-DDD	0.00071	0.1	7.73E-09	NV (1)	100.00%	NV
				TOTAL HAZARD INDEX		**2E-04**

Absorbed Dose (mg/kg/day) $= \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Hazard Quotient $= \frac{\text{Absorbed Dose}}{\text{Reference Dose} \times \text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**7948**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**350**
Exposure Duration	**ED**	**years**	**24**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**8760**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 11
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
DERMAL CONTACT WITH SOIL - CARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Oral Slope Factor (mg/kg-day)^-1	Absorption Efficiency	CANCER RISK (unitless)
Benzo(a) anthracene	0.035	0.13	8 78E-08	NV (1)	100.00%	NV
Benzo(a) pyrene	0.041	0.13	1.03E-07	7.3 (1)	100.00%	7.50E-07
Benzo(b) fiuoranthene	0.045	0.13	1.13E-07	NV (1)	100.00%	NV
Benzo(k) fluoranthene	0.042	0.13	1.05E-07	NV (1)	100.00%	NV
bis(2-Ethylhexyl) phthalate	0.099	0.1	1.91E07	0.014 (1)	100.00%	2.67E-09
Carbazole	0.025	0.1	4.82E-08	0.02 (1)	100.00%	9.64E-10
Chrysene	0.042	0.13	1.05E-07	NV (1)	100.00%	NV
Indeno(1,2,3-cd) pyrene	0.024	0.13	6.02E-08	NV (1)	100.00%	NV
4,4'-DDD	0.00071	0.1	1.37E-09	0.24 (1)	100.00%	3.29E-10
			TOTAL CANCER RISK			**8E-07**

Absorbed Dose (mg/kg/day) $= \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Cancer Risk = Absorbed Dose x $\frac{\text{Slope Factor}}{\text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**3250**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**350**
Exposure Duration	**ED**	**years**	**6**
Body Weight	**BW**	**kg**	**15**
Averaging Time	**AT**	**days**	**25550**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 12
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, RESIDENTIAL (CHILD)

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Chronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
Acetone	0.00704	NV	NV	1 (1)	100.00%	NV
Acenaphthylene	0.001	0.13		NV (1)	100.00%	NV
Benzo(a) anthracene	0.035	0.13		NV (1)	100.00%	NV
Benzo(a) pyrene	0.041	0.13		NV (1)	100.00%	NV
Benzo(b) fluoranthene	0.045	0.13		NV (1)	100.00%	NV
Benzo(g,h,i)perylene	0.02	0.13		0.3 (4)	100.00%	1.95E-06
Benzo(k) fluoranthene	0.042	0.13		NV(1)	100.00%	NV
Benzoic acid	0.088	0.1		4 (1)	100.00%	4.95E-07
bis(2-Ethylhexyl) phthalate	0.099	0.1		0.02 (3)	100.00%	1.11E-04
Carbazole	0.025	0.1		NV(1)	100.00%	NV
Chrysene	0.042	0.13		NV(1)	100.00%	NV
Di-n-octylphthalate	0.0065	0.1		0.02 (1)	100.00%	7.31E-06
Fluoranthene	0.069	0.13		0.4 (1)	100.00%	5.05E-06
Indeno(1,2,3-cd) pyrene	0.024	0.13		NV(1)	100.00%	NV
Phenanthrene	0.06	0.13		0.03 (4)	100.00%	5.85E-05
Pyrene	0.067	0.13		0.03 (1)	100.00%	6.53E-06
4,4'-DDD	0.00071	0.1		NV (1)	100.00%	NV
				TOTAL HAZARD INDEX		**1E-04**

Absorbed Dose (mg/kg/day) $= \frac{\text{CS x CF x SA x AF x ABS x EF x ED}}{\text{BW x AT}}$

Hazard Quotient $= \frac{\text{Absorbed Dose}}{\text{Reference Dose x Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	CF	kg/mg	0.000001
Skin Surface Area Available for Contact	SA	cm^2/event	3520
Soil to Skin Adherence Factor	AF	mg/cm^2	1
Exposure Frequency	EF	events/year	350
Exposure Duration	ED	years	6
Body Weight	BW	kg	15
Averaging Time	AT	days	2190

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 13
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - CARCINOGENIC EVALUATION
FUTURE USE - RESIDENTIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor Vfsesp mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) mg/m³ air	Intake (mg/kg-day) Resident		Inhalation Slope Factor (mg/kg-day)⁻¹	Cancer Risk (Unitless) Resident	
				Adult	Child		Adult	Child
Benzo(a)anthracene	0.03500	4.70E-11	1.65E-12	1.16E-13	1.35E-13	NV	NV	NV
Benzo(a)pyrene	0.04100	6.39E-12	2.62E-13	1.85E-14	2.15E-14	NV	NV	NV
Benzo(b)fluoranthene	0.04500	2.12E-11	9.53E-13	6.71E-14	7.83E-14	NV	NV	NV
Benzo(k)fluoranthene	0.04200	2.36E-12	9.91E-14	6.98E-15	8.14E-15	NV	NV	NV
bis(2-Ethylhexyl) phthalate	0.09900	6.87E-14	6.80E-15	4.79E-16	5.59E-16	NV	NV	NV
Carbazole	0.02500	4.02E-10	1.00E-11	7.08E-13	8.26E-13	NV	NV	NV
Chrysene	0.04200	5.87E-10	2.47E-11	1.74E-12	2.03E-12	NV	NV	NV
Indeno(1,2,3-cd)pyrene	0.02400	1.18E-12	2.82E-14	1.99E-15	2.32E-15	NV	NV	NV
4,4'-DDD	0.00070	1.55E-10	1.09E-13	7.66E-15	8.93E-15	NV	NV	NV
				TOTAL CANCER RISK			**0E+00**	**0E+00**

PARAMETER	SYMBOL	UNITS	RESIDENT	
			ADULT	CHILD
Inhalation rate	IR	m³/day	15	15
Exposure frequency	EF	days/year	350	350
Exposure duration	ED	years	24	6
Body weight	BW	kg	70	15
Averaging time	AT	days	25550	25550

NOTES:
NV - No Value
NA - Not Available

EQUATIONS.
Intake = (CA x IR x EF x ED) /(BW x AT)
Cancer Risk = (Intake) x (Slope Factor)
CA = VF sesp (Table 15) x CS

TABLE 14
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - RESIDENTIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor Vfsesp mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) mg/m³ air	Intake (mg/kg-day)		Inhalation Reference Dose (mg/kg-day)		Cancer Risk (Unitless)	
				Resident		Chronic	Subchronic	Resident	
				Adult	Child			Adult	Child
Acetone	0.00704	6.29E-05	4.43E-07	9.10E-08	4.25E-07	NV	NV	NV	NV
Acenanhthylene	0.00100	3.40E-06	3.40E-09	6.98E-10	3.26E-09	NV	NV	NV	NV
Benzo(a)anthracene	0.03500	4.70E-11	1.65E-12	3.38E-13	1.58E-12	NV	NV	NV	NV
Benzo(a)pyrene	0.04100	6.39E-12	2.62E-13	5.38E-14	2.51E-13	NV	NV	NV	NV
Benzo(b)fluoranthene	0.04500	2.12E-11	9.53E-13	1.96E-13	9.14E-13	NV	NV	NV	NV
Benzo(g,h,i)perlene	0.02000	4.95E-13	9.91E-15	2.04E-15	9.50E-15	NV	NV	NV	NV
Benzo(k)fluoranthene	0.04200	2.36E-12	9.91E-14	2.04E-14	9.50E-14	NV	NV	NV	NV
Benzoic acid	0.08800	1.70E-04	1.50E-05	3.08E-06	1.44E-05	NV	NV	NV	NV
bis(2-Ethylhexyl)phthalate	0.09900	6.87E-14	6.80E-15	1.40E-15	6.52E-15	NV	NV	NV	NV
Carbazole	0.02500	4.02E-10	1.00E-11	2.06E-12	9.64E-12	NV	NV	NV	NV
Chrysene	0.04200	5.87E-10	2.47E-11	5.07E-12	2.36E-11	NV	NV	NV	NV
Di-n-octylphthalate	0.00650	6.59E-16	4.28E-18	8.80E-19	4.10E-18	NV	NV	NV	NV
Fluoranthene	0.06900	4.64E-10	3.20E-11	6.58E-12	3.07E-11	NV	NV	NV	NV
Indeno(1,2,3-cd)pyrene	0.02400	1.18E-12	2.82E-14	5.80E-15	2.71E-14	NV	NV	NV	NV
Phenanthrene	0.06000	3.73E-06	2.24E-07	4.60E-08	2.15E-07	NV	NV	NV	NV
Pyrene	0.06700	2.97E-10	1.99E-11	4.09E-12	1.91E-11	NV	NV	NV	NV
4,4'-DDD	0.00070	1.55E-10	1.09E-13	2.23E-14	1.04E-13	NV	NV	NV	NV
					TOTAL HAZARD INDEX			**0E+00**	**0E+00**

PARAMETER	SYMBOL	UNITS	RESIDENT	
			ADULT	CHILD
Inhalation rate	IR	m^3/day	15	15
Exposure frequency	EF	days/year	350	350
Exposure duration	ED	years	24	6
Body weight	BW	kg	70	15
Averaging time	AT	days	8760	2190

NOTES:

NV - No Value

NA - Not Available

EQUATIONS:

Intake = (CA x IR x EF x ED) /(BW x AT)

Hazard Quotient = (Intake) /(Reference Dose)

CA = VF sesp (Table15) x CS

TABLE 15
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
CALCULATION OF VOLATILIZATION FACTOR TO INDOOR AIR FROM SOIL DETECTIONS

Parameter	Contaminant-Specific Properties						Effective Diffusion Coefficient in Soil	Effective Diffusion Coefficient through Foundation Cracks	Volatilization Factor	
	Diffusion Coefficient in Air	Diffusion Coefficient in Water	Henry's Law Constant		Carbon-Water Sorption Coefficient	Soil-Water Sorption Coefficient				
	D_{air}	D_{wat}	H	H'	k_{oc}	K_d	$D_{eff,s}$	$D_{eff,crack}$	VF_{sesp}	VF_{samb}
	cm² / s	cm² / s	atm-m³ / mol	cm³ water / cm³ air	cm³ water / g carbon	cm³ water / g soil	cm² / s	cm² / s	mg/m³ air / mg/kg soil	mg/m³ air / mg/kg soil
Acetone	1.24E-01	1.14E-05 F	3.88E-05 F	1.59E-03	1 F	0.00575	9.72E-03	9.72E-03	6.29E-05	6.71E-05
Acenaphthylene	8.00E-02	8.00E-06	1.48E-03	6.05E-02	3467	34.67	6.24E-03	6.24E-03	3.40E-06	3.62E-06
Benzo(a)anthracene	5.10E-02	9.00E-06	3.35E-06	1.37E-04	398000	3980	4.37E-03	4.37E-03	4.70E-11	5.01E-11
Benzo(a)pyrene	4.30E-02	9.00E-06	1.13E-06	4.62E-05	1020000	10200	4.51E-03	4.51E-03	6.39E-12	6.82E-12
Benzo(b)fluoranthene	2.26E-02	5.56E-06	1.11E-05	4.54E-04	1230000	12300	1.84E-03	1.84E-03	2.12E-11	2.26E-11
Benzo(g,h,i)perylene	8.00E-02	8.00E-06	5.34E-08	2.18E-06	3860000	38600	2.80E-02	2.80E-02	4.95E-13	5.28E-13
Benzo(k)fluoranthene	2.26E-02	5.56E-06	8.29E-07	3.39E-05	1230000	12300	2.74E-03	2.74E-03	2.36E-12	2.52E-12
Benzoic acid	5.36E-02	7.97E-06	7.00E-04	2.86E-02	15	0.145	4.18E-03	4.18E-03	1.70E-04	1.82E-04
bis(2-Ethylhexyl)phthalate	3.51E-02	3.66E-06	1.02E-07	4.17E-06	15100000 F	151000	7.95E-03	7.95E-03	6.87E-14	7.32E-14
Carbazole	3.90E-02	7.03E-06	1.53E-08	6.26E-07	3390	33.9	6.98E-02	6.98E-02	4.02E-10	4.29E-10
Chrysene	2.48E-02	6.21E-06	9.40E-05	3.84E-03	398000 F	3980	1.94E-03	1.94E-03	5.87E-10	6.26E-10
Di-n-octylphthalate	0.0151 B	3.90E-06 F	1.41E-12 F	5.77E-11	977237221 F	9772372	4.02E+02	4.02E+02	6.59E-16	6.97E-16
Fluoranthene	3.02E-02	6.35E-06	1.61E-05	6.58E-04	107000	1070	2.41E-03	2.41E-03	4.64E-10	4.95E-10
Indeno(1,2,3-cd)pyrene	1.90E-02	5.66E-06	1.60E-06	6.54E-05	3470000	34700	2.00E-03	2.00E-03	1.18E-12	1.26E-12
Phenanthrene	8.00E-02	8.00E-06	6.61E-03	2.70E-01	14125	141.25	6.24E-03	6.24E-03	3.73E-06	3.98E-06
Pyrene	2.72E-02	7.24E-06	1.10E-05	4.50E-04	105000	1050	2.22E-03	2.22E-03	2.97E-10	3.17E-10
4,4'-DDD	1.69E-02 B	4.50E-06 F	2.16E-05 F	8.83E-04	239883 F	2398.833	1.35E-03	1.35E-03	1.55E-10	1.66E-10
Lead	-	-	-	-	-	-	NA	NA	NA	NA

SYSTEM-SPECIFIC DATA

Enclosed space volume/infiltration area ratio	L_B =	200	cm
Enclosed space air exchange rate	ER =	0.01	1/s
Volumetric air content in foundation/wall cracks	θ_{acrack} =	0.26	cm³ air/ cm³ tot. volume
Volumetric water content in foundation/wall cracks	θ_{wcrack} =	0.12	cm³ water/ cm³ tot. volume
Total soil porosity	θ_T =	0.38	cm³/ cm³ soil
Volumetric air content in vadose zone soil	θ_{as} =	0.26	cm³ air/ cm³ soil
Volumetric water content in vadose zone soil	θ_{ws} =	0.12	cm³ water/ cm³ soil
Enclosed space foundation or wall thickness	L_{crack} =	15	cm
Areal fraction of cracks in foundation/walls	η =	0.01	cm² cracks/ cm² total area
Depth to subsurface soil sources	L_S =	100	cm
Soil bulk density	ρ_s =	1.7	g soil/ cm³ soil
Fraction of organic carbon in soil	f_{oc} =	0.01	g C/ g soil

$$VF_{sesp} = \frac{H \times \rho s}{\theta ws + kd \times \rho s + H' \times \theta as} \times \frac{D_{eff,s}/L_s}{1 + \frac{D_{eff,s}/L_s}{ER \times L_B} + \frac{D_{eff,s}/L_s}{(D_{eff,crack}/L_{crack}) \times \eta}} \times 1000$$

REFERENCES

Standard Guide for Risk-Based Corrective Action at Petroleum Release Sites, American Society for Testing and Materials, E 1739 - 95

All data are from MDEQ's "Toxicological and Chemical-Physical Data for Part 201 Cleanup Criteria" August 1998, except as noted.

C - EPA. 1986. Superfund Public Health Evaluation Manual. OSWER Directive 9285.4-1. EPA 540/1-86/060

F - J.H.Montgomery. 1996. Groundwater Chemicals. CRC Lewis, Boca Raton, Florida.

B - Risk Assessment Information System *http://risk.lsd.ornl.gov/cgi-bin/tox/TOX_9801*, 3/23/01

NA Not available.

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4/1/2004

TABLE 16
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INGESTION OF SOIL - CARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Oral Slope Factor (mg/kg-day)^1	CANCER RISK (unitless)
Benzo(a) anthracene	0.035	6.12E-09	NV (1)	NV
Benzo(a) pyrene	0.041	7.16E-09	7.3 (1)	5.23E-08
Benzo(b)fluoranthene	0.045	7.86E-09	NV (1)	NV
Benzo(k) fluoranthene	0.042	7.34E-09	NV (1)	NV
bis(2-Ethylhexyl) phthalate	0.099	1.73E-08	0.014 (1)	2.42E-10
Carbazole	0.025	4.37E-09	0.02 (1)	8.74E-11
Chrysene	0.042	7.34E-09	NV (1)	NV
Indeno(1,2,3-cd) pyrene	0.024	4.19E-09	NV (1)	NV
4,4'-DDD	0.00071	1.24E-10	0.24 (1)	2.98E-11
		TOTAL CANCER RISK		**5E-08**

Intake (mg/kg/day) $= \frac{CS \times IR \times CF \times Fl \times EF \times ED}{BW \times AT}$

Cancer Risk = Intake x Slope Factor

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	200
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source Exposure	FI	unitless	1
Frequency	EF	days/year	250
Exposure Duration	ED	years	25
Body Weight	BW	kg	70
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 17
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
Acetone	0.00704	3.44E-09	1 (1)	3.44E-08
Acenaphthylene	0.001	4.89E-10	NV (1)	NV
Benzo(a) anthracene	0.035	1.71E-08	NV (1)	NV
Benzo(a) pyrene	0.041	2.01E-08	NV (1)	NV
Benzo(b) fluoranthene	0.045	2.20E-08	NV (1)	NV
Benzo(g,h,i)perylene	0.02	9.78E-09	0.3 (4)	3.26E-07
Benzo(k) fluoranthene	0.042	2.05E-08	NV(1)	NV
Benzoic acid	0.088	4.31E-08	4 (1)	1.08E-08
bis(2-Ethylhexyl) phthalate	0.099	4.84E-08	0.02 (1)	2.42E-06
Carbazole	0.025	1.22E-08	NV(1)	NV
Chrysene	0.042	2.05E-08	NV(1)	NV
Di-n-octylphthalate	0.0065	3.18E-09	0.02 (1)	1.59E-07
Fluoranthene	0.069	3.38E-08	0.04 (1)	8.44E-07
Indeno(1,2,3-cd) pyrene	0.024	1.17E-08	NV(1)	NV
Phenanthrene	0.06	2.94E-08	0.03 (4)	9.78E-07
Pyrene	0.067	3.28E-08	0.03 (1)	1.09E-06
4,4'-DDD	0.00071	3.47E-10	NV (1)	NV
		TOTAL HAZARD INDEX		**6E-06**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Intake}}{\text{Reference Dose}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	50
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source Exposure	FI	unitless	1
Frequency	EF	days/year	250
Exposure Duration	ED	years	25
Body Weight	BW	kg	70
Averaging Time	AT	days	9125

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 18
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
DERMAL CONTACT WITH SOIL - CARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Oral Slope Factor (mg/kg-day)^-1	Absorption Efficiency	CANCER RISK (unitless)
Benzo(a) anthracene	0.035	0.13	4.96E-08	NV (1)	100.00%	NV
Benzo(a) pyrene	0.041	0.13	5.81E-08	7.3 (1)	100.00%	4.24E-07
Benzo(b) fiuoranthene	0.045	0.13	6.38E-08	NV (1)	100.00%	NV
Benzo(k) fluoranthene	0.042	0.13	5.95E-08	NV (1)	100.00%	NV
bis(2-Ethylhexyl) phthalate	0.099	0.1	1.08E-07	0.014 (1)	100.00%	1.51E-09
Carbazole	0.025	0.1	2.73E-08	0.02 (1)	100.00%	5.45E-10
Chrysene	0.042	0.13	5.95E-08	NV (1)	100.00%	NV
Indeno(1,2,3-cd) pyrene	0.024	0.13	3.40E-08	NV (1)	100.00%	NV
4,4'-DDD	0.00071	0.1	7.74E-10	0.24 (1)	100.00%	1.86E-10
			TOTAL CANCER RISK			**4E-07**

Absorbed Dose (mg/kg/day) $= \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Cancer Risk = Absorbed Dose x $\frac{\text{Slope Factor}}{\text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	CF	kg/mg	0.000001
Skin Surface Area Available for Contact	SA	cm^2/event	3120
Soil to Skin Adherence Factor	AF	mg/cm^2	1
Exposure Frequency	EF	events/year	250
Exposure Duration	ED	years	25
Body Weight	BW	kg	70
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 19
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, INDUSTRIAL WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Subchronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
Acetone	0.00704	NV	NV	1 (1)	100.00%	NV
Acenaphthylene	0.001	0.13	3.97E-09	NV (1)	100.00%	NV
Benzo(a) anthracene	0.035	0.13	1.39E-07	NV (1)	100.00%	NV
Benzo(a) pyrene	0.041	0.13	1.63E-07	NV (1)	100.00%	NV
Benzo(b) fluoranthene	0.045	0.13	1.79E-07	NV (1)	100.00%	NV
Benzo(g,h,i)perylene	0.02	0.13	7.94E-08	0.03 (4)	100.00%	2.65E-06
Benzo(k) fluoranthene	0.042	0.13	1.67E-07	NV(1)	100.00%	NV
Benzoic acid	0.088	0.1	2.69E-07	4 (1)	100.00%	6.72E-08
bis(2-Ethylhexyl) phthalate	0.099	0.1	3.02E-07	0.02 (1)	100.00%	1.51E-05
Carbazole	0.025	0.1	7.63E-08	NV(1)	100.00%	NV
Chrysene	0.042	0.13	1.67E-07	NV(1)	100.00%	NV
Di-n-octylphthalate	0.0065	0.1	1.98E-08	0.02 (1)	100.00%	9.92E-07
Fluoranthene	0.069	0.13	2.74E-07	0.04 (1)	100.00%	6.85E-06
Indeno(1,2,3-cd) pyrene	0.024	0.13	9.52E-08	NV(1)	100.00%	NV
Phenanthrene	0.06	0.13	2.38E-07	0.03 (4)	100.00%	7.94E-06
Pyrene	0.067	0.13	2.66E-07	0.03 (1)	100.00%	8.86E-06
4,4'-DDD	0.00071	0.1	2.17E-09	NV (1)	100.00%	NV
				TOTAL HAZARD INDEX		**4E-05**

Absorbed Dose (mg/kg/day) $= \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Hazard Quotient $= \frac{\text{Absorbed Dose}}{\text{Reference Dose} \times \text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	**CF**	**kg/mg**	**0.000001**
Skin Surface Area Available for Contact	**SA**	**cm^2/event**	**3120**
Soil to Skin Adherence Factor	**AF**	**mg/cm^2**	**1**
Exposure Frequency	**EF**	**events/year**	**250**
Exposure Duration	**ED**	**years**	**25**
Body Weight	**BW**	**kg**	**70**
Averaging Time	**AT**	**days**	**9125**

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 20
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - CARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor VFseap mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) (mg/m³ air)	Intake (mg/kg-day) Industrial Worker	Inhalation Slope Factor (mg/kg-day)$^{-1}$	Cancer Risk (Unitless) Industrial Worker
Benzo(a)anthracene	0.03500	4.70E-11	1.65E-12	1.15E-13	NV	NV
Benzo(a)pyrene	0.04100	6.39E-12	2.62E-13	1.83E-14	NV	NV
Benzo(b)fluoranthene	0.04500	2.12E-11	9.53E-13	6.66E-14	NV	NV
Benzo(k)fluoranthene	0.04200	2.36E-12	9.91E-14	6.92E-15	NV	NV
bis(2-Ethylhexyl) phthalate	0.09900	6.87E-14	6.80E-15	4.75E-16	NV	NV
Carbazole	0.02500	4.02E-10	1.00E-11	7.02E-13	NV	NV
Chrysene	0.04200	5.87E-10	2.47E-1 1	1.72E-12	NV	NV
Indeno(1,2,3-cd)pyrene	0.02400	1.18E-12	2.82E-14	1.97E-15	NV	NV
4,4'-DDD	0.00070	1.55E-10	1.09E-13	7.59E-15	NV	NV
				TOTAL CANCER RISK		**0E+00**

PARAMETER	SYMBOL	UNITS	INDUSTRIAL WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	25
Body weight	BW	kg	70
Averaging time	AT	days	25550

NOTES:
NV - No Value
NA - Not Available

EQUATIONS.
Intake = (CA x IR x EF x ED) /(BW x AT)
Cancer Risk = (Intake) x (Slope Factor)
CA = VF sesp (Table 15) x CS

TABLE 21
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF INDOOR AIR FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Volatilization Factor VFseap mg/m³ air / mg/kg soil	Vapor Phase Concentration (CA) (mg/m³ air)	Intake (mg/kg-day) Industrial Worker	Inhalation Slope Factor (mg/kg-day)⁻¹	Cancer Risk (Unitless) Industrial Worker
Benzo(a)anthracene	0.03500	4.70E-11	1.65E-12	3.22E-13	NV	NV
Benzo(a)pyrene	0.04100	6.39E-12	2.62E-13	5.13E-14	NV	NV
Benzo(b)fluoranthene	0.04500	2.12E-11	9.53E-13	1.87E-13	NV	NV
Benzo(k)fluoranthene	0.04200	2.36E-12	9.91E-14	1.94E-14	NV	NV
bis(2-Ethylhexyl)phthalate	0.09900	6.87E-14	6.80E-15	1.33E-15	NV	NV
Carbazole	0.02500	4.02E-10	1.00E-11	1.97E-12	NV	NV
Chrysene	0.04200	5.87E-10	2.47E-1 1	4.82E-12	NV	NV
Indeno(1,2,3-cd)pyrene	0.02400	1.18E-12	2.82E-14	5.53E-15	NV	NV
4,4'-DDD	0.00070	1.55E-10	1.09E-13	2.13E-14	NV	NV
				TOTAL HAZARD INDEX		**0E+00**

PARAMETER	SYMBOL	UNITS	INDUSTRIAL WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	25
Body weight	BW	kg	70
Averaging time	AT	days	9125

NOTES:
NV - No Value
NA - Not Available

EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Hazard Quotient = (Intake) /(Reference Dose)

TABLE 22
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF FUGITIVE DUST FROM SOIL - CARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Slope Factor (mg/kg-day)$^{-1}$	Cancer Risk (unitless)
		Industrial Worker		Industrial Worker
Benzo(a)anthracene	9.10E-09	6.36E-10	NV	NV
Benzo(a)pyrene	1.07E-08	7.45E-10	NV	NV
Benzo(b)fluoranthene	1.17E-08	8.18E-10	NV	NV
Benzo(k)fluoranthene	1.09E-08	7.63E-10	NV	NV
bis(2-Ethylhexyl)phthalate	2.57E-08	1.80E-09	NV	NV
Carbazole	6.50E-09	4.54E-10	NV	NV
Chrysene	1.09E-08	7.63E-10	NV	NV
Indeno(1,2,3-cd)pyrene	6.24E-09	4.36E-10	NV	NV
4,4'-DDD	1.82E-10	1.27E-11	NV	NV
Lead	1.51E-08	1.06E-09	NV	NV
		TOTAL CANCER RISK		**0.E+00**

PARAMETER	SYMBOL	UNITS	INDUSTRIAL WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	25
Body weight	BW	kg	70
Averaging time	AT	days	25550

NOTES:

NV - No Value

EQUATIONS:

Intake = (CA x IR x EF x ED) /(BW x AT)
Cancer Risk = (Intake) x (Slope Factor)
CA is taken from Table 30

TABLE 23
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF FUGITIVE DUST FROM SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE - INDUSTRIAL WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (unitless)
		Industrial Worker		Industrial Worker
Acetone	4.66E-09	9.11E-10	NV	NV
Acenaphthylene	2.40E-07	4.70E-08	NV	NV
Anthracene	1.94E-07	3.79E-08	NV	NV
Benzo(a) anthracene	3.84E-07	7.51E-08	NV	NV
Benzo(a) pyrene	5.93E-07	1.16E-07	NV	NV
Benzo(b) fluoranthene	5.01E-07	9.80E-08	NV	NV
Benzo(g,h,i)perylene	3.49E-07	6.83E-08	NV	NV
Benzo(k) fluoranthene	4.58E-07	8.95E-08	NV	NV
Benzoic acid	6.55E-08	1.28E-08	NV	NV
bis(2-Ethylhexyl) phthalate	1.21E-07	2.37E-08	NV	NV
Carbazole	1.89E-07	3.70E-08	NV	NV
Chrysene	4.52E-07	8.85E-08	NV	NV
Di-n-octylphthalate	8.19E 09	1.60E-09	NV	NV
Fluoranthene	5.64E-07	3.10E-07	NV	NV
Indeno(1,2,3-cd) pyrene	3.56E-07	6.97E-08	NV	NV
Phenanthrene	3.68E-07	7.19E-08	NV	NV
Pyrene	5.68E-07	1.11E-07	NV	NV
4,4'-DDD	1.37E-09	2.68E-10	NV	NV
Lead	2.14E-06	4.19E-07	NV	NV
		TOTAL HAZARD INDEX		**0E+00**

PARAMETER	SYMBOL	UNITS	INDUSTRIAL WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	25
Body weight	BW	kg	70
Averaging time	AT	days	9125

NOTES:
NV - No Value
EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Hazard Quotient = (Intake) /(Reference Dose)
CA is from Table 0-37

TABLE 24
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INGESTION OF SOIL - CARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Oral Slope Factor (mg/kg-day)^-1	CANCER RISK (unitless)
Benzo(a)anthracene	0.035	5.87E-10	NV (1)	NV
Benzo(a)pyrene	0.041	6.88E-10	7.3 (1)	5.02E-09
Benzo(b)fluoranthene	0.045	7.55E-10	NV (1)	NV
Benzo(k)fluoranthene	0.042	7.05E-10	NV (1)	NV
bis(2-Ethylhexyl)phthalate	0.099	1.66E-09	0.014 (1)	2.32E-11
Carbazole	0.025	4.19E-10	0.02 (1)	8.39E-12
Chrysene	0.042	7.05E-10	NV (1)	NV
Indeno(1,2,3-cd)pyrene	0.024	4.03E-10	NV (1)	NV
4,4'-DDD	0.00071	1.19E-11	0.24 (1)	2.86E-12
		TOTAL CANCER RISK		**5E-09**

Intake (mg/kg/day) $= \frac{CS \times IR \times CF \times Fl \times EF \times ED}{BW \times AT}$ **Cancer Risk = Intake x Slope Factor**

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	480
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source Exposure	FI	unitless	1
Frequency	EF	days/year	250
Exposure Duration	ED	years	0.25
Body Weight	BW	kg	70
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 25
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INGESTION OF SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Intake (mg/kg-day)	Chronic Oral Reference Dose (mg/kg-day)	Hazard Quotient (unitless)
Acetone	0.00704	3.32E-08	0.1 (1)	3.32E-08
Acenaphthylene	0.001	4.71E-09	NV (1)	NV
Benzo(a) anthracene	0.035	1.65E-07	NV (1)	NV
Benzo(a) pyrene	0.041	1.93E-07	NV (1)	NV
Benzo(b) fluoranthene	0.045	2.12E-07	NV (1)	NV
Benzo(g,h,i)perylene	0.02	9.42E-08	0.03 (4)	3.14E-07
Benzo(k) fluoranthene	0.042	1.98E-07	NV(1)	NV
Benzoic acid	0.088	4.14E-07	4 (1)	1.04E-07
bis(2-Ethylhexyl) phthalate	0.099	4.66E-07	0.02 (3)	2.33E-05
Carbazole	0.025	1.18E-07	NV(1)	NV
Chrysene	0.042	1.98E-07	NV(1)	NV
Di-n-octylphthalate	0.0065	3.06E-08	0.02 (1)	1.52E-06
Fluoranthene	0.069	3.25E-07	0.4 (1)	8.12E-07
Indeno(1,2,3-cd) pyrene	0.024	1.13E-07	NV(1)	NV
Phenanthrene	0.06	2.83E-07	0.03 (4)	9.42E-07
Pyrene	0.067	3.16E-07	0.03 (1)	1.05E-06
4,4'-DDD	0.00071	3.34E-09	NV (1)	NV
		TOTAL HAZARD INDEX		**3E-05**

Intake (mg/kg/day) = $\frac{\text{CS x IR x CF x Fl x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Intake}}{\text{Reference Dose}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Ingestion Rate	IR	mg soil/day	480
Conversion Factor	CF	kg/mg	0.000001
Fraction Ingested from Contaminated Source Exposure	FI	unitless	1
Frequency	EF	days/year	250
Exposure Duration	ED	years	0.25
Body Weight	BW	kg	70
Averaging Time	AT	days	91

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 26
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
DERMAL CONTACT WITH SOIL - CARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Oral Slope Factor (mg/kg-day)^-1	Absorption Efficiency	CANCER RISK (unitless)
Benzo(a) anthracene	0.035	0.13	1.26E-09	NV (1)	100.00%	NV
Benzo(a) pyrene	0.041	0.13	1.48E-09	7.3 (1)	100.00%	1.08E-08
Benzo(b) fiuoranthene	0.045	0.13	1.62E-09	NV (1)	100.00%	NV
Benzo(k) fluoranthene	0.042	0.13	1.52E-09	NV (1)	100.00%	NV
bis(2-Ethylhexyl) phthalate	0.099	0.1	2.75E-09	0.014 (1)	100.00%	3.85E-11
Carbazole	0.025	0.1	6.94E-10	0.02 (1)	100.00%	1.39E-11
Chrysene	0.042	0.13	1.52E-09	NV (1)	100.00%	NV
Indeno(1,2,3-cd) pyrene	0.024	0.13	8.67E-10	NV (1)	100.00%	NV
4,4'-DDD	0.00071	0.1	1.97E-11	0.24 (1)	100.00%	4.73E-12
			TOTAL CANCER RISK			**1E-08**

Absorbed Dose (mg/kg/day) $= \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Cancer Risk = Absorbed Dose x $\frac{\text{Slope Factor}}{\text{Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	CF	kg/mg	0.000001
Skin Surface Area Available for Contact	SA	cm^2/event	7948
Soil to Skin Adherence Factor	AF	mg/cm^2	1
Exposure Frequency	EF	events/year	250
Exposure Duration	ED	years	0.25
Body Weight	BW	kg	70
Averaging Time	AT	days	25550

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 27
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
DERMAL CONTACT WITH SOIL - NONCARCINOGENIC EVALUATION
FUTURE USE, CONSTRUCTION WORKER

PARAMETER	Exposure Concentration (CS) (mg/kg)	Dermal Absorption Factor (ABS) (unitless)	Absorbed Dose (mg/kg/day)	Subchronic Oral Reference Dose (mg/kg-day)	Absorption Efficiency	Hazard Quotient (unitless)
Acetone	0.00704	NV	NV	1 (1)	100.00%	NV
Acenaphthylene	0.001	0.13	1.01E-08	NV (1)	100.00%	NV
Benzo(a) anthracene	0.035	0.13	3.55E-07	NV (1)	100.00%	NV
Benzo(a) pyrene	0.041	0.13	4.16E-07	NV (1)	100.00%	NV
Benzo(b) fluoranthene	0.045	0.13	4.56E-07	NV (1)	100.00%	NV
Benzo(g,h,i)perylene	0.02	0.13	2.03E-07	0.3 (4)	100.00%	6.76E-07
Benzo(k) fluoranthene	0.042	0.13	4.26E-07	NV(1)	100.00%	NV
Benzoic acid	0.088	0.1	6.86E-07	4 (1)	100.00%	1.72E-07
bis(2-Ethylhexyl) phthalate	0.099	0.1	7.72E-07	0.02 (3)	100.00%	3.86E-05
Carbazole	0.025	0.1	1.95E-07	NV(1)	100.00%	NV
Chrysene	0.042	0.13	4.26E-07	NV(1)	100.00%	NV
Di-n-octylphthalate	0.0065	0.1	5.07E-08	0.02 (1)	100.00%	2.53E-06
Fluoranthene	0.069	0.13	7.00E-07	0.4 (1)	100.00%	1.75E-06
Indeno(1,2,3-cd) pyrene	0.024	0.13	2.43E-07	NV(1)	100.00%	NV
Phenanthrene	0.06	0.13	6.08E-07	0.3 (4)	100.00%	2.03E-06
Pyrene	0.067	0.13	6.79E-07	0.3 (1)	100.00%	2.26E-06
4,4'-DDD	0.00071	0.1	5.54E-09	NV (1)	100.00%	NV
				TOTAL HAZARD INDEX		**5E-05**

Absorbed Dose (mg/kg/day) = $\frac{\text{CS x CF x SA x AF x ABS x EF x ED}}{\text{BW x AT}}$

Hazard Quotient = $\frac{\text{Absorbed Dose}}{\text{Reference Dose x Absorption Efficiency}}$

Where:

PARAMETER	SYMBOL	UNITS	VALUES
Conversion Factor	CF	kg/mg	0.000001
Skin Surface Area Available for Contact	SA	cm^2/event	7948
Soil to Skin Adherence Factor	AF	mg/cm^2	1
Exposure Frequency	EF	events/year	250
Exposure Duration	ED	years	0.25
Body Weight	BW	kg	70
Averaging Time	AT	days	91

Source List:

1 SmartTOX Database
2 Based on estimated order of potency with respect to Benzo(a)pyrene presented in USEPA.
3 Chronic RFD is used for subchronic RFD when no subchronic value is available.
4 NCEA through USEPA Region 2. Available values were obtained for PAHs and chlorinated organics.
5 Based on USEPA's Science Advisory Board, weight of evidence for trichloroethene is C-B2 continuum.
6 IRIS

TABLE 28
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF SOIL VAPORS - CARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Slope Factor (mg/kg-day)$^{-1}$	Cancer Risk (unitless) Construction Worker
Benzo(a)anthracene	3.74E-07	2.62E-10	NV	NV
Benzo(a)pyrene	1.46E-07	1.02E-10	NV	NV
Benzo(b)fluoranthene	3.32E-07	2.32E-10	NV	NV
Benzo(k)fluoranthene	8.46E-08	5.92E-11	NV	NV
bis(2-Ethylhexyl)phthalate	2.49E-08	1.74E-11	NV	NV
Carbazole	1.71E-07	1.20E-10	NV	NV
Chrysene	1.66E-06	1.16E-09	NV	NV
Indeno(1,2,3-cd)pyrene	3.67E-08	2.56E-11	NV	NV
4,4'-DDD	1.43E-08	9.99E-12	NV	NV
		TOTAL CANCER RISK		**0.E+00**

PARAMETER	SYMBOL	UNITS	CONSTRUCTION WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	0.25
Body weight	BW	kg	70
Averaging time	AT	days	25550

NOTES:
NV - No Value
EQUATIONS:
Intake = (CA x IR x EF x ED) /(BW x AT)
Cancer Risk = (Intake) x (Slope Factor)

TABLE 29
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF SOIL VAPORS - NONCARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION WORKER

PARAMETER	Respirable Concentration (CA) mg/m³ air	Intake (mg/kg-day)	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (unitless) Construction Worker
Acetone	3.51E-04	6.89E-05	NV	NV
Benzo(a) anthracene	3.74E-07	7.35E-08	NV	NV
Benzo(a) pyrene	1.46E-07	2.87E-08	NV	NV
Benzo(b) fluoranthene	3.32E-07	6.51E-08	NV	NV
Benzo(g,h,i)perylene	1.09E-08	2.13E-09	NV	NV
Benzo(k) fluoranthene	8.46E-08	1.66E-08	NV	NV
Benzoic acid	2.41E-03	4.72E-04	NV	NV
bis(2-Ethylhexyl) phthalate	2.49E-08	4.88E-09	NV	NV
Carbazole	1.71E-07	3.36E-08	NV	NV
Chrysene	1.66E-06	3.26E-07	NV	NV
Di-n-octylphthalate	4.95E-13	9.72E-14	NV	NV
Fluoranthene	2.40E-06	4.71E-07	NV	NV
Indeno(1,2,3-cd) pyrene	3.67E-08	7.20E-09	NV	NV
Phenanthrene	1.90E-04	3.72E-05	NV	NV
Pyrene	1.85E-06	3.62E-07	NV	NV
4,4'-DDD	1.43E-08	2.81E-09	NV	NV
		TOTAL HAZARD INDEX		**0E+00**

PARAMETER	SYMBOL	UNITS	CONSTRUCTION WORKER
Inhalation rate	IR	m³/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	0.25
Body weight	BW	kg	70
Averaging time	AT	days	91

NOTES:
NV - No Value
EQUATIONS:
Intake = (CA x IR x EF x ED) / (BW x AT)
Hazard Quotient = (Intake) / (Reference Dose)

TABLE 30
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF FUGITIVE DUST FROM SOIL VOLATILIZATION - CARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Exposure Soil Concentration (CSD) (mg/kg)	Modeling Exposure Factor (MEF) (mg/m^3)	Respirable Concentration (CA) (mg/m^3 air)	Intake (mg/kg-day) Construction Worker	Inhalation Slope Factor $(mg/kg\text{-}day)^{-1}$	Cancer Risk (Unitless) Construction Worker
Benzo(a)anthracene	0.03500	3.50E-08	2.60E-01	9.10E-09	6.36E-12	NV	NV
Benzo(a)pyrene	0.04100	4.10E-08	2.60E-01	1.07E-08	7.45E-12	NV	NV
Benzo(b)fluoranthene	0.04500	4.50E-08	2.60E-01	1.17E-08	8.18E-12	NV	NV
Benzo(k)fluoranthene	0.04200	4.20E-08	2.60E-01	1.09E-08	7.63E-12	NV	NV
bis(2-Ethylhexyl) phthalate	0.09900	9.90E-08	2.60E-01	2.57E-08	1.80E-11	NV	NV
Carbazole	0.02500	2.50E-08	2.60E-01	6.50E-09	4.54E-12	NV	NV
Chrysene	0.04200	4.20E-08	2.60E-01	1.09E-08	7.63E-12	NV	NV
Indeno(1,2,3-cd)pyrene	0.02400	2.40E-08	2.60E-01	6.24E-09	4.36E-12	NV	NV
4,4'-DDD	0.00070	7.00E-10	2.60E-01	3.82E-10	1.27E-13	NV	NV
Lead	0.05810	5.81E-08	2.60E-01	1.51E-08	1.06E-11	NV	NV
					TOTAL CANCER RISK		**0.E+00**

PARAMETER	SYMBOL	UNITS	CONSTRUCTION WORKER
Inhalation rate	IR	m^3/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	0.25
Body weight	BW	kg	70
Averaging time	AT	days	25550

NOTES:
NV - No Value
NA - Not Available

EQUATIONS:
Intake = (CA x IR x EF x ED) / (BW x AT)
Cancer Risk = (Intake) x (Slope Factor)
CA = CSD x MEF (Attachment A-4)

TABLE 31
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF FUGITIVE DUST FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION

PARAMETER	Exposure Soil Concentration (CS) (mg/kg)	Exposure Soil Concentration (CSD) (mg/kg)	Modeling Exposure Factor (MEF) (mg/m^3)	Respirable Concentration (CA) (mg/m^3 air)	Intake (mg/kg-day) Construction Worker	Inhalation Reference Dose (mg/kg-day) Subchronic	Hazard Quotient (Unitless) Construction Worker
Acetone	0.00704	7.04E-09	2.60E-01	1.83E-09	3.59E-10	NV	NV
Acenaphthylene	0.00100	1.00E-09	2.60E-01	2.60E-10	5.10E-11	NV	NV
Benzo(a) anthracene	0.03500	3.50E-08	2.60E-01	9.10E-09	1.79E-09	NV	NV
Benzo(a) pyrene	0.04100	4.10E-08	2.60E-01	1.07E-08	2.09E-09	NV	NV
Benzo(b) fluoranthene	0.04500	4.50E-08	2.60E-01	1.17E-08	2.30E-09	NV	NV
Benzo(g,h,i)perylene	0.02000	2.00E-08	2.60E-01	5.20E-09	1.02E-09	NV	NV
Benzo(k) fluoranthene	0.04200	4.20E-08	2.60E-01	1.09E-08	2.14E-09	NV	NV
Benzoic acid	0.08800	8.80E-08	2.60E-01	2.29E-08	4.49E-09	NV	NV
bis(2-Ethylhexyl) phthalate	0.09900	9.90E-08	2.60E-01	2.57E-08	5.05E-09	NV	NV
Carbazole	0.02500	2.50E-08	2.60E-01	6.50E-09	1.28E-09	NV	NV
Chrysene	0.04200	4.20E-08	2.60E-01	1.09E-08	2.14E-09	NV	NV
Di-n-octylphthalate	0.00650	6.50E-09	2.60E-01	1.69E-09	3.32E-10	NV	NV
Fluoranthene	0.06900	6.90E-08	2.60E-01	1.79E-08	3.52E-09	NV	NV
Indeno(1,2,3-cd) pyrene	0.02400	2.40E-08	2.60E-01	6.24E-09	1.22E-09	NV	NV
Phenanthrene	0.06000	6.00E-08	2.60E-01	1.56E-08	3.06E-09	NV	NV
Pyrene	0.06700	6.70E-08	2.60E-01	1.74E-08	3.42E-09	NV	NV
4,4'-DDD	0.00070	7.00E-10	2.60E-01	1. 82E-10	3.57E-11	NV	NV
Lead	0.05810	5.81E-08	2.60E-01	1.51E 08	2.96E-09	NV	NV
					TOTAL HAZARD INDEX		**0.E+00**

TABLE 31
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
INHALATION OF FUGITIVE DUST FROM SOIL VOLATILIZATION - NONCARCINOGENIC EVALUATION
FUTURE USE - CONSTRUCTION

PARAMETER	SYMBOL	UNITS	CONSTRUCTION WORKER
Inhalation rate	IR	m^3/day	20
Exposure frequency	EF	days/year	250
Exposure duration	ED	years	0.25
Body weight	BW	kg	70
Averaging time	AT	days	91

NOTES:
NV - No Value

EQUATIONS:
Intake = (CA x IR x EF x ED) / (BW x AT)
Hazard Quotient = (Intake) / (Reference Dose)
CA = CSD x MEF (Attachment A-4)

ATTACHMENT A-1

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005) FUGITIVE DUST MODEL

CALCULATION COVER SHEET

Client: AFCEE

Project Name: Plattsb AFB SS-005

Project/Calculation Number: 111 73 369. 00000

Title: Fugitive Dust Model for Future Construction Scenario

Total Number of Pages (including cover sheet): 42 (41 + cover)

Total Number of Computer Runs: 0

Prepared by: Marek Ostrowski

Date: March 16, 2004

Checked by: Craig W. Pawlewski

Date: March 17, 2004

Description and Purpose: To estimate Maximum Actual Annual Concentrations from fugitive dust emissions, for an onsite receptor, for a construction scenario.

