United States Air Force
Installation Restoration Program

Munitions Maintenance Squadron (SS-013)

Record of Decision

Plattsburgh Air Force Base
Clinton County, New York

Final
August 2008

G3731F

DEPARTMENT OF THE AIR FORCE
AIR FORCE REAL PROPERTY AGENCY

SEP 0 8 2008

AFRPA/COO
143 Billy Mitchell Blvd., Suite 1
San Antonio, TX 78226-1856

Mr. John LaPadula
Deputy Director, Emergency and Remedial Response Division
290 Broadway, 19th Floor
New York, NY 10007-1866

Dear Mr. LaPadula

Three copies of the Record of Decision for the Munitions Maintenance Squadron (SS-013) at the Former Plattsburgh Air Force Base, Plattsburgh, NY are signed by the Air Force Real Property Agency and attached. Upon signature by your agency, request one original signed copy be provided to NYSDEC (Attention: Mr. Daniel Eaton) and one original signed copy be provided to the AFRPA Plattsburgh Office (Attention: Mr. Stephen Gagnier).

Thanks to you and the other members the EPA and NY State staffs for your contributions that have led to this important milestone.

Sincerely

STEPHEN TERMAATH
Environmental Coordinator

Attachments:
SS-013 Record of Decision (3 Cys)

cc:
NYSDEC (Mr. Daniel Eaton), (w/o atch)
AFRPA (Mr. Steve Gagnier), (w/o atch)

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

SEP 22 2003

Mr. Jeffrey Domm
Deputy Director
Air Force Real Property Agency
1700 North Moore Street, Suite 2300
Arlington, VA 22209-2802

Re: Record of Decision – Munitions Maintenance Squadron (Site SS-013)
Former Plattsburgh AFB, Plattsburgh, NY

Dear Mr. Domm:

This is to inform you that after considering public comments on the Proposed Plan, the Air Force's (AF's) responsiveness summary to those comments, the Draft Final Record of Decision, and other supporting documents, the U.S. Environmental Protection Agency (EPA) concurs with the Record of Decision for the Munitions Maintenance Squadron (Site SS-013), located at Plattsburgh Air Force Base (AFB), Plattsburgh, New York. A copy of the signed Record of Decision, which I have co-signed on behalf of EPA, will be mailed directly to David Farnsworth at Plattsburgh AFB.

The Record of Decision for the Munitions Maintenance Squadron calls for Ozone Sparging to treat groundwater contamination at the site. Groundwater monitoring and Institutional Controls (ICs) are also included as part of the remedy to ensure protection of human health and the integrity of the remedy. The Record of Decision also documents past response actions taken under various removal actions or other programs. As a result of these actions, no further action is required for site soil or sediment. Please note this Record of Decision addresses only the above mentioned area of concern. All other areas at the former Plattsburgh AFB are being addressed under separate operable units.

If you have any questions regarding the subject of this letter, please contact me at (212) 637-4405 or have your staff contact Bob Morse at (212) 637-4331.

Sincerely,

George Pavlou
Acting Director
Emergency and Remedial Response Division

enclosure

FINAL

RECORD OF DECISION

MUNITIONS MAINTENANCE SQUADRON (SS-013)

FORMER PLATTSBURGH AIR FORCE BASE

PLATTSBURGH, NEW YORK

UNITED STATES DEPARTMENT OF THE AIR FORCE

AIR FORCE REAL PROPERTY AGENCY

AUGUST 2008

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FIGURES

TABLES

APPENDICES

ACRONYMS

ABB	ABB Environmental Services, Inc.
AF	Department of the Air Force
AFB	Air Force Base
AFRPA	Air Force Real Property Agency
ARARs	applicable and/or relevant and appropriate requirements
AST	aboveground storage tank
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
FS	feasibility study
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
DCA	dichloroethane
DCE	dichloroethene
DERP	Defense Environment Restoration Program
FFA	Federal Facilities Agreement
FS	feasibility study
FWAA	Former Waste Accumulation Area
GW	groundwater
HRA	health risk assessment
IC	institutional control
IRP	Installation Restoration Program
kg	kilogram
L	liter

ACRONYMS (Continued)

µg	microgram
MCL	Maximum Contaminant Level
MMS	Munitions Maintenance Squadron
NCP	National Contingency Plan
NPL	National Priorities List
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
O&M	operation and maintenance
ORC®	oxygen-releasing compound
OU	operable unit
PA	preliminary assessment
PAH	polycyclic aromatic hydrocarbon
PARC	Plattsburgh Airbase Redevelopment Corporation
PCB	polychlorinated biphenyl
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RG	Remediation Goal
RI	remedial investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SI	site investigation/inspection
SS-013	Munitions Maintenance Squadron Site
SVOC	semivolatile organic compound
SW	surface water

ACRONYMS (Continued)

TAGM	Technical and Administrative Guidance Memorandum
TBC	To Be Considered
TBD	To Be Determined
TCE	trichloroethene
TCL	Target Compound List
TMV	toxicity, mobility, and volume
TOGS	Technical and Operational Guidance Series
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VC	vinyl chloride
VOC	volatile organic compound
WSA	Weapons Storage Area

DECISION SUMMARY

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Plattsburgh Air Force Base
Munitions Maintenance Squadron (SS-013)
Plattsburgh, Clinton County, New York
EPA ID # NY4571924774

Statement of Basis and Purpose

This Record of Decision (ROD) presents the selected remedial alternative for the Munitions Maintenance Squadron Site (SS-013) at the Plattsburgh Air Force Base (AFB) in Plattsburgh, New York. It has been developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for this site, 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 and is available on-line at https://afrpaar.afrpa.pentagon.af.mil/ar/docsearch.aspx.

The remedy has been selected by the United States Air Force (Air Force) in conjunction with the United States Environmental Protection Agency (USEPA) and with the concurrence of the New York State Department of Environmental Conservation (NYSDEC) pursuant to the Federal Facility Agreement among the parties under Section 120 of CERCLA, dated July 10, 1991. A copy of the NYSDEC concurrence letter is included as Appendix C of this ROD.

Assessment of the Site

The SS-013 site is located immediately north of the Weapons Storage Area, west of the runway, and approximately 500 feet from the base's western boundary. The Munitions Maintenance Squadron (MMS) industrial complex consists of several buildings that were used

from 1954 to 1991 for the maintenance, storage, and handling of munitions-related items. Building 3578 generated wastes in significant quantities. Activities carried out at the MMS complex included warehousing, inspecting, cleaning, and painting of munitions and munitions support equipment. The MMS complex was not connected to the Plattsburgh AFB sanitary sewer system, but instead was served by septic systems with leach fields. Leach fields were located north of Building 3578 (leach field "N"), adjacent to the north side of Building 3569 (leach field "S"), and northeast of Building 3569 (leach field "A"). The MMS complex also had its own heating system that was supplied by fuel oil stored in above ground storage tanks (ASTs) and underground storage tanks (USTs). Several response actions addressing soil contamination have been undertaken at site SS-013 in coordination with the NYSDEC and USEPA. In addition, equipment removals were executed following the closure of Plattsburgh AFB in 1995. These actions included the Fuel-Oil Tank UST-3578-A-2 Removal (1996), Leach Fields N and A Piping Removals (1996), Septic Tank SPT-3578 Removal (1996), Former Waste Accumulation Area Solvent Storage Pad Removal (1997), and Buildings 3578 and 3569 Soil Removal Actions (2000-2001). These actions have mitigated contamination in soils at site SS-013 to levels that do not pose a significant risk to human health and/or the environment. These actions have also removed the potential continued sources of groundwater contamination at the site. Residual groundwater contamination remaining beneath the SS-013 site, present above New York State groundwater standards, is likely attributable to the former waste accumulation area north of Building 3578 and the fuel oil UST located next to Building 3578 (near the southwest corner). Groundwater contamination consists primarily of fuel oil-related compounds and vinyl chloride. This contamination extends a maximum of approximately 200 feet southwest of the southern edge of Building 3578. This ROD selects a remedy to address the remaining groundwater contamination at site SS-013 and also concludes that no further action is necessary to address soil and sediment contamination at the site. The site specific remedial action objectives for the SS-013 site are to reduce contaminants of concern concentrations in the groundwater to the remediation goals (RGs) defined in this section and to address any future potential soil vapor pathways using institutional controls.

The response action selected in this ROD is necessary to protect the public health and welfare from releases of hazardous substances into the environment.

Description of the Remedy

Site SS-013 is one of a number of sites administered under the Plattsburgh AFB Installation Restoration Program (IRP). RODs have been signed for 17 operable units at the base and additional RODs are planned for other IRP sites.

The selected remedy for remediation of the SS-013 site includes: installation of one additional downgradient groundwater monitoring well, installation of approximately 20 ozone sparging wells to inject ozone into the subsurface to treat the contamination using an oxidation-reduction technique, groundwater monitoring, and preventing any unacceptable risk under CERCLA and the NCP that may be posed by indoor air contaminated via vapor intrusion through institutional controls.

Statutory Determinations

The selected remedy for site SS-013 is protective of human health and the environment, complies with federal and state applicable or relevant and appropriate requirements ("ARARs"), is cost effective, and utilizes permanent solutions and resource recovery technologies to the extent practicable. Treatment of contaminated groundwater in-situ by ozone sparging will be used to reduce the toxicity, mobility, or volume of site contaminants, thereby satisfying the statutory preference for treatment as a principle element of the remedy. Until groundwater remediation goals (RGs) are achieved, groundwater contaminants will remain at site SS-013 above levels that allow for unlimited use and unrestricted exposure. Therefore, a statutorily required five-year review, according to Section 121(c) of CERCLA, will be conducted within five years after initiation of the remedial action, and every five years thereafter as long as contamination remains at levels that do not permit unlimited use and unrestricted exposure (land use restrictions remain in place). The purpose of the five-year reviews is to determine whether the remedy remains protective of human health and the environment.

ROD Data Certification Checklist

The following information is included in this ROD. Additional information can be found in the Administrative Record file for this site.

- Chemicals of concern and their respective concentrations (Section 5.0)
- Baseline risk represented by the chemicals of concern (Section 7.0)
- Cleanup levels established for chemicals of concern and the basis for these levels (Table 7)
- How source materials constituting principal threats are addressed (Section 4.0)
- Current and reasonably anticipated future land use assumptions, and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD (Sections 6.0 and 7.0)
- Potential land and groundwater use that will be available at the site as a result of the selected remedy (Section 6.0)
- Estimated annual operation and maintenance (O&M) costs (Section 9.0)
- Key factors that led to selecting the remedy (Sections 10.0, 12.0, and 13.0)

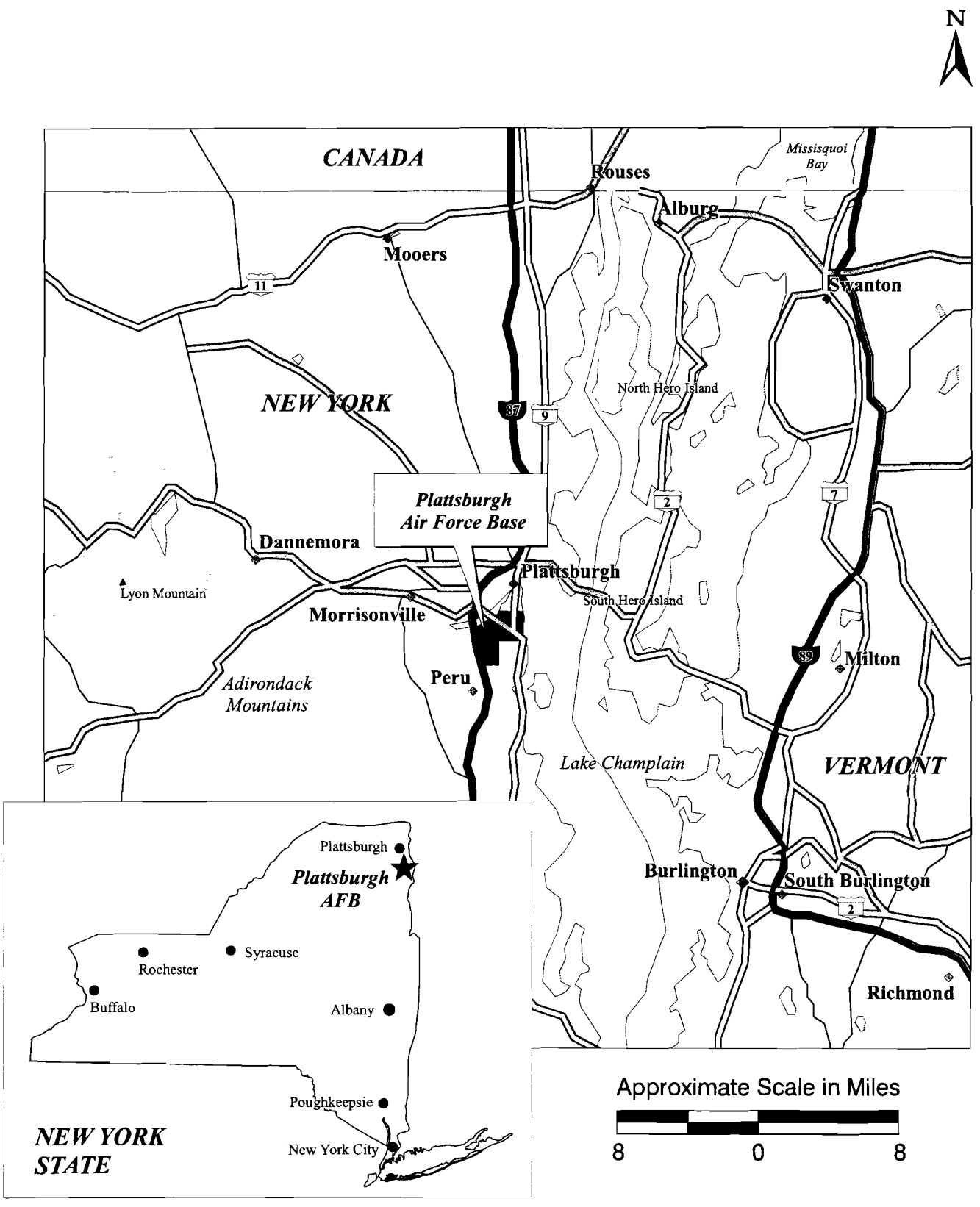
JEFFREY DOMM
Deputy Director
Air Force Real Property Agency

GEORGE PAVLOU
Acting Director, Emergency and Remedial Response Division
United States Environmental Protection Agency, Region 2

1.0 SITE NAME, LOCATION, AND DESCRIPTION

Plattsburgh AFB, located in Clinton County in northeastern New York State, is bordered on the north by the City of Plattsburgh, the south by the Salmon River, on the west by Interstate 87, and on the east by Lake Champlain (Figure 1). The base is approximately 26 miles south of the Canadian border and 167 miles north of Albany. Plattsburgh AFB was closed on September 30, 1995 as part of the (third round of) base closures mandated under the Defense Base Closure and Realignment Act of 1993, and its reuse is being administered by the Plattsburgh Airbase Redevelopment Corporation (PARC). As part of the Air Force's Installation Restoration Program (IRP) and Base Realignment and Closure (BRAC) Program, Plattsburgh AFB has initiated activities to identify, evaluate, and remediate identified hazardous material disposal sites. The IRP at Plattsburgh AFB is being implemented according to a Federal Facilities Agreement (FFA), Docket No.: II-CERCLA-FFA-10201, signed between the Air Force, USEPA, and NYSDEC on July 10, 1991. Plattsburgh AFB was placed on the National Priorities List on November 21, 1989. Cleanup is being funded by the Air Force.

