FINAL

DECISION DOCUMENT
FOR THE
INSTALLATION RESTORATION PROGRAM
SITES 4, 7, AND 9

NEW YORK AIR NATIONAL GUARD
(106TH RESCUE WING)
FRANCIS GABRESKI INTERNATIONAL AIRPORT

WESTHAMPTON BEACH, NEW YORK

JULY 2008

FINAL

DECISION DOCUMENT
FOR THE
INSTALLATION RESTORATION PROGRAM
SITES 4, 7, AND 9

NEW YORK AIR NATIONAL GUARD
(106TH RESCUE WING)
FRANCIS GABRESKI INTERNATIONAL AIRPORT

WESTHAMPTON BEACH, NEW YORK

JULY 2008

Contract No. DAHA92-01-D-0008
Delivery Orders 0115

Prepared for
NGB/A7CVR
New York Air National Guard, Westhampton Beach, New York

Prepared by
Science Applications International Corporation
Oak Ridge, Tennessee

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

contributed to the preparation of this document and should not be considered an eligible contractor for its review.

DECLARATION STATEMENT

Installation Restoration Program Sites 4, 7 and 9
New York Air National Guard, 106th Rescue Wing
Francis Gabreski International Airport, Westhampton Beach, New York

STATEMENT OF BASIS AND PURPOSE

This Decision Document presents the selected remedies for Installation Restoration Program (IRP) Sites 4 (Aircraft Refueling Apron Site), 7 (Former Fire Training Area [FTA]), and 9 (Ramp Drainage Outfall) at the New York Air National Guard (NYANG) located at the Francis Gabreski International Airport, Westhampton Beach, New York. The selected remedies were chosen in accordance with the New York State Environmental Conservation Law and Title 6 New York Codes, Rules, and Regulations (NYCRR) Part 375.

This decision is based on the Administrative Record for the IRP Sites 4, 7 and 9 at the NYANG, and the public's input to the Proposed Remedial Action Plan (PRAP).

ASSESSMENT OF SITE

Actual or threatened releases of hazardous substances and petroleum products from these sites, if not addressed by implementing the response actions selected in this Decision Document, present a current or potential threat to public health and/or the environment.

DESCRIPTION OF SELECTED REMEDY

Based on the results of the Site Investigation (SI) and Remedial Investigation (RI) reports for the IRP Sites 4 and 9 at the NYANG, and the criteria identified for evaluation of alternatives, the selected remedy for surface and subsurface soils is no further action. The selected remedy for groundwater is treatment by a combination of in situ air biosparging system for source areas of contamination and monitored natural attenuation (MNA) for dissolved phase contamination downgradient of the source areas. The components of the remedy for IRP Site 4 and 9 are as follows:

1. A remedial design would be developed to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program

2. Installation of air biosparge wells within the contaminated groundwater plume to treat source areas of groundwater and enhance aerobic bioremediation

3. Construction, operation, and maintenance of the air biosparge system until concentrations of contaminants in groundwater are sufficiently reduced to allow MNA to achieve site closure criteria

4. Periodic groundwater sampling of monitoring wells would be performed until contaminant concentrations are below criteria and New York State Department of Environmental Conservation (NYSDEC) closure requirements are met

5. Development of a site management plan to identify any use restrictions on the site, maintain site access control, and provisions for the continued operation and maintenance of the components of the remedy

6. Periodic certification of the institutional and engineering controls

7. The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until continued operation is technically impracticable or not feasible

Based on the results of the SI and RI reports for the IRP Site 7 at the NYANG and the evaluation presented here, the selected remedy for surface and subsurface soils is no further action. The selected remedy for groundwater is No Further Action with monitoring, as current conditions at this site indicate that contaminant concentrations are below NYSDEC criteria. If groundwater concentrations rebound and exceed criteria, monitoring would continue until the remedial objectives have been achieved, or until continued operation is technically impracticable or not feasible. The components of the remedy for IRP Site 7 are as follows:

1. A remedial design would be developed to provide the details on the closure monitoring program

2. Periodic groundwater sampling of monitoring wells would be performed until NYSDEC closure requirements are met

3. Development of a site management plan to identify any use restrictions on the site and maintain site access control

4. Periodic certification of the institutional and engineering controls

NEW YORK STATE DEPARTMENT OF HEALTH ACCEPTANCE

The New York State Department of Health (NYSDOH) concurs that the remedy selected for these sites is protective of human health.

DECLARATION

The selected remedies are protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial actions to the extent practicable, and are cost effective. The signatures below indicate the National Guard Bureau's (NGB's) authorization of this Decision Document.

AUTHORIZING SIGNATURES

Mr. David Van Gasbeck
Chief
National Guard Bureau Environmental Division (NGB/A7CV)

Date

CONTENTS

FIGURES

TABLES

THIS PAGE INTENTIONALLY LEFT BLANK.

ABBREVIATIONS AND ACRONYMS

ABB-ES	ABB-Environmental Services, Inc.
ANG	Air National Guard
BEHP	bis(2-ethylhexyl)phthalate
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
cm/sec	centimeters per second
COC	contaminant of concern
1,1-DCA	1,1-dichloroethane
DERP	Defense Environmental Restoration Program
DoD	U.S. Department of Defense
DPT	direct-push technology
ft	feet
FTA	Fire Training Area
FS	feasibility study
gal	gallon
gpm	gallons per minute
HMTC	Hazardous Materials Training Center
IRM	Interim Remedial Measure
IRP	Installation Restoration Program
JP	jet propellant
lb	pounds
MCL	maximum contaminant level
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MNA	monitored natural attenuation
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NGB	National Guard Bureau
NGB/A7CV	National Guard Bureau Environmental Division
NGB/A7CVR	National Guard Bureau Environmental Restoration Branch
NYANG	New York Air National Guard
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	operations and maintenance
ORC®	Oxygen Release Compound®
PAH	polycyclic aromatic hydrocarbon
PCE	tetrachloroethylene
PEER	PEER Consultants, P.C.
POC	principle organic contaminant
PRAP	Proposed Remedial Action Plan
PRP	Potentially Responsible Parties
RI	remedial investigation
RL	reporting limits
RQW	Rescue Wing
SAIC	Science Applications International Corporation

SARA	Superfund Amendments and Reauthorization Act of 1986
SCG	standards, criteria, and guidance
SCWA	Suffolk County Water Authority
SI	site investigation
SVOC	semivolatile organic compound
S&W	Stone & Webster Environmental Technology & Services
1,1,1-TCA	1,1,1-trichloroethane
TAGM	Technical and Administrative Guidance Memorandum
TCE	trichloroethylene
TOGS	Technical and Operational Guidance Series
ULV	upper limit value
USACE	U. S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound

1.0 SUMMARY OF THE RECORD OF DECISION

In 1984, the Defense Environmental Restoration Program (DERP) was established to promote and coordinate efforts for the evaluation and cleanup of contamination at U.S. Department of Defense (DoD) installations. In 1987, DERP became part of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The IRP was established under DERP to identify, investigate, and clean up contamination at DoD installations. The IRP is focused on cleanup of contamination associated with past DoD activities to ensure that threats to public health are eliminated and to restore natural resources for future use following applicable, relevant, and appropriate federal, state, and local cleanup standards. Within the Air National Guard (ANG), the National Guard Bureau Environmental Restoration Branch (NGB/A7CVR) manages the IRP and related activities.

SAIC Engineering of New York, P.C., a wholly owned subsidiary of Science Applications International Corporation (SAIC), was retained by the ANG to develop this Decision Document for three IRP Sites at the NYANG, located at Francis Gabreski International Airport, Westhampton Beach, New York. The development of the Decision Document is being conducted under the NGB Contract No. DAHA92-01-D-0008, Delivery Order 0115.

The NGB, in consultation with the NYSDEC and NYSDOH, has selected remedies for IRP Sites 4, 7, and 9 at the NYANG. The presence of hazardous substances has created threats to human health and/or the environment that are addressed by these selected remedies. As more fully described in Sections 3 and 5 of this document, NYANG has stored and used various types of hazardous materials during its history. The major operations performed at NYANG that used and disposed of hazardous waste/hazardous material included fuel and aircraft maintenance, support operations, and training exercises. These activities have resulted in a current or potential threat to human health associated with potential exposure to contaminated groundwater.

To eliminate or mitigate these potential threats, the installation of an in situ air biosparging groundwater treatment system is proposed for source areas of contamination and MNA for dissolved phase contamination downgradient of the source areas for IRP Sites 4 and 9. Institutional and/or engineering controls would be implemented for future potential threats from vapor intrusion if structures are placed on the site or from contact with potentially impacted soils during intrusive activities.

The selected remedies for Sites 4 and 9, as discussed in detail in Section 8, are intended to attain the remediation goals identified for this site in Section 6. The remedy will conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selected remedies also take into consideration the appropriate standards, criteria and guidance (SCGs).

For IRP Site 7, the selected remedy is No Further Action with monitoring. Based on the results of recent groundwater monitoring events, the remediation goals and SCGs, detailed in Section 6 for Site 7 have been satisfied. This alternative would be protective of human health and the environment, and would satisfy all SCGs for the site. If groundwater concentrations rebound and exceed criteria, monitoring would continue until the remedial objectives have been achieved. Institutional and/or engineering controls would be implemented for future potential threats from vapor intrusion if structures are placed on the site or from contact with potentially impacted soils during intrusive activities.

THIS PAGE INTENTIONALLY LEFT BLANK.

2.0 SITE LOCATION AND DESCRIPTION

The 106th Rescue Wing (RQW) of the NYANG is located at the Francis Gabreski International Airport in Suffolk County, New York, on the eastern end of Long Island. The Francis Gabreski International Airport, formerly known as Suffolk County Airport is on Old Riverhead Road, approximately 2 miles north of the Atlantic Ocean shoreline in Westhampton Beach. The airport is bounded to the north by undeveloped land, to the east by the Quogue Wildlife Refuge, to the south by the Long Island Railroad, and to the west by Old Riverhead Road. The airport is owned by Suffolk County. The NYANG leases approximately 70 acres of runways, hangars, and maintenance/service facilities on the southwest side of the airport. The Francis Gabreski International Airport Master Plan reports the current area of the airport as 1,486 acres (Latino 2002).

The airport is underlain by glacial sediments and outwash deposits consisting of 100 to 120 ft of stratified fine to coarse sand and gravel. Sieve analyses of two subsurface samples indicated the following average percentages: 90.5% sand, 7.9% gravel, and 1.6% silt/clay. Surface soil was found to contain higher percentages of silt (ABB-Environmental Services, Inc. [ABB-ES] 1997). These upper Pleistocene sediments are composed of glacial outwash deposits; lacustrine and marine deposits; and terminal, ground, and ablation-moraine till deposits. The sediments under the airport are mostly outwash deposits consisting of stratified fine to coarse sand and gravel of light- to dark-brown, tan, and yellowish-brown color. Till deposits known as the Ronkonkoma Terminal Moraine are expressed as hills approximately 2 miles north of the airport. Lacustrine and marine deposits are usually thin and discontinuous and are found locally throughout Long Island.

An approximately 40 ft thick clay bed, named the Gardiners Clay, lies below the surficial glacial deposits. This clay is present at about 100 ft below mean sea level at the airport and extends southward where it overlaps the Monmouth Greensand. The Gardiners Clay pinches out just north of the airport, but equivalent clay bodies can be found locally at various locations on Long Island. This unit is made up of green and gray clay, silt, and clayey and silty sand, including some interbedded clayey and silty gravel. This layer as a whole has low hydraulic conductivity and tends to confine water in the underlying and overlying aquifer (Dames and Moore 1986).

The Upper Glacial Aquifer forms the shallowest aquifer beneath the airport. This water-bearing unit is an unconfined aquifer present directly below the airport. Groundwater elevations are approximately 15 to 19 ft above the National Geodetic Vertical Datum, which varies seasonally. The fine to course sand and gravel are very porous and highly permeable, so that a high proportion of rainfall infiltrates where it falls. There is little surface run-off after precipitation events. The glacial deposits store large quantities of water and, due to their high porosity and permeability, yield large quantities of water to wells. The glacial deposits are the source of nearly all groundwater pumped in central Suffolk County. There are no effective barriers to the movement of water anywhere in the unit, but there may be substantial variation in permeability over short distances. As the surficial deposits were developed by water flowing generally from north to south, individual lenses of sand and gravel may be elongated in this direction. Thus, there may be threads of material with relatively higher permeably material along which water might move a little more rapidly under proper hydraulic conditions.

The direction of groundwater movement beneath the Francis Gabreski International Airport in the Upper Glacial Aquifer is toward the south-southeast. Depth to groundwater averages 35 to 40 ft below ground surface (bgs). Slug tests performed on installation monitoring wells and piezometers (screened in the Upper Glacial Aquifer) produced hydraulic conductivities ranging from 1.6×10^{-2} to 5.2×10^{-2} cm/sec

(Dames and Moore 1986). The Gardiners Clay, as described previously, acts as an aquitard between the Upper Glacial Aquifer and the deeper Magothy Aquifer located approximately 150 ft to approximately 1000 ft below mean sea level. Migration of contaminants downward into lower aquifers is very unlikely (Dames and Moore 1986).

Groundwater is the only water supply source for Suffolk County. Most of the water in the surrounding area of the Francis Gabreski International Airport is obtained from the Upper Glacial Aquifer; the rest is obtained from the deeper Magothy and Lloyd aquifers. At present, the Suffolk County Water Authority (SCWA) supplies the majority of the water in the area, while several smaller companies supply the rest. SCWA operates 18 wells in 4 well fields within a 4-mile radius of the site, and the nearest public supply well field is located 0.6 miles southeast of Sites 4, 7 and 9.

The current and projected future land use of the property is intended to remain as commercial/military use as an airport. Sites 4, 7 and 9 lay within a 1,000 ft of the center line of the flightline, and as such, no structures are permitted per Federal Aviation Administration rules.

3.0 SITE HISTORY

This section discusses the operational and waste disposal history, and previous investigations conducted at the NYANG.

3.1 OPERATIONAL/DISPOSAL HISTORY

The airport property was acquired in 1942 by the Civil Aeronautics Authority and was used for military training, aircraft maintenance, and armed forces support until 1969. Since 1970, Suffolk County has leased portions of the airport to numerous tenants, including the NYANG. In 1990, Suffolk County purchased the property and began operation of the Suffolk County Airport. The name of the airport was changed to the Francis Gabreski International Airport in 1999, in honor of the former base commander and fighter pilot ace. Currently, the 106th RQW of the NYANG operates and maintains the Lockheed HC-130P and the Sikorski HH-60 in support of its search and rescue mission.

In support of its primary mission of maintaining readiness for providing aerial rescue services, the NYANG has stored and used various types of hazardous materials during its history. The major operations performed at NYANG that used and disposed of hazardous waste/hazardous material included fuel and aircraft maintenance, support operations, and training exercises. These operations required the use and disposal of such hazardous materials as oils, solvents, and fuels. This Decision Document encompasses three identified IRP sites as indicated in Figure 3-1: IRP Site 4 (Aircraft Refueling Apron Site), IRP Site 7 (Former FTA), and IRP Site 9 (Ramp Drainage Outfall).

3.1.1 IRP Site 4 (Aircraft Refueling Apron Site) and Site 9 (Ramp Drainage Outfall)

Site 4 encompasses a grassy area adjacent to the refueling apron, southeast of Building 358. The refueling apron was used from the 1950s through the 1980s. Fuel was pumped from the on-base Petroleum, Oil, and Lubricant Tank Farm, located approximately 3,000 ft southeast of the refueling apron, to fuel outlets in a depressed concrete area at the apron. The depressed area was constructed to prevent potential surface releases of fuel from migrating onto the grassy area. Unused fuel was pumped back to the tank farm. It was estimated that hydraulic oil, trichloroethylene (TCE), and fuel were released, but that much of this material is believed to have drained to catch basins along the edge of the apron (ABB-ES 1997).

Two fuel spill incidents are known to have occurred at Site 4. The first spill occurred on July 6, 1987. Reportedly, the fire department applied foam to the area of the spill and the flow of fuel, water, and foam was stopped at the drains. The remainder of the spill was allowed to evaporate on the ramp surface. To prevent any residual floating product from leaving the installation, absorbent matting and powdered absorbent were placed along the outfall. The spill does not have a NYSDEC spill number, and the quantity of fuel spilled is not known. A second spill occurred on July 8, 1994 and was assigned the NYSDEC spill number "94-04858." During the second spill, approximately 100 gal of jet propellant (JP)-8 spilled on to the ramp during a heavy rain event. The material washed down the adjacent storm drains to a drainage ditch at an outfall located approximately 800 ft south of the refueling apron. This ramp drainage outfall was later identified as Site 9. Approximately 300 gal of an oil-water mixture from this spill was recovered (NGB/A7CVR 2003).

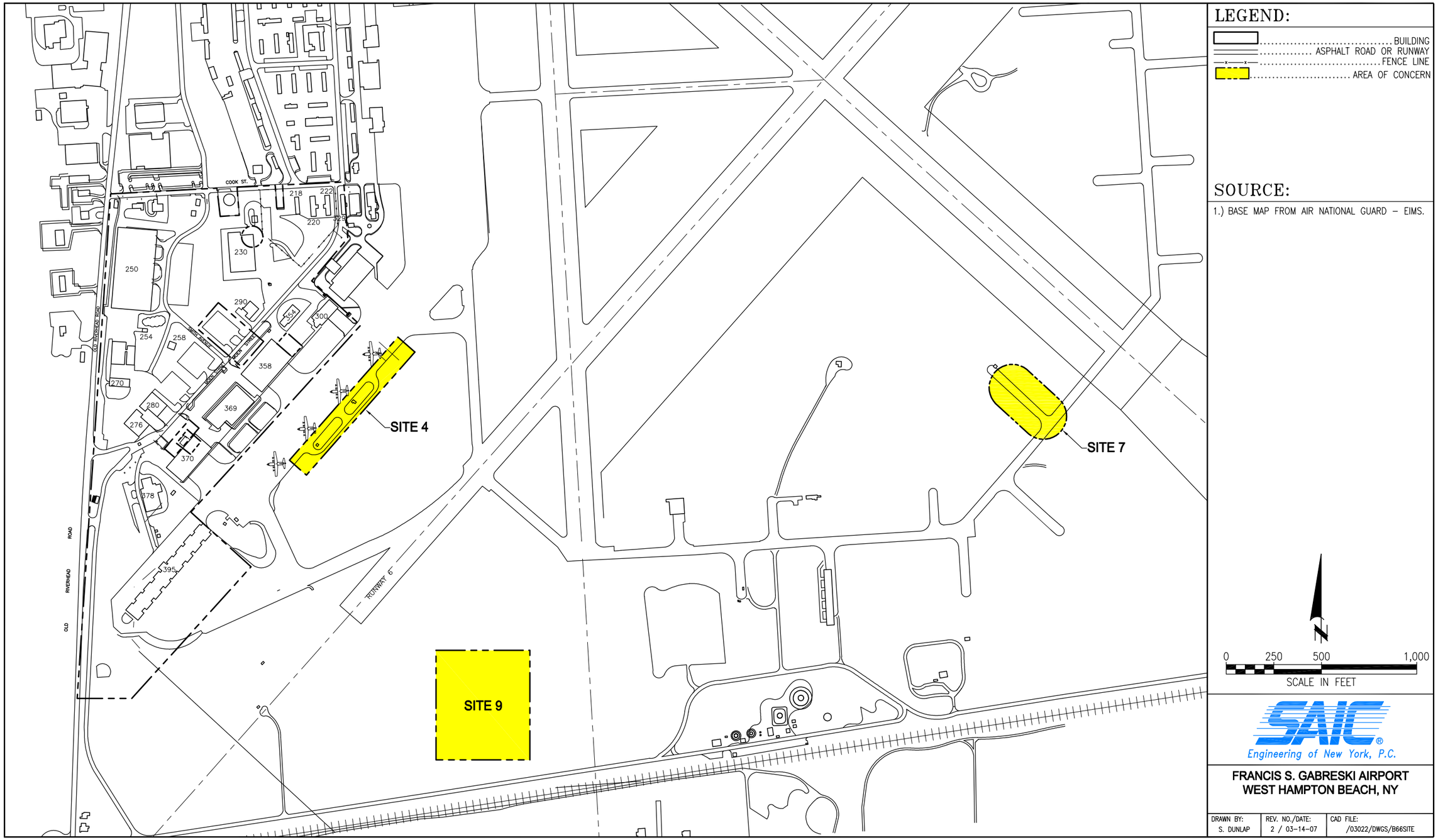


Figure 3-1. IRP Site 4, 7, and 9 at the 106th Rescue Wing, New York Air National Guard

3.1.2 IRP Site 7 (Former FTA)

Site 7 was used for fire training exercises by the Air Force from 1943 to 1971. It is situated 130 ft northwest of the taxiway on the southeast side of the airport, on a 10-in.-thick, concrete hardstand approximately 400 ft long by 50 ft wide, and bordered by a 10 ft wide asphalt apron. The area was originally an unlined pit encompassing 1 acre, located 3,000 ft southeast and across the airport from the current NYANG facility. Waste fuels, jet fuel and solvents (e.g., kerosene, mineral spirits, TCE, 2-butanone, toluene, etc.) were reportedly poured directly on the ground and ignited for fire training exercises.

The area was paved with a concrete hardstand in 1971 after the NYANG took over operations. A curb was constructed in 1978 to act as a berm around the burn area (approximately 1 ft high and 50 by 50 ft in size). Burn procedures were modified by floating a layer of jet fuel inside the berm on water, then either separating the fuel into a concrete underground storage tank (UST) or burning off the excess. Fuel to be used in training exercises was stored in an aboveground steel tank located about 250 ft south-southeast of the former FTA. Both tanks were connected to the former FTA by buried piping. Use of the site for fire training was discontinued by NYANG in 1986. The water contained in the UST was sampled on July 16, 1987, for lead and petroleum hydrocarbons, with no detections of these analytes (E.C. Jordan 1989).

3.1.3 IRP Site 9 (Ramp Drainage Outfall)

Site 9 was designated when Site 4 was split into two sites in 1990 because of detected chemicals at the storm water outfall at Site 9. By 2001, contaminants in groundwater had migrated from Site 4 to Site 9 such that the plumes were commingled. For this reason, the two sites are discussed together throughout this document.

Site 9 consists of an outfall, which receives storm drainage from the refueling apron, several hangars, a drainage ditch and surface drainage from Site 4. Surface drainage from the refueling apron is collected at five catch basins near the fuel outlets and then directed through underground pipes to the drainage outfall, at the north end of Site 9. The drainage ditch extends approximately 400 ft south of the outfall point along a ditch where it infiltrates into the subsurface.

3.2 REMEDIAL HISTORY

3.2.1 IRP Site 4 (Aircraft Refueling Apron Site) and Site 9 (Ramp Drainage Outfall)

A Phase I records search was conducted in 1987 (Hazardous Materials Training Center [HMTC] 1987) that included Site 4. A tracer study was conducted in 1988 to identify potential leaks in the hydrant lines. Potential leaks were identified in the fuel lines northwest of the distribution pumps and in one storage tank at the tank farm (neither were part of Site 4). As a result of the findings of the records search, a SI was conducted for Sites 4, 5, 8, and 9 in 1994 (ABB-ES 1997).

The NYANG indicated that the U. S. Army Corps of Engineers (USACE) had removed subsurface lines and tanks at Site 4 and that the contaminants at this site were associated with historic uses of JP-4 and/or JP-8. Fuel distribution pumps at the concrete apron have been inactive since 1980.

