AECOM Environment

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April 2013

Draft Alternatives Analysis Report

Former Scott Aviation Facility
Lancaster, NY

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List of Acronyms

1,1,1-TCA	1,1,1-trichloroethane
AA	Alternatives Analysis
AAR	Alternatives Analysis Report
AECOM	AECOM Technical Services, Inc.
AVOX	AVOX Systems Inc.
BASE	Building Assessment and Survey Evaluation
BCP	Brownfield Cleanup Program
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene compounds
CAMP	Community Air Monitoring Program
CHP	Catalyzed hydrogen peroxide
cis-1,2-DCE	cis-1,2-dichloroethene
cm/sec	centimeters per second
COPC	Constituent of Potential Concern
DBC	Dehalococcoides
DER	Division of Environmental Remediation
DHB	Dehalobacter
EVO	Emulsified vegetable oil
ft	Feet
FWIA	Fish and Wildlife Impact Analysis
gpm	Gallons per minute
GRA	General Response Action
IRM	Interim Remedial Measure
ISCO	In-situ chemical oxidation
K	Hydraulic Conductivity
MNA	Monitored natural attenuation
NYCRR	New York State Official Compilation of Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSEG	New York State Electric and Gas
O&M	Operations and maintenance
ORP	Oxidation-reduction potential
PCB	Polychlorinated biphenyl
RAO	Remedial Action Objectives
RI	Remedial Investigation
RIR	Remedial Investigation Report
SCG	Standards, Criteria, and Guidelines
SCO	Soil Cleanup Objectives
SRI	Supplemental Remedial Investigation
SRIR	Supplemental Remedial Investigation Report
SSD	Sub-slab depressurization
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TCE	Trichloroethene
TOD	Total oxidant demand
TOGS	Technical and Operational Guidance Series
TVOC	Total Volatile Organic Compound
μg/L	Microgram per liter
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

1.0 INTRODUCTION

On behalf of Scott Technologies, Inc., AECOM Technical Services, Inc. (AECOM) prepared this Draft Alternatives Analysis Report (AAR) under the guidance of New York State Department of Environmental Conservation's (NYSDEC) Brownfield Cleanup Program (BCP) for the former Scott Aviation Facility Area 1 site (Site) located at 225 Erie Street, Village of Lancaster, Erie County, New York (**Figure 1**).

Scott Technologies, Inc. submitted an application on September 11, 2008 to enter NYSDEC BCP per Title 6 New York State Official Compilation of Codes, Rules, and Regulations (NYCRR) Part 375-3.4 (Applications) effective December 14, 2006 for the Site. Scott Technologies, Inc. applied for entry into NYSDEC BCP as a participant to investigate and remediate, as appropriate, potential areas of environmental concern associated with the Site.

A Remedial Investigation Report (RIR) (AECOM, September 1, 2011) presenting the findings of the Remedial Investigation (RI) was submitted to NYSDEC and the New York State Department of Health (NYSDOH) and approved on September 15, 2011. A revised Supplemental Remedial Investigation Report (SRIR) (AECOM, April 30, 2012) presenting the findings of additional RI work performed in May, June, and October 2011 was submitted to NYSDEC and NYSDOH on April 30, 2012 and approved on June 1, 2012. This Draft AAR was developed based upon findings of the RI and Supplemental Remedial Investigation (SRI). The Draft AAR has been completed in accordance with NYSDEC Division of Environmental Remediation (DER) Draft Brownfield Cleanup Program Guide (BCP Guide) (NYSDEC, May 2004), 6 NYCRR Part 375 Environmental Remediation Programs (NYSDEC, December 14, 2006), and NYSDEC DER Technical Guidance for Site Investigation and Remediation (DER-10) (NYSDEC, May 3, 2010).

1.1 OBJECTIVE

The primary purpose of the AAR is to identify and evaluate the most appropriate remedial alternatives to eliminate or mitigate, through the proper application of scientific and engineering principles, any significant threats to public health and to the environment presented by contaminants present in Site environmental media.

The ultimate goal of the AAR is to select an appropriate final remedy that will allow continued use of the Site as an active industrial facility. This AAR presents the remedy selection process and the proposed remedy for the Site based upon a risk-based, land use approach. The selected remedy will utilize the generic soil cleanup objectives to remediate the Site under Track 2 of the BCP to conditions suitable for future industrial or commercial use or redevelopment of the Site.

1.2 REPORT ORGANIZATION

This AAR is organized as follows:

- Section 1 - Introduction: This section provides an overview of the project.
- Section 2 - Site Description and History: This section provides a description of the Site and a summary of the Site's history.

- Section 3 – Summary of Remedial Investigation and Supplemental Remedial Investigation: This section presents a summary of the results of the RI and SRI.
- Section 4 – Remedial Action Objectives and Goals: This section presents the goals and objectives of the proposed remedy.
- Section 5 – General Response Action and Identification of Remedial Technologies: This section presents a review and screening of applicable technologies for remediating environmental media exhibiting contaminant concentrations exceeding relevant standards at the Site.
- Section 6 – Initial Screening of Remedial Technologies: The section presents the initial screening of potentially applicable remedial technologies at the Site.
- Section 7 – Detailed Analyses of Retained Remedial Alternatives: This section presents detailed analyses of retained potential remedial alternatives to address the presence of contaminant concentrations exceeding relevant regulatory criteria in environmental media at the Site.
- Section 8 – Comparative Analyses of Remedial Alternatives: This section presents the comparative analyses of the remedial alternatives for the Site.
- Section 9 – Recommended Remedial Alternative: This section presents a recommendation for the Site remedy and justification of the selection.
- Section 10 – References: This section presents a list of references used in the preparation of this AAR.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE HISTORY AND CURRENT OPPERATIONS

The AVOX facility is located in the Village and Town of Lancaster, Erie County, New York. The overall facility is currently used as a manufacturing, development, testing, and distribution facility for aircraft and military supplied-air systems.

The overall property includes manufacturing plants (Plants 1, 2, and 3), support buildings, and asphalt-paved driveways and parking areas (**Figure 2**). Buildings and pavement cover roughly 65 percent of the Plant 1, 2, and 3 manufacturing area. Grassy and undeveloped areas comprise the remainder of the overall property. A tributary to Plum Creek (known as Spring Creek) flows within a culvert beneath the area between Plants 2 and 3.

The 62,000 square foot Plant 1 (225 Erie Street) resides south of Erie Street on the central parcel of a 6.4-acre combination of three adjacent parcels. The three adjacent parcels include: a vacant 1.1-acre parcel zoned light industrial west of the central parcel; a 3.8-acre central parcel zoned light industrial on which Plant 1 is located; and a vacant 1.6-acre parcel zoned residential to the east of the central parcel. Support buildings located within the central parcel include: a small pre-fabricated storage shed for hazardous materials and wastes; a record retention building; a paint storage shed; a grounds keeping equipment shed; a 3,000-gallon elevated steel aboveground storage tank containing liquid oxygen; and, a 100,000-gallon water tower for process use and fire protection.

The 42,000 square foot Plant 2 (25 Walter Winter Drive) and the 30,000 square foot Plant 3 (27 Walter Winter Drive) are located on an 8.4-acre parcel north of Plant 1, and north of Erie Street. The Plant 2 and Plant 3 Areas also contain a small metal building west of Plant 2 that houses a groundwater treatment system, and a storm water detention pond northwest of Plant 2.

An undeveloped 10.1-acre parcel north of the Plant 2 and Plant 3 Area is referred to as the Northern Area. The Northern Area is separated from the Plant 2 / Plant 3 Area by a 100-foot wide parcel owned by New York State Electric & Gas (NYSEG) containing a power line that traverses the area in an east-west orientation.

The proposed BCP boundary for Area 1 is located west/southwest of Plant 1 as shown on **Figure 2**.

3.0 SUMMARY OF REMEDIAL INVESTIGATIONS

3.1 GEOLOGY/HYDROLOGY

3.1.1 SITE GEOLOGY

The native soils underlying the Site generally consist of interbedded silts and clays with discontinuous sporadic fine sand lenses (shallow overburden). A thin coarse-grained layer is located above the bedrock (deep overburden). Based on the deep overburden wells, the average thickness of the overburden extends to approximately 21 feet (ft) below ground surface (bgs); ranging from 20 ft in the south to 26 ft in the north.

Bedrock cores were collected and logged from MW-41B. The core indicates black shale (Marcellus Formation). A distinct weathered bedrock zone at the base of the deep overburden was not identified. Bedrock cores collected from 24.8 ft bgs to the bottom of the boring (34.8 ft bgs) indicated three potential fractures (two 1 to 1.5-inch horizontal fracture zones and one inclined fracture). Multiple mechanical breaks were observed in the rock core as a result of the fissile nature of the shale. A description of the bedrock core and elevations of the fractures are presented on the stratigraphic borehole log for this well in Appendix A of the RIR; overburden logs are also presented in Appendix A of the RIR and in Appendix A of the SRIR. Refer to **Figure 3** for location of monitoring wells.

3.1.2 SITE HYDROGEOLOGY

Groundwater is first encountered at the Site in the shallow overburden. Depth to groundwater across the Site was measured during five comprehensive rounds of water level measurements; three during the RI and two during the SRI. The table below presents the average depth to water from the monitoring wells for each zone for each round:

Zone/Date	**June 2010**	**August 2010**	**October 2010**	**April 2011**	**June 2011**
Shallow Overburden	2.82 ft bgs	4.98 ft bgs	7.13 ft bgs	3.92 ft bgs	2.46 ft bgs
Deep Overburden*	5.06 ft bgs	5.79 ft bgs	6.94 ft bgs	5.56 ft bgs	4.11 ft bgs
Bedrock*	9.2 ft bgs	9.5 ft bgs	10.28 ft bgs	9.63 ft bgs	6.96 ft bgs

*The groundwater within the deep overburden and bedrock appears to be semi-confined.

Table 1 summarizes the groundwater elevations collected in June 2010, August 2010, October 2010, April 2011 and June 2011.

As depicted on **Figure 4,** the most recent measured groundwater elevations in the shallow overburden in the vicinity of Plant 1 are generally flat, with localized highs and lows as measured in June 2010, August 2010, October 2010 and April 2011. A west-northwest flow direction in the shallow overburden can be inferred from the data as measured in the five comprehensive rounds of water level measurements. A northwest flow direction is most evident from the groundwater elevations collected in October 2010.