The SS-013 site is located immediately north of the Weapons Storage Area site, west of the runway, and approximately 500 feet from the base's western boundary (Figure 2). The Munitions Maintenance Squadron (MMS) industrial complex consists of several buildings that were used from 1954 to 1991 for the maintenance, storage, and handling of munitions-related items. Building 3578 generated wastes in significant quantities. Activities carried out at the MMS complex included warehousing, inspecting, cleaning, and painting of munitions and munitions support equipment. The MMS complex was not connected to the Plattsburgh AFB sanitary sewer system, but instead was served by septic systems with leach fields. Leach fields were located north of Building 3578 (leach field "N"), adjacent to the north side of Building 3569 (leach field "S"), and northeast of Building 3569 (leach field "A"), as shown on Figure 3. The MMS complex also had its own heating system that was supplied by fuel oil stored in above ground storage tanks (ASTs) and underground storage tanks (USTs). Several response actions addressing soil contamination have been undertaken at site SS-013 in coordination with the NYSDEC and USEPA. In addition, equipment removals were executed following the closure of Plattsburgh AFB in 1995. These actions included the Fuel-Oil Tank UST-3578-A-2 Removal (1996), Leach Fields N and A Piping Removals (1996), Septic Tank SPT-3578 Removal (1996),



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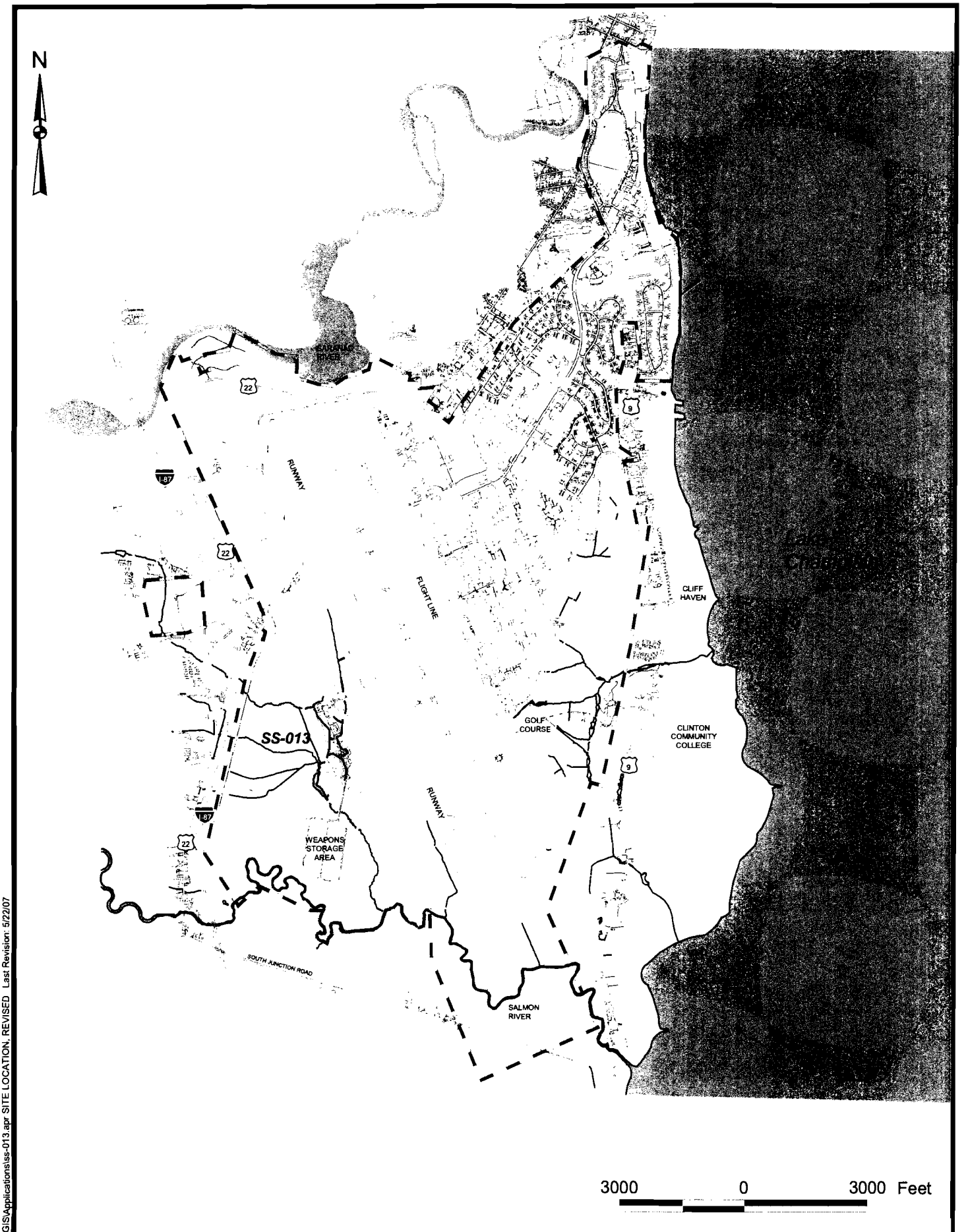
URS

PLATTSBURGH AIR FORCE BASE
VICINITY LOCATION MAP

FIGURE 1



N:\11168476.00000\GIS\Applications\ss-013.apr SITE LOCATION, REVISED Last Revision: 5/22/07

URS	SITE LOCATION	FIGURE 2

N:\11188476.00000\GIS\Applications\sss-013.apr SITE FEATURES, REVISED Last Revision: 5/22/07

URS

SITE FEATURES

FIGURE 3

Former Waste Accumulation Area Solvent Storage Pad Removal (1997), and Buildings 3578 and 3569 Soil Removal Actions (2000-2001). These actions have mitigated contamination in soils at site SS-013 to levels that do not pose a significant risk to human health and/or the environment. These actions have also removed the potential sources for groundwater contamination at the site. Residual groundwater contamination remaining beneath the SS-013 site, present above New York State groundwater standards, is likely attributable to the former waste accumulation area north of Building 3578 and the fuel oil UST located next to Building 3578 (near the southwest corner). Groundwater contamination consists primarily of fuel oil-related compounds and vinyl chloride. This contamination extends a maximum of approximately 200 feet southwest of the southern edge of Building 3578 as shown on Figure 3. This ROD selects a remedy to address the remaining groundwater contamination at site SS-013 and also concludes that no further action is necessary to address soil and sediment contamination at the site.

2.0 HISTORY AND ENFORCEMENT ACTIVITIES

Several investigations and removal actions have been undertaken to evaluate and mitigate contaminated soil and groundwater present at the SS-013 site. The site is situated downgradient of groundwater containment plumes emanating from sites FT-002 and LF-023: however, in the vicinity of SS-013, this contamination is below levels that might cause a risk to human health and the environment and is decreasing. Therefore, investigation and actions at site SS-013 have focused on addressing soil and groundwater contamination attributable to activities at the site; these actions are listed and referenced below and are described in greater detail in Section 5.1.

Timeframe	Activity	Description
1985	Phase I Record Search (Radian 1985)	Review of records and practices at the MMS.
1987	Site Investigation (E.C. Jordan 1989)	Limited soil gas, groundwater, surface water, and sediment sampling at the site.
1991	Drainage Flow Study (ABB 1991)	Base-wide evaluation of surface water quality: included sampling at site SS-013.
1993-1996	Remedial Investigation (URS 1996a)	Extensive sampling of soil, groundwater, surface water, and sediment at site SS-013.
1996	Fuel Oil UST Removal	Removal of fuel oil tank and surrounding soil.
1996	Septic System Removal	Removal of septic system at Building 3578.
1997	Waste Accumulation Area Removal (Parsons 1999)	Removal of concrete pad and contaminated soil west of Building 3578.
2000-2001	Removal Actions at Buildings 3578 and 3569 (Versar 2002)	Removal of additional soil from Building 3578 fuel tank area and PAH contamination near Building 3569.
2002	Supplemental Remedial Investigation (URS 2003)	Consolidation of data and additional groundwater sampling at the site.
2003	Focused Alternatives Analysis (URS 2003c)	Formulation and evaluation of alternatives to address the remaining groundwater contamination at site SS-013.
1998-2003	Supplemental surface water sampling	As part of larger FT-002 investigation, surface water samples were collected at site SS-013.

3.0 COMMUNITY PARTICIPATION

The Air Force has kept the community informed regarding progress at site SS-013 during regular Restoration Advisory Board (RAB) meetings that are open to the public. This board consists of the BRAC Cleanup Team (BCT) members (key representatives from the Air Force, USEPA, and NYSDEC) and representatives from municipalities, community organizations, and associations including community members with environmental/engineering expertise. The RAB, which was chartered in 1995, serves as a forum for the community to become familiar with the restoration activities ongoing at Plattsburgh AFB and to provide input to the BCT.

The RI report, the Proposed Plan (URS 2006), and other site-related documents in the Administrative Record have been made available to the public. The full-length reports have been available at the Information Repository located at the Feinberg Library on the Plattsburgh campus of the State University of New York and also available on-line at https://afrpaar.afrpa.pentagon.af.mil/ar/docsearch.aspx.

The notice of the availability of these documents was published in the Plattsburgh *Press Republican* Newspaper on July 14, 2006. In addition, a 30-day public comment period was held from July 17, 2006 to August 15, 2006 to solicit public input on the site SS-013 Proposed Plan. During this period, the public was invited to review the Administrative Record and comment on the preferred alternative being considered.

In addition, Plattsburgh AFB hosted a public meeting on July 24, 2006 at the Clinton County Government Center, First Floor Conference Room, 137 Margaret Street. The date and time of the meeting was published in the Plattsburgh *Press Republican* Newspaper. The meeting was divided into two segments. In the first segment, data gathered at the site, the preferred alternative, and the decision-making process were discussed. In the second segment, immediately after the informational presentation, Plattsburgh AFB held a formal public meeting to accept comments about the remedial alternative being considered for site SS-013. The meeting provided the opportunity for people to comment officially on the plan. Public comments have been recorded and transcribed, and a copy of the transcript has been added to the Administrative Record and Information Repository. This transcript is included as Appendix A of this ROD.

Public comments on the Proposed Plan, and Air Force responses to those comments, are summarized in the responsiveness summary, which is included as Appendix B.

4.0 SCOPE AND ROLE OF OPERABLE UNIT

Site SS-013 is one of a number of sites administered under the Plattsburgh AFB IRP. RODs have been signed for 17 operable units at the base and additional RODs are planned for other IRP sites. This ROD addresses groundwater, soil, and sediment contamination that has been detected at site SS-013. Surface water is not considered a media of concern for the SS-013 OU because the contaminants detected in surface water are attributable to groundwater discharging from the FT-002 site groundwater plume and are being addressed as part of the FT-002/Industrial Area Groundwater Operable Unit (OU).

The principal threats for Site SS-013 include a potential threat to future groundwater users at the site should the unconfined aquifer be utilized as a source for potable water use in the future and a potential threat posed to occupants of existing or new buildings located within the area of groundwater contamination via volatilization of chemicals from contaminated groundwater entering the indoor air of overlying buildings (soil vapor intrusion). The remedy addresses the principal threats by restoring the aquifer to drinking water quality over time and identifying institutional controls to prevent potential future threats from soil vapor intrusion. It is intended that the remedy will be the final action for site SS-013.

Based on the human health and ecological risk assessment, no significant threat to human health and the environment is posed by contaminants remaining in soil and sediment at site SS-013. Therefore, no further action is necessary to address these media.

5.0 SITE CHARACTERISTICS

Past spills at site SS-013 have contaminated groundwater at the site to levels above New York State groundwater standards. Various actions undertaken at the site have removed the sources for continued groundwater contamination; only dissolved contamination remains. No significant threat to human health is posed by contaminants remaining in soil or sediment at the site. Past investigations and removal actions at site SS-013 (Section 5.1), the surface water hydrology (Section 5.2.1), site drainage (Section 5.2.2), the hydrogeologic setting (Section 5.2.3), and the nature and extent of contamination (Section 5.3) are summarized below.

5.1 Previous Investigations and Removal Actions

5.1.1 SS-013 Phase I Records Search

In 1985, a Phase I record search was completed for SS-013 (Radian 1985). Based upon the results of the Phase I record search, a preliminary investigation was recommended. The subsequent preliminary investigation included sampling surface water and the installation and sampling of five monitoring wells.

5.1.2 SS-013 Site Investigation

In 1987, a series of site investigations (SIs) was performed at various Plattsburgh AFB sites, including SS-013 (E.C. Jordan 1989). The SI for SS-013 included 1) a limited soil gas survey around leachfield "A", 2) installation and sampling of five monitoring wells, and 3) collection of one surface water and one sediment sample in tributary C-21-1 located downstream of the SS-013 site.

Based on the results of the SI, which indicated that organic and inorganic compounds were present in the sediment, surface, and groundwater, an additional investigation was recommended to further characterize the drainageways and groundwater at SS-013.

5.1.3 SS-013 Drainage Flow Study

A base-wide drainage flow study was completed in September 1991 (ABB 1991). The purpose of the study was to establish baseline water quality data and to characterize the surface water network at Plattsburgh AFB. As part of this study, seven locations were monitored for one year in the vicinity of SS-013.

5.1.4 SS-013 Remedial Investigation

As a follow-up to the SI, a multi-phased SS-013 groundwater RI (URS 1996a) was undertaken to address the nature and extent of contamination in groundwater attributable to SS-013. The RI concluded that site contamination was potentially attributed to five potential onsite source areas: (1) leach field N; (2) leach field S; (3) leach field A; (4) the former waste accumulation area; and (5) the UST that was located southwest of Building 3578. Contamination in the leach fields is likely a result of small spills that may have reached the leach fields through floor drains and the sewer network. The waste accumulation area was used for drum storage and staging. A solvent storage pad, located about 30 feet north of the waste accumulation area, was used to stage drums of solvents, primarily toluene. Spills appear to have occurred in these areas. The UST and associated piping appear to have leaked an unknown quantity of #2 fuel oil. Of these sources, the solvent storage pad near the waste accumulation area and the fuel oil UST were believed to be continuous sources for groundwater contamination.

In general, contamination likely migrated from the five potential source areas into groundwater. Contamination in groundwater may then have discharged into surface drainage near the site. Surface drainageways were also impacted by upgradient sources. Results of the groundwater sampling showed that the fire training area (site FT-002) plume was migrating and beginning to encroach on the MMS area, since 1,2-dichloroethene (1,2-DCE) and trichloroethene (TCE) were detected at one of the SS-013 upgradient wells (MW-13-001). However, this contamination had not impacted wells in the MMS industrial complex area and has diminished over time (URS 2003a).

As part of the study, the health risk posed to potential human receptors was assessed. The assessment concluded that using groundwater contaminated by the SS-013 site for potable use could pose a significant threat to human health. The aquifer contaminated by the SS-013 plume currently is not used as a potable supply source – a public water supply is available.

5.1.5 Equipment Removals

In 1996, the underground fuel-oil storage tank (UST) located southwest of Building 3578 and the majority of the septic system equipment at SS-013 were removed (Figure 3). The piping, septic tank, sand filter, and leach field S north of Building 3569 were not removed.

5.1.6 Fuel Oil UST Removal

In March 1996, OHM Inc. removed the fuel oil UST located southwest of Building 3578 as part of the basewide storage tank removal project. Soil around the UST was excavated to a depth of approximately 10 feet below grade. Based on preliminary soil and water samples obtained from the excavation, further soil was removed in October 1996 and the remaining fuel supply piping was removed. Results of a second round of soil and water sampling resulted in the excavation of additional soil. Four composite confirmatory samples were collected from the excavation side walls in December 1996 and then the excavation was backfilled with clean fill. The four samples were analyzed for volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). One VOC and several PAHs were detected at concentrations greater than New York State TCLP Alternative Guidance Values (NYSDEC 1992), that are used as an indication of whether or not contaminants in soil could have an impact on groundwater quality. The petroleum-impacted soil was transported to an on-site treatment cell.

5.1.7 Septic System Removal

In September 1996, the septic system at Building 3578 was removed and soil at the septic tank location was excavated to a depth of 5 feet and temporarily stockpiled adjacent to the excavation on plastic sheeting. Groundwater was encountered at a depth of 4 feet during removal activities. No signs of contamination (staining or odors) were noted. A composite soil sample

was collected from the sidewalls of the excavation and a water sample was collected from the bottom of the excavation. Both samples were analyzed for VOCs and PAHs. There were no detections in either sample. The excavation was backfilled to grade with the originally excavated soil.

5.1.8 1997 Removal Action at Former Waste Accumulation Area

In November 1997, the 6-foot by 13.5-foot concrete pad located east of Building 3578 was removed (Parsons 1999). Excavated soil beneath the pad was loaded directly into dump trucks for transportation to the on-site treatment facility. Confirmatory soil samples collected from the bottom and sidewalls of the excavation indicated that VOCs and semivolatile organic compounds (SVOCs) were detected at low concentrations in the soil samples, but the detected concentrations were well below their respective NYSDEC soil cleanup objective guidance concentrations (NYSDEC 1994). NYSDEC and USEPA concurred with the recommendation that no further soil removal was warranted at the excavation location. In May 1998, the excavation was backfilled with clean fill, regraded, and seeded.

5.1.9 Fire Training Area /Industrial Area Groundwater Operable Unit Remedial Investigation/Feasibility Study

From 1995 through 1999, a large volume of groundwater and surface water data was compiled as part of the Fire Training Area (FT-002)/Industrial Area Groundwater RI/FS (URS 2001). These data supported the conclusions of the SS-013 RI, indicating that the leading edge of the chlorinated hydrocarbon contaminated groundwater plume from site FT-002 was impacting the most upgradient SS-013 monitoring wells (MW-13-001 and MW-13-002) and was likely to impact the MMS industrial complex in the future (this upgradient contamination has since diminished over time; URS 2003a). Surface water sampling results also indicated that contaminated groundwater from the FT-002 plume discharges to surface water in the drainage basin between the runway and flightline north of SS-013. The storm drainage system carries this water to tributary C-21-1 that flows through site SS-013 and eventually to the Salmon River. In the fall of 2003, a collection and treatment system (shown on Figures 2 and 3) was installed to address groundwater contamination from FT-002. The system currently treats about 300 gallons

per minute of groundwater collected from the drainage basin between the runway and flightline north of SS-013 and about 80 gallons per minute of groundwater collected from recovery wells located downgradient from the FT-002 source. Consequently, the upstream water quality of tributary C-21-1 is expected to improve.

5.1.10 2000/2001 Removal Action at Buildings 3578 and 3569

An additional soil removal action was implemented by the Air Force to address soil contamination remaining in the vicinity of the former Building 3578 UST and to address a small area of PAH contaminated soils near Building 3569. The soil removals began in August 2000 and continued through May 2001. Confirmatory soil samples were collected at both removal locations and sample data was submitted to the NYSDEC and USEPA for review. Following regulatory agency approvals, the Air Force (November 2001) removed and disposed of the contaminated soil. The excavations were backfilled with soil from the stockpiles that showed no exceedances of NYSDEC recommended soil cleanup objectives (NYSDEC 1994) and also imported clean fill material from an offbase source. A Final Closure Report was submitted in February 2003 (Versar 2003).

5.1.11 Supplemental Remedial Investigation

The purpose of the Supplemental RI Report (URS 2003) was to present, summarize, and provide interpretations and conclusions regarding data from environmental activities at site SS-013, particularly those occurring after the initial RI (URS 2002). In addition, three new groundwater monitoring wells were installed. Groundwater samples were also collected from all wells at the SS-013 site and the results were used to update the human health risk assessment to provide an evaluation of a potential future residential reuse exposure scenario. A summary of site risk is provided in Section 7.