An initial RI was conducted in 1999 for Sites 4, 5, 8 and 9 (Stone & Webster Environmental Technology & Services [S&W] 1999). The data from this RI was subsequently incorporated into a comprehensive RI in 2004 that included eleven sites at Francis Gabreski International Airport, including Sites 4, 7 and 9. The results from the RI indicated that a groundwater plume consisting of dissolved phase volatile and semivolatile organic compounds existed at Sites 4 and 9. Field observations and analytical results

indicated that natural attenuation of the groundwater plume was occurring and no further action was recommended for surface and subsurface soils. The RI recommended that a remedial action be evaluated and implemented to address the groundwater contamination plume (PEER Consultants, P.C. [PEER] 2004).

Supplemental sampling conducted in 2004 (SAIC 2006a) indicated that previously detected groundwater contaminants still exceed action levels at Sites 4 and 9. In addition, the results of the sampling indicated that the groundwater plume geometry and size had changed and that a continuous groundwater plume still existed between Sites 4 and 9.

In July 2006, a supplemental site investigation was performed in order to refine the known extents of the groundwater plume at Sites 4 and 9. Groundwater samples were collected from 18 direct-push technology (DPT) borings at various depths. Groundwater samples were collected from each boring at approximately 10 ft intervals starting with the first water encountered to a depth of 30 ft below the water table. Upon completion of the supplemental DPT investigation, four new monitoring wells were installed and sampled. The supplemental investigation and new monitoring wells have provided further delineation of the groundwater plume at Sites 4 and 9. The results indicate concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) that still exceed action levels. Based on the available groundwater data, various remedial alternatives were evaluated for Sites 4 and 9, and a Feasibility Study (FS) and PRAP developed (SAIC 2006b).

3.2.2 IRP Site 7 (Former FTA)

A draft consent decree was issued on June 11, 1986, requiring that a SI be developed and implemented for the former FTA, to be followed by development and implementation of a Remedial Action Plan. The complaint was filed by the state of New York against the United States of America, et al., alleging that the United States caused the release of hazardous substances into the environment at the Suffolk County Airport, and as a consequence, soil and groundwater had become contaminated with hazardous substances. The former FTA was not included in the Phase I records search because SI and RI activities were already underway as a result of this decree (HMTC 1987).

During the 2001 RI, volatile and semivolatile organic compounds, arsenic, and lead were detected exceeding action levels in groundwater samples, and defined a plume migrating southeastward from the source area at the former FTA. Metals contamination in groundwater was detected beyond the source area at the former FTA, but not as far as the downgradient wells. Metals data from the affected monitoring well are suspect due to its galvanized steel construction (PEER 2004).

Supplemental sampling conducted in 2004 (SAIC 2006a) indicated that previously detected groundwater contaminants were below action levels at Site 7 and that no further action was warranted. In July 2006, one 2 inch galvanized steel well (MW-00X) also was abandoned in accordance with NYSDEC requirements. Based on the available groundwater data, various remedial alternatives were evaluated for Site 7 and a FS and PRAP developed (SAIC 2006b).

3.3 CURRENT AND POTENTIAL FUTURE LAND AND WATER USE

The 106th RQW at Gabreski operates as an active ANG Base on leased property from Suffolk County. The airport, including NYANG's leased portion, is improved with a variety of office buildings, paved parking areas, aircraft hangars, airfield aprons, runways, and taxiways with sparse, grassy areas throughout. The airport is bounded to the north by undeveloped land, to the east by the Quogue Wildlife Refuge, to the south by the Long Island Railroad, and to the west by Old Riverhead Road. Figure 3-1

depicts the layout of these features and neighboring facilities. The area surrounding the airport is relatively undeveloped to the West, North and East and heavily populated with much of the land used for residential purposes to the South. The closest residential areas are approximately 1,000 ft South from the leading edge of the dissolved phase plume at Site 9.

The SCWA supplies the majority of the drinking water in the area, while several smaller companies supply the rest. SCWA operates 18 wells in 4 well fields within a 4-mile radius of the site, and the nearest public supply well field is located 0.6 miles southeast of Sites 4, 7 and 9. There are no onsite groundwater extraction wells at the NYANG or airport.

The current and projected future land use of the property is intended to remain as commercial/military use as an airport. Sites 4, 7 and 9 lay within a 1,000 ft of the center line of the flightline, and as such, no structures are permitted per Federal Aviation Administration rules.

THIS PAGE INTENTIONALLY LEFT BLANK.

4.0 ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The NGB is the lead agency for site activities at the NYANG, and the NYSDEC is the supporting regulatory agency. A draft consent decree was issued on June 11, 1986 for Site 7 requiring that a SI be developed and implemented and followed by the development and implementation of a Remedial Action Plan. No other enforcement orders have been issued.

THIS PAGE INTENTIONALLY LEFT BLANK.

5.0 SITE CONTAMINATION

RIs and subsequent supplemental sampling events have been conducted to evaluate the alternatives for addressing the threats to human health the environment at IRP Sites 4, 7 and 9.

5.1 SUMMARY OF THE REMEDIAL INVESTIGATION

5.1.1 IRP Site 4 (Aircraft Refueling Apron Site) and Site 9 (Ramp Drainage Outfall)

Soil sampling performed in 1994 at Site 4 indicated exceedances of NYSDEC action levels for volatile organic compounds (VOCs), chlorobenzene, and the metal arsenic. The detected concentration of arsenic did not exceed the revised NYSDEC soil action levels. Groundwater sampling results indicated exceedances of NYSDEC action levels for BTEX, chlorobenzene, naphthalene, 2-methylnaphthalene, and chromium.

The Revised Draft RI (S&W 1999) reported that six polycyclic aromatic hydrocarbons (PAHs) and lead exceeded previous NYSDEC action levels in surface and subsurface soils collected in 1998. Groundwater sampling was also conducted using direct-push methodology in 1998 at Site 4. A total of six monitoring wells also were installed at Site 4, including SW-5, -6, -7, and -10, and deep wells SW-8 and -9 and two rounds of samples were collected. The samples had exceedances of NYSDEC action levels by fuel-related VOC and semivolatile organic compounds (SVOCs), including BTEX, naphthalene, and 2-methylnaphthalene.

A Final RI (including Sites 4, 7, and 9) was conducted in 2001 and the final document submitted in 2004 (PEER 2004). Field activities included sampling existing wells that had exceeded action levels in prior sampling events. Conclusions based on historical and 2001 data indicated that groundwater remained contaminated. The RI recommended no further action for surface and subsurface soils.

Supplemental sampling conducted in 2004 (SAIC 2006a) indicates that VOC, SVOC and metal contaminants in groundwater still exceed action levels at Sites 4 and 9. In addition, the results of the sampling indicate that the groundwater plume geometry and size had changed and that a continuous groundwater plume still existed between Sites 4 and 9.

At Site 9, PAHs and several metals were detected in surface and shallow subsurface soil in the upper portions of the ramp drainage outfall. Some of these constituents exceeded NYSDEC action levels. Some metal concentrations also exceeded NYSDEC action levels, although none exceeded background concentrations for the eastern United States (ABB-ES 1997).

Site 9 surface and subsurface soils were further investigated in 1998 (S&W 1999). Seven SVOCs were found to exceed NYSDEC action levels: pyrene, benzo(*a*)anthracene, chrysene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, benzo(*a*)pyrene, and dibenzo(*a*,*h*)anthracene. The metals cadmium and lead also exceeded previous NYSDEC action levels. No subsurface exceedances were found, and direct-push groundwater was not investigated. The Final RI recommended no further action for surface and subsurface soils since site soils posed no immediate risk (PEER 2004).

The two permanent monitoring wells at Site 9 were completed during the Final RI (PEER 2004) in 2001. Sample results indicated groundwater at Site 9 was being impacted by migration of contaminated groundwater from Site 4, but concentrations were not high enough for any contaminants of potential concern to be identified.

Supplemental groundwater sampling of both permanent wells at Site 9 was conducted in 2004 as a baseline for subsequent remedial actions. The results indicated that both VOCs and SVOCs exceed NYSDEC action levels (SAIC 2006a).

In July 2006, a supplemental site investigation was performed in order to refine the known extents of the groundwater plume at Sites 4 and 9. Groundwater samples were collected from 18 DPT borings and various depths. Groundwater samples were collected from each boring at approximately 10 ft intervals starting with the first water encountered to a depth of 30 ft below the water table. Upon completion of the supplemental DPT investigation, four new monitoring wells were installed and sampled. The supplemental investigation and new monitoring wells have provided further delineation of the groundwater plume at Sites 4 and 9. The results indicate concentrations of BTEX that still exceed NYSDEC action levels.

5.1.2 IRP Site 7 (Former FTA)

The SI was conducted in 1989 (E.C. Jordan 1989). A series of monitoring wells were installed at the site to assess and track groundwater contamination, and an extensive surface and subsurface soil sampling program was performed to define surface and subsurface soil contamination (YEC, Inc., 1989). Over the course of investigations at Site 7, a total of 22 monitoring wells and 4 piezometers were installed and sampled at the former FTA, and compared to NYSDEC action levels (ABB-ES 1997). VOCs that were detected all exceeded their respective action levels including BTEX, 1,1-dichloroethane (1,1-DCA), 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), and acetone. One SVOC, bis(2-ethylhexyl)phthalate (BEHP), also exceeded the NYSDEC action level. Lead was detected, but did not exceed the previous NYSDEC action level (ABB-ES 1997).

The 1989 Site Characterization (E.C. Jordan 1989) of Site 7 soils included both hand-auger and soil boring sampling of surface soils (0 to 0.5 ft bgs), shallow subsurface soils (0.5 to 2.0 ft bgs), and deeper subsurface soils (more than 2.0 ft bgs). Soil samples were analyzed for VOCs, SVOCs, polychlorinated biphenyls, and lead. At one location, ethylbenzene, total xylenes, fluorene, and 2-methyl phenol exceeded NYSDEC action levels for saturated soil (30 ft bgs), and total xylenes exceeded NYSDEC action levels for unsaturated soil (20 ft bgs). All of the surface soil samples (0 to 0.5 ft bgs), 7 out of 9 soil samples from 0.5 to 2.0 ft bgs, and 3 out of 12 samples from 3.5 to 4.0 ft bgs exceeded the previous NYSDEC action level for lead of 4.4 mg/kg. However, all analyses were within the range of eastern United States or state of New York background concentrations of 4 to 500 mg/kg. The highest lead concentrations were detected near the center of the former FTA, with an additional peak area near the concrete waste fuel UST.

A Final RI was implemented in 2001 comprised of direct-push sampling of soil and groundwater, surface soil sampling, and sampling of all existing permanent groundwater monitoring wells at the site. Two rounds of groundwater sampling were conducted in March and June 2001. Conclusions of the Final RI (PEER 2004) were that surface soil was impacted with lead, but the concentrations did not represent an unacceptable risk to human health. Subsurface saturated soil was impacted by VOCs, but a complete pathway to human receptors could not be established. It was also concluded that groundwater was impacted by site activities. Specifically, a dissolved phase VOC, SVOC, and metals plume existed at the site. It was recommended an additional investigation as well as a remedial action be conducted for groundwater at the site (PEER 2004).

Additional groundwater sampling was conducted at Site 7 in 2004 as part of a baseline sampling evaluation for subsequent remedial action at the site. Samples collected from wells at the site did not

contain detectable concentrations of any VOCs or SVOCs. In addition, all metals concentrations were below NYSDEC action levels or were not detected (SAIC 2006a).

5.2 STANDARDS, CRITERIA, AND GUIDANCE

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigations at Sites 4, 7 and 9 were compared to the following SCGs:

- Groundwater SCGs at Sites 4, 7, and 9 are based on State of New York Class GA groundwater standards. Usages are described in Part 701 of the state of New York Administrative Code. The SCGs are selected by determining the applicability of the principle organic contaminant (POC) groundwater standard. This procedure is outlined in the Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 amended in June 2004 (NYSDEC 2004).

- Soil SCGs were developed from NYSDEC guidance for determination of soil cleanup objectives (NYSDEC 1994). Action levels for SVOCs and VOCs reflect the most stringent value relative to human health-based levels and environmental concentrations protective of groundwater/drinking water quality. Action levels for inorganic constituents are based on the upper limit value (ULV) of site background concentrations, excluding outliers, as per NYSDEC recommendations. NYSDEC action levels for the metals arsenic, cadmium, chromium, lead, selenium, and silver in surface soils, sediment, and subsurface soils are summarized in the Final RI (PEER 2004). Action levels for all other metals are based on NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046.

Based on the investigation results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.3. More complete information can be found in the referenced site investigation reports.

5.3 NATURE AND EXTENT OF CONTAMINATION

5.3.1 IRP Site 4 (Aircraft Refueling Apron Site) and Site 9 (Ramp Drainage Outfall)

This section describes the findings of the investigation for all environmental media at Sites 4 and 9. As described in Section 5.1.1, many soil and groundwater samples were collected in the course of previous investigations to characterize the nature and extent of contamination at Site 4 and 9. The main categories of contaminants that exceed their SCGs are VOCs and SVOCs. The VOCs of concern are predominantly petroleum related compounds. While metals were observed slightly above SCGs, they are naturally occurring and attributable to local soil background conditions (PEER 2004).

Table 5-1 and Figures 5-1, 5-2 and 5-3 summarize the degree of contamination for the contaminants of concern (COCs) in groundwater at Sites 4 and 9 from monitoring wells during the 2004 and 2006 supplemental sampling events and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigations.

Waste Materials

No site-related waste material has been identified during the investigations at Sites 4 and 9. Free-phase petroleum product was not observed during previous investigations at this site (ABB-ES 1997). Therefore, no remedial alternatives were evaluated for waste.

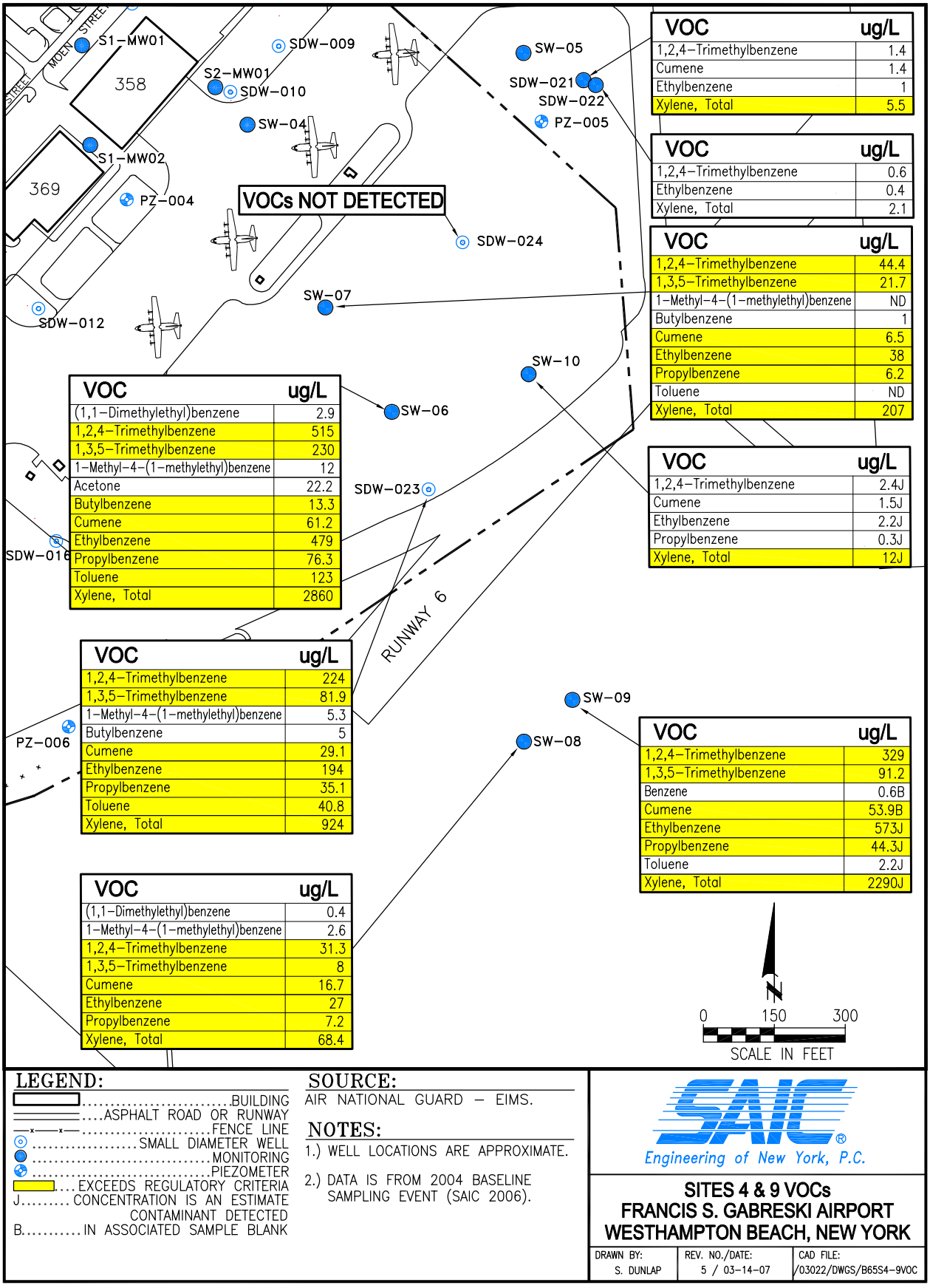


Figure 5-1. Extent of VOC Contamination in Groundwater at Sites 4 and 9

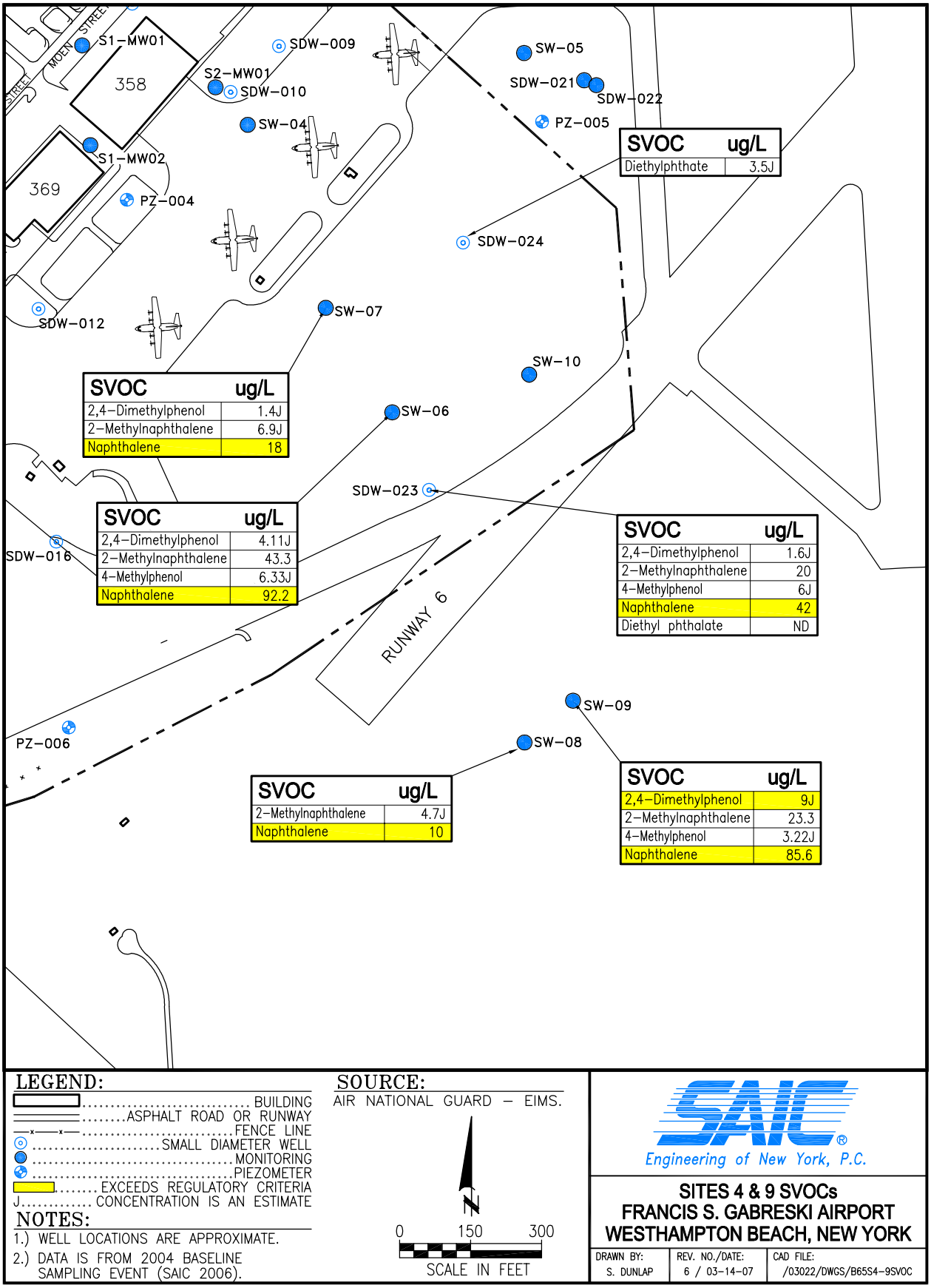


Figure 5-2. Extent of SVOC Contamination in Groundwater at Sites 4 and 9

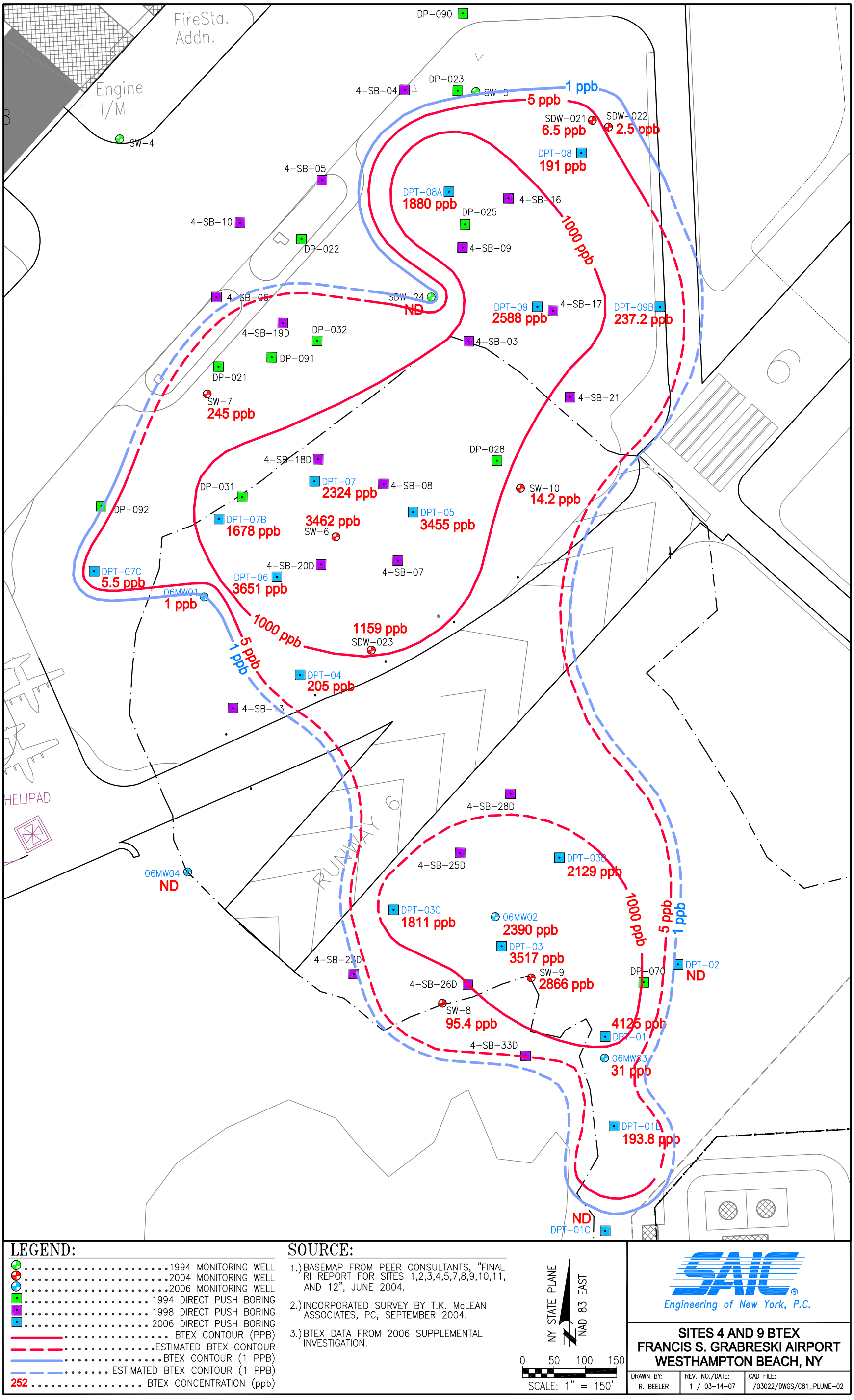


Figure 5-3. Extent of BTEX Contamination in Groundwater at Sites 4 and 9

Table 5-1. Maximum VOC and SVOC Reported Detections
Installation Restoration Program Sites 4 and 9
New York Air National Guard, Francis Gabreski International Airport, Westhampton Beach, New York