Design Basis/References/Assumptions

See text.

Remarks/Conclusions/Results: Contaminant-specific values are shown on page 2.

Calculation Approved by: _____

Project Manager/Date

Revision No.:	Description of Revision:	Approved by:

Project Manager/Date

FUGITIVE DUST MODEL FOR FUTURE CONSTRUCTION SCENARIO
PLATTSBURGH AIR FORCE BASE
SITE SS-005

SUMMARY

The USEPA documents *Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination Sites* (EPA/600/8-85/002 Feb. 1985) and *AP-42* Chapter 13.2 (July 1994), are used to estimate the rate of fugitive dust emission from the Plattsburgh AFB site SS-005. The *New York State Air Guide-l, Draft* (NYSDEC 1991) is used to estimate the Maximum Actual Annual 1mpact Concentration for an onsite receptor during future construction activities.

The Maximum Actual Annual Concentration (C_a) for an onsite receptor at the SS-005 site is estimated to be:

$$C_a) \ (mg/m^3) = 0.63 \ \alpha$$

Parameter "α" is the dimensionless concentration of a compound in the onsite soils (mass of compound per mass of soil). Both "α" and "C_a" are contaminant-specific.

Maximum Actual Annual Concentrations are shown on page 2.

SITE SS-005
Maximum Actual Annual Concentrations from
Fugitive Dust Emissions During Construction

CHEMICAL	EXPOSURE CONC. IN SOIL (Date from 5-yr site review)		MAXIMUM ACTUAL ANNUAL CONCENTRATION
	Csoil	alpha	Ca
	(mg/kg-soil)	(-)	(mg/m^3)
VOAs			
2-Hexanone	5.83E-03	5.83E-09	3.67E-09
4-Methyl-2-pentanone	5.75E-03	5.75E-09	3.62E-09
Acetone	7.39E-03	7.39E-09	4.66E-09
Methylene Chloride	1.65E-02	1.65E-09	1.04E-08
Tetrachloroethene	1.00E-03	1.00E-09	6.30E-10
Toluene	5.16E-03	5.16E-09	3.25E-09
Trichloroethene	1.00E-03	1.00E-09	6.30E-10
Xylene (total)	1.96E-02	1.96E-08	1.23E 08
SVOAs			
2,4-Dinitrotoluene	1.67E-01	1.67E-07	1.05E-07
2-Methylnaphthalene[1]	1.96E 01	1.96E 07	1.23E-07
4-Methylphenol	2.60E-02	2.60E-08	1.64E-08
Acenaphthene[1]	1.57E-01	1.57E-07	9.89E-08
Acenaphthylene	3.82E-01	3.82E-07	2.40E-07
Anthracene[1]	3.07E-01	3.07E-07	1.94E-07
Benzo(a) anthracene	6.09E-01	6.09E-07	3.84E-07
Benzo(a) pyrene	9.41E-01	9.41E-07	5.93E-07
Benzo(b)fluoranthene[1]	7.95E-01	7.95E-07	5.01E-07
Benzo(g,h, i) perylene	5.54E-01	5.54E-07	3.49E-07
Benzo(k) fiuoranthene[1]	7.26E-01	7.26E-07	4.58E-07
Benzoic acid	1.04E-01	1.04E-07	6.55E-08
bis(2-Ethylhexyl) phthalate	1.93E-01	1.93E-07	1.21E-07
Carbazole[1]	3.00E-01	3.00E-07	1.89E-07
Chrysene[1]	7.18E-01	7.18E-07	4.52E-07
Dibenz(a,h)anthracene[1]	2.32E-01	2.32E-07	1.46E-07
Dibenzofuran	4.10E-02	4.10E-08	2.58E-08
Diethylphthalate[1]	2.00E-02	2.00E-08	1.26E-08
Di-n-butylphthalate	1.60E-02	1.60E-08	1.01E-08

SITE SS-005
Maximum Actual Annual Concentrations from
Fugitive Dust Emissions During Construction

CHEMICAL	EXPOSURE CONC. IN SOIL (Date from 5-yr site review)		MAXIMUM ACTUAL ANNUAL CONCENTRATION
	Csoil	alpha	Ca
	(mg/kg-soil)	(-)	(mg/m^3)
Di-n-octyl phthalate[1]	1.30E-02	1.30E-08	8.19E-09
Fluoranthene[1]	8.96E-01	8.96E-07	5.64E-07
Fluorene[1]	1.30E-01	1.30E-07	8.19E-08
Indeno(1,2,3-cd) pyrene	5.65E-01	5.65E-07	3.56E-07
Naphthalene	3.40E-02	3.40E-08	2.14E-08
Phenanthrene[1]	5.84E-01	5.84E-07	3.68E-07
Phenol	1.78E-01	1.78E-07	1.12E-07
Pyrene[1]	9.01E-01	9.01E-07	5.68E-07
Pesticides			
4,4'-DDD[1]	2.17E-03	2.17E-09	1.37E 09
4,4'-DDT[1]	2.40E-02	2.40E-08	1.51E-08
Endosulfan II	2.20E-03	2.20E-09	1.39E-09
Methoxychlor	2.50E-03	2.50E-09	1.58E-09
PBCs			
Aroclor 1254[1]	7.00E-03	7.00E-09	4.41E-09
Arochlor 1260[1]	5.67E-02	5.67E-08	3.57E-08

Convertion factor from "alpha" to "Ca" = 0. 63

1. PURPOSE

The purpose of this calculation is to estimate the ambient air concentration of contaminants from particulate emissions at the SS-005 site during future construction activities.

2. METHODOLOGY

The rate of fugitive dust emission is estimated using methodologies described in the *Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination Sites* and *AP-42* Chapter 13 (these documents hereafter are referred to as the "manual"). The ambient air concentration model in the manual is applicable to sites measuring 300 ft. x 300 ft. or smaller, and to receptors located at a certain distance away from the site. The dimensions of the site SS-004 are approximately 200 ft. x 400 ft; therefore, the ambient air concentration model could provide a reasonable approximation. However, concentrations have to be estimated for a receptor located inside the area. Because of that, a method outlined in the *New York State Air Guide-1, Draft* (NYSDEC 1991) is used to estimate the fugitive dust contaminant concentrations. The method is applicable to receptors located inside the contaminated area.

All tables and figures cited are from the manual and copies are included in the reference section of this calculation.

3. SUMMARY OF ASSUMPTIONS

a) Large non-erodible particulates are not present so u_{*t} does not need to be corrected.

b) The area is covered with grass. Assume roughness height of $z_o = 4$ cm.

c) Site dimensions are approximately 200 by 400 ft (See Figure 2).

d) Earth-moving operations are assumed to be batch drop operations. Corresponding assumptions are:

   (i) Backhoe drops from a height of 10 ft.
   (ii) The capacity of the dumping device was 3.0 yd^3
   (iii) The backhoe operates at 30 sec/load
   (iv) Load weighs 1.5 tons/yd^3
   (v) 2 backhoes are used on the site

e) Construction vehicles are assumed to travel 25 km/hr, weight 15 tons, and have 8 wheels on average. Approximately 5 round trips/day are made by 10 vehicles making a 0.1 km round trip on the site.

f) Average concentrations of contaminants are the same in surface and subsurface soils ($\alpha_{surf} = \alpha_{sub} = \alpha$).

g) No other sources contribute to the SS-005 site contamination.

h) Emissions are assumed to originate at ground level.

i) It has been assumed that the future structures will have a basement. For foundation and floor slab, it has been assumed the excavation will be carried down 8 to 10 feet below ground level. Frost depth in the Plattsburgh area is 6 feet.

j) Adjacent to the construction area is a large paved area which will have vehicular traffic as well as construction traffic. Information regarding silt loading on the paved surfaces is not available, so PM-10 size range of airborne particulate matter is used from *AP-42* Chapter 13, Section 13.2.4.

4. CALCULATIONS – CONSTRUCTION ACTIVITIES

a) Likelihood of Wind Erosion

Visual inspection indicates that the site is mostly covered by pavement or grass. As a result, wind erosion is not significant on the present site. However, this calculation models emissions from future construction activities which will involve excavating soil and producing exposed soil areas. All calculations following are for this construction scenario.

b) Type of Emission Model

In order to determine the type of emission model to use for the site, the threshold friction velocity of the soil particulates on the site needs to be calculated. Note that grain size analyses for the site are not available. Therefore, data for the nearby site SS-004 was used (Fig 1). See *Flightline (SS-004) Remedial Investigation Report, Appendix M* (attached).

i) Surface Soil

Mode = 0.28, 0.28. Thus, the representative mode for the site is M = 0.28 mm.

ii) Subsurface Soil

From subsurface soil grain-size analysis.

- Soil boring SB04-04 (10 ft. to 12 ft.) $\text{Mode} = \frac{0.17 + 0.25}{2} = 0.21$
- Soil Boring SB04-05 (4 ft. to 6 ft.) $\text{Mode} = \frac{0.21 + 0.12}{2} = 0.17$
- Soil Boring SB04-06 (6 ft. to 8 ft.) $\text{Mode} = \frac{0.21 + 0.12}{2} = 0.17$

$$\text{Subsurface Soil Mode} = \frac{0.21 + 0.17 + 0.17}{3} = 0.183$$

Representative Combined Soil Mode = ½ (0.28 + 0.18) = 0.23 mm

iii) From Figure 3-4, the threshold friction velocity is u_{*t} = 35cm/s

iv) It is assumed that large non-erodible particles are not present at the site, thus u_{*t} does not need to be corrected.

v) Because 75 cm/s> 35 cm/s, the "unlimited reservoir model" will be utilized.

c) Wind Erosion from Subsurfaces with Unlimited Erosion

i) Find E_{10} (annual average emission rate) using Equation 4-4 in the manual:

$$E_{10} = 0.036\,(1-V)\left(\frac{[u]}{u_t}\right)^3 F(x)$$

Where:

E_{10}	= annual average emission (g/m^2 hr)
V	= fraction of vegetated surface
[u]	= mean annual wind speed (from Table 4-1)
x	= 0.886 u_t/[u]
F(x)	= function of x (plotted in Figure 4-3)
u_t	= threshold value of wind speed at 7 m (m/s)

- Rearrange Eqn. 4-3 to find u_t (Eqn. 4-3 in the manual)

$$u(z) = \left(\frac{u_{*t}}{0.4}\right) \ln\left(\frac{z}{z_o}\right)$$

Where:

u(z)	= wind speed at height "z" (m/s)
u_{*t}	= friction velocity (m/s)
z	= height above surface (cm)
z_o	= roughness height (cm)

- u_{*t} = 35 cm/s = 0.35 m/s
- z = 7m = 700 cm (note" typical weather station sensor height)
- z_o = 4 cm. It is assumed that the surrounding area is covered with grass. See Fig 3-6 of the manual.

$$u(z = 7m) = u_t = \left(\frac{0.35 \quad m/s}{0.4}\right) \ln\left(\frac{700\,cm}{4\,cm}\right) = \underline{\underline{4.52\,m/s}}$$

- [u] = 3.9 m/s (Table 4-1 for Burlington, VT)
- To find F (x)

$$x = 0.886\frac{u_t}{[u]} = 0.886\frac{4.52\,m/s}{3.9\,m/s} = 1.027$$

<u>F (x = 1.027) = 1.55</u> (from Figure 4-3)

- Existing buildings at the site cover approximately 200 by 200 feet (see Figure 2). Assume that the remainder of the site will be excavated during construction. Thus, the "no-erosion" area will comprise approximately 50% of the entire site area of 400 by 200 ft.

There will not be any erosion on <u>V = 50%</u> of the site.

$$E_{10} = 0.036\,(1 - 0.50)\left(\frac{3.9\,m/s}{4.52\,m/s}\right)^3 (1.55) = 0.0179\,g/m^2hr = \underline{\underline{1.79\,x\,10^{-2}\;g/m^2h}}$$

ii) Total mass emission rate for wind erosion can be calculated from:

$R_w = \alpha E_w A$ [Eqn. 2-1 in the manual]

Where:

R_w	= emission rate of contaminant (g/hr)
α	= contaminant concentration in soil (unitless)
E_w	= emission factor (g/m^2 hr)
A	= source area extent (m^2)

- α = contaminant-specific
- $E_w = E_{10} = 1.79 \times 10^{-2}$ (g/m^2 hr)
- A = 400*200 = 80,000 ft^2 = 7,400 m^2

Thus $R_w = \alpha\,(1.79 \times 10^{-2}$ g/m^2 hr) (7,400 m^2)
$R_w =$ <u>133 α g/hr</u>

d) <u>Emissions Due to Traffic</u>

i) During construction activities at the site, the contractor will use the paved area for vehicle parking and for loading and unloading purposes. Construction vehicles also will use the paved area as an approach and exit road. Use of vehicles in these paved areas will produce fugitive dust emissions. Since there is

no silt data available, the PM-10 particle size multiplier value is used in the calculation to obtain emission factor.

AP-42 Chapter 13.2.4 is used to calculate the emissions from vehicle traffic on a paved road.

$$E = k\left(\frac{sL}{2}\right)^{0.65}\left(\frac{W}{3}\right)^{1.5}$$

Where:

E = particulate emission factor (kg/VKT)
k = base emission factor for particle size range and units of interest (g/VKT)
sL = road surface silt loading (g/m^2)
W = average weight (tons) of the vehicles traveling the road (Note: 1 Ton = 2000 lbs)

- Use PM-10 particle size to establish the value of multiplier k
  k = 4.6 g/VKT (page 13.2.4-3 of AP-42)
- Silt loading for annual condition – a default value of 0.02 g/m^2 is used for the pavement because it is not a main thoroughfare (page 13.2.4-3 of AP-42)
- Average weight of vehicle = W = 15 tons

$$E = (4.6\ g/VKT)\left(\frac{0.02\ g/m^2}{2}\right)^{0.65}\left(\frac{15\ ton}{3}\right)^{1.5} = 2.58\ kg/VKT$$

ii) Total mass emission rate from the paved area due to vehicular traffic

$R_{traffic} = \alpha\ E_{10}\ A$

Where:

α = contaminant concentration in soil (unitless)
E_{10} = particulate emission factor (kg/VKT)
A = # VKT/yr

- The area is not heavily traveled. Assuming an average of 5 round trips/day made by 10 vehicles making 0.1 km (only over the paved area of consideration, the site dimension is on the order of 0.1 km):

A = (365 days) (5 trips/day) (0.1 km/trip) (10 vehicles) = 1,825 VKT/yr

- E_{10} = 2.58 kg/VKT

$R_{traffic}$ = α (2.58 kg/VKT) (1,825 VKT/yr) = α 4,709 kg/yr
= α (4,709 kg/yr) (1,000 g/kg) (1 yr/365 days) (1 day/24 hr)
= <u>538 α g/hr</u>

e) Emissions Due to Construction Activities

The emissions from the bare soil produced during future construction will be accounted for in the construction assessment of emissions modeled in this section. The earth-moving operations on site are assumed to be batch drop operations.

i) The quantity of particulate emissions generated by batch drop operations can be estimated using the empirical equation given in *AP-42* Chapter 13.2.2.

$$E = k\,(0.0032)\,\frac{\left[\frac{U}{5}\right]^{1.3}}{\left[\frac{M}{2}\right]^{1.4}}\,(lb\,/\,ton)$$

Where:

E = emission factor (lb/ton)
k = particle size multiplier (dimensionless)
U = mean wind speed (mph)
M = soil moisture content (%)

- M = Mode of subsurface soil = 0.18 mm i.e., 180 μm; therefore, k = 0.74 (see Table 13.2.2-1 of *AP-42*)
- U = 3.9 m/s = 8.72 mph (from Table 4-1)
- M = 19.4%, 20.5%, 20.3% , M_{av} = 20% (from *Flightline (SS-004) Remedial Investigation Report, Appendix M*)

$$E = 0.74\,(0.0032)\,\frac{\left[\frac{8.72}{5}\right]^{1.3}}{\left[\frac{20}{2}\right]^{1.4}}\,(lb\,/\,ton) = 1.94\,x\,10^{-4}\;lb\,/\,ton$$

NOTE: Since there is not enough information provided to calculate the fugitive dust emissions from heavy construction operations presented in Section 13.2.3 of *AP-42*, Section 13.2.2 has been used to calculate the fugitive dust emission. This section is used because it includes loading, unloading, equipment movement, and batch or continuous drop operations.

- Assuming a cycle of 30 sec/load, in one hour the backhoe can process:

  (3600 sec/hr)/(30 sec/load) = <u>120 loads/hr</u>

- Assuming weight of excavated soil 1.5 ton/yd^3, the mass of soil moved in one hour is:

  (120 loads/hr) (3.0 yd^3/load) (1.5 tons/yd^3) = <u>540 tons/hr</u>

- Given the total area = 80,000 ft^2 the emission rate is:

E_{emo} = [(1.94 x 10^{-4} lb/ton) (540 tons/hr)/80,000 ft^2
E_{emo} = 1.31 x 10^{-6} lb/ft^2 hr

- Assuming two backhoes will be used in the construction area

E_{emo} = 2 x (1.31 x 10^{-6} lb/ft^2 hr) (3.2808 ft/m)^2 x (1g/0.0022 lb)
E_{emo} = 1.28 x 10^{-2} g/m^2 hr

ii) The total mass emission for earth-moving operations can be calculated from:

$R_{emo} = \alpha E_{emo} A$ [Eqn 2-1 in the manual]

Where:

R_{emo} = emission rate of contaminants
α = contaminant concentration in soil (unitless)
E_{emo} = emission factor (g/m^2 hr)
A = source extent = area of region (m^2)

- α = contaminant-specific
- E_{emo} = 1.28 x 10^{-2} g/m^2 hr
- A = 7,400 m^2

Thus

$R_{emo} = \alpha$ (1.28 x 10^{-2} g/m^2 hr) (7,400 m^2)
R_{emo} = 95 α g/hr

f) Construction Activities - Traffic

i) For traffic on the construction site, the empirical formula for unpaved roads given in AP-42 Chapter 13.2.1 is used.

$$E = k\,(1.7)\left[\frac{s}{12}\right]\left[\frac{S}{48}\right]\left[\frac{W}{2.7}\right]^{0.7}\left[\frac{w}{4}\right]^{0.5}\left[\frac{365-p}{365}\right]\frac{kg}{VKT}$$

Where:

E = emission factor (kg/VKT)
k = particle size multiplier (dimensionless)
s = silt content of road surface material (%)
S = mean vehicle speed (km/hr)
W = mean vehicle weight
w = mean number of wheels
p = number of days with at least 0.254 mm of precipitation per year

- Mode: surface soil = 0.28 mm
  subsurface soil = 0.18 mm

$$M_{av} = \frac{0.28 + 0.18}{2} = 0.23\ mm, i.e. 230\ \mu m$$

k varies with aerodynamic particle size (page 13.2.1-1 of AP-42)
k = 1.0

- silt content surface soil = 9.2%
  subsurface soil = 8.05%

  From *Flightline (SS-004) Remedial Investigation Report, Appendix M*

  S_{av} = 8.63%

- Vehicle speed
  The vehicles on the construction site will include workers' vehicles, construction equipment, and trucks bringing supplies and removing spoils.

  Assume S = 25 km/hr

- Vehicle weight
  Assume W = 15 Tons = 13.6 Mg

- Mean number of wheels w = 8 based on construction vehicles

- p = Number of days with at least 0.254 mm of precipitation/year from Figure 4-4 of the manual

  p for Plattsburgh AFB = 140 days

$$E_{10} = (1.0)\,(1.7)\left[\frac{8.62}{12}\right]\left[\frac{25}{48}\right]\left[\frac{13.6}{2.7}\right]^{0.7}\left[\frac{8}{4}\right]^{0.5}\left[\frac{365-140}{365}\right] kg/VKT = 1.719\ kg/VKT = 1.72\ kg/VKT$$

ii) Total mass emission rate for vehicular traffic was calculated using Equation 2-1 in the manual:

$$R_{traffic} = \alpha\ E_{10}\ A$$

Where:

α = contaminant concentration in soil (unitless)
E_{10} = emission factor
A = # VKT/yr

- E_{10} = 1.72 kg/VKT

- Assuming an average of 5 round trips/day made by 10 vehicles making 0.1 km round trip:

  A = (365 days) (5 trips/day) (0.1 km/trip) 10 vehicles = 1,825 VKT/yr

$R_{traffic}$ = α (1.72 kg/VKT) (1,825 VKT/yr)
= α (3,139 kg/yr) (1,000 g/kg) (1 yr/365 days) (1 day/24 hr)
= 358 α g/hr

g) Summary of Emission Rates

Wind erosion: R_w = 133 α (g/hr) = 0.29 α (lb/hr)

Traffic: $R_{traffic}$ = 538 α (g/hr) = 1.19 α (lb/hr)

Constr. Activities: R_{emo} = 95 α (g/hr) = 0.21 α (lb/hr)

Constr. Traffic: $R_{traffic\text{-}c}$ = 358 α (g/hr) = 0.79 α (lb/hr)

Note: α = contaminant specific

h) Maximum Actual Annual Impact (C_a)

1) To determine the area source emission rate, the alternative area source method from *NYS Air Guide* – 1 was used because it addresses concentrations inside the area. The entire area will be subjected to fugitive dust. Using the following equation from page B-11 of *NYS Air Guide – 1*:

- The area source emission rate (Q_A)

$$Q_A = \frac{Q_a}{A}$$

Where:

Q_A = area source emission rate (lb/hr ft^2)
Q_a = emission rate (lb/hr)
A = area (ft^2) – A = 80,000 ft^2

Thus,

Q_a = 0.29 α + 1.19 α + 0.21 α + 0.79α = 2.48 α

$Q_A = Q_a / A$ = 2.48 α / 80,000 = 3.1*10^{-5} α (lb/hr ft^2)

b) To determine the Maximum Actual Annual Impact (C_a), the following equation from page B-11 of the *NYS Air Guide-1* was used:

$$C_a\ (\mu g/m^3) = KQ_A\ C_m$$

Where:

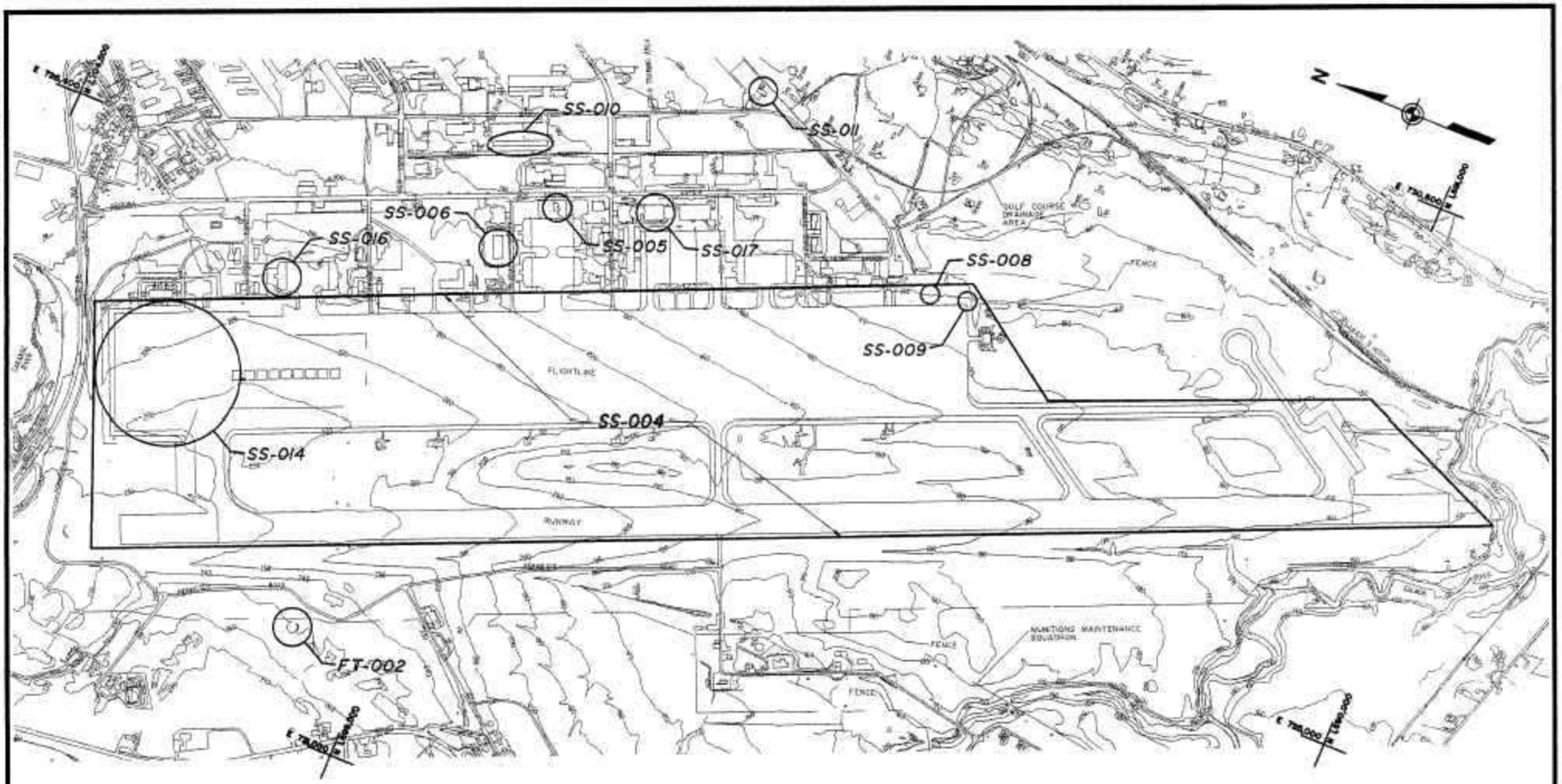
K	= 15 for $330 \leq S \leq 3300$
	= 30 for $S > 3300$
S	= length of a side of the area source (ft)
C_m	= conversion factor from lb/hr ft^2 to $\mu g/m^2 s$
Q_A	= area source emission rate (lb/hr ft^2)

- $C_m = 1.355 \times 10^6$
- $Q_A = 3.1 \times 10^{-5}\ \alpha$ lb/hr ft^2
- $S \approx 300$ ft, so $K = 15$

$$C_a = 15\ (3.1 \times 10^{-5}\ \alpha)\ (1.355 \times 10^6)\ \mu g/m^3$$

$$= 630\ \alpha\ (\mu g/m^3)$$

$$= 0.63\ \alpha\ (mg/m^3)$$



SITE LIST

FT-002	FIRE TRAINING AREA
SS-004	FLIGHT LINE
SS-005	NON-DESTRUCTIVE INSPECTION FACILITY
SS-006	AEROSPACE GROUND EQUIPMENT FACILITY
SS-008	ELECTRICAL VAULT
SS-009	FUEL VALVE PIT JP-4 SPILL
SS-010	HEAVY EQUIPMENT MAINTENANCE FACILITY
SS-011	DRMO FACILITY
SS-014	ALERT AREA
SS-016	NOSE DOCK 8
SS-017	BUILDING 2774

PLATTSBURG A.F.B.
FLIGHTLINE & VICINITY SITE MAP

URS CONSULTANTS, INC.

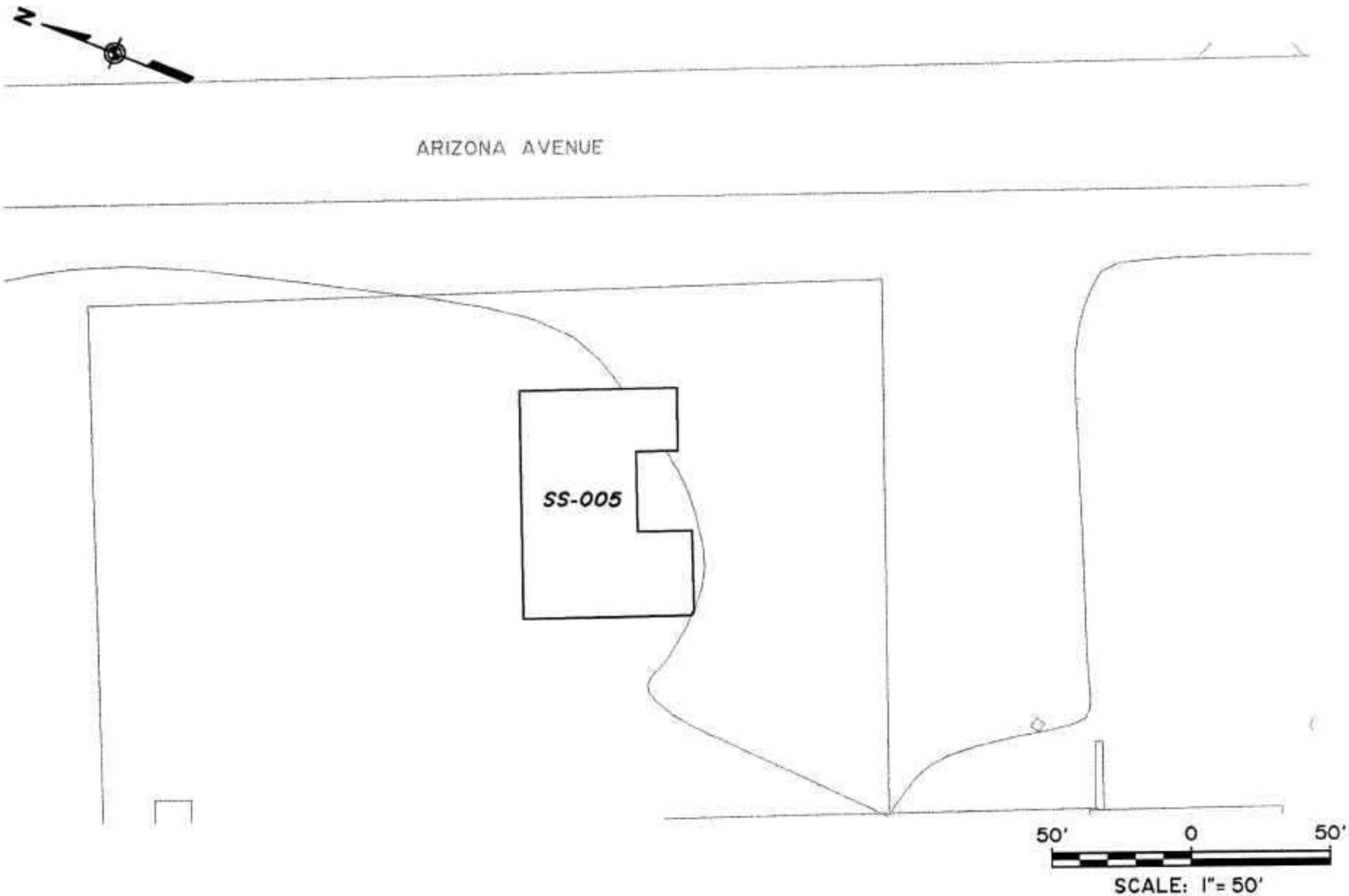
FIGURE 1

N:\1173369.00000\CAD\1-1000 3/15/04-1 RAL

CC-7543

AC-18452

N:\1173369.00000\CAD\ 1=1 3/15/04-1 RAL



URS

PLATTSBURGH A.F.B.
NON-DESTRUCTIVE INSPECTION FACILITY

FIGURE 2

Environmental Protection Agency
Environmental Assessment
Washington DC 20460
February 19
Research and Development
PB85-192219

EPA

Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination Sites

-15-

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NATIONAL TECHNICAL
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U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

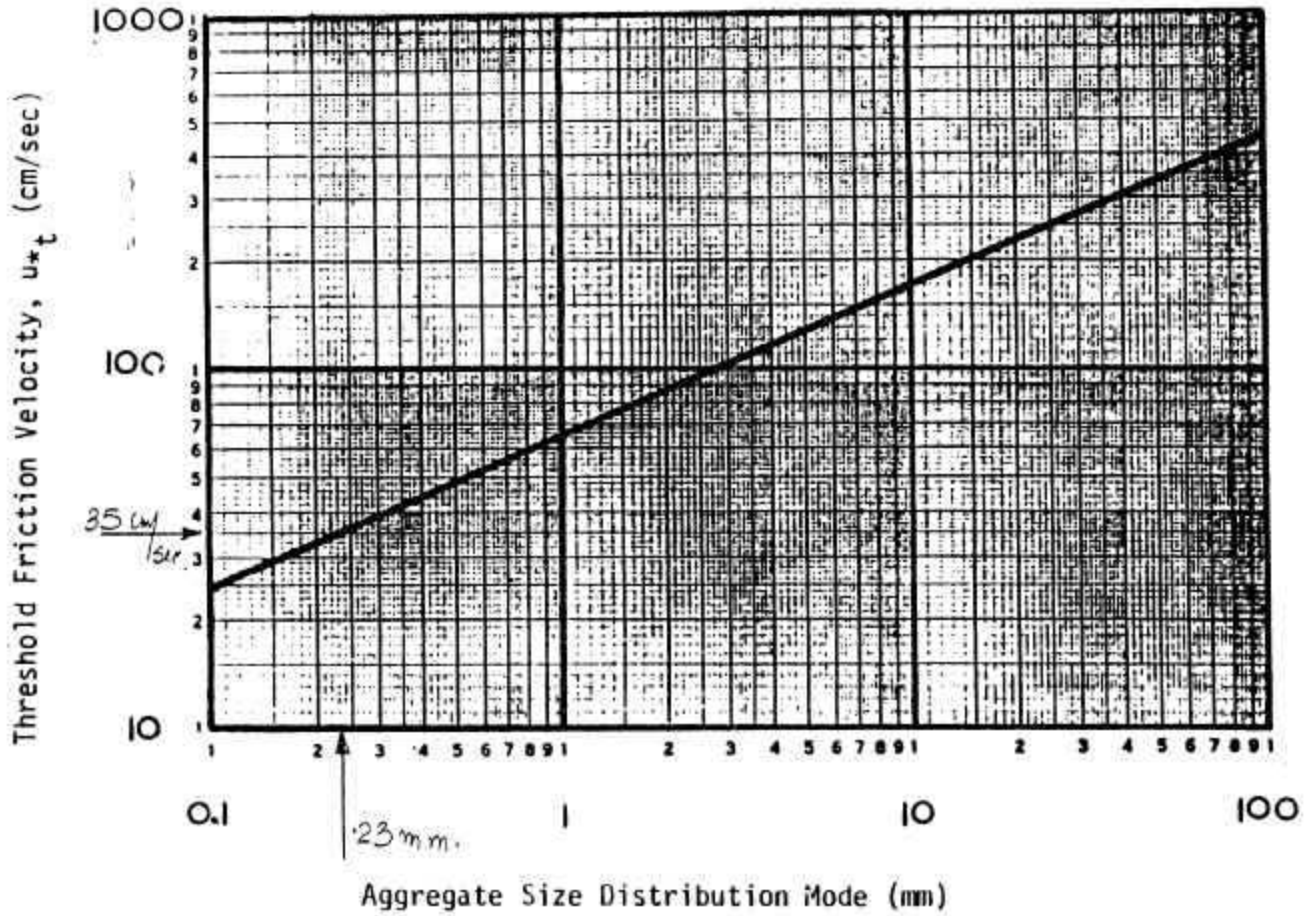


Figure 3-4. Relationship of Threshold Friction Velocity to Size Distribution Mode

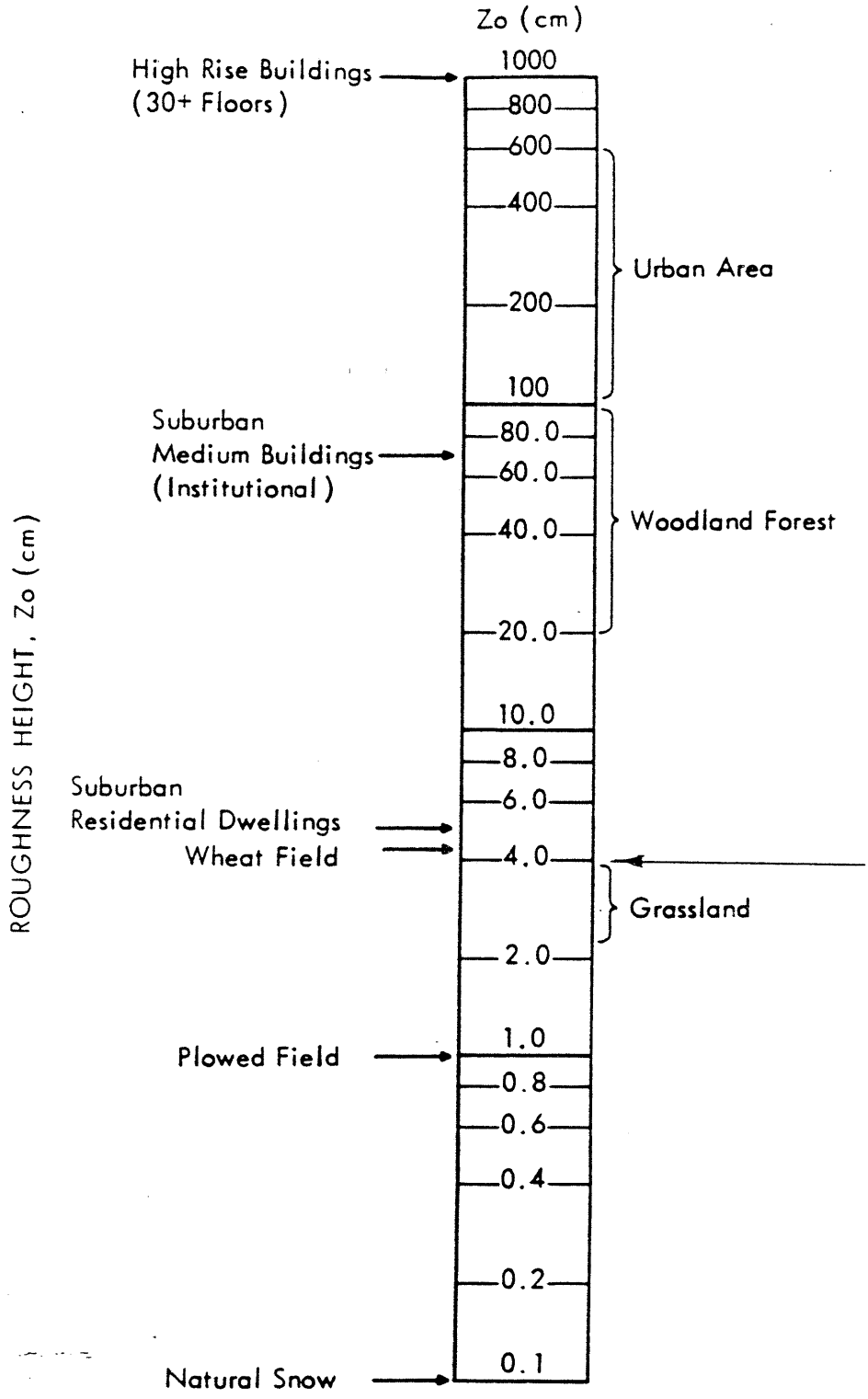


Figure 3-6. Roughness Heights for Various Surfaces (Cowherd and Guenther, 1976)

TABLE 4-1. FASTEST MILE[a] [u^+] AND MEAN WIND SPEED[b] [u] FOR SELECTED UNITED STATES STATIONS

Station	State	[u^+] (m/s)	[u] (m/s)	Station	State	[u^+] (m/s)	[u] (m/s)
Birmingham	AL	20.8	3.3	Detroit	MI	21.8	4.6
Montgomery	AL	20.2	3.0	Grand Rapids	MI	21.6	4.5
Tucson	AZ	23.0	3.7	Lansing	MI	23.7	4.6
Yuma	AZ	21.8	3.5	Sault St. Marie	MI	21.6	4.3
Fort Smith	AR	20.8	3.4	Duluth	MN	22.8	5.1
Little Rock	AR	20.9	3.6	Minneapolis	MN	22.0	4.7
Fresno	CA	15.4	2.8	Jackson	MS	20.5	3.4
Red Bluff	CA	23.3	3.9	Columbia	MO	22.4	4.4
Sacramento	CA	20.6	3.7	Kansas City	MO	22.6	4.6
San Diego	CA	15.4	3.0	St. Louis	MO	21.2	4.2
Denver	CO	22.0	4.1	Springfield	MO	22.4	5.0
Grand Junction	CO	23.6	3.6	Billings	MT	26.6	5.1
Pueblo	CO	28.1	3.9	Great Falls	MT	26.4	5.9
Hartford	CT	20.2	4.0	Havre	MT	25.9	4.5
Washington	DC	21.6	3.4	Helena	MT	24.7	3.5
Jacksonville	FL	21.7	3.8	Missoula	MT	21.6	2.7
Tampa	FL	22.2	3.9	North Platte	NE	27.7	4.6
Atlanta	GA	21.2	4.1	Omaha	NE	24.6	4.8
Macon	GA	20.1	3.5	Valentine	NE	27.1	4.8
Savannah	GA	21.3	3.6	Ely	NV	23.6	4.7
Boise	ID	21.4	4.0	Las Vegas	NV	24.4	4.0
Pocatello	ID	23.8	4.6	Reno	NV	25.2	2.9
Chicago	IL	21.0	4.6	Winnemucca	NV	22.4	3.5
Moline	IL	24.5	4.4	Concord	NH	19.2	3.0
Peoria	IL	23.2	4.6	Albuquerque	NM	25.6	4.0
Springfield	IL	24.2	5.1	Roswell	NM	26.0	4.1
Evansville	IN	20.9	3.7	Albany	NY	21.4	4.0
Fort Wayne	IN	23.7	4.6	Binghampton	NY	22.0	4.6
Indianapolis	IN	24.8	4.3	Buffalo	NY	24.1	5.5
Burlington	IA	25.0	4.6	New York	NY	22.5	5.5
Des Moines	IA	25.8	5.0	Rochester	NY	23.9	4.3
Sioux City	IA	25.9	4.9	Syracuse	NY	22.5	4.4
Concordia	KS	25.7	5.4	Cape Hatteros	NC	25.9	5.1
Dodge City	KS	27.1	6.3	Charlotte	NC	20.0	3.4
Topeka	KS	24.4	4.6	Greensboro	NC	18.9	3.4
Wichita	KS	26.0	5.6	Wilmington	NC	22.3	4.0
Louisville	KY	22.0	3.8	Bismarck	ND	26.1	4.7
Shreveport	LA	19.9	3.9	Fargo	ND	26.6	5.7
Portland	ME	21.7	3.9	Cleveland	OH	23.6	4.8
Baltimore	MD	25.0	4.2	Columbus	OH	22.1	3.9
Boston	MA	25.2	5.6	Dayton	OH	24.0	4.6

TABLE 4-1 (concluded)

Station	State	$[u^+]$ (m/s)	[u] (m/s)	Station	State	$[u^+]$ (m/s)	[u] (m/s)
Toledo	OH	22.7	4.2	Dallas	TX	21.9	4.9
Oklahoma City	OK	24.1	5.7	El Paso	TX	24.8	4.2
Tulsa	OK	21.4	4.7	Port Arthur	TX	23.7	4.5
Portland	OR	23.5	3.5	San Antonio	TX	21.0	4.2
Harrisburg	PA	20.4	3.4	Salt Lake City	UT	22.6	3.9
Philadelphia	PA	22.1	4.3	Burlington	VT	20.4	3.9
Pittsburgh	PA	21.6	4.2	Lynchburg	VA	18.3	3.5
Scranton	PA	19.9	3.8	Norfolk	VA	21.8	4.7
Huron	SD	27.4	5.3	Richmond	VA	18.9	3.4
Rapid City	SD	27.3	5.0	Quillayute	WA	16.3	3.0
Chattanooga	TN	21.4	2.8	Seattle	WA	18.7	4.1
Knoxville	TN	21.8	3.3	Spokane	WA	21.4	3.9
Memphis	TN	20.3	4.1	Green Bay	WI	25.3	4.6
Nashville	TN	20.9	3.6	Madison	WI	24.9	4.4
Abilene	TX	24.4	5.4	Milwaukee	WI	24.0	5.3
Amarillo	TX	27.3	6.1	Cheyenne	WY	27.0	5.9
Austin	TX	20.2	4.2	Lander	WY	27.4	3.1
Brownsville	TX	19.5	5.3	Sheridan	WY	27.5	3.6
Corpus Christi	TX	24.4	5.4	Elkins	WV	22.8	2.8

[a] Data taken from Extreme Wind Speeds at 129 Stations in the Contiguous United States. Simiu, E., Filliben, J. J., and M. J. Changery. NBS Building Science Series 118. U.S. Department of Commerce, National Bureau of Standards, 1979.

[b] Data taken from Local Climatological Data - Annual Summaries for 1977. U.S. Department of Commerce, National Oceanic and Atmospheric Administration/Environmental Data Service/National Climatic Data Center.