5.1.12 Supplemental Surface Water Sampling

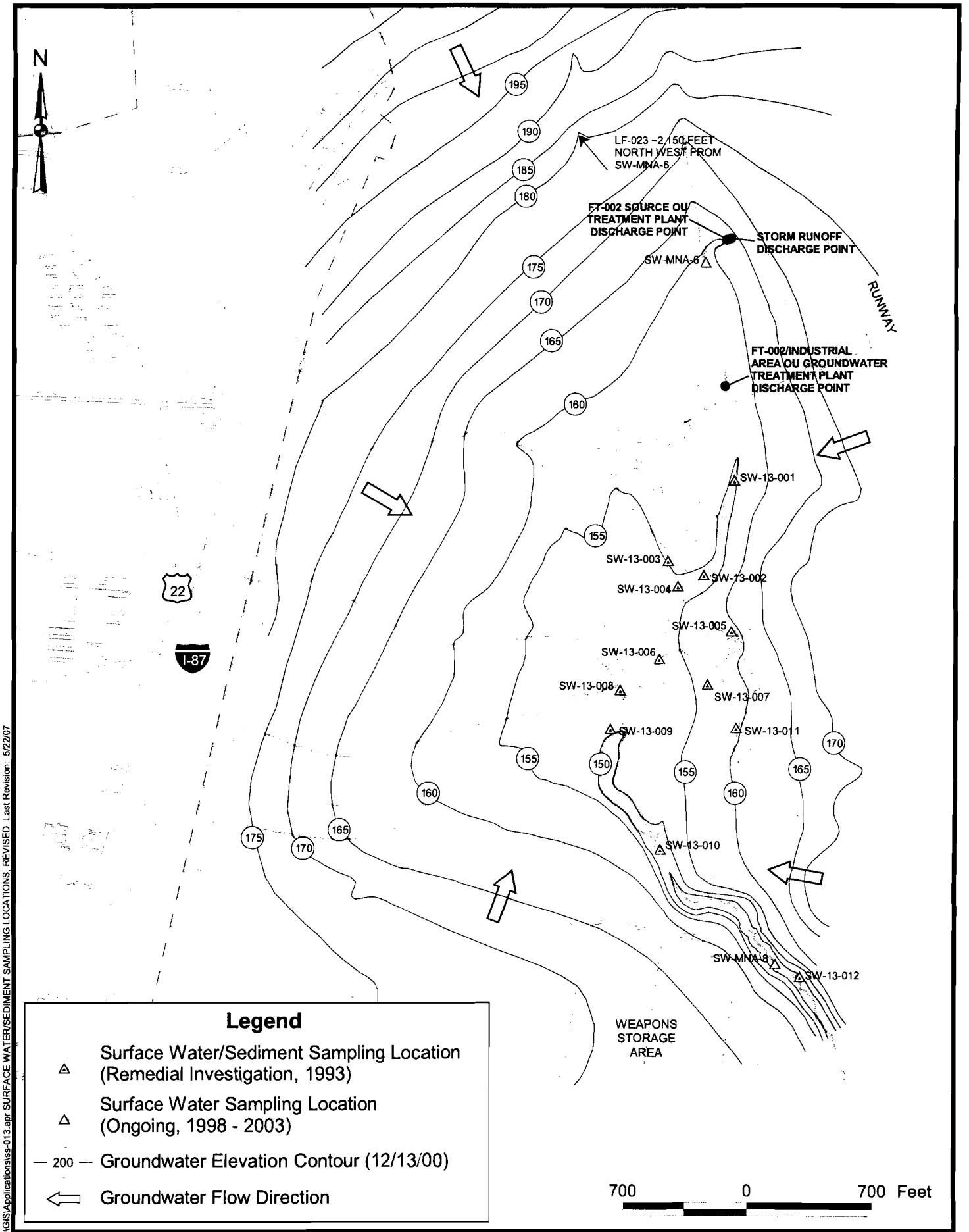
Since February 1998, the Air Force has conducted periodic surface water sampling at key locations on the base (including Tributary C-21-1), in support of the FT-002 Industrial Area

Groundwater Operable Unit. Two locations in the C-21-1 drainage system have each been sampled 23 times and the samples analyzed for VOCs. The purpose of the sampling has been to assure that surface water and groundwater contaminants are not migrating off base. The latest data were collected in June (URS 2003b). Several compounds have been detected; however, only trichloroethene has been detected above its NYSDEC surface water quality standard and only at the upstream location. The two sampling locations are shown on Figure 4. The volatiles detected in the stream are attributable to discharge from groundwater contaminated by the FT-002 contaminant plume.

5.1.13 Radiological Surveys

In June 1995, the Air Force completed a radiological decommissioning survey at the Weapons Storage Area and maintenance areas (AF 1995). The survey included alpha/beta/gamma and gamma scanning with detection equipment and swipe sampling. The survey concluded that the facility was releasable for public use.

In 2003-2004, a thorough preliminary assessment/site inspection (PA/SI) of the MMS and weapons storage area was undertaken by the Air Force in response to reports of potential disposal of low-level radiological waste at former Strategic Air Command bases across the United States. The investigation included historical research, interviews, and an extensive electromagnetic geophysical survey. In addition, a gamma radiological survey was performed. No radiological waste was discovered. The PA/SI Report (Cabrera 2004) recommended no further action for surface soils and building interiors, and no further subsurface investigation of burial sites. The site was deemed acceptable for unrestricted reuse (from a radiological perspective), confirming the recommendation of the 1995 radiological decommissioning survey. In April 2004, the NYSDEC Bureau of Hazardous Waste and Radiation Management agreed with the recommendations of the PA/SI (NYSDEC 2004), and the NYSDEC and USEPA accepted the document without comment. A no further action decision document (FPM Group 2004) was signed by the Air Force on September 22, 2004.



N:\11168476.00000\GIS\Applications\ss-013.apr SURFACE WATER/SEDIMENT SAMPLING LOCATIONS, REVISED Last Revision: 5/22/07

URS	SURFACE WATER/SEDIMENT SAMPLING LOCATIONS	FIGURE 4

5.1.14 Focused Alternatives Analysis

In 2003, a focused alternatives analysis was developed that evaluated four feasible alternatives for remediating SS-013 groundwater (URS 2003c). The four alternatives, agreed upon by the Air Force, NYSDEC, and USEPA, were:

- Institutional controls with intrinsic bioremediation,
- Enhanced intrinsic bioremediation using an oxygen-releasing compound,
- Groundwater extraction, treatment, and re-injection, and
- Ozone sparging

Conceptual plans and cost estimates for construction and implementation of these four alternatives were developed, along with an estimate of the time required for each alternative to reduce contaminants in groundwater to acceptable levels. This study was the basis for the remedial alternatives discussed in Section 9.

5.2 Surface Water and Groundwater

5.2.1 Surface Water Hydrology

Plattsburgh AFB lies within the Lake Champlain drainage basin. The dominant surface water features in the vicinity of Plattsburgh AFB are the Saranac River to the north, the Salmon River to the south, and Lake Champlain to the east. The Saranac and Salmon Rivers, which discharge into Lake Champlain, originate west of Plattsburgh AFB in the Adirondack Mountains. A network of drainage ways carries surface water runoff from the base into sewers and streams that lead to off base areas.

5.2.2 Site Drainage

SS-013 is located within the drainage basin of a tributary of the Salmon River (Figure 2). This drainage area carries water from the north/northwest to the south and discharges to the Salmon River. A significant part of the upper reaches of this drainage area lies off-base to the west of Route I-87. Drainage from the runway east of SS-013 also flows through this drainage area. The sources of drainage within this system are precipitation, discharge from the two FT-002 water treatment plants, and groundwater discharge.

SS-013 is situated in a broad topographic basin, where the unconfined aquifer thins. Groundwater discharges directly to the ground surface or into drainage channels. A collection trench carries groundwater from another topographic basin, situated between the runway and flightline ramp, to the recently installed FT-002/Industrial Area Ground-water Operable Unit treatment plant, which discharges into a tributary that flows through site SS-013. This stream also receives treated groundwater from the FT-002 Source OU water treatment plant. These discharge points are shown on Figure 4. The smaller drainage channels and seeps coalesce into a larger single stream. The major streams of this basin are classified by NYSDEC as tributary C-21-1 to the Salmon River.

The topographic basin between the runway and flightline ramp is probably the feature that historically had the greatest impact on water quality in the SS-013 drainage. This basin is a large depression in the sand unit with six storm sewer drop inlets at its base. The original intent of this basin was probably to collect surface water flow and direct it southward to tributary C-21-1. However, portions of the basin are up to 27 feet lower than the flanking runway and flightline ramp, which induces groundwater flow into the basin.

The installation of the runway/flightline groundwater collection trench has significantly lowered the water table beneath the runway/flightline topographic basin. The storm drainage system will still convey surface runoff to the tributary C-21-1.

5.2.3 Hydrogeologic Setting

Groundwater in the vicinity of Plattsburgh AFB occurs in both overburden deposits and bedrock. Hydrologically, the stratigraphic sequence can be divided into the following units from top to bottom: the unsaturated zone, the unconfined sand aquifer, the clay confining layer, the confined till water-bearing zone, and the confined bedrock aquifer. Groundwater movement in these units is controlled by aquifer characteristics, infiltration, and run-off. Borings and monitoring wells were advanced within each of these units to thoroughly characterize them during the FT-002 RI/FS (URS 2001).

Within the boundaries of site SS-013, the naturally occurring surficial unit encountered is gray silty sand with occasional interstratified layers of fine sand, silts, and clays. This stratum probably represents the basal portions of the fine sand unit seen basewide. Within the SS-013 industrial complex, several feet of regraded material or sandy fill often cover the silty sand unit. The silty sand unit thickness was fairly consistent in site borings and ranged from 7 to 15 feet, overlying the clay-confining unit.

Groundwater around the SS-013 site flows radially from all directions (Figure 4) into the WSA drainage basin and converges along the main stream that meanders through the site (tributary C-21-1 of the Salmon River). The depth to groundwater ranges from up to 10 feet below the surface to the east toward the runway to near the surface in the immediate vicinity of the drainages of tributary C-21-1. Because of irregular surface topography and smaller drainage features (i.e., ditches and small streams), groundwater flow direction can vary on a local scale. Groundwater at SS-013 discharges to surface water within the basin and is eventually carried southward to the Salmon River by tributary C-21-1.

5.3 Nature and Extent of Contamination

5.3.1 Groundwater Contamination

The primary contaminants of concern (COCs) identified in the Supplemental RI Report (URS 2003) are vinyl chloride and naphthalene. These compounds were identified as COCs

based on concentrations detected at monitoring well MW-13-008 and on their potential to impact human health (refer to section 7.1). In the latest round of sampling at MW-13-008 in 2003, naphthalene was detected at a concentration of 2,842 µg/L and vinyl chloride was detected at a concentration of 12 µg/L. The New York State water quality guidance value for naphthalene is 10µg\L and the standard for vinyl chloride is 2 µg\L (See Table 1).

The most recent comprehensive round of groundwater sampling was accomplished in the fall of 2000 as part of the Supplemental RI (URS 2003). Sixteen chemicals were present in groundwater at concentrations above water quality standards/guidance values among the wells sampled. Ten of the contraventions (vinyl chloride, methylene chloride, toluene, ethylbenzene, m&p xylenes, 2,4-dimethylphenol, naphthalene, acenaphthene, dibenzofuran, and carbazole) occurred at MW-13-008.

Iron, manganese, and sodium were also detected in groundwater at concentrations above water quality standards in several of the wells at site SS-013. However, all three of these metals were detected in groundwater at concentrations below base background concentrations (URS 1996b). Thallium was detected in groundwater at one location (MW-13-013); the detected concentration of 4 µg/L in the unfiltered (total) groundwater sample exceeded the 0.5 µg/L guidance value concentration for unaltered groundwater samples from this site. However, it is noted that thallium was not detected in the filtered (dissolved) groundwater sample at MW-13-013.

The two remaining chemicals that were detected in groundwater above water quality standards (trichloroethene and 1,2-dichoroethane) appear to be from upgradient sources. Trichloroethene (TCE) was detected in groundwater at MW-13-02 at a concentration of 9 µg/L. This contamination appears to have migrated from the flightline area (which lies to the northeast). However, subsequent sampling determined that this contamination has been reduced to below its State water quality standard (5 µg/L) at this upgradient location (URS 2003a). 1,2-Dichloroethane (1,2-DCA) was detected in groundwater at MW-013-009 at a concentration of 1.2 µg/L, slightly above its water quality standard concentration of 0.6 µg/L. This compound was not detected previously at this location. MW-013-009 is located downgradient from landfill LF-023, which lies about 1,500 feet to the north. 1,2-DCA and related chemicals (chloroethane – a breakdown

product of DCA) have been detected in groundwater at LF-023 in the past, albeit very sporadically.

Analytes detected in more recent (since 2000) SS-013 groundwater samples at concentrations above water quality standards/guidance values are listed in Table 1. Exceedances have primarily occurred at MW-13-008. Groundwater at the nearest upgradient and downgradient wells (MW-13-007 and MW-13-012, respectively) is in compliance with the water quality values for all organic compounds. The estimated extent of the contaminant plume is shown on Figure 3. Tributaries of the Weapons Storage Area stream (C-21-1) are believed to act as a hydraulic barrier and limit the downgradient extent of the plume. The upgradient limit is conservatively assumed to be located between MW-13-007 and MW-13-008.

TABLE 1

SUMMARY OF ANALYTES DETECTED IN SS-013 GROUNDWATER SAMPLES SINCE 2000 AT CONCENTRATIONS ABOVE WATER QUALITY CRITERIA

PARAMETER	CRITERION	SOURCE	NO. OF SAMPLES	NO. OF DETECTIONS	NO. OF EXCEEDANCES	MAXIMUM DETECTED VALUE	LOCATION OF MAXIMUM VALUE
1,2,4-Trimethylbenzene	5	A	3	1	1	15.85	MW-13-008
1,2-Dichloroethane	0.6	A	26	1	1	1.23	MW-13-009
1,3,5-Trimethylbenzene	5	A	3	1	1	16.10	MW-13-008
Benzene	1	A	26	1	1	3.62	MW-13-008
Ethylbenzene	5	A	26	3	3	29.75	MW-13-008
Methylene Chloride	5	A	26	3	1	8.19	MW-13-008
Toluene	5	A	26	3	1	5.63	MW-13-008
Trichloroethene	5	A	26	4	2	9.39	MW-13-002
Vinyl Chloride	2	A	26	3	3	21.75	MW-13-008
Xylenes (total)	5	A	26	2	2	16.10	MW-13-008
1,1'-Biphenyl	5	A	6	1	1	20.10	MW-13-008
2,4-Dimethylphenol	1	A	18	2	2	209.7	MW-13-008
Acenaphthene	20	C	20	2	2	172.5	MW-13-008
Carbazole	50	B	18	2	2	75.78	MW-13-008
Dibenzofuran	50	B	20	2	1	63.73	MW-13-008
Naphthalene	10	C	23	3	3	4,529	MW-13-008
Antimony	3	A	10	3	3	11.20	MW-13-015
Iron	300	A	10	10	10	32,700	MW-13-013
Manganese	300	A	10	10	4	714.0	MW-13-014
Sodium	20000	A	10	10	3	31,100	MW-13-007
Thallium	0.5	C	10	4	4	11.50	MW-13-014

Notes:

Chemical concentrations of organic chemicals are given in µg/Kg; inorganic chemicals are given in mg/Kg

Sources:

A: ARAR - NYSDEC, 1999. *6NYCRR Part 703.5, Water Quality Standards for Taste-, Color-, and Odor-Producing, Toxic, and Other Deleterious Substances.*

B: ARAR - NYSDOH, 1992. *10NYCRR Subpart 5-1 Public Water Systems, Maximum Contaminant Levels.*

C: TBC - NYSDEC, 1998a. *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Technical and Operational Guidance Series (TOGS)1.1.1.*

5.3.2 Soil Contamination

Soil contamination identified in the RI (URS 1996a) was addressed by several removal actions at the site. Five areas of the site were identified in the RI as potential soil sources for groundwater contamination. Actions undertaken to address these sources included: removal of the UST and contaminated soil south of Building 3578 in 1996 and removal of additional soil contamination associated with the UST in 2000 (Versar 2002); removal of the solvent storage pad near the waste accumulation area; and removal of soil above the septic system that leads from Building 3569 to leach field S (Versar 2002). Confirmatory samples were collected from these excavations. Table 2 shows the maximum soil concentrations compared to TBCs (NYSDEC 1994 and URS 1996) for chemicals detected in groundwater above New York State water quality standards/guidance values in the fall of 2000 comprehensive round of ground water sampling. Maximum concentrations are shown for groups of soil samples based on the five potential source areas identified in the RI. Only manganese near the solvent storage pad was detected at a concentration above TBCs. Soil samples used in the analysis include locations that were not excavated and samples collected to confirm the extent of excavation (soil sample locations are shown on Figure 5). Therefore, no soil source for groundwater contamination remains at site SS-013.