As depicted on **Figure 5**, the most recent measured groundwater flow direction in the deep overburden in the vicinity of Plant 1 is to the northwest, with an approximate gradient of 0.020 foot per foot (ft/ft) as measured in the five comprehensive rounds of water level measurements.

Measured groundwater elevations at the one bedrock well fluctuated over the 5 measured events between 6.96 ft bgs and 10.28 ft bgs.

Seasonal variations in groundwater elevations between June 2010 and October 2010 dropped an average of 2.82 ft bgs in the shallow overburden, 1.88 ft bgs in the deep overburden, and 1.08 ft bgs in the bedrock. From a seasonal perspective, it is anticipated that water levels would rise during the spring and winter season and fall during summer and fall seasons across the Site.

Water elevations were also monitored from the temporary piezometers installed in the storm sewer bedding in the vicinity of Plant 1 during the five monitoring events. The water elevations collected from the temporary piezometers were not included in the groundwater contour figures, as they were screened in a different hydraulic unit (storm sewer bedding) than the shallow overburden wells. Groundwater elevation data from MW-30 was also not included on the groundwater contour figures as this well is screened across both the shallow and deep overburden units.

Results of the in-situ hydraulic conductivity (K) tests performed in the monitoring wells at the Site are presented in Appendix I of the RIR. RI data showed that K values range from 1.49E-03 centimeters per second (cm/sec) to 3.13E-05 cm/sec in the shallow overburden, and range from 4.72E-03 cm/sec to 8.96E-05 cm/sec in the deep overburden. Hydraulic conductivity testing was not performed in the bedrock monitoring well. The K values ranged as presented in the following table:

Monitoring Well	**Rising Head**	**Falling Head**	**Geometric Mean**
Shallow Overburden			
MW-35S	1.01E-03 cm/sec	2.19E-03 cm/sec	1.49E-03 cm/sec
MW-37S	Not available	3.13E-05 cm/sec	3.13E-05 cm/sec
Geometric mean			**2.16E-04** cm/sec
Deep Overburden			
MW-39D	4.96E-03 cm/sec	4.50E-03 cm/sec	4.72E-03 cm/sec
MW-38D	Not available	8.96E-05 cm/sec	8.96E-05 cm/sec
Geometric mean			**6.50E-04** cm/sec

3.2 NATURE AND EXTENT OF CONTAMINATION

Based on the results of the RI, SRI and the associated Qualitative Human Health Exposure Assessment, the following conclusions were made:

1. No fill was observed in the RI or SRI borings. Previously identified fill was excavated during the Interim Remedial Measure (IRM). Overburden soils were comprised of fine-grained soil, specifically silts and clays, and divided hydraulically into the upper overburden and lower overburden. Borehole refusal (i.e., bedrock) within the overburden was approximately 21 ft to 26 ft bgs.

2. Volatile organic compound (VOC) concentrations for surface soil (i.e., 0 to 2 inches bgs) were below the soil cleanup objectives (SCOs) for protection of groundwater at the borings sampled (refer to **Table 2** for surface soil VOC data). Semi-volatile organic compound (SVOC), metals, polychlorinated biphenyl (PCB) and pesticide concentrations were below the SCOs for commercial use with the exceptions of benzo(a)pyrene (potentially resulting from the adjacent active rail line) and metals cadmium and nickel. Refer to **Tables 3**, **4**, **and 5** for surface soil SVOC, metals, and PCB/pesticide data, respectively.

3. VOC concentrations for subsurface soil were below the SCO for unrestricted use with the exception of acetone and methylene chloride at borings DPT8-2A and DPT8-2B (common laboratory contaminants) at the borings sampled. Refer to **Table 6** for subsurface soil VOC data. SVOC, metals, and PCB/pesticide concentrations in subsurface soil. Only mercury, copper, and cadmium exceeded SCO for commercial use. These exceedances occurred at borings DPT8-1A and DPT8-2A. Refer to **Tables 7**, **8**, **and 9** for subsurface soil SVOC, metals, and PCB/pesticide data, respectively.

4. Groundwater was present within the monitoring wells that were installed within the shallow overburden, deep overburden, and bedrock. The average depth to groundwater as measured during the five events was 4 ft bgs in the shallow overburden, 5 ft bgs in the deep overburden, and 9 ft bgs in the bedrock. Water level data indicates that the groundwater flow direction in the overburden in the vicinity of Plant 1 is to the northwest; although this is not as pronounced in the shallow overburden. Only one bedrock well is present on the Site, so no groundwater flow direction can be inferred in the bedrock at the Site. Groundwater within the deep overburden and bedrock appear to be semi-confined. **Figures 4** and **5** present shallow and deep overburden surface elevation groundwater contours.

5. Analytical data for groundwater samples collected from the shallow and deep overburden identifies the presence of VOCs exceeding NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 standards for the protection of drinking water (NYSDEC, June 1998). Refer to **Table 10** for groundwater VOC data. There were no exceedances of NYSDEC TOGS 1.1.1. protection of drinking water standards in the bedrock groundwater. 1,1,1-trichloroethane (1,1,1-TCA) was detected at the highest concentrations. The most frequently detected VOCs were trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE). The greatest VOC concentrations were detected in the area of the previously-excavated source area during the IRM at A1-GP01, A1-GP02, A1-GP03, A1-GP04, A1-GP10, and MW-38D.

6. At perimeter wells, VOCs were either not detected or were detected at concentrations below or slightly above NYSDEC TOGS 1.1.1 protection of drinking water standards for TCE. The delineation of TCE is complete to the north, south, east and west (to northeast corner of building) of the historic source area. (Note: TCE had been detected above NYSDEC TOGS

1.1.1 protection of drinking water standards at A1-GP13 and MW-36S during one of two groundwater sampling events performed during the RI).

7. SVOCs in groundwater were below NYSDEC TOGS 1.1.1 protection of drinking water standards; refer to **Table 11**.

8. Three naturally occurring metals (iron, magnesium, and sodium) were detected in groundwater above NYSDEC TOGS 1.1.1 protection of drinking water standards; refer to **Table 12**.

9. No PCBs were detected in groundwater above NYSDEC TOGS 1.1.1 protection of drinking water standards. Refer to **Table 13** for PCB groundwater data.

10. One pesticide (heptachlor epoxide at MW-36S) was detected in groundwater above NYSDEC TOGS 1.1.1 protection of drinking water standards. (Note: A duplicate sample collected at MW-36S was below NYSDEC TOGS 1.1.1 protection of drinking water standards for heptachlor epoxide.) Refer to **Table 13** for pesticide groundwater data.

11. VOCs were detected within several storm sewer catch basins located on Site and within the storm sewer pipe bedding. Because groundwater is shallower than the storm sewer piping, contaminants from the groundwater may be infiltrating the storm sewer and bedding material. Compounds detected in the outfall at Spring Creek were either at significantly lower concentrations than those detected in the catch basin samples, or were compounds not found in the Site catch basins. No compounds detected in the outfall sample exceeded NYSDEC Surface Water Standard/Guidance values or US Environmental Protection Agency (EPA) Region 5 Ecological Screening Levels; refer to **Table 14**.

12. Constituents of Potential Concern (COPCs) were identified for soil by comparison of maximum detected concentrations for VOCs to 6 NYCRR Part 375 unrestricted use and for SVOCs, metals, pesticides, and PCBs to restricted use for commercial. COPCs were identified for groundwater by comparison of maximum detected concentrations for VOCs, SVOCs, metals, pesticides, and PCBs to NYSDEC TOGS 1.1.1 protection of drinking water standards.

13. Based on the evaluation of the data against the decision matrices, a vapor intrusion condition is not present at the Site, and indoor air quality has not been adversely impacted by the presence of the adjacent groundwater plume. However, per a June 1, 2012 letter from NYSDEC to Tyco, NYSDOH considers this Site a significant threat due to elevated concentrations of VOCs in sub-slab soil vapor, and the potential for this vapor to impact indoor air. Refer to **Tables 15** and **16** for vapor data compared to 2006 NYSDOH guidance values and the EPA 2001 Building Assessment and Survey Evaluation (BASE) database indoor air values respectively.

14. The qualitative exposure assessment identified the potential for human exposure to soil through dermal contact, incidental ingestion, and inhalation of particulate matter and vapors, and to groundwater through dermal contact, incidental ingestion, and inhalation of vapors. The potentially exposed on-site receptors include workers (plant workers and construction/utility workers) and persons that may trespass onto the Site. Potential human exposure can be addressed using remedial or other methods to eliminate exposure pathways and/or provide worker protection.

15. During the FWIA it was determined that the small, isolated vegetated areas on Site provide limited habitat for wildlife. The Site is surrounded by developments (rail line, industrial and residential properties, roads, etc.). The vegetated areas on Site show no stress due to the presence of COPCs.

3.3 SUMMARY OF THE NATURE AND EXTENT OF CONTAMINATION AND POTENTIAL EXPOSURE PATHWAYS

The results of the RI and SRI indicate that the primary concern is VOCs in shallow overburden groundwater on the Site, and to a lesser extent deep overburden groundwater, at concentrations that exceed NYSDEC TOGS 1.1.1 protection of drinking water standards.

An assessment of potential exposure pathways for receptors at the Site is presented in **Table 17**.

The following summarizes the Constituents of Potential Concern (COPCs) and potential exposure pathways identified through the completion of the RI and the SRI.

Groundwater

- Observed contamination at the Site appears to mainly exist in the groundwater as VOCs. The table below summarizes the groundwater COPCs for this Site, as well as the maximum detected concentrations of groundwater VOCs that exceed NYSDEC TOGS 1.1.1 protection of drinking water standards.

- Few SVOCs were detected, and only in concentrations below the NYSDEC TOGS 1.1.1 protection of drinking water standards.

- Iron, magnesium, and sodium were detected at concentrations greater than NYSDEC TOGS 1.1.1 protection of drinking water standards, but are not considered COPCs because these compounds are often found naturally.

- No PCBs were detected, and only one pesticide was tentatively detected in one groundwater sample at a concentration greater than NYSDEC TOGS 1.1.1 protection of drinking water standards.