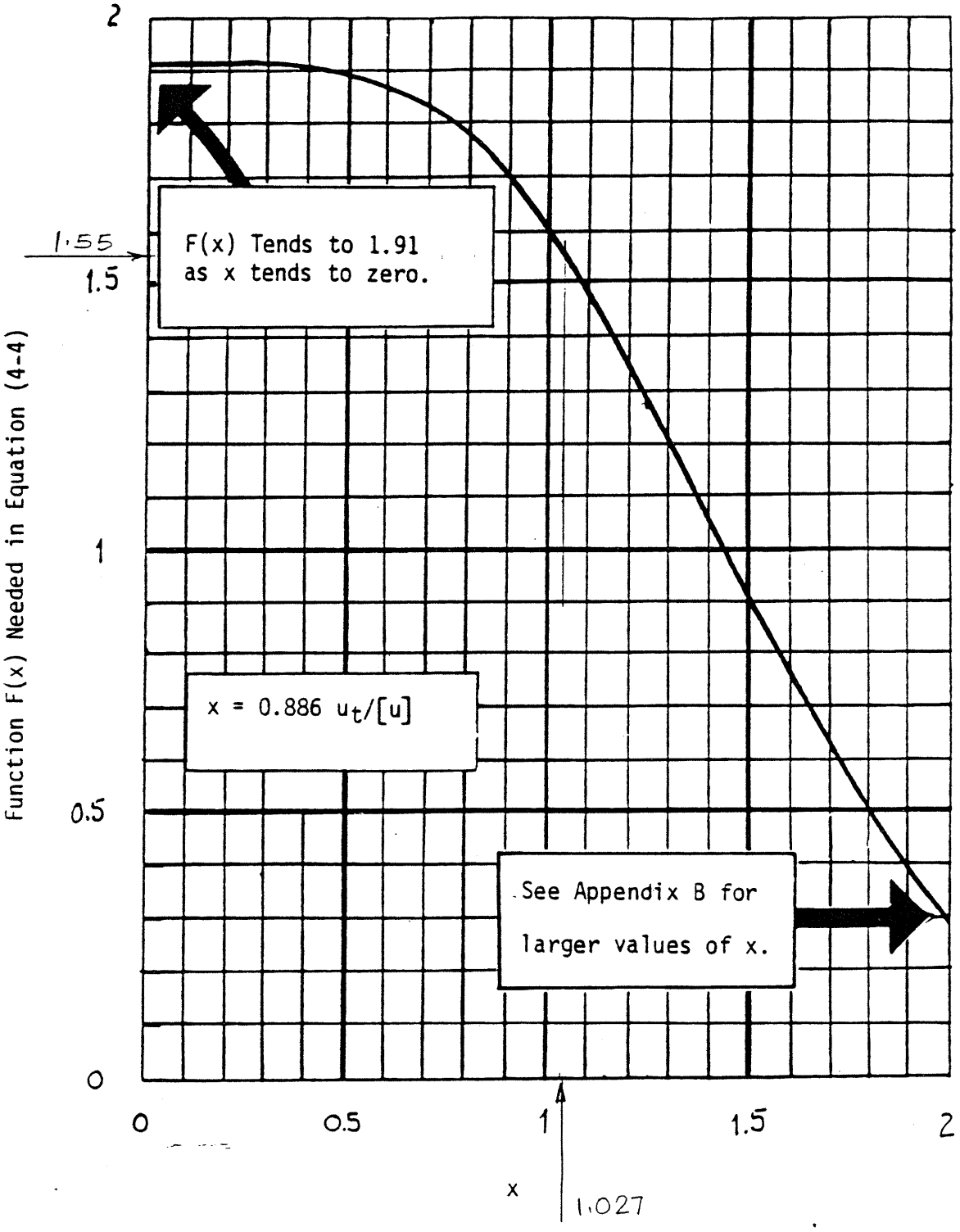
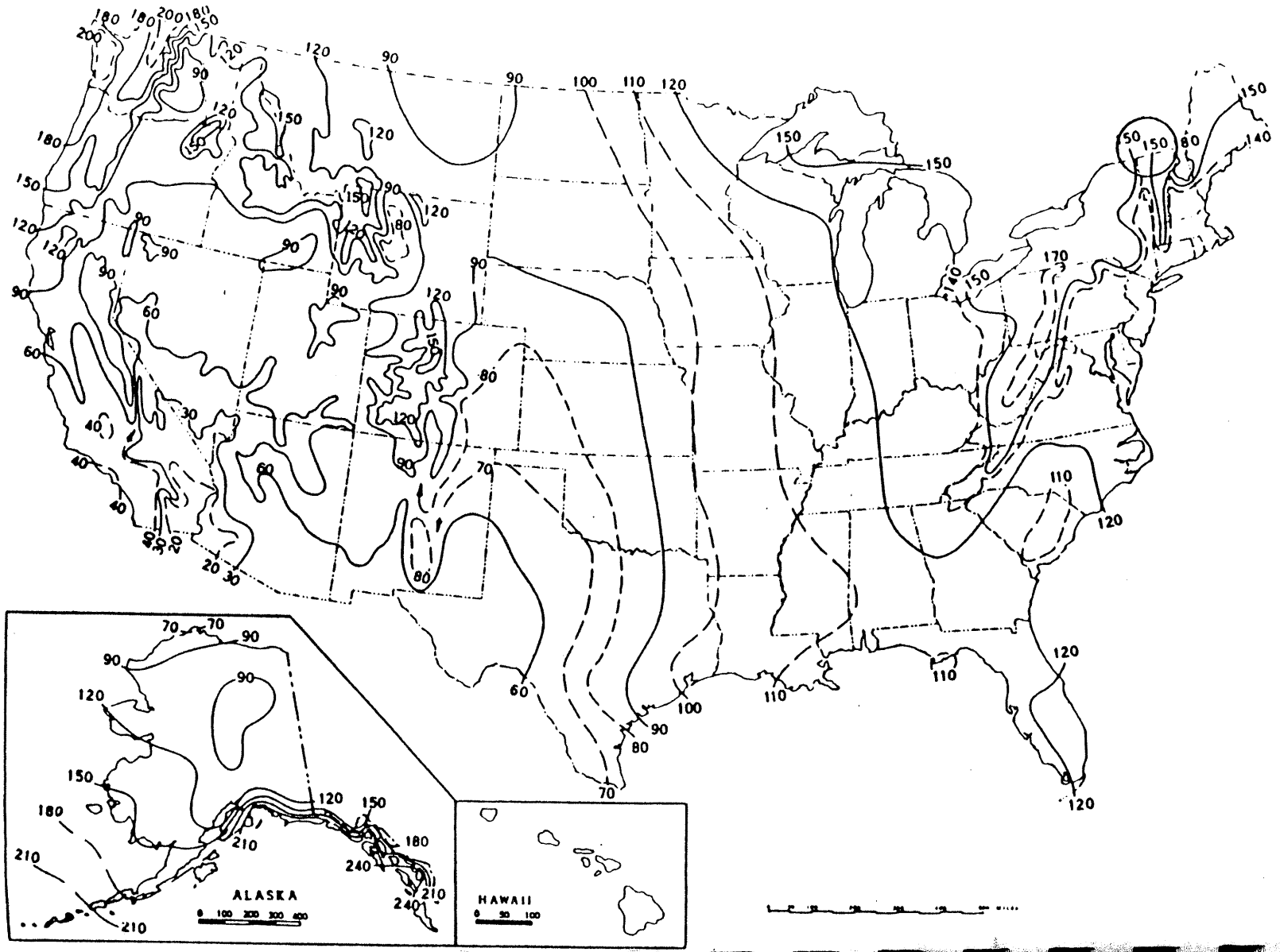


Figure 4-3. Graph of Function F(X) Needed to Estimate Unlimited Erosion

MEAN NUMBER OF DAYS WITH 0.01 INCH OR MORE OF PRECIPITATION, ANNUAL



exposure of fresh surface material. This would occur whenever aggregate material is either added to or removed from the old surface. A disturbance of an exposed area may also result from the turning of surface material to a depth exceeding the size of the largest pieces of material present.

Although vehicular traffic alters the surface by pulverizing surface material, several vehicle passes may be required to restore the full erosion potential, except for surfaces that crust before substantial wind erosion occurs. In that case, breaking of the crust over the area of the tire/surface contact once again exposes the erodible material beneath.

Thornthwaites' P-E (PE) Index is a useful indicator of average surface soil moisture conditions. In the present context, the P-E Index is applied as a correction parameter for wind generated emissions in the limited reservoir case. Figure 4-2 provides a basis for selecting an appropriate P-E value.

The worst-case emission rate is calculated by assuming that a disturbance occurs just prior to the annual fastest mile event, both within the 24-h period of interest. For this calculation, use Equation (4-1) with $f = 30\ mo^{-1}$.

4.1.2 Wind Erosion from Surfaces with Unlimited Erosion Potential

For estimating respirable particulate emissions from wind erosion of surfaces with an "unlimited reservoir" of erodible particles, a predictive emission factor equation developed from Gillette's (1981) field measurements of highly erodible soils is recommended. In relating the annual average rate of respirable particulate emissions (per unit area) to field and climatic factors, the equation takes the following form:

$$E_{10} = 0.036\ (1-V) \left(\frac{[u]}{u_t}\right)^3 F(x) \qquad (4\text{-}4)$$

where:

E_{10} = PM_{10} emission factor, i.e., annual average PM_{10} emission rate per unit area of contaminated surface (g/m^2-hr)

V = fraction of contaminated surface vegetative cover (equals 0 for bare soil)

$[u]$ = mean annual wind speed (m/s), taken from Table 4-1

$x = 0.886\ u_t/[u]$ = dimensionless ratio

$F(x)$ = function plotted in Figure 4-3

u_t = threshold value of wind speed at 7 m (m/s)

This follows from the empirical relationship that the vertical flux of particles smaller than 10 μm diameter is proportional to the cube of wind speed. Because highly erodible soils do not readily retain moisture, no moisture-related parameter is included in the equation.

u^+ = observed (or probable) fastest mile of wind for the period between disturbances (m/s)

$P(u^+)$ = erosion potential, i.e., quantity of erodible particles present on the surface prior to the onset of wind erosion (g/m^2)

V = fraction of contaminated surface area covered by continuous vegetative cover (equals 0 for bare soil)

PE = Thornthwaite's Precipitation Evaporation Index used as a measure of average soil moisture content

Although Equation 4-1 is based primarily on field tests of nonsoil surfaces (e.g., coal with a top size of 3 cm and a silt content exceeding 4%), subsoil and other crustal materials showed similar behavior. The erosion potential (in g/m^2) depends on the fastest mile (in m/s) as follows:

$$P(u^+) = 6.7\,(u^+ - u_t), \quad u^+ \geqq u_t \qquad (4\text{-}2)$$
$$0 \quad , \quad u^+ < u_t$$

where u_t is the erosion threshold wind speed (in m/s), measured at a typical weather station sensor height of 7 m.

The threshold friction velocity determined from the site survey is converted to the equivalent wind speed at a height of 7 m using Figure 4-1. This figure assumes a logarithmic velocity profile near the earth's surface:

$$\frac{u(z)}{u_*} = \frac{1}{0.4} \ln (z/zo) \qquad (4\text{-}3)$$

where: u = wind speed at height z (m/s)
z = height above surface (cm)
u_* = friction velocity (m/sec)
z_o = roughness height (cm)

Mean annual fastest mile (u^+) values are presented in Table 4-1. The value for the weather station closest to the surface contamination site should be used.

Emissions generated by wind erosion of "limited reservoir" surfaces are also dependent on the frequency of disturbance (f) of the erodible surface, because each time that a surface is disturbed, its erosion potential is restored. A disturbance is defined as an action which results in the

Step 1 - Estimation of Emissions

The technical approach for estimating respirable (PM_{10}) emissions from surface contamination sites is consistent with the technique used in air pollution assessments. It is based on the following equation:

$$R_{10} = \alpha E_{10} A \qquad (2\text{-}1)$$

where R_{10} = emission rate of contaminant as PM_{10} (mass/time)

α = fraction of contaminant in PM_{10} emissions (mass/mass)

E_{10} = PM_{10} emission factor (mass/source extent)

A = source extent (source-dependent units)

The emission factor is simply the ratio of uncontrolled emissions per unit of source extent. For wind erosion, the source extent is the area of erodible surface. In the case of emissions generated by mechanical disturbance, source extent is also the area (or volume) of the material from which the emissions emanate. Normally, the "uncontrolled" emission factor incorporates the effects of natural mitigation (e.g., rainfall). If anthropogenic control measures (e.g., treating the surface with a chemical binder which forms an artificial crust) are applied to the source, the uncontrolled emission factor must be reduced to reflect the resulting fractional control.

The first step in the estimation of atmospheric particulate emissions from a surface contamination site is to decide whether potential emissions are limited to those generated by wind erosion. If traffic over the site occurs, it is likely that the traffic emissions (or emissions from other forms of mechanical disturbance) substantially exceed emissions from wind erosion. This is because, for most parts of the country, vehicle traffic is an intensive entrainment mechanism in comparison with wind erosion.

For estimation of emissions from traffic on unpaved surfaces, a predictive emission factor equation is recommended in Section 4. This equation, developed from regression analysis of field test data, explains much of the observed variance in road dust emission factor values on the basis of variances in specific road surface and traffic parameters. Thus it provides more reliable estimates of source emissions on a site specific basis than does a single-valued average emission factor. The appropriate measure of source extent for this emission factor is obtained by converting traffic counts and road segment lengths into the total vehicle-distance traveled; in effect this represents the cumulative road surface area from which the emissions are released.

For estimating emissions from wind erosion, either of two emission factor equations are recommended in Section 4 depending on the erodibility of the surface material. In both cases, the appropriate measure of source

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Date. Wed Mar 22, 1995 12:26 PM

[redacted]

This is the information you requested from

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(919) 541-0548

Sect 13.2.4

If you need assistance, phone Info CHIEF at (919) 541-5285

Index (Document #001) updated on February 22, 1995

13.2.4 PAVED ROADS

13.2.4.1 General

Particulate emissions occur whenever vehicles travel over a paved surface, such as a road or parking lot. In general terms, particulate emissions from paved roads originate from the loose material present on the surface. In turn, that surface loading, as it is moved or removed, is continuously replenished by other sources. At industrial sites, surface loading is replenished by spillage of material and trackout from unpaved roads and staging areas. Figure 13.2.4-1 illustrates several transfer processes occurring on public streets.

Various field studies have found that public streets and highways, as well as roadways at industrial facilities, can be major sources of the atmospheric particulate matter within an area.[1-8] Of particular interest in many parts of the United States are the increased levels of emissions from public paved roads when the equilibrium between deposition and removal processes is upset. This situation can occur for various reasons, including application of snow and ice controls, carryout from construction activities in the area, and wind and/or water erosion from surrounding unstabilized areas.

13.2.4.2 Emissions And Correction Parameters

Dust emissions from paved roads have been found to vary with what is termed the "silt loading" present on the road surface as well as the average weight of vehicles traveling the road. The term silt loading (sL) refers to the mass of silt-size material (equal to or less than 75 micrometers [μm] in physical diameter) per unit area of the travel surface.[4-5] The total road surface dust loading is that of loose material that can be collected by broom sweeping and vacuuming of the traveled portion of the paved road. The silt fraction is determined by measuring the proportion of the loose dry surface dust that passes through a 200-mesh screen, using the ASTM-C-136 method. Silt loading is the product of the silt fraction and the total loading, and is abbreviated "sL". Additional details on the sampling and analysis of such material are provided in AP-42 Appendix C.

The surface sL provides a reasonable means of characterizing seasonal variability in a paved road emission inventory.[9] In many areas of the country, road surface loadings are heaviest during the late winter and early spring months when the residual loading from snow/ice controls is greatest.

13.2.4.3 Predictive Emission Factor Equations[9]

The quantity of dust emissions from vehicle traffic on a paved road may be estimated using the following empirical expression:

$$E = k\,(sL/2)^{0.65}\,(W/3)^{1.5}$$

[The unit will depend on the unit of k used. This is as per (1) R. Meyers EPA] Tel. 1-919-541-5

where:

	E	=	particulate emission factor
	k	=	base emission factor for particle size range and units of interest (see below)
	sL	=	road surface silt loading (g/m^2)
	W	=	average weight (tons) of the vehicles traveling the road

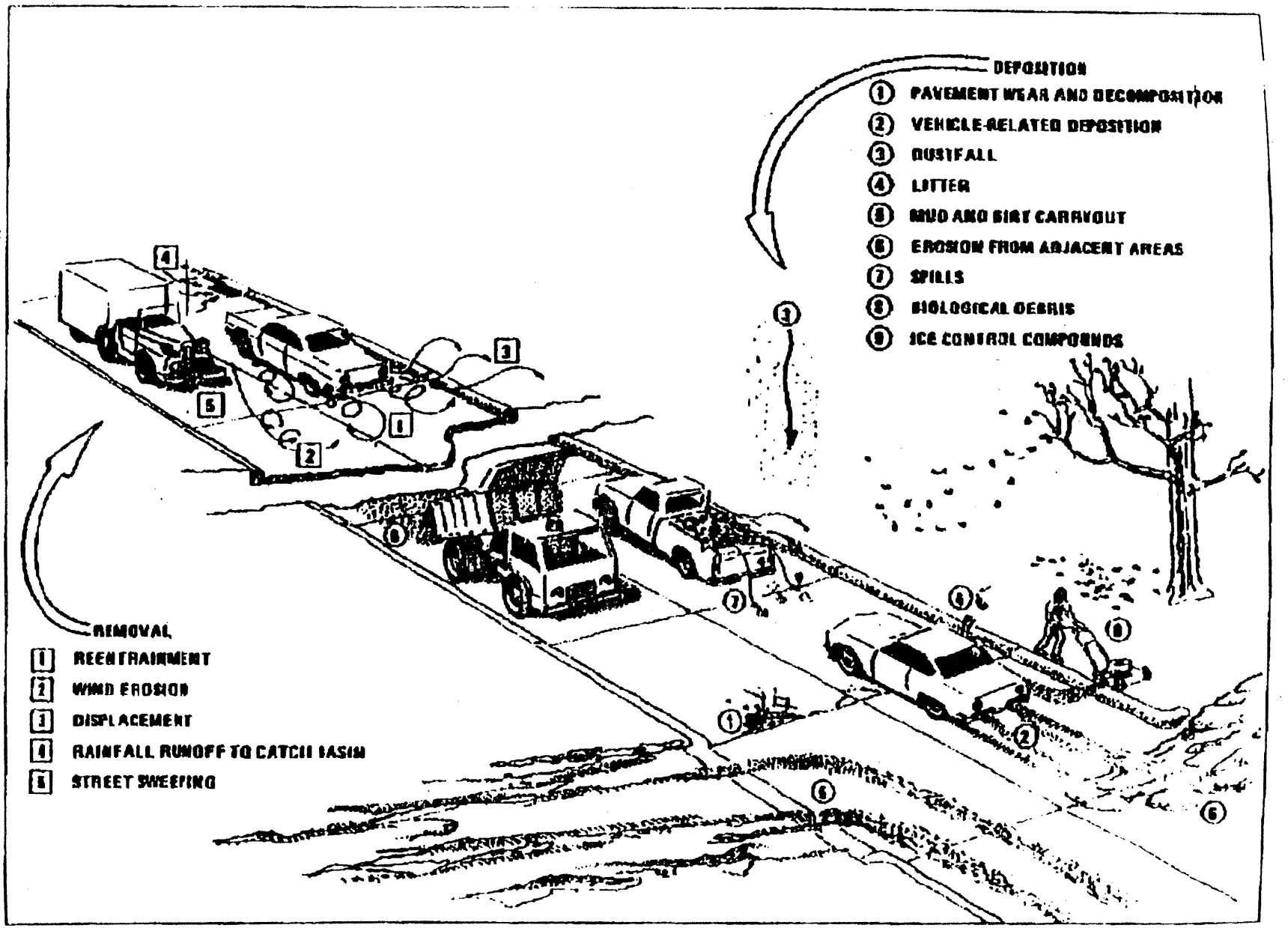

Figure 13.2.4-1. Deposition and removal processes.

The particle size multiplier (k) above varies with aerodynamic size range as follows.

Particle Size Multipliers for Paved Road Equation

Size Range[a]	Multiplier k[b]		
	g/VKT	g/VMT	lb/VMT
PM-2.5	2.1	3.3	0.0073
PM-10	4.6	7.3	0.016
PM-15	5.5	9.0	0.020
PM-30[c]	24	38	0.082

[a] Refers to airborne particulate matter (PM-x) with an aerodynamic diameter equal to or less than x microns.

[b] Units shown are grams per vehicle kilometer traveled (g/VKT), grams per vehicle mile traveled (g/VMT), and pounds per vehicle mile traveled (lb/VMT).

[c] PM-30 is sometimes termed "suspendable particulate" (SP) and is often used as a surrogate for TSP.

To determine particulate emissions for a specific particle size range, use the appropriate value of k above.

The above equation is based on a regression analysis of numerous emission tests, including 65 tests for PM 10.[9] Sources tested include public paved roads, as well as controlled and uncontrolled industrial paved roads. The equations retain the quality rating of A (B for PM-2.5), if applied within the range of source conditions that were tested in developing the equation as follows:

Silt loading:	0.02 - 400 g/m^2
	0.03 - 570 grain/ft^2
Mean vehicle weight:	2.0 - 42 tons
	1.8 - 38 Mg
Mean vehicle speed:	10 - 55 mph
	16 - 88 kph

To retain the quality rating for the emission factor equation when it is applied to a specific paved road, it is necessary that reliable correction parameter values for the specific road in question be determined. The field and laboratory procedures for determining surface material silt content and surface dust loading are summarized in Appendix C. In the event that site-specific values cannot be obtained, an appropriate value for an industrial road may be selected from the mean values given in Table 13.2.4-1, but the quality rating of the equation should be reduced by one level.

With the exception of limited access roadways, which are difficult to sample, the collection and use of site-specific sL data for public paved road emission inventories are strongly recommended. Although hundreds of public paved road sL measurements have been made since 1980,[7, 13-20] uniformity has been lacking in sampling equipment and analysis techniques, in roadway classification schemes, and in the types of data reported.[9] The assembled data set (described below) does not yield

13.2.2 AGGREGATE HANDLING AND STORAGE PILES

13.2.2.1 General

Inherent in operations that use minerals in aggregate form is the maintenance of outdoor storage piles. Storage piles are usually left uncovered, partially because of the need for frequent material transfer into or out of storage.

Dust emissions occur at several points in the storage cycle, such as material loading onto the pile, disturbances by strong wind currents, and loadout from the pile. The movement of trucks and loading equipment in the storage pile area is also a substantial source of dust.

13.2.2.2 Emissions And Correction Parameters

The quantity of dust emissions from aggregate storage operations varies with the volume of aggregate passing through the storage cycle. Emissions also depend on three parameters of the condition of a particular storage pile: age of the pile, moisture content, and proportion of aggregate fines.

When freshly processed aggregate is loaded onto a storage pile, the potential for dust emissions is at a maximum. Fines are easily disaggregated and released to the atmosphere upon exposure to air currents, either from aggregate transfer itself or from high winds. As the aggregate pile weathers, however, potential for dust emissions is greatly reduced. Moisture causes aggregation and cementation of fines to the surfaces of larger particles. Any significant rainfall soaks the interior of the pile, and then the drying process is very slow.

Silt (particles equal to or less than 75 microns in diameter) content is determined by measuring the portion of dry aggregate material that passes through a 200-mesh screen, using ASTM-C-136 method.[1] Table 13.2.2-1 summarizes measured silt and moisture values for industrial aggregate materials.

13.2.2.3 Predictive Emission Factor Equations

Total dust emissions from aggregate storage piles result from several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic in storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Loadout of aggregate for shipment or for return to the process stream (batch or continuous drop operations).

Either adding aggregate material to a storage pile or removing it usually involves dropping the material onto a receiving surface. Truck dumping on the pile or loading out from the pile to a truck with a front-end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

Table 13.2.2-1. TYPICAL SILT AND MOISTURE CONTENTS OF MATERIALS AT VARIOUS INDUSTRIES[a]

Industry	No. of Facilities	Material	Silt Content (%)			Moisture Content (%)		
			No. of Samples	Range	Mean	No. of Samples	Range	Mean
Iron and steel production	9	Pellet ore	13	1.3 - 13	4.3	11	0.64 - 4.0	2.2
		Lump ore	9	2.8 - 19	9.5	6	1.6 - 8.0	5.4
		Coal	12	2.0 - 7.7	4.6	11	2.8 - 11	4.8
		Slag	3	3.0 - 7.3	5.3	3	0.25 - 2.0	0.92
		Flue dust	3	2.7 - 23	13	1	-	17
		Coke breeze	2	4.4 - 5.4	4.9	2	6.4 - 9.2	7.8
		Blended ore	1	-	15	1	-	6.6
		Sinter	1	-	0.7	0	-	-
		Limestone	3	0.4 - 2.3	1.0	2	NA	0.2
Stone quarrying and processing	2	Crushed limestone	2	1.3 - 1.9	1.6	2	0.3 - 1.1	0.7
		Various limestone products	8	0.8 - 14	3.9	8	0.46 - 5.0	2.1
Taconite mining and processing	1	Pellets	9	2.2 - 5.4	3.4	7	0.05 - 2.0	0.9
		Tailings	2	NA	1[illegible]	1	-	0.4
Western surface coal mining	4	Coal	15	3.4 - 16	6.2	7	2.8 - 20	6.9
		Overburden	15	3.8 - 15	7.5	0	-	-
		Exposed ground	3	5.1 - 21	15	3	0.8 - 6.4	3.4
Coal-fired power plant	1	Coal (as received)	60	0.6 - 4.8	2.2	59	2.7 - 7.4	4.5
Municipal solid waste landfills	4	Sand	1	-	2.6	1	-	7.4
		Slag	2	3.0 - 4.7	3.8	2	2.3 - 4.9	3.6
		Cover	5	5.0 - 16	9.0	5	8.9 - 16	12
		Clay/dirt mix	1	-	9.2	1	-	14
		Clay	2	4.5 - 7.4	6.0	2	8.9 - 11	10
		Fly ash	4	78 - 81	80	4	26 - 29	27
		Misc. fill materials	1	-	12	1	-	11

[a]References 1 - 10. NA = Not Available.

The quantity of particulate emissions generated by either type of drop operation, per kg (ton) of material transferred, may be estimated, with a rating of A, using the following empirical expression:[11]

$$E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (kg/Mg)}$$

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (lb/ton)}$$

where:
- E = emission factor
- k = particle size multiplier (dimensionless)
- U = mean wind speed, m/s (mph)
- M = material moisture content (%)

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows:

Aerodynamic Particle Size Multiplier (k) for Equation

< 30 μm	< 15 μm	< 10 μm	< 5 μm	< 2.5 μm
0.74	0.48	0.35	0.20	0.11

The equation retains the assigned quality rating if applied within the ranges of source conditions that were tested in developing the equation, as follows. Note that silt content is included, even though silt content does not appear as a correction parameter in the equation. While it is reasonable to expect that silt content and emission factors are interrelated, no significant correlation between the two was found during the derivation of the equation, probably because most tests with high silt contents were conducted under lower winds, and vice versa. It is recommended that estimates from the equation be reduced one quality rating level, if the silt content used in a particular application falls outside the range given:

Ranges Of Source Conditions For Equation

Silt Content (%)	Moisture Content (%)	Wind Speed (m/s)	Wind Speed (mph)
0.44 - 19	0.25 - 4.8	0.6 - 6.7	1.3 - 15

To retain the quality rating of the equation when it is applied to a specific facility, reliable correction parameters must be determined for specific sources of interest. The field and laboratory procedures for aggregate sampling are given in Reference 3. In the event that site specific values for

13.2.1 UNPAVED ROADS

13.2.1.1 General

Dust plumes trailing behind vehicles traveling on unpaved roads are a familiar sight in rural areas of the United States. When a vehicle travels an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed.

13.2.1.2 Emissions Calculation And Correction Parameters

The quantity of dust emissions from a given segment of unpaved road varies linearly with the volume of traffic. Field investigations also have shown that emissions depend on correction parameters (average vehicle speed, average vehicle weight, average number of wheels per vehicle, road surface texture and road surface moisture) that characterize the condition of a particular road and the associated vehicle traffic.[1-4]

Dust emissions from unpaved roads have been found to vary in direct proportion to the fraction of silt (particles smaller than 75 micrometers in diameter) in the road surface materials.[1] The silt fraction is determined by measuring the proportion of loose dry surface dust that passes a 200-mesh screen, using the ASTM-C-136 method. Table 13.2.1-1 summarizes measured silt values for industrial and rural unpaved roads.

Since the silt content of a rural dirt road will vary with location, it should be measured for use in projecting emissions. As a conservative approximation, the silt content of the parent soil in the area can be used. Tests, however, show that road silt content is normally lower than in the surrounding parent soil, because the fines are continually removed by the vehicle traffic, leaving a higher percentage of coarse particles.

Unpaved roads have a hard, generally nonporous surface that usually dries quickly after a rainfall. The temporary reduction in emissions caused by precipitation may be accounted for by not considering emissions on "wet" days (more than 0.254 millimeters [0.01 inches] of precipitation).

The following empirical expression may be used to estimate the quantity of size specific particulate emissions from an unpaved road, per vehicle kilometer traveled (VKT) or vehicle mile traveled (VMT):

$$E = k(1.7)\left(\frac{s}{12}\right)\left(\frac{S}{48}\right)\left(\frac{W}{2.7}\right)^{0.7}\left(\frac{w}{4}\right)^{0.5}\left(\frac{365-p}{365}\right) \quad \text{(kg/VKT)}$$

$$E = k(5.9)\left(\frac{s}{12}\right)\left(\frac{S}{30}\right)\left(\frac{W}{3}\right)^{0.7}\left(\frac{w}{4}\right)^{0.5}\left(\frac{365-p}{365}\right) \quad \text{(lb/VMT)} \qquad (1)$$

where:

- E = emission factor
- k = particle size multiplier (dimensionless)
- s = silt content of road surface material (%)
- S = mean vehicle speed, km/hr (mph)
- W = mean vehicle weight, Mg (ton)
- w = mean number of wheels
- p = number of days with at least 0.254 mm (0.01 in.) of precipitation per year (see discussion below about the effect of precipitation.)

The particle size multiplier in the equation, k, varies with aerodynamic particle size range as follows:

Aerodynamic Particle Size Multiplier For Equation					
≤30 μm[a]	≤30 μm	≤15 μm	≤10 μm	≤5 μm	≤2.5 μm
1.0	0.80	0.50	0.36	0.20	0.095

[a]Stokes diameter.

The number of wet days per year, p, for the geographical area of interest should be determined from local climatic data. Figure 13.2.1-1 gives the geographical distribution of the mean annual number of wet days per year in the United States.[17] The equation is rated "A" for dry conditions (p = 0) and "B" for annual or seasonal conditions (p > 0). The lower rating is applied because extrapolation to seasonal or annual conditions assumes that emissions occur at the estimated rate on days without measurable precipitation and, conversely, are absent on days with measurable precipitation. Clearly, natural mitigation depends not only on how much precipitation falls, but also on other factors affecting the evaporation rate, such as ambient air temperature, wind speed, and humidity. Persons in dry, arid portions of the country may wish to base p (the number of wet days) on a greater amount of precipitation than 0.254 millimeters (0.01 inch). In addition, Reference 18 contains procedures to estimate the emission reduction achieved by the application of water to an unpaved road surface.

The equation retains the assigned quality rating, if applied within the ranges of source conditions that were tested in developing the equation, as follows:

Ranges Of Source Conditions for Equation					
Road Silt Content (wt %)	Mean Vehicle Weight		Mean Vehicle Speed		Mean No. of Wheels
	Mg	ton	km/hr	mph	
4.3 - 20	2.7 - 142	3 - 157	21 - 64	13 40	4 - 13

Moreover, to retain the quality rating of the equation when addressing a specific unpaved road, it is necessary that reliable correction parameter values be determined for the road in question. The field

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Division of Air Resources

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III.B.5. Calculate the maximum Short-Term Impact, C_{ST}, from the area source using the equation below:

$$C_{ST}\ (ug/m3) = C_p\ 100.$$

where C_p is the maximum Potential Annual Impact as defined above.

III.C. ALTERNATE AREA SOURCE METHOD

The following alternate area source method was developed specifically for remediation projects and urban scale emissions. It has the flexibility to permit the calculation of the maximum annual concentration within an area source. Annual impacts may be estimated both within and downwind from an area source. However, the method has not been modified to estimate short-term impacts. The method will perform better the closer the source characteristics and assumptions approximate those specified in Section IV.G. The contribution from nearby area sources can be calculated by the procedures outlined below. Only sources located within a distance of 3S (S is the length of a side of the area source) from the source being analyzed need be considered. The method can calculate impacts at receptor distances from the source boundary to a distance of 2.5S from the area source. This range encompasses practically all cases of interest in these types of applications.

The following procedures are valid for ground level area sources, effectively less than 10 feet in height, with side lengths greater than 330 feet:

III.C.1. Determine the area source emission rate (Q_A) in units of lb/(hr-ft^2) by dividing the total annual emission rate, Q_a (lb/hr), by the area, A (ft^2), of the source.

$$Q_A \frac{(\ lb\ )}{(hr\text{-}ft^2)} = \frac{(emission\ rate)}{(area)} = \frac{Q_a}{A}$$

III.C.2. Calculate the maximum Actual Annual Impact, C_a, within the area source as defined below:

$$C_a(ug/m^3) = K \quad Q_A \quad C_m$$

Where: K_1 = 15 for 330 ft $\leq$ S< 3300 ft
K = 30 for S $\geq$ 3300 ft
C_m = 1.355×10^6, a conversion factor from lb/(hr-ft^2) to ug/m^2-sec).

III.C.3. If the receptors of interest are located off-site and are from one to 2.5 times the side length of the area source away, divide the concentration calculated in Step III.C.2. by the following factors:

Receptor Downwind Distance	S	1.5S	2S	2.5S
Concentration Reduction Factor	7	20	25	35

III.C.4. If there are other area sources within 3S distances from the source being considered, (ideally contiguous to the source being analyzed) then the contribution of these sources can be determined by redefining Q_A in Step III.C.2. ($lb/(hr\text{-}ft^2)$) as:

$$Q_A = (Q_{A0} + .32Q_{A1} + .18Q_{A2} + .13Q_{A3})$$

Where Q_{A0} represents the emissions from the source under consideration and Q_{A1} to Q_{A3} represent emissions from sources (if they exist) which are at upwind distances of 1S, 2S, and 3S respectively, from the Q_{A0} source. It must be noted that the nearby sources are assumed to have about the same size as the source under consideration.

III.D. AMBIENT IMPACT EVALUATION METHOD

An ambient air quality impact assessment is required as part of the Appendix B screening procedure. That assessment requires a comparison of predicted worst case annual and short-term impacts to the appropriate standards or guideline values. When building cavity impacts exceed the ambient impacts calculated using the Section III methodologies, those cavity concentrations become critical for determining the appropriate Environmental Rating under 6NYCRR Part 212.

It is important to understand that the Appendix B screening methods are generally conservative. This is especially true for the short-term impact hand calculation methods. When hand calculated impacts exceed the appropriate standards or guideline values, the AG-1 software program and/or SCREEN model should be used to reduce that conservatism. The SCREEN model should be used as the last step in the short-term impact screening procedure before a refined air quality impact analysis (III.D.1.) should be required.

When there are multiple sources of a contaminant and a great separation between sources, the conservatism in the short-term methods may be pronounced. In such a case, summing short-term impacts may be unrealistically conservative. That level of conservatism increases with greater variations in stack heights and source separation. Source separation becomes critical when it would be impossible for all sources to impact the point of maximum concentration for a given wind direction. When assessing annual impacts, the consideration of multiple sources is not as critical because wind direction varies over a yearly period. Therefore,

United States Air Force
Environmental Restoration Program

Flightline (SS-004) Remedial Investigation Report

Volume III
Appendices I through P

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APPENDIX M

FUGITIVE DUST AND VOLATILIZATION OF CHEMICALS FROM SOIL MODELS

URS CONSULTANTS, INC.

PAGE M-17 OF
SHEET NO. OF
JOB NO.
MADE BY PP DATE 7/6/95
CHKD. BY XHT DATE 7/21/95

PROJECT Plattsburgh Air Force Base
SUBJECT Fugitive Dust Model
Flight Line Site SS-004

REF. PAGE

Calculation for Soil Mode.

1) Surface Soil.

Boring GS-004-001 0' to 1'-0

$M_1 = \frac{.42+.25}{2} = .34.$

$M_2 = \frac{.25+.16}{2} = .21$

$M_{av} = \frac{1}{2}(.34+.21) = 0.275 \approx 0.28.$

Boring GS 004-002 0ft 1'-0

$M_1 = \frac{.42+.25}{2} = .34$

$M_2 = \frac{.25+.17}{2} = .21$

$M_{av} = (.34+.21)/2 = .275 \approx 0.28$

2.) Subsurface soil.

SB 04 - 04 10'-12'

$Mode = \frac{1}{2}(.17+.25) = .21$

SB 04 - 05 4'-6'

$M_1 = \left(\frac{.17+.25}{2}\right) = .21$

$M_2 = (.17+.075) \times 1/2 = .122$

URS CONSULTANTS, INC.

PROJECT Plattsburgh Airforce Base.
SUBJECT Fugitive Dust Model
Flight Line - Site SS-004

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REF. PAGE

SB 04 - 06 6' - 8'

$M_1 = (.25 + .17) \times 1/2 = 0.21$

$M_2 = (.17 + .075) \times 1/2 = 0.12$

$M = 1/2 (0.21 + 0.12) = 0.17.$

Moisture Content

SB 04 - 004 - 19.4 %

SB-04 - 005 - 20.5%

SB-04 - 006 - 20.3%

Average Moisture content $= \frac{19.4 + 20.5 + 20.3}{3}$

$= 20.07\ \%.$

Silt Content.

Surface soil

GS-004-001	0 to 1'-0	10.5%
GS-004-002	0 to 1'-0	7.9%

Silt content surface soil $= \frac{10.5+7.9}{2}$

$= 9.2\%$

Subsurface Soil. varying depth.

SB-04-004	10' to 12'	5.6%
SB-04-005	4' to 6'	10.1%
SB-04-006	6' to 8'	5.2%
SB-04-006	8' to 10	11.3%

Average silt content of subsurface soil

$= \frac{1}{4}(5.6+10.1+5.2+11.3) = 8.05\%$.

ATTACHMENT A-2

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005) OUTDOOR AIR INHALATION DURING CONSTRUCTION

URS **EXHIBIT 4.7-2**

CALCULATION COVER SHEET

Client: AFCEE Project Name: Plattsburgh AFB

Project/Calculation Number: 111 73 369.00003

Title: Site SS-005, Contaminant Volatilization from Soil

Total Number of Pages (including cover sheet): 24 (23 + cover)

Total Number of Computer Runs: 0

Prepared by: Marek Ostrowski Date: March 16, 04

Checked by: CRAIG PAWLEWSKI Date: March 17, 2004

Description and Purpose: To estimate exposure concentrations of site contaminants from volatilization from soils during the construction scenario

Design Basis/References/Assumptions

see text.

Remarks/Conclusions/Results: Chemical-specific Annual Average Concentrations are shown in Table 1 ~~on~~ pg 8.

Calculation Approved by: _____

Project Manager/Date

Revision No.:	Description of Revision:	Approved by:

Project Manager/Date

PROJECT...Plattsburgh AFB. SS-005..... JOB NO. .....11173369.00009.....
SUBJECT.....Contaminant Volatilization from Soil..... MADE BY...MO...DATE...
CHKD BY CWP...DATE 3/17/04

1. PURPOSE

The purpose of this analysis was to estimate the exposure concentrations of chemicals volatilizing from ~~subsurface~~ soil at SS-005 during the future construction scenario.

2. METHODOLOGY

The estimate of exposure concentrations is performed based on the methodology outlined in the *Guideline for Predictive Baseline Emissions Estimation Procedures for Superfund Sites - Interim Final* (USEPA 1992). Copies of the relevant pages from this publication are attached. Unless otherwise indicated, all equations used below are from the guideline document. The calculation consists of two parts: estimating air emission rates and estimating ambient air concentrations resulting from the emission rates.

2.1 Estimate of Air Emission Rates

A. Saturation Concentration

The method used to estimate emission rates depends on the relationship between the actual contaminant concentration in soil (C_{soil}) and the saturation concentration (C_{sat}). The saturation concentration is "the concentration at which the adsorptive limit of the soil plus the theoretical dissolution limit of the contaminant in the available soil moisture has been reached." Concentrations in the soil above this saturation concentration indicate that the contaminant is found as a "free-phase" contaminant within the soil matrix. From equation 1:

$$C_{sat} = (K_d \ s \ n_m) + (s \ \theta_m)$$

Where:

C_{sat}	= Saturation concentration (mg/kg)
K_d	= Soil/Water partition coefficient (L/kg)
s	= Solubility of contaminant in water (mg/L-water)
n_m	= Soil moisture content expressed as a weight fraction (kg-water/kg-soil)
θ_m	= Soil moisture content (L-water/kg-soil)

The soil partition coefficient is determined from the following equation (Equation 2):

$$K_d = K_{oc} \ f_{oc}$$

Where:

K_d	= Soil/Water partition coefficient (L/kg)
K_{oc}	= Organic carbon partition coefficient (L/kg)
f_{oc}	= Fraction of organic carbon in soil (mg/mg)

B. Emission Rates in the Presence of Free Phase ($C_{soil} > C_{sat}$)

When the measured bulk concentration is greater than the saturation concentration, the emission rate of the component was calculated from the following equation (Equation 5):

$$E_i = D_i C_{si} A P_t^{4/3} \frac{M_i}{d_{sc}}$$

Where:

E_i	= Emission rate of component i (g/s)
D_i	= Diffusion coefficient of component in air (cm^2/s)
C_{si}	= Saturation vapor concentration of component i (g/cm^3)
A	= Exposed surface area (cm^2)
P_t	= Total soil porosity (dimensionless)
M_i	= Mole fraction of component i in the waste (gmole/gmole)
d_{sc}	= Effective depth of soil cover from sample depth to soil surface (cm)

The calculation of M_i includes the number of moles of all contaminants plus the water within the waste but does not include the soil because it is assumed to be nonvolatile.

Diffusion coefficients are either obtained from published sources or, if not available, can be calculated using the FSG method (Lyman, 1982). This equation is:

$$D_{BA} = \frac{10^3 T^{1.75} \sqrt{M_r}}{P(V_A^{1/3} + V_B^{1/3})^2}$$

[Eqn. 17-12 from Lyman, et al. 1982]

Where:

D_{BA} =	diffusion coefficient for chemical in air (cm^2/s)
T =	temperature (^oK)
P =	pressure (atm)
M_r =	$(M_A + M_B)/(M_A M_B)$
M_A =	molecular weight of air
M_B =	molecular weight of compound
V_A =	molar volume for air (cm^3/mol)
V_B =	molar volume of compound, (cm^3/mol) calculated by summing the applicable incremental values from Table 17-4 (Lyman, et al. 1982)

This equation is the same as Equation 7 of the manual.

The saturation vapor concentration was determined from the following equation (Equation 8):

$$C_{si} = \frac{p \ MW_i}{R \ T}$$

Where:

C_{si}	= Saturation vapor concentration of component i (g/cm^3)
p	= Vapor pressure of the chemical i (mm Hg)
R	= Molar gas constant = 62,361 mmHg-cm^3/mole-^{o}K
T	= Absolute temperature of waste in-situ (^{o}K)
MW_i	= Molecular weight of component i (g/mole)

C. Emission Rates in the Absence of Free Phase ($C_{soil} < C_{sat}$)

When the measured bulk concentration is less than the saturation concentration, the emission rate was calculated from the following equation (Equation 9 of the manual):

$$E_i = \frac{A \ 2 \ D_{ei} \ \varepsilon \ K_{as} \ C_i}{\sqrt{\pi \ \alpha \ t}}$$

Where:

E_i	= Emission rate of component i (g/s)
D_{ei}	= Effective diffusivity of component i (cm^2/s)
K_{as}	= Soil/air partition coefficient (g/cm^3)
C_i	= Bulk soil concentration of component i (g/g)
t	= Exposure interval (s) = exposure time x exposure frequency x exposure duration
ε	= Soil porosity (dimensionless) = P_t for dry soil or ε = P_a when soil is more often wet than dry
A	= Exposed surface area (cm^2)

And (Equation 9a):

$$\alpha = \frac{D_{ei} \ \varepsilon}{\varepsilon + \dfrac{\rho (1 - \varepsilon)}{K_{as}}}$$

Where:

ρ	= Particle density (g/cm^3)

Total soil porosity is calculated from the following equation (Equation 6):

$$P_t = 1 - \frac{\beta}{\rho}$$

Where:

P_t = Total soil porosity (dimensionless)
β = Soil bulk density (g/cm^3)
ρ = Particle density (g/cm^3)

The site area is open to infiltration and the groundwater table is relatively high. Therefore, the air filled porosity was substituted for the total soil porosity. Equation 6a from the manual was used to determine the air filled porosity.

$$P_a = P_t - \theta_m \beta$$

Where:

P_a = Air-filled soil porosity (dimensionless)
P_t = Total soil porosity (dimensionless)
θ_m = Soil moisture content (cm^3-water/g-soil)
β = Soil bulk density (g/cm^3)

The soil/air partition coefficient is calculated as follows (Equation 9b):

$$K_{as} = \frac{41\ H}{K_d}$$

Where:

K_{as} = Soil/air partition coefficient (g/cm^3)
H = Henry's Law constant of component i (atm-m^3/mole)
K_d = Soil/water partition coefficient (mL/g or cm^3/g)
41 = Conversion factor to change H to dimensionless form

The effective diffusivity is determined from the following equation (Equation 9):

$$D_{ei} = D_i \, \varepsilon^{0.33}$$

Where:

D_{ei} = Effective diffusivity of component i (cm^2/s)
D_i = Diffusion coefficient of component in air (cm^2/s)
ε = Soil porosity (dimensionless)

2.2 Estimate of Ambient Air Concentrations

For the health risk assessment, it was conservatively assumed that the receptor would be standing at the center of the area source. Thus, the annual average concentration was calculated using the following equation (Equation on p. 35 of the manual)

$$\ln\left(\frac{C}{Q_T}\right) = 13.0 - 0.261(\ln X) - 0.241(\ln X)^2 + 0.0124(\ln X)^3$$

Where:

C = Long-term (annual average) concentration (ug/m^3)
Q_T = Total source emission rate (g/s)
X = Horizontal dimension of the square area source (m)

From this:

$$\frac{C}{Q_T} = e^{13.0 - 0.261(\ln X) - 0.241(\ln X)^2 + 0.0124(\ln X)^3}$$

$$C = Q_T e^{13.0 - 0.261(\ln X) - 0.241(\ln X)^2 + 0.0124(\ln X)^3}$$

3. PARAMETERS

Input parameters used in the model are listed below.