TABLE 2

MAXIMUM SOIL CONCENTRATIONS COMPARED TO SOIL TBCs FOR CHEMICALS DETECTED IN GROUNDWATER ABOVE WATER QUALITY CRITERIA

Chemical	TBC	Source	Leach Field "N"	Leach Field "A"	Leach Field "S"	Waste AA/ Solvent Pad	3875 UST
Vinyl Chloride	200	A	Nd	Nd	Nd	2	Nd
Methylene Chloride	100	A	Nd	Nd	53	45	Nd
1,2-Dichloroethane	100	A	Nd	Nd	Nd	Nd	Nd
Trichloroethene	700	A	Nd	Nd	Nd	39	Nd
Toluene	1,500	A	4	Nd	110	48	Nd
Ethylbenzene	5,500	A	6	Nd	Nd	Nd	34.8
Xylenes	1,200	A	47	2	25	12	94.3
2,4-Dimethylphenol	Ns	A	Nd	Nd	Nd	Nd	Nd
Naphthalene	13,000	A	Nd	Nd	120	100	969
Acenaphthene	50,000	A	Nd	Nd	340	1,100	Nd
Dibenzofuran	6,200	A	Nd	Nd	200	540	Nd
Carbazole	Ns	A	Nd	Nd	500	1,100	Nd
Iron	36,700	B	18,700	7,420	5,760	10,900	Na
Manganese	474	B	441	84.6	92.4	679	Na
Sodium	520	B	155	36.4	33.5	82.1	Na
Thallium	Nd	B	Nd	Nd	Nd	Nd	Na

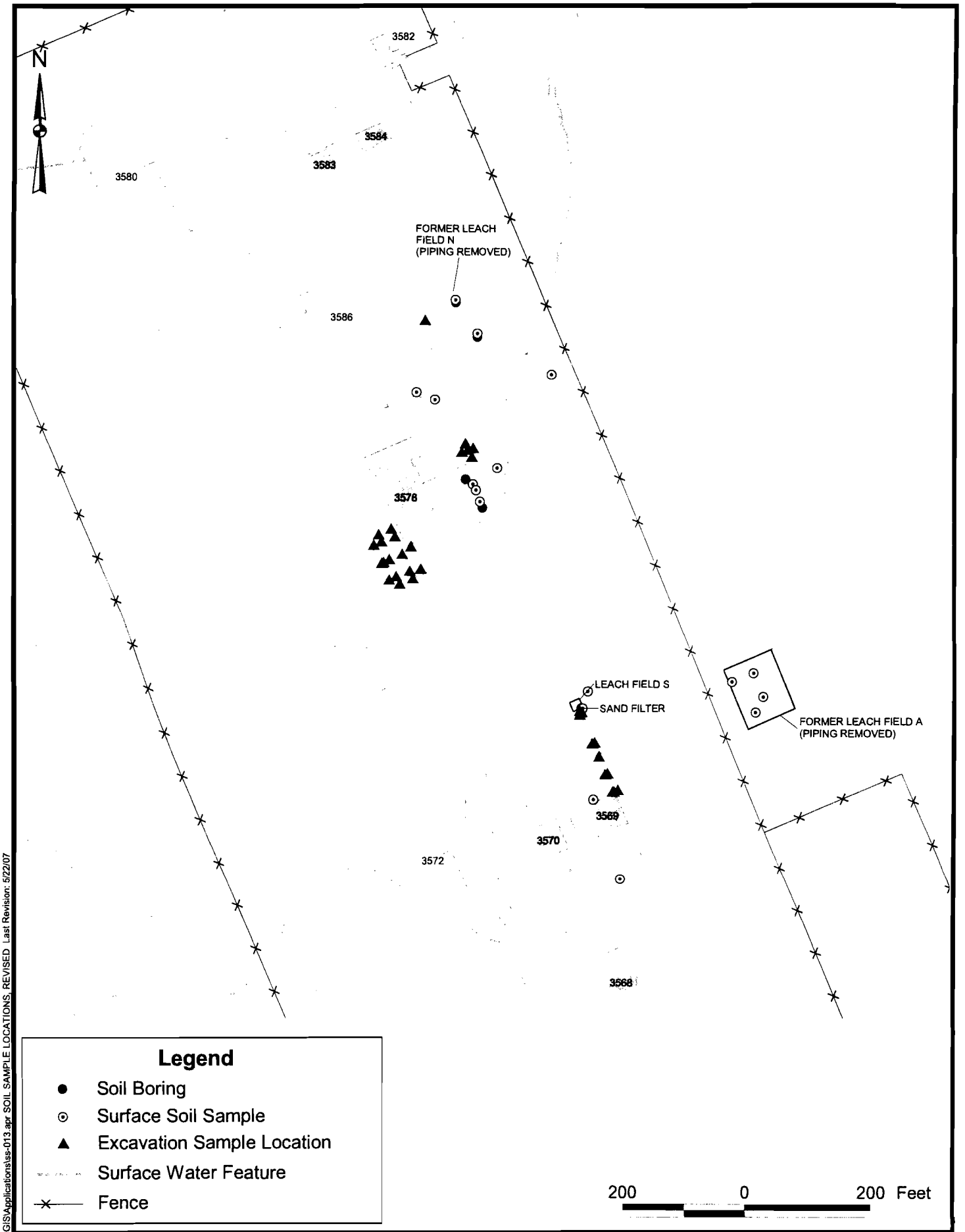
Notes:

Chemical concentrations of organic chemicals are given in µg/Kg; inorganic chemicals are given in mg/Kg
Ns = no standard; Nd = non detect; Na = not analyzed
= Concentration exceeds TBC

Sources:

A. For organic compounds, TBCs are the Recommended Soil Cleanup Objectives from NYSDEC, 1994.

B. For metals, as allowed by NYSDEC 1994, TBCs are site background values from URS, 1996.



N:\11168476.00000\GIS\Applications\ss-013.apr SOIL SAMPLE LOCATIONS, REVISED Last Revision: 5/22/07

URS	SOIL SAMPLE LOCATIONS	FIGURE 5

5.3.3 Sediment Contamination

Twelve sediment samples were collected at site SS-013 from the Tributary C-21-1 drainage system in October 1993 (URS 1996a). The 12 sample locations are shown on Figure 4. Samples were analyzed for a wide-ranging suite of contaminants. Of the twelve samples, four contained VOCs, seventeen contained SVOCs, three contained pesticides, and one contained polychlorinated biphenyl (PCB), and eighteen metals were detected among the samples. The concentrations of these chemicals were generally very low, and, as shown in Table 3, only 12 were detected at concentrations that exceeded sediment screening criteria that were developed using NYSDEC methodology (NYSDEC, 1998b). A screening level ecological risk assessment, done as part of the initial RI (URS 1996a), concluded that there did not appear to be a significant risk to ecological receptors from site-related sediment contaminants (see Section 7.2).

5.3.4 Surface Water Contamination

In 1993, twelve surface water samples were collected as part of the RI (URS 1996a) from locations corresponding to the sediment samples (Figure 4). Samples were analyzed for VOCs and SVOCs. No chemicals were detected above New York State Class C surface water quality standards.

Since February 1998, the Air Force has conducted periodic surface water sampling at key locations on the base (including Tributary C-21-1), in support of the FT-002 Industrial Area Groundwater Operable Unit. Two locations (Figure 4) in the C-21-1 drainage system have each been sampled 23 times and the samples analyzed for VOCs. Trichloroethene has been detected at a maximum concentration (106 μg/L) above its state water quality standard (40 μg/L) at the location (SW-MNA-6) upstream from site SS-013 (URS 2003b). The VOCs detected in the stream are attributable to discharge from groundwater contaminated by the FT-002 contaminant plume, and as such will be addressed as part of the FT-002/Industrial Area Groundwater Operable Unit (URS 2003a).

TABLE 3

CHEMICALS DETECTED ABOVE

SEDIMENT SCREENING LEVELS (TBCs)

Chemical	Frequency Above State Screening Levels	Maximum Concentration
Benzo(a)anthracene	2 / 12	66 µg/Kg
Chrysene	3 / 12	75 µg/Kg
Benzo(b)fluoranthene	1 / 12	72 µg/Kg
Benzo(k)fluoranthene	1 / 12	50 µg/Kg
Benzo(a)pyrene	2 / 12	56 µg/Kg
4-4'DDE	2 / 4	2.3 µg/Kg
4-4'DDD	1 / 4	0.85 µg/Kg
Aroclor-1248	1 / 4	53 µg/Kg
Antimony	1 / 4	4.6 mg/Kg
Cadmium	1 / 4	0.75 mg/kg
Iron	1 / 4	41,100 mg/kg
Manganese	1 / 4	2,570 mg/kg

6.0 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USE

The Plattsburgh Airbase Redevelopment Corporation (PARC) is responsible for maintaining base property, marketing and controlling base reuse, leasing and managing property, and developing base facilities, as necessary, to promote advantageous reuse. The planned future land-use designations for SS-013 includes aviation support, industrial, and public/recreational. The runway/flightline area, located about 1,000 feet east of Site SS-013 (Figure 2), will become part of the relocated Clinton County Airport, and thus SS-013 will be subject to Federal Aviation Administration restrictions. There will be deed restrictions limiting use to industrial/commercial use excluding schools, child care, and day care facilities and prohibiting occupation of the existing building (Building 3578) and any construction of buildings intended to be occupied within the Area Subject to Institutional Controls, as identified in Figure 6.

Currently, the overall site is not used and the buildings of the former MMS complex are unoccupied. Groundwater in the affected area of the site is not being utilized as a resource. New York State considers all groundwater (Class GA) in the state as having the potential for use as a future potable resource.

7.0 SUMMARY OF SITE RISKS

A human health risk assessment (HRA) was presented in the RI report that evaluated potential human exposure to soil and groundwater contamination under trespassing, construction, and industrial development scenarios (URS 1996a). The HRA was updated in the Supplemental RI in 2000 (URS 2000). The updated HRA evaluated the potential human health risks associated with exposure to contaminated soil and groundwater under a future residential use development scenario. Although the expected use of the site is industrial, risk was evaluated under a residential scenario to ascertain the need for institutional controls to restrict land development. The updated HRA asserted that the potential exposure pathway of greatest concern is the ingestion of contaminated groundwater. For this pathway, naphthalene and vinyl chloride are the primary contaminants of concern (COCs). The potential for vapor intrusion was also examined, and naphthalene is the primary COC.

Ecological risks also were assessed as part of the RI (URS 1996a) by a screening level ecological risk assessment (ERA). The ERA concluded that site-related contaminants in soil, sediment, and surface water did not appear to represent a significant risk to ecological receptors.

Based on the human health and ecological risk assessments, no significant threat to human health and the environment is posed by contaminants remaining in soil and sediment at the site. Therefore, no further action is necessary to address these media.

7.1 Human Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: Step 1 – *Hazard Identification* – identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration. Step 2 – *Exposure Assessment* – estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well water) by which humans are potentially exposed. Step 3 – *Toxicity Assessment* – determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of

adverse effects (response). Step 4 – *Risk Characterization* – summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

The HRA for the SS-013 site evaluated potential human exposure to contaminants in a residential reuse scenario. Exposure pathways assessed included ingestion of contaminated soil, dermal contact with and adsorption of contaminants from soil, inhalation of contaminants volatilizing from soil migrating to indoor air, ingestion of contaminated groundwater, dermal contact with and adsorption of contaminated groundwater, and inhalation of contaminants volatilizing from groundwater and indoor air. Analytical data from the following samples were used in the HRA: the latest round of groundwater samples, soil samples collected from in and around removal action excavations, and historical soil samples from locations that were not subsequently excavated during removal actions. Risks were quantified and compared to USEPA evaluation criteria. Under USEPA regulations, for known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 1×10^{-4} and 1×10^{-6} (USEPA 1990). A potential non-cancer risk is indicated if the hazard index exceeds 1 (USEPA 1991). The HRA results for potential human cancer risks and non-cancer risks are given in Tables 4 and 5, respectively.

The overall excess cancer risk posed by chemicals detected in soil via the three soil exposure pathways is 1×10^{-4}. This risk falls at the upper end of the range of risk (10^{-4} to 10^{-6} excess cancer risk) that is considered acceptable under current USEPA regulations. The overall noncancer hazard index for the soil pathways is lower than the USEPA specified hazard index of 1. Based on these results, site-related contaminants in soil do not represent a significant threat to human receptors.

The overall cancer risk posed by chemicals detected in groundwater is 5×10^{-4} and the overall hazard index for the groundwater pathway is 50. These risks fall above USEPA's cancer and noncancer target risk thresholds. The ingestion and inhalation exposure pathways primarily contribute to the risk. The chemicals primarily responsible for the excess cancer risk posed by chemicals detected in groundwater include arsenic, vinyl chloride, and naphthalene. The potential indoor air risk is attributable to naphthalene. Detections of arsenic in groundwater were widespread; however, arsenic was not detected in groundwater at concentrations above the ARAR (10 μg/L) at any location.

It should be noted that all the above exposure pathways are hypothetical. Groundwater is not currently used as a potable supply source in the impacted area, and the impacted area (currently unoccupied) is not used for residential purposes and is not expected to be used for residential purposes in the future under the reuse and redevelopment plan for the base (Tetra Tech 1995). While the Air Force does not believe there are unacceptable risks from potential soil vapor intrusion pathways (based on the human risk assessment showing an acceptable risk range through modeling), the contingent and unknown nature of future actions, plus some uncertainties surrounding analysis of that pathway, have led to a determination to address potential future unacceptable risks as outlined herein.

TABLE 4
SUMMARY OF CANCER RISKS

Exposure Pathway	Cancer Risk
Ingestion of Soil	2 x 10-5
Dermal Contact With Soil	7 x 10-5
Inhalation of Contaminants Volatilizing from Soil into Indoor Air	1 x 10-5
TOTAL SOIL PATHWAYS	**1 x 10-4**
Ingestion of Groundwater	4 x 10-4
Dermal Contact With Groundwater	2 x 10-6
Inhalation of Contaminants Volatilizing from Groundwater into Indoor Air	8 x 10-5
TOTAL GROUNDWATER PATHWAYS	**5 x 10-4**

TABLE 5

SUMMARY OF NON-CANCER RISKS

Exposure Pathway	Hazard Index
Ingestion of Soil	0.16
Dermal Contact With Soil	0.15
Inhalation of Contaminants Volatilizing from Soil into Indoor Air	0.15
TOTAL SOIL PATHWAYS	**0.46**
Ingestion of Groundwater	38
Dermal Contact With Groundwater	3
Inhalation of Contaminants Volatilizing from Groundwater into Indoor Air	9
TOTAL GROUNDWATER PATHWAYS	**50**

7.2 Ecological Risk Assessments

A screening-level ecological risk assessment (ERA) was performed as part of the initial RI (URS 1996a). Risks to terrestrial wildlife were assessed by evaluating potential impacts of soil and sediment contaminants on four indicator species (meadow jumping mouse, raccoon, fox, and common crow). Results showed no potential threat to the terrestrial species from soil contamination. There was a potential for impacts on the meadow jumping mouse population from sediment exposure; however, the magnitude of the impact was expected to be small (risk is attributable to manganese). Ecological risk assessment results are given in Table 6. An ecological risk index of less than 1.0 is considered an acceptable level of risk to the ecological receptor as a result of exposure to site contaminants.

Risks to aquatic life were evaluated by comparing representative contaminant concentrations in surface water to state and federal water quality criteria and guidelines established for the protection of aquatic life. No significant risks were indicated by this evaluation.

The conclusions of the ERA for the SS-013 site were that site-related contaminants in soil, sediment, and surface water did not appear to represent a significant threat to ecological receptors.

TABLE 6

ECOLOGICAL HAZARD INDICES

Media	Meadow Jumping Mouse	Raccoon	Red Fox	Common Crow
Soil	0.2	0.0005	0.000004	0.002
Sediment	2.5	0.002	0.00004	0.0003

8.0 SITE-SPECIFIC REMEDIAL ACTION OBJECTIVES

The site-specific remedial action objectives for the SS-013 site are to reduce contaminant of concern concentrations in groundwater to the remediation goals (RGs) defined in this Section and to address any future potential soil vapor pathway through implementation of institutional controls that may lead to engineering controls, if needed.

RGs for groundwater, that are contaminant-specific cleanup criteria for the SS-013 groundwater contaminants of concern, are shown in Table 7. They were selected from ARARs that include New York State groundwater and drinking water standards (NYSDEC 1999 and NYSDOH 1992), the National Primary Drinking Water Standards (USEPA 2003), and TBCs that are New York State groundwater quality guidance values (NYSDEC 1998a). The most stringent of the values from these sources were selected. Achievement of the remedial action objective will protect human health and the environment. One year of quarterly groundwater samples revealing concentrations below the RGs will demonstrate that they have been achieved and that active remediation of the site groundwater can be discontinued. One additional round of groundwater samples will be collected 3 to 6 months after the active treatment of the site groundwater has been discontinued to demonstrate that there is no rebound effect.

The existing building (Building 3578) on the Area Subject to Institutional Controls is unoccupied, and the Air Force will (a) ensure that it will remain unoccupied during its ownership, and (b) place an institutional control in the deed to that property containing the building, prohibiting it from being occupied. "Occupied" means that the building is used and there is human occupation of it with regularity (e.g., persons present the same day of the week, for approximately the same number of hours). Incidental use of the building, such as for storage of materials, that necessitates intermittent visits by individuals who would not remain in the building after delivery or retrieval of such materials, would not meet this definition of occupation. The owner may also choose to demolish the building.

TABLE 7

GROUNDWATER REMEDIATION GOALS

SUBSTANCE	MAXIMUM ALLOWABLE CONCENTRATION (µg/L)	SOURCE
1,2,4-Trimethylbenzene	5	A
1,2-Dichloroethane	0.6	A
1,3,5-Trimethylbenzene	5	A
Benzene	1	A
Ethylbenzene	5	A
Methylene Chloride	5	A
Toluene	5	A
Trichloroethene	5	A
Vinyl Chloride	2	A
Xylenes (total)	5	A
1,1'-Biphenyl	5	A
2,4-Dimethylphenol	1	A
Acenaphthene	20	C
Carbazole	50	B
Dibenzofuran	50	B
Naphthalene	10	C

Notes: µg/L = microgram per liter

Sources:

A: ARAR - NYSDEC, 1999. *6NYCRR Part 703.5, Water Quality Standards for Taste-, Color-, and Odor-Producing, Toxic, and Other Deleterious Substances.*

B: ARAR - NYSDOH, 1992. *10NYCRR Subpart 5-1 Public Water Systems, Maximum Contaminant Levels.*

C: TBC - NYSDEC, 1998. *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Technical and Operational Guidance Series (TOGS) 1.1.1.*

9.0 DESCRIPTION OF THE ALTERNATIVES

Four groundwater remedial alternatives were developed, evaluated, and described in detail in the Focused Alternatives Analysis (URS 2003c) to address the remedial action objectives for the SS-013 site. The four alternatives developed are summarized in this section. Groundwater monitoring will be required for each alternative to verify attainment of RGs.