The maximum detected concentrations of groundwater VOCs which exceeded NYSDEC Groundwater Guidance or Standards, from the RI and SRI, are as follows:

Constituent of Concern	***NYSDEC Groundwater Guidance (g) or Standard (s) Value (µg/L)***	***Maximum Detected Conc. (µg/L)***	**Sample**	**Date of Maximum Detection**
Benzene	1 s	34 J	A1-GP13-S	8/3/10
Toluene	5 s	1,500	A1-GP01-S	6/22/10
Ethylbenzene	5 s	270	MW-38D	6/22/10
Xylenes (total)	5 s	2,000	A1-GP13-S	8/3/10
1,1,1-Trichloroethane	5 s	84,000	A1-GP10-S	8/3/10
1,1,2-Trichloro-1,2,2-trifluoroethane	5 s	4,400	A1-GP01-S	6/22/10
1,1,2-Trichloroethane	1 s	240 J	MW-42S	4/7/11
1,1-Dichloroethane	5 s	48,000	A1-GP10-S	8/3/10
1,1-Dichloroethene	5 s	6,100	MW-42S	4/7/11
1,2-Dichloroethane	0.6 s	77	A1-GP10-S	6/21/10
2-Butanone	50 g	510 J	MW-42S	4/7/11
Acetone	50 g	400	MW-42S	4/7/11
Chloroethane	5 s	180	A1-GP13-S	8/3/10
cis-1,2-Dichloroethene	5 s	22,000	A1-GP01-S	6/22/10
Dichlorodifluoromethane	5 s	33 J	A1-GP06-S	8/4/10
Methylene chloride	5 s	17	A1-GP10-S	6/21/10
Tetrachloroethene	5 s	230 J	MW-38D	6/22/10
trans-1,2-Dichloroethene	5 s	190 J	A1-GP02-S	8/4/10
Trichloroethene	5 s	20,000	A1-GP02-S	8/4/10
Vinyl chloride	2 s	2,200	A1-GP13-S	8/3/10

Storm sewer catch basins and groundwater within the associated pipe bedding were also sampled for VOCs as a part of the SRI, although they are likely influenced by groundwater, as the overburden groundwater elevation is high throughout the Site. Compounds detected in the catch basins were also detected in groundwater; refer to the table below for compounds detected above USEPA Region 5 Ecological Screening Levels (USEPA, August 22, 2003). Only two compounds (1,1,1-trichloroethane and 1,1,2-trichloro-1,2,2-trifluoroethane) that were detected in the outfall to the tributary were also detected in the catch basins on Site. The Site is only one of many properties, whose stormwater feeds into the communal storm sewer which terminates at the referenced outfall. These compounds were detected at concentrations significantly lower at the outfall than were detected in the Site catch basins, and at levels below regulatory limits. Additional compounds detected in the outfall are likely from water entering the communal storm sewer from other area properties. Because all of the detected compounds in the outfall were below regulatory values, their potential impact upon off-site receptors is not discussed.

Constituent of Concern	***USEPA Region 5 Ecological Screening Level (µg/L)***	***Maximum Detected Conc. (µg/L)***	Sample	Date of Maximum Detection
1,1,1-Trichloroethane	76	420	CB-1-06/01/2011	6/01/11
1,1-Dichloroethane	47	110	CB-E-06/16/2011	6/16/11
1,1-Dichloroethene	65	93	CB-E-06/16/2011	6/16/11
Trichloroethene	47	60	CB-E-06/16/2011	6/16/11

Surface Soil

- No VOC, PCB, or pesticide was detected above the applicable standards in the surface soil at the Site.
- SVOC benzo(a)pyrene was present in three surface soil samples at concentrations slightly greater than the Commercial SCO. Benzo(a)pyrene is a typical byproduct of fossil fuel combustion, and the low levels observed during this sampling are typical of urban background (Note: Active railroad tracks are adjacent to the Site). Therefore, benzo(a)pyrene in soil is not considered a COPC.
- Two metals (cadmium and nickel) were observed above commercial use standards at two boring locations.

Subsurface Soil

- No SVOC, PCB, or pesticide was detected above the applicable standards in the subsurface soil at the Site.
- VOC concentrations for subsurface soil were below the SCO for unrestricted use with the exception of acetone and methylene chloride (common laboratory contaminants) at borings DPT8-2A and DPT8-2B.
- Metal concentrations in subsurface soil were below the SCO for commercial use, with the exception of total mercury, copper, and/or cadmium at borings DPT8-1A and DPT8-2A.

4.0 REMEDIAL ACTION OBJECTIVES AND GOALS

4.1 POTENTIAL STANDARDS, CRITERIA, AND GUIDELINES

Applicable or relevant and appropriate standards, criteria, and guidelines (SCGs) are used to develop remedial action objectives (RAOs) and to scope and formulate remedial action technologies and alternatives. SCGs are categorized as:

- Chemical-specific requirements that define acceptable exposure levels and may, therefore, be used in establishing preliminary remediation goals;
- Location-specific requirements that may serve to protect characteristics, resources, and specific environmental features, such as flood plains or wetlands; and/or
- Action-specific requirements which may set controls or restrictions for particular treatment and disposal activities related to the management of hazardous wastes.

Applicable SCGs should consider the current, intended, and reasonably anticipated future use of the Site and its surroundings. Potential SCGs are described in the following subsections.

4.1.1 CHEMICAL-SPECIFIC SCGs

Chemical-specific SCGs define health-based or risk-based concentration limits in various environmental media for hazardous substances and contaminants. Concentration limits provide predictive cleanup levels, and may be used as a basis for estimating appropriate cleanup levels for the COPCs in the designated media. Chemical-specific SCGs may be used to determine treatment system discharge requirements or disposal restrictions for remedial activities and/or to assess the effectiveness or suitability of a remedial alternative. Chemical-specific SCGs are generally promulgated standards.

Potential chemical-specific SCGs that may apply to groundwater, subsurface soil, surface soil, and air at the Site are described in the following subsections.

4.1.1.1 GROUNDWATER

Groundwater at the Site will be considered Class GA for the purpose of this AAR. Class GA groundwater pertains to fresh groundwater found in the saturated zone of unconsolidated deposits and bedrock. The best usage for Class GA groundwater is as a source of potable water; however, Site groundwater is not used as a drinking water source. The NYS water quality standards and guidance values for Class GA groundwater are stipulated in:

- New York Water Classifications and Quality Standards (6 NYCRR Parts 609, and 700-704).

- TOGS 1.1.1, Ambient Water Quality Standards and Guidance Values dated October 22, 1993 (reissued June 1998).

4.1.1.2 SOIL

For the purpose of characterizing the nature and extent of contamination at the Site and the potential exposure scenarios in the RIR, surface soil sample results were compared to NYSDEC Subpart 375-6 commercial use and unrestricted use SCOs. Subsurface soil VOC analytical results were compared to NYSDEC Subpart 375-6 unrestricted use SCOs; whereas SVOCs, metals, pesticides, and PCBs subsurface soil analytical results were compared to the commercial use SCOs only.

The FWIA completed as part of the RI and SRI determined that the small, isolated vegetated areas on Site provide limited habitat for wildlife. The Site is also surrounded by developments (rail line, industrial and residential properties, roads, etc.). Within a 0.5-mile radius of the Site, there are some large vegetated tracts. However, due to the level of development that separates the Site from these tracts, it is unlikely that organisms which inhabit those large vegetated tracts transit to the Site to utilize the limited vegetated areas. Therefore, the SCOs for the protection of ecological resources are not applicable to this Site.

Tables 2, **3**, **4**, and **5** for surface soil and **Tables 6**, **7**, **8**, and **9** for subsurface soil (VOCs, SVOCs, metals, and pesticides/PCBs, respectively) present a summary of the soil results as compared to the SCOs discussed above. As required by Part 375, the AAR must also consider an alternative to remediate the Site under an unrestricted use scenario. Therefore, these tables also provide a comparison of the soil analytical results the Part 375 unrestricted use SCOs.

4.1.2 ACTION-SPECIFIC SCGs

Action-specific SCGs are determined by the particular remedial activities that are selected for the Site cleanup. Action-specific requirements establish controls or restrictions on the design, implementation, and performance of remedial activities. Following the development of remedial alternatives, action-specific SCGs that specify performance levels, actions, technologies, or specific levels for discharge of residual chemicals provide a means for assessing the feasibility and effectiveness of the remedial activities.

4.1.3 LOCATION-SPECIFIC SCGs

Potential location-specific SCGs are requirements that set restrictions on activities depending on the physical and environmental characteristics of the Site or its immediate surroundings.

The Site is bounded by both residential and industrial properties. The FWIA completed during the RI concluded that there are no identified rare, threatened or endangered species, habitats of concern, or freshwater wetlands within a 0.5-mile radius of the Site.

Potential location-specific SCGs that may be applicable to potential Site remedial technologies are the Town of Lancaster zoning ordinances and building codes.

4.2 REMEDIAL ACTION GOALS AND OBJECTIVES

4.2.1 REMEDIAL ACTION GOALS

The primary goals of any remedial action are that the action:

- Is protective of human health and the environment;
- Maintains that protection over time; and
- Minimizes untreated waste.

The remedy selection process has been performed in a manner consistent with established state and federal guidance.

4.2.2 REMEDIAL ACTION OBJECTIVES

RAOs established for the protection of human health and the environment should specify:

- The contaminants and media of concern.
- The exposure routes and receptors.
- An acceptable contaminant level or range of levels for each exposure route.

Based on the results of the RI, the remedial actions evaluated for the Site address the presence of VOCs in on-site groundwater and soils. The following RAOs have been established for Site media:

Overburden Groundwater:

- Prevent unacceptable exposure/contact of human receptors to the VOCs detected in on-site groundwater, including preventing people from drinking groundwater with contaminant concentrations in excess of drinking water standards.
- Address overburden groundwater impacts to the extent practicable, so that groundwater conditions are consistent with the contemplated use of the Site as a commercial/industrial manufacturing facility.
- Prevent or mitigate, to the extent practicable, migration of impacted groundwater to off-site areas.
- Reduce/remove source(s) of groundwater contamination.
- Restore the groundwater aquifer to meet ambient groundwater quality criteria, to the extent practicable.
- Monitor the groundwater to confirm that the selected remedy is protective of human health and the environment.

Soil

- Prevent unacceptable exposure/contact of human receptors to Site contaminants in on-site soil, including preventing ingestion/direct contact with contaminated soil and inhalation of, or exposure to contaminants volatilizing from, contaminants in soil. Prevent ingestion/direct contact with contaminated soil.
- Reduce/remove source(s) of VOCs that could impact groundwater.