3.1 Contaminant-Specific Parameters (see Table 3)

Solubility:	s	= Contaminant-specific (mg/L-water)
Vapor pressure:	p	= Contaminant-specific (mm Hg)
Molecular weight:	MW_i	= Contaminant-specific (g/mole)
Diffusion coefficient in air:	D_i	= Contaminant-specific (cm^2/s)
Henry's law constant:	H	= Contaminant-specific (atm-m^3/mole)
Organic carbon partition coeff.:	K_{oc}	= Contaminant-specific (L/kg)

3.2 Soil Parameters

Site-specific soil parameters for SS-005 are not available. Soil parameters of moisture content and organic carbon content were determined based on properties obtained from an investigation program at the SS-04 site. See Table 2. The site is located in the immediate vicinity of SS-005 (see page 12). The soil bulk density and particle density are assumed based on equation 6.

Soil moisture content:	n_m	= 0.11 kg-water/kg-soil or, with ρ_w = 1 kg/L
	θ_m	= 0.11 L-water/kg-soil
Soil organic carbon content:	f_{oc}	= 0.00335 mg/mg
Soil bulk density:	β	= 1.5 g/cm^3
Soil particle density:	ρ	= 2.65 g/cm^3

3.3 Site Parameters

Site area (see page 13):	A	= 200*400 = 80,000 ft^2 = $7.4*10^7$ cm^2
Site dimension:	X	= $A^{1/2} = (7.4*10^7)^{1/2}$ = 8,600 cm
Depth of soil cover. Assume 2 ft:	d_{sc}	= 2 ft = 61 cm

3.4 Exposure Time

According to the construction scenario, a construction worker works on the site 3 months, 22 days per month, 8 hrs/day (28,800 sec/day). This results in:

t = (3 months)(22 days/month)(28,800 sec/day) =
= 1,900,800 sec

3.5 Other

Universal gas constant (equation 8):	R	= 62,361 mmHg-cm^3/mole-°K
Temperature. Assume 25°C:	T	= 298°K

4. CALCULATION

The calculation of the annual average concentration is shown on Table 1.

5. REFERENCES

USEPA, 1992. Guideline for Predictive Baseline Emissions Estimation Procedures for Superfund Sites - Interim Final. EPA-450/1-92-002. New York.

Lyman, W.J., et al., 1982. Handbook of Chemical Property Estimation Methods. McGraw Hill.Book Company, New York.

TABLE 1

SITE SS-005
EXPOSURE CONCENTRATIONS - ORGANICS VOLATILIZING FROM SOIL
FUTURE USE SCENARIO

CHEMICAL	ORGANIC CARBON/ WATER PARTITION COEFF.	SOIL/ WATER PARTITION COEFF.	SOLUBILITY IN WATER	SATURATION CONC. IN SOIL	EXPOSURE CONC. IN SOIL (1)	SITE SOIL CONC > SAT CONC?	MOL. WEIGHT	VAPOR PRESSURE	SATURATION VAPOR CONC.	# OF MOLES OF CHEMICAL	MOLE FRACTION OF CHEMICAL	DIFFUSION COEFFICIENT IN AIR	EMISSION RATE FOR Csite>Csat	EFFECTIVE DIFUSIVITY	HENRY'S LAW CONSTANT	SOIL/AIR PARTITION COEFF.	COEFF.	EMISSION RATE FOR Csite<Csat	SUMMARY OF EMISSION RATES	ANNUAL AVERAGE CONCENTRATION	
	Koc	Kd	s	Csat	Csite	Csite>Csat?	MWi	p	Csi	Mc	Mi	Di	Ei(1)	Dei	H	Kas	alpha	Ei(2)	Ei	C	
	(L/kg)	(L/kg)	(mg/L)	(mg/kg)	(mg/kg-soil)		(g/mole)	mmHg	(g/cm³)	(mole/kg-soil)	(-)	(cm²/s)	(g/s)	(cm²/s)	(atm-m³/mol)	(g/cm³)		(g/s)	(g/s)	(ug/m³)	(mg/m³)
VOAs																					
2-Hexanone	1.30E+01	4.36E-02	1.75E+04	2.01E+03	5.83E-03	NO	100.16	1.16E+01	—	5.82E-08	—	8.00E-02	—	5.19E-02	9.29E-05	8.73E-02	6.21E-04	1.73E-05	1.73E-05	5.98E-02	5.98E-05
4-Methyl-2-pentanone	1.09E+01	3.65E-02	1.90E+04	2.17E+03	5.75E-03	NO	100.16	1.99E+01	—	5.74E-08	—	7.50E-02	—	4.86E-02	1.38E-04	1.55E-01	1.02E-03	2.20E-05	2.20E-05	7.64E-02	7.64E-05
Acetone	5.75E-01	1.93E-03	1.00E+06	1.10E+05	7.39E-03	NO	58	2.35E+02	—	1.27E-07	—	1.24E-01	—	8.04E-02	3.88E-05	8.26E-01	8.27E-03	8.79E-05	8.79E-05	3.05E-01	3.05E-04
Methylene Chloride	1.20E+01	4.02E-02	1.70E+04	1.95E+03	1.65E-02	NO	50.5	4.40E+02	—	3.27E-07	—	1.01E-01	—	6.55E-02	2.40E-03	2.45E+00	1.66E-02	3.34E-04	3.34E-04	1.16E+00	1.16E-03
Tetrachloroethene	1.55E+02	5.19E-01	2.00E+02	3.34E+01	1.00E-03	NO	166	1.40E+01	—	6.02E-09	—	7.20E-02	—	4.67E-02	1.84E-02	1.45E+00	7.84E-03	1.25E-05	1.25E-05	4.33E-02	4.33E-05
Toluene	1.82E+02	6.10E-01	5.30E+02	9.38E+01	5.16E-03	NO	92	2.20E+01	—	5.61E-08	—	8.70E-02	—	5.64E-02	6.64E-03	4.47E-01	3.29E-03	3.69E-05	3.69E-05	1.28E-01	1.28E-04
Trichloroethene	1.66E+02	5.56E-01	1.10E+03	1.88E+02	1.00E-03	NO	131.4	5.35E+01	—	7.61E-09	—	7.90E-02	—	5.12E-02	1.02E-02	7.52E-01	4.84E-03	9.02E-06	9.02E-06	3.13E-02	3.13E-05
Xylene (total)	3.47E+02	1.16E+00	1.90E+02	4.52E+01	1.96E-02	NO	106	1.98E+02	—	1.85E-07	—	7.80E-02	—	5.06E-02	6.04E-03	2.13E-01	1.45E-03	9.01E-05	9.01E-05	3.12E-01	3.12E-04
SVOAs																					
2,4-Dinitrotoluene	3.64E+02	1.22E+00	2.70E+02	6.59E+01	1.67E-01	NO	182.14	1.47E-04	—	9.18E-07	—	2.03E-01	—	1.32E-01	5.39E-08	1.81E-06	3.31E-08	3.57E-06	3.57E-06	1.24E-02	1.24E-05
2-Methylnaphthalene[1]	6.82E+03	2.29E+01	2.50E+01	6.56E+01	1.96E-01	NO	142	5.10E-02	—	1.38E-06	—	8.00E-02	—	5.19E-02	4.99E-04	8.95E-04	6.44E-06	5.84E-05	5.84E-05	2.02E-01	2.02E-04
4-Methylphenol	4.34E+02	1.45E+00	2.15E+04	5.80E+03	2.60E-02	NO	108.14	1.10E-01	—	2.40E-07	—	7.40E-02	—	4.80E-02	9.98E-07	2.81E-05	1.87E-07	1.32E-06	1.32E-06	4.58E-03	4.58E-06
Acenaphthene[1]	7.08E+03	2.37E+01	4.20E+00	1.14E+01	1.57E-01	NO	154	1.55E-03	—	1.02E-06	—	4.21E-02	—	2.73E-02	1.55E-04	2.68E-04	1.02E-06	1.86E-05	1.86E-05	6.44E-02	6.44E-05
Acenaphthylene	3.47E+03	1.16E+01	3.90E+01	5.41E+01	3.82E-01	NO	152	6.68E-03	—	2.51E-06	—	8.00E-02	—	5.19E-02	1.48E-03	5.22E-03	3.76E-05	2.75E-04	2.75E-04	9.52E-01	9.52E-04
Anthracene[1]	2.95E+04	9.88E+01	4.30E-02	4.72E-01	3.07E-01	NO	178	1.95E-04	—	1.73E-06	—	3.24E-02	—	2.10E-02	6.50E-05	2.70E-05	7.86E-08	1.01E-05	1.01E-05	3.51E-02	3.51E-05
Benzo(a)anthracene	3.98E+05	1.33E+03	9.40E-03	1.38E+00	6.09E-01	NO	228	3.05E-08	—	2.67E-06	—	5.10E-02	—	3.31E-02	3.35E-06	1.03E-07	4.73E-10	1.55E-06	1.55E-06	5.39E-03	5.39E-06
Benzo(a)pyrene	1.02E+06	3.42E+03	1.60E-03	6.02E-01	9.41E-01	YES	252	5.60E-09	7.59E-14	3.73E-06	6.11E-07	4.30E-02	4.20E-16	—	1.13E-06	—	—	—	4.20E-16	1.46E-12	1.46E-15
Benzo(b)fluoranthene[1]	1.23E+06	4.12E+03	1.50E-03	6.80E-01	7.95E-01	YES	252	5.00E-07	6.78E-12	3.15E-06	5.16E-07	2.26E-02	1.67E-14	—	1.11E-05	—	—	—	1.67E-14	5.77E-11	5.77E-14
Benzo(g,h,i)perylene	3.86E+06	1.29E+04	2.60E-04	3.70E-01	5.54E-01	YES	276	1.01E-10	1.50E-15	2.01E-06	3.28E-07	8.00E-02	8.30E-18	—	5.34E-08	—	—	—	8.30E-18	2.88E-14	2.88E-17
Benzo(k)fluoranthene[1]	1.23E+06	4.12E+03	8.00E-04	3.63E-01	7.26E-01	YES	252	9.59E-11	1.30E-15	2.88E-06	4.72E-07	2.26E-02	2.92E-18	—	8.29E-07	—	—	—	2.92E-18	1.01E-14	1.01E-17
Benzoic acid	1.45E+01	4.85E-02	3.40E+03	3.92E+02	1.04E-01	NO	122.12	7.00E-04	—	8.52E-07	—	5.36E-02	—	3.48E-02	7.00E-04	5.91E-01	2.64E-03	6.78E-04	6.78E-04	2.35E+00	2.35E-03
bis(2-Ethylhexyl)phthalate	1.51E+07	5.06E+04	3.40E-01	1.89E+03	1.93E-01	NO	390	6.30E-09	—	4.94E-07	—	3.51E-02	—	2.28E-02	1.02E-07	8.27E-11	2.61E-13	1.15E-08	1.15E-08	4.00E-05	4.00E-08
Carbazole[1]	3.39E+03	1.14E+01	7.50E+00	1.02E+01	3.00E-01	NO	167	7.50E-07	—	1.80E-06	—	3.90E-02	—	2.53E-02	1.53E-08	5.52E-08	1.94E-10	4.90E-07	4.90E-07	1.70E-03	1.70E-06
Chrysene[1]	3.98E+05	1.33E+03	1.60E-03	2.35E-01	7.18E-01	YES	228	6.30E-09	7.73E-14	3.15E-06	5.15E-07	2.48E-02	2.08E-16	—	9.40E-05	—	—	—	2.08E-16	7.21E-13	7.21E-16
Dibenz(a,h)anthracene[1]	1.66E+06	5.56E+03	5.00E-04	3.06E-01	2.32E-01	NO	278	2.78E-12	—	8.34E-07	—	2.02E-02	—	1.31E-02	1.70E-06	1.25E-08	2.28E-11	1.30E-07	1.30E-07	4.50E-04	4.50E-07
Dibenzofuran	1.13E+04	3.79E+01	3.10E+00	1.32E+01	4.10E-02	NO	168.2	2.48E-03	—	2.44E-07	—	8.00E-02	—	5.19E-02	2.12E-04	2.30E-04	1.65E-06	6.19E-06	6.19E-06	2.14E-02	2.14E-05
Diethylphthalate[1]	6.90E+01	2.31E-01	8.96E+02	1.21E+02	2.00E-02	NO	222	1.65E-03	—	9.01E-08	—	2.56E-02	—	1.66E-02	8.46E-07	1.50E-04	3.46E-07	1.38E-06	1.38E-06	4.78E-03	4.78E-06
Di-n-butylphthalate	3.39E+04	1.14E+02	1.10E+01	1.39E+02	1.60E-02	NO	278	7.30E-05	—	5.76E-08	—	4.38E-02	—	2.84E-02	9.38E-10	3.39E-10	1.34E-12	2.17E-09	2.17E-09	7.52E-06	7.52E-09
Di-n-octyl phthalate[1]	9.77E+08	3.27E+06	2.85E-01	1.03E+05	1.30E-02	NO	390.6	1.40E-04	—	3.33E-08	—	1.51E-02	—	9.79E-03	1.41E-12	1.77E-17	2.40E-20	2.36E-13	2.36E-13	8.19E-10	8.19E-13
Fluoranthene[1]	1.07E+05	3.58E+02	2.10E-01	8.30E+00	8.96E-01	NO	202	5.00E-06	—	4.44E-06	—	3.02E-02	—	1.96E-02	1.61E-05	1.84E-06	5.01E-09	7.44E-06	7.44E-06	2.58E-02	2.58E-05
Fluorene[1]	1.38E+04	4.62E+01	2.00E+00	1.04E+01	1.30E-01	NO	116	7.10E-04	—	1.12E-06	—	3.63E-02	—	2.35E-02	6.36E-05	5.64E-05	1.84E-07	6.55E-06	6.55E-06	2.27E-02	2.27E-05
Indeno(1,2,3-cd)pyrene	3.47E+06	1.16E+04	2.20E-05	2.81E-02	5.65E-01	YES	276	1.01E-10	1.50E-15	2.05E-06	3.35E-07	1.90E-02	2.01E-18	—	1.60E-06	—	—	—	2.01E-18	6.98E-15	6.98E-18
Naphthalene	2.00E+03	6.70E+00	3.10E+01	2.63E+01	3.40E-02	NO	128	2.30E-01	—	2.66E-07	—	5.90E-02	—	3.83E-02	4.83E-04	2.96E-03	1.57E-05	1.58E-05	1.58E-05	5.48E-02	5.48E-05
Phenanthrene[1]	1.41E+04	4.73E+01	1.00E+00	5.32E+00	5.84E-01	NO	178	6.80E-04	—	3.28E-06	—	8.00E-02	—	5.19E-02	6.61E-03	5.73E-03	4.12E-05	4.40E-04	4.40E-04	1.53E+00	1.53E-03
Phenol	2.68E+02	8.98E-01	8.28E+04	1.73E+04	1.78E-01	NO	94.11	3.50E-01	—	1.89E-06	—	8.20E-02	—	5.32E-02	3.32E-07	1.52E-05	1.12E-07	6.98E-06	6.98E-06	2.42E-02	2.42E-05
Pyrene[1]	1.05E+05	3.52E+02	1.40E-01	5.43E+00	9.01E-01	NO	202	2.50E-06	—	4.46E-06	—	2.72E-02	—	1.76E-02	1.10E-05	1.28E-06	3.14E-09	5.92E-06	5.92E-06	2.05E-02	2.05E-05
Pesticides																					
4,4'-DDD[1]	2.40E+05	8.04E+02	5.00E-02	4.43E+00	2.17E-03	NO	320	4.68E-06	—	6.78E-09	—	1.69E-02	—	1.10E-02	2.16E-05	1.10E-06	1.68E-09	1.04E-08	1.04E-08	3.61E-05	3.61E-08
4,4'-DDT[1]	1.40E+05	4.69E+02	5.50E-03	2.84E-01	2.40E-02	NO	354.5	1.00E-07	—	6.77E-08	—	1.37E-02	—	8.88E-03	3.80E-05	3.32E-06	4.10E-09	1.80E-07	1.80E-07	6.25E-04	6.25E-07
Endosulfan II	NV	NV	2.80E-01	NV	2.20E-03	NO	407	NV	—	5.41E-09	—	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Methoxychlor	7.94E+04	2.66E+02	4.00E-02	1.18E+00	2.50E-03	NO	346	4.17E-05	—	7.23E-09	—	1.56E-02	—	1.01E-02	1.58E-05	2.43E-06	3.42E-09	1.71E-08	1.71E-08	5.95E-05	5.95E-08
PCBs																					
Aroclor 1254[1]	4.07E+05	1.36E+03	5.70E-02	8.56E+00	7.00E-03	NO	327	2.20E-05	—	2.14E-08	—	8.00E-02	—	5.19E-02	2.70E-03	8.11E-05	5.84E-07	6.28E-07	6.28E-07	2.18E-03	2.18E-06
Aroclor 1260[1]	2.07E+05	6.93E+02	2.84E-04	2.17E-02	5.67E-02	YES	395.33	4.05E-05	8.62E-10	1.43E-07	2.35E-08	1.38E-02	5.88E-14	—	3.30E-04	—	—	—	5.88E-14	2.04E-10	2.04E-13

Notes:

(1) - Data from annual site review.

NV - No value is available.

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TABLE 1 (continued)

SITE SS-005
EXPOSURE CONCENTRATIONS - ORGANICS VOLATILIZING FROM SOIL
FUTURE USE SCENARIO

PARAMETER	SYMBOL	UNITS	VALUE
Soil bulk density	ß	g-soil/cm³-soil	1.5
Total soil porosity	Pt	cm³/cm³-soil	0.43
Air filled porosity	Pa, £	cm³/cm³-soil	0.27
Density of water	þw	kg/L	1.00
Effective depth of soil cover	d	cm	61
Soil moisture content expressed as a weight fraction	nm	kg-water/kg-soil	0.11
Soil moisture content	Øm	L-water/kg-soil	0.11
Organic carbon content in soil	foc	kg-carbon/kg-soil	0.00335
Molar gas constant	R	mm Hg-cm³/mole-°K	62,361
Absolute temperature of waste (in-situ)	T	°K	298
Particle density	þ	g/cm³	2.65
Exposure interval	t	s	1,900,800
Exposed surface area	A	cm²	74,000,000
Horizontal dimension of the square area	X	m	86.02
Total moles of contaminants	Mtot	moles	4.84E-05
Total moles of water	MH2O	moles	6.11E+00

EQUATIONS:

Csat = (Kd · s · nm) + (s · Øm)

Kd = Koc · foc

Mc = Csite/(MWi · 1,000)

Mi = Mc/(sum of Mc over site)

$\ln(C/Qt) = 13.0 - 0.261 (\ln X) - 0.241 (\ln X)^2 + 0.0124 (\ln X)^3$ [Qt = Ei]

For Csite>Csat

Ei = Di· Csi· A · Pa^(4/3) · Mi/dsc

where:

Pt = 1 - ß/þ

Pa = Pt - Øm · ß

Csi = (p · MWi)/(R · T)

Øm = nm / þw

For Csite<Csat

Ei = (Dei · 2 · A · £ · Kas · Csite)/(pi · alpha· t)^(0.5)

where:

alpha = (Dei · £)/(£+(p(1- £)/Kas))

Kas = 41 · H/Kd

Dei = Di · $£^{0.33}$

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TABLE 2

FLIGHTLINE (SS-004)
MOISTURE AND ORGANIC CARBON CONTENT IN SOIL SAMPLES
USED TO REPRESENT PARAMETERS AT SS-005

Sample	Moisture Content [%]
SS04-010	11
SS04-011	13
SS04-012	13
SS04-013	14
SS04-014	14
SS04-015	11
SS04-016	10
SS04-017	24
SS04-018	6
SS04-019	2
SS04-020	2
SS04-021	3
SS04-022	8
SS04-023	5
SS04-024	7
SS04-025	6
SS04-026	15
SS04-027	6
SS04-028	5
SS04-030	14
SS04-031	21
SS04-032	11
SS04-033	4
SS04-034	9
SS04-035	2
SS04-036	10
SS04-037	6
SS04-038	9
SS04-039	6
SS04-040	8
SS04-041	7
SS04-042	6
SS04-043	4
SS04-044	7
SS04-049	26
SS04-050	14
SS04-051	7
SS04-052	22
SS04-053	36
SS04-054	6
SS04-055	21
SS04-056	23
SS04-057	3
SB04-01-3	5
SB04-01-10	16
SB04-02-2	4
SB04-02-7	7
SB04-03-3	2
SB04-03-5	12
SB04-04-2	16
SB04-04-4	17
SB04-05-2	17
SB04-05-4	20
SB04-06-2	13.5
SB04-06-4	17
SB04-07-2	19
SB04-07-4	16
SB04-08-3	11
SB04-08-8	14
SB04-09-4	6
SB04-09-6	13
Average [%]	11.19
Average [-]	0.11

Sample	TOC Content [mg/kg]
SB04-08-30	4,340
SB04-08-6T	2,360
Average [mg/kg]	3,350
Average [-]	0.00335

TABLE 3

SITE SS-005
PROPERTIES OF CONTAMINANT OF CONCERN

Parameter	Contaminant-Specific Properties								
	MW	VP	log K_{ow}	Solubility	D_{air}	D_{wat}	H	H'	k_{oc}
	gr/mol	mm Hg		mg/L	cm^2 / s	cm^2 / s	$atm\text{-}m^3$ / mol	cm^3 water / cm^3 air	cm^3 water / g carbon
VOAs									
2-Hexanone	100.16 B	11.6 B	1.19	17500	0.08	0.0000078 F	9.2927E-05 B	0.00381 B	13.02 B
4-Methyl-2-pentanone	100.16 B	19.9 B		19000	0.075 B		0.000138 B		10.91 B
Acetone	58 F	235 F	-0.24	1000000	0.124	0.0000114 F	0.0000388 F	0.001586718	0.575 F
Methylene chloride	50.5	440 F	1.3	17000	0.101	0.0000117	0.0024	0.098147523	12
Tetrachloroethene	166	14 F	2.1	200	0.072	0.0000082	0.0184	0.752464341	155
Toluene	92	22 F	2.61	530	0.087	0.0000086	0.00664	0.27154148	182
Trichloroethene	131.4 F	53.5 F	2.53	1100	0.079	0.0000091 F	0.0102 F	0.417126972	166 F
Xylene (total)	106	198 C	3.2	190	0.078	0.0000321	0.00604	0.247004599	347
SVOAs									
2,4-Dinitrotoluene	182.14 B	0.000147 B		270	0.203 B		5.39E-08 B		363.8 B
2-Methylnaphthalene	142	0.051 F	4.11	25	0.08	0.000008	0.000499	0.020406506	6823
4-Methylphenol (p-cresol)	108.1 B	0.11 B	1.91	21500	0.074 B	0.0000077 F	9.98E-07 B	0.000040918	434 B
Acenaphthene	154	0.00155 C	3.92	4.2	0.0421	0.00000769	0.000155	0.006338694	7080
Acenaphthylene	152	0.00668 F	3.94	39	0.08	0.000008	0.00148	0.060524306	3467
Anthracene	178	0.000195	4.45	0.043	0.0324	0.00000774	0.000065	0.002658162	29500
Benzo(a)anthracene	228	3.05E-08 F	5.61	0.0094	0.051	0.000009	0.00000335	0.000136998	398000
Benzo(a)pyrene	252	5.6E-09 C	6	0.0016	0.043	0.000009	0.00000113	4.62111E-05	1020000
Benzo(b)fluoranthene	252	0.0000005 F	6.06	0.0015	0.0226	0.00000556	0.0000111	0.000453932	1230000
Benzo(g,h,i)perylene	276	1.01E-10 F	7.1	0.00026	0.08	0.000008	5.34E-08	2.18378E-06	3860000
Benzo(k)fluoranthene	252	9.59E-11	6.85	0.0008	0.0226	0.00000556	8.29E-07	3.39018E-05	1230000
Benzoic acid	122.12 B	0.0007 B		3400	0.0536 B		0.0007 B		14.49 B
bis(2-Ethylhexyl)phthalate	390	6.3E-09 C	4.2	0.34	0.0351	0.00000366	1.02E-07	4.17127E-06	15100000
Carbazole	167	7.50E-06 B	NA	7.5	0.039	0.00000703	1.53E-08	6.2569E-07	3390
Chrysene	228	6.3E-09 C	5.6	0.0016	0.0248	0.00000621	0.000094	0.003844111	398000
Dibenz(a,h)anthracene	278 F	2.78E-12 F	6.5	0.0005	0.0202 B	0.0000046 F	0.0000017 F	6.95212E-05	1659586.91 F
Dibenzofuran	168.2 B	0.00248 B	4.17	3.1	0.08	0.000008	0.00021244 B	0.00871 B	11300 B
Diethylphthalate	222 F	0.00165 F	2.35	896	0.0256 B	0.0000059 F	8.46E-07 F	3.4597E-05	69 F
Di-n-butylphthalate	278	0.000073 F	4.31	11	0.0438	0.00000786	9.38E-10	3.83593E-08	33900
Di-n-octylphthalate	390.6 F	0.00014 F	9.2	0.285	0.0151 B	0.0000039 F	1.41E-12 F	5.76617E-11	977237221 F
Fluoranthene	202	0.000005 C	5.22	0.21	0.0302	0.00000635	0.0000161	0.000658406	107000
Fluorene	116	0.00071 C	4.12	2	0.0363	0.00000788	0.0000636	0.002600909	13800
Indeno(1,2,3-cd)pyrene	276	1.01E-10 F	5.97	0.000022	0.019	0.00000566	0.0000016	6.54317E-05	3470000
Naphthalene	128	0.23 F	3.63	31	0.059	0.0000075	0.000483	0.019752189	2000
Phenanthrene	178	0.00068 C	4.57	1	0.08	0.000008	0.00661	0.270314636	14125
Phenol	94.11 B	0.35 B	1.37	82800	0.082 B	0.0000087 F	3.3171E-07 B	0.0000136 B	268 B
Pyrene	202	0.0000025 C	5.18	0.14	0.0272	0.00000724	0.000011	0.000449843	105000
Pesticides									
4,4'-DDD	320 F	0.00000468 F	6.02	0.05	0.0169 B	0.0000045 F	0.0000216 F	0.000883328	239883.292 F
4,4'-DDT	354.5 F	0.0000001 F	6.36	0.0055	0.0137 B	0.0000037 F	0.000038 F	0.001554002	139958.732 F
Endosulfan II	406.95	NA	NA	0.28	NA	NA	NA	NA	NA
Methoxychlor	346 F	0.0000417 B	4.3	0.04	0.0156	0.0000044 F	0.0000158 F	0.000646138	79432.8235 F
PCBs									
Aroclor 1254	327 F	0.000022 F	6.47	0.057	0.08	0.0000056 F	0.0027 F	0.110415963	407380.278 F
Aroclor 1260	395.33 B	0.0000405 B		0.0002842	0.0138 B		0.00033 B		207000 B

References

All data are from MDEQ's "Toxicological and Chemical-Physical Data for Part 201 Cleanup Criteria" August 1998, except as noted.

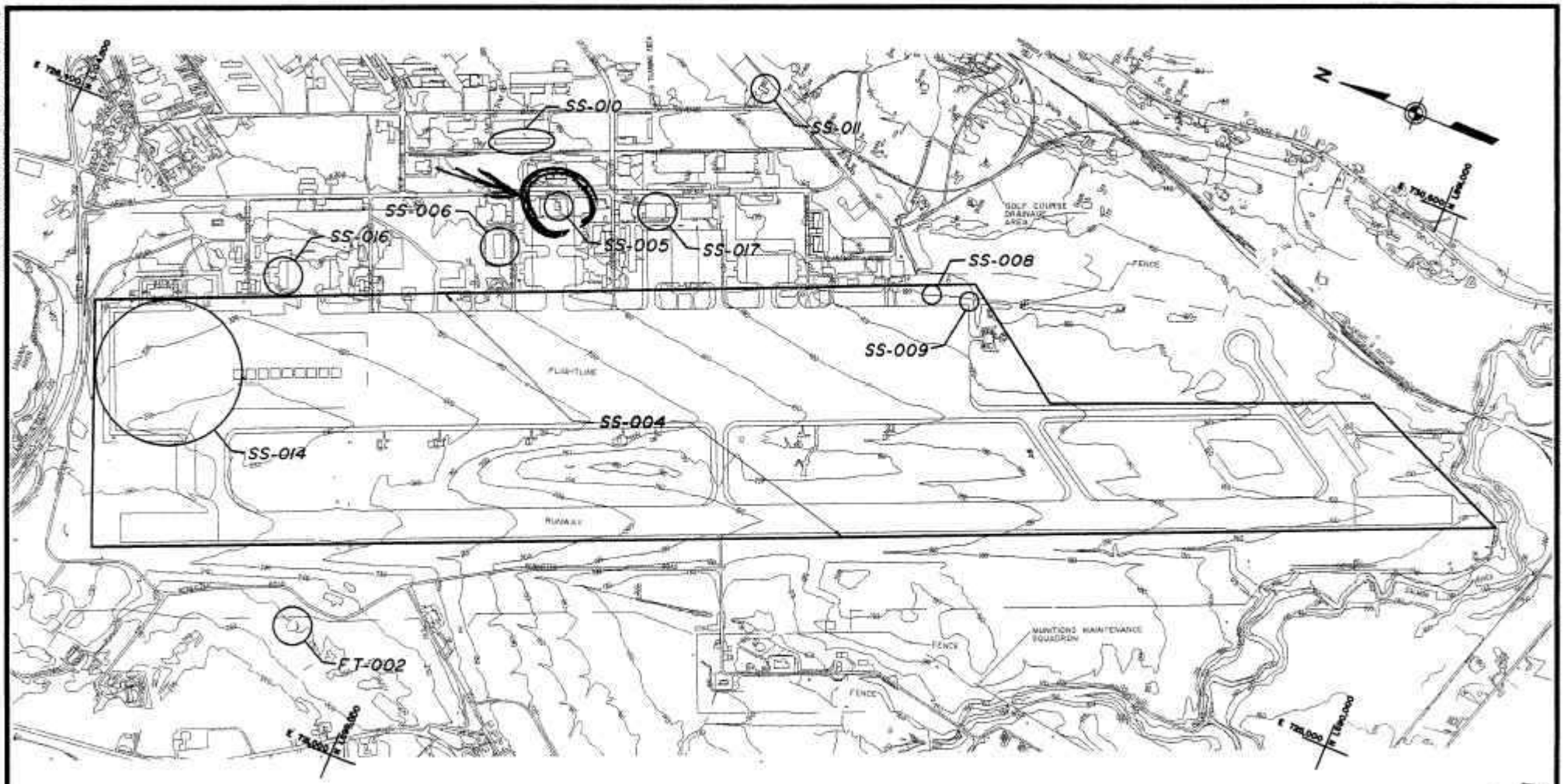
C - EPA. 1986. Superfund Public Health Evaluation Manual. OSWER Directive 9285.4-1. EPA 540/1-86/060

F - J.H.Montgomery. 1996. Groundwater Chemicals. CRC Lewis, Boca Raton, Florida.

B - Risk Assessment Information System *http://risk.lsd.ornl.gov/cgi-bin/tox/TOX_9801* 3/23/01

NA - Not available.

Pg 1 of 2



SITE LIST

FT-002	FIRE TRAINING AREA
SS-004	FLIGHT LINE
SS-005	NON-DESTRUCTIVE INSPECTION FACILITY
SS-006	AEROSPACE GROUND EQUIPMENT FACILITY
SS-008	ELECTRICAL VAULT
SS-009	FUEL VALVE PIT JP-4 SPILL
SS-010	HEAVY EQUIPMENT MAINTENANCE FACILITY
SS-011	DRMO FACILITY
SS-014	ALERT AREA
SS-016	NOSE DOCK 8
SS-017	BUILDING 2774

1000 0 1000

SCALE IN FEET

PLATTSBURG A.F.B.
FLIGHTLINE & VICINITY SITE MAP

URS

FIGURE 1-3

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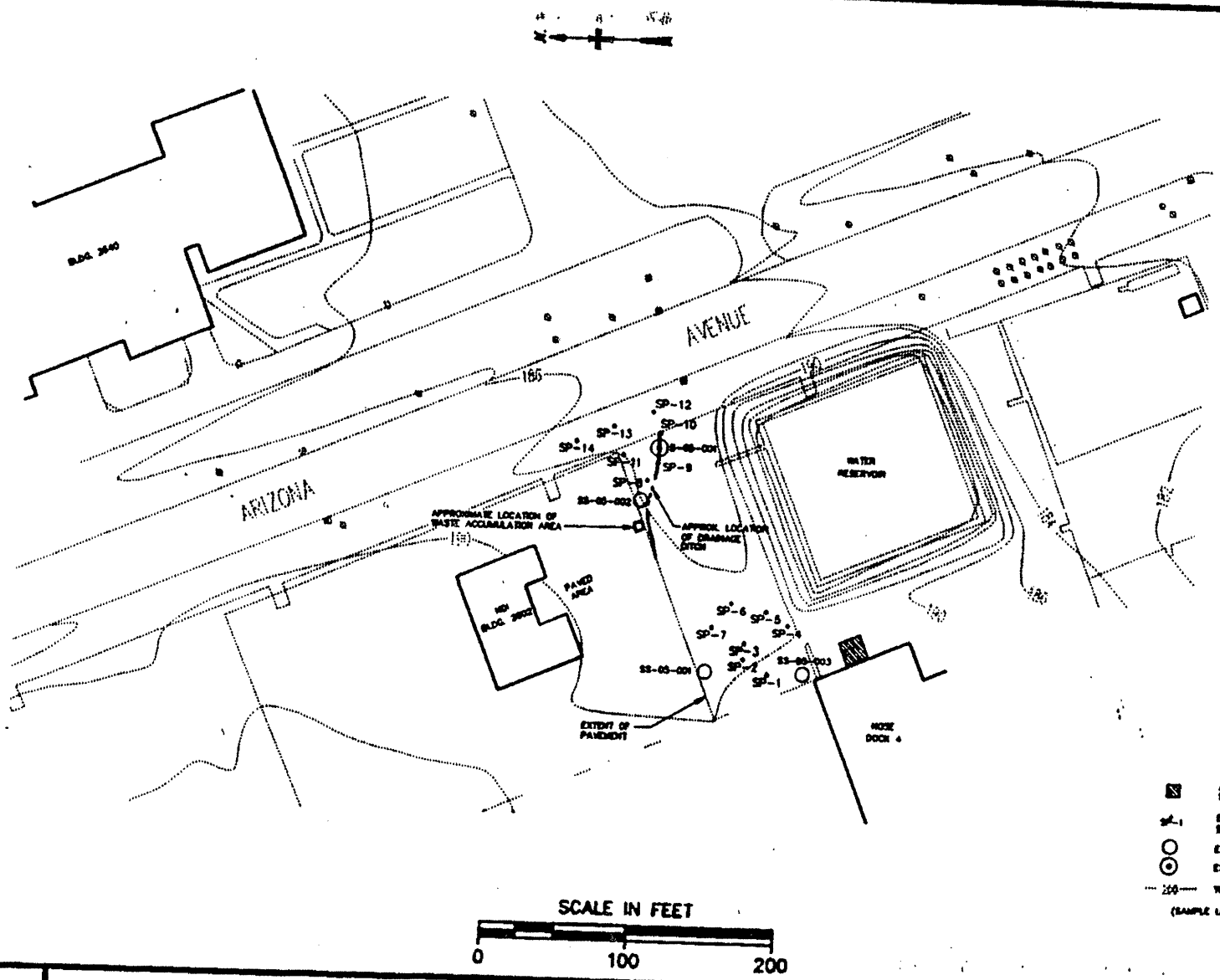

835 40

FIGURE 1.2

US Army Corps of Engineers

NON-DESTRUCTIVE INSPECTION FACILITY (NDI) (SS-005)

SITE MAP

PLATTSBURGH AIR FORCE BASE

USACE CONTRACT NO. DACA41-91-C-0121

MALCOLM PIRNIE, INC.

R.I. REPORT

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pg 14
of 23

Reference 1

GUIDELINE FOR PREDICTIVE BASELINE EMISSIONS ESTIMATION PROCEDURES FOR SUPERFUND SITES

INTERIM FINAL

Prepared by

Environmental Quality Management, Inc.
3109 University Drive, Suite B
Durham, North Carolina 27707

Contract No. 68-D0-0124
Work Assignment No. 1-80
PN 5025-8

Alison Devine, Work Assignment Manager

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

January 1992

subsection of the area of contamination unless this concentration is greater than the maximum detected concentration. In this case, the maximum observed value should be used. Data used in calculating contaminant concentrations for this analysis should include all detected concentrations of a substance plus half the quantitation limit for each sample in which that substance was not detected. Only substances that were detected in at least one sample from the site should be included in this analysis.

Reference for Step III, 1, A: *RAGS Part A*, Sections 5-6. December 1989.

B. If soil bulk concentrations are to be used to calculate emission rates, estimate the saturation concentration (C_{sat}) for each contaminant in the vadose zone. C_{sat} for each contaminant is the concentration at which the adsorptive limit of the soil plus the theoretical dissolution limit of the contaminant in the available soil moisture has been reached. Concentrations > C_{sat} indicate "free-phase" contaminants within the soil matrix.

$$C_{sat} = (K_d \times s \times n_m) + (s \times \theta_m) \qquad (1)$$

where C_{sat} = Saturation concentration, mg/kg (ppm)

K_d = Soil/water partition coefficient, l/kg (or ml/g)

s = Solubility of contaminant in water, mg/l-water

n_m = Soil moisture content expressed as a weight fraction, kg-water/kg-soil

θ_m = Soil moisture content, l-water/kg-soil (or ml/g).

Reference for Equation No. 1: *Risk Assessment Guidance for Superfund (RAGS), Volume I, Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals), Interim*, Section 3.3.1, Office of Emergency and Remedial Response, Washington, D.C., EPA Publication No. 9285.7-01B, October 1991.

Estimation of K_d if not available in the scientific literature:

$$K_d = K_{oc} \times f_{oc} \quad (2)$$

where K_d = Soil/water, partition coefficient, l/kg (or ml/g)

K_{oc} = Organic carbon partition coefficient, l/kg (or ml/g)

f_{oc} = Fraction of organic carbon in soil, mg/mg (default = 0.02)

Estimation of K_{oc} if not available in the scientific literature:

Use one of the following equations based on the chemical class closest to the subject contaminant. If the contaminant does not fit any given class, use Equation No. 3 (based on largest sampling):

Based on a wide variety of contaminants (mostly pesticides):

$$K_{oc} = 10^{((0.544 \log K_{ow}) + 1.377)} \quad (3)$$

Based on aromatics, polynuclear aromatics, triazines, and dinitroaniline herbicides:

$$K_{oc} = 10^{((0.937 \log K_{ow}) - 0.006)} \quad (3a)$$

Based on aromatics or polynuclear aromatics:

$$K_{oc} = 10^{((1.00 \log K_{ow}) - 0.21)} \quad (3b)$$

Based on s-triazines and dinitroaniline herbicides:

$$K_{oc} = 10^{((0.94 \log K_{ow}) + 0.02)} \quad (3c)$$

Based on insecticides, herbicides, and fungicides:

$$K_{oc} = 10^{((1.029 \log K_{ow}) - 0.18)} \quad (3d)$$

Based on substituted phenylureas and alkyl-N-phenylcarbamates:

$$K_{oc} = 10^{((0.524 \log K_{ow}) + 0.855)} \quad (3e)$$

where K_{oc} = Organic carbon partition coefficient, l/kg (or ml/g)

K_{ow} = Octanol/water partition coefficient, l/kg (or ml/g).

Reference for Step III, 1, Equation Nos. 2-3e: *Superfund Exposure Assessment Manual (SEAM)*, Section 3.5.2.4, Office of Emergency and Remedial Response, Washington, D.C., EPA-450/1-88-001, 1988.

Reference for Values of K_{oc} and $\log K_{ow}$ in Step III, 1, B: *Superfund Public Health Evaluation Manual (SPHEM)*, Exhibit A-1, Office of Emergency Remedial Response, Washington, D.C., EPA-540/1-86-060, October 1986.

C. From the vapor-phase contaminant concentrations (soil gas) or from bulk concentrations determined in "A" above, calculate an emission rate for each contaminant.

1. With measured soil gas concentrations:

$$E_i = \frac{D_i \, C_i \, A \, (P_t^{4/3})}{d_{sc}} \quad (4)$$

where E_i = Emission rate of component i, g/s

D_i = Diffusion coefficient of component i in air, cm^2/s (scientific literature or Equation No. 7)

C_i = Vapor concentration of component i measured in the soil pore spaces, g/cm^3 (Equation No. 4a)

A = Exposed surface area, cm^2

P_t = Total soil porosity, dimensionless (Equation No. 6). P_t assumes dry soil (worst-case); if soil is wet more often than dry, substitute the term $(P_a^{10/3}/P_t^2)$ for the term $P_t^{4/3}$ (see Equation No. 6a)

d_{sc} = Effective depth of soil cover, cm (from sample depth to soil surface).

If soil gas measurements are given in ppm on a volume per volume basis, use the following equation to convert to a weight per volume basis:

$$C_i = C_{SG} \times \frac{MW_i}{2.404 \times 10^{10}} \qquad (4a)$$

where C_i = Vapor concentration of component i in the soil pore spaces, g/cm^3

C_{SG} = Measured soil gas concentration of component i, ppmv

MW_i = Molecular weight of component i, g/mole.

2. With measured bulk concentrations $> C_{sat}$ (Equation No. 1):

Note: Under this scenario, "free-phase" contaminants exist in the soil vadose zone, usually as a liquid-phase waste layer or discrete film. Representative concentration measurements should be used from the discrete waste layer at depth and not from composite samples.

$$E_i = D_i \, C_{si} \, A(P_t^{4/3}) \frac{M_i}{d_{sc}} \qquad (5)$$

where E_i = Emission rate of component i, g/s

D_i = Diffusion coefficient of component i in air, cm^2/s (scientific literature or Equation No. 7)

C_{si} = Saturation vapor concentration of component i, g/cm^3 (Equation No. 8)

A = Exposed surface area, cm^2

P_t = Total soil porosity, dimensionless (Equation No. 6). P_t assumes dry soil (worst-case); if soil is wet more often than dry, substitute the term $(P_a^{10/13}/P_t^2)$ for the term $P_t^{4/3}$ (see Equation No. 6a).

M_i = Mole fraction of component i in the waste, gmole/gmole

d_{sc} = Effective depth of soil cover, cm.

Note: When calculating M_i, include the number of moles of all contaminants plus the water within the waste. Do not include the number of moles of soil because soil is assumed to be nonvolatile.

Calculation of total soil porosity (P_t):

$$P_t = 1 - \frac{\beta}{\rho} \qquad (6)$$

where P_t = Total soil porosity, dimensionless

β = Soil bulk density, g/cm^3: generally between 1.0 and 2.0 g/cm^3 (default = 1.5 g/cm^3)

ρ = Particle density, g/cm^3: usually 2.65 g/cm^3 for most mineral material.

Note: P_t assumes dry soil and thus worst-case diffusion conditions. If the soil cover is wet more often than dry on a long-term basis, air-filled porosity (P_a) may be substituted for P_t. For estimation, P_t can be

assumed to be between 0.55 for dry, noncompacted soils and 0.35 for compacted soils.

Calculation of air-filled porosity (P_a):

$$P_a = P_t - \theta_m \beta \tag{6a}$$

where P_a = Air-filled soil porosity, dimensionless

P_t = Total soil porosity, dimensionless (Equation No. 6)

Θ_m = Soil moisture content, cm^3-water/g-soil (or ml/g)

β = Soil bulk density, g/cm^3.

Estimation of diffusion coefficient of component i in air (D_i) if not available from the scientific literature:

$$D_i = \frac{0.001 T^{1.75} \sqrt{\frac{1}{MW_i} + \frac{1}{MW_a}}}{P_{ab} \left[\left(\sum V_i\right)^{1/3} + \left(\sum V_a\right)^{1/3} \right]^2} \tag{7}$$

where D_i = Diffusion coefficient of component i in air, cm^2/s

T = Absolute temperature of ambient air, °K (annual average)

MW_i; MW_a = Molecular weight of component i and air (28.8), respectively, g/mole

P_{ab} = Absolute pressure, atmospheres

ΣV_i; ΣV_a = Molecular diffusion volumes of component i and air (20.1), respectively, cm^3/mole. This is the sum of the atomic diffusion volumes of the compound's atomic constituents.

Atomic diffusion volumes for use in estimating D_i:

C = 16.5	Cl = 19.5	Aromatic ring = -20.2
H = 1.98	Br = 35.0	Heterocyclic ring = -20.2
O = 5.48	F = 25.0	
N = 5.69	S = 17.0	

Example of calculating ΣV_i for carbon tetrachloride, CCl_4:

$$\begin{aligned} C &= 16.5 \\ Cl_4 = 4 \times 19.5 &= \underline{78.0} + \\ & \quad 94.5 \text{ cm}^3/\text{mole} \end{aligned}$$

Note: Equation No. 7 may not be appropriate for polar compounds. Where possible, values of D_i in the scientific literature should be used.

Calculation of saturation vapor concentration (C_{si}):

$$C_{si} = \frac{p\ MW_i}{R\ T} \tag{8}$$

where C_{si} = Saturation vapor concentration of component i, g/cm^3

p = Vapor pressure of the chemical i, mm Hg

R = Molar gas constant, 62,361 mm Hg-cm^3/mole-°K

T = Absolute temperature of waste (in situ), °K

MW_i = Molecular weight of component i, g/mole.

3. With measured bulk concentrations C_{ik} (Equation No. 1):

Note: Under this scenario all contaminants are assumed to be in solution with the available soil moisture and adsorbed to soil particles within the soil matrix (fully incorporated). Soil samples should not show evidence of discrete waste layers or films.

$$E_i = \frac{A\ 2\ D_{ei}\ \varepsilon\ K_{as}\ C_i}{\sqrt{\pi\ a\ t}} \qquad (9)$$

where E_i = Average emission rate of component i for exposure interval t, g/s

D_{ei} = Effective diffusivity of component i, cm^2/s $(= D_i\ \epsilon^{0.33})$

D_i = Molecular diffusivity of component i in air, cm^2/s (scientific literature or Equation No. 7)

K_{as} = Soil/air partition coefficient, g/cm^3 (Equation No. 9b)

C_i = Bulk soil concentration of component i, g/g

t = Exposure interval, s (exposure time x exposure frequency x exposure duration in seconds)

ϵ = Soil porosity, dimensionless. $\epsilon = P_t$ for dry soil or $\epsilon = P_s$ when soil is more often wet than dry (see Equation Nos. 6 and 6a)

A = Exposed surface area, cm^2.

and:

$$a = \frac{D_{ei}\ \varepsilon}{\varepsilon + (\rho)(1-\varepsilon)/K_{as}} \qquad (9a)$$

where ρ = Particle density, g/cm^3 (default = 2.65 g/cm^3).