			SITE 4 & 9 Maximum Detected Contaminant Concentration
Volatile Organics (µg/L)	**NYSDEC[a]**	**MCL[b]**	
(1,1-Dimethyl-ethyl)benzene	*5**	N/A	2.9
(1-Methylpropyl)-benzene	*5**	N/A	2.6
1,2,4-Trimethyl-benzene	*5**	N/A	**515**
1,3,5-Trimethyl-benzene	*5**	N/A	**230**
Acetone	N/A	N/A	22.2 J
1-Methyl-4-(1-methylethyl)-benzene (p-Isopropyltoluene)	*5**	N/A	**12**
Benzene	1	5	0.6 J
Butylbenzene	*5**	N/A	**13.3**
Cumene (Isopropylbenzene)	*5**	N/A	**61.2**
Ethylbenzene	*5**	700	**770**
n-Propylbenzene	*5**	N/A	**76.3**
Toluene	*5**	1,000	**670**
Xylene, Total	*5**	10,000	**2,860**
Semi Volatile Organics (µg/L)			
2,4-Dimethyl-phenol	5*	N/A	1.6 J
2-Methyl-naphthalene	N/A	N/A	25
4-Methylphenol	N/A	N/A	6 J
Diethyl phthalate	N/A	N/A	3.5 J
Naphthalene	10	N/A	**44**

Notes:
[a] New York State Department of Environmental Conservation Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, Table 1 (cf. section 703.5) Water Quality Standards Surface Waters and Groundwaters, Class GA Waters, Amended June 2004
[b] Environmental Protection Agency National Primary and Secondary Drinking Water Standard Maximum Contaminant Level
[c] "5*" is the principal organic contaminant standard for groundwater of 5 ug/L applies to this substance
[d] Bolded values represent concentrations exceeding criteria.
[e] All units are in micrograms per liter (µg/L)

Abbreviations and Acronyms:
J – detected at an estimated concentration
N/A – not applicable
µg/L – micrograms per liter

Surface Soil

Soil sampling performed in 1994 at Site 4 indicated exceedances of NYSDEC action levels for VOCs, chlorobenzene, and the metal arsenic (ABB-ES 1997). The detected concentration of arsenic did not exceed the revised NYSDEC soil action levels. PAHs and several metals were detected in surface soil in

the upper portions of the ramp drainage outfall at Site 9. Although some metal concentrations exceeded NYSDEC action levels, none exceeded background concentrations for the eastern United States (ABB-ES 1997). Surface soils at Site 9 were investigated in 1998, as reported in the Revised Draft RI (S&W 1999). Seven SVOCs were found to exceed NYSDEC action levels: pyrene, benzo(*a*)anthracene, chrysene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, benzo(*a*)pyrene, and dibenzo(*a,h*)anthracene. The metals cadmium and lead also exceeded previous NYSDEC action levels. The Final RI conducted in 2001 (PEER 2004) concluded that risks associated with surface soils are within the acceptable limits, that no further action was required, and that no remedial alternatives need to be evaluated.

Subsurface Soil

The Revised Draft RI (S&W 1999) reported that six PAHs and lead exceeded NYSDEC action levels in subsurface soils collected in 1998. However, none exceeded background concentrations for the eastern United States (ABB-ES 1997). The Final RI conducted in 2001 (PEER 2004) concluded that risks associated with subsurface soils are within the acceptable limits, that no further action was required, and that no remedial alternatives need to be evaluated for subsurface soil.

Groundwater

Groundwater sampling results from the 1994 SI indicated exceedances of NYSDEC action levels for BTEX, chlorobenzene, naphthalene, 2-methylnaphthalene, and chromium (ABB-ES 1997). Groundwater sampling was also conducted using direct-push methodology in 1998 at Site 4 as reported in the Revised Draft RI (S&W 1999). The samples had exceedances of NYSDEC action levels by fuel-related VOC and SVOC compounds, including BTEX, naphthalene, and 2-methylnaphthalene.

Supplemental groundwater sampling was conducted in 2004 as a baseline for subsequent remedial actions (SAIC 2006a). A total of eight monitoring wells were sampled across the two sites for VOCs, SVOCs, and metals. The results indicated that both VOCs and SVOCs exceed NYSDEC action levels. Naphthalene was the only SVOC detected at concentrations greater than the action levels in the 2004 sample data. Metals (aluminum, iron, manganese, and sodium) also exceeded the NYSDEC action levels in groundwater at the sites; however, none of these detections exceeded background concentrations for the eastern United States (PEER 2004).

In July 2006, a supplemental site investigation was performed in order to refine the known extents of the groundwater plume at Sites 4 and 9. The results indicate concentrations of BTEX that still exceed NYSDEC action levels (SAIC 2006a).

Soil Vapor/Air

No soil vapor samples have been collected at Site 4 and 9. Since no structures exist at Sites 4 or 9 and are unlikely to exist in the reasonable future, there are no risks associated with soil vapor and no remedial alternatives need to be evaluated for soil vapor.

5.3.2 IRP Site 7 (Former FTA)

This section describes the findings of the investigation for all environmental media that were investigated at Site 7. As described in Section 5.1.2, many soil and groundwater samples were collected in the course of previous investigations to characterize the nature and extent of contamination at Site 7. Historically, the main categories of contaminants that exceed their SCGs are VOCs and SVOCs; however, no action level exceedances were observed during the most recent sampling event. While metals were observed marginally above SCGs, they occur at concentrations below soil background conditions (PEER 2004).

Table 5-2 and Figure 5-4 summarize the degree of contamination for the COCs in groundwater at Site 7 from monitoring wells during the 2004 supplemental sampling event and compare the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigations.

Table 5-2. Maximum VOC and SVOC Reported Detections
Installation Restoration Program Site 7
New York Air National Guard, Francis Gabreski International Airport, Westhampton Beach, New York

			SITE 7 Maximum Detected Contaminant Concentration
Volatile Organics (µg/L)	**NYSDEC[a]**	**MCL[b]**	
1,2,4-Trimethylbenzene	*5**	N/A	0.7 J
Chloroform	7	80	1.2
Ethylbenzene	*5**	700	1
Xylene, Total	*5**	10,000	4
Semi Volatile Organics (µg/L)			
Benzoic Acid	N/A	N/A	9.5 J
Bis(2-ethylhexyl)-phthalate	*5**	N/A	2.8 J

Notes:
[a] New York State Department of Environmental Conservation Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, Table 1 (cf. section 703.5) Water Quality Standards Surface Waters and Groundwaters, Class GA Waters, Amended June 2004
[b] Environmental Protection Agency National Primary and Secondary Drinking Water Standard Maximum Contaminant Level
[c] "5*" is the principal organic contaminant standard for groundwater of 5 µg/L applies to this substance
[d] Bolded values represent concentrations exceeding criteria.
[e] All units are in micrograms per liter (µg/L)

Abbreviations and Acronyms:
J – detected at an estimated concentration
N/A – not applicable
µg/L – micrograms per liter

Waste Materials

No site-related waste material has been identified during the investigations at Site 7. Therefore, no remedial alternatives were evaluated for waste.

Surface Soil

The 1989 Site Characterization (E.C. Jordan 1989) of Site 7 soils included sampling of surface soils (0 to 0.5 ft bgs). Soil samples were analyzed for VOCs, SVOCs, polychlorinated biphenyls, and lead. All of the surface soil samples exceeded the previous lead NYSDEC action level of 4.4 mg/kg. However, all analyses were within the range of eastern United States or state of New York background concentrations of 4 to 500 mg/kg. The highest lead concentrations were detected near the center of the former FTA, with an additional peak area near the concrete waste fuel UST.

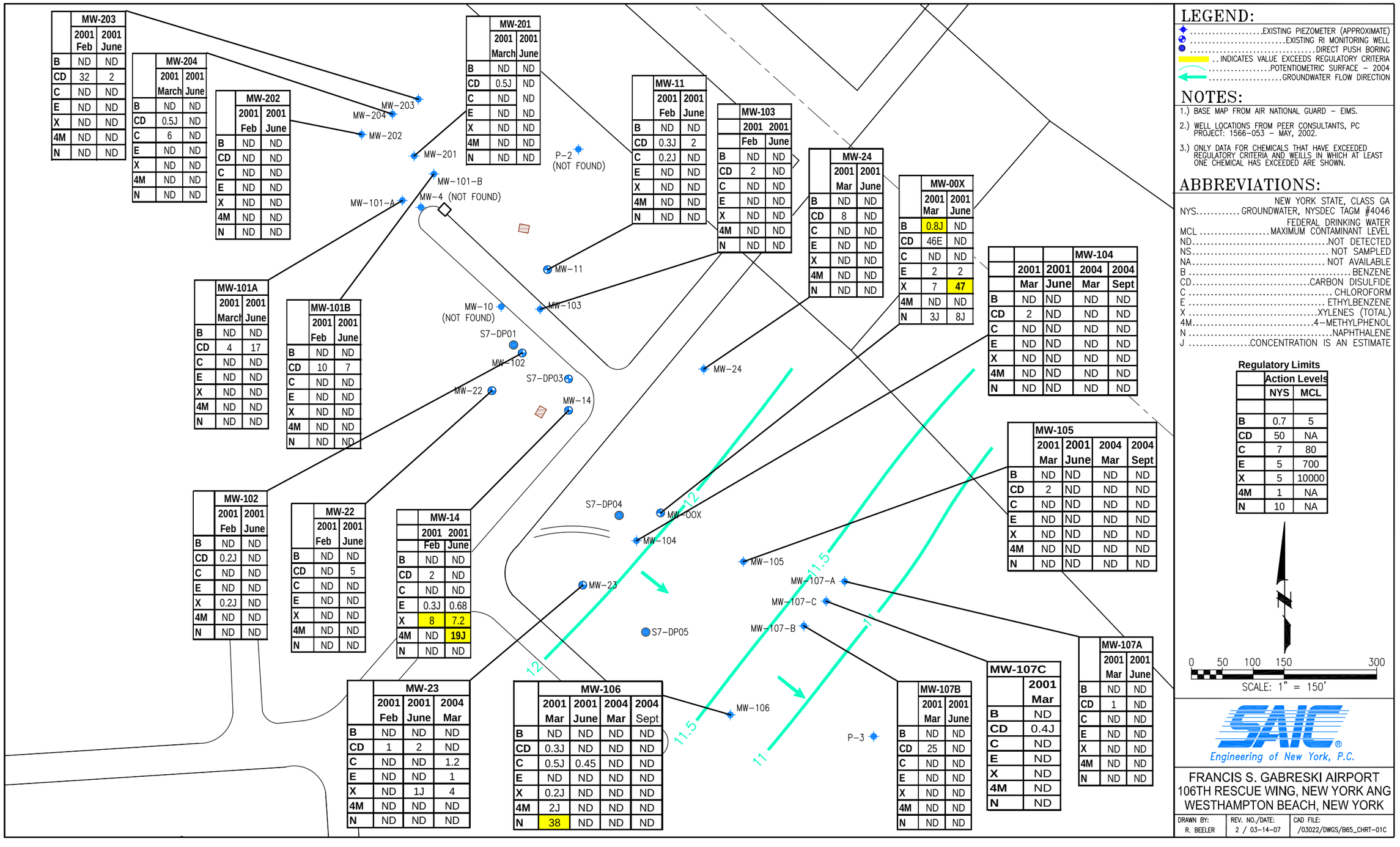


Figure 5-4. Extent of SVOC and VOC Contamination in Groundwater at Site 7

Additional surface soil sampling was conducted under the Final RI (PEER 2004) in 2001. Conclusions of this investigation were that surface soil was impacted with lead, but the concentrations did not represent an unacceptable risk to human health and no remedial alternatives need to be evaluated for surface soil.

Subsurface Soil

The 1989 Site Characterization (E.C. Jordan 1989) of Site 7 soils included both hand-auger and soil boring sampling of shallow subsurface soils (0.5 to 2.0 ft bgs) and deeper subsurface soils (more than 2.0 ft bgs). Soil samples were analyzed for VOCs, SVOCs, polychlorinated biphenyls, and lead. At one location, ethylbenzene, total xylenes, fluorene, and 2-methyl phenol exceeded NYSDEC action levels for saturated soil (30 ft bgs), and total xylenes exceeded NYSDEC action levels for unsaturated soil (20 ft bgs). Lead concentrations in 7 out of 9 soil samples from 0.5 to 2.0 ft bgs, and 3 out of 12 samples from 3.5 to 4.0 ft bgs exceeded the previous lead NYSDEC action level for lead of 4.4 mg/kg. However, all analyses were within the range of eastern United States or state of New York background concentrations of 4 to 500 mg/kg. The highest lead concentrations were detected near the center of the former FTA, with an additional peak area near the concrete waste fuel UST.

Direct-push sampling of soils in 2001 under the Final RI (PEER 2004) confirmed that subsurface saturated soil was impacted by VOCs, but a complete pathway to human receptors could not be established. These previous investigations have concluded that risks associated with subsurface soils are within the acceptable limits and no remedial alternatives need to be evaluated for subsurface soil.

Groundwater

Initial investigations at Site 7 indicated detections of 2-butanone. However, the subsequent "Evaluation of 2-Butanone in Groundwater Samples" (ABB-ES 1992) concluded that the 2-butanone in samples collected from the former FTA was a sampling artifact resulting from the use of methyl hydrate as a decontamination fluid. This was demonstrated through the use of chromatographic fingerprinting, statistical analysis of data, and focused field investigation.

During RI activities in 2001, VOCs and SVOCs were detected in exceedance of NYSDEC action levels, including benzene, carbon disulfide, chloroform, ethylbenzene, xylenes (total), 4-methyl-phenol, and naphthalene. The metals arsenic, cadmium, lead, and selenium were detected exceeding NYSDEC action levels. Conclusions of the RI indicated that a dissolved phase VOC, SVOC, and metals plume existed at Site 7 as a result of former site activities (PEER 2004).

Additional groundwater sampling was conducted at Site 7 in 2004 as part of a baseline sampling evaluation for subsequent remedial action at the site and to delineate the full extent of the plume (SAIC 2006a). Data from this investigation represent the most current concentrations available to evaluate Site 7 groundwater. Of the monitoring wells sampled at Site 7 in 2004, only monitoring well MW-23 reported detections of any VOCs at concentrations above the laboratory method detection limit; 1,2,4-trimethylbenzene, chloroform, ethylbenzene, and total xylenes. However, none of these VOC exceeded their respective regulatory criteria. A total of 2 SVOCs were detected in the groundwater samples collected at IRP Site 7 in 2004; benzoic acid and bis(2-ethylhexyl)phthalate were both detected at estimated (J) concentrations below their respective regulatory criteria. Historically, 4-methyl-phenol, and naphthalene have exceeded regulatory criteria, but were not detected in any of the 2004 samples collected. A total of 12 inorganic compounds were detected in the groundwater samples, three of which (aluminum, iron, and manganese) were detected above their respective established maximum contaminant levels (MCLs). Manganese exceeded the MCL at a single location, monitoring well MW-106 while iron and aluminum exceeded their respective MCLs in two and three Site 7 wells, respectively. None of the

reported concentrations exceeded the background range for metals reported in the 2004 Final RI (PEER 2004).

Soil Vapor/Air

No soil vapor samples have been collected at Site 7. Since no structures exist at Sites 7 and are unlikely to exist in the reasonable future, there are no risks associated with soil vapor and no remedial alternatives need to be evaluated for soil vapor.

5.4 INTERIM REMEDIAL MEASURES

There were no Interim Remedial Measures (IRMs) performed at these sites during the RI/FS phase.

5.5 SUMMARY OF HUMAN EXPOSURE PATHWAYS

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways for IRP Sites 4, 7 and 9 can be found in the Revised Draft RI (S&W 1999) and Final RI (PEER 2004). An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Pathways which are known to or potentially exist at the site include:

Soil

- Direct contact with contaminated surface soil is a potential exposure pathway for site users. However, concentrations of contaminants in surfaces soils at Sites 4, 7 and 9 do not represent an unacceptable risk to human health.

- During excavation work, construction workers could come into direct contact with contaminated sub-surface soil, potentially resulting in dermal exposures or exposure through the inhalation of soil particles.

Groundwater

- Ingestion of groundwater was considered to be a potential pathway for groundwater from Site 7 and a hypothetical pathway and Sites 4 and 9. However, this route of exposure is considered unlikely. The

distance to the nearest water well is approximately 0.6 mile and there are no water wells within the site boundaries.

Ambient (Outdoor) Air

- Inhalation of VOCs and particulates may be a potential exposure pathway during excavation and construction activities. However, these short term risks would be mitigated through proper engineering and safety controls which would be implemented prior to the inception of any intrusive site activities at Sites 4, 7 and 9.

Indoor Air

- Based on the current and reasonable future land use at Sites 4, 7 and 9, no complete or potential pathways are considered to exist for indoor air.

5.6 SUMMARY OF ENVIRONMENTAL IMPACTS

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

No current pathways for environmental exposure have been identified for Sites 4, 7 and 9. The NYANG occupies 70 acres of runways, hangars, and maintenance/service facilities within the 1,486 acre footprint of the Francis Gabreski International Airport. The grass areas within this footprint are actively mowed / maintained and do not contain extensive wildlife. Site contamination has impacted the groundwater resource in the Upper Glacial Aquifer, although there is no surface water exposure point near the sites and associated environmental impacts.

THIS PAGE INTENTIONALLY LEFT BLANK.

6.0 SUMMARY OF THE REMEDIATION GOALS

Remedial objectives for the NYANG have been established through the remedy selection process as stated in Title 6 NYCRR Part 375-1.10. At a minimum, the remedies selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous substances disposed of at the site through proper application of scientific and engineering principles.

The current and projected future land use of the property is intended to remain as commercial/military use as an airport. Sites 4, 7 and 9 lay within a 1,000 ft of the center line of the flightline, and as such, no structures are permitted per Federal Aviation Administration rules.

Site data from previous investigations indicate that groundwater is the only medium that must be addressed by remedial action, and that multiple VOCs and SVOCs are included as groundwater contaminants of concern for the site. The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to VOCs and SVOCs in groundwater;
- the release of contaminants from identified sources of potentially significant impacts to groundwater that may create exceedances of SCGs; and
- off-site migration of groundwater that does not attain SCGs.

Further, the remediation goals for the site include attaining to the extent practicable:

- SCGs for groundwater over the long-term.

The SCGs for groundwater at Sites 4, 7, and 9 are based on NYSDEC Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, amended August 1999. Specifically, action levels for groundwater are derived from Section 703.5 based on a groundwater classification of GA as a source of potable water supply (NYSDEC 2004) and the associated TOGS 1.1.1 amended June 2004. Groundwater classes and usages are described in Part 701. The SCGs are selected by determining the applicability of the POC groundwater standard as detailed in TOGS 1.1.1. Determining an action level requires finding the COC in one of three tables presented in TOGS. If the COC is not included in any of the three tables, then procedures included in TOGS are followed. If the COC is not found in these four steps, NYSDEC assistance is required.

The relevant SCGs for groundwater derived from State of New York guidance and Federal drinking water MCLs are presented in Table 5-1 and 5-2 above. Federal drinking water MCLs are provided for comparison. If standards or guidance values are less than laboratory reporting limits (RLs), the RLs will be used as action levels.

THIS PAGE INTENTIONALLY LEFT BLANK.

7.0 SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the IRP Sites 4, 7, and 9 at the NYANG were identified, screened and evaluated in the FS / PRAP report which is available in the administrative record for this site (SAIC 2006b).

All of the remedial alternatives evaluated include restricting access to the site by maintaining the current security around Sites 4, 7, and 9 at Francis Gabreski International Airport, preventing the use of on-site groundwater at the NYANG, and preventing construction of structures without evaluating vapor intrusion risks.

A summary of the remedial alternatives that were considered for each site is discussed below. The present worth represents the amount of money invested in the current year (2006 baseline) that would be sufficient to cover all present and future operations and maintenance (O&M) costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis.

7.1 DESCRIPTION OF REMEDIAL ALTERNATIVES FOR IRP SITES 4 AND 9

As detailed in the FS / PRAP, the following potential remedies were considered to address the contaminated groundwater at IRP Sites 4 and 9.

Alternative 1: No Further Action With Monitoring

Present Worth: $1,753,000
Capital Cost: $35, 000
Annual O&M Costs:
(Years 1-30): $1,718,000

The No Further Action with monitoring alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. Monitoring would be continued annually until achievement of closure criteria.

Alternative 2: Pump and Treat

Present Worth: $3,291,000
Capital Cost: $503,000
Annual O&M Costs:
(Years 1-10): $2,788,000

This alternative would involve installing a pump-and-treat groundwater control and treatment system. The alternative would include the following elements:

- Preconstruction design and permitting, and work plan development
- Installation of extraction wells downgradient of the source areas to prevent migration of impacted groundwater
- Treatment of collected groundwater to meet discharge requirements

- Discharge of treated groundwater directly into the Site 9 drainage basin or to the nearest sanitary sewer
- Installation of new monitoring wells to monitor the plume's leading edge
- Periodic groundwater sampling to monitor performance
- O&M of the pump and treat system until closure requirements are met

Based on a calculated radius of influence of 75 ft along a 500 ft border, it is estimated that installation of three to five new groundwater extraction wells would be required. Extraction wells would be installed in a line perpendicular to the direction of groundwater flow. The flow of groundwater collected from each extraction well was estimated to be approximately 25 gallons per minute (gpm) from a 10 ft screened interval.