5.0 GENERAL RESPONSE ACTION AND IDENTIFICATION OF REMEDIAL TECHNOLOGIES

General response actions (GRAs) are remedial approaches encompassing those actions that will satisfy the RAOs. General response actions may include treatment, containment, removal, disposal, institutional controls, or a combination of these, if required, to address varied Site environmental problems and to be effective in meeting all the RAOs. GRAs and potentially applicable remedial technologies for addressing RAOs for each medium of concern were identified and evaluated for potential applicability in **Tables 18**, **19**, and **20** for groundwater, soil, and soil vapor, respectively.

The following GRA descriptions have been generated in accordance with the guidelines in NYSDEC's DER-10. Brief descriptions of specific technologies for each media are provided in **Tables 18**, **19**, and **20**.

Limited Action involves institutional controls that restrict access to contaminated areas through physical and/or administrative measures. Limited Action also includes long-term monitoring. The institutional control response is not intended to reduce the toxicity, mobility, or volume of hazardous Site constituents, but to reduce the potential for human and wildlife exposure to these constituents.

Containment actions include control, isolation, and encapsulation technologies that involve little or no treatment, but provide protection of human health and the environment by reducing mobility of contaminants and/or eliminating pathways of exposure. Since these technologies consist primarily of physical barriers to control migration, contaminant toxicity and volume are not reduced significantly within the contained area.

Removal/Treatment/Disposal actions include technologies that act to reduce the volume, toxicity, and/or mobility of contaminants. These technologies include in-situ treatment, removal, ex-situ treatment, and destruction. Treatment methods reduce contaminant volume, toxicity, and/or mobility by treating contamination to acceptable cleanup levels. Destruction technologies permanently and irreversibly destroy or detoxify contaminants to acceptable cleanup levels, thereby reducing contaminant volume, toxicity, and mobility. Disposal actions include both on-site and off-site technologies, including reuse/recycling, and/or landfill disposal.

No remedial activities would be implemented under a "No Action" general response action; however, it is considered throughout the AAR process as a baseline against which other general response actions and technologies can be compared.

The general response actions and associated technologies identified for each medium include one or a combination of the following on-site actions:

Overburden Groundwater

- No Action
- Limited Action, including institutional controls
- In-situ Treatment
- Removal and Treatment

Soil

- No Action
- Limited Action, including institutional controls
- In-situ Treatment
- Removal

Soil Vapor

- No action
- Engineering Control
- Physical/Ex-situ Treatment

6.0 INITIAL SCREENING OF REMEDIAL TECHNOLOGIES

Technologies that are labeled general response actions and technologies labeled as applicable or potentially applicable in Section 5.0 (**Tables 18**, **19**, and **20**) have undergone a process of initial screening. The purpose of an initial screening is to eliminate remedial technologies that may not be effective based on anticipated Site conditions and/or that cannot be implemented technically at the Site, as well as to more narrowly focus the list of alternatives that will be developed and evaluated in greater detail. Specifically, the initial screening reviewed each technology in terms of effectiveness in providing protection to human health and in reducing toxicity, mobility, or volume of the waste; implementability; and relative cost. The initial screening process was guided by NYSDEC's Selection of Remedial Actions at Inactive Hazardous Waste Sites (Technical and Administrative Guidance Memorandum (TAGM 4030)) as well as the National Contingency Plan and USEPA RI/FS guidance [USEPA, 1988; USEPA, 1990]. **Table 21** presents the initial screening evaluation to each specific technology.

Technologies retained from this initial screening process were grouped into potential remedial alternatives for discussion in Section 7.0. Based upon the screening of technologies presented in **Table 21**, the following alternatives have undergone detailed evaluation:

Alternative 1 - No Action (all media, required for baseline)

Groundwater

Alternative GW-2: Excavation

Alternative GW-2A: Focused Excavation with Monitored Natural Attenuation (MNA)

Alternative GW-3: Enhanced Bioremediation

Alternative GW-4: In-situ Chemical Oxidation (ISCO)

Alternative GW-4A: Focused ISCO with MNA

Alternative GW-4B: Focused ISCO with Enhanced Bioremediation

For unsaturated soil, based on the limited extent and shallow depths of identified contaminated soil, excavation is the selected remedy for the ease of implementation and because it will not limit Site reuse. Excavation for impacted unsaturated soil will be included as a component of all of the groundwater alternatives.

For soil vapor, depressurization is the preferred engineering control technology by regulators and practitioners, especially for an existing building, where other engineering control technologies may not be applicable to all buildings or rooms and are often less preferred by environmental regulators. Therefore, sub-slab depressurization will be included as a component of all groundwater alternatives.

7.0 DETAILED ANALYSES OF RETAINED REMEDIAL ALTERNATIVES

The technologies and process options retained from the initial screening process were combined to develop remedial alternatives to undergo detailed analysis. A range of alternatives was developed that would satisfy the Site-specific remedial goals and RAOs. A detailed analysis of each alternative provides conceptual design, primary capital and operating costs, and approximate remediation time to attain remedial goals. The specific evaluation criteria are described in Section 7.1.

7.1 Evaluation Criteria

Each of the remedial alternatives was evaluated using the criteria set forth in NYSDEC's Draft DER-10, Section 4.1(e): Technical Guidance for Site Investigation and Remediation [NYSDEC, 2010a] as well as the USEPA Guidance for Conducting RI/FS Studies under CERCLA [USEPA, 1988].

7.1.1 Overall Protection of Human Health and the Environment

This criterion is an evaluation of the remedy's ability to protect human health and the environment, assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through the removal, treatment, engineering controls or institutional controls. The remedy's ability to achieve each RAO is evaluated.

7.1.2 Compliance with Standards, Criteria, and Guidance

This criterion is an evaluation of the remedy's ability to meet applicable environmental laws, regulations, standards, and guidance.

7.1.3 Long-Term Effectiveness and Permanence

This criterion is an evaluation of the long-term effectiveness and performance of the remedy after implementation.

7.1.4 Reduction of Toxicity, Mobility or Volume

This criterion is an evaluation of the remedy's ability to reduce the toxicity, mobility or volume of the materials.

7.1.5 Short-term Effectiveness

The potential short-term adverse impact(s) and risks of the remedy upon the community, the workers, and the environment during implementation are evaluated.

7.1.6 Implementability

This criterion is an evaluation of the feasibility of technical and administrative implementation.

7.1.7 Cost

Capital, operation, maintenance and monitoring costs are estimated for the remedy and presented on a present worth basis.

7.1.8 Land Use

This criterion is an evaluation of the current, intended and reasonably anticipated future use of the Site and its surroundings, as it relates to an alternative or remedy, when unrestricted use levels would not be achieved.

7.1.9 Community Acceptance

Community acceptance is typically evaluated following a public comment period, after a remedy has been proposed.

7.1.10 Green Remediation

This criterion is an evaluation of the extent to which green and sustainable practices and technologies are incorporated into the remedy during its implementation. NYSDEC DER-31(NYSDEC, 2010b) establishes a preference for remediating Sites in the most sustainable manner while still meeting legal, regulatory, and program requirements.

7.2 Remediation Target Areas

For the purposes of the planning level design generated for the detailed evaluation and comparison of remedial alternatives, this AAR assumes that remediation is targeted for groundwater within the 100 to 1,000 µg/L Total VOC (TVOC) isopleths for shallow and deep groundwater, plus 10 percent of this area as contingency. For shallow groundwater (approximately 3 to 15 ft bgs), an area of 24,000 square feet is used, and for deep groundwater (approximately 15 to 21 ft bgs) an area of approximately 7,000 square feet is used for the detailed evaluation. Many in-situ remedial technologies become inefficient, and therefore cost prohibitive, when concentrations of total chlorinated VOCs are less than 100 µg/L. It is assumed that natural attenuation would address contamination outside of these target areas. The areas targeted for groundwater remediation in the AAR are shown on **Figure 6**.

7.3 Cost Evaluation Approach

As part of the detailed evaluation, planning level costs were developed for each alternative, and in some cases, multiple scenarios have been presented. These costs were based on general assumptions and elements likely to become part of each alternative (conceptual planning). The planning level costs presented are intended to provide a measure of total estimated resource costs over time, and the accuracy of these estimates is expected to be between -30 and +50 percent [USACE/USEPA, 2000]. Contingencies were estimated as suggested in *A Guide to Developing and Documenting Estimates during the Feasibility Study* [USACE/USEPA, 2000]. In addition, net present value costs were estimated for future costs for each alternative.

Detailed cost backup calculations are provided in **Appendix A**.

7.4 Common Elements

All groundwater alternatives, except for the Alternative 1 (No Action), include the following common elements:

- Targeted excavation of shallow soil locations with metals concentrations that exceed Commercial SCO criteria;
- Storm Sewer action;
- Sub-slab depressurization system (SSD) for the Plant 1 building; and

- Institutional Controls

To mitigate contaminated groundwater entering the storm sewer and eventually discharging at the outfall in Spring Creek, all alternatives will include protective measures implemented directly to the storm sewer. Within the VOC plume area; there are approximately 300 feet of 12-inch diameter pipe, approximately 150 feet of 6-inch diameter pipe, and four catch basins. A range of actions for the sewer line would be considered based on the cost, schedule, and visual appearance of the pipe and connections, and could include repair or replacement of individual sections or joints, encasing the sewer pipe with an impermeable material, pouring concrete around the sewer pipe, and/or complete replacement of the pipe run. Temporary bypass measures would be provided to maintain operation of the storm sewer, which has a base flow of approximately 10 gallons per minute (gpm). In addition, remediation to reduce VOC concentrations in the groundwater around the storm sewer by the chosen alternative will also reduce the VOCs entering the storm sewer and eventually discharging at the outfall.

Based upon sub-slab indoor vapor sampling and groundwater sampling results and assumed VOC concentrations below the building, this AAR assumes that the SSD system will only be needed for a limited area in the southwestern corner of the existing Plant 1 building, namely the boiler room (**Figure 7**, approximately 10 ft by 30 ft). The boiler room is a stand-alone building with metal walls and roof, and a poured concrete floor. It is anticipated that the SSD system would consist of floor sealing, sub-slab vertical suction (or passive venting), and a small blower (if determined required from pilot testing).

Targeted shallow excavations would be performed for unsaturated soil that exceeds commercial use SCO for metals (copper, cadmium, and total mercury) in soil. An area of approximately 20 ft by 40 ft is estimated for removal to depths of two feet, as shown on **Figure 8**. This excavation volume is easy to access, and will eliminate the need for land use controls to continue commercial use of property.