Calculation of soil/air partition coefficient (K_{as}):

$$K_{as} = (H/K_d) \times 41 \qquad (9b)$$

1. Determine the natural logarithm of the horizontal dimension of the subject area source (lnX).

2. Enter the value produced in (1) above into the following polynomial equation to produce the natural logarithm of the normalized concentration:

$$\ln(C/Q_T) = 13.0 - 0.261(\ln X) - 0.241(\ln X)^2 + 0.0124(\ln X)^3$$

3. Take the exponential of the value produced in (2) above to produce the normalized concentration:

$$C/Q_T = e^{\ln(C/Q_T)}$$

4. Multiply the normalized concentration by the emission rate to produce the long-term (annual average) concentration in $\mu g/m^3$:

$$C = (C/Q_T)Q_T$$

Note: The above polynomial equation is based on the modeling results of progressively larger square area sources utilizing the U.S. EPA Point-Area-Line (PAL) dispersion model. A single receptor was located at the center of each source negating the effects of wind direction. Windspeed was set at 2 m/s and atmospheric stability was set at Pasquill-Gifford class D (neutral) as typical average annual values. Emissions are assumed to be continuous, uniform over the surface of the area, nonbuoyant, inert, and emitted at a concentration less than approximately one percent (10,000 ppmv), so that density differences relative to air are not important. These procedures may not be conservative for sites in very sheltered locations where windspeeds may average less than 2 m/s and/or where very stable conditions may be typical. In these cases, refined modeling and/or monitoring may be required.

The procedures in Step IV,1,D and E are presently under review and subject to change.

Reference for Step IV.1.E: Memorandum from Robert Wilson, U.S. EPA, Region X Meteorologist, to Pat Cirone, Chief, Health and Environmental Assessment Section. June 1991.

2. If the Baseline Risk Assessment ultimately indicates that the incremental or aggregate risk for carcinogenic contaminants from onsite incidental ingestion of contaminated soil exceeds the acceptable risk range (i.e., 10^{-4} to 10^{-6}) or if the

ATTACHMENT A-3

UNCERTAINTY ANALYSIS

POTENTIAL SOURCES OF UNCERTAINTY
NON-DESTRUCTIVE INSPECTION FACILITY (SS-005) AND
AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)

Potential Source	Direction of Effect	Reasons for Uncertainty
Data Evaluation:		
Analytical Data	Unknown	Soil samples were collected from various locations/depths at SS-004. Samples may not be representative of the entire site.
Background Data	Unknown	The comparisons of onsite data to background are limited by the background samples collected.
Exposure Assessment:		
Likelihood of exposure pathways selected for evaluation	Overestimate risk	Pathways may not actually occur.
Lack of consideration of transformation of chemicals	Overestimate risk	Risk estimates are based on chemical concentrations detected during the RI sampling events, which may decrease over time.
Exposure assumptions (frequency, duration and intensity)	Overestimate risk	Parameters are conservative estimates of exposure.
Absorption of soil contaminants through skin	Overestimate risk	Dermal absorption is a function of the length of actual skin contact, which may be limited at the site.
Fugitive Dust Model	Unknown	The model was designed for rapid assessment and makes several conservative assumptions that tend to overestimate risk. The method does not provide contaminant concern estimates for distances less than 200 meters from the source, so contaminant concentrations may be underestimated receptors located closer to the site.
Dermal absorption not calculated for all chemicals	Underestimate risk	Dermal absorption factors are available for PCBs, cadmium, arsenic, PAHs and SVOCs only.
Toxicity Assessment:		
Dermal contact risk calculations	Underestimate risk	Cancer risks and hazard indices are based solely on PCBs and cadmium only. These represent a small fraction of the CPCs identified for the soils media.

Potential Source	**Direction of Effect**	**Reasons for Uncertainty**
Absorption adjustments for toxicity values used for dermal contact	Unknown	Oral toxicity values are adjusted to account for absorption based on efficiency factors that have not been USEPA verified.
Extrapolation of animal toxicity data to humans	Unknown, probably overestimate risk	Animal studies typically involve high-dose exposures whereas humans are exposed to lower doses.
Analytes with no toxicity values	Underestimate risk	Risks associated with chemicals that lack toxicity values cannot be quantified.
Use of linearized, multi-stage model to derive cancer slope factors	Overestimate risk	Model assumes a non-threshold, linear at low dose relationship for carcinogens. Model results in a 95% upper confidence limit of the cancer risk. The true risk is unlikely to be higher and may be as low as zero.
Use of uncertainty factors in derivation of reference doses	Overestimate risk	Ten-fold uncertainty factors are incorporated to account for various sources of uncertainty (e.g., animal to human extrapolation, protection of sensitive human populations, extrapolation from subchronic to chronic data).
Risk Characterization:		
Summation of cancer and noncancer risks	Unknown	Adding risks ignores potential synergistic or antagonistic effects. Assumes similarity in mechanism of action, which is not the case for many substances.
Combination of pathways	Overestimate risk	ln order to determine total site-wide risks, the risks were summed over all exposure pathways. However, the net probability of an individual being exposed to all non-exclusive pathways is very low.
Contribution to total risk by dermal contact	Underestimate risk	Since dermal contact risk is based on PCBs and cadmium only, actual risks may be significantly higher, thereby changing the risk characterization.

ATTACHMENT A-4

AEROSPACE GROUND EQUIPMENT FAC1LITY (SS-006) FUGITIVE DUST MODEL

CALCULATION COVER SHEET

Client: AFCEE

Project Name: Plattsb AFB SS-006

Project/Calculation Number: 111 73 369.00009

Title: Fugitive Dust Model for Future Construction Scenario

Total Number of Pages (including cover sheet): 42 (41 + cover)

Total Number of Computer Runs: 0

Prepared by: Marek Ostrowski Date: 3/17/04

Checked by: CRAIG PAWLENSKI CWP Date: 3/18/04

Description and Purpose: To estimate Maximum Actual Annual Impact Concentration from fugitive dust emissions, for an onsite receptor, for a construction scenario.

Design Basis/References/Assumptions

See text.

Remarks/Conclusions/Results: Contaminants - specific values are shown on page 2.

Calculation Approved by: _____

Project Manager/Date

Revision No.:	Description of Revision:	Approved by:

Project Manager/Date

FUGITIVE DUST MODEL FOR FUTURE CONSTRUCTION SCENARIO
PLATTSBURGH AIR FORCE BASE
SITE SS-006

SUMMARY

The USEPA documents *Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination Sites* (EPA/600/8-85/002 Feb. 1985) and *AP-42* Chapter 13.2 (July 1994), are used to estimate the rate of fugitive dust emission from the Plattsburgh AFB site SS-006. The *New York State Air Guide-l, Draft* (NYSDEC 1991) is used to estimate the Maximum Actual Annual Impact Concentration for an onsite receptor during future construction activities.

The Maximum Actual Annual Concentration (C_a) for an onsite receptor at the SS-006 site is estimated to be:

$$C_a \text{ (mg/m}^3\text{)} = 0.26\ \alpha$$

Parameter "α" is the dimensionless concentration of a compound in the onsite soils (mass of compound per mass of soil). Both '"'α" and "C_a " are contaminant-specific.

Maximum Actual Annual Concentrations are shown on page 2.

SITE SS-006
Maximum Actual Annual Concentrations
from Fugitive Dust Emissions During Construction

CHEMICAL	EXPOSURE CONC. IN SOIL (Data from 5-yr site review))		MAXIMUM ACTUAL ANNUAL CONCENTRATION
	Csoil	alpha	Ca
	(mg/kg-soil)	(-)	(mg/m^3)
VOAs			
Acetone	7.04E-03	7.04E-09	1.83E-09
SVOAs			
Acenaphthylene	1.00E-03	1.00E-09	2.60E-10
Benzo(a) anthracene	3.50E-02	3.50E-08	9.10E-09
Benzo(a) pyrene	4.10E-02	4.10E-08	1.07E-08
Benzo(b)fluoranthene[1]	4.50E-02	4.50E-08	1.17E-08
Benzo(g,h,i)perylene	2.00E-02	2.00E-08	5.20E-09
Benzo(k) fluoranthene[1]	4.20E-02	4.20E-08	1.09E-08
Benzoic acid	8.80E-02	8.80E-08	2.29E-08
bis(2-Ethylhexyl) phthalate	9.90E-02	9.90E-08	2.57E-08
Carbazole[1]	2.50E-02	2.50E-08	6.50E-09
Chrysene[1]	4.20E-02	4.20E-08	1.09E-08
Di-n-octyl phthalate[1]	6.50E-03	6.50E-09	1.69E-09
Fluoranthene[1]	6.90E-02	6.90E-08	1.79E-08
Indeno(1,2,3-cd) pyrene	2.40E-02	2.40E-08	6.24E-09
Phenanthrene[1]	6.00E-02	6.00E-08	1.56E-08
Pyrene[1]	6.70E-02	6.70E-08	1.74E-08
Pesticides			
4,4'-DDD[1]	7.10E-04	7.10E-10	1.85E-10

Convertion factor from "alpha" to "Ca" = 0 26

ATTACHMENT A-6

CHEMICAL DATA

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Sample ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/07/92	11/07/92	11/08/92	11/08/92	11/08/92
Parameter	Units				(2-1)	
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Sample ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/07/92	11/07/92	11/08/92	11/08/92	11/08/92
Parameter	**Units**				(2-1)	
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Sample ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/07/92	11/07/92	11/08/92	11/08/92	11/08/92
Parameter	**Units**				(2-1)	
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Sample ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/07/92	11/07/92	11/08/92	11/08/92	11/08/92
Parameter	Units				(2-1)	
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Sample ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/07/92	11/07/92	11/08/92	11/08/92	11/08/92
Parameter	**Units**				(2-1)	
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	330 U	14 J	4 J	17 J
Anthracene	UG/KG	330 U	330 U	330 U	330 U	14 J
Benzo(a)anthracene	UG/KG	18 J	330 U	14 J	330 U	330 U
Benzo(a)pyrene	UG/KG	19 J	330 U	24 J	22 J	37 J
Benzo(b)fluoranthene	UG/KG	18 J	330 U	25 J	11 J	36 J
Benzo(g,h,i)perylene	UG/KG	330 U	330 U	25 J	12 J	38 J
Benzo(k)fluoranthene	UG/KG	21 J	330 U	30 J	330 U	40 J
Benzoic acid	UG/KG	35 J	330 U	57 J	330 U	59 J
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	330 U	330 U	330 U	330 U	330 U
Chrysene	UG/KG	21 J	330 U	22 J	20 J	30 J
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U	330 U	330 U	35 J
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Sample ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/07/92	11/07/92	11/08/92	11/08/92	11/08/92
Parameter	**Units**				(2-1)	
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	28 J	330 U	21 J	20 J	28 J
Fluorene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	330 U	25 J	28 J	43 J
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	330 U	330 U	330 U	9 J	20 J
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	32 J	330 U	22 J	23 J	30 J
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	NA	NA	3.3 U	NA
4,4‘-DDE	UG/KG	NA	NA	NA	3.3 U	NA
4,4'-DDT	UG/KG	NA	NA	NA	4.6 E	NA
Aldrin	UG/KG	NA	NA	NA	1.7 U	NA
alpha-BHC	UG/KG	NA	NA	NA	1.7 U	NA
alpha-Chlordane	UG/KG	NA	NA	NA	1.7 U	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Sample ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/07/92	11/07/92	11/08/92	11/08/92	11/08/92
Parameter	**Units**				(2-1)	
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	NA	NA	1.7 U	NA
delta-BHC	UG/KG	NA	NA	NA	1.7 U	NA
Dieldrin	UG/KG	NA	NA	NA	3.3 U	NA
Endosulfan I	UG/KG	NA	NA	NA	1.7 U	NA
Endosulfan ll	UG/KG	NA	NA	NA	3.3 U	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	3.3 U	NA
Endrin	UG/KG	NA	NA	NA	3.3 U	NA
Endrin aldehyde	UG/KG	NA	NA	NA	3.3 U	NA
Endrin ketone	UG/KG	NA	NA	NA	3.3 U	NA
gamma-BHC (Lindane)	UG/KG	NA	NA	NA	1.7 U	NA
gamma-Chlordane	UG/KG	NA	NA	NA	1.7 U	NA
Heptachlor	UG/KG	NA	NA	NA	1.7 U	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	1.7 U	NA
Methoxychlor	UG/KG	NA	NA	NA	1.7 U	NA
Toxaphene	UG/KG	NA	NA	NA	170 U	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1221	UG/KG	NA	NA	NA	67 U	NA
Aroclor 1232	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1242	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1248	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1254	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1260	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1262	UG/KG	NA	NA	NA	33 U	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Sample ID		BS-05-001-02	BS-05-001-06	BS-05-002-02	BS-05-002-02	BS-05-002-07
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/07/92	11/07/92	11/08/92	11/08/92	11/08/92
Parameter	**Units**				(2-1)	
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	NA	NA	33 U	NA
Total Metals						
Aluminum	MG/KG	2,793	3,219	2,186	2,570	2,383
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	4 U	4 U	4 UR	4 U
Barium	MG/KG	101	40 U	40 U	10.6 J	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	1 U	1 U	1	1.2	1
Calcium	MG/KG	999	1,210	721	889	1,000 U
Chromium	MG/KG	4	11	6	7.8 E	5
Cobalt	MG/KG	10 U	10 U	10 U	1.5 J	10 U
Copper	MG/KG	5 U	5 U	5 U	3.2 J	5 U
Iron	MG/KG	6,552	4,883	4,153	4,490	3,580
Lead	MG/KG	0.6 U	0.6 U	17	25	20
Magnesium	MG/KG	1,000 U	622	1,000 U	753	1,000 U
Manganese	MG/KG	59	29	40	45.3	18
Nickel	MG/KG	8 U	8 U	8 U	3.5 J	8 U
Potassium	MG/KG	1,000 U	1,000 U	1,000 U	214 J	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	1,000 U	1,000 U	39.9 J	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	8	7	9	9.7	9
Zinc	MG/KG	34	19	47	50.3	21

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Sample ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/09/92	11/09/92	11/09/92
Parameter	Units		(2-1)			
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Sample ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/09/92	11/09/92	11/09/92
Parameter	Units		(2-1)			
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Sample ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Sample ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/09/92	11/09/92	11/09/92
Parameter	Units		(2-1)			
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Sample ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	330 U	330 U	330 U	330 U
Anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)pyrene	UG/KG	25 J	9 J	330 U	330 U	330 U
Benzo(b)fluoranthene	UG/KG	22 J	330 U	330 U	330 U	330 U
Benzo(g,h,i)perylene	UG/KG	19 J	330 U	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	20 J	330 U	330 U	330 U	330 U
Benzoic acid	UG/KG	19 J	330 U	330 U	330 U	330 U
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	330 U	330 U	330 U	330 U	330 U
Chrysene	UG/KG	330 U	330 U	330 U	330 U	330 U
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U	330 U	330 U	35 J
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Sample ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	5 J	330 U	330 U	330 U
Fluoranthene	UG/KG	28 J	330 U	330 U	330 U	330 U
Fluorene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	19 J	5 J	330 U	330 U	330 U
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	330 U	2 J	330 U	330 U	330 U
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	330 U	330 U	330 U	330 U	330 U
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	3.3 U	NA	NA	NA
4,4‘-DDE	UG/KG	NA	3.3 U	NA	NA	NA
4,4'-DDT	UG/KG	NA	3.3 U	NA	NA	NA
Aldrin	UG/KG	NA	1.7 U	NA	NA	NA
alpha-BHC	UG/KG	NA	1.7 U	NA	NA	NA
alpha-Chlordane	UG/KG	NA	1.7 U	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Sample ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	1.7 U	NA	NA	NA
delta-BHC	UG/KG	NA	1.7 U	NA	NA	NA
Dieldrin	UG/KG	NA	3.3 U	NA	NA	NA
Endosulfan I	UG/KG	NA	1.7 U	NA	NA	NA
Endosulfan ll	UG/KG	NA	3.3 U	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	3.3 U	NA	NA	NA
Endrin	UG/KG	NA	3.3 U	NA	NA	NA
Endrin aldehyde	UG/KG	NA	3.3 U	NA	NA	NA
Endrin ketone	UG/KG	NA	3.3 UR	NA	NA	NA
gamma-BHC (Lindane)	UG/KG	NA	1.7 U	NA	NA	NA
gamma-Chlordane	UG/KG	NA	1.7 U	NA	NA	NA
Heptachlor	UG/KG	NA	1.7 U	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	1.7 U	NA	NA	NA
Methoxychlor	UG/KG	NA	1.7 U	NA	NA	NA
Toxaphene	UG/KG	NA	170 U	NA	NA	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1221	UG/KG	NA	67 U	NA	NA	NA
Aroclor 1232	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1242	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1248	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1254	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1260	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1262	UG/KG	NA	33 U	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Sample ID		BS-05-003-02	BS-05-003-02	NS-05-001-02	NS-05-001-04	NS-05-002-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	33 U	NA	NA	NA
Total Metals						
Aluminum	MG/KG	2,311	2,450	2,376	2,647	794
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	0.34 J	4 U	4 U	4 U
Barium	MG/KG	40 U	7.9 J	40 U	40 U	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	1 U	1 U	1U	1 U	1 U
Calcium	MG/KG	1,000 U	583 J	4,104	1,000 U	1,000 U
Chromium	MG/KG	3	2.9	36	3	2 U
Cobalt	MG/KG	10 U	1.3 J	10 U	10 U	10 U
Copper	MG/KG	5 U	1.7 J	5 U	5 U	5 U
Iron	MG/KG	3,466	4,840	4,212	3,913	1,037
Lead	MG/KG	0.6 U	2.2	0.6 U	0.6 U	0.6 U
Magnesium	MG/KG	1,000 U	634 J	1,911	955	1,000 U
Manganese	MG/KG	46	58 E	107	29	8
Nickel	MG/KG	8 U	2.1 J	8 U	8 U	8 U
Potassium	MG/KG	1,000 U	162 J	1,000 U	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	26 J	1,000 U	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	10 U	6.2 J	10 U	10 U	10 U
Zinc	MG/KG	10	10	22	9	4 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Sample ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	Units				(2-1)	
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Sample ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**				(2-1)	
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Sample ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	Units				(2-1)	
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	4,900 J	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	117 J	17,000 E	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Sample ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	Units				(2-1)	
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	440 J	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Sample ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	Units				(2-1)	
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	330 U	330 U	330 U	330 U
Anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)pyrene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(b)fluoranthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(g,h,i)perylene	UG/KG	330 U	93 J	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzoic acid	UG/KG	21 J	330 U	330 U	330 U	330 U
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	330 U	330 U	330 U	330 U	330 U
Chrysene	UG/KG	330 U	330 U	330 U	330 U	330 U
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Sample ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**				(2-1)	
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	13 J	330 U
Fluoranthene	UG/KG	330 U	330 U	3,175 J	2,100 B	330 U
Fluorene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	56 J	330 U	330 U	330 U
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	330 U	330 U	330 U	29 J	330 U
Phenol	UG/KG	330 U	423 J	330 U	330 U	330 U
Pyrene	UG/KG	330 U	330 U	330 U	47 JB	330 U
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	NA	NA	3.3 U	NA
4,4‘-DDE	UG/KG	NA	NA	NA	3.3 U	NA
4,4'-DDT	UG/KG	NA	NA	NA	3.3 U	NA
Aldrin	UG/KG	NA	NA	NA	1.7 U	NA
alpha-BHC	UG/KG	NA	NA	NA	1.7 U	NA
alpha-Chlordane	UG/KG	NA	NA	NA	1.7 U	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Sample ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**				(2-1)	
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	NA	NA	1.7 U	NA
delta-BHC	UG/KG	NA	NA	NA	1.7 U	NA
Dieldrin	UG/KG	NA	NA	NA	3.3 U	NA
Endosulfan I	UG/KG	NA	NA	NA	1.7 U	NA
Endosulfan ll	UG/KG	NA	NA	NA	3.3 U	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	3.3 U	NA
Endrin	UG/KG	NA	NA	NA	3.3 U	NA
Endrin aldehyde	UG/KG	NA	NA	NA	3.3 U	NA
Endrin ketone	UG/KG	NA	NA	NA	3.3 U	NA
gamma-BHC (Lindane)	UG/KG	NA	NA	NA	1.7 U	NA
gamma-Chlordane	UG/KG	NA	NA	NA	1.7 U	NA
Heptachlor	UG/KG	NA	NA	NA	1.7 U	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	1.7 U	NA
Methoxychlor	UG/KG	NA	NA	NA	1.7 U	NA
Toxaphene	UG/KG	NA	NA	NA	170 U	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1221	UG/KG	NA	NA	NA	67 U	NA
Aroclor 1232	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1242	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1248	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1254	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1260	UG/KG	NA	NA	NA	33 U	NA
Aroclor 1262	UG/KG	NA	NA	NA	33 U	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Sample ID		NS-05-002-04	NS-05-003-02	NS-05-003-04	NS-05-003-04	NS-05-003-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**				(2-1)	
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	NA	NA	33 U	NA
Total Metals						
Aluminum	MG/KG	2,202	2,603	2,015	1,970	1,722
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	4 U	4 U	4 U	4 U
Barium	MG/KG	40 U	40 U	40 U	14.5 J	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	1 U	2	1	1.1	1 U
Calcium	MG/KG	1,000 U	1,000 U	1,000 U	700 J	1,000 U
Chromium	MG/KG	3	16	5	5.3	3
Cobalt	MG/KG	10 U	10 U	10 U	10 U	10 U
Copper	MG/KG	5 U	6	5 U	7.7 E	5 U
Iron	MG/KG	2,920	2,471	2,808	2,710	2,851
Lead	MG/KG	0.6 U	75	0.6 U	5	0.6 U
Magnesium	MG/KG	1,000 U	996	781	783 J	1,000 U
Manganese	MG/KG	19	18	16	14.8 E	11
Nickel	MG/KG	8 U	8 U	8 U	3.1 J	83
Potassium	MG/KG	1,000 U	1,000 U	1,000 U	256 J	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	1,000 U	1,000 U	28.7 J	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	10 U	10 U	10 U	4 J	10 U
Zinc	MG/KG	7	51	34	36	433

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Sample ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	Units		(2-1)			(2-1)
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**NS-05-004-02**	**NS-05-004-02**	**NS-05-004-04**	**NS-05-005-02**	**NS-05-005-02**
Sample ID		**NS-05-004-02**	**NS-05-004-02**	**NS-05-004-04**	**NS-05-005-02**	**NS-05-005-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/09/92**	**11/09/92**	**11/09/92**	**11/09/92**	**11/09/92**
Parameter	**Units**		(2-1)			(2-1)
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Sample ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			(2-1)
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	117 J	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	NA	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	NA	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	NA	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	NA	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Sample ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	Units		(2-1)			(2-1)
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	NA	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	NA	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	NA	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	NA	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	NA	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	NA	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	NA	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	NA	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	NA	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	NA	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	NA	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	NA	330 U	440 J	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	NA	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	NA	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	NA	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	NA	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	NA	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	NA	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	NA	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	NA	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	NA	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	NA	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	NA	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	NA	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Sample ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			(2-1)
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	NA	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	NA	330 U	330 U	330 U
Acenaphthylene	UG/KG	24 J	NA	330 U	330 U	330 U
Anthracene	UG/KG	18 J	NA	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	51 J	NA	330 U	330 U	330 U
Benzo(a)pyrene	UG/KG	77 J	NA	330 U	330 U	330 U
Benzo(b)fluoranthene	UG/KG	72 J	NA	330 U	330 U	330 U
Benzo(g,h,i)perylene	UG/KG	80 J	NA	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	82 J	NA	330 U	330 U	330 U
Benzoic acid	UG/KG	37 J	NA	330 U	88 J	330 U
Benzyl alcohol	UG/KG	330 U	NA	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	NA	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	NA	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	NA	330 U	330 U	330 U
Butylbenzylphthalate	UG/KG	330 U	NA	330 U	330 U	330 U
Carbazole	UG/KG	21 J	NA	330 U	330 U	330 U
Chrysene	UG/KG	99 J	NA	330 U	330 U	330 U
Cresols (total)	UG/KG	330 U	NA	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	NA	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	NA	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	NA	330 U	330 U	330 U
Diethylphthalate	UG/KG	20 J	NA	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	NA	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	NA	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Sample ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			(2-1)
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	NA	330 U	330 U	4 J
Fluoranthene	UG/KG	66 J	NA	330 U	330 U	330 U
Fluorene	UG/KG	330 U	NA	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	NA	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	NA	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	NA	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	NA	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	75 J	NA	330 U	330 U	330 U
Isophorone	UG/KG	330 U	NA	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	NA	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	NA	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	NA	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	NA	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	NA	830 U	830 U	830 U
Phenanthrene	UG/KG	58 J	NA	330 U	330 U	2 J
Phenol	UG/KG	330 U	NA	330 U	330 U	330 U
Pyrene	UG/KG	132 J	NA	330 U	330 U	330 U
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	3.3 U	NA	NA	NA
4,4‘-DDE	UG/KG	NA	3.3 U	NA	NA	NA
4,4'-DDT	UG/KG	NA	6.8 EN	NA	NA	NA
Aldrin	UG/KG	NA	1.7 U	NA	NA	NA
alpha-BHC	UG/KG	NA	1.7 U	NA	NA	NA
alpha-Chlordane	UG/KG	NA	1.7 U	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Sample ID		NS-05-004-02	NS-05-004-02	NS-05-004-04	NS-05-005-02	NS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/09/92
Parameter	**Units**		(2-1)			(2-1)
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	1.7 U	NA	NA	1.7 U
delta-BHC	UG/KG	NA	1.7 U	NA	NA	1.7 U
Dieldrin	UG/KG	NA	3.3 U	NA	NA	3.3 U
Endosulfan I	UG/KG	NA	1.7 U	NA	NA	1.7 U
Endosulfan ll	UG/KG	NA	3.5 JN	NA	NA	3.3 U
Endosulfan sulfate	UG/KG	NA	3.3 U	NA	NA	3.3 U
Endrin	UG/KG	NA	3.3 U	NA	NA	3.3 U
Endrin aldehyde	UG/KG	NA	3.3 U	NA	NA	3.3 U
Endrin ketone	UG/KG	NA	3.3 UR	NA	NA	3.3 UR
gamma-BHC (Lindane)	UG/KG	NA	1.7 U	NA	NA	1.7 U
gamma-Chlordane	UG/KG	NA	1.7 U	NA	NA	1.7 U
Heptachlor	UG/KG	NA	1.7 U	NA	NA	1.7 U
Heptachlor epoxide	UG/KG	NA	1.7 U	NA	NA	1.7 U
Methoxychlor	UG/KG	NA	1.7 U	NA	NA	2.5 J
Toxaphene	UG/KG	NA	170 U	NA	NA	170 U
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	33 U	NA	NA	33 U
Aroclor 1221	UG/KG	NA	67 U	NA	NA	67 U
Aroclor 1232	UG/KG	NA	33 U	NA	NA	33 U
Aroclor 1242	UG/KG	NA	33 U	NA	NA	33 U
Aroclor 1248	UG/KG	NA	33 U	NA	NA	33 U
Aroclor 1254	UG/KG	NA	33 U	NA	NA	7 J
Aroclor 1260	UG/KG	NA	33 U	NA	NA	33 U
Aroclor 1262	UG/KG	NA	33 U	NA	NA	33 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**NS-05-004-02**	**NS-05-004-02**	**NS-05-004-04**	**NS-05-005-02**	**NS-05-005-02**
Sample ID		**NS-05-004-02**	**NS-05-004-02**	**NS-05-004-04**	**NS-05-005-02**	**NS-05-005-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/09/92**	**11/09/92**	**11/09/92**	**11/09/92**	**11/09/92**
Parameter	**Units**		(2-1)			(2-1)
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	33 U	NA	NA	33 U
Total Metals						
Aluminum	MG/KG	2,172	2,200	2,251	2,426	2,610
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	0.81 J	4 U	4 U	0.4 J
Barium	MG/KG	485	340	40 U	40 U	8.1 J
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	2	1.1	1 U	1 U	1 U
Calcium	MG/KG	4,410	3,080 J	796	1,000 U	653 J
Chromium	MG/KG	21	16.2	4	2	3.5
Cobalt	MG/KG	10 U	1.4 J	10 U	10 U	1.3 J
Copper	MG/KG	6	4.2 J	5 U	5 U	1.5 J
Iron	MG/KG	4,520	4,590	4,229	3,586	4,440
Lead	MG/KG	120	89.6	0.6 U	0.6 U	2.1
Magnesium	MG/KG	783	848	846	1,000 U	637 J
Manganese	MG/KG	31	31.2 E	18	44	44.5 E
Nickel	MG/KG	5	3.9 J	8 U	8 U	2.6 J
Potassium	MG/KG	1,000 U	219 J	1,000 U	1,000 U	187 J
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	29.7 J	1,000 U	1,000 U	33 J
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	13	13.5	9	10 U	5.8 J
Zinc	MG/KG	117	60.8	26	7	8.4

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Sample ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/03/92
Parameter	Units					
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Sample ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/03/92
Parameter	**Units**					
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Sample ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/03/92
Parameter	**Units**					
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Sample ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/03/92
Parameter	Units					
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Sample ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/03/92
Parameter	**Units**					
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	330 U	330 U	330 U	1,478 J
Anthracene	UG/KG	330 U	330 U	330 U	330 U	971 J
Benzo(a)anthracene	UG/KG	330 U	330 U	330 U	330 U	1,373 J
Benzo(a)pyrene	UG/KG	330 U	330 U	330 U	330 U	3,168 J
Benzo(b)fluoranthene	UG/KG	330 U	330 U	330 U	330 U	2,429 J
Benzo(g,h,i)perylene	UG/KG	330 U	330 U	330 U	330 U	2,640 J
Benzo(k)fluoranthene	UG/KG	330 U	330 U	330 U	330 U	3,062 J
Benzoic acid	UG/KG	330 U	39 J	94 J	53 J	330 U
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	330 U	330 U	330 U	401 J
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	330 U	330 U	330 U	330 U	306 J
Chrysene	UG/KG	330 U	330 U	330 U	330 U	2,534 J
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U	330 U	330 U	1,056 J
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Sample ID		NS-05-005-04	NS-05-006-02	NS-05-006-04	NS-05-007-02	SS-05-001-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/09/92	11/09/92	11/09/92	11/09/92	11/03/92
Parameter	**Units**					
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	330 U	25 J	330 U	330 U	1,056 J
Fluorene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	330 U	330 U	330 U	2,957 J
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	330 U	15 J	330 U	330 U	211 J
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	330 U	22 J	330 U	330 U	1,584 J
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA
4,4‘-DDE	UG/KG	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA
alpha-BHC	UG/KG	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**NS-05-005-04**	**NS-05-006-02**	**NS-05-006-04**	**NS-05-007-02**	**SS-05-001-02**
Sample ID		**NS-05-005-04**	**NS-05-006-02**	**NS-05-006-04**	**NS-05-007-02**	**SS-05-001-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/09/92**	**11/09/92**	**11/09/92**	**11/09/92**	**11/03/92**
Parameter	**Units**					
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA
Endosulfan ll	UG/KG	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	UG/KG	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA
Aroclor 1262	UG/KG	NA	NA	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**NS-05-005-04**	**NS-05-006-02**	**NS-05-006-04**	**NS-05-007-02**	**SS-05-001-02**
Sample ID		**NS-05-005-04**	**NS-05-006-02**	**NS-05-006-04**	**NS-05-007-02**	**SS-05-001-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/09/92**	**11/09/92**	**11/09/92**	**11/09/92**	**11/03/92**
Parameter	**Units**					
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	NA	NA	NA	NA
Total Metals						
Aluminum	MG/KG	1,878	2,969	3,524	2,651	2,534
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	4 U	4 U	4 U	4 U
Barium	MG/KG	40 U	40 U	40 U	73	86
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	1 U	1 U	1 U	1 U	4
Calcium	MG/KG	1,000 U	1,007	1,000 U	1,018	8,853
Chromium	MG/KG	4	7	3	4	27
Cobalt	MG/KG	10 U	10 U	10 U	10 U	10 U
Copper	MG/KG	5 U	7J	5 U	5 U	7
Iron	MG/KG	3,201	4,666	5,176	3,818	6,125
Lead	MG/KG	0.6 U	0.6 U	0.6 U	0.6 U	161
Magnesium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,911
Manganese	MG/KG	14	52	944	39	122
Nickel	MG/KG	8 U	8 U	8 U	58	9
Potassium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	10 U	10 U	10 U	10 U	22
Zinc	MG/KG	4 U	50	7	350	89

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Sample ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2-1)				
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Sample ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2-1)				
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Sample ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2-1)				
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Sample ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2-1)				
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 UR	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Sample ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2-1)				
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	11 J	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	420	330 U	330 U	330 U	330 U
Anthracene	UG/KG	160 J	330 U	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	420	20 J	330 U	220 J	330 U
Benzo(a)pyrene	UG/KG	1,100	28 J	330 U	336 J	202 J
Benzo(b)fluoranthene	UG/KG	1,200	27 J	330 U	232 J	330 U
Benzo(g,h,i)perylene	UG/KG	500	20 J	266 J	255 J	439 J
Benzo(k)fluoranthene	UG/KG	970	35 J	330 U	313 J	330 U
Benzoic acid	UG/KG	330 U	86 J	330 U	330 U	330 U
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	34 J	330 U	330 U	191 J
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	29 J	330 U	330 U	330 U	330 U
Chrysene	UG/KG	770	34 J	330 U	278 J	330 U
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	220 J	19 J	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Sample ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2-1)				
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	220 J	27 J	330 U	330 U	330 U
Fluorene	UG/KG	23 J	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	990	22 J	208 J	255 J	360 J
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	12 J	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	70 J	15 J	330 U	330 U	211 J
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	350	28 J	330 U	325 J	330 U
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	3.3 UR	NA	NA	NA	NA
4,4‘-DDE	UG/KG	3.3 U	NA	NA	NA	NA
4,4'-DDT	UG/KG	24 E	NA	NA	NA	NA
Aldrin	UG/KG	1.7 U	NA	NA	NA	NA
alpha-BHC	UG/KG	1.7 U	NA	NA	NA	NA
alpha-Chlordane	UG/KG	1.7 U	NA	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Sample ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2-1)				
Pesticide Organic Compounds						
beta-BHC	UG/KG	1.7 U	NA	NA	NA	NA
delta-BHC	UG/KG	1.7 U	NA	NA	NA	NA
Dieldrin	UG/KG	3.3 U	NA	NA	NA	NA
Endosulfan I	UG/KG	1.7 U	NA	NA	NA	NA
Endosulfan ll	UG/KG	3.3 U	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	3.3 U	NA	NA	NA	NA
Endrin	UG/KG	3.3 U	NA	NA	NA	NA
Endrin aldehyde	UG/KG	3.3 U	NA	NA	NA	NA
Endrin ketone	UG/KG	3.3 U	NA	NA	NA	NA
gamma-BHC (Lindane)	UG/KG	1.7 U	NA	NA	NA	NA
gamma-Chlordane	UG/KG	1.7 U	NA	NA	NA	NA
Heptachlor	UG/KG	1.7 U	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	1.7 U	NA	NA	NA	NA
Methoxychlor	UG/KG	17 U	NA	NA	NA	NA
Toxaphene	UG/KG	170 U	NA	NA	NA	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	33 U	NA	NA	NA	NA
Aroclor 1221	UG/KG	67 U	NA	NA	NA	NA
Aroclor 1232	UG/KG	33 U	NA	NA	NA	NA
Aroclor 1242	UG/KG	33 U	NA	NA	NA	NA
Aroclor 1248	UG/KG	33 U	NA	NA	NA	NA
Aroclor 1254	UG/KG	33 U	NA	NA	NA	NA
Aroclor 1260	UG/KG	67	NA	NA	NA	NA
Aroclor 1262	UG/KG	33 U	NA	NA	NA	NA

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Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Sample ID		SS-05-001-02	SS-05-002-02	SS-05-003-02	SS-05-004-02	SS-05-005-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2-1)				
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	33 U	NA	NA	NA	NA
Total Metals						
Aluminum	MG/KG	3,100	2,500	1,977	2,158	2,700
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	1.3 J	4 U	4 U	4 U	4 U
Barium	MG/KG	166	40 U	40 U	40 U	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	4.7	1 U	2	2	2
Calcium	MG/KG	20,100 E	1,011	2,277	4,872	1,654
Chromium	MG/KG	41.1	9	39	18	17
Cobalt	MG/KG	2.2 J	10 U	10 U	10 U	10 U
Copper	MG/KG	12.7 E	5 U	5	5	6
Iron	MG/KG	8,450	5,000	4,395	4,756	3,600
Lead	MG/KG	211	0.6 U	39	34	31
Magnesium	MG/KG	2,820	1,000 U	913	1,000 U	1,000 U
Manganese	MG/KG	128	80	57	34	19
Nickel	MG/KG	10.4	8 U	8 U	8 U	8 U
Potassium	MG/KG	415 J	1,000 U	1,000 U	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	45.6 J	1,000 U	1,000 U	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	26.9 E	13	18	18	9
Zinc	MG/KG	109 E	28	37	37	47

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Sample ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-006-02**	**SS-05-007-02**	**SS-05-008-02**	**SS-05-009-02**	**SS-05-010-02**
Sample ID		**SS-05-006-02**	**SS-05-007-02**	**SS-05-008-02**	**SS-05-009-02**	**SS-05-010-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**					
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Sample ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Sample ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

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NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Sample ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	639 J	330 U	330 U	109 J	2,036 J
Anthracene	UG/KG	330 J	330 U	330 U	62 J	1,286 J
Benzo(a)anthracene	UG/KG	782 J	330 U	330 U	164 J	3,537
Benzo(a)pyrene	UG/KG	1,322 J	18 J	182 J	284 J	5,681
Benzo(b)fluoranthene	UG/KG	1,024 J	15 J	148 J	197 J	4,394
Benzo(g,h,i)perylene	UG/KG	947 J	330 U	273 J	186 J	2,358 J
Benzo(k)fluoranthene	UG/KG	1,101 J	15 J	148 J	284 J	5,573
Benzoic acid	UG/KG	330 U	330 U	330 U	59 J	330 U
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	308 J	33 J	228 J	40 J	343 J
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	396 J	330 U	182 J	71 J	782 J
Chrysene	UG/KG	1,211 J	330 U	330 U	240 J	4,823
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U	330 U	54 J	268 J
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Sample ID		SS-05-006-02	SS-05-007-02	SS-05-008-02	SS-05-009-02	SS-05-010-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	7822 J	15 J	171 J	197 J	4,180
Fluorene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	870 J	330 U	205 J	197 J	2,787 J
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	231 J	330 U	330 U	55 J	986 J
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	1,090 J	14 J	205 J	295 J	5,145
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA
4,4‘-DDE	UG/KG	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA
alpha-BHC	UG/KG	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-006-02**	**SS-05-007-02**	**SS-05-008-02**	**SS-05-009-02**	**SS-05-010-02**
Sample ID		**SS-05-006-02**	**SS-05-007-02**	**SS-05-008-02**	**SS-05-009-02**	**SS-05-010-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**					
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA
Endosulfan ll	UG/KG	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	UG/KG	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA
Aroclor 1262	UG/KG	NA	NA	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-006-02**	**SS-05-007-02**	**SS-05-008-02**	**SS-05-009-02**	**SS-05-010-02**
Sample ID		**SS-05-006-02**	**SS-05-007-02**	**SS-05-008-02**	**SS-05-009-02**	**SS-05-010-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**					
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	NA	NA	NA	NA
Total Metals						
Aluminum	MG/KG	2,181	2,137	3,185	1,672	2,144
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	4 U	4 U	4 U	4 U
Barium	MG/KG	121	40 U	50	40 U	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	5	1 U	6	2	10
Calcium	MG/KG	6,278	879	6,371	1,104	7,717
Chromium	MG/KG	18	5	31	5	29
Cobalt	MG/KG	10 U	10 U	10 U	10 U	10 U
Copper	MG/KG	6	5 U	16	5 U	6
Iron	MG/KG	5,727	3,471	4,778	3,388	4,180
Lead	MG/KG	110	0.6 U	175	20	209
Magnesium	MG/KG	1,377	1,000 U	1,240	1,000 U	825
Manganese	MG/KG	94	24	38	43	49
Nickel	MG/KG	8	8 U	9	8 U	8
Potassium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	34	10 U	15	12	25
Zinc	MG/KG	67	12	140	38	124

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Sample ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**		(2-1)			
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Sample ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**		(2-1)			
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	27	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	24	10 U	10 U	10 U	10 U
Acetone	UG/KG	40	10 U	10 U	6 J	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Sample ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**		(2-1)			
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	1 J	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	1 J	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	2 J	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Sample ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**		(2-1)			
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Sample ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**		(2-1)			
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	130 J	330 U	112 J	330 U
Acenaphthylene	UG/KG	330 U	380 J	16 J	202 J	330 U
Anthracene	UG/KG	330 J	240 J	24 J	280 J	330 U
Benzo(a)anthracene	UG/KG	238 J	1,100	57 J	1,076 J	19 J
Benzo(a)pyrene	UG/KG	295 J	2,700	68 J	942 J	26 J
Benzo(b)fluoranthene	UG/KG	272 J	2,500	66 J	717 J	22 J
Benzo(g,h,i)perylene	UG/KG	227 J	940	58 J	493 J	22 J
Benzo(k)fluoranthene	UG/KG	284 J	100 J	72 J	830 J	25 J
Benzoic acid	UG/KG	330 U	330 U	39 J	330 U	45 J
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	330 U	48 J	148 J	45 J
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	330 U	180 J	17 J	830 J	330 U
Chrysene	UG/KG	295 J	2,000	74 J	1,570 J	26 J
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	180 J	20 J	235 J	17 J
Dibenzofuran	UG/KG	330 U	41 J	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Sample ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**		(2-1)			
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	443 J	1,400	118 J	1,570 J	37 J
Fluorene	UG/KG	330 U	130 J	330 U	90 J	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	216 J	590 J	58 J	482 J	24 J
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	34 J	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	318 J	1,100	65 J	1,054 J	26 J
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	443 J	1,800	101 J	2,803	31 J
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	3.3 U	NA	NA	NA
4,4‘-DDE	UG/KG	NA	3.3 U	NA	NA	NA
4,4'-DDT	UG/KG	NA	3.3 U	NA	NA	NA
Aldrin	UG/KG	NA	1.7 U	NA	NA	NA
alpha-BHC	UG/KG	NA	1.7 U	NA	NA	NA
alpha-Chlordane	UG/KG	NA	1.7 U	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-011-02**	**SS-05-011-02**	**SS-05-012-02**	**SS-05-013-02**	**SS-05-014-02**
Sample ID		**SS-05-011-02**	**SS-05-011-02**	**SS-05-012-02**	**SS-05-013-02**	**SS-05-014-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**		(2-1)			
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	1.7 U	NA	NA	NA
delta-BHC	UG/KG	NA	1.7 U	NA	NA	NA
Dieldrin	UG/KG	NA	3.3 U	NA	NA	NA
Endosulfan I	UG/KG	NA	1.7 U	NA	NA	NA
Endosulfan ll	UG/KG	NA	3.3 U	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	3.3 U	NA	NA	NA
Endrin	UG/KG	NA	3.3 U	NA	NA	NA
Endrin aldehyde	UG/KG	NA	3.3 U	NA	NA	NA
Endrin ketone	UG/KG	NA	3.3 U	NA	NA	NA
gamma-BHC (Lindane)	UG/KG	NA	1.7 U	NA	NA	NA
gamma-Chlordane	UG/KG	NA	1.7 U	NA	NA	NA
Heptachlor	UG/KG	NA	1.7 U	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	1.7 U	NA	NA	NA
Methoxychlor	UG/KG	NA	17 U	NA	NA	NA
Toxaphene	UG/KG	NA	170 U	NA	NA	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1221	UG/KG	NA	67 U	NA	NA	NA
Aroclor 1232	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1242	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1248	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1254	UG/KG	NA	33 U	NA	NA	NA
Aroclor 1260	UG/KG	NA	76	NA	NA	NA
Aroclor 1262	UG/KG	NA	33 U	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Sample ID		SS-05-011-02	SS-05-011-02	SS-05-012-02	SS-05-013-02	SS-05-014-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**		(2/1)			
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	33 U	NA	NA	NA
Total Metals						
Aluminum	MG/KG	2,100	2,410	1,324	2,197	1,837
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	0.85 J	4 U	4 U	4 U
Barium	MG/KG	40 U	721	40 U	138	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	2	2.8	1	2	1 U
Calcium	MG/KG	10,897	6,810 E	1,378	3,587	1,243
Chromium	MG/KG	21	35.2	8	39	4
Cobalt	MG/KG	10 U	1.7 J	10 U	10 U	10 U
Copper	MG/KG	10	15.9 E	5 U	7	5 U
Iron	MG/KG	4,427	5,870	4,198	4,484	3,919
Lead	MG/KG	120	254	45	186	0.6 U
Magnesium	MG/KG	1,000 U	1,010	1,000 U	684	1,000 U
Manganese	MG/KG	31	36.1	27	35	25
Nickel	MG/KG	8 U	7.4	8 U	5	8 U
Potassium	MG/KG	1,000 U	280 J	1,000 U	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	42.9 J	1,000 U	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	18	20.7 E	14	19	7
Zinc	MG/KG	73	190 E	31	76	11