Extracted groundwater would be treated ex-situ by an air stripper. The process has been widely and successfully applied to groundwater remediation for a number of contaminants, including BTEX, naphthalene, 2-methylnaphthalene. Common air stripping configurations for extracted groundwater impacted by VOCs and SVOCs include a low profile tray tower to treat the contaminated groundwater followed by a carbon adsorption of the vapor phase. This system would be sized to treat the total inflow from the extraction wells of 75 to 125 gpm. Groundwater and treated water sampling would be performed as appropriate until site closure requirements are met.

Alternative 3: Air Biosparging with Monitored Natural Attenuation

Present Worth: $780,000
Capital Cost: $379,000
Annual O&M Costs:
(Years 1-5): $401,000

This alternative would involve installation of an in situ groundwater treatment system for source areas of contamination and MNA for dissolved phase contamination downgradient of the source areas. The costs for this alternative include:

- Preconstruction design and permitting, and work plan development
- Installation of air biosparge wells within the contaminated groundwater plume to treat source areas of groundwater and enhance aerobic bioremediation
- Construction and operation of the air biosparge system
- Groundwater sampling for MNA and air biosparge performance monitoring, and to quantify the rate of reduction for the groundwater contaminants
- O&M of the air biosparge system until concentrations of chemicals in groundwater achieve site closure criteria
- Conduct the required NYSDEC closure monitoring once groundwater remediation criteria are achieved

For this alternative, the number of air biosparge wells would be approximately 50 with an approximate radius of influence of 40 ft. The air biosparge wells would be installed into the contaminated plume at a depth of approximately 45 ft bgs with a 5 ft screened interval. Groundwater sampling of eight monitoring wells would be performed semiannually for 2 years and annually until concentrations are below criteria.

At that time, four quarterly sampling events would be performed to meet regulatory requirements for site closure.

Alternative 4: Enhanced Bioremediation with Monitored Natural Attenuation

Present Worth: $2,525,000
Capital Cost: $2,250,000
Annual O&M Costs:
(Years 1-5): $275,000

This alternative consists of injecting oxygen release compound (ORC® or equivalent) into the contaminated groundwater plume source area with MNA for areas outside the treatment area. The alternative would include the following elements:

- Preconstruction design and permitting, and work plan development
- Injection of ORC into the source of the contaminated groundwater plume
- Installation of new monitoring wells down-gradient plume's leading edge
- Groundwater sampling to monitor performance and to quantify attenuation rates
- Monitoring the attenuation of contaminants until concentrations of chemicals in groundwater achieve site closure criteria
- Conduct the required NYSDEC closure monitoring once groundwater remediation criteria are achieved

Under this alternative, ORC will be injected with a direct-push rig using a grid spacing of 10 ft to a depth of approximately 45 ft bgs. There are 2,371 injection points required to cover the source area of the contaminant plume. The ORC would be injected at a rate of 35 lbs per well, based on a 15 ft contaminant depth. It is assumed that a polishing step would be required for 50% of the injection points at the same injection rates. Groundwater sampling of eight monitoring wells would be performed semiannually for 2 years and annually until concentrations are below criteria. At that time, four quarterly sampling events would be performed to meet regulatory requirements for site closure.

7.2 DESCRIPTION OF REMEDIAL ALTERNATIVES FOR IRP SITE 7

The following potential remedy was considered to address the contaminated groundwater at Site 7:

Alternative 1: No Further Action With Monitoring

Present Worth: $108,000
Capital Cost: $108,000
Annual Costs:
(Years 1-2): $0

The No Further Action with monitoring alternative would leave the site in its present condition. Four semi-annual sampling events would be performed to meet regulatory requirements for site closure.

Current conditions at Site 7 indicate that no remedial action is warranted at this time. Chemical concentrations in groundwater are below action levels and/or are within natural background

concentrations. The human health risk assessments have indicated that risks associated with soils are not at unacceptable levels. The lack of contamination in groundwater precludes the necessity for a comparison of remedial alternatives.

Monitoring of groundwater is required for site closure with a minimum of four monitoring events required to show that groundwater concentrations are consistently below action levels. Under this proposed alternative, a suite of site wells will be sampled for VOCs, SVOCs, and metals for site closure purposes until closure criteria are met, or until reevaluation of a remedy is required by contamination rebound. Additionally, controls will be maintained to continue restrictions on site access, to prevent the use of on-site groundwater, and to prevent construction of structures without evaluating vapor intrusion risks.

Based on the results of the investigations at the site and the evaluation presented here, No Further Action with monitoring is proposed as the preferred alternative for Site 7.

7.3 EVALUATION OF REMEDIAL ALTERNATIVES

The criteria to which potential remedial alternatives are compared are defined in Title 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS / PRAP report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment: This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State SCGs: Compliance with SCGs address whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the NYSDEC has determined to be applicable on a case-specific basis.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness: The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence: This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

5. Reduction of Toxicity, Mobility or Volume: Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

6. Implementability: The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectivness: Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 7-1 and 7-2.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the FS / PRAP have been received.

8. Community Acceptance: Concerns of the community regarding the RI and the FS / PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the NGB will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Table 7-1. Remedial Alternative Costs for Sites 4 and 9
Installation Restoration Program Sites 4 and 9
New York Air National Guard, Francis Gabreski International Airport, Westhampton Beach, New York

Remedial Alternative for Groundwater at Sites 4 and 9		Duration	Capital Cost	O&M Costs	Total Present Worth
1	No Further Action With Monitoring	30 yr	$35,000	$1,718,000	$1,753,000
2	Pump and Treat	10 yr	$503,000	$2,788,000	$3,291,000
3	Air Biosparging With MNA	5 yr	$379,000	$401,000	$780,000
4	Enhanced Bioremediation With MNA	5 yr	$2,250,000	$275,000	$2,525,000

Abbreviations and Acronyms:
MNA – monitored natural attenuation
yr – year

Table 7-2. Remedial Alternative Costs for Site 7
Installation Restoration Program Site 7
New York Air National Guard, Francis Gabreski International Airport, Westhampton Beach, New York

Remedial Alternative for Groundwater at Site 7		Duration	Capital Cost	O&M Costs	Total Present Worth
1	No Further Action With Monitoring	1 yr	$108,000	$0	$108,000

Abbreviations and Acronyms:
yr – year

THIS PAGE INTENTIONALLY LEFT BLANK.

8.0 SUMMARY OF THE SELECTED REMEDY

The selected remedies for groundwater contamination at Sites 4 and 9 of the NYANG is air biosparging with MNA. The selected remedy for Site 7 is No Further Action with monitoring. Both of these remedies are inclusive of a combination of site access restrictions, groundwater use restrictions, building restrictions, and associated closure sampling.

8.1 IRP SITE 4 (AIRCRAFT REFUELING APRON SITE) AND SITE 9 (RAMP DRAINAGE OUTFALL)

The selected remedies for IRP Sites 4 and 9 are Alternative 3, Air Biosparging with MNA. The elements of this remedy are described at the end of this section.

The selected remedies are based on the results of the RI (PEER 2004), baseline sampling (SAIC 2006a), and the evaluation of alternatives presented in the FS / PRAP (SAIC 2006b). Alternative 3 has been selected since it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.3. It is the most protective of human health and the environment because the sources impacting groundwater would be treated and controlled. This alternative would achieve the remediation goals for the site by reducing impacts from site groundwater on downgradient areas and would create the conditions needed to restore groundwater quality to the extent practicable. The other alternatives considered would also comply with the threshold criteria, albeit to a lesser degree and with a lower certainty.

Since Alternatives 1, 2, and 4 that were evaluated for Sites 4 and 9 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site.

The selected remedy (Alternative 3, Air Biosparging with MNA), Alternative 2 (Pump-and-Treat) and Alternative 4 (Enhanced Bioremediation and MNA) all have short-term impacts which can easily be controlled with the proper implementation of engineering controls. Alternative 1 (no further action with monitoring) has a relatively low short-term risk; however, the time for this remedy to achieve remedial objectives would be the longest of all considered alternatives, at up to 30 years. The time needed to achieve the remediation goals for Alternatives 2, 3, and 4 would be 10 years, 5 years, and 5 years, respectively.

Achieving long-term effectiveness and providing a permanent remedy is best accomplished by remediation of the groundwater contaminant source area. Alternatives 2, 3, and 4 would be the most effective means of ensuring long-term protection because the highest concentrations of groundwater would be controlled. While Alternative 1 would be effective in the long term, this remedy would be the slowest, as its effectiveness is entirely dependant upon naturally-occurring attenuation processes.

Alternatives 3 and 4 are favored relative to Alternatives 1 and 2 because they would reduce the toxicity, mobility, and volume of constituents in impacted groundwater within the source areas. Alternative 2 would eliminate the toxicity, mobility, and volume of impacted groundwater and would reduce the impacts to off-site receptors; however, this reduction is largely dependent upon the long-term maintenance of the pump-and-treat system. Alternative 1 would reduce the toxicity and volume of impacted groundwater, but would not reduce the mobility of contaminants.

Alternatives 1, 3, and 4 would be very easy to implement. Alternative 2 is also implementable, but there are more uncertainties regarding the length of operations and maintenance of the treatment system that would be required.

The cost of the alternatives varies significantly. The selected remedy (Alternative 3) is very favorable because it is a permanent remedy that will treat and control the sources impacting groundwater, and it is also the least expensive of the considered remedies. Pump-and-treat (Alternative 2) is the most costly remedy, and its implementability, length of operations, and effectiveness involve a high degree of uncertainty. Alternative 1 (no further action with monitoring) is the second least expensive remedy, but requires the longest time to achievement of remedial objectives of all the considered alternatives and does not control the mobility of contaminants over that time period. Alternative 4 (enhanced bioremediation) possesses many of the benefits of the selected Alternative 3 (Air Biosparging with MNA), but at nearly three times the total cost.

The estimated present worth cost to implement the selected remedy is $780,000. The cost to construct the remedy is estimated to be $379,000, and the estimated average annual costs for a 5-year treatment period and 6 years of monitoring is $401,000.

The elements of the proposed remedy are as follows:

1. A remedial design would be developed to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. Air biosparge wells would be installed within the contaminated groundwater plume to treat source areas of groundwater and enhance aerobic bioremediation (see Figure 8-1).

3. The air biosparge system would be constructed, operated, and maintained until concentrations of chemicals in groundwater achieve site closure criteria.

4. Groundwater sampling of eight monitoring wells would be performed semiannually for 2 years and annually until contaminant concentrations are below criteria. Data from these monitoring events would also be used to monitor performance and quantify the rate of reduction for the groundwater contaminants.

5. Imposition of an institutional control in the form of an environmental easement that would require (a) limiting the use and development of the property to commercial or military uses; (b) compliance with the approved site management plan; (c) restricting the use of groundwater onsite as a source of potable or process water; (d) restricting construction of occupied buildings on the site without an evaluation or engineering controls of potential vapor intrusion risks; and (e) the property owner to complete and submit to the NYSDEC a periodic certification of institutional and engineering controls.

6. Development of a site management plan which would include the following institutional and engineering controls: (a) monitoring of groundwater; (b) identification of any use restrictions on the site; (c) maintenance of current security practices at Francis Gabreski International Airport to control site access; and (d) provisions for the continued proper operation and maintenance of the components of the remedy.

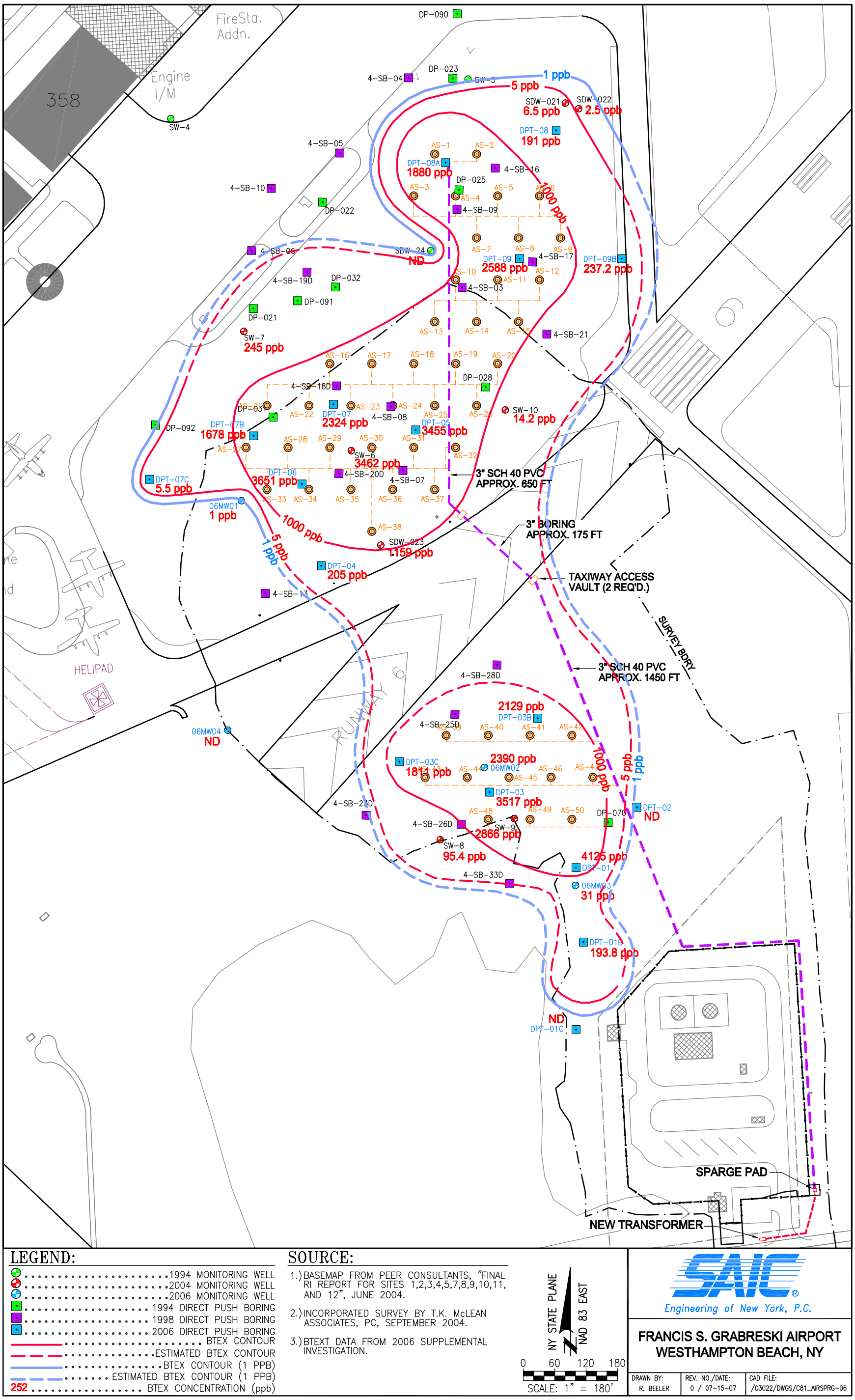


Fig. 8-1. Air Biosparge Layout (Sites 4 and 9)

7. The property owner would provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with NYSDEC-approved modifications; (b) allow the NYSDEC access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the NYSDEC.

8. The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

9. Once groundwater remediation criteria are achieved, four quarterly sampling events would be performed to meet the regulatory requirements for site closure.

8.2 IRP SITE 7 (FORMER FTA)

Based on the 2004 sampling events, the remediation goals and SCGs for Site 7 appear to have been satisfied. Based on the results of the investigations at the site and the evaluation presented here, the selected remedy is No Further Action with monitoring for Site 7. This alternative would be protective of human health and the environment and would satisfy all SCGs as described above. Overall protectiveness is achieved through meeting the remediation goals listed above. The elements of No Further Action with monitoring remedy include:

1. Imposition of an institutional control that would require (a) limiting the use and development of the property to commercial or military uses; (b) compliance with the approved site management plan; (c) restricting the use of groundwater onsite as a source of potable or process water; (d) restricting construction of occupied buildings on the site without an evaluation or engineering controls of potential vapor intrusion risks; and (e) the property owner to complete and submit to the NYSDEC a periodic certification of institutional and engineering controls.

2. Development of a site management plan which would include the following institutional and engineering controls: (a) monitoring of groundwater; (b) identification of any use restrictions on the site; (c) maintenance of current security practices at Francis Gabreski International Airport to control site access; and (d) provisions for the continued proper operation and maintenance of the components of the remedy.

3. The property owner would provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with NYSDEC-approved modifications; (b) allow the NYSDEC access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the NYSDEC.

4. Groundwater would be monitored semiannually for two years to meet the regulatory requirements for site closure. If concentrations exceed regulatory limits, MNA with continued monitoring would be implemented until the requirements for site closure were met or a decision will be made concerning the need for additional remediation.

8.3 SIGNIFICANT CHANGES FROM THE PREFERRED ALTERNATIVE OF THE PRAP AND PROPOSED PLAN

There are no changes from the preferred alternative detailed in the FS / PRAP to the selected alternative detailed in this Decision Document for IRP Sites 4 and 9. The preferred alternative for IRP Sites 4 and 9 in the FS / PRAP was Alternative 3, Air Biosparging with MNA (SAIC 2006b).

There are no changes from the preferred alternative detailed in the FS / PRAP to the selected alternative detailed in this Decision Document for IRP Site 7. The preferred alternative for IRP Site 7 in the FS / PRAP was No Further Action with monitoring (SAIC 2006b).

THIS PAGE INTENTIONALLY LEFT BLANK.

9.0 COMMUNITY PARTICIPATION

As part of the NYANG environmental restoration process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The administrative record for the site is available for public viewing at the following address:

Westhampton Free Library
Reference Section
7 Liberty Avenue
Westhampton Beach, NY 11978

The FS / PRAP for the NYANG was issued as a component of the citizen participation developed pursuant to New York State Environmental Conservation Law and Title 6 NYCRR Part 375. A public comment period was held from May 1, 2008 to May 30, 2008 and a public meeting conducted May 15, 2008 to provide an opportunity for public participation in selection for a remedy at IRP Sites 4, 7, and 9.

The Responsiveness Summary presented in Appendix A addresses these public comments received. This Responsiveness Summary is part of the NGB's public participation responsibility under Section 300.430(f)(2) of the NCP.

THIS PAGE INTENTIONALLY LEFT BLANK.

10.0 REFERENCES

ABB-ES 1992. *Installation and Restoration Program, Management Action Plan, Francis Gabreski International Airport, Westhampton Beach, New York*, prepared for the New York Air National Guard, submitted to HAZWRAP Support Contractor Office, Oak Ridge, Tennessee.

ABB-ES 1997. *Site Investigation Report, 106th Rescue Group, Westhampton Beach, New York*, prepared for the New York Air National Guard, submitted to HAZWRAP Support Contractor Office, Oak Ridge, Tennessee.

Dames & Moore 1986. "Phase I Records Search, Suffolk County Air Force Base (Retired)."

E.C. Jordan, Co. 1989. *Final Site Characterization Report, Suffolk County Airport, Fire Training Area, Westhampton Beach, New York*, prepared for the Air National Guard Bureau, submitted to HAZWRAP Support Contractor Office, Oak Ridge, Tennessee.

HMTC (Hazardous Materials Technical Center) 1987. *Phase I Records Search*.

Latino, Patricia 2002. "Francis Gabreski International Airport Master, Plan," February.

NGB/A7CVR (National Guard Bureau Environmental Restoration Branch) 2003. "Air National Guard Responses to New York State Department of Environmental Conservation, Federal Projects Section," June 24.

NYSDEC 1994. *Determination of Soil Cleanup Objectives and Cleanup Levels*, Division of Environmental Remediation Guidance Document, Technical and Administrative Guidance Memorandum #4046, January 24.

NYSDEC (New York State Department of Environmental Conservation) 2004. *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, Division of Water, Technical and Operational Guidance Series 1.1.1, June.

PEER 2004. *Final Remedial Investigation Report for Sites 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, and 12*, June.

SAIC (Science Applications International Corporation) 2006a. *Draft-Final Baseline Groundwater Sampling for Installation Restoration Program Sites 4, 7, and 9*, January.

SAIC (Science Applications International Corporation) 2006b. *Draft-Final Proposed Remedial Action Plan for Installation Restoration Program Sites 4, 7, and 9*, October.

S&W (Stone & Webster Environmental Technology and Services) 1999. *Revised Draft Remedial Investigation Sites 4, 5, 8, and 9*, January.

YEC, Inc. (Lawler, Matusky & Skelly Engineers) 1989. *Phase I Investigation Fire Training Area Site No. 152122*, September.

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX A
FINAL RESPONSIVENESS SUMMARY

THIS PAGE INTENTIONALLY LEFT BLANK.

FINAL

APPENDIX A
RESPONSIVENESS SUMMARY
FOR THE
INSTALLATION RESTORATION PROGRAM
SITES 4, 7, AND 9

NEW YORK AIR NATIONAL GUARD
(106TH RESCUE WING)
FRANCIS GABRESKI INTERNATIONAL AIRPORT

WESTHAMPTON BEACH, NEW YORK

JULY 2008

Contract No. DAHA92-01-D-0008
Delivery Orders 0115

Prepared for
NGB/A7CVR
New York Air National Guard, Westhampton Beach, New York

Prepared by
Science Applications International Corporation
Oak Ridge, Tennessee

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

contributed to the preparation of this document and should not be considered an eligible contractor for its review.

CONTENTS

TABLES

THIS PAGE INTENTIONALLY LEFT BLANK.

ABBREVIATIONS AND ACRONYMS

ANG	Air National Guard
bgs	Below Ground Surface
ft	Feet
IRP	Installation Restoration Program
MNA	Monitored Natural Attenuation
NYANG	New York Air National Guard
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
PEER	PEER Consultants, P.C.
PID	Photo-Ionization Device
POL	Petroleum, Oil and Lubricants
PRAP	Proposed Remedial Action Plan
RQW	106th Rescue Wing
SAIC	Science Application International Corporation
SCDHS	Suffolk County Department of Health Services

THIS PAGE INTENTIONALLY LEFT BLANK.

1.0 INTRODUCTION

This Responsiveness Summary details public comments and concerns on the Proposed Remedial Action Plan (PRAP) and Decision Document for Installation Restoration Program (IRP) Sites 4 (Aircraft Refueling Apron Site), 7 (Former Fire Training Area), and 9 (Ramp Drainage Outfall), and the Air National Guard's (ANG) responses to them.

The Responsiveness Summary serves two functions:

- It provides decision-makers with information about the views of the community on the proposed remedial actions and any alternatives.
- It documents how public comments were considered during the decision-making process, and provides answers to the major comments.

The public comment period for the review of the PRAP and Decision Document reports began on May 1, 2008. A Public Meeting was held on May 15, 2008 at the Airport Management Conference Room, Administration Building #1, Francis S. Gabreski Airport, Westhampton Beach, New York from 5:30 to 6:30 PM. This document summarizes the written comments on the technical documents and the preferred remedial alternative and the changes made to the Decision Document.

Approximately 10 people attended the Public Meeting. At the Public Meeting, copies of the PRAP, Decision Document, and Fact Sheet were available for reference. Copies of the PRAP and Decision Document also were available at the Administrative Record Repository for public review during the comment period and prior to the Public Meeting.

The Responsiveness Summary report is divided into the following sections:

- **Section 2 – Responsiveness Summary**: This section briefly describes the ANG's selected alternative and the public's reaction to the ANG's preferred alternative.
- **Section 3 – Background on Community Involvement**: This section briefly summarizes the community's involvement in selecting a remedy for IRP Sites 4, 7 & 9, the major community concerns identified during the Public Meeting and the public comment period, and ANG's responses.
- **Section 4 – Comprehensive Summary of Public Comments and Responses**: This section summarizes the specific written comments ANG received during the Public Meeting and the public comment period and ANG's responses.
- **Section 5 – Remaining Concerns**: This section identified any public concerns that the ANG did not address directly (if any) and how the NG proposes to handle these concerns.
- **Section 6 – References**: This section provides references used in this Responsiveness Summary.