Alternative 1:

INSTITUTIONAL CONTROLS

Capital Cost: $ 2,000
Present Worth O&M: $229,400
Total Present Worth: $231,400
Years to Groundwater RGs: 20

Under this alternative, contamination in groundwater would decrease over time by intrinsic processes. Unacceptable risks may be posed by indoor air contaminated by chemicals volatilizing from the groundwater (vapor intrusion). Institutional controls (ICs) relating to groundwater restoration and vapor intrusion would be implemented so that existing buildings or newly constructed buildings within the Area Subject to Institutional Controls must be modified or constructed in a manner that would mitigate unacceptable risk, or the potential risk must be evaluated for mitigation of the vapor intrusion if an unacceptable risk under CERCLA and the NCP is present. The following ICs are part of this alternative:

- Prohibit the installation of any wells for drinking water or any other purposes that could result in the use of the underlying groundwater.

- With respect to risks that may be posed via indoor air contaminated by chemicals volatilizing from the groundwater (vapor intrusion), a grantee covenant in the deed will require that (a) modifications to existing or construction of new buildings within *the identified* groundwater restriction area must be performed in a manner that would mitigate unacceptable risk under CERCLA and the NCP; or (b) an evaluation of the

potential for unacceptable risk must occur prior to the erection of any structure or the use of any existing building or structure in the identified area of the groundwater restriction area, and include mitigation of the vapor intrusion in the design/construction of the structure prior to occupancy if an unacceptable risk under CERCLA and the NCP is posed Any such mitigation or evaluations will be coordinated with EPA and NYSDEC.

For an estimated 20-year period, but ultimately until attainment of RGs, a routine groundwater sampling and analysis program would be required to document progress towards and attainment of RGs. One additional monitoring well, designated MW-13-016, would be installed to monitor groundwater quality downgradient of MW-13-008. One year of quarterly groundwater samples revealing concentrations below the RGs will demonstrate that the RGs have been achieved and that remediation of the site groundwater can be discontinued. The estimated conceptual cost for this alternative includes the capital cost of installing the new monitoring well and the present worth costs for quarterly groundwater sampling, analyses, and reporting of three monitoring wells during the time period needed to attain RGs. The alternative is subject to five-year reviews in accordance with Section 121(c) of CERCLA until all contaminant concentrations have been reduced to levels that allow for unlimited use and unrestricted exposure.

Alternative 2:

ENHANCED INTRINSIC BIOREMEDIATION USING AN OXYGEN-RELEASING COMPOUND

Capital Cost: $693,000
Present Worth O&M: $ 45,064
Total Present Worth: $738,064
Years to Groundwater RGs: 2 ½

Enhanced intrinsic bioremediation using an oxygen-releasing compound (ORC®) is an in-situ technology that offers a passive, low maintenance approach to treat groundwater under aerobic conditions. The technology is suitable for treating vinyl chloride and naphthalene on saturated soils and in the groundwater if indigenous organisms are present naturally in groundwater at the site.

This alternative involves drilling over 250 shallow borings and injecting patented formulations of the ORC®, which is designed to evolve oxygen at a constant rate in groundwater, and maintain aerobic conditions in the subsurface. The length of time that oxygen is evolved from the ORC® is dependent on the biological activity, which in turn is dependent on the availability of compounds utilized by the bacteria as a source of energy. The product manufacturer recognizes that one application may be insufficient to produce the required results and periodic re-evaluation of site conditions is often warranted. Several applications of oxygen releasing compound may be required.

This alternative also includes installing one new monitoring well, groundwater monitoring to assess remediation progress, addressing any unacceptable risks under CERCLA and the NCP that may be posed by indoor air contaminated via vapor intrusion through institutional controls as described in Alternative 1. One year of quarterly groundwater samples revealing concentrations below the RGs will demonstrate that the RGs have been achieved and that remediation of the site groundwater can be discontinued. One additional round of groundwater samples will be collected 3 to 6 months after the active treatment of the site groundwater has been discontinued to demonstrate that there is no rebound effect. However, the estimated present worth costs for O&M are less because of the reduced time needed to reach the groundwater RGs. The alternative is subject to five-year reviews in accordance with Section 121(c) of CERCLA until all contamination concentrations have been reduced to levels that allow for unlimited use and unrestricted exposure.

Alternative 3:

GROUNDWATER EXTRACTION, TREATMENT, AND REINJECTION OF TREATED WATER

Capital Cost: $ 67,000
Present Worth O&M: $221,300
Total Present Worth: $288,300
Years to Groundwater RGs: 6

Alternative 3 involves extraction of contaminated groundwater, via pumping wells or collection trenches, and treatment in an above ground unit, and addressing any unacceptable risks

under CERCLA and the NCP that may be posed by indoor air contaminated via vapor intrusion through institutional controls as described in Alternative 1.. A wide variety of recovery systems are available, but all have in common the ability to hydraulically control contaminant migration while treating the organic contaminants. The treated water would be reinjected into the aquifer upgradient from the contaminated area. As described in Alternative 1, this alternative also includes installing a new monitoring well, groundwater monitoring to assess remediation progress, and institutional controls. One year of quarterly groundwater samples revealing concentrations below the RGs will demonstrate that the RGs have been achieved and that remediation of the site groundwater can be discontinued. One additional round of groundwater samples will be collected 3 to 6 months after the active treatment of the site groundwater has been discontinued to demonstrate that there is no rebound effect. The alternative is subject to five-year reviews in accordance with Section 121(c) of CERCLA until all contamination concentrations have been reduced to levels that allow for unlimited use and unrestricted exposure.

Alternative 4:

OZONE SPARGING

Capital Cost: $115,000
Present Worth O&M: $ 30,000
Total Present Worth: $145,000
Years to Groundwater RGs: 1

This alternative would implement ozone sparging to treat contaminants in groundwater. Ozone is a highly reactive chemical that is effective at chemically oxidizing various organic contaminants, including naphthalene and vinyl chloride.

Ozone sparging combines the unit operations of air stripping and oxidative decomposition in a single process. Air and ozone would be injected directly into the groundwater at SS-013 through an estimated 20 micro-porous sparge points that create microbubbles with a high surface area to volume ratio. Extraction of contaminants from groundwater occurs by aqueous to gas partitioning as the bubbles rise in the water table. The ozone contained within the bubbles reacts to decompose the contaminant molecules. The end products are carbon dioxide,

dilute hydrochloric acid, and water. This technology can substantially reduce the mass of contaminants in a relatively short period of time and does not require vapor control since the contaminants are oxidized, rather than transferred from one phase to another.

This alternative also includes installing one new monitoring well, groundwater monitoring to assess remediation progress during the estimated one year O&M period, and addressing any unacceptable risk under CERCLA and the NCP that may be posed by indoor air contaminated via vapor intrusion through institutional controls as described in Alternative 1. One year of quarterly groundwater samples revealing concentrations below the RGs will demonstrate that the RGs have been achieved and that remediation of the site groundwater can be discontinued. One additional round of groundwater samples will be collected 3 to 6 months after the active treatment of the site groundwater has been discontinued to demonstrate that there is no rebound effect. The alternative is subject to five-year reviews in accordance with Section 121(c) of CERCLA until all contamination concentrations have been reduced to levels that allow for unlimited use and unrestricted exposure.

10.0 SUMMARY OF COMPARATIVE ANALYSIS

The alternatives for the SS-013 site were analyzed with respect to nine criteria specified in the National Contingency Plan (NCP), which directs remediation of inactive hazardous waste sites. A brief description of each criterion and the evaluation of alternatives based on these criteria are presented below. The NCP categorizes the evaluation criteria into three principal groups:

Threshold Criteria - The recommended alternative must meet these requirements.

- Overall protection of human health and the environment.
- Compliance with ARARs

Primary Balancing Criteria - The most favorable and cost-effective alternative is determined using these criteria (a remedy is cost effective if its costs are proportional to its overall effectiveness).

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume
- Short-term effectiveness
- Implementability
- Cost

Modifying Criteria - The recommended alternative may be modified by public input before it is finalized and presented in the ROD.

- State Acceptance
- Community Acceptance

Analysis of Alternatives

A discussion and comparative analysis is contained in the MMS (SS-013) Focused Alternative Analysis (URS 2003c). This analysis is summarized below.

- **Overall Protection of Human Health and the Environment** addresses whether a remedy provides adequate protection to potential human and ecological receptors.

All alternatives are protective of human health and the environment.

- **Compliance with ARARs** addresses whether a remedy will meet all of the ARARs of federal and state environmental statutes, and/or provide grounds for invoking a waiver.

The time to reach chemical-specific groundwater RGs is estimated to range from one to 20+ years for the various alternatives. Alternative 4 - Ozone Sparging (1 year) would achieve groundwater RGs in the shortest amount of time, whereas Alternative 1 - Institutional Controls (20+ years) would achieve the RGs in the longest period of time. The time needed to achieve RGs for Alternative 2 (Enhanced Intrinsic Bioremediation Using an Oxygen-Releasing Compound) and Alternative 3 (Groundwater Extraction, Treatment, and Reinjection of Treated Water) is 2½ years and 6 years, respectively.

- **Long-Term Effectiveness and Permanence** refers to the magnitude of residual risk, and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

For the groundwater contamination, groundwater monitoring and related deed restrictions (for Alternatives 1 through 4) will need to continue until RGs are achieved. For any risk which may be posed by indoor air contaminated via vapor intrusion, the ICs will continue until changed pursuant to Section 12.1, Notification of Land Use Modification. In this way, long-term effectiveness is related to the ability of the alternative to achieve RGs (see discussion of ARAR compliance above). As RGs are achieved more quickly, some encumbrances on the Area Subject to Institutional Controls should be eliminated sooner.

- **Reduction of Toxicity, Mobility, or Volume** addresses the anticipated performance of treatment technologies employed in the remedy.

The estimated mass of each of the primary contaminants of concern contained within the dissolved phase within the groundwater plume and adsorbed on soil at the water table surface is:

Vinyl chloride: 0.3 pounds

Naphthalene: 500 pounds

The bulk of this mass would be removed, either by natural or accelerated bioremediation (Alternatives 1 and 2), by removal from the aquifer by treatment (Alternative 3), or by in-situ treatment (Alternative 4).

- **Short-Term Effectiveness** refers to the speed with which the alternative achieves protection, as well as the alternative's potential to create adverse impacts on human health or the environment during its implementation.

Alternatives 1 through 3 achieve protection immediately with the implementation of groundwater deed restrictions. It is expected that Alternative 4 (Ozone Sparging) would eliminate the risk in approximately 1 year by reducing contaminant levels to RGs. In all cases, potential short-term construction risk easily can be controlled or minimized by implementing standard environmental health and safety measures.

- **Implementability** addresses aspects of implementing the remedial alternatives, such as the ability to construct and operate technologies, reliability, ability to monitor effectiveness, availability of materials and services, permitting, and coordination with other agencies.

A comparison of alternatives in terms of implementability is presented below.

All alternatives include long term monitoring. As stated above, the duration of the long term monitoring is anticipated to be related to the duration required to attain the groundwater RGs.

Alternative 1 (Institutional Controls) includes little construction (installation of one monitoring well) and, comparatively, is easily implemented.

Alternative 2 involves drilling over 250 shallow injection borings with possible multiple applications of ORC®. Design and construction of this technology is conventional and standardized.

Alternative 3 (Groundwater Extraction with Re-injection) includes some construction (installation of two extraction wells and an above ground treatment system). The construction activities are conventional and standardized and, comparatively, are easily implemented.

Alternative 4 (Ozone Sparging) requires drilling of 20 shallow sparge wells, limited shallow trenching, and installation of a pre-engineered, modular ozone generator/control system in an equipment shed at the site. Although the technology is relatively new, the construction activities are conventional and standardized.

- **Cost** includes the capital and O&M cost of each alternative, as well as its present worth.

The present worth cost of each alternative, from lowest to highest, is listed below.

Alternative 4	$145,000
Alternative 1	$231,000
Alternative 3	$288,000
Alternative 2	$738,000

- **State acceptance** addresses technical and administrative concerns of the State with regard to remediation.

The NYSDEC provided input during the preparation of the Proposed Plan and has concurred with the selection of the preferred alternative, ozone sparging, for Site SS-013. A letter regarding NYSDEC concurrence is presented in Appendix C.

- **Community acceptance** addresses public comments received on the Administrative Record and the Proposed Plan.

Community comments on the preferred alternative were evaluated following the public comment period and are discussed in the Responsiveness Summary (Appendix B). As a general statement, the community concurs with the preferred alternative, ozone sparging (Alternative 4).

11.0 PRINCIPAL THREAT WASTES

The NCP establishes an expectation that treatment that reduces the toxicity, mobility, or volume of the principal threat wastes will be utilized by a remedy to the extent practicable. The principal threat wastes for site SS-013 include fuel oil-related compounds and vinyl chloride dissolved within groundwater. The selected remedy (Alternative 4) includes treatment by ozone sparging, which will chemically oxidize contamination in-situ, satisfying the statutory preference for treatment as a principal element of the remedy.

12.0 SELECTED REMEDY

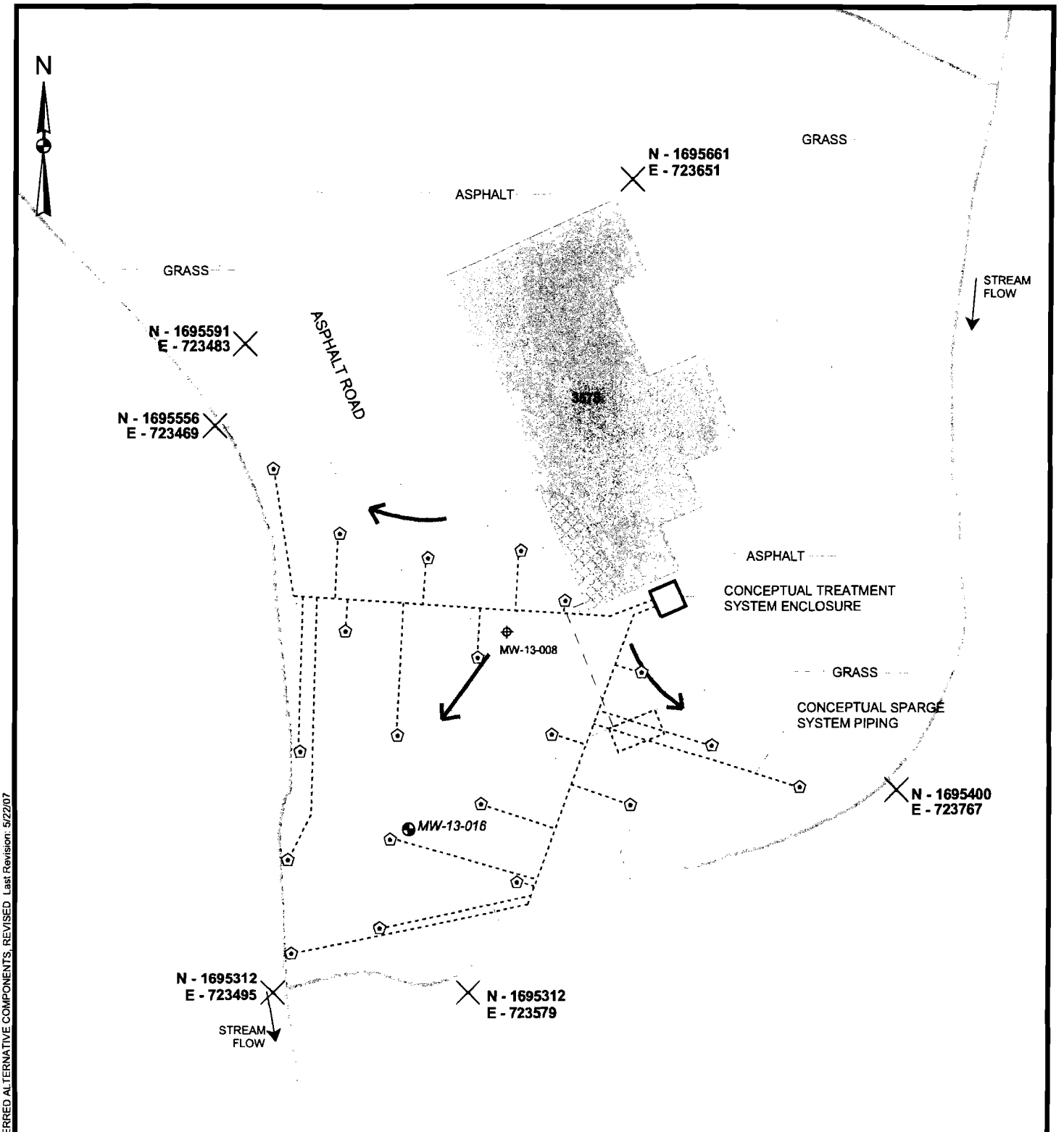
The Air Force has selected ozone sparging, Alternative 4, as the remedy for the SS-013 Site. The remedy has been selected by the Air Force in conjunction with the USEPA and with the concurrence of the NYSDEC. The Air Force initially proposed that the transferee would evaluate or mitigate potential vapor intrusion if occupancy is planned in an existing building or new buildings in the future within the Area Subject to Institution Controls. However, it was ultimately decided to prohibit occupancy of the existing building and to prohibit construction of new buildings intended for occupancy within the Area Subject to Institutional Controls. This remedy provides the best balance between cost and effectiveness of all the alternatives examined. It provides a permanent solution to the extent practicable and is protective of human health and the environment. This remedy addresses the principal threats by in-situ destruction of the groundwater contaminants responsible for the threats.

12.1 Identification of Alternative

The selected remedy for remediation of the SS-013 site includes the following components.