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Sample ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Sample ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	7 J	10 U	6 J
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Sample ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Sample ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Sample ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	157 J	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	419 J	330 U	330 U	330 U	17 J
Anthracene	UG/KG	692 J	330 U	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	3,354	330 U	330 U	330 U	330 U
Benzo(a)pyrene	UG/KG	3,774	330 U	21 J	330 U	16 J
Benzo(b)fluoranthene	UG/KG	3,354	330 U	330 U	330 U	35 J
Benzo(g,h,i)perylene	UG/KG	1,992	40 J	27 J	330 U	29 J
Benzo(k)fluoranthene	UG/KG	2,725	330 U	330 U	330 U	33 J
Benzoic acid	UG/KG	330 U	104 J	77 J	63 J	60 J
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	371 J	267 J	330 U	330 U
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	1,363 J	330 U	330 U	330 U	330 U
Chrysene	UG/KG	3,459	330 U	330 U	330 U	27 J
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	231 J	330 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	16 J	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Sample ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	4,612	19 J	16 J	330 U	16 J
Fluorene	UG/KG	105 J	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	2,306	32 J	330 U	330 U	33 J
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	1,572 J	330 U	330 U	330 U	330 U
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	5,031	31 J	18 J	330 U	18 J
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA
4,4‘-DDE	UG/KG	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA
alpha-BHC	UG/KG	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Sample ID		SS-05-015-02	SS-05-016-02	SS-05-017-02	SS-05-018-02	SS-05-019-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**					
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA
Endosulfan ll	UG/KG	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	UG/KG	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA
Aroclor 1262	UG/KG	NA	NA	NA	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Sample ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**					
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	NA	NA	NA	NA
Total Metals						
Aluminum	MG/KG	2,002	5,889	7,453	2,769	2,839
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	4 U	4 U	4 U	4 U
Barium	MG/KG	40 U	48	40 U	40 U	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	3	1 U	3	1 U	1 U
Calcium	MG/KG	2,096	2,399	3,226	1,000 U	1,104
Chromium	MG/KG	44	10	17	3	4
Cobalt	MG/KG	10 U	10 U	10 U	10 U	10 U
Copper	MG/KG	5 U	7	11	5 U	5 U
Iron	MG/KG	2,935	8,724	10,567	3,940	4.837
Lead	MG/KG	146	51	53	0.6 U	14
Magnesium	MG/KG	1,000 U	1,000 U	979	1,000 U	1,000 U
Manganese	MG/KG	32	59	78	40	52
Nickel	MG/KG	8 U	8 U	8	8 U	8 U
Potassium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	13	14	17	10 U	8
Zinc	MG/KG	50	73	58	11	6

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-019-02**	**SS-05-020-02**	**SS-05-020-02**	**SS-05-021-02**
Sample ID		**SS-05-019-02**	**SS-05-020-02**	**SS-05-020-02**	**SS-05-021-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**	**--**	**--**
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**	(2/1)			(2/1)
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-019-02**	**SS-05-020-02**	**SS-05-020-02**	**SS-05-021-02**
Sample ID		**SS-05-019-02**	**SS-05-020-02**	**SS-05-020-02**	**SS-05-021-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**	**--**	**--**
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**	(2/1)			(2/1)
Volatile Organic Compounds					
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Sample ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Matrix		Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2/1)			(2/1)
Volatile Organic Compounds					
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds					
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Sample ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Matrix		Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92
Parameter	Units	(2/1)			(2/1)
Semivolatile Organic Compounds					
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	26 J	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Sample ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Matrix		Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2/1)			(2/1)
Semivolatile Organic Compounds					
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	33 U	14 J	330 U	86 J
Acenaphthylene	UG/KG	19 J	880	63 J	136 J
Anthracene	UG/KG	19 J	617	24 J	204 J
Benzo(a)anthracene	UG/KG	160 J	948	330 U	363 J
Benzo(a)pyrene	UG/KG	190 J	2,426	120 J	431 J
Benzo(b)fluoranthene	UG/KG	150 J	2,756	140 J	442 J
Benzo(g,h,i)perylene	UG/KG	76 J	1,433	160 J	215 J
Benzo(k)fluoranthene	UG/KG	180 J	1,874	330 U	454 J
Benzoic acid	UG/KG	330 U	79 J	330 U	330 U
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	154 J	330 U	125 J
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U
Carbazole	UG/KG	31 J	35 J	330 U	408 J
Chrysene	UG/KG	210 J	1,544	51 J	454 J
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	19 J	176 J	330 U	330 U
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Sample ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Matrix		Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2/1)			(2/1)
Semivolatile Organic Compounds					
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	220 J	573	38 J	669 J
Fluorene	UG/KG	8 J	330 U	330 U	62 J
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	100 J	1,654	280 J	249 J
Isophorone	UG/KG	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	7 J	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	72 J	64 J	12 J	624 J
Phenol	UG/KG	330 U	330 U	330 U	330 U
Pyrene	UG/KG	190 J	761	41 J	703 J
Pesticide Organic Compounds					
4,4'-DDD	UG/KG	1.2 JN	NA	3.1 J	NA
4,4‘-DDE	UG/KG	3.3 U	NA	3.3 U	NA
4,4'-DDT	UG/KG	15 E	NA	3.3 U	NA
Aldrin	UG/KG	1.7 U	NA	1.7 U	NA
alpha-BHC	UG/KG	1.7 U	NA	1.7 U	NA
alpha-Chlordane	UG/KG	1.7 U	NA	1.7 U	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Sample ID		SS-05-019-02	SS-05-020-02	SS-05-020-02	SS-05-021-02
Matrix		Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--
Date Sampled		11/03/92	11/03/92	11/03/92	11/03/92
Parameter	**Units**	(2/1)			(2/1)
Pesticide Organic Compounds					
beta-BHC	UG/KG	1.7 U	NA	1.7 U	NA
delta-BHC	UG/KG	1.7 U	NA	1.7 U	NA
Dieldrin	UG/KG	3.3 U	NA	3.3 U	NA
Endosulfan I	UG/KG	1.7 U	NA	1.7 U	NA
Endosulfan ll	UG/KG	3.3 U	NA	3.3 U	NA
Endosulfan sulfate	UG/KG	3.3 U	NA	3.3 U	NA
Endrin	UG/KG	3.3 U	NA	3.3 U	NA
Endrin aldehyde	UG/KG	3.3 U	NA	3.3 U	NA
Endrin ketone	UG/KG	3.3 U	NA	3.3 U	NA
gamma-BHC (Lindane)	UG/KG	1.7 U	NA	1.7 U	NA
gamma-Chlordane	UG/KG	1.7 U	NA	1.7 U	NA
Heptachlor	UG/KG	1.7 U	NA	1.7 U	NA
Heptachlor epoxide	UG/KG	1.7 U	NA	1.7 U	NA
Methoxychlor	UG/KG	17 U	NA	17 U	NA
Toxaphene	UG/KG	170 U	NA	170 U	NA
Polychlorinated Biphenyls					
Aroclor 1016	UG/KG	33 U	NA	33 U	NA
Aroclor 1221	UG/KG	67 U	NA	67 U	NA
Aroclor 1232	UG/KG	33 U	NA	33 U	NA
Aroclor 1242	UG/KG	33 U	NA	33 U	NA
Aroclor 1248	UG/KG	33 U	NA	33 U	NA
Aroclor 1254	UG/KG	33 U	NA	33 U	NA
Aroclor 1260	UG/KG	33 U	NA	39	NA
Aroclor 1262	UG/KG	33 U	NA	33 U	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

NON-DESTRUCTIVE INSPECTION FACILITY (SS-005)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-019-02**	**SS-05-020-02**	**SS-05-020-02**	**SS-05-021-02**
Sample ID		**SS-05-019-02**	**SS-05-020-02**	**SS-05-020-02**	**SS-05-021-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**	(2/1)			(2/1)
Polychlorinated Biphenyls					
Aroclor 1268	UG/KG	33 U	NA	33 U	NA
Total Metals					
Aluminum	MG/KG	2,960	3,418	2,530	2,381
Antimony	MG/KG	12 U	12 U	12 U	12 U
Arsenic	MG/KG	0.43 J	4 U	0.66	4 U
Barium	MG/KG	14.6 J	137	339	110
Beryllium	MG/KG	1	1 U	1	1 U
Cadmium	MG/KG	0.59 J	3	1.2	2
Calcium	MG/KG	1,150 E	2,536	1,800 E	4,989
Chromium	MG/KG	5	30	9.5	25
Cobalt	MG/KG	1.4 J	10 U	1.5 J	10 U
Copper	MG/KG	3.7 J	8	5.5 E	27
Iron	MG/KG	5,610	7,056	5,920	5,782
Lead	MG/KG	13.9 E	221	60.5	167
Magnesium	MG/KG	616 J	783	646 J	1,000 U
Manganese	MG/KG	55.2	64	50.1	36
Nickel	MG/KG	2 J	6	2.6 J	10
Potassium	MG/KG	246 J	1,000 U	175 J	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U
Sodium	MG/KG	45 J	1,000 U	41.8 J	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U
Vanadium	MG/KG	8.4 J	17	10.9 E	21
Zinc	MG/KG	70.4 E	186	121 E	107

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		BS-06-001-02	BS-06-001-04	BS-06-002-02	BS-06-002-04	BS-06-002-06
Sample ID		BS-06-001-02	BS-06-001-04	BS-06-002-02	BS-06-002-04	BS-06-002-06
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/10/92	11/10/92	11/16/92	11/16/92	11/16/92
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**BS-06-001-02**	**BS-06-001-04**	**BS-06-002-02**	**BS-06-002-04**	**BS-06-002-06**
Sample ID		**BS-06-001-02**	**BS-06-001-04**	**BS-06-002-02**	**BS-06-002-04**	**BS-06-002-06**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**	**--**	**--**	**--**
Date Sampled		**11/10/92**	**11/10/92**	**11/16/92**	**11/16/92**	**11/16/92**
Parameter	**Units**					
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**BS-06-001-02**	**BS-06-001-04**	**BS-06-002-02**	**BS-06-002-04**	**BS-06-002-06**
Sample ID		**BS-06-001-02**	**BS-06-001-04**	**BS-06-002-02**	**BS-06-002-04**	**BS-06-002-06**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**	**--**	**--**	**--**
Date Sampled		**11/10/92**	**11/10/92**	**11/16/92**	**11/16/92**	**11/16/92**
Parameter	**Units**					
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**BS-06-001-02**	**BS-06-001-04**	**BS-06-002-02**	**BS-06-002-04**	**BS-06-002-06**
Sample ID		**BS-06-001-02**	**BS-06-001-04**	**BS-06-002-02**	**BS-06-002-04**	**BS-06-002-06**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/10/92**	**11/10/92**	**11/16/92**	**11/16/92**	**11/16/92**
Parameter	**Units**					
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Sample ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**					
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	330 U	330 U	330 U	330 U
Anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)pyrene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(b)fluoranthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(g,h,i)perylene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzoic acid	UG/KG	33 J	330 U	330 U	330 U	330 U
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	330 U	330 U	330 U	330 U	330 U
Chrysene	UG/KG	330 U	330 U	330 U	330 U	330 U
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Sample ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**					
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U	7 J
Fluoranthene	UG/KG	330 U	330 U	20 J	330 U	330 U
Fluorene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	330 U	330 U	330 U	330 U
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	330 U	330 U	330 U	330 U	330 U
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	330 U	330 U	19 J	330 U	330 U
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	NA	NA	NA	3.3 U
4,4‘-DDE	UG/KG	NA	NA	NA	NA	3.3 U
4,4'-DDT	UG/KG	NA	NA	NA	NA	3.3 U
Aldrin	UG/KG	NA	NA	NA	NA	1.7 U
alpha-BHC	UG/KG	NA	NA	NA	NA	1.7 U
alpha-Chlordane	UG/KG	NA	NA	NA	NA	1.7 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Sample ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**	**--**	**--**	**--**
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**					
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	NA	NA	NA	1.7 U
delta-BHC	UG/KG	NA	NA	NA	NA	1.7 U
Dieldrin	UG/KG	NA	NA	NA	NA	3.3 U
Endosulfan I	UG/KG	NA	NA	NA	NA	1.7 U
Endosulfan ll	UG/KG	NA	NA	NA	NA	3.3 U
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	3.3 U
Endrin	UG/KG	NA	NA	NA	NA	3.3 U
Endrin aldehyde	UG/KG	NA	NA	NA	NA	3.3 U
Endrin ketone	UG/KG	NA	NA	NA	NA	3.3 U
gamma-BHC (Lindane)	UG/KG	NA	NA	NA	NA	1.7 U
gamma-Chlordane	UG/KG	NA	NA	NA	NA	1.7 U
Heptachlor	UG/KG	NA	NA	NA	NA	1.7 U
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	1.7 U
Methoxychlor	UG/KG	NA	NA	NA	NA	17 U
Toxaphene	UG/KG	NA	NA	NA	NA	170 U
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	NA	NA	NA	33 U
Aroclor 1221	UG/KG	NA	NA	NA	NA	67 U
Aroclor 1232	UG/KG	NA	NA	NA	NA	33 U
Aroclor 1242	UG/KG	NA	NA	NA	NA	33 U
Aroclor 1248	UG/KG	NA	NA	NA	NA	33 U
Aroclor 1254	UG/KG	NA	NA	NA	NA	33 U
Aroclor 1260	UG/KG	NA	NA	NA	NA	33 U
Aroclor 1262	UG/KG	NA	NA	NA	NA	33 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Sample ID		**SS-05-015-02**	**SS-05-016-02**	**SS-05-017-02**	**SS-05-018-02**	**SS-05-019-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**	**11/03/92**
Parameter	**Units**					
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	NA	NA	NA	33 U
Total Metals						
Aluminum	MG/KG	2,220	1,617	3,437	2,133	1,572
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	4 U	4 U	4 U	4 U
Barium	MG/KG	40 U	40 U	40 U	40 U	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	1 U	1 U	1 U	1 U	1 U
Calcium	MG/KG	10,254	1,207	892	1,000 U	835
Chromium	MG/KG	4	3	4	4	6
Cobalt	MG/KG	10 U	10 U	10 U	10 U	10 U
Copper	MG/KG	5 U	5 U	5 U	5 U	5 U
Iron	MG/KG	5,497	3,876	4,189	3,515	3,686
Lead	MG/KG	0.6 U	0.6 U	18	0.6 U	0.6 U
Magnesium	MG/KG	1,015	653	1,000 U	1,000 U	786
Manganese	MG/KG	64	35	40	18	39
Nickel	MG/KG	8 U	8 U	8	8 U	8 U
Potassium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	10	10 U	11	10 U	10 U
Zinc	MG/KG	12	9	213	16	6

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Sample ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/16/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**	(2/1)			(2/1)	
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**BS-06-002-06**	**SS-06-001-02**	**SS-06-002-02**	**SS-06-003-02**	**SS-06-003-02**
Sample ID		**BS-06-002-06**	**SS-06-001-02**	**SS-06-002-02**	**SS-06-003-02**	**SS-06-003-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/16/92**	**11/02/92**	**11/02/92**	**11/02/92**	**11/02/92**
Parameter	**Units**	(2/1)			(2/1)	
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	17 E	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**BS-06-002-06**	**SS-06-001-02**	**SS-06-002-02**	**SS-06-003-02**	**SS-06-003-02**
Sample ID		**BS-06-002-06**	**SS-06-001-02**	**SS-06-002-02**	**SS-06-003-02**	**SS-06-003-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/16/92**	**11/02/92**	**11/02/92**	**11/02/92**	**11/02/92**
Parameter	**Units**	(2/1)			(2/1)	
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Sample ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/16/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	Units	(2/1)			(2/1)	
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Sample ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/16/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**	(2/1)			(2/1)	
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	330 U	330 U	1 J	330 U
Anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)pyrene	UG/KG	330 U	330 U	330 U	20 J	330 U
Benzo(b)fluoranthene	UG/KG	330 U	330 U	330 U	24 J	330 U
Benzo(g,h,i)perylene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	330 U	330 U	330 U	16 J	330 U
Benzoic acid	UG/KG	330 U	330 U	330 U	330 U	41 J
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	15 J	55 J	330 U	33 J
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	330 U	330 U	330 U	5 J	330 U
Chrysene	UG/KG	330 U	330 U	330 U	24 J	330 U
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Sample ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/16/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**	(2/1)			(2/1)	
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	6 J	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	330 U	330 U	330 U	34 J	330 U
Fluorene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	330 U	330 U	330 U	330 U
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	330 U	330 U	330 U	14 J	330 U
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	330 U	330 U	330 U	26 J	330 U
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	3.3 U	NA	NA	3.3 UR	3.3 U
4,4‘-DDE	UG/KG	3.3 U	NA	NA	3.3 U	3.3 U
4,4'-DDT	UG/KG	3.3 U	NA	NA	3.3 UR	3.3 U
Aldrin	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
alpha-BHC	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
alpha-Chlordane	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**BS-06-002-06**	**SS-06-001-02**	**SS-06-002-02**	**SS-06-003-02**	**SS-06-003-02**
Sample ID		**BS-06-002-06**	**SS-06-001-02**	**SS-06-002-02**	**SS-06-003-02**	**SS-06-003-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/16/92**	**11/02/92**	**11/02/92**	**11/02/92**	**11/02/92**
Parameter	**Units**	(2/1)			(2/1)	
Pesticide Organic Compounds						
beta-BHC	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
delta-BHC	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
Dieldrin	UG/KG	3.3 U	NA	NA	3.3 U	3.3 U
Endosulfan I	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
Endosulfan ll	UG/KG	3.3 U	NA	NA	3.3 U	3.3 U
Endosulfan sulfate	UG/KG	3.3 U	NA	NA	3.3 U	3.3 U
Endrin	UG/KG	3.3 U	NA	NA	3.3 U	3.3 U
Endrin aldehyde	UG/KG	3.3 U	NA	NA	3.3 U	3.3 U
Endrin ketone	UG/KG	3.3 U	NA	NA	3.3 U	3.3 U
gamma-BHC (Lindane)	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
gamma-Chlordane	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
Heptachlor	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
Heptachlor epoxide	UG/KG	1.7 U	NA	NA	1.7 U	1.7 U
Methoxychlor	UG/KG	17 U	NA	NA	17 U	17 U
Toxaphene	UG/KG	170 U	NA	NA	170 U	170 U
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	33 U	NA	NA	33 U	33 U
Aroclor 1221	UG/KG	67 U	NA	NA	67 U	67 U
Aroclor 1232	UG/KG	33 U	NA	NA	33 U	33 U
Aroclor 1242	UG/KG	33 U	NA	NA	33 U	33 U
Aroclor 1248	UG/KG	33 U	NA	NA	33 U	33 U
Aroclor 1254	UG/KG	33 U	NA	NA	33 U	33 U
Aroclor 1260	UG/KG	33 U	NA	NA	33 U	33 U
Aroclor 1262	UG/KG	33 U	NA	NA	33 U	33 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Sample ID		BS-06-002-06	SS-06-001-02	SS-06-002-02	SS-06-003-02	SS-06-003-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/16/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**	(2/1)			(2/1)	
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	NA	NA	33 U	33 U
Total Metals						
Aluminum	MG/KG	1,020	2,220	2,424	2,570	2,988
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	0.57 J	4 U	4 U	0.84 J	4 U
Barium	MG/KG	4.2 J	40 U	40 U	10.4 J	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	1 U	1 U	1 U	0.58 J	1 U
Calcium	MG/KG	583 J	1,000 U	1,000 U	1,210 E	1,174
Chromium	MG/KG	4.1	3	3	5	4
Cobalt	MG/KG	0.97 J	10 U	10 U	1.5 J	10 U
Copper	MG/KG	4.3 J	5 U	5 U	5 E	5 U
Iron	MG/KG	2,600	3,488	3,793	8,880	7,364
Lead	MG/KG	2.5	0.6 U	0.6 U	18.6 E	0.6 U
Magnesium	MG/KG	540 J	1,000 U	1,000 U	670 J	1,000 U
Manganese	MG/KG	28.2 E	41	36	72.3	98
Nickel	MG/KG	1.8 J	7	8 U	2.4 J	8 U
Potassium	MG/KG	254 J	1,000 U	1,000 U	143 J	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	26.6 J	1,000 U	1,000 U	28.9 J	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	3.5 J	10 U	10 U	13.8 E	14
Zinc	MG/KG	5.3	21	5	4 UR	22

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Sample ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/02/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**			(2/1)		Field Duplicate (1-1)
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Sample ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/02/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**			(2/1)		Field Duplicate (1-1)
Volatile Organic Compounds						
1,4-Dioxane	UG/KG	10 U	10 U	10 U	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U	10 U	10 U	10 U
Acetone	UG/KG	10 U	10 U	10 U	10 U	10 U
Benzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/KG	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/KG	10 U	10 U	10 U	10 U	10 U
Chloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Sample ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/02/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**			(2/1)		Field Duplicate (1-1)
Volatile Organic Compounds						
Ethylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Styrene	UG/KG	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U	10 U	10 U	10 U
Toluene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds						
1,1'-Biphenyl	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Sample ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/02/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**			(2/1)		Field Duplicate (1-1)
Semivolatile Organic Compounds						
1,4-Dichlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U	830 U	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U	830 U	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Sample ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/02/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**			(2/1)		Field Duplicate (1-1)
Semivolatile Organic Compounds						
4-Nitrophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	330 U	330 U	330 U	330 U
Anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	330 U	24 J	17 J	35 J	32 J
Benzo(a)pyrene	UG/KG	18 J	30 J	22 J	36 J	34 J
Benzo(b)fluoranthene	UG/KG	21 J	30 J	23 J	43 J	35 J
Benzo(g,h,i)perylene	UG/KG	16 J	20 J	330 U	20 J	21 J
Benzo(k)fluoranthene	UG/KG	21 J	31 J	21 J	36 J	39 J
Benzoic acid	UG/KG	330 U	330 U	330 U	330 U	41 J
Benzyl alcohol	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	42 J	51 J	55 J	99 J	20 J
Butylbenzylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Carbazole	UG/KG	330 U	330 U	330 U	25 J	330 U
Chrysene	UG/KG	20 J	31 J	22 J	42 J	41 J
Cresols (total)	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	330 U	330 U	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Sample ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/02/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**			(2/1)		Field Duplicate (1-1)
Semivolatile Organic Compounds						
Di-n-octylphthalate	UG/KG	330 U	330 U	330 U	330 U	330 U
Fluoranthene	UG/KG	26 J	27 J	28 J	69 J	66 J
Fluorene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U	330 U	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	16 J	20 J	330 U	24 J	21 J
Isophorone	UG/KG	330 U	330 U	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	330 U	330 U	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U	830 U	830 U	830 U
Phenanthrene	UG/KG	330 U	330 U	14 J	31 J	28 J
Phenol	UG/KG	330 U	330 U	330 U	330 U	330 U
Pyrene	UG/KG	21 J	36 J	28 J	59 J	56 J
Pesticide Organic Compounds						
4,4'-DDD	UG/KG	NA	3.3 U	0.71 J	NA	NA
4,4‘-DDE	UG/KG	NA	3.3 U	3.3 U	NA	NA
4,4'-DDT	UG/KG	NA	3.3 U	3.3 UR	NA	NA
Aldrin	UG/KG	NA	1.7 U	1.7 U	NA	NA
alpha-BHC	UG/KG	NA	1.7 U	1.7 U	NA	NA
alpha-Chlordane	UG/KG	NA	1.7 U	1.7 U	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Sample ID		SS-06-004-02	SS-06-005-02	SS-06-005-02	SS-06-006-02	SS-06-006-02
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		--	--	--	--	--
Date Sampled		11/02/92	11/02/92	11/02/92	11/02/92	11/02/92
Parameter	**Units**			(2/1)		Field Duplicate (1-1)
Pesticide Organic Compounds						
beta-BHC	UG/KG	NA	1.7 U	1.7 U	NA	NA
delta-BHC	UG/KG	NA	1.7 U	1.7 U	NA	NA
Dieldrin	UG/KG	NA	3.3 U	3.3 U	NA	NA
Endosulfan I	UG/KG	NA	1.7 U	1.7 U	NA	NA
Endosulfan ll	UG/KG	NA	3.3 U	3.3 U	NA	NA
Endosulfan sulfate	UG/KG	NA	3.3 U	3.3 U	NA	NA
Endrin	UG/KG	NA	3.3 U	3.3 U	NA	NA
Endrin aldehyde	UG/KG	NA	3.3 U	3.3 U	NA	NA
Endrin ketone	UG/KG	NA	3.3 U	3.3 U	NA	NA
gamma-BHC (Lindane)	UG/KG	NA	1.7 U	1.7 U	NA	NA
gamma-Chlordane	UG/KG	NA	1.7 U	1.7 U	NA	NA
Heptachlor	UG/KG	NA	1.7 U	1.7 U	NA	NA
Heptachlor epoxide	UG/KG	NA	1.7 U	1.7 U	NA	NA
Methoxychlor	UG/KG	NA	17 U	17 U	NA	NA
Toxaphene	UG/KG	NA	170 U	170 U	NA	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	NA	33 U	33 U	NA	NA
Aroclor 1221	UG/KG	NA	67 U	67 U	NA	NA
Aroclor 1232	UG/KG	NA	33 U	33 U	NA	NA
Aroclor 1242	UG/KG	NA	33 U	33 U	NA	NA
Aroclor 1248	UG/KG	NA	33 U	33 U	NA	NA
Aroclor 1254	UG/KG	NA	33 U	33 U	NA	NA
Aroclor 1260	UG/KG	NA	33 U	33 U	NA	NA
Aroclor 1262	UG/KG	NA	33 U	33 U	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-004-02**	**SS-06-005-02**	**SS-06-005-02**	**SS-06-006-02**	**SS-06-006-02**
Sample ID		**SS-06-004-02**	**SS-06-005-02**	**SS-06-005-02**	**SS-06-006-02**	**SS-06-006-02**
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft)		--	--	--	--	--
Date Sampled		**11/02/92**	**11/02/92**	**11/02/92**	**11/02/92**	**11/02/92**
Parameter	**Units**			(2/1)		Field Duplicate (1-1)
Polychlorinated Biphenyls						
Aroclor 1268	UG/KG	NA	33 U	33 U	NA	NA
Total Metals						
Aluminum	MG/KG	4,274	1,969	2,260	3.021	2,188
Antimony	MG/KG	12 U	12 U	12 U	12 U	12 U
Arsenic	MG/KG	4 U	4 U	0.44 J	4 U	4 U
Barium	MG/KG	40 U	40 U	9.9 J	40 U	40 U
Beryllium	MG/KG	1 U	1 U	1 U	1 U	1 U
Cadmium	MG/KG	1 U	1 U	1 U	1 U	1 U
Calcium	MG/KG	1,421	5,026	2,600 E	938	1,844
Chromium	MG/KG	7	12	11.5	3	3
Cobalt	MG/KG	10 U	10 U	1.5 J	10 U	10 U
Copper	MG/KG	4	5 U	2.6 J	5 U	5 U
Iron	MG/KG	23,504	3,674	5,260	4,896	3,021
Lead	MG/KG	29	22	16.3 E	0.6 U	0.6 U
Magnesium	MG/KG	1,122	1,000 U	898	813	1,000 U
Manganese	MG/KG	160	70	67	84	41
Nickel	MG/KG	8 U	8 U	2.9 J	8 U	8 U
Potassium	MG/KG	1,000 U	1,000 U	246 J	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U	1 U	1 U	1 U
Silver	MG/KG	2 U	2 U	2 U	2 U	2 U
Sodium	MG/KG	1,000 U	1,000 U	27.1 J	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U	2 U	2 U	2 U
Vanadium	MG/KG	36	10 U	10.4 E	10 U	10 U
Zinc	MG/KG	37	29	31.5 E	11	10

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-007-02**	**SS-06-008-02**
Sample ID		**SS-06-007-02**	**SS-06-008-02**
Matrix		**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**
Date Sampled		**11/02/92**	**11/02/92**
Parameter	**Units**		
Volatile Organic Compounds			
1,1,1,2-Tetrachloroethane	UG/KG	10 U	10 U
1,1,1-Trichloroethane	UG/KG	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	10 U	10 U
1,1,2-Trichloroethane	UG/KG	10 U	10 U
1,1-Dichloroethane	UG/KG	10 U	10 U
1,1-Dichloroethene	UG/KG	10 U	10 U
1,1-Dichloropropene	UG/KG	10 U	10 U
1,2,3-Trichlorobenzene	UG/KG	10 U	10 U
1,2,3-Trichloropropane	UG/KG	10 U	10 U
1,2,4-Trichlorobenzene	UG/KG	10 U	10 U
1,2,4-Trimethylbenzene	UG/KG	10 U	10 U
1,2-Dibromo-3-chloropropane	UG/KG	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	UG/KG	10 U	10 U
1,2-Dichlorobenzene	UG/KG	10 U	10 U
1,2-Dichloroethane	UG/KG	10 U	10 U
1,2-Dichloroethene (cis)	UG/KG	10 U	10 U
1,2-Dichloroethene (trans)	UG/KG	10 U	10 U
1,2-Dichloropropane	UG/KG	10 U	10 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/KG	10 U	10 U
1,3-Dichlorobenzene	UG/KG	10 U	10 U
1,3-Dichloropropane	UG/KG	10 U	10 U
1,3-Dichloropropene (cis)	UG/KG	10 U	10 U
1,3-Dichloropropene (trans)	UG/KG	10 U	10 U
1,4-Dichlorobenzene	UG/KG	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-007-02**	**SS-06-008-02**
Sample ID		**SS-06-007-02**	**SS-06-008-02**
Matrix		**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**
Date Sampled		**11/02/92**	**11/02/92**
Parameter	**Units**		
Volatile Organic Compounds			
1,4-Dioxane	UG/KG	10 U	10 U
2,2-Dichloropropane	UG/KG	10 U	10 U
2-Chloroethyl vinyl ether	UG/KG	10 U	10 U
2-Chlorotoluene	UG/KG	10 U	10 U
2-Hexanone	UG/KG	10 U	10 U
4-Chlorotoluene	UG/KG	10 U	10 U
4-Isopropyltoluene (p-Cymene)	UG/KG	10 U	10 U
4-Methyl-2-pentanone	UG/KG	10 U	10 U
Acetone	UG/KG	10 U	10 U
Benzene	UG/KG	10 U	10 U
Bromobenzene	UG/KG	10 U	10 U
Bromochloromethane	UG/KG	10 U	10 U
Bromodichloromethane	UG/KG	10 U	10 U
Bromoform	UG/KG	10 U	10 U
Bromomethane	UG/KG	10 U	10 U
Carbon disulfide	UG/KG	10 U	10 U
Carbon tetrachloride	UG/KG	10 U	10 U
Chlorobenzene	UG/KG	10 U	10 U
Chloroethane	UG/KG	10 U	10 U
Chloroform	UG/KG	10 U	10 U
Chloromethane	UG/KG	10 U	10 U
Dibromochloromethane	UG/KG	10 U	10 U
Dibromomethane	UG/KG	10 U	10 U
Dichlorodifluoromethane	UG/KG	10 U	10 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-007-02**	**SS-06-008-02**
Sample ID		**SS-06-007-02**	**SS-06-008-02**
Matrix		**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**
Date Sampled		**11/02/92**	**11/02/92**
Parameter	**Units**		
Volatile Organic Compounds			
Ethylbenzene	UG/KG	10 U	10 U
Hexachlorobutadiene	UG/KG	10 U	10 U
Isopropylbenzene (Cumene)	UG/KG	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	10 U
Methylene chloride	UG/KG	10 U	10 U
Naphthalene	UG/KG	10 U	10 U
n-Butylbenzene	UG/KG	10 U	10 U
n-Propylbenzene	UG/KG	10 U	10 U
sec-Butylbenzene	UG/KG	10 U	10 U
Styrene	UG/KG	10 U	10 U
tert-Butylbenzene	UG/KG	10 U	10 U
Tetrachloroethene	UG/KG	10 U	10 U
Tetrahydrofuran	UG/KG	10 U	10 U
Toluene	UG/KG	10 U	10 U
Trichloroethene	UG/KG	10 U	10 U
Trichlorofluoromethane	UG/KG	10 U	10 U
Vinyl acetate	UG/KG	10 U	10 U
Vinyl chloride	UG/KG	10 U	10 U
Xylene (total)	UG/KG	10 U	10 U
Semivolatile Organic Compounds			
1,1'-Biphenyl	UG/KG	330 U	330 U
1,2,4-Trichlorobenzene	UG/KG	330 U	330 U
1,2-Dichlorobenzene	UG/KG	330 U	330 U
1,3-Dichlorobenzene	UG/KG	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-007-02**	**SS-06-008-02**
Sample ID		**SS-06-007-02**	**SS-06-008-02**
Matrix		**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**
Date Sampled		**11/02/92**	**11/02/92**
Parameter	**Units**		
Semivolatile Organic Compounds			
1,4-Dichlorobenzene	UG/KG	330 U	330 U
2,2'-oxybis(1-Chloropropane)	UG/KG	330 U	330 U
2,4,5-Trichlorophenol	UG/KG	830 U	830 U
2,4,6-Trichlorophenol	UG/KG	330 U	330 U
2,4-Dichlorophenol	UG/KG	330 U	330 U
2,4-Dimethylphenol	UG/KG	330 U	330 U
2,4-Dinitrophenol	UG/KG	830 U	830 U
2,4-Dinitrotoluene	UG/KG	330 U	330 U
2,6-Dinitrotoluene	UG/KG	330 U	330 U
2-Chloronaphthalene	UG/KG	330 U	330 U
2-Chlorophenol	UG/KG	330 U	330 U
2-Methylnaphthalene	UG/KG	330 U	330 U
2-Methylphenol (o-cresol)	UG/KG	330 U	330 U
2-Nitroaniline	UG/KG	830 U	830 U
2-Nitrophenol	UG/KG	330 U	330 U
3,3'-Dichlorobenzidine	UG/KG	330 U	330 U
3-Nitroaniline	UG/KG	830 U	830 U
4,6-Dinitro-2-methylphenol	UG/KG	830 U	830 U
4-Bromophenyl-phenylether	UG/KG	330 U	330 U
4-Chloro-3-methylphenol	UG/KG	330 U	330 U
4-Chloroaniline	UG/KG	330 U	330 U
4-Chlorophenyl-phenylether	UG/KG	330 U	330 U
4-Methylphenol (p-cresol)	UG/KG	330 U	330 U
4-Nitroaniline	UG/KG	830 U	830 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-007-02**	**SS-06-008-02**
Sample ID		**SS-06-007-02**	**SS-06-008-02**
Matrix		**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**
Date Sampled		**11/02/92**	**11/02/92**
Parameter	**Units**		
Semivolatile Organic Compounds			
4-Nitrophenol	UG/KG	830 U	830 U
Acenaphthene	UG/KG	330 U	330 U
Acenaphthylene	UG/KG	330 U	330 U
Anthracene	UG/KG	330 U	330 U
Benzo(a)anthracene	UG/KG	330 U	35 J
Benzo(a)pyrene	UG/KG	330 U	41 J
Benzo(b)fluoranthene	UG/KG	330 U	45 J
Benzo(g,h,i)perylene	UG/KG	330 U	330 U
Benzo(k)fluoranthene	UG/KG	330 U	42 J
Benzoic acid	UG/KG	330 U	88 J
Benzyl alcohol	UG/KG	330 U	330 U
bis(2-Chloroethoxy) methane	UG/KG	330 U	330 U
bis(2-Chloroethyl)ether	UG/KG	330 U	330 U
bis(2-Ethylhexyl)phthalate	UG/KG	330 U	51 J
Butylbenzylphthalate	UG/KG	330 U	19 J
Carbazole	UG/KG	330 U	330 U
Chrysene	UG/KG	330 U	40 J
Cresols (total)	UG/KG	330 U	330 U
Di-(2-Ethylhexyl) adipate	UG/KG	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	330 U
Dibenzofuran	UG/KG	330 U	330 U
Diethylphthalate	UG/KG	330 U	330 U
Dimethylphthalate	UG/KG	330 U	330 U
Di-n-butylphthalate	UG/KG	330 U	330 U

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-007-02**	**SS-06-008-02**
Sample ID		**SS-06-007-02**	**SS-06-008-02**
Matrix		**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**
Date Sampled		**11/02/92**	**11/02/92**
Parameter	**Units**		
Semivolatile Organic Compounds			
Di-n-octylphthalate	UG/KG	330 U	330 U
Fluoranthene	UG/KG	27 J	65 J
Fluorene	UG/KG	330 U	330 U
Hexachlorobenzene	UG/KG	330 U	330 U
Hexachlorobutadiene	UG/KG	330 U	330 U
Hexachlorocyclopentadiene	UG/KG	330 U	330 U
Hexachloroethane	UG/KG	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	330 U
Isophorone	UG/KG	330 U	330 U
Naphthalene	UG/KG	330 U	330 U
Nitrobenzene	UG/KG	330 U	330 U
N-Nitroso-di-n-propylamine	UG/KG	330 U	330 U
N-Nitrosodiphenylamine	UG/KG	330 U	330 U
Pentachlorophenol	UG/KG	830 U	830 U
Phenanthrene	UG/KG	23 J	60 J
Phenol	UG/KG	330 U	330 U
Pyrene	UG/KG	21 J	67 J
Pesticide Organic Compounds			
4,4'-DDD	UG/KG	NA	NA
4,4‘-DDE	UG/KG	NA	NA
4,4'-DDT	UG/KG	NA	NA
Aldrin	UG/KG	NA	NA
alpha-BHC	UG/KG	NA	NA
alpha-Chlordane	UG/KG	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-007-02**	**SS-06-008-02**
Sample ID		**SS-06-007-02**	**SS-06-008-02**
Matrix		**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**
Date Sampled		**11/02/92**	**11/02/92**
Parameter	**Units**		
Pesticide Organic Compounds			
beta-BHC	UG/KG	NA	NA
delta-BHC	UG/KG	NA	NA
Dieldrin	UG/KG	NA	NA
Endosulfan I	UG/KG	NA	NA
Endosulfan ll	UG/KG	NA	NA
Endosulfan sulfate	UG/KG	NA	NA
Endrin	UG/KG	NA	NA
Endrin aldehyde	UG/KG	NA	NA
Endrin ketone	UG/KG	NA	NA
gamma-BHC (Lindane)	UG/KG	NA	NA
gamma-Chlordane	UG/KG	NA	NA
Heptachlor	UG/KG	NA	NA
Heptachlor epoxide	UG/KG	NA	NA
Methoxychlor	UG/KG	NA	NA
Toxaphene	UG/KG	NA	NA
Polychlorinated Biphenyls			
Aroclor 1016	UG/KG	NA	NA
Aroclor 1221	UG/KG	NA	NA
Aroclor 1232	UG/KG	NA	NA
Aroclor 1242	UG/KG	NA	NA
Aroclor 1248	UG/KG	NA	NA
Aroclor 1254	UG/KG	NA	NA
Aroclor 1260	UG/KG	NA	NA
Aroclor 1262	UG/KG	NA	NA

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

AEROSPACE GROUND EQUIPMENT FACILITY (SS-006)
SOIL ANALYTICAL RESULTS

Location ID		**SS-06-007-02**	**SS-06-008-02**
Sample ID		**SS-06-007-02**	**SS-06-008-02**
Matrix		**Soil**	**Soil**
Depth Interval (ft)		**--**	**--**
Date Sampled		**11/02/92**	**11/02/92**
Parameter	**Units**		
Polychlorinated Biphenyls			
Aroclor 1268	UG/KG	NA	NA
Total Metals			
Aluminum	MG/KG	2,839	2,195
Antimony	MG/KG	12 U	12 U
Arsenic	MG/KG	4 U	4 U
Barium	MG/KG	40 U	40 U
Beryllium	MG/KG	1 U	1 U
Cadmium	MG/KG	1 U	1 U
Calcium	MG/KG	1,000 U	1,800
Chromium	MG/KG	4	3
Cobalt	MG/KG	10 U	10 U
Copper	MG/KG	5 U	5 U
Iron	MG/KG	4,942	3,732
Lead	MG/KG	0.6 U	0.6 U
Magnesium	MG/KG	757	1,000 U
Manganese	MG/KG	55	50
Nickel	MG/KG	8 U	8 U
Potassium	MG/KG	1,000 U	1,000 U
Selenium	MG/KG	1 U	1 U
Silver	MG/KG	2 U	2 U
Sodium	MG/KG	1,000 U	1,000 U
Thallium	MG/KG	2 U	2 U
Vanadium	MG/KG	10	11
Zinc	MG/KG	10	12

Flags assigned during chemistry validation are shown.

Detection Limits shown are MDL

APPENDIX E

FIVE-YEAR REVIEW SITE INSPECTION REPORTS

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base SS-005 Non-Destructive Inspection Facility	**Date of inspection:** April 7, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:** Sunny, breezy 50°F

Remedy Includes: (Check all that apply)

- O Landfill cover/containment
- O Access controls
- X Institutional controls
- O Groundwater pump and treatment
- O Surface water collection and treatment
- O Other _____
- O Monitored natural attenuation
- O Groundwater containment
- O Vertical barrier walls

Attachments: O Inspection team roster attached X Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** David Farnsworth (Name) Environmental Engineer (Title) 4-7-04 (Date)

   Interviewed X at site O at office O by phone Phone no. 518-563-2871

   Problems, suggestions: _____

2. **OTHER INFORMATION**

SS-005

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	O O&M manual	O Readily available	O Up to date	☒ N/A
	O As-built drawings	O Readily available	O Up to date	☒ N/A
	O Maintenance logs	O Readily available	O Up to date	☒ N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	O Readily available	O Up to date	☒ N/A
	O Contingency plan/emergency response plan	O Readily available	O Up to date	☒ N/A
	Remarks			
3.	**O&M and OSHA Training Records**	O Readily available	O Up to date	☒ N/A
	Remarks			
4.	**Permits and Service Agreements**			
	O Air discharge permit	O Readily available	O Up to date	☒ N/A
	O Effluent discharge	O Readily available	O Up to date	☒ N/A
	O Waste disposal, POTW	O Readily available	O Up to date	☒ N/A
	O Other permits	O Readily available	O Up to date	☒ N/A
	Remarks			
5.	**Gas Generation Records**	O Readily available	O Up to date	☒ N/A
	Remarks			
6.	**Settlement Monument Records**	O Readily available	O Up to date	☒ N/A
	Remarks			
7.	**Groundwater Monitoring Records**	☒ Readily available	O Up to date	O N/A
	Remarks groundwater monitoring is not part of remedy, but past monitoring data for site is available at AFRPA onbase office			
8.	**Leachate Extraction Records**	O Readily available	O Up to date	☒ N/A
	Remarks			
9.	**Discharge Compliance Records**			
	O Air	O Readily available	O Up to date	☒ N/A
	O Water (effluent)	O Readily available	O Up to date	☒ N/A
	Remarks			
10.	**Daily Access/Security Logs**	O Readily available	O Up to date	☒ N/A
	Remarks			

SS-005

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ○ Location shown on site map ○ Gates secured ○ N/A
   Remarks Fencing surrounds flightline/runway area

B. Other Access Restrictions

1. **Signs and other security measures** ○ Location shown on site map ○ N/A
   Remarks Access only through a manned security gate

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) visual drive bys
   Responsible party/agency AFRPA (and their O&M contractor)
   Contact See Section II

Name	Title	Date	Phone no.

   Reporting is up-to-date ○ Yes ○ No ☒ N/A
   Reports are verified by the lead agency ○ Yes ○ No ☒ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks

2. **Land use changes on site** ○ N/A
   Remarks Site is currently unoccupied

SS-005

3. **Land use changes off site** O N/A
Remarks Nearby facilities are being used for airfield/industrial/commercial reuses.

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable O N/A

1. **Roads damaged** O Location shown on site map ☒ Roads adequate O N/A
Remarks

B. Other Site Conditions

Remarks

C. Monitoring Well Condition

1. **Monitoring Wells**
☒ Properly secured/locked O Functioning O Routinely sampled ☒ Good condition
☒ All site wells located O Needs Maintenance O N/A
Remarks

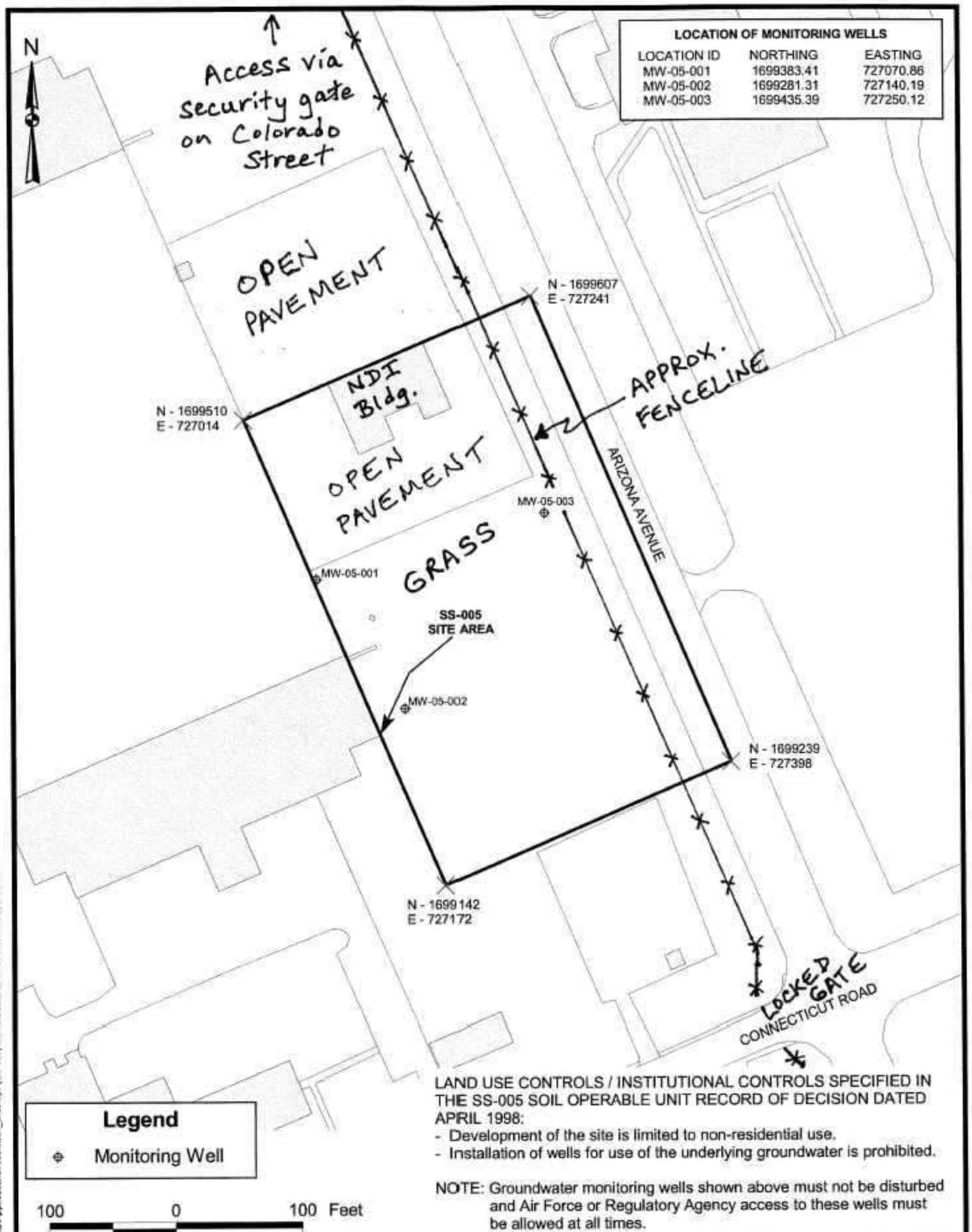
VI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy consists of institutional controls to prevent groundwater usage and to restrict reuses to non-residential. No unauthorized use of groundwater was noted in the vicinity of the site. The site is currently unoccupied, but surrounding facility usage is consistent with the planned non-residential reuse. The institutional controls are not being violated based upon the observations from this site visit and the interview with the AFRPA site manager.