The Public Meeting slides are included as **Attachment 1**. The transcript of the Public Meeting is included as **Attachment 2**. The Public Meeting Fact Sheet is included as **Attachment 3**. The public's written comments are included in **Attachment 4**.

THIS PAGE INTENTIONALLY LEFT BLANK.

2.0 RESPONSIVENESS SUMMARY OVERVIEW

2.1 SITE BACKGROUND

The background on the 106th Rescue Wing (RQW) of the New York Air National Guard (NYANG) and IRP Sites 4, 7 and 9 is summarized in the Decision Document.

2.2 DESCRIPTION OF THE SELECTED REMEDY

The major elements of the preferred remedy for IRP Sites 4, 7 and 9, as outlined in the PRAP and Decision Document and presented in the Public Meeting, include:

- Construct and operate a groundwater air biosparging system to enhance aerobic bioremediation of the primary contaminant source areas at IRP Sites 4 and 9. Approximately 50 air biosparging wells will be installed in the contaminated plume as part of the treatment system.
- Conduct groundwater sampling at IRP Sites 4 and 9 for performance monitoring of the biosparge system and monitored natural attenuation (MNA).
- Implement site access restrictions and groundwater use restrictions to ensure that the public does not come into contact with contaminants at IRP Sites 4, 7 and 9 until remedial levels are achieved.
- Implement a long-term groundwater monitoring program to verify that all groundwater contaminants are below New York State Department of Environmental Conservation (NYSDEC) groundwater standards and criteria at IRP Sites 4, 7 and 9.

2.3 PUBLIC'S REACTION TO PREFERRED ALTERNATIVE

The Public Meeting was well attended by the public. The meeting participants were very knowledgeable of the technical issues of local hydrogeology, contaminant transport and remediation technologies.

The public's reaction to the preferred alternatives for IRP Site 4, 7 and 9 were generally favorable as evidenced by the submitted comments but three primary concerns were expressed over:

- Migration of contaminants off the Installation
- Adequacy of the monitoring well network, especially for the vertical flow component of groundwater
- Potential vapor intrusion into occupied structures contained within the footprint of the groundwater plume.

The ANG's monitoring to date indicates that the groundwater plume at Site 9, which is closest to the Installation boundary, is stable and has not migrated offsite. The ANG also plans to continue monitoring until the planned remedial measures have restored groundwater to confirm that contaminants have not migrated offsite.

The ANG concurs that additional monitoring wells are needed to monitor the vertical migration of contaminants at Site 4 and 9 and will install these additional monitoring wells as part of the remedial action.

The ANG does not believe vapor intrusion is an issue since there are no occupied structures within the footprint of the plume. The closest building to the groundwater plume is the control room at the Petroleum, Oil and Lubricants (POL) yard which is slightly down and cross gradient of the groundwater plume. In addition, the preferred biosparge system for Sites 4 and 9 will be operated such that it minimizes volatilization of contaminants into the vadose soils but stimulates aerobic bioremediation in the groundwater. Surface and breathing zone vapors also will be monitored during operation of the biosparge system using a photo-ionization device (PID) or equivalent. Moreover, institutional and/or engineering controls will be implemented to prevent construction of structures within the footprint of the groundwater plume without evaluating vapor intrusion risks.

3.0 BACKGROUND ON COMMUNITY INVOLVEMENT

3.1 COMMUNITY PROFILE

The 106th RQW is located on Long Island in central Suffolk County and just north of the Village of Westhampton Beach. Westhampton Beach was rated by the 2004 New York Post as one of the five best places to live in the state. Thanks to its proximity to New York City and the other "Hamptons" in the South Shore community, this upscale village is growing. Westhampton Beach is basically residential with single-family homes and condominium complexes allowing for seasonal fluctuations in populations. The year round average population is nearly 2,000.

Suffolk County is considered suburban to New York City and totals 911 square miles with shores on both the Atlantic Ocean and the Long Island Sound. The majority of the land surrounding Gabreski are persevered lands, including the Quogue Wildlife Refuge. Suffolk County has a population of about 1.4 million and has the lowest unemployment rate of the nation. The median household income in 2000 was more than $65,000, well above the national average of $42,000. Retail trade is the largest employer in Suffolk County. The second largest employer is the manufacturing industry, including manufacture of durable goods, transportation equipment, and biotechnical and electronic industries. Education, health, and social services employ 23 percent of Westhampton Beach. Due to increases in home and office building, construction employs 10 percent of the village.

Long Island ranks second only to California in U.S. grape production and Suffolk County's wine industry is the most prosperous agricultural enterprise in New York State. Environmental stewardship is a concern for the community and is voiced by community and industry leaders as well as by New York businesses, state government, and educational institutions.

3.2 COMMUNITY INVOLVEMENT

The 106th RQW conducts a number of ongoing community involvement activities as part of the environmental restoration process to inform and educate the public about conditions at Gabreski. The community involvement and IRP activities are documented in the administrative record which is available for public viewing at the following address:

Westhampton Free Library
Reference Section
7 Liberty Avenue
Westhampton Beach, NY 11978

A Community Involvement Plan was issued in May 2006 based on community interviews conducted in June 2005 (Science Applications International Corporation [SAIC], 2006). The interviewees were not familiar with the environmental restoration activities conducted at the Installation although a majority of the interviewees were concerned about the local groundwater. Nearly everyone interviewed mentioned a “jet fuel” spill “many years ago”.

The PRAP for Site 4, 7 and 9 was issued as a component of the Community Involvement Plan. The goals of the community involvement were:

- To inform stakeholders about the issues being addressed at the IRP Sites 4, 7 and 9

- To solicit input from the community and stakeholders about these issues
- To provide stakeholder input to ANG management to be used as one of the decision-making criteria for evaluating cleanup alternatives

Pursuant to New York State Environmental Conservation Law and Title 6 New York Codes, Rules and Regulations (NYCRR) Part 375, a public comment period was held from May 1, 2008 to May 30, 2008 and a Public Meeting conducted May 15, 2008 to provide an opportunity for public participation in selection for a remedy at IRP Sites 4, 7, and 9. The Public Meeting was advertised in the *Southhampton Press* on May 1, May 8 and May 15, 2008. A fact sheet also was distributed to the mailing list detailed in the Community Involvement Plan to announce the Public Meeting. The Public Meeting was conducted at the Gabreski Airport Management Conference Room, Administration Building #1, from 5:30 to 6:30 PM local time.

The Public Meeting slides are included as Attachment 1. The transcript of the Public Meeting is included as Attachment 2. The Public Meeting Fact Sheet is included as Attachment 3. The public's written comments are included in Attachment 4.

The ANG's responses to the public comments are provided in the next section.

4.0 SUMMARY OF PUBLIC COMMENTS AND RESPONSES

Several written questions and comments were received during the public comment period and are addressed below. The written comments are included in Attachment 4.

4.1 SUMMARY AND RESPONSE TO LOCAL COMMUNITY CONCERNS

As discussed, the public's reaction to the preferred alternatives for IRP Site 4, 7 and 9 were generally favorable as evidenced by the submitted comments but three primary concerns were expressed over:

- Migration of contaminants off the Installation
- Adequacy of the monitoring well network, especially for the vertical flow component of groundwater
- Potential vapor intrusion into occupied structures contained within the footprint of the groundwater plume.

ANG's monitoring to date indicates that the groundwater plume at Site 9, which is closest to the Installation boundary, is stable and has not migrated offsite. The ANG plans to continue monitoring until the planned remedial measures have restored groundwater to confirm that contaminants have not migrated offsite. However, the ANG concurs that additional monitoring wells are needed to monitor the vertical migration of contaminants at Site 4 and 9 and will install additional monitoring wells as part of the remedial action (see Table 4.1). Well clusters will be created from the existing monitoring well network within the IRP Sites 4 and 9, but will not be installed at Site 7 since all contaminants are below criteria.

Table 4-1. Additional Monitoring Wells to be Installed
Installation Restoration Program Sites 4 and 9
New York Air National Guard, Francis Gabreski International Airport, Westhampton Beach, New York

Existing MW or Historic Sample Point	Current Screen Interval (ft bgs)	Depth to GW (ft bgs)	Monitoring Location	Proposed Screen Intervals (ft bgs)
SWD-24 (Site 4)	23-33	31	Plume Centerline	35-45
SW-6 (Site 4)	20-30	25	Plume Centerline	30-40 40-50
SDW-023 (Site 4)	23-33	28	Down Gradient	35-45
DPT-09B (Site 4)	NA	NA	Side Gradient	25-35
4-SB-28D (Site 9)	NA	NA	Up Gradient	25-35 35-45
06MW02 (Site 9)	23-33	26	Plume Centerline	35-45 45-55 55-65
06MW03 (Site 9)	5-35	11	Plume Centerline	35-45 45-55 45-65
DPT-02 (Site 9)	NA	NA	Side Gradient	25-45
DPT-01B (Site 9)	NA	NA	Down Gradient	5-35 35-45 45-55 45-65

Based on the June 2006 vertical profile samples, groundwater contamination exists from approximately 20 to 50 feet (ft) below ground surface (bgs) at Site 4 and 20 to 60 ft bgs at Site 9. To develop accurate vertical gradient measurements, additional nested monitoring wells be installed alongside existing monitoring wells or historic elevated detections of contaminants from temporary borings, as detailed in Table 4.1. This equates to approximately 870 linear feet of new monitoring wells. The monitoring wells at SW-6 will be installed as 2-inch, flush mount wells using hollow stem augers to match the existing nested monitoring well pair. The remaining monitoring wells will be installed as 1.4-inch outside diameter (0.75-inch inside diameter) Geoprobe® Prepacked Wells to match the existing nested monitoring well pairs. The top of casing for each new monitoring well will be surveyed and incorporated into the existing site survey. Each monitoring well will be developed and a baseline sample taken for groundwater elevation and volatile organic compounds. Semi-volatile organic compounds and natural attenuation parameters also will be taken from the new monitoring wells installed at SW-6 and 06MW03. The field activities and analytical results will be summarized in the Remedial Action Report.

4.2 SPECIFIC PUBLIC COMMENTS AND RESPONSES

The specific public comments and ANG's responses are provided below. Some of the letters received from the public contained multiple comments. The multiple comments are separated by paragraph with the associated ANG response to help ensure all questions were adequately addressed.

Letter From Robert J. Mozer, Hydrogeologist, Dated May 29, 2008

Comment 1: **In general, I concur with the Decision Document's characterization of the horizontal component of groundwater water flow at the three sites and the extent of contamination in the same horizontal dimension. I also concur with the report's proposed remedial alternatives, which are appropriate for the type of hydrocarbon contamination detected in the groundwater.**

Response 1: ANG concurs with the comment.

Comment 2: **However, I do have some concerns about the completeness of the overall investigation to characterize the nature and extent of contamination at Sites 4, 7, and 9, as follows. Gabreski Airport, while it is officially outside the Pine Barrens "Core" area due to its "developed" nature, is located in Hydrogeologic Zone III as defined in the Long Island Comprehensive Waste Treatment Management Plan, July 1978 (the Plan). Hydrogeologic Zone III is defined as a deep recharge area for the Magothy Aquifer and contains good quality groundwater in both the Upper Glacial and Magothy aquifers, which should be afforded a high degree of protection from surficial contamination by applying land use restrictions and strict pollution source controls as described in the Plan.**

Unfortunately, the investigation contains no data to support or refute the current characterization of any of the sites as being located in a deep recharge area. To address this and its Zone III designation, there need to be several sets of clustered monitoring wells to evaluate the vertical component of ground water flow and to determine if contamination has entered the deep flow regime. The current report has not characterized the flow or the contamination in the vertical dimension.

Response 2: ANG concurs with the comment. Historical reports have provided vertical characterization data of contaminant nature and extent through temporary direct-push points; however, permanent clustered monitoring wells were not installed. To further characterize the vertical component of contaminant migration, the ANG will modify the proposed alternative to include clustered monitoring wells, as identified in Table 4.1, to further evaluate the vertical component of ground water flow. Well clusters will be created from the existing monitoring well network at IRP Sites 4 and 9, but will not be installed at Site 7 since all contaminants are below criteria.

Comment 3: **The report also states that several monitoring wells were resurveyed for top of casing elevations. This data along with the original surveyed casing elevations is not presented in the report. The report needs to include a table of casing elevations and depth to groundwater measurements along with a copy of the licensed surveyor's report of the resurveyed elevations. This information would allow for a more complete technical evaluation of the conclusions reached by the investigators.**

Response 3: ANG concurs with the comment with a clarification. The resurveyed casing elevations, screen intervals and depth to ground water were presented in Table 1 of the *Final Baseline Groundwater Sampling Report* (SAIC 2007a) but was not included in the *Final Proposed Remedial Action Plan, Feasibility Study and Proposed Plan* (SAIC 2007b) or the *Draft-Final Decision Document* (SAIC 2008) in order to simplify those reports. The historic survey data was included in the *Final Remedial Investigation* (PEER Consultants, P.C. [PEER] 2004). The ANG refers the Public to those reports, which are contained in the Administrative Record.

Comment 4: **The report also discusses some anomalous water level elevations, which formed the basis for resurveying the well casing elevations, without any explanation to support the decision not to use or include the data. Data is data, and should be reported regardless of the author's opinion about it being anomalous. If groundwater elevations are not used in the contouring, they should at least be presented in a data table and indicated as such on the groundwater contour map(s).**

Response 4: ANG concurs with the comment with a clarification. All groundwater elevation data was presented in Table 1 of the *Final Baseline Groundwater Sampling Report* (SAIC 2007a) without modification. Figure 2 and the associated explanatory text of Section 1.1 was the ANG's professional interpretation of all 2004 groundwater elevation data, based on the resurveyed casing elevations. Similarly, all historic groundwater elevation data was presented in Table 5.2 of the *Final Remedial Investigation* (PEER 2004) without modification. The 2004 potentiometric surface interpretation was different than the historic interpretation provided in the *Final Remedial Investigation* (PEER 2004), which excluded several points as potentially anomalous, and hence formed the basis for the resurveying of the casing elevations in 2004.

Comment 5: **The report also does not characterize the local geology at the site. There are no geologic cross-sections based on site specific soil cores to identify the subsurface stratigraphy, including the presence and depths of zones of high and low hydraulic conductivity. This is a serious omission from the report.**

Response 5: ANG concurs with the comment with a clarification. A detailed geologic discussion based on site specific soil cores and including geologic cross-sections was presented in

Section 3, Figure 3-5 and Figure 3-6 of the *Final Remedial Investigation* (PEER 2004). Subsequent reports referenced with geologic assessment for simplicity.

Comment 6: **In summary, as part of the next phase of the investigation/remediation planned for the sites, I recommend that several, three-well clusters be created from the existing monitoring well network; one upgradient and one downgradient in each of the site areas. As the deep wells are drilled, soil samples should be collected at least at five foot intervals, or less if changes in strata are encountered, and logged by a geologist. Hydrogeologic cross-sections should be prepared from the soil samples, groundwater elevations, and contaminant concentrations collected from these borings/wells to illustrate the subsurface geology, groundwater head relationships and contaminant distribution in the vertical dimension. This information may also help to resolve the anomalous groundwater elevations that have been encountered during previous investigations at the site(s) and would illustrate the potential for unidentified deep contamination at one or more of the sites.**

Response 6: ANG concurs with the comment. To further characterize the vertical component of contaminant migration, the ANG will modify the proposed alternative to include clustered monitoring wells, as identified in Table 4.1, to further evaluate the vertical component of ground water flow. Well clusters will be created from the existing monitoring well network at IRP Sites 4 and 9, but will not be installed at Site 7 since all contaminants are below criteria.

Although already determined from historical investigations, the cluster monitoring wells to be installed at SW-6 will be drilled using hollow-stem augers and logged by a professional geologist. The remaining monitoring wells will be installed using direct-push technology which precludes logging. As discussed in Section 4.1 of this report, the newly installed monitoring wells will be surveyed and sampled, and then groundwater elevations determined for all site wells. All collected data will be presented in the Remedial Action Report.

<u>Letter From Ron Paulsen, Hydrogeologist, Suffolk County Department of Health Services (SCDHS), Dated May 29, 2008</u>

Comment 1: **The Suffolk County Department of Health Services Office of Water Resources reviewed the referenced PRAP prepared by SAIC dated April, 2008. These comments are in addition to the comments provided at the public meeting held on May 15th. SCDHS is concerned that the proposed monitoring well design may not be uniformly addressing all areas of the Site 4 and 9 ground water plume. In order to verify that no contamination is leaving the site at depth, we suggest the installation of additional cluster monitoring wells within the know plume area and down gradient. Wells should be screened at several intervals below the water table to verify no deeper contamination is present and to determine the vertical gradient in the aquifer along the plume. We are concerned that the current monitoring has not eliminated the possibility of off site groundwater contamination and have identified at least 12 private wells in the down gradient area. A private water survey and offsite investigation is being conducted and we will forward any results related to the site. We appreciate the opportunity to comment on the PRAP.**

Response 1: ANG concurs with the comment. To further characterize the vertical component of contaminant migration, the ANG will modify the proposed alternative to include clustered monitoring wells, as identified in Table 4.1, to further evaluate the vertical component of ground water flow. Well clusters will be created from the existing monitoring well network at IRP Sites 4 and 9, but will not be installed at Site 7 since all contaminants are below criteria.

THIS PAGE INTENTIONALLY LEFT BLANK.

5.0 REMAINING CONCERNS

There are no remaining public concerns that the ANG did not address directly in the previous section. It is recommended that the Remedial Action Work Plan be finalized and preferred alternative be constructed immediately.

THIS PAGE INTENTIONALLY LEFT BLANK.

6.0 REFERENCES

PEER (PEER Consultants, P.C.) 2004. *Final Remedial Investigation Report for Sites 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, and 12*, June.

SAIC (Science Applications International Corporation) 2006. *Final Community Involvement Plan, Air National Guard Environmental Restoration Program, 106th Rescue Wing, Francis S. Gabreski Airport, Westhampton Beach, New York*, May.

SAIC 2007a. *Final Baseline Groundwater Sampling for Installation Restoration Program Sites 4, 7, and 9, New York Air National Guard (106th Rescue Wing), Francis S. Gabreski Airport, Westhampton Beach, New York*, July.

SAIC 2007b. *Final Proposed Remedial Action Plan, Feasibility Study and Proposed Plan, for Installation Restoration Program Sites 4, 7, and 9, New York Air National Guard (106th Rescue Wing), Francis S. Gabreski Airport, Westhampton Beach, New York*, July.

THIS PAGE INTENTIONALLY LEFT BLANK.

ATTACHMENT 1
PUBLIC MEETING SLIDES

THIS PAGE INTENTIONALLY LEFT BLANK.

Proposed Remedial Action Plan (PRAP) and Decision Document Public Meeting

for the

Remedial Action and Closure of

Installation Restoration Program (IRP)

Site 4 - Aircraft Refueling Apron

Site 7 - Former Fire Training Area

Site 9 - Ramp Drainage Outfall

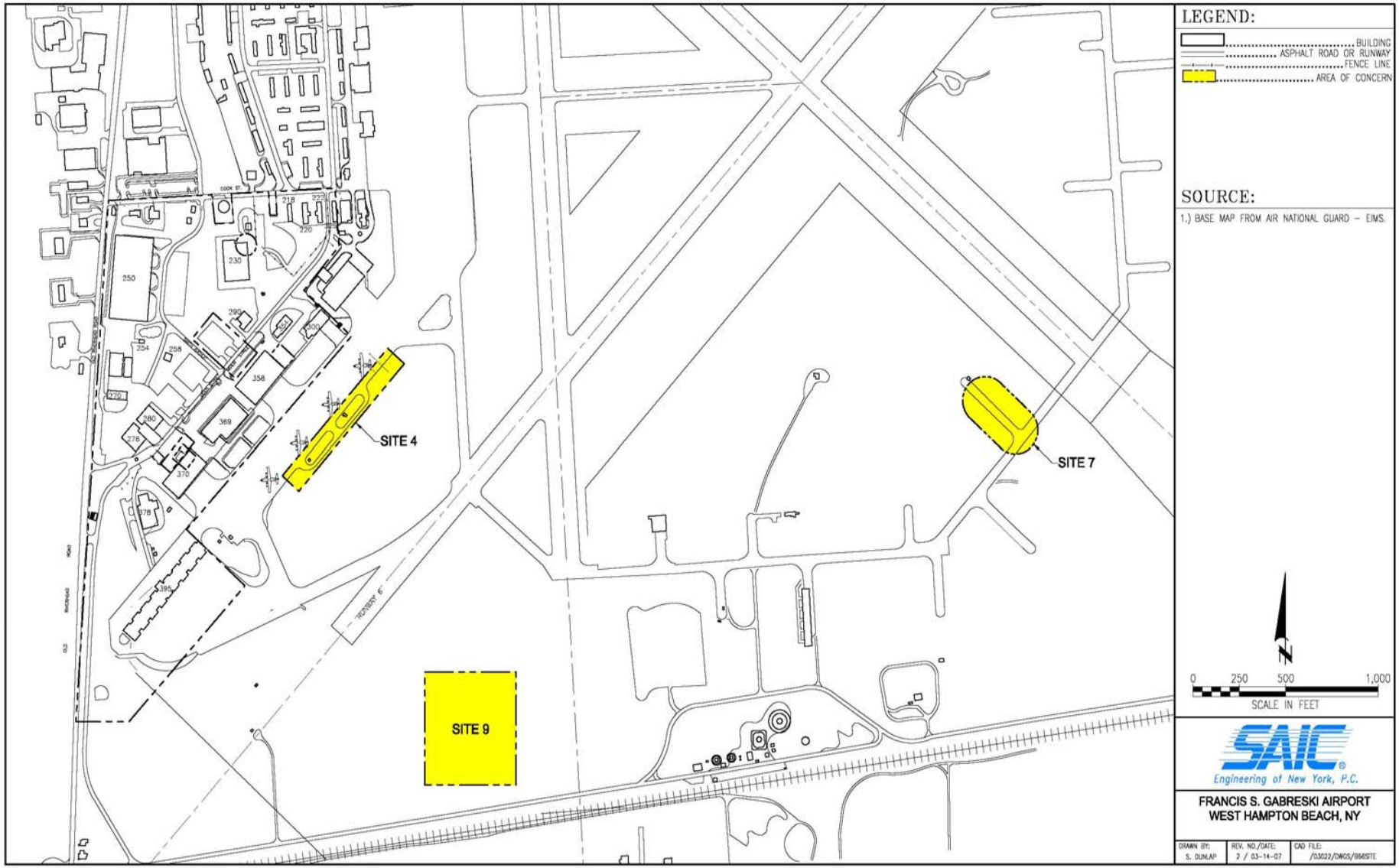
106th Rescue Wing
New York Air National Guard
Francis Gabreski International Airport
Westhampton Beach, New York

May 15, 2008

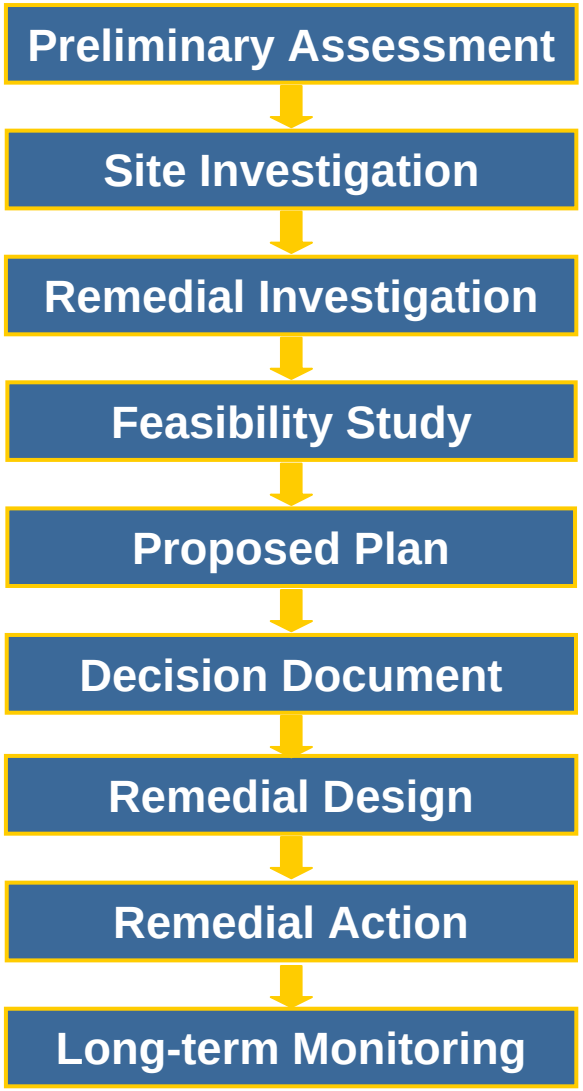
Restoration Team Members & Introductions

- Air National Guard (ANG) Headquarters
  - Ms. Jody Ann Murata
- 106th Rescue Wing
  - Lt. Colonel Jerry Webb
- Native Energy and Technology
  - Mr. John Morris
- Science Applications International Corporation (SAIC)
  - Mr. Michael Klosky
- New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER)
  - Ms. Heather Bishop

IRP Sites 4, 7, and 9 at the 106th Rescue Wing



The CERCLA Process at IRP Sites 4, 7, and 9



- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Provides broad Federal authority to cleanup releases of hazardous substances that may endanger public health or the environment
- The Department of Defense follows the CERCLA process to investigate and clean up sites whether or not they are on the National Priorities List
- Coordination and oversight by NYSDEC
- CERCLA incorporates requirements of NYSDEC's State Superfund Program

SAIC From Science to Solutions

What is the Proposed Remedial Action Plan (PRAP) and Decision Document?