Public potable water is used at the Site and the surrounding properties. However, because groundwater concentrations exceed NYS water quality standards and guidance values for Class GA groundwater, Institutional Controls to implement groundwater use prohibitions may be put in place to minimize any future exposure risks from contaminated groundwater. Institutional Controls could be removed from the property after groundwater remedial goals are met. In addition, the NYSDEC approval letter of the SRIR dated June 1, 2012, stated that this AAR must evaluate treatment for subsurface soil that exceeds groundwater SCOs; the limited number of subsurface soil samples that exceeded groundwater protection SCOs are co-located within the area and volume described above and shown on **Figure 8** and therefore would be appropriately managed by the proposed shallow excavation.

7.5 Remedial Action Alternatives

7.5.1 Alternative 1: No Action

The Alternative 1 (No Action) is developed as a baseline to which other alternatives can be compared, in accordance with USEPA RI/FS Guidance [USEPA, 1988]. Under this alternative, no remedial action is taken and as a result, only naturally occurring processes would be working to achieve RAOs. The time to achieve RAOs under Alternative 1 would likely exceed 100 years, based on the mixture of VOCs, the areal extent of the VOC groundwater contamination, the residual high concentrations in groundwater, and the current oxidation-reduction potential of Site groundwater that is not favorable for natural bioremediation of chlorinated VOCs (generally -40 to +40 millivolts); although natural attenuation is occurring. No costs are presented as no remedial action would be performed. The detailed analysis of Alternative 1 compared to the evaluation criteria is presented in **Table 22**.

7.5.2 Alternative GW-2: Excavation

Under this alternative, contaminated soil and groundwater within the area identified in Section 7.2 would be excavated and transported to an appropriate landfill or treatment facility. This alternative would remove saturated soil and groundwater contaminated with VOCs, in addition to the limited excavation of shallow soils for metals described in Section 7.4. Excavation of soils is not typically considered a groundwater remedy, but the removal of soil in a groundwater hot spot area can accelerate clean up time for groundwater and/or can be used to complement other remedies. Chlorinated solvent contamination extends through the saturated zone, and excavation to the top of bedrock would be required to remove all possible contaminant source materials.

Site preparation activities for soil excavation would include the placement of erosion control materials and equipment decontamination areas to prevent migration of contaminated soil off-site. Sheet piling would be required near Plant 1 (approximately 75 linear ft) to preserve the structural integrity of the building. The removal, transportation, and disposal of contaminated soils can be accomplished with standard construction equipment. Excavated soil would be screened, segregated, and stockpiled prior to being disposed off-site. Safety precautions would include a community air monitoring program (CAMP) to protect people on adjacent properties from the likely presence of airborne volatile contaminants and dust. One challenge to excavating all contaminated soil is that significant volumes of water would need to be removed from within the excavation pit, during both excavation and backfilling activities. With a shallow water table (~3 to 6 ft), dewatering would be required, and water discharge and permitting requirements would need to be determined. For this AAR it is assumed that construction water and stormwater would be treated on-site via air stripper and/or activated carbon and disposed of off-site (likely to a publically owned treatment works). After excavation is complete, clean backfill would be placed back into the entire excavation with compaction and restoration. It is assumed that site preparation, excavation, backfilling, and restoration activities would be completed in approximately five to six months. Bottom and sidewall limit of excavation soil samples would be collected and analyzed for VOCs. Additional soil collection for VOC analysis would be performed for soil characterization prior to land disposal.

The primary capital costs for this alternative include soil excavation, disposal, backfill, and dewatering costs. For the AAR cost estimate, a range of soil disposal scenarios is provided (hazardous vs. non-hazardous). Operations and maintenance (O&M) costs would be minimal with successful implementation of this alternative, but would include groundwater monitoring to evaluate reductions in groundwater concentrations inside and outside of the excavation area. A detailed analysis of Alternative GW-2 (Excavation) compared with the evaluation criteria is presented in **Table 22**.

DER-10 requires evaluation of an alternative that can achieve unrestricted use of the site. This excavation alternative would be performed such that all soils that fail to meet unrestricted use SCOs would be excavated and disposed off-site.

7.5.3 Alternative GW-2A: Excavation with Monitored Natural Attenuation

Under this sub-alternative, soil excavation would be performed within the areas with the most contaminated groundwater, generally within the 10,000 µg/L TVOC isopleths for the shallow and deep zones, as shown on **Figure 9**. The excavation footprint areas would be approximately 7,000 square feet for the shallow zone, which includes the area near point A1-GP13 between the two 10,000 µg/L contoured shapes. Inside that area, approximately 1,600 square feet would be removed to the top of bedrock (approximately 40 ft by 40 ft area around MW-38D). This area would also include soils not excavated during the IRM. By removing the most contaminated soil, it is anticipated that groundwater concentrations throughout the rest of the site would decrease through natural attenuation, which is defined as “a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume or concentration of contaminants in soil and groundwater" [USEPA, 1999]. Such in-situ processes include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction of contaminants. Similar methods for excavation, dewatering, and backfill would be performed as described in Alternative GW-2; however, only limited shoring would likely be needed as the focused excavation areas are generally further away from Plant 1.

Implementation of monitored natural attenuation (MNA) would require installation of additional monitoring wells and environmental monitoring including biological and geochemical parameters to evaluate attenuation reactions. For this AAR it is assumed that groundwater samples would be collected semi-annually for up to five years with annual sampling thereafter for a period of 30 years. Institutional controls could also be implemented to minimize the potential for human exposure by restricting resource usage, potentially including water use restrictions.

The primary capital costs for this alternative include soil excavation, disposal, backfill, dewatering, and well installation costs. For the AAR cost estimate, a range of disposal scenarios is provided (hazardous vs. non-hazardous). O&M costs would include groundwater monitoring to evaluate reductions in concentrations and the success of natural attenuation processes inside and outside of the excavation area. A summary of the costs estimated for Alternative GW-2A is presented in **Appendix A**, and a detailed analysis of Alternative GW-2A compared with the evaluation criteria is presented in **Table 22**.

7.5.4 Alternative GW-3: Enhanced Bioremediation

This alternative consists of injection of amendment(s) to enhance biological processes that convert contaminants to less harmful compounds. Commonly applied remediation technologies utilize reductive processes for chlorinated VOCs and aerobic processes for benzene, toluene, ethylbenzene, and xylene compounds (BTEX) VOCs. Therefore, a single bioremediation technology is not applicable for treating all VOC contaminants detected in Site groundwater. However, a significant fraction (70-100%) of the Total VOC contamination in groundwater consists of chlorinated VOCs, with only the area south of Plant 1 having elevated concentrations of BTEX constituents (primarily toluene and xylene). Therefore, for the purposes of this AAR, the detailed evaluation has assumed enhanced bioremediation using reductive dechlorination.

Under this alternative, treatment of chlorinated VOCs would be achieved by amending the groundwater to create reducing groundwater conditions conducive to the progressive dechlorination of TCE and 1,1,1-TCA by bacteria. Naturally occurring microorganisms create hydrogen, which replaces chlorine on chlorinated VOCs. Biotic dechlorination of TCE yields cis-1,2-DCE, with subsequent biotic dechlorination reactions producing vinyl chloride and eventually ethene. Similarly, biotic dechlorination of 1,1,1-TCA sequentially yields 1,1-DCA and chloroethane. Activity of dehalogenating microbes is most favorable under reducing groundwater conditions when dissolved oxygen is negligible, pH is between 6.0 and 8.5, and oxidation-reduction potential (ORP) is below -100 mV. Biotic dechlorination daughter products are present in Site groundwater, which suggests that some reductive dechlorination is naturally occurring. Biodegradation of chlorinated VOCs can be accelerated through the addition of a carbon source (as a food source and electron donor), the addition of nutrients, and/or bioaugmentation to increase the number of dechlorinating bacteria. Reductive dechlorination of chloroethane to ethane does not readily occur; however, aerobic biodegradation of chloroethane has been observed and would be anticipated to occur as the Site ORP returns to baseline conditions.

Several proprietary and non-proprietary reductive amendments are available for groundwater remediation, including emulsified vegetable oil (EVO), hydrogen release compounds, molasses, lactate, and soluble oils. Proprietary formulations include readily available carbon as well as slow-release carbon, which allows for extended release time, and nutrients required for biotic growth. Variations of these products include addition of zero valent iron or reduced (ferrous) iron complexes for promotion of abiotic, chemical dechlorination in addition to biodegradation.

An injection system for enhanced biodegradation would consist of chemical tanks, mixers, pumps, piping, and fittings. Injections would be performed using a regularly-spaced grid throughout the treatment area. Injection can be performed through semi-permanent PVC wells or through direct-push rods. For this AAR, it is assumed that injection would be performed through semi-permanent PVC wells to allow for multiple future injections and allow for future data collection. Direct injection would offer some capital cost savings, but rig mobilization would be required to perform future injections. The injection strategy would be finalized during remedial design. In order to remediate the full saturated overburden (approximately 3 ft to 21 ft bgs), it is assumed that each injection location would consist of several PVC wells (injection points) with screens located at different intervals that are installed in separate boreholes positioned within shallow saturated overburden (4 ft to 14 ft bgs) and the deep saturated overburden (15 ft to 21 ft bgs) just above or slightly into weathered bedrock. Due to the low permeability of the subsurface, injection rates and pressures would be relatively low (approximately 0.5 to 1.5 gpm at 5 to 10 psi) to avoid mounding of remedial solutions above the ground surface or out of nearby wells. An injection apparatus could be manifolded to divert and monitor injection flow into multiple injection wells simultaneously, to decrease overall time required for injection activities. The anticipated lifetime of the injected amendments would range from three months to three years, based upon the specific amendment chosen and dosage applied. For this AAR, follow-up carbon enhancement addition is assumed.

This alternative also assumes that bioaugmentation would be performed. Microorganisms capable of degrading TCE to cis-1,2-DCE are omnipresent in subsurface environments [AFCEE, 2004]. However, only specific strains of bacteria are known to fully dechlorinate 1,1,1-TCA to ethane (*Dehalobacter* or DHB) and TCE to ethene (*Dehalococcoides* or DHC), and these bacteria are not present in the subsurface at all Sites or uniformly at a given Site. Advantages of bioaugmentation are that for a relatively small additional cost remediation time is often shorter than enhanced biodegradation using the microbes already present in the subsurface. That bioaugmentation would enhance bioremediation of both TCA and 1,1,1-TCA, as 1,1,1-TCA has been shown to inhibit DHC. Groundwater geochemical parameters, including dissolved oxygen, pH, and ORP, would be monitored following addition of the carbon substrate amendments to evaluate the changing groundwater geochemistry to determine when conditions become favorable for bioaugmentation of DHC microbes. For this AAR, it is assumed that microorganism cultures would be injected approximately three to six months after completion of initial injection of electron donor.