SS-005



LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-05-001	1699383.41	727070.86
MW-05-002	1699281.31	727140.19
MW-05-003	1699435.39	727250.12

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE SS-005 SOIL OPERABLE UNIT RECORD OF DECISION DATED APRIL 1998:

- Development of the site is limited to non-residential use.
- Installation of wells for use of the underlying groundwater is prohibited.

NOTE: Groundwater monitoring wells shown above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

URS	FORMER PLATTSBURGH AIR FORCE BASE, NY SS-005 SOIL OPERABLE UNIT LAND USE CONTROLS / INSTITUTIONAL CONTROLS	FIGURE 1

N:\11168476.00000\GIS\Applications\restriction_area.apr (SS-005) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base SS-006 Aerospace Ground Equipment Facility	**Date of inspection:** April 7, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:**

Remedy Includes: (Check all that apply)

- o Landfill cover/containment
- o Access controls
- X Institutional controls
- o Groundwater pump and treatment
- o Surface water collection and treatment
- o Other _____
- o Monitored natural attenuation
- o Groundwater containment
- o Vertical barrier walls

Attachments: o Inspection team roster attached X Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** David Farnsworth (Name) Environmental Engineer (Title) 4-7-04 (Date)

   Interviewed X at site o at office o by phone Phone no. 518-563-2871

   Problems, suggestions: _____

2. **OTHER INFORMATION**

   Current sublessee of Building 2801 is Exelon Power Labs (PECO Nuclear), a calibration laboratory.

   Current sublessee of Building 2815 is TransEd Inc., a company that produces wheel assemblies for subway rail cars.

SS-006

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - O O&M manual — O Readily available — O Up to date — ☒ N/A
   - O As-built drawings — O Readily available — O Up to date — ☒ N/A
   - O Maintenance logs — O Readily available — O Up to date — ☒ N/A

   Remarks

2. **Site-Specific Health and Safety Plan** — O Readily available — O Up to date — ☒ N/A
   - O Contingency plan/emergency response plan — O Readily available — O Up to date — ☒ N/A

   Remarks

3. **O&M and OSHA Training Records** — O Readily available — O Up to date — ☒ N/A

   Remarks

4. **Permits and Service Agreements**
   - O Air discharge permit — O Readily available — O Up to date — ☒ N/A
   - O Effluent discharge — O Readily available — O Up to date — ☒ N/A
   - O Waste disposal, POTW — O Readily available — O Up to date — ☒ N/A
   - O Other permits — O Readily available — O Up to date — ☒ N/A

   Remarks

5. **Gas Generation Records** — O Readily available — O Up to date — ☒ N/A

   Remarks

6. **Settlement Monument Records** — O Readily available — O Up to date — ☒ N/A

   Remarks

7. **Groundwater Monitoring Records** — ☒ Readily available — O Up to date — O N/A

   Remarks groundwater monitoring is not part of the remedy, but past monitoring data for site is available at AFRPA onsite office

8. **Leachate Extraction Records** — O Readily available — O Up to date — ☒ N/A

   Remarks

9. **Discharge Compliance Records**
   - O Air — O Readily available — O Up to date — ☒ N/A
   - O Water (effluent) — O Readily available — O Up to date — ☒ N/A

   Remarks

10. **Daily Access/Security Logs** — O Readily available — O Up to date — ☒ N/A

    Remarks

SS-006

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ○ Location shown on site map ○ Gates secured ○ N/A
   Remarks Fencing surrounds flightline/runway area

B. Other Access Restrictions

1. **Signs and other security measures** ☒ Location shown on site map ○ N/A
   Remarks Access only through a manned security gate

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) visual drive by
   Responsible party/agency AFRPA (and their O&M contractor)
   Contact see Section II

Name	Title	Date	Phone no.

   Reporting is up-to-date ○ Yes ○ No ☒ N/A
   Reports are verified by the lead agency ○ Yes ○ No ☒ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks

2. **Land use changes on site** ○ N/A
   Remarks Site is currently occupied by 2 tenants (see page 1) for non-residential reuses.

SS-006

3. **Land use changes off site** O N/A
Remarks Nearby facilities are being used for airfield/industrial/commercial reuses.

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable O N/A

1. **Roads damaged** O Location shown on site map ☒ Roads adequate O N/A
Remarks

B. Other Site Conditions

Remarks

C. Monitoring Well Condition

1. **Monitoring Wells**
☒ Properly secured/locked O Functioning O Routinely sampled ☒ Good condition
☒ All site wells located O Needs Maintenance O N/A
Remarks

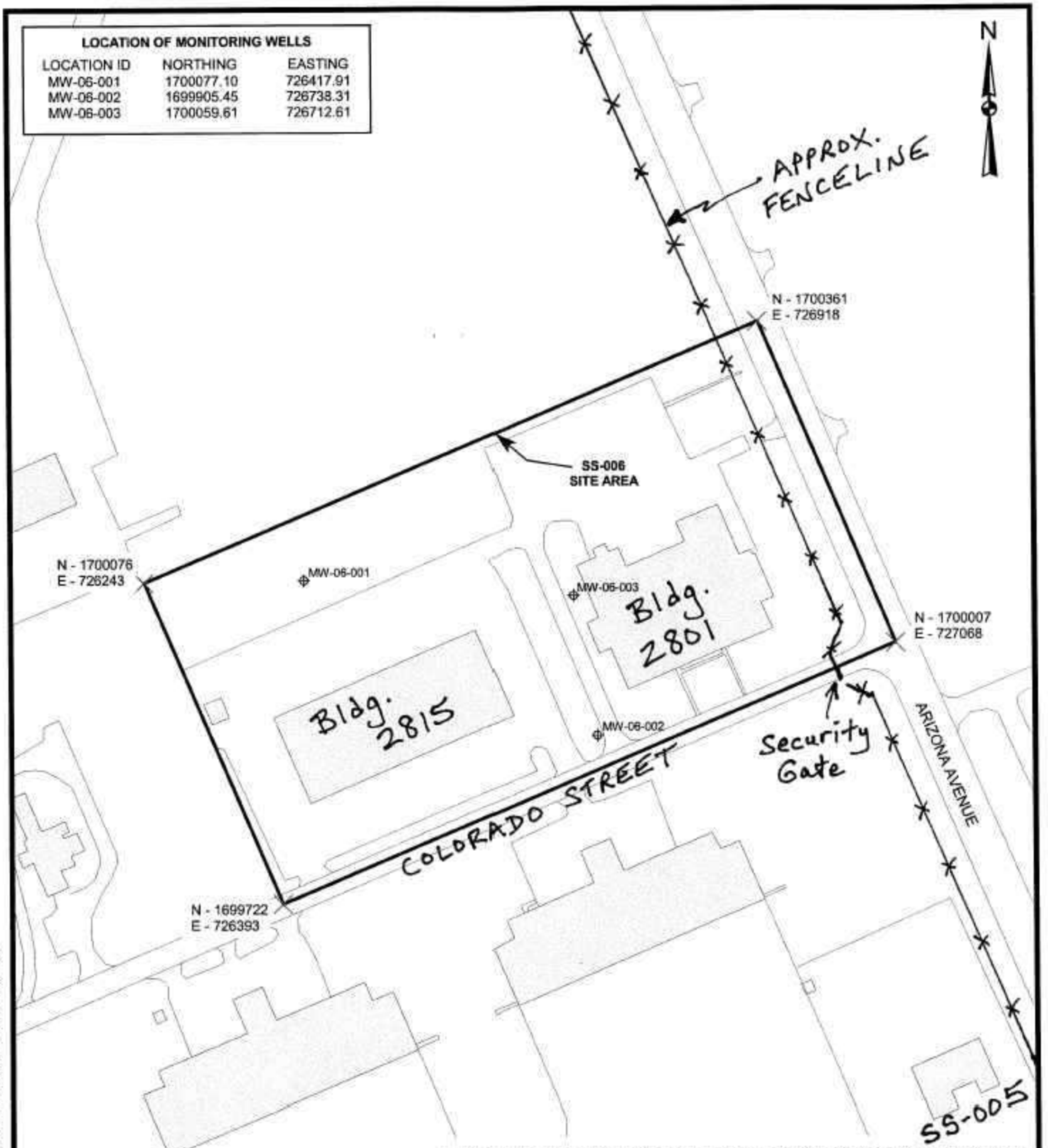
VI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy consists of institutional controls to prevent groundwater usage and to restrict reuses to non-residential. No unauthorized use of groundwater was noted in the vicinity of the site. Facility usage is non-residential. The institutional controls are not being violated based on the observations from this site visit and the interview with the AFRPA site manager.

SS-006



LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-06-001	1700077.10	726417.91
MW-06-002	1699905.45	726738.31
MW-06-003	1700059.61	726712.61

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE SS-006 SOIL OPERABLE UNIT RECORD OF DECISION DATED APRIL 1998:

- Development of the site is limited to non-residential use.
- Installation of wells for use of the underlying groundwater is prohibited.

NOTE: Groundwater monitoring wells shown above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

Legend

⌖ Monitoring Well

150 0 150 Feet

URS	FORMER PLATTSBURGH AIR FORCE BASE, NY SS-006 SOIL OPERABLE UNIT LAND USE CONTROLS / INSTITUTIONAL CONTROLS	FIGURE 1

N:\11169476.00000\GIS\Application\restriction_area.apr (SS-006) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base SS-018/SS-028 Auto Hobby Shop & Bldg. 508 Open Storage Area	**Date of inspection:** April 7, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:** Sunny, breezy, 45°F

Remedy Includes: (Check all that apply)

- o Landfill cover/containment
- o Access controls
- X Institutional controls
- o Groundwater pump and treatment
- o Surface water collection and treatment
- o Other Groundwater Monitoring
- o Monitored natural attenuation
- o Groundwater containment
- o Vertical barrier walls

Attachments: o Inspection team roster attached X Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** Stephen Gagnier (Name) Environmental Engineer (Title) 4-7-04 (Date)

Interviewed o at site X at office o by phone Phone no. 518-563-2871

Problems, suggestions: _____

2. **OTHER INFORMATION**

Building 508 and its surrounding Open Storage Area are currently vacant.

Building 509 is currently being subleased and houses the Champlain Valley Transportation Museum.

A pedestrian walking/bike path is located east of the sites but is separated from the buildings/open storage area by a chain-link fence.

SS-018/SS-028

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☒ O&M manual	O Readily available	O Up to date	O N/A
	O As-built drawings	O Readily available	O Up to date	O N/A
	O Maintenance logs	O Readily available	O Up to date	O N/A
	Remarks Groundwater Monitoring Plan - at AFRPA onbase office and URS Plattsburgh Office			
2.	**Site-Specific Health and Safety Plan**	☒ Readily available	☒ Up to date	O N/A
	O Contingency plan/emergency response plan	O Readily available	O Up to date	O N/A
	Remarks at URS Plattsburgh Office			
3.	**O&M and OSHA Training Records**	☒ Readily available	☒ Up to date	O N/A
	Remarks at URS Plattsburgh Office			
4.	**Permits and Service Agreements**			
	O Air discharge permit	O Readily available	O Up to date	☒ N/A
	O Effluent discharge	O Readily available	O Up to date	☒ N/A
	O Waste disposal, POTW	O Readily available	O Up to date	☒ N/A
	O Other permits _____	O Readily available	O Up to date	☒ N/A
	Remarks			
5.	**Gas Generation Records**	O Readily available	O Up to date	☒ N/A
	Remarks			
6.	**Settlement Monument Records**	O Readily available	O Up to date	☒ N/A
	Remarks			
7.	**Groundwater Monitoring Records**	☒ Readily available	O Up to date	O N/A
	Remarks at AFRPA onbase office			
8.	**Leachate Extraction Records**	O Readily available	O Up to date	☒ N/A
	Remarks			
9.	**Discharge Compliance Records**			
	O Air	O Readily available	O Up to date	☒ N/A
	O Water (effluent)	O Readily available	O Up to date	☒ N/A
	Remarks			
10.	**Daily Access/Security Logs**	O Readily available	O Up to date	☒ N/A
	Remarks			

SS-018/SS-028

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ☒ Location shown on site map ☒ Gates secured ○ N/A
   Remarks

B. Other Access Restrictions

1. **Signs and other security measures** ○ Location shown on site map ☒ N/A
   Remarks

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) visual drive bys and during sampling events
   Responsible party/agency AFRPA (and their O&M contractor
   Contact See Section II

Name	Title	Date	Phone no.

   Reporting is up-to-date ○ Yes ○ No ☒ N/A
   Reports are verified by the lead agency ○ Yes ○ No ☒ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks

2. **Land use changes on site** ○ N/A
   Remarks Bldg. 508 and surrounding open storage area are vacant; Bldg. 509 is an automotive museum (i.e., non-residential reuse)

SS-018/SS-028

3. **Land use changes off site** ○ N/A
Remarks Nearby residential and office/commercial reuses. Sites are adjacent to a paved walking/bike path.

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ○ N/A

1. **Roads damaged** ○ Location shown on site map ☒ Roads adequate ○ N/A
Remarks

B. Other Site Conditions

Remarks
Parcel A 2.9, which includes the sites, is currently being FOSTed. The Lakefront Area (K-2) has been FOSTed. Appropriate deed restrictions are listed in the FOSTs.

C. Monitoring Well Condition

1. **Monitoring Wells**
☒ Properly secured/locked ○ Functioning ○ Routinely sampled ☒ Generally Good condition
☒ All site wells located ☒ Needs Maintenance ○ N/A
Remarks → MW-28-001 had protective casing damaged by plowing → scheduled for repair.

VI. OVERALL OBSERVATIONS

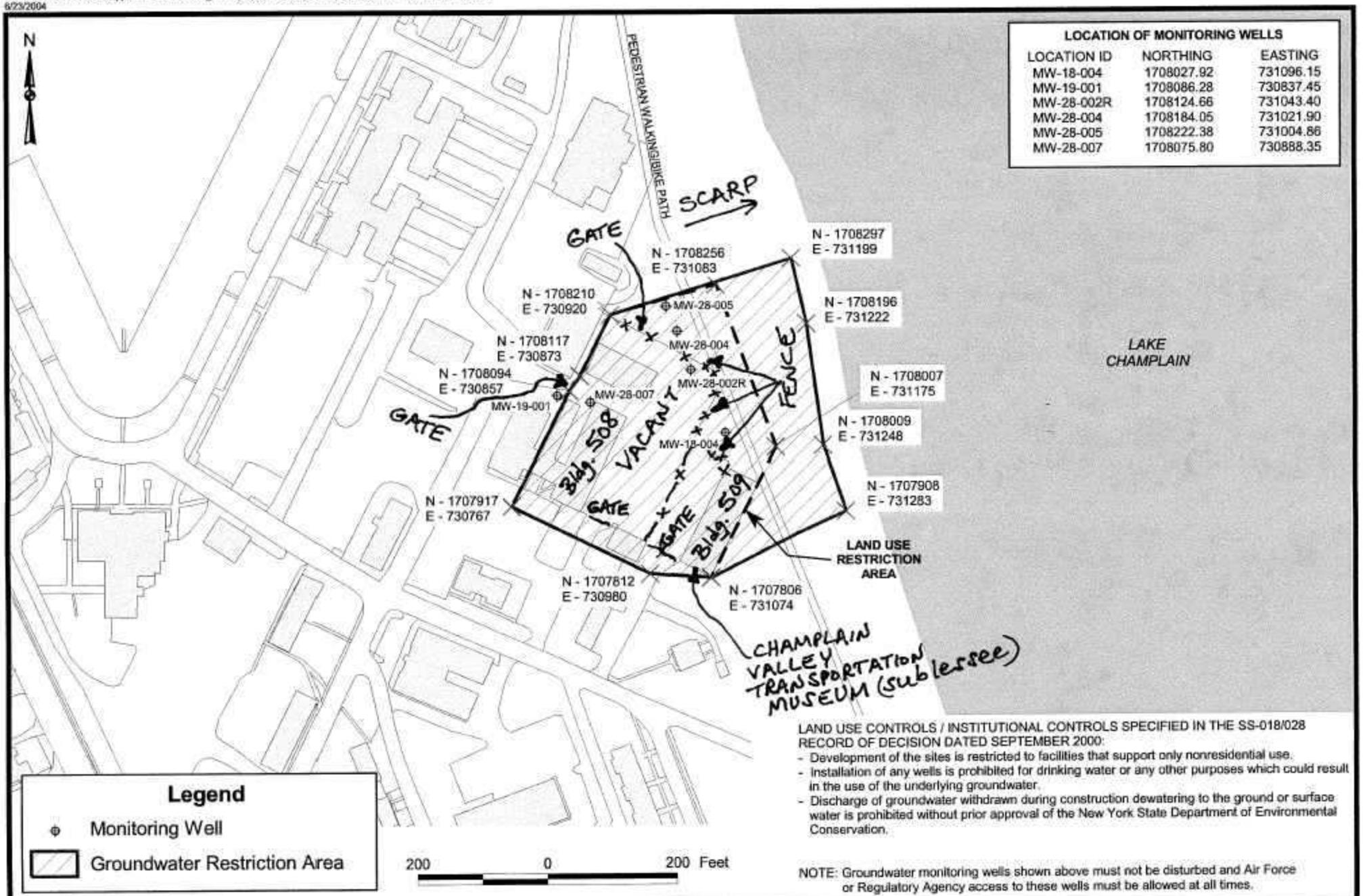
A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy for the site involves periodic groundwater sampling and institutional controls to prohibit groundwater use and residential redevelopment. No unauthorized groundwater use was observed near the site and site reuse is non-residential. The institutional controls are not being violated based on the observations from this site visit and the interviews with the AFRPA site manager. Groundwater monitoring is being performed in accordance with the ROD and results are provided to the regulatory agencies.

SS-018/SS-028

N:\11168476.00000\GIS\Applications\restriction_area.apr (SS-018-028) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004



LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-18-004	1708027.92	731096.15
MW-19-001	1708086.28	730837.45
MW-28-002R	1708124.66	731043.40
MW-28-004	1708184.05	731021.90
MW-28-005	1708222.38	731004.86
MW-28-007	1708075.80	730888.35

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE SS-018/028 RECORD OF DECISION DATED SEPTEMBER 2000:

- Development of the sites is restricted to facilities that support only nonresidential use.
- Installation of any wells is prohibited for drinking water or any other purposes which could result in the use of the underlying groundwater.
- Discharge of groundwater withdrawn during construction dewatering to the ground or surface water is prohibited without prior approval of the New York State Department of Environmental Conservation.

NOTE: Groundwater monitoring wells shown above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

URS

FORMER PLATTSURGH AIR FORCE BASE, NY
SS-018/028 LAND USE CONTROLS / INSTITUTIONAL CONTROLS

FIGURE 1

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base FT-002/IA GW OU	**Date of inspection:** April 7, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:** Slightly Overcast, 45°F, windy

Remedy Includes: (Check all that apply)

- O Landfill cover/containment
- X Access controls
- X Institutional controls
- X Groundwater pump and treatment
- O Surface water collection and treatment
- X Other Remedy under construction
- O Monitored natural attenuation
- O Groundwater containment
- O Vertical barrier walls

Attachments: O Inspection team roster attached X Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** David Farnsworth (Name) Environmental Engineer (Title) 4-7-04 (Date)

   Interviewed X at site O at office O by phone Phone no. _____

   Problems, suggestions: _____

2. **OTHER INFORMATION**

   Toured:

   * Runway/Flightline Groundwater Collection Trench – to be backfilled/graded in summer 2004
   * East Flightline Groundwater Collection Trench – partial constructed
   * New FT-002/IA Groundwater Treatment Plant – being proved out (FT-002/IA WTP)

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - ☒ O&M manual New Plant — ☒ Readily available — O Up to date — O N/A
   - O As-built drawings — O Readily available — O Up to date — O N/A
   - O Maintenance logs — O Readily available — O Up to date — O N/A
   - Remarks

2. **Site-Specific Health and Safety Plan** — O Readily available — O Up to date — ☒ N/A
   - O Contingency plan/emergency response plan — O Readily available — O Up to date — ☒ N/A
   - Remarks

3. **O&M and OSHA Training Records** — O Readily available — O Up to date — ☒ N/A
   - Remarks

4. **Permits and Service Agreements**
   - O Air discharge permit — O Readily available — O Up to date — ☒ N/A
   - O Effluent discharge FT-002/IA WTP — O Readily available — O Up to date — O N/A
   - O Waste disposal, POTW — O Readily available — O Up to date — ☒ N/A
   - O Other permits — O Readily available — O Up to date — ☒ N/A
   - Remarks → did not review, available at AFRPA onbase office

5. **Gas Generation Records** — O Readily available — O Up to date — ☒ N/A
   - Remarks

6. **Settlement Monument Records** — O Readily available — O Up to date — ☒ N/A
   - Remarks

7. **Groundwater Monitoring Records** — O Readily available — O Up to date — ☒ N/A
   - Remarks Monitoring program to begin summer 2004

8. **Leachate Extraction Records** — O Readily available — O Up to date — ☒ N/A
   - Remarks

9. **Discharge Compliance Records**
   - O Air — O Readily available — O Up to date — ☒ N/A
   - O Water (effluent) — O Readily available — O Up to date — ☒ N/A
   - Remarks FT-002/IA WTP is in prove out stage

10. **Daily Access/Security Logs** — O Readily available — O Up to date — ☒ N/A
    - Remarks

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ○ Location shown on site map ☒ Gates secured ○ N/A
   Remarks

B. Other Access Restrictions

1. **Signs and other security measures** ○ Location shown on site map ○ N/A
   Remarks Access is restricted by airfield perimeter fencing and locked gates

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) visual drive by
   Responsible party/agency AFRPA (and their O&M contractor)
   Contact see Section II

Name	Title	Date	Phone no.

   Reporting is up-to-date ○ Yes ○ No ☒ N/A
   Reports are verified by the lead agency ○ Yes ○ No ☒ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached
   Institutional controls are specified in the Interim Record of Decision for the site and are expected to be consistent with those in the Final Record of Decision.

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks

2. **Land use changes on site** ○ N/A
   Remarks Redevelopment within and around the flightline/runway is industrial, commercial, airfield-related (i.e. - non-residential)

3. **Land use changes off site** o N/A
Remarks Redevelopment of former PAFB

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable o N/A

1. **Roads damaged** o Location shown on site map ☒ Roads adequate o N/A
Remarks

B. Other Site Conditions

Remarks

C. Monitoring Well Condition

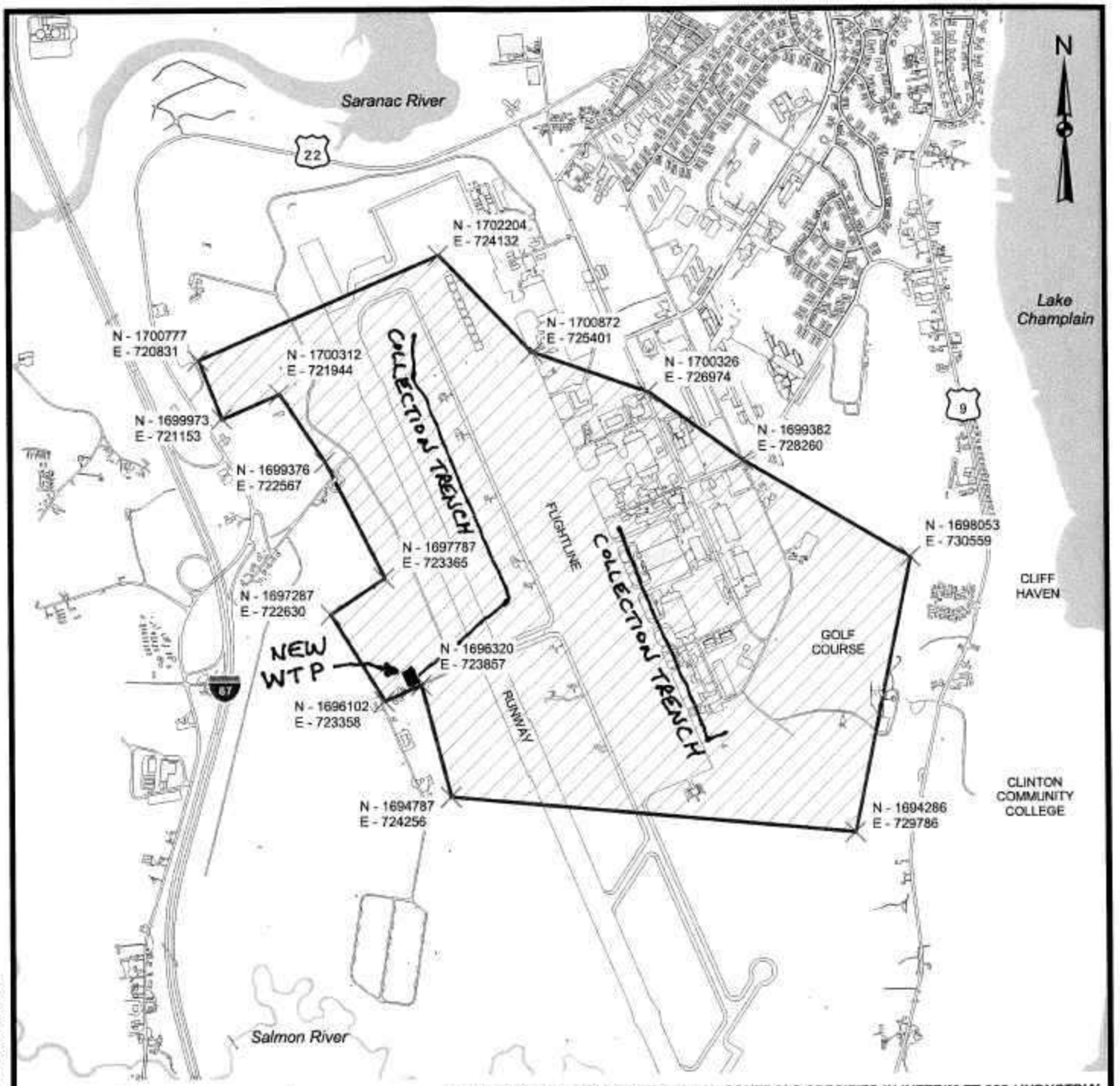
1. **Monitoring Wells**
o Properly secured/locked o Functioning o Routinely sampled o Good condition
o All site wells located o Needs Maintenance ☒ N/A
Remarks Did not check wells for Five-Year Review; however, wells are inspected annually and maintained

VI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy is being constructed as specified in the Interim Record of Decision (IROD). Institutional controls specified in the IROD appear to be properly implemented and no violations were observed. The remedy and institutional controls specified in the Final ROD are expected to be consistent with the IROD.



* REMEDY UNDER CONSTRUCTION

2000 0 2000 Feet

Legend

Groundwater Restriction Area

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN INTERIM FT-002 / INDUSTRIAL AREA GROUNDWATER OPERABLE UNIT RECORD OF DECISION DATED JUNE 2003:

1) Prohibit the installation of any wells for drinking water or any other purposes which could result in the use of the underlying groundwater within the Groundwater Restriction Area shown above.
2) Except for environmental response actions conducted by the Air Force pursuant to CERCLA, prohibit discharge of groundwater that is withdrawn within the Groundwater Restriction Area shown above during construction dewatering to the ground or surface water, without prior approval of the New York State Department of Environmental Conservation (NYSDEC) through the State Pollution Discharge Elimination System (SPDES) permitting process.
3) Prohibit property development or land use that would interfere with the proper operation of the interim remedy selected in the IROD. This includes the prohibition of any development within 20 feet of any above-ground structure or underground structure (including but not limited to pumping wells, underground and overhead electrical wiring, collection drains, piping, permeable treatment walls, groundwater treatment facilities, aeration basins, manholes, and pump stations) constructed as part of the physical remedy, or within 5 feet of any monitoring point which will be used in the monitoring of the physical remedy, without pre-approval by the USAF. USAF approval shall be obtained through the dig permit sytem maintained by the Air Force Real Property Agency's (AFRPA's) Plattsburgh office.

NOTE: Air Force or Regulatory Agency access to wells and remedial systems within the restriction area must be allowed at all times.

URS	FORMER PLATTSBURGH AIR FORCE BASE, NY FT-002 /IA GROUNDWATER OPERABLE UNIT LAND USE CONTROLS / INSTITUTIONAL CONTROLS	FIGURE 1

N:\11168476.00000\GIS\Applications\restriction_area.apr (FT-002/IA OU) LANDUSE/INSTITUTIONAL CONTROLS
8/23/2004

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base FT-002 Source OU	**Date of inspection:** September 16, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:** Sunny, 75°F, breezy

Remedy Includes: (Check all that apply)

- o Landfill cover/containment
- X Access controls
- X Institutional controls
- X Groundwater pump and treatment
- o Surface water collection and treatment
- X Other Soil Vapor Extraction with Catalytic Oxidation; Bioventing; Product Recovery
- o Monitored natural attenuation
- X Groundwater containment
- o Vertical barrier walls

Attachments: o Inspection team roster attached X Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** David Farnsworth (Name) Environmental Engineer (Title) 9-22-04 (Date)

   Interviewed o at site o at office X by phone Phone no. 518-563-2871

   Problems, suggestions: _____

2. **OTHER INFORMATION**

FT-002 Source

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☒ O&M manual	☒ Readily available	o Up to date	o N/A
	☒ As-built drawings	☒ Readily available	o Up to date	o N/A
	☒ Maintenance logs	☒ Readily available	o Up to date	o N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	☒ Readily available	☒ Up to date	o N/A
	☒ Contingency plan/emergency response plan	☒ Readily available	☒ Up to date	o N/A
	Remarks also MSDS sheets ready availabe			
3.	**O&M and OSHA Training Records**	☒ Readily available	o Up to date	o N/A
	Remarks			
4.	**Permits and Service Agreements**			
	o Air discharge permit	o Readily available	o Up to date	o N/A
	o Effluent discharge	o Readily available	o Up to date	o N/A
	o Waste disposal, POTW	o Readily available	o Up to date	o N/A
	o Other permits	o Readily available	o Up to date	o N/A
	Remarks			
5.	**Gas Generation Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
6.	**Settlement Monument Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	o N/A
	Remarks			
8.	**Leachate Extraction Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
9.	**Discharge Compliance Records**			
	o Air	o Readily available	o Up to date	o N/A
	o Water (effluent)	o Readily available	o Up to date	o N/A
	Remarks			
10.	**Daily Access/Security Logs**	o Readily available	o Up to date	☒ N/A
	Remarks			

FT-002 Source

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ○ Location shown on site map ☒ Gates secured ○ N/A
   Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** ○ Location shown on site map ○ N/A
   Remarks "NO TRESPASSING" signs on fence

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) onsite Treatment Plant Operator
   Responsible party/agency URS Corporation
   Contact Kevin Kearney (Name) Treatment Plant Operator (Title) 9-16-04 (Date) 518-566-9118 (Phone no.)

   Reporting is up-to-date ☒ Yes ○ No ○ N/A
   Reports are verified by the lead agency ☒ Yes ○ No ○ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks _____

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks _____

2. **Land use changes on site** ☒ N/A
   Remarks _____

FT-002 Source

3. **Land use changes off site** o N/A
Remarks airfield redevelopment; commercial redevelopment south of site

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable o N/A

1. **Roads damaged** o Location shown on site map ☒ Roads adequate o N/A
Remarks

B. Other Site Conditions

Remarks Water Treatment Plant and other site buildings in good condition, doors locked

Well field well marked and grass recently mowed

C. Monitoring Well Condition

1. **Monitoring Wells**
o Properly secured/locked ☒ Functioning ☒ Routinely ~~sampled~~ monitored ☒ Good condition
o All site wells located o Needs Maintenance o N/A
Remarks Did not inspect all site wells

VI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy includes hydraulic containment of the remaining source, product recovery, soil vapor extraction, and bioventing of vadose zone soils. The current remedial systems at the site appear to be implementing the remedy and no violations of institutional controls were observed.

FT-002 Source

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE FT-002 SOURCE OPERABLE UNIT RECORD OF DECISION DATED MARCH 2001:

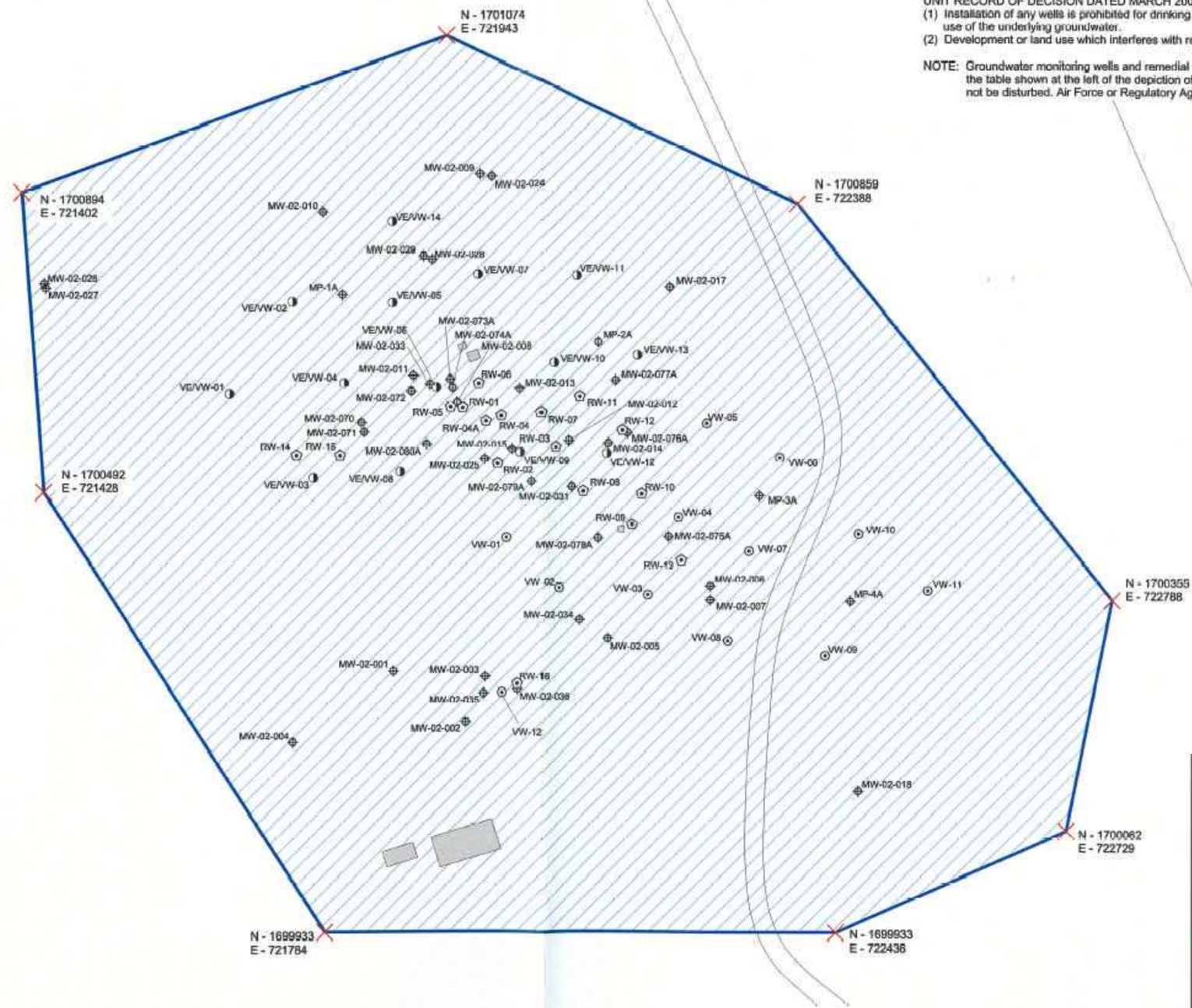
(1) Installation of any wells is prohibited for drinking water or any other purposes which could result in the use of the underlying groundwater.

(2) Development or land use which interferes with remedial operations is prohibited.

NOTE: Groundwater monitoring wells and remedial system wells located at or near the locations listed in the table shown at the left of the depiction of the Groundwater and Land Use Restriction Area must not be disturbed. Air Force or Regulatory Agency access to these wells must be allowed at all times.

LOCATION OF MONITORING POINTS AND REMEDIAL SYSTEM WELLS

LOCATION ID	NORTHING	EASTING
44PLTW1	1700619.3	722799.2
45PLTW1	1700617.2	722800.0
46PLTW8	1700238.5	722964.6
MP-1A	1700743.2	721807.9
MP-2A	1700684.2	722133.7
MP-3A	1700487.0	722338.3
MP-4A	1700352.8	722454.0
MW-02-001	1700264.1	721871.7
MW-02-002	1700199.6	721963.8
MW-02-003	1700257.3	721988.5
MW-02-004	1700173.5	721743.2
MW-02-005	1700306.3	722144.4
MW-02-006	1700372.5	722275.9
MW-02-007	1700354.5	722276.2
MW-02-008	1700606.7	721954.1
MW-02-009	1700897.4	721984.0
MW-02-010	1700848.3	721783.9
MW-02-011	1700640.3	721898.8
MW-02-012	1700558.1	722095.6
MW-02-013	1700624.4	722033.6
MW-02-014	1700554.9	722146.2
MW-02-015	1700547.4	722023.5
MW-02-017	1700753.0	722225.1
MW-02-018	1700111.8	722464.1
MW-02-019	1700166.6	722797.9
MW-02-020	1700165.4	722806.7
MW-02-024	1700894.4	721999.2
MW-02-025	1700534.9	721988.8
MW-02-026	1700757.2	721429.0
MW-02-027	1700751.2	721430.8
MW-02-028	1700788.6	721922.9
MW-02-029	1700793.0	721911.8
MW-02-030	1700172.7	722806.7
MW-02-031	1700498.8	722098.9
MW-02-033	1700629.5	721919.3
MW-02-034	1700329.5	722108.4
MW-02-035	1700236.6	721880.3
MW-02-036	1700241.9	722029.2
MW-02-070	1700579.8	721831.5
MW-02-071	1700567.8	721834.9
MW-02-072	1700620.5	721898.1
MW-02-073A	1700636.1	721945.6
MW-02-074A	1700625.8	721948.5
MW-02-075A	1700435.3	722223.0
MW-02-076A	1700567.6	722170.8
MW-02-077A	1700634.8	722155.4
MW-02-078A	1700433.8	722132.4
MW-02-079A	1700505.6	722047.9
MW-02-080A	1700553.5	721915.0
RW-01	1700600.7	721961.8
RW-02	1700529.9	722005.3
RW-03	1700550.6	722078.4
RW-04	1700590.3	722010.2
RW-04A	1700583.7	721990.4
RW-05	1700601.4	721946.2
RW-06	1700632.0	721981.6
RW-07	1700593.3	722060.6
RW-08	1700484.0	722113.3
RW-09	1700452.0	722176.0
RW-10	1700490.7	722188.7
RW-11	1700615.1	722109.6
VE/VW-01	1700616.6	721664.7
VE/VW-02	1700733.5	721744.7
VE/VW-03	1700509.6	721770.2
VE/VW-04	1700630.2	721810.2
VE/VW-05	1700733.0	721871.9
VE/VW-06	1700626.0	721927.4
VE/VW-07	1700770.0	721981.3
VE/VW-08	1700518.0	721880.8
VE/VW-09	1700542.7	722033.7
VE/VW-10	1700656.6	722076.7
VE/VW-11	1700768.7	722106.0
VE/VW-12	1700542.0	722143.9
VE/VW-13	1700666.7	722183.4
VE/VW-14	1700830.0	721872.3
VW-01	1700434.4	722016.0
VW-02	1700370.5	722082.8
VW-03	1700361.7	722195.9
VW-04	1700480.2	722230.5
VW-05	1700578.9	722271.5
VW-06	1700535.2	722364.3
VW-07	1700416.3	722325.3
VW-08	1700302.7	722298.2
VW-09	1700281.2	722421.8
VW-10	1700438.5	722464.8
VW-11	1700366.5	722553.3
VW-12	1700237.2	722009.4
RW-12	1700571.5	722164.3
RW-13	1700406.0	722239.1
RW-14	1700538.9	721748.9
RW-15	1700538.8	721804.5
RW-16	1700240.9	722029.2



Legend

- Monitoring Well
- Vapor Extraction Well
- Recovery Well
- Gas Vent Well
- Groundwater and Land Use Restriction Area
- Above Ground Structures Associated With Onsite Remedial Systems

FORMER PLATTSBURGH AIR FORCE BASE, NY
FT-002 SOURCE OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

URS

FIGURE 1

N:\11168\76.80001\GIS\Applications\restriction_areas.apr (FT-002\SOURCE OU\ LANDUSE\INSTITUTIONAL CONTROLS
6/23/2004

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base Landfill LF-021	**Date of inspection:** September 16, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:** Sunny, 70°F, breezy

Remedy Includes: (Check all that apply)

- X Landfill cover/containment
- X Access controls
- X Institutional controls
- O Groundwater pump and treatment
- O Surface water collection and treatment
- O Other _____
- O Monitored natural attenuation
- O Groundwater containment
- O Vertical barrier walls

Attachments: O Inspection team roster attached X Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** Stephen Gagnier (Name) Environmental Engineer (Title) 9-22-04 (Date)

   Interviewed O at site O at office X by phone Phone no. 518-563-2871

   Problems, suggestions: _____

2. **OTHER INFORMATION**

LF-021

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☒ O&M manual	☒ Readily available	o Up to date	o N/A
	o As-built drawings	o Readily available	o Up to date	☒ N/A
	o Maintenance logs	o Readily available	o Up to date	☒ N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	☒ Readily available	o Up to date	o N/A
	o Contingency plan/emergency response plan	o Readily available	o Up to date	o N/A
	Remarks			
3.	**O&M and OSHA Training Records**	☒ Readily available	o Up to date	o N/A
	Remarks			
4.	**Permits and Service Agreements**			
	o Air discharge permit	o Readily available	o Up to date	☒ N/A
	o Effluent discharge	o Readily available	o Up to date	☒ N/A
	o Waste disposal, POTW	o Readily available	o Up to date	☒ N/A
	o Other permits	o Readily available	o Up to date	☒ N/A
	Remarks			
5.	**Gas Generation Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
6.	**Settlement Monument Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	o N/A
	Remarks			
8.	**Leachate Extraction Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
9.	**Discharge Compliance Records**			
	o Air	o Readily available	o Up to date	☒ N/A
	o Water (effluent)	o Readily available	o Up to date	☒ N/A
	Remarks			
10.	**Daily Access/Security Logs**	o Readily available	o Up to date	☒ N/A
	Remarks			

LF-021

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ○ Location shown on site map ☒ Gates secured ○ N/A
   Remarks

B. Other Access Restrictions

1. **Signs and other security measures** ○ Location shown on site map ○ N/A
   Remarks "NO TREPASSING" signs posted on chain-link fencing every few hundred feet

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) during GW sampling; drive by
   Responsible party/agency AFRPA; URS Corporation (O&M Contractor)
   Contact see Section II

Name	Title	Date	Phone no.

   Reporting is up-to-date ☒ Yes ○ No ○ N/A
   Reports are verified by the lead agency ☒ Yes ○ No ○ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks

2. **Land use changes on site** ☒ N/A
   Remarks

LF-021

3. **Land use changes off site** ☒ N/A
Remarks

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ○ N/A

1. **Roads damaged** ○ Location shown on site map ☒ Roads adequate ○ N/A
Remarks

B. Other Site Conditions

Remarks
Landfill recently mowed.
Landfill cover appears O.K.
No signs of vector activity.