- Installation of one additional downgradient groundwater monitoring well;
- Quarterly groundwater samples will be collected until one year of samples reveal concentrations below the RGs, which will be necessary to demonstrate that the RGs have been achieved and that remediation of the site groundwater can be discontinued. One additional round of groundwater samples will be collected 3 to 6 months after the active treatment of the site groundwater has been discontinued to demonstrate that there is no rebound effect.
- Installation of approximately 20 ozone sparging wells to inject ozone into the subsurface to treat the contamination;
- Installation of a pre-engineered, modular ozone generator/control system in an equipment shed at the site;
- Institutional Controls

The major conceptual components are depicted on Figure 6.



Legend

- Conceptual Ozone Sparge Point
- Conceptual New Monitoring Well Location
- Monitoring Well Location
- Estimated Extent of Groundwater Contaminant Plume
- Area Subject to Institutional Controls
- Surface Water Feature
- Approximate Groundwater Flow Direction

60 0 60 Feet

URS	LOCATION OF PREFERRED ALTERNATIVE COMPONENTS	FIGURE 6

N:\11168476.00000\GIS\Applications\ss-013.apr LOCATION OF PREFERRED ALTERNATIVE COMPONENTS, REVISED Last Revision: 5/22/07

Institutional Controls

Institutional controls (ICs) are a component of the selected remedy for site SS-013. ICs are the non-technical, non-engineering actions that support the treatment elements of the remedy. ICs will be used to minimize the exposure of any future users of the Area Subject to Institutional Controls encompassed by site SS-013, including Air Force personnel, lessees/sublessees, transferees, and construction workers, and the environment to hazardous substances. The ICs will also be used to maintain the integrity of the physical remedial action components.

The Air Force is ultimately responsible for implementing, maintaining, monitoring and enforcing the ICs for the duration of the remedial alternative identified in this ROD. It will exercise this responsibility in accordance with CERCLA and the NCP.

It is anticipated that successful implementation of the selected remedy, along with implementation and enforcement of these ICs in accordance with the terms of this ROD, will achieve protection of human health and the environment and compliance with all legal requirements.

The following are the goals and objectives of the ICs:

- Prevent the use of the contaminated groundwater for drinking water or any other purposes that could result in the ingestion of the contaminated groundwater.
- Address any future potential soil vapor pathway through implementation of institutional controls that may lead to engineering controls, if needed.
- Prevent property development or land use that would interfere with the proper operation of the remedy and all other related components of the remedy, and
- Maintain the integrity of any current or future remedial or monitoring systems, such as monitoring wells.

To achieve these goals and objectives, the Air Force is requiring that use restrictions and controls be placed on the Area Subject to Institutional Controls where the residual contamination is located. The following are the corresponding use restrictions and controls on the Area Subject to Institutional Controls:

- Prohibit the installation of any wells for drinking water or any other purposes that could result in the use of the underlying groundwater within the area shown on Figure 6.

- Prohibit property development or land use that would interfere with the proper operation of the remedy selected in this ROD.

The above two restrictions shall be maintained until the concentrations of hazardous substances in the groundwater have been reduced to levels meeting the RGs (Table 7). Quarterly groundwater samples will be collected until one year of samples reveal concentrations below the RGs, which will be necessary to demonstrate that the RGs have been achieved and that remediation of the site groundwater can be discontinued. One additional round of groundwater samples will be collected 3 to 6 months after the active treatment of the site groundwater has been discontinued to demonstrate that there is no rebound effect.

The following two restrictions are to be placed in the deed(s) and will remain and run with the Area Subject to Institutional Controls on properties until USEPA and NYS approve a change (see Section 12.1, Notification of Land Use Modification):

- With respect to risks that may be posed via indoor air contaminated by chemicals volatilizing from the groundwater (vapor intrusion), a deed covenant (or lease restriction for a lessee) would be imposed to prohibit construction of new buildings intended for occupancy within the Area Subject to Institutional Controls.

- Also with respect to risks that may be posed via indoor air contaminated by chemicals volatilizing from the groundwater (vapor intrusion), a deed covenant (or lease restriction for a lessee) would be imposed, which requires that the existing building (Building 3578) on the property remain unoccupied (i.e., it may not be used for occupied purposes). "Occupied" means that the building is used and there is human occupation of it with regularity (e.g., persons present the same day of the

week, for approximately the same number of hours). Incidental use of the building, such as for storage of materials, that necessitates intermittent visits by individuals who would not remain in the building after delivery or retrieval of such materials, would not meet this definition of occupation. The Grantee may demolish the building.

The Air Force will not modify or terminate the above use restrictions and controls listed in the IC section without approval by USEPA and NYSDEC. The Air Force will seek prior concurrence before any anticipated action that may disrupt the effectiveness of the restrictions/controls, or any action that may alter or negate the need for restrictions.

The Air Force will take the following actions to ensure that the aforementioned use restrictions and the controls are effective in eliminating the exposure scenario and protecting human health and the environment:

Deed Restrictions: Each transfer of fee title from the United States will include a CERCLA 120(h)(3) covenant which will have a description of the residual contamination on the property and the environmental use restrictions, described above, expressly prohibiting activities inconsistent with the performance measures goals and objectives.

The deed will include the CERCLA 120(h)(3) covenant that the United States is required to include in the deed for any property that has had hazardous substances stored for one year or more, known to have been released or disposed of on the property. The Air Force will consult with USEPA and NYSDEC on the deed restriction language. The deed will contain appropriate provisions to ensure that the restrictions continue to run with the land and are enforceable by the Air Force. Each deed will also contain a reservation of access to the property for the Air Force, USEPA, and the State of New York and their respective officials, agents, employees, contractors, and subcontractors for purposes consistent with the Air Force IRP and the FFA.

In addition, the deed will require the transferee and subsequent transferee(s) to comply with the environmental use restrictions and Institutional Control requirements specified herein, including without limitation annual monitoring and reporting on ICs, and that the

initial transferee who will receive fee title from the United States will place the same obligations and responsibilities on any subsequent transferee receiving a real property interest in the Area Subject to Institutional Controls.

Lease Restrictions: During the time between adoption of this ROD and deeding of the property, equivalent restrictions are being implemented by lease terms that are no less restrictive than the use restrictions and controls described in this ROD. The parcels of property encompassing the SS-013 site are currently leased in furtherance of conveyance to the PARC under Air Force Lease No. BCA-PLA-12-00-1001. The lease restrictions will remain in place until the property is transferred by deed. At the moment of deed transfer, the lease restrictions will be superseded by the restrictions to be included in the federal deed, which will be equivalent to the ICs set forth in this ROD.

Environmental Easement and State Land Use Notification: The Air Force will condition transfer of the property upon the transferee granting an environmental easement, containing a complete description of the restrictions described in this ROD, for the Area Subject to Institutional Controls shown on Figure 6 in accordance with Article 71, Title 36 of the New York State Environmental Conservation Law. The Air Force will ensure that the transferee will grant the environmental easement to NYSDEC, on behalf of the State of New York, at the time of transfer of title for the property from the United States. The content of the document creating the environmental easement must be pre-approved by NYSDEC. **Notice:** Prior to property transfer, the transferee will be notified of any environmental use restrictions and institutional controls or reporting requirements. Concurrent with the transfer of fee title, information regarding the environmental use restrictions and controls will be communicated in writing to appropriate state agencies to ensure such agencies can factor such conditions into their oversight and decision-making activities regarding the Area Subject to Institutional Controls. The Air Force will also provide a copy of the deeds to the regulatory agencies as soon as practicable after the transfer of fee title.

Monitoring and Enforcement:

Monitoring: Monitoring of the environmental use restrictions and controls will be conducted annually by the Air Force until the property encompassing the Area Subject to Institutional Controls is transferred and a report will be provided. Any such annual monitoring reports will be included in a separate report or as a section of another environmental report, if appropriate, and be provided to the USEPA and NYSDEC. Upon the effective date of the property conveyance, the Air Force will place a requirement in the deed that the transferee or subsequent property owner(s) will conduct annual physical inspections of Site SS-013 to confirm continued compliance with all IC objectives unless and until all ICs at the site are terminated and will provide to the Air Force, USEPA and NYSDEC an annual monitoring report.

If a transferee fails to provide an annual monitoring report as described above to the Air Force, the Air Force will notify USEPA and NYSDEC as soon as practicable. If USEPA does not receive the annual monitoring report from the transferee, it will notify the Air Force as soon as practicable. Within 30 days of the report's due date, the Air Force will take steps to determine whether ICs are effective and remain in place and advise the regulators of its efforts. In any event, within 90 days of the report's due date, the Air Force shall determine the status of the ICs and provide its written findings, with supporting evidence sufficient to confirm the reported status based on the use restrictions/ICs and site conditions, to USEPA and NYSDEC unless either USEPA or NYSDEC, in its sole discretion, acts to confirm the status of the ICs independently.

All annual monitoring reports will report on the status of ICs and how any IC deficiencies or inconsistent uses have been addressed, whether use restrictions and controls were communicated in the deed(s) for any property transferred in the reporting period, and whether use of the property encompassing the Area Subject to Institutional Controls has conformed to such restrictions and controls.

The IC monitoring reports will be used in the preparation of the 5-Year Reviews to evaluate the effectiveness of the remedy. The continuation, modification, or elimination

of the monitoring reports, and any changes to IC monitoring frequencies, will be subject to EPA and NYSDEC approval. The 5-Year Review reports will be submitted to the regulatory agencies in accordance with the FFA.

The Air Force is ultimately responsible for implementing, maintaining and monitoring the remedial actions (including the ICs) before and after property transfer, even if it transfers some obligations with property conveyance.

Response to Violations: The Air Force will notify the USEPA and the NYSDEC via e-mail or telephone as soon as practicable, but no later than ten days after discovery of any activity that is inconsistent with the IC objectives or use restrictions, or any action that may interfere with the effectiveness of the ICs. Any violations that breach federal, state or local criminal or civil law will be reported to the appropriate civilian authorities, as required by law.

Enforcement: Any activity that is inconsistent with the IC objectives or use restrictions, or any action that may interfere with the effectiveness of the ICs will be addressed by the Air Force as soon as practicable (but in no case more than 10 days) after the Air Force becomes aware of the breach. The Air Force will notify USEPA and NYSDEC regarding how the breach has been or will be addressed within 10 days of sending USEPA and NYSDEC notification of the breach. The Air Force will exercise such rights under the deed and applicable laws to direct that activities in breach of the controls be immediately halted. To the extent necessary, the Air Force will engage the services of the Department of Justice to enforce such rights.

Notification of Land Use Modification: The recipient of the property encompassing the Area Subject to Institutional Controls will obtain approval from the Air Force, USEPA, and NYSDEC for any proposals for a land use change at the Area Subject to Institutional Controls inconsistent with the use restrictions and assumptions described in this ROD.

Specifically with respect to changing the prohibition on future occupation or construction, a future owner would be required either to (a) construct any new building

within the Area Subject to Institutional Controls in a manner designed to mitigate unacceptable risk under CERCLA and the NCP; or (b) evaluate the potential for unacceptable risk prior to the erection of any structure within the Area Subject to Institutional Controls and include mitigation in the design/construction of the structure prior to occupancy if an unacceptable risk is posed. EPA and NYSDEC would have to approve either option for the restriction to change.

Notifications of Transfers, Including Federal-to-Federal Transfers. The Air Force shall provide notice to EPA and NYSDEC at least six (6) months prior to any transfer or sale of property located within site SS-013 so that EPA and NYSDEC can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective ICs. If it is not possible for the Air Force to notify EPA and NYSDEC at least six months prior to any transfer or sale, the Air Force will notify EPA and NYSDEC as soon as possible, but no later than 60 days prior to the transfer or sale of any property subject to ICs, unless EPA and NYSDEC agree to a shorter period. In addition to the land transfer notice and discussion provisions above, the Air Force further agrees to provide EPA and NYSDEC with similar notice, within the same time frames, as to federal-to-federal transfer of property. The Air Force shall provide a complete copy of the executed deed(s) to EPA and NYSDEC.

State Land Use Notification Requirements: At the time of transfer by the Air Force, the environmental easement will require that the new property owner provide an annual certification, prepared and submitted by a professional engineer or environmental professional acceptable to the NYSDEC, which would certify that the institutional controls put in place are unchanged from the previous certification, and nothing has occurred that would impair the ability of the control(s) to protect human health and the environment or constitute a violation or failure to comply with any operation and maintenance or site management plan.

5-Year Site Reviews

Consistent with the requirements of section 121(c) of CERCLA, at least once within 5 years of the implementation of the remedy, and every five years thereafter as long as

contamination remains at site SS-013 above levels that allow for unlimited use and unrestricted exposure, the Air Force shall, in coordination with USEPA and NYSDEC, review the selected remedy to determine whether the remedy remains protective of human health and the environment. Remedial progress and the need to continue institutional controls to protect human health and the environment will be evaluated as part of the review.

Groundwater Monitoring

As currently envisioned, a conceptual groundwater monitoring plan will include the installation and sampling of one additional new monitoring well in conjunction with the sampling of two existing monitoring wells. Groundwater samples will be collected quarterly for comparison to the RGs, and a surface water sample will also be collected to estimate the potential impact on the stream during remediation. One year of quarterly groundwater samples revealing concentrations below the RGs will demonstrate that they have been achieved and that active remediation of the site groundwater can be discontinued. One additional round of groundwater samples will be collected 3 to 6 months after the active treatment of the site groundwater has been discontinued to demonstrate that there is no rebound effect. The sampling program can be adjusted if NYSDEC, USEPA, and the Air Force agree.

12.2 Comparison of the Preferred Alternative to Nine USEPA Criteria

The USEPA has developed nine evaluation criteria, which are specified in the National Contingency Plan, that are used to assess remedial alternatives. These criteria are listed in Table 8 and compared to Air Force's selected remedy.

TABLE 8

COMPARISON OF REMEDY TO USEPA EVALUATION CRITERIA

CRITERION	DESCRIPTION OF CRITERION	COMPARISON OF ALTERNATIVE TO CRITERION
Overall Protection of Human Health and the Environment	Addresses whether a remedy provides adequate protection to human and ecological receptors.	The remedy is protective of human health and the environment. It includes measures to restore groundwater to RGs.
Compliance with ARARs	Addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of all state and federal environmental statutes.	Chemical-specific RGs for groundwater listed in Table 7 should be achieved in an estimated time period of 1 year or less.
Long-Term Effectiveness and Permanence	Refers to the magnitude of residual risk and the ability of the remedy to maintain reliable protection of human health and the environment once cleanup goals have been met.	The risk for groundwater ingestion and indoor air inhalation will be reduced to levels acceptable under applicable law. Groundwater concentrations will be at or below RG levels. During the remediation period, monitoring and use restrictions will adequately and reliably protect human health and the environment.
Reduction of Toxicity, Mobility, or Volume	Addresses the anticipated performance of treatment technologies employed in the remedy.	Based on the estimated mass of contaminants, the preferred alternative is estimated to take one year or less to reduce the concentrations to levels below the groundwater RGs. The contamination will be oxidized in-situ.

TABLE 8 (Continued)

CRITERION	DESCRIPTION OF CRITERION	COMPARISON OF ALTERNATIVE TO CRITERION
Short-Term Effectiveness	Refers to the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts during its implementation.	Intrusive activities required for construction of the ozone sparging system and small buildings would produce a small potential risk to workers. However, potential risk could be minimized easily by implementing standard environmental health and safety measures. Groundwater would be restored to ARARs in an estimated time period of 1 year or less.
Implementability	Addresses aspects of implementing the remedy such as the ability to construct and operate technologies, reliability, ability to monitor effectiveness, availability of materials, permitting, and coordination with other agencies.	The remedy is feasible. Design and construction of all this technology is conventional and standardized. Groundwater and surface water monitoring would reliably test the effectiveness of remediation.
Cost	Refers to the capital and O&M cost of a remedy and its present worth.	The cost to construct the elements of the remedy (capital cost) is $115,000. It is expected that $30,000 will be needed annually to operate the remedial system and to perform monitoring. The overall present worth is $145,000.
State Acceptance	Addresses the technical and administrative concerns of the State with regard to remediation.	The NYSDEC has provided input during the preparation of the ROD and its concurrence is given in Appendix C.
Community Acceptance	Addresses public comments received on the Administrative Record and the Proposed Plan.	Community comments to the selected remedy are discussed in the Responsiveness Summary (Appendix B) of this ROD.

13.0 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost effective, and utilizes permanent solutions and resource recovery technologies to the extent practicable. Treatment of contaminated groundwater in-situ by ozone sparging will be used to reduce the toxicity, mobility, or volume of site contaminants, thereby satisfying the statutory preference for treatment as a principle element of the remedy. As demonstrated in Table 9, the selected remedy provides the best balance between cost and effectiveness of all the alternatives examined. It is the most effective and least expensive alternative.

Until groundwater RGs are achieved, contaminants will be present at site SS-013 above levels that allow for unlimited use and unrestricted exposure. Therefore, a statutory review, according to Section 121(c) of CERCLA, will be conducted within five years after initiation of the remedial action, and every five years thereafter as long as contamination remains at the site above levels that do not allow for unlimited use and unrestricted exposure, to insure that the remedy is protective of human health and the environment.