Remediation monitoring would be performed to evaluate the distribution of the electron donor in the subsurface, assess contaminant destruction, and determine progress towards attainment of the cleanup objectives. Groundwater geochemical parameters, including dissolved oxygen, pH, and ORP, would be monitored to evaluate the changing conditions as they become favorable for biodegradation. Monitoring of biological degradation parameters, including ethene, ethane, methane, chloride, as well as VOCs and some metals, would be conducted following injection in order to monitor remedial progress. This alternative may result in temporary mobilization of some metals (including arsenic, iron, and manganese) due to the creation of reducing conditions and potential for a decrease in pH. Laboratory analysis for metals would be performed prior to commencement of groundwater remedial activities to determine baseline metal concentrations and during performance monitoring to evaluate this potential effect. Typically, geochemical conditions will return to pre-injection conditions at some time following the injection, and metals will again become immobile.

The primary capital costs associated with this alternative are carbon addition/electron donor additive and associated chemical additives, installation of injection points, bioaugmentation cultures, and injection labor and equipment. Additional O&M costs include performance monitoring and future follow-up injection of carbon amendments. A summary of the costs estimated for Alternative GW-3 is presented in **Appendix A** and a detailed analysis of Alternative GW-3 compared with the evaluation criteria is presented in **Table 22**.

7.5.5 Alternative GW-4: In-Situ Chemical Oxidation

ISCO acts to reduce the mass of organic contaminants through the direct injection of a strong oxidizing agent into the subsurface. Nearly all organic contaminants can be oxidized to non-hazardous end products of water, carbon dioxide, and inorganic chloride [ITRC, 2005], and ISCO of on-site VOCs has been demonstrated at numerous sites. Successful delivery of the oxidant to the contaminant is the primary factor controlling performance of the remedy, and is dependent upon geologic conditions, injection location, transport, and natural oxidant demand in the subsurface. Several chemical oxidants are available for contaminant remediation, including permanganate, activated persulfate, catalyzed hydrogen peroxide (CHP), and ozone.

Activated persulfate is a robust oxidant approach that is capable of oxidizing BTEX and chlorinated VOCs. Sodium persulfate needs to be activated to be used for remedial chemical oxidation to generate even more oxidizing free radicals. Iron, base, acid, and hydrogen peroxide are potential activators. CHP is a very robust ISCO approach for oxidation of a wide range of VOCs. Iron is used to catalyze hydrogen peroxide to generate an array of oxidizing free radicals. CHP has been shown to improve desorption of VOCs from soil, but subsurface persistence of CHP is relatively short (hours to days). Ozone is a gaseous oxidant, so delivery would be difficult and the propagation of the oxidant would be slow in the low permeability soils observed beneath the Site. Permanganate is particularly effective for oxidizing double bonds, but chlorinated ethanes are recalcitrant to permanganate oxidation. Therefore, ozone and permanganate will not be evaluated. Activated persulfate or CHP would both be applicable oxidants for the Site. For this AAR, activated persulfate was assumed for generating a cost estimate. It should be noted that 1,1,1-TCA is more recalcitrant to oxidation than other VOCs, and bench-scale treatability and/or field pilot-scale testing would be conducted to optimize treatment.

An ISCO injection system would consist of tanks, mixers, pumps, piping, and fittings. All components would need to be compatible for use with strong chemical oxidants. Like in-situ bioremediation (Alternative GW-3), ISCO injections can be performed through installed semi-permanent wells or through direct-push rods. For this AAR, it is assumed that injection would be performed through semi-permanent PVC wells, to allow for multiple future injections and future data collection. Direct injection would offer some capital cost savings, but rig mobilization would be required to perform future injections. The injection strategy would be finalized during remedial design. Similar to Alternative GW-3, a grid system of wells would be installed in order to provide sufficient distribution of the oxidant in the subsurface. Multiple injection intervals would be treated at each location to remediate the full saturated overburden (approximately 3 ft to 21 ft bgs). Multiple injections are often required to achieve groundwater regulatory cleanup goals [McGuire, et. al, 2006; ITRC, 2005]. For this AAR, three injection events are estimated to be required to complete treatment, and follow-up injections are anticipated to be sequentially smaller in treatment areas and volumes.

A wide range of naturally occurring reactants other than the target contaminant(s), including organic matter and reduced metals species, also react with chemical oxidants. Oxidant demand attributed to soil and organic matter within soil (also termed non-target, natural, or background demand) is typically greater than the demand from target contaminants. Laboratory testing to estimate the Total Oxidant Demand (TOD) would be completed to assist the Remedial Design and selecting dosage(s).

Remediation monitoring would be performed to evaluate the distribution of the oxidant in the subsurface, assess contaminant destruction, and determine progress toward attainment of the cleanup objectives. Groundwater geochemical parameters, including dissolved oxygen, pH, ORP, and conductivity would be monitored to evaluate the changing conditions as a result of ISCO injections. In addition, persulfate test kits and sulfate analysis would be used to evaluate oxidant persistence and distribution. This alternative may result in temporary mobilization of some metals due to creation of oxidizing conditions (chromium) or decrease in pH (arsenic, iron and manganese) which are potential outcomes depending on the native soil conditions (buffer capacity) and specific oxidant-activator pairing selected. Laboratory analysis for metals would be performed prior to commencement of groundwater remedial activities to determine baseline metal concentrations and during performance monitoring to evaluate this potential effect. Typically, geochemical conditions will return to pre-injection conditions at some time following the injection, and metals will again become immobile.

The primary capital costs associated with this alternative are installation of ISCO injection points, injection apparatus, oxidant chemicals, and injection labor and materials. Additional O&M costs include performance monitoring and follow-up injections. A summary of the costs estimated for Alternative GW-4 is presented in **Appendix A** and a detailed analysis of Alternative GW-4 compared with the evaluation criteria is presented in **Table 22**.

7.5.6 Alternative GW-4A: Focused In-Situ Chemical Oxidation with Monitored Natural Attenuation

Under this sub-alternative, ISCO would be performed within the areas with the most contaminated groundwater. Outside of the ISCO treatment area, MNA would be implemented to evaluate reductions in VOC concentrations from natural processes, after reducing the contaminant mass and concentrations in the most contaminated areas that are serving as a source of groundwater contamination. The ISCO treatment area for this sub-alternative will generally lie within the 10,000 µg/L Total VOC isopleths for the shallow and deep zones as shown on **Figure 9** (similar to Alternative GW-2A). The approximate treatment footprint for this sub-alternative would be 7,000 square feet for the shallow zone, which includes the area near point A1-GP13 between the two 10,000 ug/L contoured shapes. Within this ISCO area, for the deep interval approximately 1,600 square feet would be treated to the top of bedrock (approximately 40 ft x 40 ft area around MW-38D). ISCO would be performed as described in Alternative GW-4, except in a smaller area. It is assumed that three injections will be performed in this smaller area.

For the MNA component of this sub-alternative, additional monitoring wells will be installed. In addition, groundwater samples will be analyzed for additional parameters to evaluate natural attenuation processes, including alkalinity, methane/ethane/ethene, and total organic carbon in addition to periodic quantification of DHC and DHB bacteria.

The primary capital costs associated with this alternative are installation of ISCO injection points, injection apparatus, oxidant chemicals, injection labor and materials, and the installation of additional monitoring wells. Additional O&M costs include performance monitoring and follow-up injections. A summary of the costs estimated for Alternative GW-4A is presented in **Appendix A**, and a detailed analysis of Alternative GW-4A compared with the evaluation criteria is presented in **Table 22**.

7.5.7 Alternative GW-4B: Focused In-Situ Chemical Oxidation with Enhanced Bioremediation

Under this sub-alternative, ISCO would be performed within the areas with the most contaminated groundwater (as described in Alternative GW-4A). Outside of the ISCO treatment area, enhanced bioremediation via reductive dechlorination would be implemented (as described in Alternative GW-3).

The injection of a chemical oxidant would render groundwater conditions more oxidizing within and immediately downgradient of the ISCO injections. Enhanced bioremediation for chlorinated VOCs is most favorable under reducing conditions; therefore it is assumed that ISCO and bioremediation injections would not be performed at the same time or immediately in sequence. For the purposes of this AAR, it is assumed that two injections of chemical oxidant would be performed within the area of highly contaminated groundwater, and approximately 9 to 12 months after the second ISCO injection, carbon substrate to stimulate bioremediation by reductive dechlorination would be injected to the areas outside of the ISCO injection area. Performance monitoring would determine if a third ISCO injection is needed and/or if injections for enhanced bioremediation would have to occur in the future within the focused ISCO area.

The primary capital costs associated with this alternative are installation of injection points, injection apparatus, oxidant chemicals, bioremediation amendments, injection labor and materials, and the installation of additional monitoring wells. Additional O&M costs include performance monitoring and follow-up injections. A summary of the costs estimated for Alternative GW-4B is presented in **Appendix A**, and a detailed analysis of Alternative GW-4B compared with the evaluation criteria is presented in **Table 22**.

8.0 COMPARATIVE ANALYSES OF REMEDIAL ALTERNATIVES

8.1 Comparative Analysis of Alternatives

After individual evaluation of each alternative based on the criteria defined in Section 7.1, comparative analyses were conducted to evaluate the relative performance of each alternative. The purpose of the analyses was to identify the advantages and disadvantages of each alternative relative to the others so that key tradeoffs could be identified and balanced. Overall protection of human health and the environment and compliance with SCGs must be met by any selected alternative. Tradeoffs among the alternatives are related to five criteria: long-term effectiveness and permanence; reduction of toxicity, mobility and volume; short-term effectiveness; implementability; and cost. The remediation timeframes for each alternative are important to consider when comparing short-term effectiveness, compliance with SCGs, protection of human health and environment, and land use. State and community acceptance would be addressed following regulatory review and a public comment period after a remedy has been recommended. **Table 22** also summarizes the comparative analysis of the alternatives and ranks each alternative for each of the criteria.