C. Monitoring Well Condition

1. **Monitoring Wells**
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☒ All site wells located ○ Needs Maintenance ○ N/A
Remarks

VI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

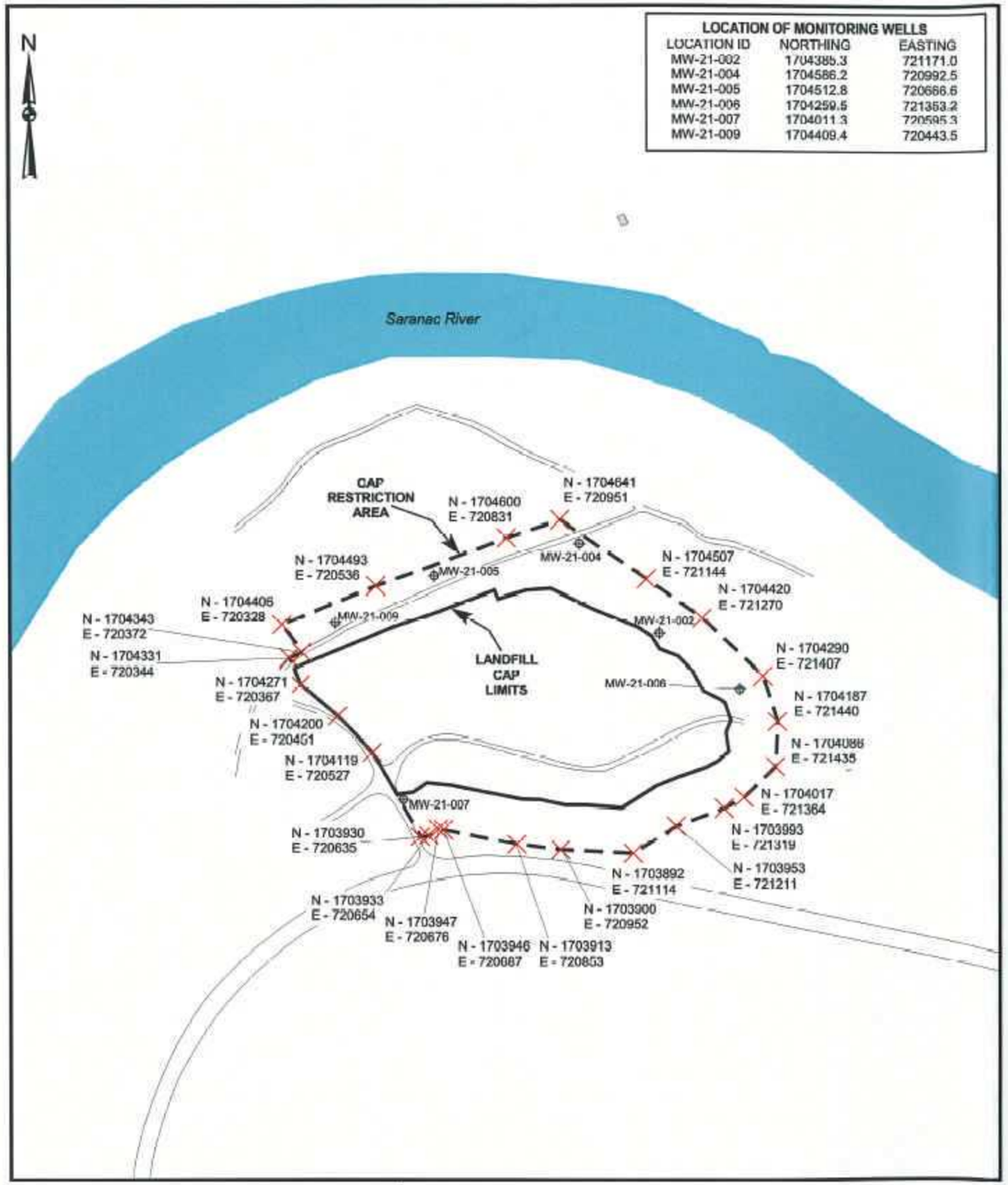
The remedial action objective for the site is to prevent direct contact with onsite soil/fill by human or ecological receptors. The RAO appears to be successfully accomplished.

Institutional controls limiting access and groundwater usage do not appear to have been violated.

LF-021

LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-21-002	1704385.3	721171.0
MW-21-004	1704586.2	720992.5
MW-21-005	1704512.8	720666.6
MW-21-006	1704259.5	721353.2
MW-21-007	1704011.3	720595.3
MW-21-009	1704409.4	720443.5

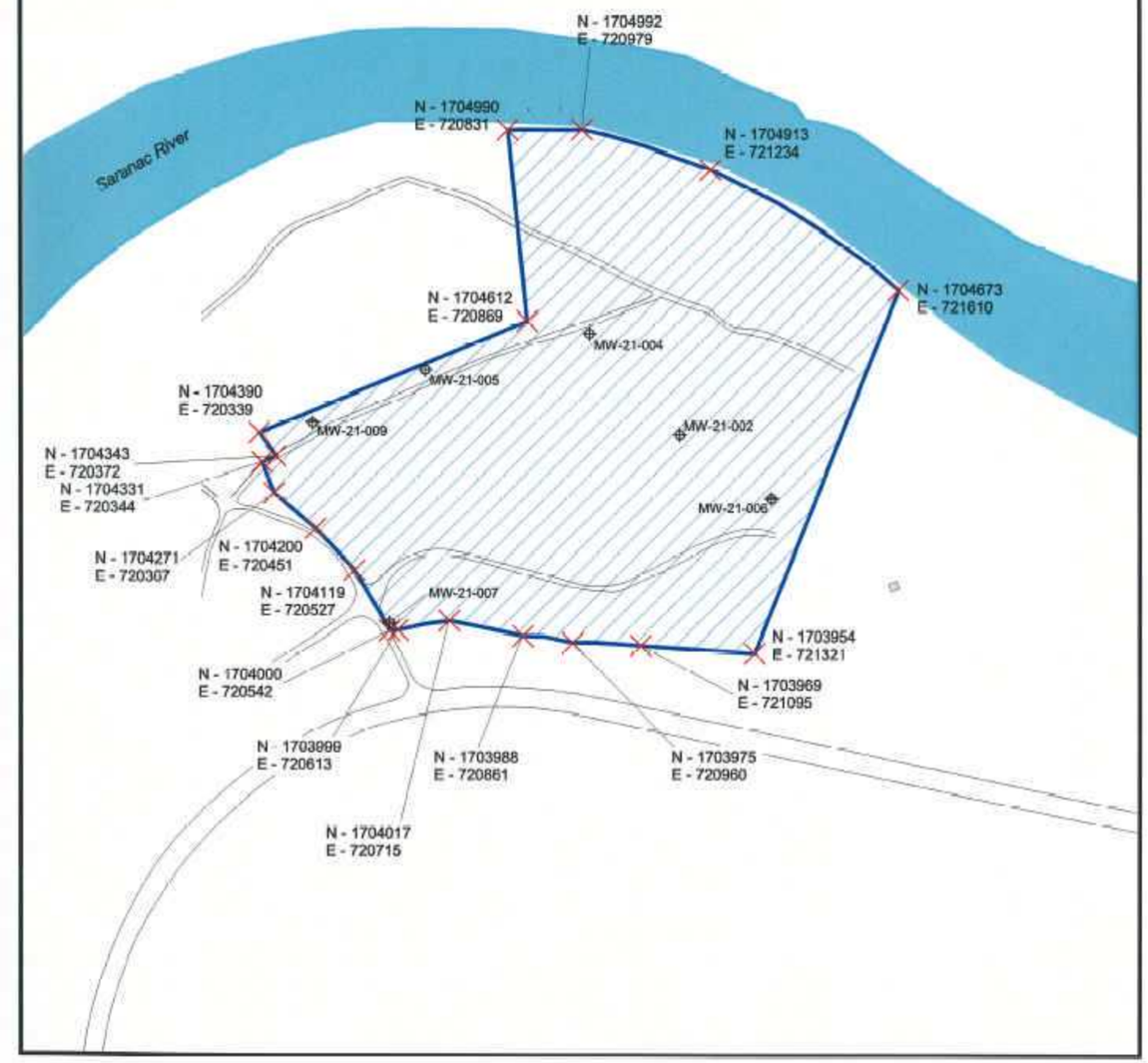


LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN LF-021 SOIL AND GROUNDWATER RECORD OF DECISION DATED MARCH 1997:

- Limit development of any structure on the landfill site which would adversely affect human health and safety.
- Prevent any adverse action leading to the deterioration of the cap.
- Excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation is prohibited.
- Wells for drinking water or any other purpose which could result in the use of the underlying groundwater is prohibited.

NOTES:

- Air Force or Regulatory Agency access to the cap restriction area must be allowed at all times.
- Groundwater monitoring wells located at or near the locations listed in the table to the left must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.



Legend

- Monitoring Well
- Groundwater Use Restriction Area

300 0 300 Feet

FORMER PLATTSBURGH AIR FORCE BASE, NY
LF-021 SOIL AND GROUNDWATER OPERABLE UNITS
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

URS

FIGURE 1

N:\11168476.00020\GIS\Applications\restriction_areas.apr (LF-021) LANDUSE\INSTITUTIONAL_CONTROLS
8/23/2004

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base Landfill LF-022	**Date of inspection:** September 16, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:** Sunny, 80°F, breezy

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- O Groundwater pump and treatment
- O Surface water collection and treatment
- O Other _____
- O Monitored natural attenuation
- O Groundwater containment
- O Vertical barrier walls

Attachments: O Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** Stephen Gagnier (Name) Environmental Engineer (Title) 9-22-04 (Date)

   Interviewed O at site O at office ☒ by phone Phone no. _____

   Problems, suggestions: _____

2. **OTHER INFORMATION**

LF-022

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☒ O&M manual	☒ Readily available	o Up to date	o N/A
	o As-built drawings	o Readily available	o Up to date	o N/A
	o Maintenance logs	o Readily available	o Up to date	o N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	☒ Readily available	o Up to date	o N/A
	o Contingency plan/emergency response plan	o Readily available	o Up to date	o N/A
	Remarks			
3.	**O&M and OSHA Training Records**	☒ Readily available	o Up to date	o N/A
	Remarks			
4.	**Permits and Service Agreements**			
	o Air discharge permit	o Readily available	o Up to date	☒ N/A
	o Effluent discharge	o Readily available	o Up to date	☒ N/A
	o Waste disposal, POTW	o Readily available	o Up to date	☒ N/A
	o Other permits	o Readily available	o Up to date	☒ N/A
	Remarks			
5.	**Gas Generation Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
6.	**Settlement Monument Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	o N/A
	Remarks			
8.	**Leachate Extraction Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
9.	**Discharge Compliance Records**			
	o Air	o Readily available	o Up to date	☒ N/A
	o Water (effluent)	o Readily available	o Up to date	☒ N/A
	Remarks			
10.	**Daily Access/Security Logs**	o Readily available	o Up to date	☒ N/A
	Remarks			

LF-022

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ○ Location shown on site map ☒ Gates secured ○ N/A
   Remarks

B. Other Access Restrictions

1. **Signs and other security measures** ○ Location shown on site map ○ N/A
   Remarks "NO TRESPASSING" signs on perimeter chain-link fence every few hundred feet

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) during GW sampling; drive by
   Responsible party/agency AFRPA; URS Corporation (O&M Contractor)
   Contact see Section II

Name	Title	Date	Phone no.

   Reporting is up-to-date ☒ Yes ○ No ○ N/A
   Reports are verified by the lead agency ☒ Yes ○ No ○ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks

2. **Land use changes on site** ☒ N/A
   Remarks

LF-022

3. **Land use changes off site** O N/A
Remarks

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable O N/A

1. **Roads damaged** O Location shown on site map ☒ Roads adequate O N/A
Remarks

B. Other Site Conditions

Remarks Landfill recently mowed.
Landfill cover appears O.K.
No signs of vector activity.

C. Monitoring Well Condition

1. **Monitoring Wells**
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☒ All site wells located O Needs Maintenance O N/A
Remarks

VI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

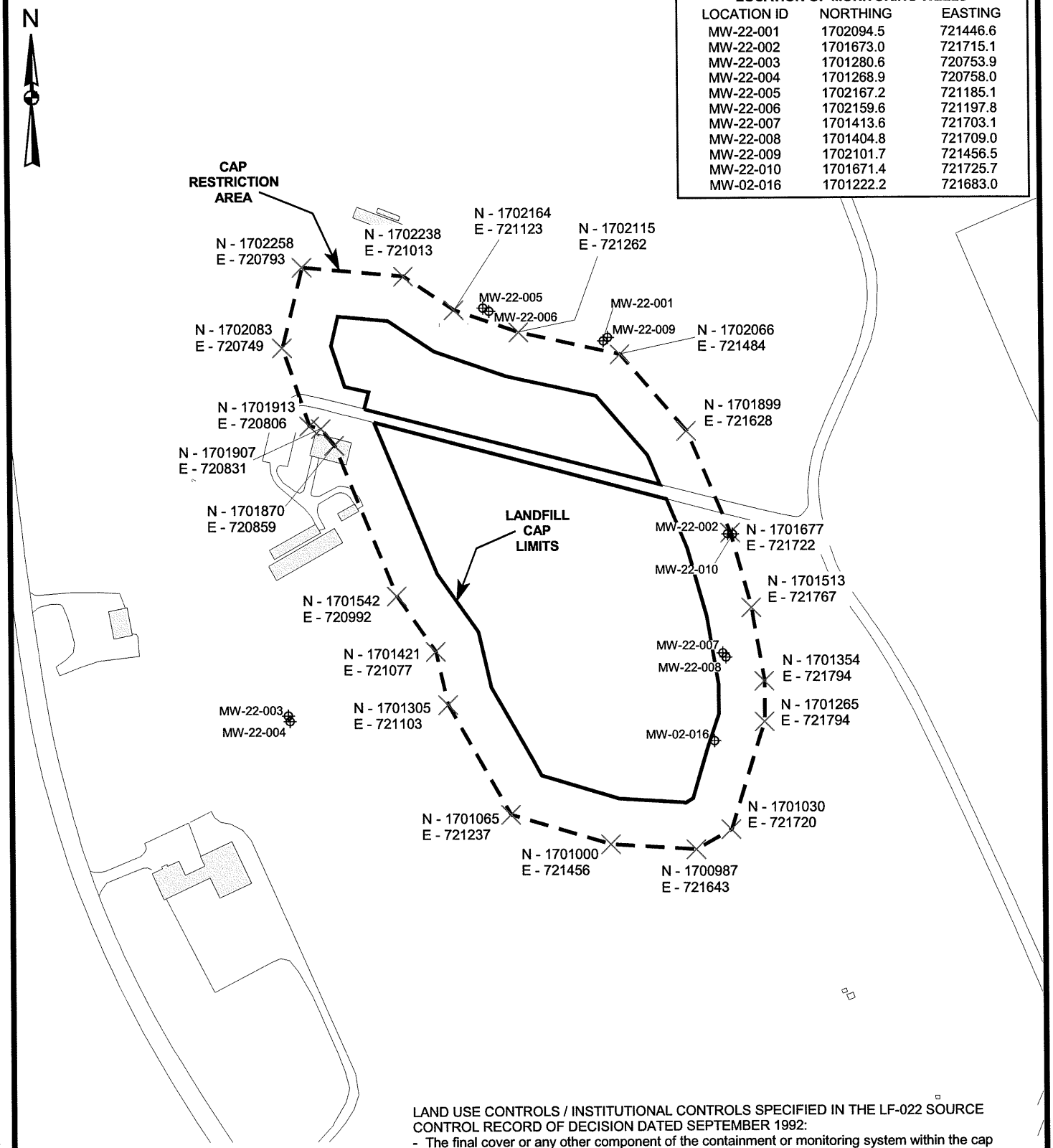
The remedial action objective (RAO) for the site is to minimize potential current and future ecological risks associated with exposure to pesticides in surface soils. The soil cover appears to be preventing this exposure and no burrows through the soil cover were noted.

Institutional controls limiting access and groundwater usage do not appear to have been violated.

LF-022

LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-22-001	1702094.5	721446.6
MW-22-002	1701673.0	721715.1
MW-22-003	1701280.6	720753.9
MW-22-004	1701268.9	720758.0
MW-22-005	1702167.2	721185.1
MW-22-006	1702159.6	721197.8
MW-22-007	1701413.6	721703.1
MW-22-008	1701404.8	721709.0
MW-22-009	1702101.7	721456.5
MW-22-010	1701671.4	721725.7
MW-02-016	1701222.2	721683.0



LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE LF-022 SOURCE CONTROL RECORD OF DECISION DATED SEPTEMBER 1992:

- The final cover or any other component of the containment or monitoring system within the cap restriction area must not be compromised. This includes restriction from disturbing the groundwater monitoring wells shown in the table above.

Additional Restrictions (added by the USEPA during the PAFB Five-Year Review dated September 1999):

- Limit development of any structure on the landfill site which would adversely affect human health and safety.
- Prevent any adverse action leading to deterioration of the cap.
- Wells for drinking water or any other purpose which could result in use of the underlying groundwater is prohibited.
- Air Force or Regulatory Agency access to these wells must be allowed at all times.

URS

FORMER PLATTSBURGH AIR FORCE BASE, NY
LF-022 SOURCE CONTROL OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

FIGURE 1

N:\11168476.00000\GIS\Applications\restriction_area.apr (LF-022) LANDUSE/INSTITUTIONAL CONTROLS
6/23/2004

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base Landfill LF-023	**Date of inspection:** September 16, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:**

Remedy Includes: (Check all that apply)

- X Landfill cover/containment
- X Access controls
- X Institutional controls
- O Groundwater pump and treatment
- O Surface water collection and treatment
- X Other Landfill gas monitoring wells and vent pipes
- O Monitored natural attenuation
- O Groundwater containment
- O Vertical barrier walls

Attachments: O Inspection team roster attached X Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** Stephen Gagnier (Name) Environmental Engineer (Title) 9-22-04 (Date)

   Interviewed O at site O at office X by phone Phone no. _____

   Problems, suggestions: _____

2. **OTHER INFORMATION**

LF-023

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☒ O&M manual	☒ Readily available	o Up to date	o N/A
	o As-built drawings	o Readily available	o Up to date	☒ N/A
	o Maintenance logs	o Readily available	o Up to date	☒ N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	☒ Readily available	o Up to date	o N/A
	o Contingency plan/emergency response plan	o Readily available	o Up to date	o N/A
	Remarks			
3.	**O&M and OSHA Training Records**	☒ Readily available	o Up to date	o N/A
	Remarks			
4.	**Permits and Service Agreements**			
	o Air discharge permit	o Readily available	o Up to date	☒ N/A
	o Effluent discharge	o Readily available	o Up to date	☒ N/A
	o Waste disposal, POTW	o Readily available	o Up to date	☒ N/A
	o Other permits	o Readily available	o Up to date	☒ N/A
	Remarks			
5.	**Gas Generation Records**	☒ Readily available	☒ Up to date	o N/A
	Remarks			
6.	**Settlement Monument Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	o N/A
	Remarks			
8.	**Leachate Extraction Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
9.	**Discharge Compliance Records**			
	o Air	o Readily available	o Up to date	☒ N/A
	o Water (effluent)	o Readily available	o Up to date	☒ N/A
	Remarks			
10.	**Daily Access/Security Logs**	o Readily available	o Up to date	☒ N/A
	Remarks			

LF-023

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ○ Location shown on site map ☒ Gates secured ○ N/A
   Remarks

B. Other Access Restrictions

1. **Signs and other security measures** ○ Location shown on site map ○ N/A
   Remarks "NO TRESPASSING" signs on perimeter chain-link fence every few hundred feet

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) during GW sampling ; drive by
   Responsible party/agency AFRPA ; URS Corporation (O&M contractor)
   Contact see Section II

Name	Title	Date	Phone no.

   Reporting is up-to-date ☒ Yes ○ No ○ N/A
   Reports are verified by the lead agency ☒ Yes ○ No ○ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks

2. **Land use changes on site** ☒ N/A
   Remarks

LF-023

3. **Land use changes off site** o N/A
Remarks Commercial redevelopment to the south of LF-023; air field redevelopment

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable o N/A

1. **Roads damaged** o Location shown on site map ☒ Roads adequate o N/A
Remarks

B. Other Site Conditions

Remarks Landfill recently mowed.
Landfill cover appears O.K.
No signs of vector activity.

C. Monitoring Well Condition

1. **Monitoring Wells**
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☒ All site wells located o Needs Maintenance o N/A
Remarks also gas monitoring wells and vent pipes checked and O.K.

VI. OVERALL OBSERVATIONS

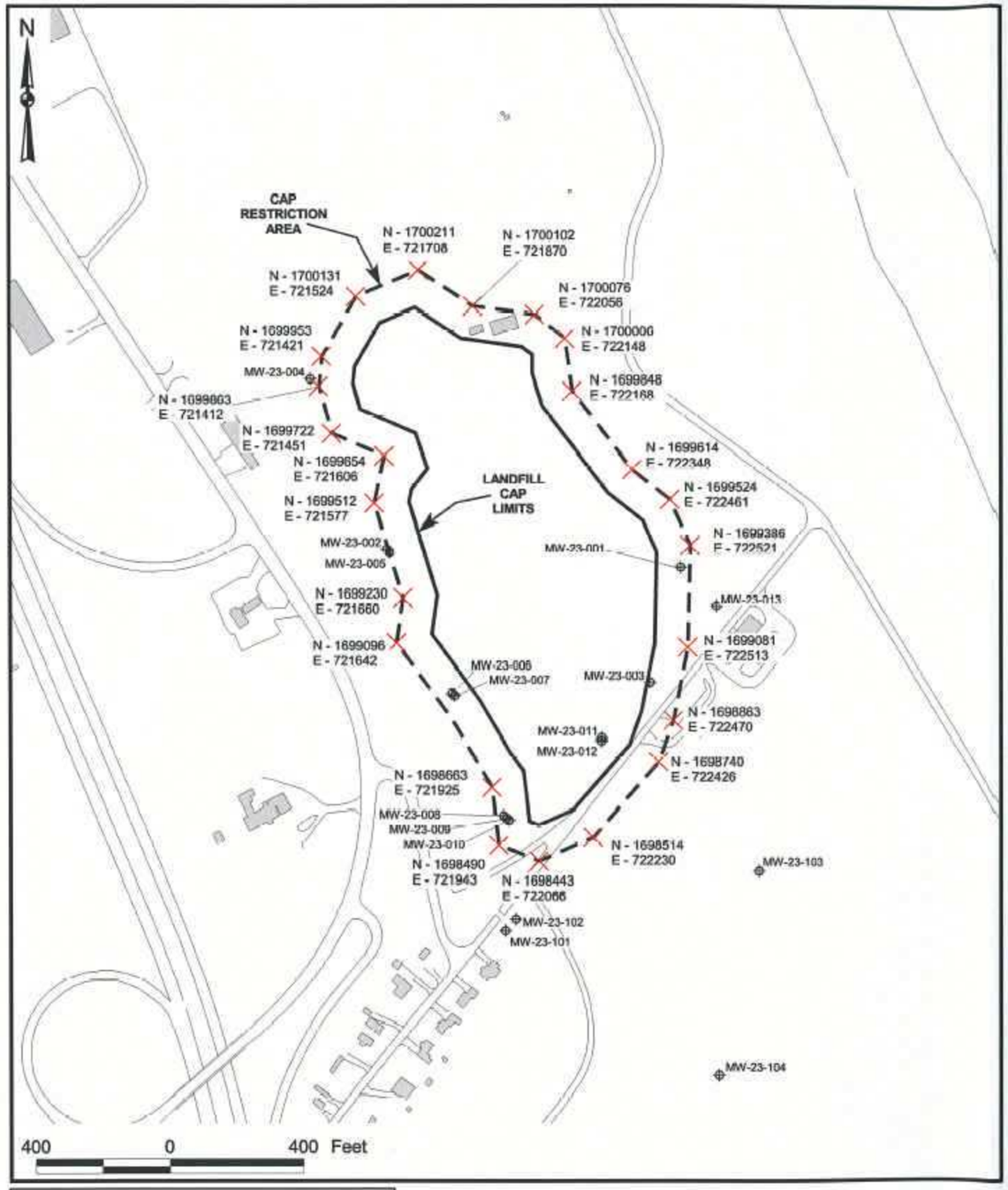
A. Implementation of the Remedy

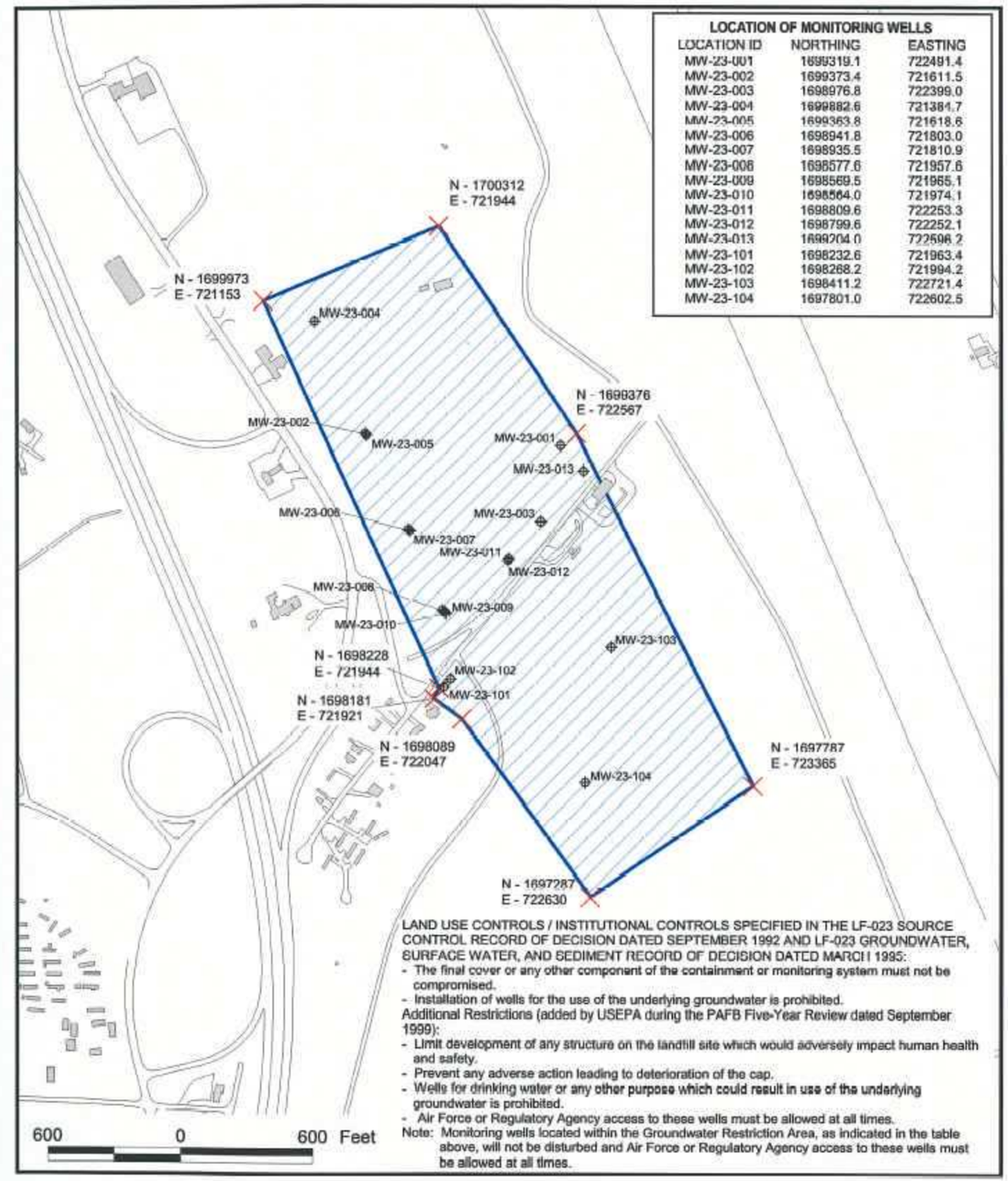
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedial action objectives for the site are to prevent exposure to landfill soil/fill and to prevent groundwater ingestion. The landfill cap is preventing soil exposure and no burrows were noted in the cap/cover soil.

Institutional controls restricting access and groundwater usage did not appear to have been violated.

LF-023





LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-23-001	1699319.1	722491.4
MW-23-002	1699373.4	721611.5
MW-23-003	1698976.8	722399.0
MW-23-004	1699882.6	721381.7
MW-23-005	1699363.8	721618.6
MW-23-006	1698941.8	721803.0
MW-23-007	1698935.5	721810.9
MW-23-008	1698577.6	721957.6
MW-23-009	1698569.5	721965.1
MW-23-010	1698564.0	721974.1
MW-23-011	1698809.6	722253.3
MW-23-012	1698799.6	722252.1
MW-23-013	1699204.0	722596.2
MW-23-101	1698232.6	721963.4
MW-23-102	1698268.2	721994.2
MW-23-103	1698411.2	722721.4
MW-23-104	1697801.0	722602.5

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN THE LF-023 SOURCE CONTROL RECORD OF DECISION DATED SEPTEMBER 1992 AND LF-023 GROUNDWATER, SURFACE WATER, AND SEDIMENT RECORD OF DECISION DATED MARCH 1995:

- The final cover or any other component of the containment or monitoring system must not be compromised.
- Installation of wells for the use of the underlying groundwater is prohibited.

Additional Restrictions (added by USEPA during the PAFB Five-Year Review dated September 1999):

- Limit development of any structure on the landfill site which would adversely impact human health and safety.
- Prevent any adverse action leading to deterioration of the cap.
- Wells for drinking water or any other purpose which could result in use of the underlying groundwater is prohibited.
- Air Force or Regulatory Agency access to these wells must be allowed at all times.

Note: Monitoring wells located within the Groundwater Restriction Area, as indicated in the table above, will not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

Legend

- Monitoring Well
- Groundwater Use Restriction Area

FORMER PLATTSBURGH AIR FORCE BASE, NY
LF-023 SOURCE CONTROL OPERABLE UNIT AND GROUNDWATER, SURFACE WATER, AND SEDIMENT OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

URS

FIGURE 1

N:\1168476.8000\GIS\Applications\restriction_area.apr (LF-023) LANDUSE/INSTITUTIONAL CONTROLS
6/24/2004

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Plattsburgh Air Force Base Landfill LF-024	**Date of inspection:** September 16, 2004
Location and Region: Plattsburgh, NY – Region 02	**EPA ID: NY4571924774**
Agency, office, or company leading the five-year review: United States Air Force (URS Corporation)	**Weather/temperature:** Sunny, 80°F, breezy

Remedy Includes: (Check all that apply)

- X Landfill cover/containment
- X Access controls
- X Institutional controls
- O Groundwater pump and treatment
- O Surface water collection and treatment
- O Other _____
- O Monitored natural attenuation
- O Groundwater containment
- O Vertical barrier walls

Attachments: O Inspection team roster attached X Site map attached

II. INTERVIEWS (Check all that apply)

1. **AFRPA site personnel** Stephen Gagnier (Name) Environmental Engineer (Title) 9-22-04 (Date)

   Interviewed O at site O at office X by phone Phone no. 518-563-2871

   Problems, suggestions: _____

2. **OTHER INFORMATION**

LF-024

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☒ O&M manual	☒ Readily available	o Up to date	o N/A
	☒ As-built drawings	☒ Readily available	o Up to date	o N/A
	o Maintenance logs	o Readily available	o Up to date	☒ N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	☒ Readily available	o Up to date	o N/A
	o Contingency plan/emergency response plan	o Readily available	o Up to date	o N/A
	Remarks			
3.	**O&M and OSHA Training Records**	☒ Readily available	☒ Up to date	o N/A
	Remarks			
4.	**Permits and Service Agreements**			
	o Air discharge permit	o Readily available	o Up to date	☒ N/A
	o Effluent discharge	o Readily available	o Up to date	☒ N/A
	o Waste disposal, POTW	o Readily available	o Up to date	☒ N/A
	o Other permits	o Readily available	o Up to date	☒ N/A
	Remarks			
5.	**Gas Generation Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
6.	**Settlement Monument Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	o N/A
	Remarks			
8.	**Leachate Extraction Records**	o Readily available	o Up to date	☒ N/A
	Remarks			
9.	**Discharge Compliance Records**			
	o Air	o Readily available	o Up to date	☒ N/A
	o Water (effluent)	o Readily available	o Up to date	☒ N/A
	Remarks			
10.	**Daily Access/Security Logs**	o Readily available	o Up to date	☒ N/A
	Remarks			

LF-024

IV. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ○ N/A

A. Fencing

1. **Fencing** ☒ Undamaged ○ Location shown on site map ☒ Gates secured ○ N/A
   Remarks

B. Other Access Restrictions

1. **Signs and other security measures** ○ Location shown on site map ○ N/A
   Remarks "NO TRESPASSING" signs on perimeter chain-link fence every few hundred feet

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
   Site conditions imply ICs properly implemented ☒ Yes ○ No ○ N/A
   Site conditions imply ICs being fully enforced ☒ Yes ○ No ○ N/A

   Type of monitoring (*e.g.*, self-reporting, drive by) during GW sampling; drive by
   Responsible party/agency AFRPA; URS Corporation (O&M contractor)
   Contact see Section II

Name	Title	Date	Phone no.

   Reporting is up-to-date ☒ Yes ○ No ○ N/A
   Reports are verified by the lead agency ☒ Yes ○ No ○ N/A

   Requirements in deed or decision documents appear to have been met ☒ Yes ○ No ○ N/A
   Violations have been reported ○ Yes ☒ No ○ N/A
   Other problems or suggestions: ○ Report attached

2. **Adequacy** ☒ ICs are adequate ○ ICs are inadequate ○ N/A
   Remarks

D. General

1. **Vandalism/trespassing** ○ Location shown on site map ☒ No vandalism evident
   Remarks

2. **Land use changes on site** ☒ N/A
   Remarks

LF-024

3. **Land use changes off site** o N/A
Remarks commercial redevelopment nearby

V. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable o N/A

1. **Roads damaged** o Location shown on site map ☒ Roads adequate o N/A
Remarks

B. Other Site Conditions

Remarks Landfill was recently mowed.
Land fill cover appeared O.K.
No signs of vector activity.

C. Monitoring Well Condition

1. **Monitoring Wells**
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☒ All site wells located o Needs Maintenance o N/A
Remarks

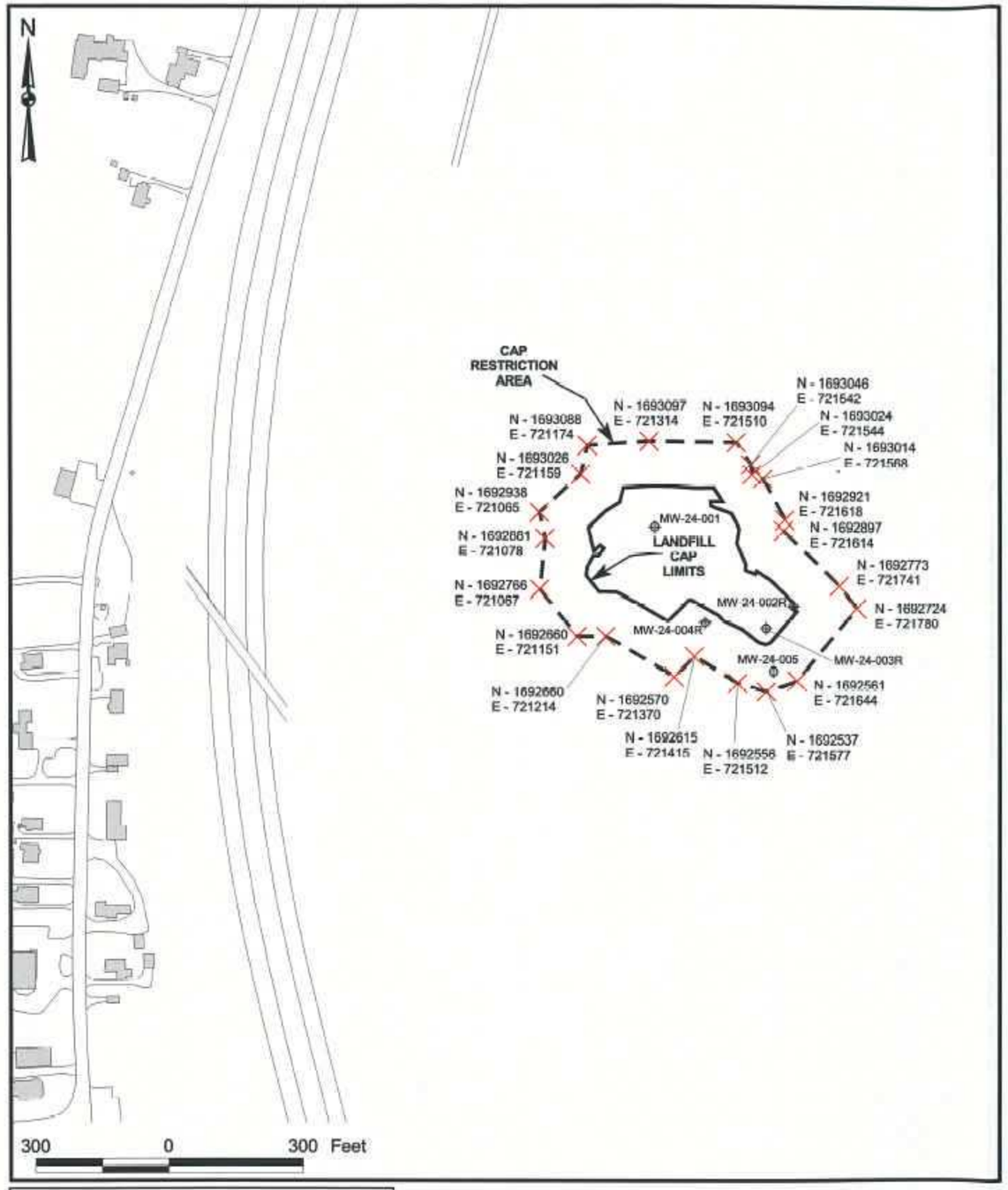
VI. OVERALL OBSERVATIONS

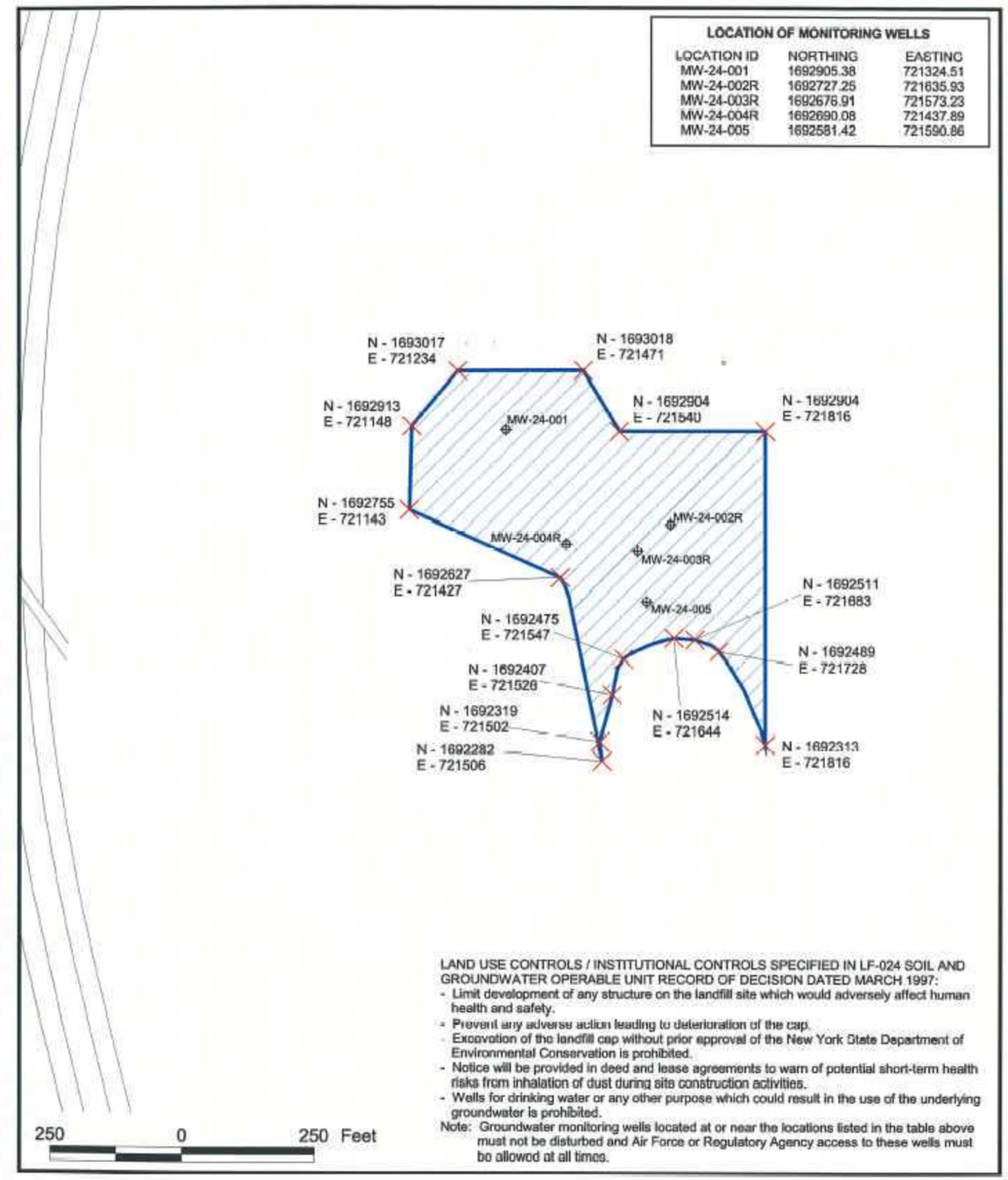
A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedial action objectives for LF-024 are to prevent construction worker fugitive dust exposure during landfill cover installation (completed), to eliminate physical hazards to construction & O&M workers, and to prevent groundwater ingestion. The soil cover has eliminated fugitive dust and C&D debris physical hazards.
Institution controls restricting site access and groundwater usage do not appear to have been violated.

LF-024





LOCATION OF MONITORING WELLS

LOCATION ID	NORTHING	EASTING
MW-24-001	1692905.38	721324.51
MW-24-002R	1692727.25	721635.93
MW-24-003R	1692676.91	721573.23
MW-24-004R	1692690.08	721437.89
MW-24-005	1692581.42	721590.86

LAND USE CONTROLS / INSTITUTIONAL CONTROLS SPECIFIED IN LF-024 SOIL AND GROUNDWATER OPERABLE UNIT RECORD OF DECISION DATED MARCH 1997:

- Limit development of any structure on the landfill site which would adversely affect human health and safety.
- Prevent any adverse action leading to deterioration of the cap.
- Excavation of the landfill cap without prior approval of the New York State Department of Environmental Conservation is prohibited.
- Notice will be provided in deed and lease agreements to warn of potential short-term health risks from inhalation of dust during site construction activities.
- Wells for drinking water or any other purpose which could result in the use of the underlying groundwater is prohibited.

Note: Groundwater monitoring wells located at or near the locations listed in the table above must not be disturbed and Air Force or Regulatory Agency access to these wells must be allowed at all times.

Legend

- Monitoring Well
- Groundwater Use Restriction Area

FORMER PLATTSBURGH AIR FORCE BASE, NY
LF-024 SOIL AND GROUNDWATER OPERABLE UNIT
LAND USE CONTROLS / INSTITUTIONAL CONTROLS

URS

FIGURE 1

N:\11168476.0008\GIS\Applications\restriction_area.apr [LF-024] LANDUSE/INSTITUTIONAL CONTROLS
6/24/2004

APPENDIX F

RESPONSES TO NYSDEC AND USAF COMMENTS ON THE

DRAFT SECOND FIVE-FEAR REVIEW REPORT FOR PLATTSBURGH AIR FORCE BASE – PLATTSBURGH, CLINTON COUNTY, NEW YORK

RESPONSES TO AIR FORCE HQ COMMENTS DATED AUGUST 26, 2004 R SEPTEMBER 21, 2004 TO THE *DRAFT SECOND FIVE-YEAR REVIEW REPORT FOR PLATTSBURGH AIR FORCE BASE – PLATTSBURGH, CLINTON COUNTY, NEW YORK*

	COMMENT	**RESPONSE**
	AUGUST 26, 2004 COMMENTS	
1	On pages ES-1, 2-5 (and maybe other pages that I missed) it mentions that RODs have been signed for 16 OUs and that these 16 OUs cover 15 of the 41 IRP sites. This is a bit misleading from my point of view, it leaves me with the impression that we have 26 sites for which we still need RODs, which is not the case. Recommend a way to summarize the remaining IRP sites (# NFA/DD, # POL, etc). Or maybe more simply don't mention the 41 IRP sites here, just leave the discussion of the remaining IRP sites in Section 3.17, Status of Other IRP Sites.	As agreed to in the September 21, 2004 BCT teleconference call, the parenthetical reference to the 41 IRP sites at PAFB has been dropped from the Executive Summary.
2	One other comment, in Section 3.17.2, page 3-21, it mentions that a NFA/DD is pending for IRP Site SS-029, in the MIS we show this site as SC in 9/30/02?	Per PAFB AFRPA personnel, both statements are correct and the text has not been modified.
	SEPTEMBER 21, 2004 COMMENTS	
1	The Air Force signature block should be changed to: MAUREEN T. KOETZ Deputy Assistant Secretary of the Air Force (Environment, Safety, and Occupational Health)	This revision was made.
2	Also, 1 found a typo on page ES-2, last sentence in the first para, change "in" to "it".	The typo has been revised.

RESPONSES TO AIR FORCE HQ COMMENTS DATED AUGUST 26, 2004 R SEPTEMBER 21, 2004 TO THE *DRAFT SECOND FIVE-YEAR REVIEW REPORT FOR PLATTSBURGH AIR FORCE BASE – PLATTSBURGH, CLINTON COUNTY, NEW YORK*

	COMMENT	**RESPONSE**
	AUGUST 26, 2004 COMMENTS	
1	On pages ES-1, 2-5 (and maybe other pages that I missed) it mentions that RODs have been signed for 16 OUs and that these 16 OUs cover 15 of the 41 IRP sites. This is a bit misleading from my point of view, it leaves me with the impression that we have 26 sites for which we still need RODs, which is not the case. Recommend a way to summarize the remaining IRP sites (# NFA/DD, # POL, etc). Or maybe more simply don't mention the 41 IRP sites here, just leave the discussion of the remaining IRP sites in Section 3.17, Status of Other IRP Sites.	As agreed to in the September 21, 2004 BCT teleconference call, the parenthetical reference to the 41 IRP sites at PAFB has been dropped from the Executive Summary.
2	One other comment, in Section 3.17.2, page 3-21, it mentions that a NFA/DD is pending for IRP Site SS-029, in the MIS we show this site as SC in 9/30/02?	Per PAFB AFRPA personnel, both statements are correct and the text has not been modified.
	SEPTEMBER 21, 2004 COMMENTS	
1	The Air Force signature block should be changed to: MAUREEN T. KOETZ Deputy Assistant Secretary of the Air Force (Environment, Safety, and Occupational Health)	This revision was made.
2	Also, 1 found a typo on page ES-2, last sentence in the first para, change "in" to "it".	The typo has been revised.