- Summarizes the remedial alternatives and key factors that led to the preferred alternative
- Presents the preferred remedial alternative to the public
- Public announcement and meeting to provide community opportunity for input into preferred alternative
- 30 day public comment period May 1st through May 30th, 2008
- The ANG will accept written comments on the PRAP and Decision Document during the public comment period
- Finalize the selected remedy at the end of the public comment period based on input
- Implement the preferred alternative in Summer 2008

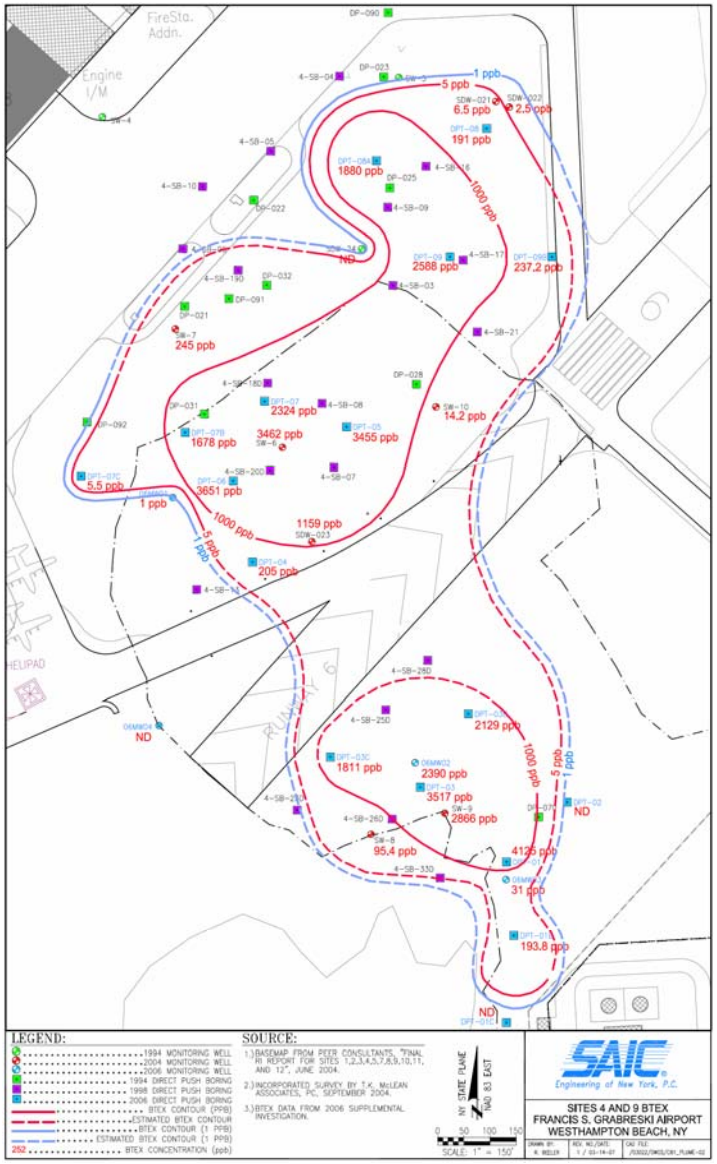
History of Remedial Investigations at IRP Sites 4, 7, and 9

- **Historic Investigations**
  - Dames & Moore – 1986
  - Hazardous Materials Technical Center – 1987
  - E.C. Jordan, Co. – 1989
  - YEC, Inc. (Lawler, Matusky & Skelly Engineers) – 1989
  - ABB-Environmental Services, Inc. – 1997
  - Stone & Webster Environmental – 1999
  - PEER Consultants, P.C. – 2004
  - SAIC – 2004 & 2006
- **Final Remedial Investigation (RI) completed in 2004 by PEER Consultants, P.C.**
- **Final PRAP / Feasibility Study completed in 2007 by SAIC**
- **Draft-Final Remedial Action Work Plan completed in 2007 by SAIC**
- **Draft-Final Decision Document completed in 2008 by SAIC**

Media and Contaminants of Concern at IRP Sites 4, 7, and 9

- **Contaminants of Concern (COCs) and Impacted Media:**
  - **No surface or subsurface soil COCs at IRP Sites 4, 7 and 9**
  - **Groundwater COCs at IRP Sites 4 and 9 are petroleum related Volatile Organic Compounds (VOCs) and Semi-volatile Organic Compounds (SVOCs)**
  - **Groundwater COCs at IRP Site 7 were petroleum related VOCs, SVOCs and metals**

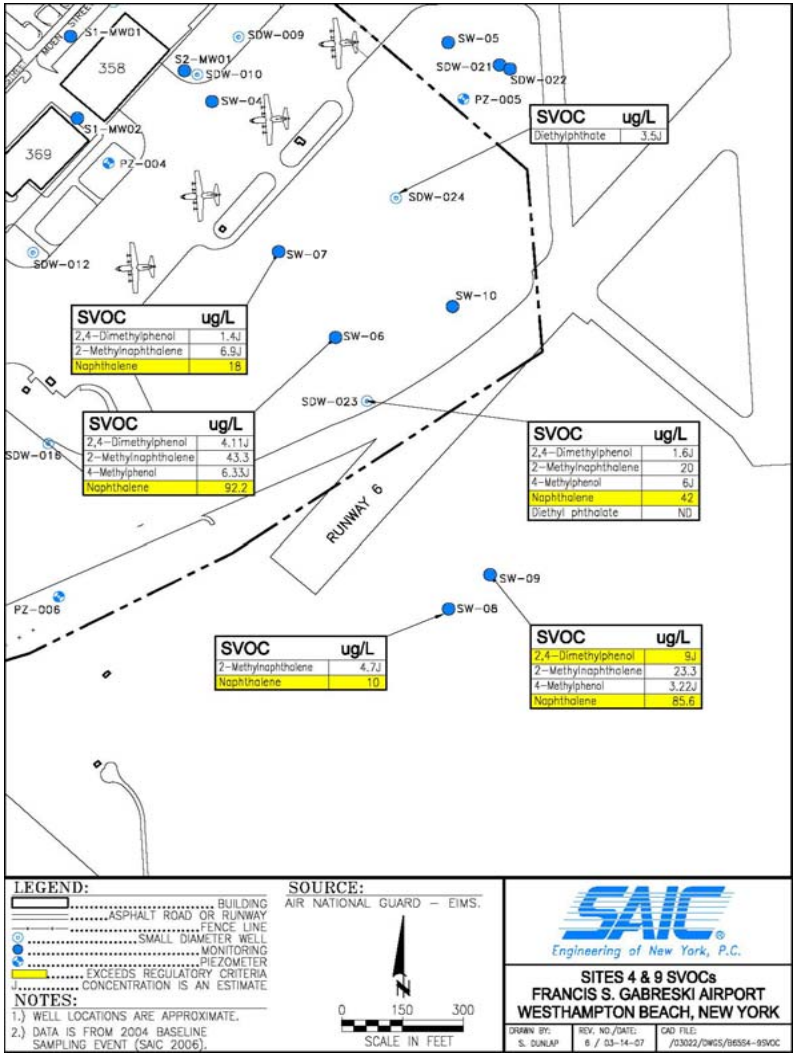
Extent of Groundwater VOC COCs at IRP Sites 4 and 9



SAIC From Science to Solutions

Extent of Groundwater SVOC COCs at IRP Sites 4 and 9

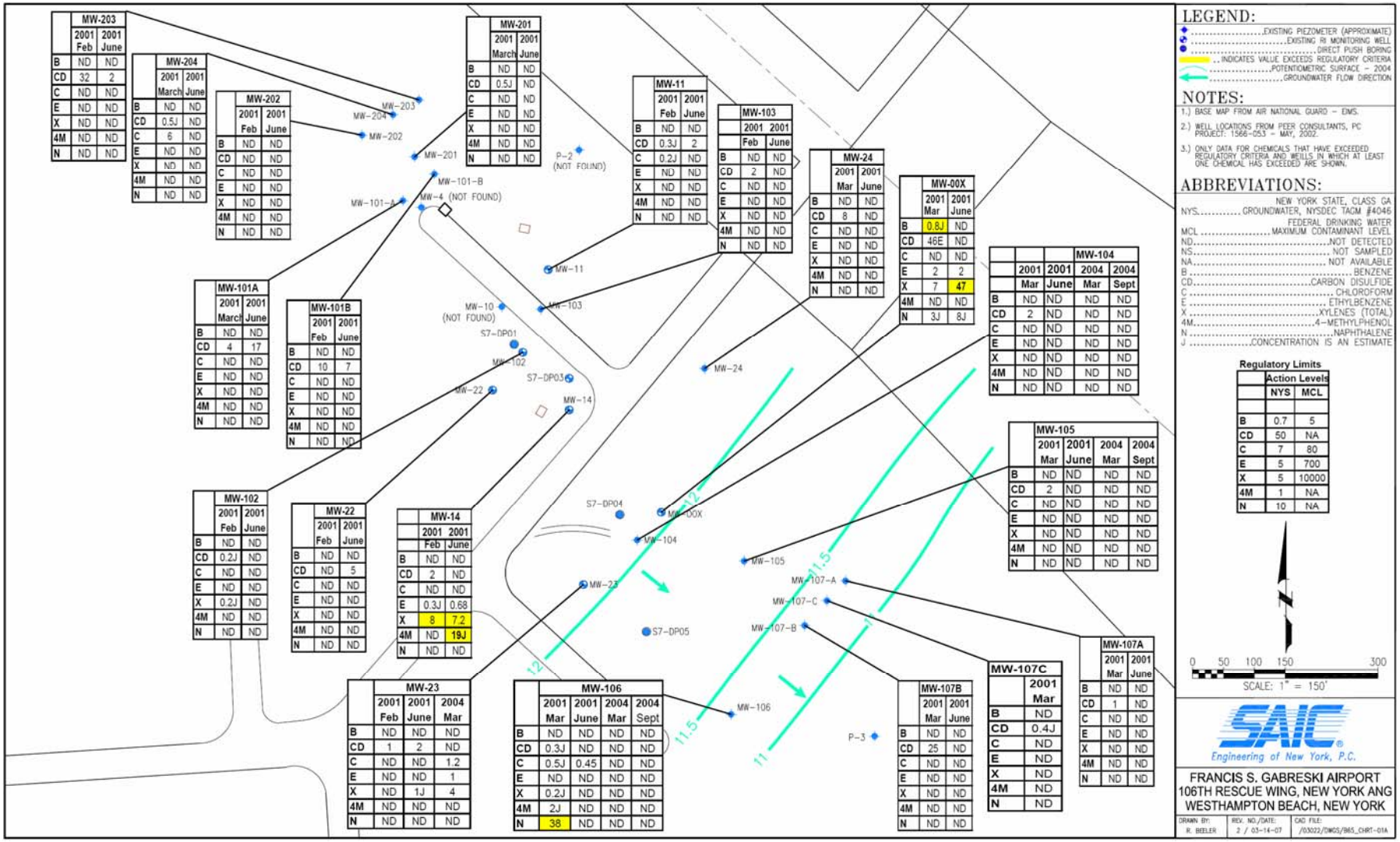
SVOCs 2004



SAIC From Science to Solutions

Extent of Groundwater VOC and SVOC COCs at IRP Site 7

VOCs and SVOCs 2001 - 2004



MW-203	2001 Feb	2001 June
B	ND	ND
CD	32	2
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-204	2001 March	2001 June
B	ND	ND
CD	0.5J	ND
C	6	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-202	2001 Feb	2001 June
B	ND	ND
CD	ND	ND
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-201	2001 March	2001 June
B	ND	ND
CD	0.5J	ND
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-11	2001 Feb	2001 June
B	ND	ND
CD	0.3J	2
C	0.2J	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-103	2001 Feb	2001 June
B	ND	ND
CD	2	ND
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-24	2001 Mar	2001 June
B	ND	ND
CD	8	ND
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-00X	2001 Mar	2001 June
B	0.8J	ND
CD	46E	ND
C	ND	ND
E	2	2
X	7	47
4M	ND	ND
N	3J	8J

MW-104	2001 Mar	2001 June	2004 Mar	2004 Sept
B	ND	ND	ND	ND
CD	2	ND	ND	ND
C	ND	ND	ND	ND
E	ND	ND	ND	ND
X	ND	ND	ND	ND
4M	ND	ND	ND	ND
N	ND	ND	ND	ND

MW-101A	2001 March	2001 June
B	ND	ND
CD	4	17
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-101B	2001 Feb	2001 June
B	ND	ND
CD	10	7
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-105	2001 Mar	2001 June	2004 Mar	2004 Sept
B	ND	ND	ND	ND
CD	2	ND	ND	ND
C	ND	ND	ND	ND
E	ND	ND	ND	ND
X	ND	ND	ND	ND
4M	ND	ND	ND	ND
N	ND	ND	ND	ND

MW-102	2001 Feb	2001 June
B	ND	ND
CD	0.2J	ND
C	ND	ND
E	ND	ND
X	0.2J	ND
4M	ND	ND
N	ND	ND

MW-22	2001 Feb	2001 June
B	ND	ND
CD	ND	5
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-14	2001 Feb	2001 June
B	ND	ND
CD	2	ND
C	ND	ND
E	0.3J	0.68
X	8	7.2
4M	ND	19J
N	ND	ND

MW-23	2001 Feb	2001 June	2004 Mar
B	ND	ND	ND
CD	1	2	ND
C	ND	ND	1.2
E	ND	ND	1
X	ND	1J	4
4M	ND	ND	ND
N	ND	ND	ND

MW-106	2001 Mar	2001 June	2004 Mar	2004 Sept
B	ND	ND	ND	ND
CD	0.3J	ND	ND	ND
C	0.5J	0.45	ND	ND
E	ND	ND	ND	ND
X	0.2J	ND	ND	ND
4M	2J	ND	ND	ND
N	38	ND	ND	ND

MW-107B	2001 Mar	2001 June
B	ND	ND
CD	25	ND
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

MW-107C	2001 Mar
B	ND
CD	0.4J
C	ND
E	ND
X	ND
4M	ND
N	ND

MW-107A	2001 Mar	2001 June
B	ND	ND
CD	1	ND
C	ND	ND
E	ND	ND
X	ND	ND
4M	ND	ND
N	ND	ND

PRAP / Feasibility Study (FS) Alternatives for IRP Sites 4 and 9

SUMMARY OF REMEDIAL ALTERNATIVES FOR GROUNDWATER, IRP SITES 4 and 9	
Alternatives	**Description**
Baseline*	No Action
1	No Further Action With Monitoring
2	Pump and Treat
3	Air Biosparging With Monitored Natural Attenuation (MNA)
4	Enhanced Bioremediation With MNA

* Required by CERCLA

PRAP / Feasibility Study (FS) Alternatives for IRP Site 7

SUMMARY OF REMEDIAL ALTERNATIVES FOR GROUNDWATER, IRP SITE 7	
Alternatives	**Description**
Baseline*	No Action
1	No Further Action With Monitoring

* Required by CERCLA

Evaluation Criteria for Alternatives

EVALUATION CRITERIA FOR REMEDIAL ALTERNATIVES
1. Overall Protectiveness of Human Health and the Environment
2. Compliance with ARARs
3. Long-term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility, or Volume of Contaminants
5. Short-term Effectiveness
6. Implementability
7. Cost
8. State/Support Agency Acceptance
9. Community Acceptance

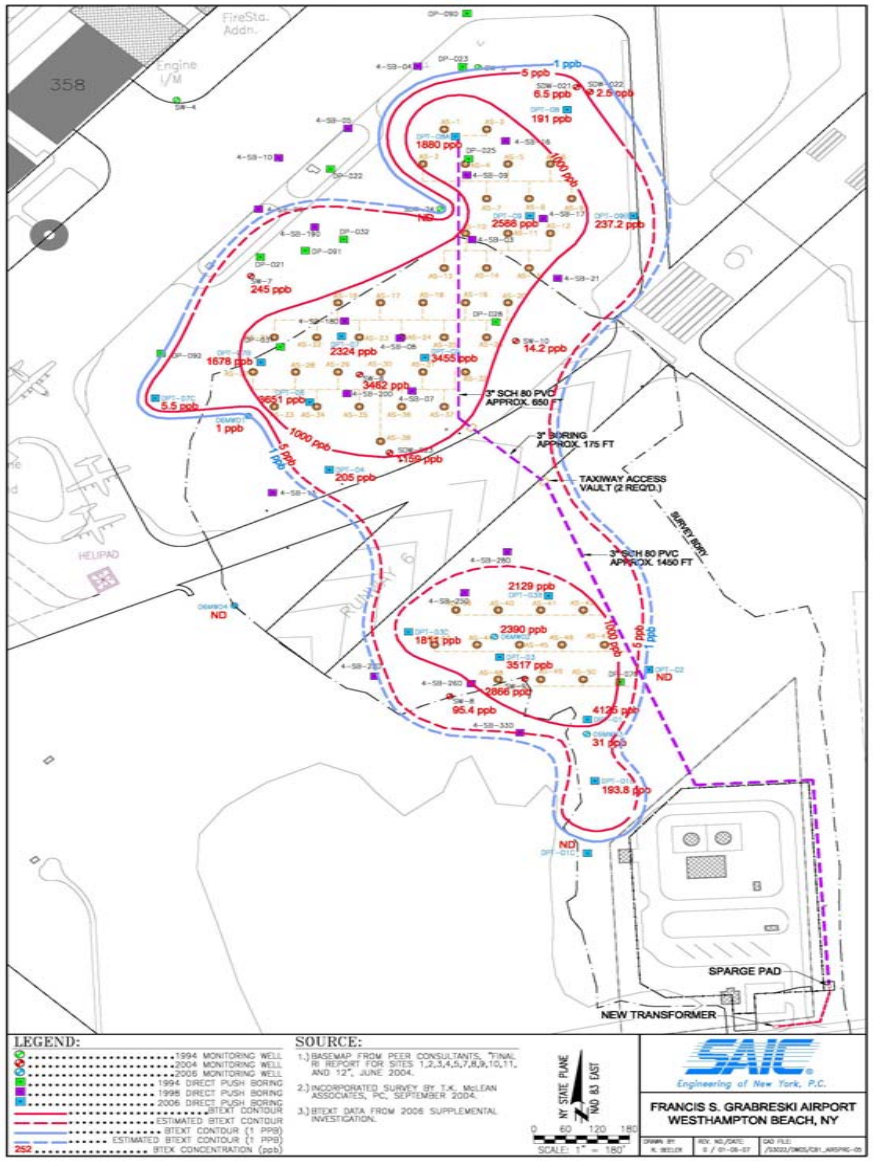
Summary of Evaluation Criteria for Alternatives IRP Sites 4 and 9

EVALUATION CRITERIA FOR REMEDIAL ALTERNATIVES							
FS Alternative	**Threshold Criteria**		**Primary Balancing Criteria**				
	Protective	Compliance ARARs	Long-term Protective-ness	Reduction Toxicity / Mobility / Volume	Short-term Effective-ness	Implement -ability	Cost
1. No Further Action With Monitoring	Low	Moderate	Moderate	Low	Low	High	$1.8M
2. Pump and Treat	Moderate	Moderate	High	Moderate	Moderate	Low	$3.3M
3. Air Biosparging with MNA	High	High	High	High	High	Moderate	$0.8M
4. Enhanced Bioremediation with MNA	High	High	High	High	High	Moderate	$2.5M

Preferred Remedial Alternative for IRP Sites 4 and 9

- **IRP Sites 4 and 9 Air Biosparging With MNA**
  - **Construct and operate a groundwater air biosparging system to enhance aerobic bioremediation of the primary contaminant source areas. Approximately 50 air biosparging wells will be installed in the contaminated plume.**
  - **Conduct groundwater sampling for performance monitoring of the biosparge system and monitored natural attenuation (MNA).**
  - **Implement site access restrictions and groundwater use restrictions to ensure that the public does not come into contact with contaminated groundwater until remedial levels are achieved.**
  - **Implement a groundwater monitoring program to verify that contaminants are below NYSDEC standards and criteria.**

Preferred Remedial Alternative for IRP Sites 4 and 9



Summary of Evaluation Criteria for Alternatives IRP Site 7

EVALUATION CRITERIA FOR REMEDIAL ALTERNATIVES							
FS Alternative	**Threshold Criteria**		**Primary Balancing Criteria**				
	Protective	Compliance ARARs	Long-term Protective-ness	Reduction Toxicity / Mobility / Volume	Short-term Effective-ness	Implement -ability	Cost
1. No Further Action With Monitoring	High	High	High	High	High	High	$0.1M

Preferred Remedial Alternative for IRP Site 7

- **IRP Site 7 No Further Action with Monitoring**
  - **Implement a groundwater monitoring program to verify that all groundwater contaminants are below NYSDEC groundwater standards and criteria.**