8.1.1 Overall Protection of Human Health and the Environment

All alternatives, with the exception of Alternative 1, would be protective of human health and the environment by eliminating potential exposure pathways, either by removal, treatment or containment of impacted soils and non-aqueous phase liquid in addition to limiting exposure pathways to intrusive activities, as in the current Site environment. The Excavation Alternative (and Subalternatives) is considered more protective by physically removing the contamination from the Site. Subalternatives that include MNA are considered less protective by only relying on natural attenuation processes to reduce contaminant concentrations over time.

8.1.2 Compliance with SCGs

All alternatives would meet the SCGs for groundwater over time via natural attenuation. They would achieve overall protection of human health and the environment by the remedial actions and/or the implementation of groundwater MNA. However, alternatives would meet SCGs in varying periods of time based on the degree of active remediation proposed.

Chemical specific SCGs would be met with implementation of excavation, chemical oxidation, and/or enhanced bioremediation alternatives; and, with MNA subalternatives and Alternative 1 over a longer period of time. All alternatives would be implemented such that action-specific and location-specific SCGs would be met.

8.1.3 Long-Term Effectiveness and Permanence

All of the alternatives except for Alternative 1 would result in permanent reduction and/or containment of impacted media. Alternative 1 would be least effective because it would involve no removal, immobilization or containment of impacted materials, relying on prolonged natural attenuation to treat impacted media without monitoring or administrative means to confirm its progress. The in-situ treatment alternatives ranked slightly lower than the excavation alternative where contamination is removed from the Site.

8.1.4 Reduction of Toxicity, Mobility, and Volume

All of the alternatives except for Alternative 1 would result in reduction in mobility of contamination. The Excavation alternative does not reduce volume or toxicity, unless treatment performed at a disposal facility, since typically contaminated soil is only moved from the Site to a disposal facility.

8.1.5 Short-Term Effectiveness

All Alternatives except Alternative 1 would include measures to minimize and mitigate exposure risks to the community, the workers and the environment during implementation. The Excavation Alternative has higher potential exposure to contamination from exposed materials, dust, and volatilized organic vapors. The Chemical Oxidation Alternative would require handling strong chemical oxidants, and personal protective equipment and materials would need to be resistant to strong oxidants.

8.1.6 Implementability

Each of the presented alternatives could be implemented; although, the degree of difficulty varies between the alternatives. The Excavation Alternatives would face the greatest challenges for implementability due to extensive dewatering, proximity to buildings, and subsurface utilities. In-situ treatment alternatives can more easily be implemented with widely available equipment and remediation amendments as well as the least disturbance to the Site.

8.1.7 Cost

The AAR cost estimates for each of the alternatives are summarized and compared in **Table 23**. Cost is inversely proportional to anticipated time to meet SCGs and directly proportional to certainty of treatment. The in-situ remediation costs are lower than excavation costs, with enhanced bioremediation being less expensive to implement than ISCO. Subalternatives that include MNA offer significant cost savings.

8.1.8 Land Use

Each of the presented alternatives includes some degree of Institutional Controls until SCGs are attained which would alter land use to be protective of human health and the environment, with the exception of Alternative 1 and Unrestricted Use SCO criteria. In addition to Institutional Controls, each alternative would have varying degree of impacts on land use. Excavation alternatives would have the highest short term impact on land use, but the lowest impact on future land use by removing the source material. MNA subalternatives would have the most impact on future land use by requiring institutional controls for the longest period of time.

8.1.9 Green Remediation

All remediation and construction activities pose an environmental impact from vehicle usage, chemical and materials manufacture, sampling activities, and laboratory analysis. The alternatives were evaluated using guidance provided in DER-31 and include a range of environmental impacts. Excavation would have the greatest environmental impact due to the heavy vehicle usage to excavate and transport contaminated materials off-Site. Generally, in-situ remediation technologies can be completed more sustainably than removal/ex-situ processes. The MNA subalternatives rely on natural processes which are viewed favorably by DER-31.

8.1.10 Community Acceptance

Community acceptance is typically evaluated following a public comment period, after a remedy has been proposed. For the evaluated alternatives short-term community impacts, long term land use, and overall protection of human health and the environment are anticipated to be the most important aspects to consider for local area stakeholders.

9.0 RECOMMENDED REMEDIAL ALTERNATIVE

Enhanced bioremediation (Alternative GW-3) is the recommended alternative for groundwater remediation based on the detailed evaluation and comparative analysis (**Table 22**). This technology is readily implementable and is a technically-proven remediation approach that has been demonstrated at numerous field sites for in-situ treatment of chlorinated VOCs, which are the groundwater contaminants that are the highest concentrations and most widespread. This is the lowest estimated cost alternative for treatment of the full contaminated area. In addition, bioremediation enhances naturally occurring processes and is considered a “greener” technology than others evaluated. This alternative also poses significantly less risks to site workers for implementation. Other advantages of enhanced bioremediation are that injected amendments have an active persistence that is significantly longer than chemical oxidants, which reduces the potential for rebound of contaminant concentrations in groundwater and will likely require fewer injection mobilization events. Additionally, as conditions become more reducing, and therefore favorable for biotic reductive dechlorination, microbes grow and multiply in the subsurface, and biodegrading microbes are not exhausted as occurs with a chemical oxidant. It is also anticipated that the community would accept this technology as it will target the significant area of the VOC plume and will not result in increased traffic, which would occur as a result of extensive excavation alternatives.

Alternative GW-3 would also include discrete excavation of shallow soils to address metals exceeding appropriate NYSDEC soil standards for commercial use (**Figure 8**), installation of a SSD system to operate beneath a portion of Plant 1 (**Figure 7**), and mitigation actions to reduce VOCs infiltrating into the storm drain.

10.0 REFERENCES

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Appendix A

Cost Estimate Detail

Appendix A
Cost Estimate Detail
Former Scott Aviation Facility Area 1
Lancaster, New York

Alternative (Cost in Millions)	Alternative 2 Excavation (Unrestricted Use)		Alternative 2A Focused Excavation + MNA		Alternative 3 Enhanced Bioremediation	Alternative 4 In-situ Chemical Oxidation	Alternative 4A Focused ISCO + MNA	Alternative 4B Focused ISCO + Enhanced Bioremediation
Process Description	Excavation, dewatering, and off-site disposal of contaminated media (soil disposal assume 100% haz)	Excavation, dewatering, and off-site disposal of contaminated media (soil disposal assume 50% haz/50% non-haz)	Excavation, dewatering, and off-site disposal of area of most contaminanted groundwater, monitored natural attenuation for remainder of plume (soil disposal assume 100% haz)	Excavation, dewatering, and off-site disposal of area of most contaminanted groundwater, monitored natural attenuation for remainder of plume (soil disposal assume 75% haz)	Injection of amendments to enhance natural microbial processes in addition to adding microbe cultures to augment desired native microbe populations.	Injection of chemical oxidant into subsurface for oxidation/destruction of contaminants in soil and groundwater.	Injection of chemical oxidant into areas with most contaminated groundwater with monitored natural attenuation for remainder of plume	Injection of chemical oxidant into areas with most contaminated groundwater with enhanced bioremediation for remainder of plume
Total Capital Cost	$6.4	$5.0	$2.0	$1.9	$1.0	$1.7	$0.76	$0.88
Future Cost	$0.02	$0.02	$0.74	$0.74	$0.67	$0.60	$1.12	$1.04
TOTAL GW ALTERNATIVE COST	**$6.4**	**$5.0**	**$2.8**	**$2.6**	**$1.6**	**$2.3**	**$1.9**	**$1.9**
TOTAL NET PRESENT VALUE ALTERNATIVE COST	**$6.4**	**$5.0**	**$2.5**	**$2.4**	**$1.6**	**$2.2**	**$1.6**	**$1.8**
SHALLOW EXCAVATION COST	**$0.12**							
STORM SEWER	**Will be remediated by default by using any of the Alternatives listed above**							
SUB SLAB DEPRESSURIZATION	**$0.06**							
TOTAL COST CONTINGENCY AND SENSITIVITY (GW ALTERNATIVE + COMMON ELEMENTS)								
-30%	**$4.6**	**$3.6**	**$1.9**	**$1.8**	**$1.2**	**$1.7**	**$1.2**	**$1.4**
50%	**$9.8**	**$7.5**	**$3.8**	**$3.5**	**$2.3**	**$3.4**	**$2.4**	**$2.7**
Remedy Construction and Implementation Time (from Notice to Proceed)	6 - 18 months		6 - 12 months		3-5 years (2-3 Injection events)	3-4 years (2-3 ISCO Injection events)	3-4 years (2-3 ISCO Injection events)	3-4 years (2-3 ISCO Injection events)
Period of Performance - Remediation & Post-Remediation Monitoring	Assume 1 - 2 years performance monitoring sampling to demonstrate criteria attainment		Assume 20 years of monitored natural attenuation sampling demonstrate criteria attainment		Assume 3-5 years performance monitoring sampling after last injection for additional natural attenuation and to demonstrate criteria attainment	Assume 2-4 years performance monitoring sampling after ISCO for additional natural attenuation and to demonstrate criteria attainment	Assume 20 years of monitored natural attenuation sampling demonstrate criteria attainment	Assume 3-5 years performance monitoring sampling after last injection for additional natural attenuation and to demonstrate criteria attainment
Overall Time to Achieve Site Closure	3 years		21 years		6 - 10 years	5 - 8 years	23 years	8 - 10 years

Summary of Engineering Assumptions for Planning Level Costs for Remedial Alternatives
Former Scott Aviation Facility, Lancaster, NY

Horizontal and Vertical Extents of Remediation

The AAR assumes that remediation is targeted for groundwater within the 100 to 1,000 ug/L Total VOC isopleths for shallow and deep groundwater, in addition to 10 percent of this area as contingency.

Shallow overburden 3-15 feet, Area = 29000 sq ft

Deep Overburden 15-21 feet, Area = 12500 sq ft

Average shallow extent of treatment (ft.) = 3-5 to 15 feet bgs [lacrustine silts and clay interbedded with thin sand lens; K values in 2 wells = 1x10-3 and 3x10-5 cm/s]

Average deep extent of treatment (ft.) = 15-21 feet bgs – [coarser grained layer (silt, sand, gravel) right above bedrock; K values in 2 wells 5x10-3 and 9x10-5 cm/s]

Depth to water (ft.) = 3 feet

The same area/thickness/volume was assumed for all technologies where planning level costs generated

Horizontal and Vertical Extents of Focused Remediation (to be used with MNA)

The AAR assumes that focused treatment for groundwater within the 10,000 ug/L Total VOC isopleths for shallow and deep groundwater, with monitored natural attenuation outside of the remediation area.