TABLE 9
MUNITIONS MAINTENANCE SQUADRON (SS-013)
MATRIX OF COST AND EFFECTIVENESS DATA

Alternative No.	Description	Present Worth Cost (USD)	Long Term Effectiveness and Permanence	Reduction of TMV of Contamination by Treatment	Short Term Effectiveness
1	Institutional Controls	$231,400	Achieves Goals in 20 Years	Does Not Reduce TMV by Treatment	Protects HHE Immediately by Use Restrictions
2	Enhanced Intrinsic Bioremediation Using an ORC	$738,064	Achieves Goals in 2.5 Years	Reduces TMV by Promoting Bioremediation	Protects HHE Immediately by Use Restrictions
3	Groundwater Extraction, Treatment, and Reinjection	$288,300	Achieves Goals in 6 Years	Reduces TMV by Aboveground Treatment	Protects HHE Immediately by Use Restrictions
4	Ozone Sparging	$145,000	Achieves Goals in 1 Year	Reduces TMV In-Situ by Oxidation	Protects HHE Immediately by Use Restrictions

Acronyms: TMV (Toxicity, Mobility, or Volume); HHE (Human Health and the Environment)

ORC: Oxygen-Releasing Compound

14.0 DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes between the preferred alternative presented in the Proposed Plan for site SS-013 and the selected remedy presented in this ROD. However, the Air Force, EPA and NYSDEC made a determination that rather than requiring transferees to perform property-by-property evaluation or mitigation related to potential risk via indoor air contaminated by chemicals volatilizing from the groundwater, this ROD would prohibit any occupancy or construction of new buildings intended for occupancy within the Area Subject to Institutional Controls. This decision was based in part on the short estimated duration of the groundwater portion of the remedial action, the small size and difficult topography of the affected area, and the low probability of interest in developing this area. Also, a prohibition will provide more certainty and ease in enforceability.

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GLOSSARY

Administrative Record: A file established and maintained in compliance with section 113(K) of the Comprehensive Environmental Response, Compensation, and Liability Act consisting of information upon which the lead agency bases its final decisions on the selection of remedial method(s) for a site. The Administrative Record is available to the public.

Adsorption: The assimilation of a gas, solid or dissolved matter through a surface (such as skin).

Aerobic: Conditions that exist in the presence of free oxygen.

Applicable Requirements: Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent that federal requirements may be applicable. See also Relevant and Appropriate Requirements.

Aquifer: A water-bearing formation or group of formations.

Area Subject to Institutional Controls. The area is delineated in Figure 6. This area is subject to the institutional controls associated with the alternative actions and selected alternative. A deed for property encompassing all or a portion of this area will contain the applicable institutional controls for the area.

Bedrock: Rock that underlies soil or other unconsolidated material.

Chlorinated Hydrocarbons: Organic compounds that contain chloride such as trichloroethene (TCE) and dichloroethene (DCE). Also referred to as chlorinated solvents.

Collection/Treatment: Collecting and treating groundwater to remove contaminants. Collection can be accomplished by wells or trenches. For volatile organic compounds, treatment is usually by air stripping or carbon polishing; cleaned water is returned to the ground or discharged to nearby surface water.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The act requires federal agencies to investigate and remediate abandoned or uncontrolled hazardous waste sites.

Confining Layer: A body of impermeable or distinctly less permeable material adjacent to an aquifer or water-bearing zone.

Contaminant Plume: A volume of contaminated groundwater with measurable horizontal and vertical dimensions. Plume contaminants are dissolved in and move with groundwater.

Drainage Basin: A region or area that gathers water originating as precipitation and contributes it to a particular stream channel, system of channels, lake, reservoir, or other body of water.

Electromagnetic Geophysical Survey: An exploration method based on the measurement of alternating magnetic fields associated with currents artificially or naturally maintained in the subsurface.

Environmental Impact Statement: A study conducted to provide information on potential environmental impacts that could result from a proposed action.

Feasibility Study (FS): An evaluation to identify and evaluate appropriate remedial goals and remedial alternatives for a site based upon United States Environmental Protection Agency criteria.

Groundwater: Water found beneath the earth's surface that fills pores within materials such as sand, soil, gravel, and cracks in bedrocks, and often serves as a source of drinking water if found in an adequate quantity.

Hazard Index: A quantitative measure of non-carcinogenic risk associated with exposure to chemicals. The hazard index is determined for all chemicals of concern affecting a particular organ or acting by a common mechanism. If the sum of all hazard indices is less than 1 for a particular exposure scenario, the risk of adverse health effects is considered acceptable.

Hydrogeologic: Pertaining to subsurface waters and the related geologic aspects of subsurface waters.

Infiltration: The flow of a fluid into a solid substance, such as soil or porous rock, through pores or small openings.

Inorganic Compounds: A class of naturally occurring compounds that includes metals, cyanide, nitrates, sulfates, chlorides, carbonate, bicarbonate, and other oxide complexes.

Installation Restoration Program (IRP): The United States Air Force subcomponent of the Defense Environment Restoration Program (DERP) that specifically deals with investigating and remediating sites associated with suspected releases of toxic and hazardous materials from past activities. The DERP was established to cleanup hazardous waste disposal and spill sites at Department of Defense facilities nationwide.

Interstratified: Layers of geologic material lying between or alternating with others of different character.

Intrinsic Bioremediation: The use of naturally present microorganisms to consume contaminants and transfer them to non-toxic compounds. Intrinsic bioremediation processes typically occur below ground surface.

Low-Level Radiological Waste: Waste material containing radioactive nuclides emitting primarily beta or gamma radiation, or both, in concentrations or quantities that exceed applicable federal or State standards for unrestricted release. Low-level radioactive waste materials are acceptable for disposal in a land disposal facility.

Monitoring: Ongoing collection of information about the environment that helps gauge the effectiveness of a cleanup action. Information gathering may include groundwater well sampling, surface water sampling, soil sampling, air sampling, and physical inspections.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The NCP provides the organization, structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants. The NCP is required under CERCLA and the Clean Water Act, and USEPA has been delegated the responsibility for preparing and implementing the NCP. The NCP is applicable to response actions taken pursuant to the authorities under CERCLA and the Clean Water Act.

National Priorities List: USEPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program.

Operation and Maintenance (O&M): A step in the remedial program. While a site is being remediated, it is overseen to make sure that the remedy is working as planned and that the construction remains operational.

Operable Unit (OU): A separate and distinct remedial project that is part of a large, complex hazardous waste site. Each OU has its own Record of Decision, remedial investigation, feasibility study, design and construction.

Organic Compounds: Any chemical compounds built on the carbon atom, i.e., methane, propane, phenol, etc.

Overburden: The loose soil, silt, sand and gravel, or other unconsolidated material overlying bedrock.

Pesticide: Chemical compounds used to control insects, rodents, plants, etc. Two classes of organic pesticides include chlorine (chlorinated) or organic phosphorous (organophosphorous).

Polychlorinated Biphenyl (PCB): An organic pollutant that was formerly used in electrical transformers and capacitors, their manufacture was banned in 1979. There are 210 different PCB compounds that typically have 40% to 60% chlorine by weight.

Polycyclic Aromatic Hydrocarbons (PAHs): Compounds often associated with combustion process and distillation tars.

Proposed Plan: A public document that solicits public input on a recommended remedial alternative to be used at a National Priorities List (NPL) site. The Proposed Plan is based on information and technical analysis generated during the RI/FS. The recommended remedial action could be modified or changed based on public comments and community concerns.

Radiological: Pertaining to the use of ionizing radiation for the scientific examination of material structures.

Record of Decision (ROD): A public document that explains the remedial alternative to be used at a National Priorities List (NPL) site. The ROD is based on information and technical analysis generated during the remedial investigation, and on consideration of the public comments and

community concerns received on the Proposed Plan. The ROD includes a Responsiveness Summary of public comments.

Relevant and Appropriate Requirements: These are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CECLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than the federal requirements may be relevant and appropriate.

Remedial Action: An action that stops or substantially reduces a release or threat of a release of hazardous substances that is serious but not an immediate threat to human health or the environment.

Remedial Alternatives: Options evaluated to address the source and/or migration of contaminants to meet health-based or ecology-based remediation goals.

Remedial Investigation (RI): An investigation that determines the nature and extent and composition of contamination at a hazardous waste site. It is used to assess the types of remedial options that are developed in the feasibility study.

Risk Assessment: A systematic scientific process of determining risk estimates based on the presence of contaminants in the environment and who might be exposed to the contaminants.

Semivolatile Organic Compounds (SVOCs): Organic constituents which are generally insoluble in water and are not readily transported in groundwater.

Solvents: Organic liquids used to dissolve grease and other oil-based materials. Many solvents are toxic at high concentrations.

Source: Area at a hazardous waste site from which contamination originates.

Sparging: A remedial action that involves injecting air into the soil's saturated zone below or within the zone of contamination. Contaminants are entrained in the air and may be discharged to the atmosphere at the surface.

Stratigraphic: Pertaining to the arrangement of consolidated or unconsolidated geologic materials as to geographic position and chronologic order of sequence.

Superfund: The trust fund, created by CERCLA out of special taxes, used to investigate and clean up abandoned or uncontrolled hazardous waste sites. Out of this fund USEPA either: (1) pays for site remediation when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work or (2) takes legal action to force parties responsible for site contamination to cleanup the site or pay back the federal government for the cost of the remediation. Federal facilities are not eligible for Superfund monies.

To Be Considered (TBC): Federal and state policies, advisories, and other non-promulgated health and environment criteria, including numerical guidance values, that are not legally binding.

TBCs are used for the protection of public health and the environment if no specific ARARs for a chemical or other site conditions exist, or if ARARs are not deemed sufficiently protective.

Topographic Basin: A depressed area with no surface outlet.

Toxicity: The quality or condition of a destructive, deadly, or poisonous substance.

Vadose Zone: The volume located between the ground surface and the water table. Also known as the unsaturated zone.

Volatile Organic Compounds (VOCs): Organic constituents which tend to volatilize or to change from a liquid to a gas form when exposed to the atmosphere. Many VOCs are readily transported in groundwater.

Water Table: The surface of a body of unconfined groundwater at which the water pressure is equal to that of the atmosphere.

APPENDIX A

TRANSCRIPT OF PUBLIC MEETING

UNITED STATES AIR FORCE

AIR FORCE REAL PROPERTY AGENCY

PUBLIC MEETING

In the Matter of

THE PROPOSED PLAN FOR SITE SS-013,
MUNITIONS MAINTENANCE SQUADRON

DATE: July 24, 2006

TIME: 7:06 p.m. to 7:36 p.m.

LOCATION: 135 Margaret Street
Plattsburgh, New York 12901

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APPEARANCES:

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PUBLIC SPEAKER:

Robert Booth

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(The public hearing commenced at 7:06 p.m.)

MR. SOREL: I'd like to begin the public meeting for the proposed plan for site SS-013, Munitions Maintenance Squadron.

I'm Mike Sorel, the BRAC Environmental Coordinator, working for the Air Force Real Property Agency of Plattsburgh. I will be -- be presiding over this meeting, the main purpose of which is to allow the public the opportunity to comment on the Air Force's actions for this site.

Assisting me in tonight's presentation are Steve Gagnier with the Air Force Real Property Agency and Bruce Przybyl, project manager for URS Greiner. We are here to provide answers to technical -- technical questions you may have about the remedial alternatives being considered by the Air Force. Tonight's agenda will consist of a summary of the data gathered at the site and a description of the preferred remedial action. After that we will move to the most important -- important part of this meeting, the part where you provide your comments on the remedial action.

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As you can see, everything being said here tonight is being taken down word for word by a professional court reporter. The transcript will become part of the administrative record for the site. We would like everyone to complete the sign-in sheet at the door. At the conclusion of the presentation we will open the floor to comments and questions. We request that all questions be held to the end of the presentation.

If you have a prepared statement you may read it out loud or turn it in without reading it. In any case your comments will become part of the record. We have cards at the front table for your use for written comments. If you turn in any written comments, please write your name and address on them. If you later decide to make a comment, you may send additional comments to us at this address. We will accept comments until August 15th, 2006. I will show this address slide again at the end of the meeting.

The final point is that our primary purpose tonight is to listen to you. We want to hear your comments on any issues you are concerned about

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and will try to answer any questions you may have. We want you to be satisfied that the action we take will properly and fully address the problems at the site.

Now I'd like to turn the meeting over to Bruce Przybyl.

MR. PRZYBYL: Good evening. I'm Bruce Przybyl from URS Inc., one of the consultants to the Air Force for this project. Today we'll be discussing with you the Air Force's proposed plan for addressing the remaining contamination present at the munitions maintenance squadron site at the Plattsburgh Air Force Base. The site has been numbered I.R.P. site SS-013.

Quite a bit of work and remediation has already been accomplished at this site, starting with investigations over twenty years ago, in 1985. Therefore, I'll first discuss with you the background and history of the site before summarizing the various investigations and actions. And then I'll focus on the remaining site contamination, which is a small area of contaminated groundwater. And then we'll look at the evaluation of site risks based on

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that remaining site contamination.

Then we'll look at the objectives of remediation for -- to address the site risk and the alternatives that we evaluated based on those objectives. And then finally, we'll present the preferred recommended alternative that the Air Force is presenting today.

The munitions maintenance site covers about fifty acres in the southwestern portion of the former base. The site consists of several buildings that were used for maintenance, storage, and handling of munitions-rated -- -related items from 1954 to 1991. Soil, groundwater and sediment were contaminated due to small spills into leach fields, and at a waste-accumulation pad. And also there was an underground storage tank that was found to be leaking at the site.

Soil contamination has been remediated at the site, and only a small area of groundwater contamination remains. The pink area shows the -- the site area, and the small black area in the center is the area where the remaining groundwater contamination is located. You can see

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there's several streams that coalesce into the site, and they flow into tributary C-21-1 of the Salmon River. Also please note that the fire-training-area treatment plants are located here and -- and here (indicating), and the discharge from -- of the treated water discharges into these streams that flow through the site.

The geology at the site consists of fill overlying silty sand and a clay unit. Groundwater is found in the fill and silty sand. The clay unit retards vertical downward migration of groundwater and the contamination contained within it. The streams at the site are typically gaining streams, that is the groundwater flows into them under normal conditions. You can see three streams are located on the cross-section and groundwater flows into them, except under storm conditions.

The groundwater flow is radial inward toward the site and eventually discharges into these small streams that cut through the site. The streams then, as I said before, coalesce to form a tributary of the Salmon River, and also the treated groundwater empties into the stream upgradient from

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the site, treated groundwater from the fire-training-area sites.

Several environmental investigations have been undertaken at the site over the past twenty years. The investigation started with a record search in 1985, which recommended further study. A site investigation was conducted in 1987 into 1989, which consisted of the installation of five monitoring wells on a soil survey around leach field eight. Also surface water and sediment samples were collected.

In 1991 there was a drainage-flow study. It was a base-wide study. Some of the samples were collected -- surface water and sediment samples were collected in this vicinity.

In 1993 to 1996 a remedial investigation was undertaken. This consisted of extensive soil, soil-gas, sediment, surface water, and groundwater sampling. Based on this investigation there were five source areas identified that the soil was potentially a source for groundwater contamination. These were three leach fields, a northern leach field, a southern leach

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field, and leach field A; a waste-accumulation area, which consisted of the waste accumulation area and a solvent storage pad, and a fuel oil U.S.T. that was found to be leaking.

In 2000, three additional wells were installed to further consolidate the data. And based on the data that was consolidated in the supplemental remedial investigation, a focused alternatives analysis was conducted which looked at four alternatives for remediating the small area of remaining groundwater contamination at the site.

One last note, there was a radiological survey done in 2003 and 2004 that was not related to the I.R.P. site investigation, and this radiological survey has been presented before at our other public meetings held by the Air Force RAB board meetings. Essentially, practices were observed or -- or noted at other bases where maintenance was occurring of -- that potentially was causing radioactive waste and the investigation of Plattsburgh was not because there was an -- any evidence that this had occurred, but just basically that the Air Force was looking at all -- all sites of

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this nature to make sure that there was no radiation remaining. And based on the investigation, from a radiological perspective, the site was deemed acceptable for unrestricted reuse. There was no significant radiation found.

Just some features to point out, this is an area that's focused in on our area of concern. Some of the samples in the R.I. and the S.R.I. were taken outside of this area. This is Building 3578, which is the most prominent building. You can see there's lines leading to the leach -- the southern leach field, and the leach field A. And there's another building here that's the source for the southern leach field. Now, these leach fields were draining from -- connected to some floor drains which the Air Force filled with concrete early on.

This area here is the old solvent-storage pad. This is the waste-accumulation area, which is another potential area of concern. These are the samples that were collected, and the site investigation focused primarily on the leach field A. The remediation --or -- or remedial investigation consisted of widespread sampling of

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many different media. And you can see the focus on all five areas of potential source for groundwater contamination. And then the supplemental investigation added three wells near the northern leach field and the southern leach field.

Over time, as contaminated soil was identified through these various investigations, the Air Force conducted a series of removal actions to address them -- the soil portion. The first two removal actions occurred in 1996. The fuel-oil storage tank was removed, south of Building 3578. Also the septic systems, the leach fields, and associated piping from the northern former leach field and leach field A was removed.

And then in 1997-1998 the solvent-storage pad was removed, and contaminated soil around that solvent-storage pad was also taken away and land farmed.

In 2000 additional soil was removed -- quite a bit of additional soil was removed from the area of the U.S.T. -- fuel-oil U.S.T. removal. And then also in 2000-2001. soil was removed that was contaminated with polycyclic

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aromatic hydrocarbons from the southern former leach field area.

And I'll show you these locations presently. This red area here is the first area of removal of the fuel-oil storage tank and associated contaminated soil surrounding the tank, and also the pipeline that connected Building 3578 to the tank.

This shows the removal action of the northern leach field and leach field A and the associated piping with those leach fields.

And this is the location of the removal action from surrounding the waste accumulation area and solvent storage pad. And this is the expanded -- later expanded 2000 -- 2001 excavation and extensive soil removal in the vicinity of the -- of Building 3578 and the fuel oil storage tank.

And then finally the last removal action -- removal action was in the vicinity of the -- and the lines connecting, the southern former leach field.

The remaining soil contamination, it's a little bright in here, but this area is

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supposed to be in pink, this is a conservative judgment of the area of remaining groundwater contamination. The contamination is -- consists of fuel-oil-related contaminants and they're volatile organic compounds and semi-volatile organic compounds. Of most concern are vinyl chloride and napthalene.