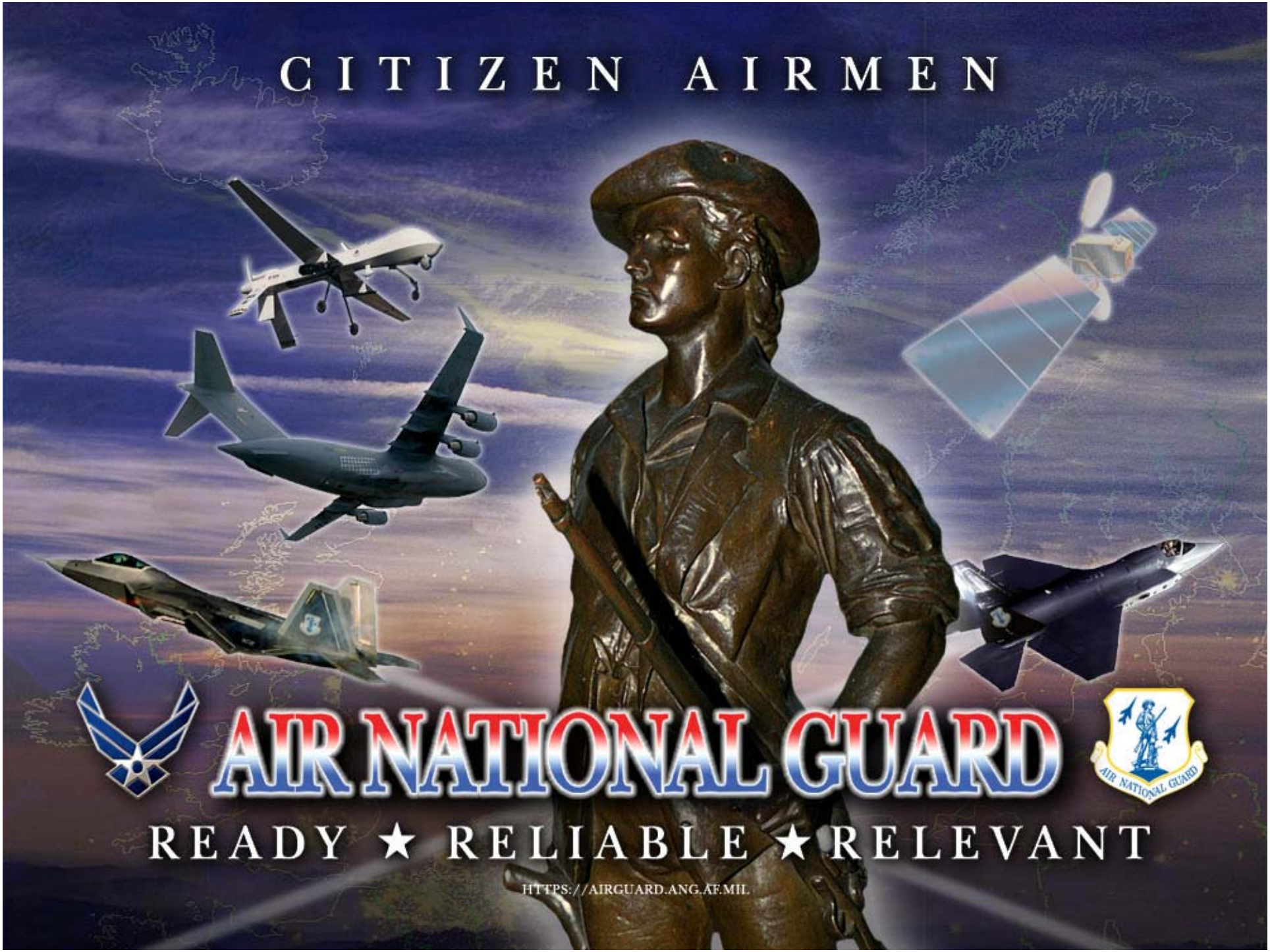
PRAP and Decision Document for IRP Sites 4, 7, and 9

- **Written public comments by May 30, 2008**
- **Submit comments to either:**

Lt Col. Jerry Webb
106th Rescue Wing, NYANG, EM
Francis S. Gabreski Airport
150 Riverhead Road
Westhampton Beach, NY 11978-1201
Phone: (631) 723-7349
Email: Jerry.Webb@nysuff.ang.af.mil

Ms. Heather Bishop
NYSDEC / DER
625 Broadway, 11th Floor
Albany, NY 12233-7015
Phone: (518) 402-9692
Email: hlbishop@gw.dec.state.ny.us

Ms. Jody Ann Murata
NGB / A7CVR
Conaway Hall
3500 Fetchet Ave.
Andrews AFB, MD 20762
Phone: (301) 836-8120
Email: Jody.Murata@ang.af.mil


CITIZEN AIRMEN
AIR NATIONAL GUARD
AIR NATIONAL GUARD
READY ★ RELIABLE ★ RELEVANT
HTTPS://AIRGUARD.ANG.AF.MIL

Maximum Detected VOCs in Groundwater at IRP Sites 4 and 9

VOCs 2004 - 2006

			Maximum Detected Contaminant Concentration
Volatile Organics (µg/L)	**NYSDEC**	**MCL**	
(1,1-Dimethyl-ethyl)benzene	5	N/A	2.9
(1-Methylpropyl)-benzene	5	N/A	2.6
1,2,4-Trimethyl-benzene	5	N/A	**515**
1,3,5-Trimethyl-benzene	5	N/A	**230**
Acetone	N/A	N/A	22.2 J
1-Methyl-4-(1-methylethyl)-benzene	5	N/A	**12**
Benzene	1	5	0.6 J
Butylbenzene	5	N/A	**13.3**
Cumene (Isopropylbenzene)	5	N/A	**61.2**
Ethylbenzene	5	700	**770**
n-Propylbenzene	5	N/A	**76.3**
Toluene	5	1,000	**670**
Xylene, Total	5	10,000	**2,860**

Maximum Detected SVOCs in Groundwater at IRP Sites 4 and 9

SVOCs 2004 - 2006

			Maximum Detected Contaminant Concentration
Semi Volatile Organics (µg/L)	**NYSDEC**	**MCL**	
2,4-Dimethyl-phenol	5	N/A	1.6 J
2-Methyl-naphthalene	N/A	N/A	25
4-Methylphenol	N/A	N/A	6 J
Diethyl phthalate	N/A	N/A	3.5 J
Naphthalene	10	N/A	**44**

Maximum Detected VOCs and SVOCs in Groundwater at IRP Site 7

VOCs and SVOCs 2004

			Maximum Detected Contaminant Concentration
Volatile Organics (µg/L)	**NYSDEC**	**MCL**	
1,2,4-Trimethylbenzene	5	N/A	0.7 J
Chloroform	7	80	1.2
Ethylbenzene	5	700	1
Xylene, Total	5	10,000	4
Semi Volatile Organics (µg/L)			
Benzoic Acid	N/A	N/A	9.5 J
Bis(2-ethylhexyl)-phthalate	5	N/A	2.8 J

THIS PAGE INTENTIONALLY LEFT BLANK.

ATTACHMENT 2
PUBLIC MEETING TRANSCRIPT

THIS PAGE INTENTIONALLY LEFT BLANK.

PUBLIC MEETING TRANSCRIPT
From May 15, 2008 Public Meeting

NEW YORK AIR NATIONAL GUARD (NYANG), 106TH RESCUE WING
INSTALLATION RESTORATION PROGRAM (IRP) SITES 4, 7 AND 9
FRANCIS GABRESKI INTERNATIONAL AIRPORT
WESTHAMPTON BEACH, NY 11978

Meeting Attendees:

Mr. Michael Klosky (SAIC) – Primary Speaker
Ms. Jody Ann Murata (HQ-ANG)
LtC. Jerry Webb (NY-ANG)
Mr. John Morris (Native Energy)
Mr. Ron Paulsen (Suffolk County)
Mr. Bob Mozer (Speonk Rosenburg Civic)
Mr. Steve Karpinslu (NY–DOH)
Ms. Gail Clyma (citizen)

[Klosky (SAIC)]
I am Michael Klosky with SAIC. We are the environmental contractor to the Air National Guard, and obviously we are here for the Installation Restoration Program at Grabeski, which is an official name for the Environmental Restoration Program, to deal with historic practices of waste management here at the installation. We're specifically here for three sites: the Sites 4, 7, and 9, as we affectionately refer to them, the Aircraft Refueling Apron, the Former Fire Training Area, and the Ramp Drainage Outfall.

Just to give an introduction to the actual crowd, if we can start over here with you, Jody.

[Murata (HQ-ANG)]
"Hi. I'm Jody Murata with the Environmental Office of the Air National Guard."

[Webb (NY-ANG)]
"Lieutenant Colonel Jerry Webb… I'm the Environmental Manager on this."

[Morris (Native Energy)]
"My name is John Morris. I'm with Native Energy and Technology. My company assists the Air Guard as an oversight contractor. We provide technical support to the readiness center on-site."

[Klosky (SAIC)]
Again, I'm Michael Klosky, I'm another contractor to the HQ Air National Guard. Michael Poligone, over here, also is with SAIC.

For the meeting there are a couple of items up here. There is a sign-in sheet. I think most of you have already done it. There is also a comment sheet as well as then a copy of the fact sheet that was put out to most of the group. If you have comments, again, we welcome them verbally throughout the presentation. We're here to try and provide information on what we're doing and what we're up to, so again please ask questions as you have them. If you have official questions, then we do ask that you actually write them down so that we can then include them in the actual administrative record for the sites.

One individual that we're missing, we are missing Heather Bishop. She is with the New York Department of Environmental Conservation. New York has a very tight budget so they don't let Heather wander too far from Albany, but Heather is the actual, and we'll have contact information for her, but she's actually the program manager at New York that's overseeing what we're doing here.

The three sites. As you can see, the Site 4, which again we call the Apron Refueling Area, the Site 9 is the Drainage Outfall, and Site 7. You'll see in an awful lot of the documents that have been generated to date, and even in our discussions today, we really combined Site 4 and Site 9. They are two separate sites, but for the most part, we treat them as one, and we'll go through the (and I think it'll be self-explanatory) "why" we actually treat them as one. Most of these sites again, as I said, these are historical practices that were at the time accepted practices for the Air Force in terms of how they actually managed wastes and generated wastes at the site that don't meet today's standards. So this is again historical activities that we're here to try and correct, to restore these areas so that again we don't leave an impact to the areas.

We do this through a very structured program. It's a federally mandated program that is called CERCLA (the Comprehensive Environmental Response, Compensation, and Liability Act). This is the actual program that is the authority to the military to actually go out and identify, investigate, study, and then provide corrective actions to these historic waste disposal sites. The Department of Defense is actually considered the lead regulatory authority, and there's kind of a subtle difference. They work very closely with New York, but technically they're actually considered the regulator for the restoration of these sites, but again working very closely with New York. We also try to do our best to incorporate New York's state regulations. CERCLA, you can imagine, is a federal program that's kind of the all-encompassing program, and then you try to then incorporate the state's specific requirements in whatever activities we are doing.

This is again the very formal process that we go through from the preliminary assessment, which is really the identification of your sites, all the way through the remedial actions. What we're here today for is really this stage right here. We're at a point that's called a decision document where we're reaching out to the public to say this is what we have, this is what we're planning to do to correct this identified problem, and we wanna make sure we get your input and comments to that before we actually move onto then the actual corrective action and restoration of the sites.

I kind of jumped the gun here a little bit. We are actually at the proposed remedial action plan and decision document phase. The PRAP, as the name that New York calls it, is equivalent to the CERCLA Proposed Plan/Feasibility Study, but the PRAP is actually a New York term that you'll find again in the documents…in the actual Decision Document itself. We're gonna go through basically the historic--what are the actual contaminants that we've identified here, what's their nature and extent, what the actual alternatives were that we looked at and that we studied, and then finally what is it that we're actually proposing as a corrective action. The CERCLA process mandates that we do this public meeting, again to seek the community's input to make sure that we're addressing your concerns, and this is done via a 30-day public notice that you saw in the *South Hampton Press*, at least I think most of you probably saw it there, and that is actually over on May 30th. So you have all the way up till May 30th to basically provide us written comments. We then take those comments and we actually incorporate them into the decision document. I have left a copy of the decision document up here for you to actually browse through.

I do need to keep…you can't take this one with you. I do need these as official record files, but you're more than welcome to look through it. We've also put copies of all these documents out in the West Hampton free library. So again, you can go down there and there's copies of all this that you can look through if you want to follow up with what we're discussing here today and again submit comments after the meeting. As I said, I think the main objective here is again to educate, provide information, and seek your input through the public comment period so that we can incorporate that into the final decision

documents before we actually start to implement the corrective action. We're anticipating that by this summer, we will actually have the corrective actions in place to start restoring the impacted areas.

Historically, these three sites have been thoroughly investigated. So I want to convey that to you…that the Air Force has spent significant money to date. As you can see, all the way back in 1986 following that very detailed process of a preliminary assessment, identifying the sites, through the various investigations that have been conducted, the sampling of soil and groundwater primarily, to identify areas that were impacted to where we're at today, which is again the pending decision document that's trying to memorialize this historical activity and investigation and sampling to then decide a path forward with the corrective action.

Out of the three sites that were here today, there were no surface soil impacts or subsurface soil impacts. This is based upon, again, those multiple studies that were done--the soil borings that were taken throughout the various areas—but there were identified at Sites 4 and 9, there were petroleum-related contaminants in the groundwater. These are derivatives mainly of the jet fuels that were used here for fueling operations that have impacted the groundwater right here at the Gabreski Airport. Now the good thing is that it is localized, it's contained on-site, and there is a monitoring well network that is monitoring this impact to the groundwater, and again we're here today to try and correct it. The other one, Site 7, historically some of the very historic sampling, again we've been out here sampling for almost 20 years, historically there were impacts to the groundwater at Site 7 that again were petroleum related to the activities conducted there, and at the moment those impacts have naturally attenuated so there are no further impacts at Site 7. But again, historically, we have identified petroleum-based chemicals that were in the groundwater.

This is mainly a placeholder, I know you can't see it (on the screen), but over here is a nice big poster of it. This is again the Ramp Area, right up in here, the Site 4, and again here is the Drainage Outfall that we call Site 9. You can tell why we actually combined it into one site. This is the boundary of the contaminants that we have identified for these two sites, and they have basically comingled together so there's really one plume. Groundwater flow from these two sites is actually flowing off to the south-southeast, and again you can see that there are basically some petroleum impacts to the groundwater at this site. Again, there is a monitoring well network that's down here that it is again providing us the boundary conditions for where these impacts are. Now we've defined this plume by the drinking water standards, meaning everything outside of this plume is acceptable to New York State Standards for drinking water.

"Yes sir?"

[Public Comment]
"The monitoring well network that you have here that you're using…are there cluster wells? Do you have discrete intervals of sampling? Because this area represents a pretty much a deep recharge area for the system—for the groundwater system, and is there measurable amounts of vertical head in this area to support that conclusion about deep groundwater flow here"

[Klosky (SAIC)]
"There's been historicals. There's not a set of actual cluster wells.

[Public Comment]
"This is strictly a horizontal picture?"

[Klosky (SAIC)]
"Correct and this is strictly a surficial. These are all screened in the actual surficial aquifer."

[Public Comment]
"So we don't know what's going on?"

[Klosky (SAIC)]
"Well that's what we're gonna get to. There actually was historical discrete sampling down 30 ft below the surficial aquifer that actually showed that everything was within that top 20 ft of the aquifer. Based on the actual contaminants of concern and the hydrology of the sites, we knew from a contaminant concern standpoint that they're not chlorinated solvents. These are all petroleum-related so they tend to remain in the surficial aquifer unless the hydrology is a downward hydrology. For the most part, there is not. There's a very neutral, vertical hydrology. It's very much a horizontal hydrology where the groundwater is moving horizontally, but vertically not at least at these sites. Again, that was based on temporary points, I want to make that clear—temporary points not permanent points that were installed."

[Public Comment]
"There really isn't a good definition of a vertical hydrology, never mind contamination, which is a vertical hydrology."

[Klosky (SAIC)]
"I would tend to agree, again there's not permanent points that are monitoring that over a long period of time. There was a snapshot that was taken that a lot of those conclusions were based on."

So, again, I just wanted to make sure again…understand that here's our boundary to the installation down here with West Hampton Beach down below and again most of the plume is contained on-site. Again, this is for Sites 4 and 9. This is the semivolatile organic compounds. Again, these are components of jet fuel. These are the slightly heavier carbon fraction components of jet fuel. It's not a very good picture. Actually, here's the group back here. The semivolatiles, for the most part, it's a little bit of naphthalene. It's just above criteria but again just so that you know this was the last sampling event done in 2004 that indicated there were some semivolatiles out there.

Site 7—there's a lot of information on this. I apologize. We actually did make a bigger picture. We have better resolution pictures in the documents here if you want to come up and look. As a quick summary, this includes both the volatiles and the semivolatile petroleum compounds, all in one picture. You can see again, the yellow areas were historic detections that were just above New York drinking water criteria, and for the most part, there have then been subsequent sampling events at either those well locations, or very close-by well locations, that have shown that we've gone below the drinking water standards or to a non-detect condition. So, at the moment, there are no petroleum impacts at Site 7.
Alright, the next phase…so there's been this significant sampling effort that's been done to date. We take all that information and data, and we basically compile it into an evaluation of what alternatives do we have to actually correct the impacts that we've identified. The baseline, and this is actually a mandate by CERCLA, is a no action—you do nothing. That is not the alternative people select. It's something that we're just trying to compare that if we did nothing, what benefit are we then getting from that alternative?

The four main alternatives that were looked at were, again, a natural attenuation approach, which is a monitoring of the plume but letting the natural subsurface properties and degradation resolve the contaminants and degrade them; a groundwater extraction system with an external treatment that would then discharge the treated water to a sewer system; a bio-sparge system, which is there to enhance the natural degradation processes that occur in the subsurface; and then the last one is an alternative to that air bio-sparging, which is again another bio-remediation technique to try and enhance the natural processes that are in the subsurface.

For Site 7, because we were below drinking water criteria, there was really just the baseline action, which was no action, and then one alternative, which was continue to monitor the site to confirm that there are no impacts to the site. We take these alternatives now and we actually compare them against these nine criteria as part of the evaluation. Now, the last two are something that actually occurs as a result of this meeting--your community acceptance of what we're here to propose to you as our preferred alternative, and then the state's endorsement of that preferred alternative.

So what you'll see in what is the PRAP feasibility study is a comparison of these seven criteria, which includes how effective is it, are we being protective of the community, then how much money is it essentially going to cost us, and is it technically feasible for us to correct the impacts.

For Sites 4 and 9, again that's combined as one site, again you can see the four alternatives that we looked at and then the seven criteria that were compared, and you can see again a relatively qualitative summary of the evaluation that is in the historical documents. What comes out of this is Alternative 3 is our recommended preferred alternative, primarily because it is protective, it will restore the groundwater to a drinking water condition, and it is relatively implementable--there are, obviously because we're in an infield, some complications with us implementing this--and the cost is quite competitive compared to the other alternatives. So we're providing the best technology at one of the most reasonable costs.

The other alternatives were discarded either because they weren't protective (and we kind of use those as our threshold criteria--if we're not being protective we really don't want that as an alternative) to either the cost was significantly more providing a comparable degree of restoration and protectiveness.

As I said, the preferred alternative for Sites 4 and 9 is for us to actually install an air bio-sparging system that would then encompass this plume. Again, you can see with this drawing, we're talking about installing an actual air compressor down in this area, the current POL Yard, and then a network of injection wells where we actually bubble air down into the subsurface that promotes the degradation of the petroleum products. This requires about 50 air sparge points located throughout the plume, and we're anticipating that this is probably going to have to run for two, possibly three, years to make the petroleum contaminants degrade.

[Public Comment]
"Is that concentrated oxygen or just air?"

[Klosky (SAIC)]
"Straight air…straight compressed air. The oxygen does improve the degradation, and that's usually used for either really high concentrations of contaminants or if you have something that is not degraded quickly. Some of the higher SVOCs, which are kind of…again, you can think of them as the high-carbon chain fractions, don't aerobically degrade very well. So you do tend towards oxygen to make that happen. But for here, No…we're talking primarily our contaminants are the benzene, toluene, ethylbenzene, and xylene components of the jet fuel.

[Public Comment]
"Is there a sparge or is it just an injection or air?"

[Klosky (SAIC)]
"It's called a bio-sparge, and I guess I wanna make a subtle point between an air sparge and a bio-sparge. A bio-sparge is there to stimulate the biological activity in the subsurface. We're not there to basically strip--physically strip--the contaminants from the subsurface. We're just there to try to get that natural aerobic bacteria to degrade.

[Public Comment]
"Is it a lower rate?"

[Klosky (SAIC)]
"Much, much slower than bubbling. Bubbling versus forcing air down in the subsurface."

Alright, there are some areas that bio-sparge wells do not cover. You can see again there's some fringes, either areas where we couldn't install wells because it's actually in the middle of a taxiway or that were on the outside edges, and so a component of this remedy is natural attenuation. We're trying to treat the source areas of the contamination, and we're trying to let the fringes naturally degrade.

There's obviously going to be a monitoring program. We will be out here on a regular basis to actually operate the air sparge/bio-sparge system, and of course we're going to continue to monitor the groundwater until we achieve the actual drinking water criteria.

[Public Comment]
"Roughly how deeply would you inject the air?"

[Klosky (SAIC)]
"The groundwater table here is about 30 ft bgs, plus or minus a couple feet, depending upon where you're at, and we're putting the air sparge points down at about 50 ft bgs, which from our vertical historical sampling showed that's where there was no impact, and then from there that's where we're bubbling up the air."

[Public Comment]
"Will you be monitoring any soil vapors or do you have something in place to make sure you're not volatilizing?"

[Klosky (SAIC)]
"The reason we…New York brought that as a concern, but we decided that, or at least we discussed it and we said that there's not going to be an SVE system that goes with a traditional air sparge. For two reasons – there's no structures over top of this, so there's no potential for vapor intrusion to occur and, again, because we're there to try and stimulate basically a minimum flow versus an air stripping type flow. So, no…we're not going to be monitoring the subsurface vapors. We're there to monitor the groundwater. I guess the third component of that was if we do volatilize some contaminants into the soils, because it's open-grass areas, those will again be essentially leached back to the groundwater so we'll see them in the groundwater eventually."

[Public Comment]
"You said [soft voice not audible] equilibrium, the groundwater roughly a foot a day travels you use as a rule of thumb. How does that explain the historical [soft voice not audible] that's 20 or 30 years [soft voice not audible]."

[Klosky (SAIC)]
For a couple of reasons. You have the first thing, which is called a contaminant retard philosophy, which is not the same as your groundwater. The contaminants have a tendency to sorb to the soil so they migrate actually slower than in the groundwater itself. You then have a competitive degradation process that's also occurring. So if you imagine, let's just say you all had ten benzene atoms that are starting up here, by the time they migrate a certain distance, half of them may have been degraded. If it migrates another certain distance, then another half of them have been degraded--through those natural attenuation processes that are occurring in the subsurface.

[Public Comment]
"So feel it's reached equilibrium?"

[Klosky (SAIC)]
"Most definitely, especially because the groundwater is moving as fast as it is that the plume is very much at an equilibrium condition."

[Public Comment]
"How far in front of the plume are there monitoring wells located?"
[Klosky (SAIC)]
We're had taken…we have drawn, these are the non-detect points that you see up here around the edge of the plume so we've taken it all the way to the front of the plume. We have then come back and put one permanent monitoring well that is near, we're gonna call the tail leading edge of the plume. But we've very conservatively drawn this plume all the way out to the non-detects from that historic sample."