Based on the various investigations and the supplemental evaluation a risk evaluation was undertaken. The various pathways were evaluated, including contact with soil, and also contact -- either ingestion or inhalation of vapors from groundwater. From the analysis the overall cancer risk was five times ten to the minus four, which was above the U.S.E.P.A.'s cancer-risk threshold, and the pathway of concern for that risk was the ingestion of groundwater.

The non-cancer risk was fifty and this was above the U.S.E.P.A. non-cancer-risk threshold of one. And the pathways of concern were the ingestion of groundwater, and also the inhalation of vapors from groundwater and indoor air -- accumulating in indoor in a hypothetical building

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located above the contaminated groundwater.

Now, it should be known that -- it should be stated that groundwater is not currently being used as a potable resource at the site, nor is it expected any time that it will be. However the -- this was a conservative assumption.

Also a residential reuse scenario was used in the assessment, which again is very conservative, since the area is very remote from any development and it's not expected, given its setting that -- and its planned use, that it will be used for residential reuse. However, it was -- we looked at the worst-case scenario.

Now the two chemicals that were driving these risks were vinyl chloride and napthalene. Vinyl chloride was a driver for the risk noted for the ingestion of groundwater. And napthalene was the primary driver for the risk for the inhalation of vapors in indoor air.

Now, based on the risk assessment we came up with two remedial action objectives. The first is to reduce contaminants of concern, the concentration of these contaminants in groundwater,

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to applicable, relevant and/or appropriate requirements, ARARS, or the groundwater standards set by New York State.

Also, the second was to reduce groundwater contaminant concentrations to levels that do not pose a potential human health risk via inhalation of indoor air.

And essentially if we achieve the first objective, reducing the contamination to ARARS, the second will fall into place.

Based on the risk and the objectives that we set we evaluated four possible alternatives. Now, these alternatives were evaluated against each other using U.S.E.P.A.'s nine evaluation criteria and I'll run through those quickly.

The first is overall protection of human health and the environment. The second is compliance with ARARS, or the regulations governing the contaminants. The third is long-term effectiveness and its permanence. The fourth is reduction of toxicity, mobility, and volume of the contamination. The fifth is short-term effectiveness. That is if -- during the

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implementation are there any potential short-term impacts from the remediation itself. Sixth is implementability. Is it practical -- is it effective and practical to implement these remedies. The seventh is cost. The eighth is state acceptance. The state has examined the documents as they have been produced, and have agreed and provided comments along the path, and have agreed with the -- in concept, with the remedy that's being presented today, as has U.S.E.P.A. And the last, and not least, is the community acceptance, and that's why we're here today presenting this to you to solicit your comments.

Now, the four alternatives were institutional controls, enhanced bioremediation, groundwater extraction and treatment and ozone sparging. Now, to simplify things we've synthesized those nine criteria into two different criteria here. One is the present worth cost, that is the capital cost plus pro rating the annual operations cost for these remedies. And the second here is the most important, and that is the years to achieve ARARS. And that is when -- when will the -- area will be

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clean, and it's a measure of effectiveness. The quicker the -- the -- we can clean up, the more effective it is. It also has a bearing on cost, because the longer the remedy goes, the more monitoring has to be done and that drives the cost up as well.

Relatively speaking ozone sparging has the best track record of effectiveness between two or three at least of certainty of effectiveness. The ozone sparging being the fourth alternative.

Enhanced bioremediation, two and a half years might be optimistic. There might be recalcitrant compound remaining that might drive remediation to be longer than two and a half years.

The same with groundwater extraction and treatment. Six years is an estimate that actually might be longer than six years.

Institutional controls consist of providing restrictions on reuse to protect human health and the environment. In this case, restriction of groundwater use, and also asking that future development consider soil vapors as the enter in -- or groundwater vapors as they enter into

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buildings. But in that sense, we'd be asking the future developers or existing building, anyone who would develop the existing building there to install a sub-slab system so that vapors would not enter the building and -- and therefore not -- and -- be breathed in by the occupants of the building.

It also consists of monitoring, and that's why the present worth is two hundred thirty-one thousand dollars, because it costs a lot of money to monitor for twenty-one years as we're -- or twenty years, as we're waiting for the groundwater to attenuate.

The second alternative is enhanced bioremediation, and that consists of injecting an oxygen-releasing compound into the ground. The contaminants of concern, fuel-related contaminants, bioremediate on their own, but they utilize oxygen -- they -- they respirate oxygen. And typically as -- as -- they're lacking oxygen because they've used all the available oxygen.

So the process of bioremediation can be accelerated by adding oxygen to feed these in situ bacteria so they can do their job. However,

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these chemicals that you -- you add into the ground tend to be expensive, and they typically last on the order of six months. So they have to be reinjected over time. So that's why the present worth was estimated to be almost three-quarters of a million dollars for alternative two, enhanced remediation -- bioremediation.

Alternative three, groundwater extraction and treatment is essentially drawing the contaminant -- contaminants out of the ground in the water and treating it above -- above ground before discharge. In this case it would be reinjected into the ground to try and accelerate and flush the contaminants out of the groundwater, rather than just containing the contaminants in place. This is a -- a little bit more expensive than the preferred alternative, which is alternative four ozone sparging.

Ozone sparging is injecting ozone into the ground, O-three. And it in place, in situ, will oxidize the contamination. It's a very aggressive process, and the -- the track record is -- shows that on other sites it has been effective in

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remediating the compounds that we have remaining in the groundwater at SS-013.

I'll run through the preferred alternative, alternative four. It would include installation of an additional monitoring well to ensure that, as remediation was progressing, that we were observing it adequately, as we approached ARARS. And then a ozone sparging network would be installed that would consist of an ozone generator, manifolded to several injection points where ozone would be injected into the groundwater. And I have a figure to show on the next slide.

Also the -- the groundwater-monitoring-well network would be monitored, again to watch the contamination as it's reduced over time. And this alternative also would include the institutional controls from alternative one, so that human health and the environment would be protected during the period of time that remediation was occurring.

Also, every remedy -- all of the four remedies include, including the preferred alternative, a five-year site review. And this is

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the Air Force's reviewing the data from the site and the remedy -- the remediation as it progresses, to make sure that human health and the environment are adequately protected. And then that five-year review is reviewed by the state of New York and also by the United States Environmental Protection Agency, so that they can also agree that human health and the environment are being protected.

This shows a conceptual layout of the preferred alternative with a couple of monitoring wells in there. And this green line shows the area where institutional controls would be put in place. And this hatched area is the area of groundwater contamination. And within that area there are multiple injection points, all manifolded into an ozone-generated -- generator situated adjacent to Building 3578.

Just to give you a little bit more detail on the institutional controls, during the remedy there would be two institutional controls placed on the -- on the property. The first would be to prohibit the installation of any wells for drinking water or any other purposes that could

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result in the use of the underlying groundwater within the site area.

And the second would be to require that any existing building or new construction within the contaminated area incorporate controls to mitigate the potential for human health impairment associated with the inhalation of indoor air containing chemicals volatilizing from groundwater.

This second requirement essentially would be to make sure that there was a mitigation system installed, which at -- the state of the art right now is a sub-slab depressurization system so that vapors coming out of the ground would be cut off by the system, and it would not enter the building.

And that's the presentation.

MR. SOREL: Okay. At this point I'd like to open up the meeting for comments or questions. Since everything being said here tonight is being taken down, please state your name for the record before you make you statement.

Any comments, questions?

MR. BOOTH: I'll ask a question.

MR. SOREL: Sure.

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MR. BOOTH: Robert Booth. In the list of contaminants there were two that stood out at the end of one chart, which I can't find and -- and that included naphthalene. This whole roster of maybe fifteen identified contaminants. I get the idea that those are petroleum-based, so to speak, so that sparging and ozone will attack them all alike, including the especially bad ones, Naphthalene and the other?

MR. PRZYBYL: Well, the -- the contaminants in the groundwater are associated with the leaking underground storage fuel -- fuel oil tank, with the exception of vinyl chloride, which we believe came from --

MR. BOOTH: Oh, yes.

MR. PRZYBYL: -- from the solvent storage pad.

MR. BOOTH: Uh-huh.

MR. PRZYBYL: All of the contaminants are receptive to the ozone sparging process.

MR. BOOTH: Uh-huh.

MR. PRZYBYL: We -- we looked at

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other sites where it had been applied to see if these contaminants -- there was a track record that these contaminants were -- could be addressed by this technology.

MR. BOOTH: Well, then what's the attack on vinyl chloride?

MR. PRZYBYL: Vinyl chloride is a little bit different than the other chlorinated hydrocarbons, like --

MR. BOOTH: Uh-huh.

MR. PRZYBYL: -- T.C.E. and D.C.E. It actually is very easily oxidized. Trichloroethylene for example would not be so readily oxidized as vinyl chloride.

MR. BOOTH: All right. And this process will continue as long as necessary to reach the limit you're after, which will certainly be reviewed in five years and probably constantly along the way. And it'll end in as many five-year intervals as -- as it takes to -- to clear the problem.

MR. PRZYBYL: That's correct. We estimate that it would be done in one year, but if it

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takes longer than that the Air Force is, of course, prepared to run the system as long as it takes.

MR. BOOTH: All right. Where does this go from here?

MR. PRZYBYL: Mike?

MR. SOREL: Oh, you mean in terms of getting the work done?

MR. BOOTH: Well, you've got the plan.

MR. SOREL: We get the plan. Once we get the record -- we have to go through a record of decision process yet, after this. And once that record of decision is completed and signed by the E.P.A. and is therefore concurred on by the state, then we'll go ahead and energize this system and actually --

MR. BOOTH: Uh-huh.

MR. SOREL: -- start the remediation. We can't do that until we have this ROD completed.

MR. BOOTH: So, the --

MR. SOREL: But that is the next step in the process, absolutely.

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MR. BOOTH: -- the -- the state is on board up to a point, but it still has to do more work?

MR. SOREL: We still have to have the -- the -- the document called the record of decision.

MR. BOOTH: Yeah.

MR. SOREL: This is just the proposed plan that precedes the record of decision.

MR. BOOTH: Okay.

MR. SOREL: This is an opportunity to get the public comment.

MR. BOOTH: Uh-huh.

MR. SOREL: And then we move on to the record of decision, which generally the process is pretty smooth at this point. But we still have to do that. We still have to get the signatures by the E.P.A. and the Air Force, and concurrence by the state.

MR. BOOTH: Okay. Thank you.

MR. PRZYBYL: Good questions.

MR. SOREL: Are there any other questions?

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MR. EATON: Just -- I didn't meet you before. I'm Dan Eaton, I'm with the state.

MR. BOOTH: You are the state. You -- you've had predecessors.

MR. EATON: Yes, I have had predecessors. I -- I'm here to represent the Department.

MR. BOOTH: I'm -- I have a special interest because I'm a downstream landowner on the Salmon River, and so I've been sensitive all along here. And I have a good idea of what you're up to and I'm pleased.

MR. EATON: We're glad to hear that.

MR. BOOTH: The -- we -- from the other way we're going -- undergoing lampricide control, so --

MR. EATON: Right.

MR. BOOTH: -- we're in the thick of it.

MR. SOREL: Okay. If you should later decide to make additional comments on the proposed action, please mail them to this address by

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August 15th, 2006.

Also I'd like to add that the proposed plan is available for review at the information repository located in Special Collections, Feinberg Library, SUNY Plattsburgh.

This concludes the meeting.

Thank you for coming.

(The public hearing concluded at 7:36 p.m.)

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I, Howard P. Hubbard, do hereby certify that the foregoing was taken by me, in the cause, at the time and place, and in the presence of counsel, as stated in the caption hereto, at Page 1 hereof; that before giving testimony said witness(es) was (were) duly sworn to testify the truth, the whole truth and nothing but the truth; that the foregoing typewritten transcription, consisting of pages number 1 to 28, inclusive, is a true record prepared by me and completed by Associated Reporters Int'l., Inc. from materials provided by me.

Howard Hubbard

Howard P. Hubbard, Reporter

9/28/06 Date

rhph/tab/plah

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IRP Site SS-013, Munitions Maintenance Squadron
Public Meeting – July 24, 2006

SIGN-IN SHEET

NAME	ORGANIZATION	PHONE NUMBER
Marcia Wilcox	Ci Male	563-1123
Robert Roth	Citizen	563-1253
Daniel Eaton	NYSDEC	518 402-9620
BRUCE PRZYBYL	URS INC.	518-566-7022
Rosemary Ryan	URS Inc	518-566-7022

APPENDIX B

RESPONSIVENESS SUMMARY

September 29, 2006

MEMO FOR RECORD

SUBJECT: Responsiveness Summary: Public Comment Period for the Proposed Plan for Installation Restoration Program (IRP) Site SS-013, Munitions Maintenance Squadron

A. OVERVIEW

The SS-013 site covers approximately fifty acres of land in the southwest portion of the former Plattsburgh AFB. Soil, groundwater, and sediment were contaminated at the site due to small spills of waste products at the former waste accumulation area and solvent storage pad, a leaking fuel oil underground storage tank (UST), and potential releases from the leach fields of the site septic system. The site was used for the maintenance, storage, and handling of munitions-related items from 1954 to 1991. At present, the site is unoccupied.

Investigations began at the site in 1985 with the most extensive environmental data collection effort occurring during the Remedial Investigation (RI) from 1993-1995. Five areas of the site were identified in the RI as potential soil sources for groundwater contamination. The Air Force has undertaken actions to address each of these potential sources. The actions included: removal of the UST and contaminated soil south of Building 3578 in 1996 and removal of additional soil contamination associated with the UST in 2000; removal of the solvent storage pad and soil near the waste accumulation area in 1997; removal of the septic system and two leach fields associated with Building 3578 in 1995; and removal of soil above the septic system that leads from Building 3569 to southern former leach field in 2001. Soil sampling confirmed the removal of the potential soil sources. However, residual groundwater contamination is present southwest of Building 3578.

The Air Force conducted an alternatives analysis to develop a remedial action to address this residual contamination. Ozone sparging was selected as the preferred alternative based on a consensus of opinions among the Air Force, New York State Department of Environmental Conservation, and United States Environmental Protection Agency. The alternative includes installing approximately 20 sparge wells to inject ozone into the subsurface to treat contamination, installing an additional monitoring well, groundwater

monitoring, and institutional controls to prevent the use of contaminated groundwater for drinking and to require that existing buildings or new buildings constructed within the contaminated area incorporate controls to mitigate the potential for human health impairment associated with the inhalation of indoor air containing chemicals volatilizing from groundwater.

B. PUBLIC MEETING AND PUBLIC COMMENT PERIOD

A public meeting was held on the recommended alternative for site SS-013, Munitions Maintenance Squadron, on July 24, 2006 at 7:00 p.m. It was held at the Clinton County Government Center, First Floor Conference Room, 137 Margaret Street, in the City of Plattsburgh, County of Clinton, New York. A prepared statement was read by Michael D. Sorel, PE, then the Site Manager/Base Realignment and Closure (BRAC) Environmental Coordinator (since retired) for the Air Force Real Property Agency (AFRPA). Mr. Bruce Przybyl of URS Inc. detailed the Proposed Plan for the audience. The floor was then opened to the public for questions and comments. Mr. Sorel concluded the meeting with a statement that additional comments could be sent to the Air Force. As advertised in the Plattsburgh *Press-Republican*, the public comment period ran from July 17, 2006 to August 15, 2006. The Public Meeting was recorded by Mr. Howard P. Hubbard a court reporter for Associated Reporters International, Inc.

C. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND AGENCY RESPONSES

Mr. Robert Booth, a member of the public, asked at the public meeting if all of the contaminants, especially the two of most concern (naphthalene and vinyl chloride) would be attacked by the ozone sparging process. Mr. Przybyl indicated that all the contaminants are receptive to the ozone sparging process. He also indicated that there is a track record showing that these contaminants can be addressed by this technology. Mr. Booth asked if vinyl chloride in particular can be attacked by the process. Mr. Przybyl indicated that vinyl chloride was easily oxidized compared to other chlorinated hydrocarbons such as trichloroethylene. Mr. Booth asked for confirmation that the process will continue for as long as necessary to reach cleanup limits. Mr. Przybyl estimated that cleanup would be done in one year, but the Air Force is prepared to run the system as long as it takes to reach cleanup limits.

Mr. Booth then asked about the next steps to get the work done. Mr. Sorel indicated that a Record of Decision (ROD) process must be followed, and the ROD must be signed by the USEPA and concurred with by the NYSDEC. Then the remediation systems can be energized.

Mr. Eaton then introduced himself to Mr. Booth as the representative from the NYSDEC. Mr. Booth stated that he has a special interest in the site because he is a down stream landowner on the Salmon River. He indicated that he has a good idea regarding what is going on and he is pleased.

From the time of the Public Meeting until the deadline of August 15, 2006, no other comments or questions were received by the Air Force on this subject.

David S. Farnsworth
BRAC Environmental Coordinator

APPENDIX C

NYSDEC CONCURRENCE LETTER

New York State Department of Environmental Conservation
Division of Environmental Remediation, 12th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9706 • **FAX:** (518) 402-9020
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

AUG 14 2008

Mr. Stephen Gagnier, PE
AFRPA/IDA Plattsburgh
304 New York Road
Plattsburgh, NY 12903

Re: Plattsburgh AFB, 510003
Final Record of Decision
Weapons Storage Area, SS-013

Dear Mr. Gagnier:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health have reviewed the final Record of Decision (ROD) for the Weapons Storage Area, Site SS-013 received June 10, 2008. The Department supported the selected alternative presented in the PRAP, as indicated in email correspondence of 12 September 2006. Comments and concerns expressed by the State of New York have been addressed in the final ROD.

The Department concurs with the selected remedy in the final ROD.

Please feel free to contact Mr. Daniel Eaton at 518-402-9620 if you have any questions.

Sincerely,

Dale A. Desnoyers
Director
Division of Environmental Remediation

cc: D. Farnsworth, AFRPA
D. Garbarini, USEPA
J. Malleck, USEPA
R. Morse, USEPA