[Public Comment]
"Would you say these soils are not probably impacted [soft voice not audible] subsurface soil and soils [soft voice not audible]"

[Klosky (SAIC)]
"Again, they leached or leach to groundwater. Here again, you don't have much where the spills occurred, which were near the edge of the runways and taxiways—they have probably more than likely leached directly to the groundwater."

[Public Comment]
"How long ago were these releases?"

[Klosky (SAIC)]
"It's in the documents; please don't hold me to the exact dates. There's been two known releases at Site 4 and 9. Those dated from…documented releases were in the 1980s. Again, I apologize…the specific dates are in those documents. The Site 7 Fire Training Area dates back to the 70s, if I remember correctly, but then those fire-training activities at that site were ceased, again, something in the 1980s time frame. So there's been a good 20 years since the last known releases in those areas."

[Public Comment]
"There are no chlorinated solvents?"

[Klosky (SAIC)]
"No chlorinated solvents.

[Public Comment]
No free product anywhere?

[Klosky (SAIC)]
No, it's been all petroleum related."

[Public Comment]
"There's been no free product either?"

[Klosky (SAIC)]

"Now again there was in the drainage ditch, which is the Site 9, I guess I didn't explain why these two sites are connected. The storm drain system for the ramp area is right here at the edge of Site 4. That storm drain system then discharges into a ditch that is down here at Site 9. There was free product during one of the documented releases here at Site 4. That product when into the storm sewer and ended up in Site 9. So there was some free product in that ditch that they went down in and cleaned up, and that's been the only known free product. There's been no gauged free product at the groundwater table itself. Clearly, there's a residual source. We don't dispute that, but there's no free product that's being gauged."

Alright. I like this group. This group actually…you end up with different kinds of groups sometimes so this group actually knows most of the terminology.

Site 7, the one alternative again, that we looked at across the seven criteria because we were already at a drinking water standard, it got high marks all the way across the board, and basically this cost here is for our continued monitoring of this site across the next several years to confirm that there is no impact to this site.

[Public Comment]
"Is this a good time to talk about the monitoring program?"

[Klosky (SAIC)]
"If you want to, please."

[Public Comment]
"What is the anticipated schedule for the monitoring program?

[Klosky (SAIC)]
"Site 7 is going to be on a quarterly sampling across the next 2 years. For 4 and 9, we're going to go semi-annual, and the only reason we're going semi-annual is because we know there's contaminants there. They're going to be there for a longer duration while we're trying to treat them. The sampling program itself, if we're going to get down into the details, I do believe Site 7 is +/- seven monitoring wells that we're going to be looking at a full suite of VOCs, SVOCs, and metals to confirm there are no impacts. At the Sites 4 and 9, I don't remember the exact number of wells but it's double digits—I want to say its 10/11 wells that we're going to be monitoring the performance of the air sparge. We're going to focus mainly on VOCs as an indicator that we've actually achieved cleanup, but once we get the VOCs below the drinking water criteria, then we'll go back to a full suite of SVOCs, VOCs, and metals to confirm that we're below criteria. Yes maam?"

[Public Comment]
"Would you say that Sites 4 and 9 will go on for a couple years?"

[Klosky (SAIC)]
"It's going to go on until we actually get below drinking water criteria and then once you get below drinking water criteria, you're back to a 2-year confirmatory program so the actual length of the sampling is very variable. It could be 4 years…5 years…it just depends upon how effective we are with the bio-sparge system."

[Public Comment]
"Is there a model to see…anticipate what your cleanup time might be?"

[Klosky (SAIC)]

"We, again, use standard EPA tools to anticipate what the current degradation rates are…what we anticipate we'll get them to. There's an awful lot of assumptions you have to make in that modeling so that's why again, I have to be a little vague with what the time frames are. It's going to be several years that this system is going to have to operate to clean up the groundwater."

"Do you monitor DO and other parameters?" "Correct. Every monitoring event you do the full field parameters—the ORP, the DO, the temperature, and the pH are all taken every monitoring event."

[Public Comment]
"Do you look at other things like nitrates and things to be sure the bugs are happy?"

[Klosky (SAIC)]
"We sure do. We actually look at, again, I won't call it a full suite of MNA parameters, but we do look at the primary. You'll see some of those primaries…once we've done them several times then we realize they're not a main degradation pathway, we'll start to drop some of those parameters off the monitoring, but the ones that we think are the primary pathways, we do monitor those on a regular basis. Nitrates is one of them. We do monitor a little bit of the iron. There's been a little bit of methane monitoring and sulfate monitoring, but those aren't primary degradation pathways, so those will likely drop off in future monitoring."

The preferred alternative…what we're recommending to the group here is, again, implement a monitoring program to confirm that there are no groundwater impacts at Site 7, and the last slide…we want your comments. You had a lot of great comments today, but if there are concerns, we're here as long as you need to be here if there's more questions. You can provide comments to any one of those groups, depending upon your comfort level. You can just provide it in an email, verbal form, written form, or we do have comment sheets here. We do like to get them in written format and who they're from, so that we can then document them, and then obviously we will adjust that decision document based on your comments. From there, once we issue the decision document--that decision document will be issued sometime in the early summer months--our intent is then to come back out and start the remedial actions if we have an input from the community.

[Public Comment]
"I guess that the deep component still leaves me a little uncomfortable. I haven't gone back into the historical documents to see what kind….having done the same kind of work myself, and getting hammered pretty hard about documenting vertical, where there's clearly hydraulic indication of vertical flow component. There seems to be a missing component here. Again, not having gone back to the historical documents."

[Klosky (SAIC)]
"I want to point you out to the one that I think will be the best potential correct answer, that was in July 2007, based on a July (summer 2006) sampling event that was conducted summarizing the vertical profile sampling that was done."

[Public Comment]
"Ron…do you have any concerns about deep well system here.

[Public Comment]
Yes, that's why I brought it up if they were confident they bounded the plume…if they felt it remained onsite [soft voice not audible] we do have some private wells and some public supply wells down here so we have some concern that we have confidence that there wasn't anything that got by. Some of our

earlier comments on some of the reports that we had, [soft voice not audible] would be to put some additional cluster wells down here [soft voice not audible]."

[Klosky (SAIC)]
"Like I said and I would agree with you that historic sampling has been a very traditional surficial horizontal definition. I don't think there was much of a vertical definition at all. Again, there was this vertical definition, but again it was done through temporary points to provide that definition. Again, there are not permanent monitoring points out there in a cluster system at the moment."

[Public Comment]
"Chemical opposed to hydraulic?"

[Klosky (SAIC)]
"Correct. Correct. We gauged the temporary points but I wouldn't make any conclusions off that—as a PE…on what that's telling you."

[Public Comment]
"So you would consider some deep cluster wells as part of the monitoring program?"

[Klosky (SAIC)]
"I think it's something we can look at for what we're proposing to do out there. We're basically about to spend a million dollars to put in a corrective action, so I think it's something that we'll go back and we'll talk with the Air Force over… we should probably put in a cluster set of wells as a clean set of downgradient wells. And, again, I'd ask you to document the comment because that helps us to then obviously provide an impetus to help resolve it."

[Public Comment]
"Should comments be on a special form or can I send an email.

[Klosky (SAIC)]
Yes, you can just write an email. "Yes…any one of these individuals, whoever you feel most comfortable with, and it will get eventually passed off—they'll all be collected together and then us as the Engineering contractor will be the ones who will actually provide responses to this."

[Public Comment]
"To the emails on the slide"

[Klosky (SAIC)]
"Yes, maam.

[Public Comment]
"The storm drain you mentioned earlier…that doesn't connect to a sump [soft voice not audible] or independent system…it is just independent?"

[Klosky (SAIC)]
"Correct. It's just an outfall."

[Public Comment]
"So it's self-contained. It's not in the series of other storm drains. It doesn't have a discharge anywhere else?"

[Webb (NY-ANG)]
"No, this is the only discharge…we have two storm drains coming from [soft voice not audible] the airfield [soft voice not audible] to the county side, they pickup primarily the flight line and the parking lot areas on base."

[Public Comment]
Are there aren't any buildings [soft voice not audible]

[Webb (NY-ANG)]
Down at the new POL here, we have our two new tanks, relatively new construction, control tower, control buildings…and our only other buildings are back on the flight line which is [soft voice not audible] helicopters, our two hangers, ops and fire department.
[Public Comment]
[soft voices not audible]

[Webb (NY-ANG)]
[soft voices not audible]

[Klosky (SAIC)]
And the drainage to the outfall is right in the area over here.

[Webb (NY-ANG)]
Just where you see this tree growth right here. There's another outfall that comes across and comes in way up here. The primary one that's pulling most of the field is this one right here.

[Public Comment]
Is there a well upgradient of that building [soft voice not audible].

[Klosky (SAIC)]
Do you mean the POL yard building? Again yes, there's that one well.

[Public Comment]
It's clean?

[Klosky (SAIC)]
It's very low impact. I can't claim it's clean…but it's a very low impact so we do feel comfortable about our boundary

[Public Comment]
[soft voice not audible]

[Klosky (SAIC)]
Understand.

[Public Comment]
[soft voice not audible]

[Public Comment]
You don't happen to know if fire-training activities occur here.

[Webb (NY-ANG)]

Not with fuels. If they have to do that they go to a couple special bases over the country and are well controlled and most of the time, they actually use natural gas [soft voice not audible].

[Klosky (SAIC)]
I think standard operating practice is all in concrete basins now with water level floated at the bottom of the concrete basin. That they then if they are going to do a petroleum based fire training exercise they then float it on top of the water, and then obviously all those floats are taken off and managed accordingly.

Now the former fire training area here was actually converted to a concrete hardstand fire training area back many, many years ago. So, it's more than likely why you don't see much of an impact historically at that Site 7.

[Public Comment]
[soft voice not audible].

[Webb (NY-ANG)]
That's one of the hangers they use for staging aircraft in World War II so it's all concrete [soft voice not audible].

[Klosky (SAIC)]
They probably cut off all the airflow down below. That was keeping the bugs nice and happy.

[Webb (NY-ANG)]
That original concrete probably dates back to 1943.

[Klosky (SAIC)]
Well again, I appreciate it. Great comments and we are here, if you have more comments feel free to browse what we have here. Again copies of all these are sitting in the West Hampton Free Library.

Thank you.

ATTACHMENT 3
PUBLIC MEETING FACT SHEET

THIS PAGE INTENTIONALLY LEFT BLANK.

FACT SHEET

Proposed Remedial Action Plan and Decision Document

NEW YORK AIR NATIONAL GUARD (NYANG), 106TH RESCUE WING
INSTALLATION RESTORATION PROGRAM (IRP) SITES 4, 7 AND 9
FRANCIS GABRESKI INTERNATIONAL AIRPORT
WESTHAMPTON BEACH, NY 11978

INTRODUCTION

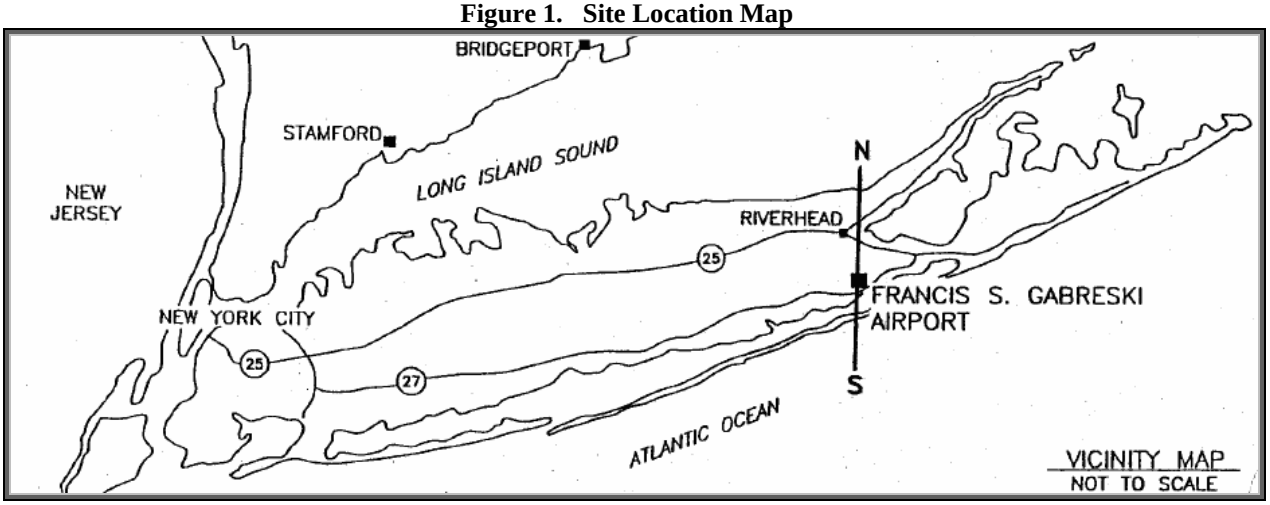
The National Guard Bureau (NGB) would like to inform you that a Proposed Remedial Action Plan (PRAP) and Decision Document have been issued for the Installation Restoration Program (IRP) Sites 4, 7, and 9 at the NYANG, 106th Rescue Wing (Figure 1). This was done pursuant to the rules governing the remediation of hazardous waste, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The selected remedy for cleanup of the groundwater at the IRP Sites 4, 7 and 9 is presented in the PRAP and Decision Document. These documents are available for public review at the document repository listed on this fact sheet.

A public information meeting will be held on May 15, 2008 at the Airport Management Conference Room, Administration Building #1, Francis S. Gabreski Airport, Westhampton Beach, New York from 5:30 to 6:30 PM local time. You may address any comments or questions regarding these sites, the PRAP or the Decision Document during the public meeting or in writing to the addresses below.

SITE BACKGROUND

The 106th Rescue Wing of the NYANG is located at the Francis Gabreski International Airport in Suffolk County, New York, on the eastern end of Long Island. The Francis Gabreski International Airport is on Old Riverhead Road, approximately 2 miles north of the Atlantic Ocean shoreline in Westhampton Beach. The NYANG leases approximately 70 acres of runways, hangars, and maintenance/service facilities at the airport in support of its primary mission for aerial search and rescue services.

Figure 1. Site Location Map



The NYANG has stored and used various types of hazardous materials during its history, including aircraft fueling and maintenance, support operations, and training exercises. These activities have led to environmental releases of such materials as oils, solvents, and fuels which have contaminated the

groundwater at the three identified IRP sites: IRP Site 4 (Aircraft Refueling Apron Site), IRP Site 7 (Former Fire Training Area) and IRP Site 9 (Ramp Drainage Outfall).

The physical description of the sites and associated nature and extent of contaminants are described in detail in the *Final Remedial Investigation Report for Sites 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, and 12*, dated June 2004 by PEER Consultants, P.C.

DESCRIPTION OF THE SELECTED REMEDY

The major elements of the selected remedy for IRP Sites 4, 7 and 9, as outlined in the PRAP and Decision Document, include:

- Construct and operate a groundwater air biosparging system to enhance aerobic bioremediation of the primary contaminant source areas at IRP Sites 4 and 9. Approximately 50 air biosparging wells will be installed in the contaminated plume as part of the treatment system.
- Conduct groundwater sampling at IRP Sites 4 and 9 for performance monitoring of the biosparge system and monitored natural attenuation (MNA).
- Implement site access restrictions and groundwater use restrictions to ensure that the public does not come into contact with contaminated groundwater at Sites 4 and 9 until remedial levels are achieved.
- Implement a long-term groundwater monitoring program to verify that all groundwater contaminants are below NYSDEC groundwater standards and criteria at Sites 4, 7 and 9.

DOCUMENT REPOSITORY AND SITE CONTACTS

Public understanding and involvement are important to the success of the Installation Restoration Program. To keep you updated, we place site documents in a repository in your community so you can read them. In addition to the PRAP and Decision Document, other documents related to previous investigations and remedial activities at the IRP Sites 4, 7 and 9 at the NYANG, 106th Rescue Wing are available for public review at:

Westhampton Free Library
Reference Section
7 Library Avenue
Westhampton Beach, NY 11978
Phone: (631) 288-3335

Additionally, any questions or concerns regarding the remedial action or environmental aspects of the site can be address by contacting the following individuals and leaving your name, address, and request:

NGB Contact:	**NYSDEC Contact:**	**NYANG Contact:**
Ms. Jody Ann Murata NGB/A7CVR Conaway Hall 3500 Fetchet Ave. Andrews AFB MD 20762 Phone: (301) 836-8120 Email: Jody.Murata@ang.af.mil	Ms. Heather Bishop NYSDEC Div. of Environmental Remediation 625 Broadway, 11th Floor Albany, NY 12233-7015 Phone: (518) 402-9692 Email: hlbishop@gw.dec.state.ny.us	LtCol. Jerry Webb 106th Rescue Wing, NYANG, EM Francis S. Gabreski Airport 150 Riverhead Road Westhampton Beach, NY 11978-1201 Phone: (631) 723-7349 Email: Jerry.Webb@nysuff.ang.af.mil

ATTACHMENT 4
PUBLIC COMMENTS

THIS PAGE INTENTIONALLY LEFT BLANK.

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

HUMAYUN J. CHAUDHRY, D.O., M.S.
Commissioner

May 29, 2008

Ms. Heather Bishop
Project Manager
NYSDEC Remedial Section, Division of Environmental Remedial Investigation
Bureau of Western Remedial Action 11th floor
625 Broadway
Albany, New York 12233-7017

Re: Proposed Remedial Action Plan (PRAP)
New York Air National Guard
Francis Gabreski Airport, Westhampton, NY
Restoration Program (IRP) Sites 4, 7, and 9

Dear Ms. Heather Bishop

The Suffolk County Department of Health Services Office of Water Resources reviewed the referenced PRAP prepared by SAIC dated April, 2008. These comments are in addition to the comments provided at the public meeting held on May 15th. SCDHS is concerned that the proposed monitoring well design may not be uniformly addressing all areas of the site 4 and 9 ground water plume. In order to verify that no contamination is leaving the site at depth we suggest the installation of additional cluster monitoring wells within the know plume area and down gradient. Well should be screened at several intervals below the water table to verify no deeper contamination is present and to determine the vertical gradient in the aquifer along the plume. We are concerned that the current monitoring has not eliminated the possibility of off site groundwater contamination and have identified at least 12 private wells in the down gradient area. A private water survey and offsite investigation is being conducted and we will forward any results related to the site. We appreciate the opportunity to comment on the PRAP.

Sincerely

Ron Paulsen
Hydrogeologist, SCDHS

Cc:
Vito Minei,SCDHS
Paul Ponturo, SCDHS
Steven Karpinski, NYSDOH
Jody Ann Murata NGB/A7CVR

Public Health
Prevent. Promote. Protect.

DIVISION OF ENVIRONMENTAL QUALITY
Office of Water Resources
360 Yaphank Avenue, Suite 1C, Yaphank NY 11980
(631) 852-5810 Fax (631) 852-5787

May 29, 2008

Ms. Heather Bishop
NYSDEC
Division of Environmental Remediation
625 Broadway, 11th Floor
Albany, NY 12233-7015

RE: IRP Sites 4, 7, and 9, Gabreski Airport, Westhampton Beach, NY

Dear Ms. Bishop:

The purpose of my correspondence is to provide comments to the overall investigation at the above referenced sites. I am a hydrogeologist with over 20 years experience conducting and directing hydrogeologic investigations at state and federal superfund sites across the country. I am also a resident of the Town of Southampton, a past President of the Remsenburg Speonk Civic Association and current board member, a Co-Chairman of the Citizen's Advisory Committee (CAC West) for the Town of Southampton, a member of the Gabreski Airport Conservation and Assessment Panel (ACAP), and a member of the Coalition Against Airport Pollution (CAAP). I also attended the recent public meeting held at Gabreski Airport on May 15, 2008 where I raised some questions about the investigation to your environmental engineers/scientists. I have reviewed both the Final Baseline Groundwater Sampling Report for Installation Restoration Program Sites 4, 7 and 9, July 2007 and the Draft Final (Version 1) Decision Document (Decision Document) for the Installation Restoration Program Sites 4, 7, and 9, April 2008.

In general, I concur with the Decision Document's characterization of the horizontal component of groundwater water flow at the three sites and the extent of contamination in the same horizontal dimension. I also concur with the report's proposed remedial alternatives, which are appropriate for the type of hydrocarbon contamination detected in the groundwater.

However, I do have some concerns about the completeness of the overall investigation to characterize the nature and extent of contamination at Sites 4, 7, and 9, as follows. Gabreski Airport, while it is officially outside the Pine Barrens "Core" area due to its "developed" nature, is located in Hydrogeologic Zone III as defined in the Long Island Comprehensive Waste Treatment Management Plan, July 1978 (the Plan). Hydrogeologic Zone III is defined as a deep recharge area for the Magothy Aquifer and contains good quality groundwater in both the Upper Glacial and Magothy aquifers, which should be afforded a high degree of protection from surficial contamination by applying land use restrictions and strict pollution source controls as described in the Plan.

Unfortunately, the investigation contains no data to support or refute the current characterization of any of the sites as being located in a deep recharge area. To address this and its Zone III designation, there need to be several sets of clustered monitoring wells to evaluate the vertical component of ground water flow and to determine if contamination has entered the deep flow regime. The current report has not characterized the flow or the contamination in the vertical dimension.

29 Dock Road • PO Box 282 • Remsenburg • New York • 11960 • (631) 325-2705 • FAX (631) 325-7721

The report also states that several monitoring wells were resurveyed for top of casing elevations. This data along with the original surveyed casing elevations is not presented in the report. The report needs to include a table of casing elevations and depth to groundwater measurements along with a copy of the licensed surveyor's report of the resurveyed elevations. This information would allow for a more complete technical evaluation of the conclusions reached by the investigators.

The report also discusses some anomalous water level elevations, which formed the basis for resurveying the well casing elevations, without any explanation to support the decision not to use or include the data. Data is data, and should be reported regardless of the author's opinion about it being anomalous. If groundwater elevations are not used in the contouring, they should at least be presented in a data table and indicated as such on the groundwater contour map(s).

The report also does not characterize the local geology at the site. There are no geologic cross-sections based on site specific soil cores to identify the subsurface stratigraphy, including the presence and depths of zones of high and low hydraulic conductivity. This is a serious omission from the report.

In summary, as part of the next phase of the investigation/remediation planned for the sites, I recommend that several, three-well clusters be created from the existing monitoring well network; one upgradient and one downgradient in each of the site areas. As the deep wells are drilled, soil samples should be collected at least at five foot intervals, or less if changes in strata are encountered, and logged by a geologist. Hydrogeologic cross-sections should be prepared from the soil samples, groundwater elevations, and contaminant concentrations collected from these borings/wells to illustrate the subsurface geology, groundwater head relationships and contaminant distribution in the vertical dimension. This information may also help to resolve the anomalous groundwater elevations that have been encountered during previous investigations at the site(s) and would illustrate the potential for unidentified deep contamination at one or more of the sites.

If you have any questions, please call me at (631) 325-2705 or email me at rmozer@optonline.net.

Respectfully submitted,

Robert J. Mozer, CPG, PG
Hydrogeologist

Cc: Ms. Jody Ann Murata, NGB/A7CVR
LtCol. Jerry Webb, 106th Rescue Wing, NY ANG, EM
Suzanne Collins, President, Remsenburg Speonk Civic Association
Hank Beck, Co-Chair, CAC West

irp site 4.7.9 gabreski.doc

THIS PAGE INTENTIONALLY LEFT BLANK.