Shallow overburden 3-15 feet, Area = 7,000 sq ft

Deep Overburden 15-21 feet, Area = 1,600 sq ft

Alternative-Specific Assumptions

Excavation (Alternative 2 and Alternatve 2A)

3 disposal scenarios evaluated (100% hazardous, 50% hazardous & 50% non-hazardous, and 25% hazardous & 75% non-hazardous)

Dewatering will be required. Water discharge and permitting requirements need to be determined

Assume sheet piling (~75') near building

Enhanced Bioremediation (Alternative 3)

Assume treatment is focused on chlorinated VOCs via reductive dechlorination

Cost estimate information based pricing information provided by Tersus and modified based on AECOM experience with this other in-situ remediation.

Three discrete injection events assumed in the cost estimate, with each 65% of the previous.

Injection assumed using installed wells as multiple injection events are included

Field pilot test assumed within the cost estimate

Injection rate of ~1.5 gallon per minute assumed based on AECOM experience injecting in similar soils. This is a critical design parameter for finalizing cost

In-Situ Chemical Oxidation (Alternative 4, Alternative 4A, Alternative 4B)

Cost estimate prepared based on AECOM experience and using several recent cost quotations for chemicals and labor&equipment

Base activated persulfate assumed as the oxidant based on demonstrated ability to oxidize all site VOCs

Three discrete injection events assumed in the cost estimate, with each 65% of the previous
(Focused ISCO scenarios assume 2nd injection is the same as the 1st and the 3rd injection is 65% of previous)

Injection assumed using installed wells as multiple injection events are included

Field pilot test assumed within the cost estimate

Injection rate of ~1.5 gallon per minute assumed based on AECOM experience injecting in similar soils. This is a critical design parameter for finalizing cost

Monitored Natural Attenuation (Alternative 2A and Alternative 4A)

Assume installation of 5 additional well pairs

Assume semi-annual sampling for 5 years and annual sampling for years 6 through 15

Thermal Remediation

Cost estimate information based on "ball park" estimate prepared by TRS, who implements thermal remediation by Electric Resistive Heating (ERH)

The TRS quote includes assumed costs for work plans, permitting, drilling, soil disposal, electrical connection and usage, vapor treatment, confirmatory sampling and well abandonment.

Xylene was selected as the controlling contaminant as it is the least volatile of the contaminants listed.

Sub-Slab Depressurization System (all Alternatives)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN & PERMITTING					
Additional Air Sampling	1	allowance	$15,000	$15,000	Allowance to confirm extent, labor, materials, and analysis
Remedial Design	40	hours	$115	$4,600	Include design, specifications, and contract documents
Permit Preparation	25	hours	$115	$2,875	Specific permits to be determined but could include air, building, or other
SUBTOTAL				**$22,475**	
ASSESSMENT AND INSTALLATION					Cost estimates from AECOM experience at similar sites
Slab Seal/Repair	10	Hour	$100	$1,000	
System Installation Labor	48	Hour	$100	$4,800	Two workers for 3 days
Electrician Installation Labor	20	Hour	$125	$2,500	
Small shed	1	each	$5,000	$5,000	
SSD Equipment	1	Lump Sum	$6,500	$6,500	Blower, knock out drum, suction points, control panel with alarm
Engineering Procurement & Coordination	6	hours	$100	$600	
Engineering Oversight	3	days	$1,000	$3,000	Oversight of SSD subcontractor
Project Management	10	hours	$150	$1,500	Assume 2 hours per day during construction + 4 hours for planning and coordination
SUBTOTAL				**$24,900**	
FUTURE COSTS					
Future Year					
Performance Monitoring Equipment Rental	1	Days	$350	$350	
Sampling and GAC Change Oversight	0	Days	$1,100	$0	
GAC changeout and disposal (2 drums)	0	Allowance	$1,500	$0	
Laboratory Analyses (VOC)	2	Samples	$175	$350	
Rental Vehicle	1	days	$75	$75	
Mileage/Misc Expenses	0	Allowance	$500	$0	
Data Evaluation and Summary Report	16	hours	$100	$1,600	
SUBTOTAL FUTURE YEAR				$2,375	

Assume annual Vapor GAC change out and sampling

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	1	$2,375	1.00	$2,375	
2	1	$2,375	0.96	$2,273	
3	1	$2,375	0.92	$2,175	
4	1	$2,375	0.88	$2,081	
5	1	$2,375	0.84	$1,992	
6	1	$2,375	0.80	$1,906	
6	1	$2,375	0.80	$1,906	
7	1	$2,375	0.77	$1,824	
8	1	$2,375	0.73	$1,745	
9	1	$2,375	0.70	$1,670	
10	1	$2,375	0.67	$1,598	
11	1	$2,375	0.64	$1,529	
12	1	$2,375	0.62	$1,463	
13	1	$2,375	0.59	$1,400	
14	1	$2,375	0.56	$1,340	
15	1	$2,375	0.54	$1,282	
16	1	$2,375	0.52	$1,227	
17	1	$2,375	0.49	$1,174	
18	1	$2,375	0.47	$1,124	
19	1	$2,375	0.45	$1,075	
20	1	$2,375	0.43	$1,029	
21	1	$2,375	0.41	$985	
22	1	$2,375	0.40	$942	
23	1	$2,375	0.38	$902	
24	1	$2,375	0.36	$863	
25	1	$2,375	0.35	$826	
26	1	$2,375	0.33	$790	
27	1	$2,375			
28	1	$2,375	0.30	$724	
29	1	$2,375	0.29	$692	
30	1	$2,375	0.28	$663	
FUTURE COST TOTALS		$71,250		$39,202	

ALTERNATIVE COST SUMMARY		
Capital Cost	$24,900	$24,900
Future Costs	$71,250	$39,202
TOTAL	**$96,150**	**$64,102**

Shallow Soil Excavation (all Alternatives)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN & PERMITTING					
Remedial Design	60	hours	$115	$6,900	Include design, specifications, and contract documents
Permit Preparation	20	hours	$115	$2,300	Specific permits to be determined but could include air, building, or other
SUBTOTAL				**$9,200**	
EXCAVATION AND FIELD ACTIVITIES					
Equipment Mobilization	1	Lump Sum	$2,500	$2,500	
Excavation & Handling of Soils (includes 1 additional foot)	208	CY	$20	$4,160	
Community Air Monitoring	3	Day	$1,000	$3,000	
Confirmation Sampling (including data validation)	10	Sample	$150	$1,500	
Clean Fill Material	208	CY	$9	$1,872	
Place & Compact	208	CY	$6	$1,248	
Seeding/asphalt	1875	SF	$1.00	$1,875	
Well Installation- Install 2 Mon Wells Post Excavation	2	Each	$1,500.00	$3,000	Install two shallow monitoring wells to evaluate groundwater impacts from excavation
Misc. Supplies and PPE (Well Installation)	1	LS	$1,000.00	$1,000	
Drum Disposal (Well Installation)	1	Each	$250.00	$250	
Engineering Procurement & Coordination	12	hours	$100	$1,200	Assume 8 hours for excavation, 4 hours for drilling
Engineering Oversight	10.5	person days	$1,000	$10,500	assume 1 full time and 1 half time staff throughout excavation, equipment mob/demob, well installation
Project Management	29	hours	$150	$4,350	assume 2 hours per day during field activities + 15 hours for procurement/coordination
SUBTOTAL (without disposal)				**$36,455**	
Disposal Scenario 1					
Transportation and Disposal; 0% of Soils (Non-HAZ)	0	Ton	$85	$0	
Transportation and Disposal: 100% of Soils (HAZ)	208	Ton	$200	$41,600	
Disposal Scenario 2					
Transportation and Disposal; 25% of Soils (Non-HAZ)	52	Ton	$85	$4,420	
Transportation and Disposal: 75% of Soils (HAZ)	156	Ton	$200	$31,200	
Disposal Scenario 3					
Transportation and Disposal; 50% of Soils (Non-HAZ)	104	Ton	$85	$8,840	
Transportation and Disposal: 50% of Soils (HAZ)	104	Ton	$200	$20,800	
		Scenario 1	**Scenario 2**	**Scenario 3**	
CAPITAL COST SUBTOTAL		**$87,255**	**$81,275**	**$75,295**	
Contingency	**30%**	$26,177	$24,383	$22,589	
TOTAL CAPITAL COSTS		**$113,432**	**$105,658**	**$97,884**	

Shallow Soil Excavation (all Alternatives)
Former Scott Aviation Facility - Lancaster, NY

FUTURE COSTS					
Future Year 1					
Low Flow Sampling Rental Equipment	0	Days	$500	$220	Semi-annual sampling one year after excavation (two monitoring wells)
Sampling Staff	0	Person-Days	$950	$0	
Laboratory Analyses (VOC)	0	Samples	$100	$0	
Rental Vehicle	0	days	$75	$0	
Mileage/Misc Expenses	1	Allowance	$500	$500	
Data Evaluation and Summary Report	10	hours	$100	$1,000	
SUBTOTAL FUTURE YEAR 1				$1,720	
Contingency	**30%**			$516	
TOTAL FUTURE YEAR 1				$2,236	
Future Year 2					
Performance Monitoring	1	Future Year 1	$720	$720	annual sampling in year 2 same scope as Year 1
Data Evaluation and Summary Report	20	hours	$100	$2,000	
SUBTOTAL FUTURE YEAR 2				$2,720	
Contingency	**30%**			$816	
TOTAL FUTURE YEAR 2				$3,536	

Assume semi-annual sampling for 5 years and annual sampling until Year 30

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	1	$2,236	1.00	$2,236	
2	1	$3,536	0.96	$3,384	
FUTURE COST TOTALS		$3,536		$3,384	

ALTERNATIVE COST SUMMARY

	Scenario 1	Scenario 2	Scenario 3
Total Capital Cost	$113,432	$105,658	$97,884
Total Future Costs	$3,536	$3,536	$3,536
TOTAL COST	**$116,968**	**$109,194**	**$101,420**
TOTAL NET PRESENT VALUE COST	**$116,815**	**$109,041**	**$101,267**

Excavation (Alternative 2)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN & PERMITTING					
Remedial Design	250	hours	$115	$28,750	design includes dewatering and sheeting
Permit Preparation	80	hours	$115	$9,200	
SUBTOTAL				**$37,950**	
EXCAVATION AND FIELD ACTIVITIES					
Equipment Mobilization	1	Lump Sum	$25,000	$25,000	
Sheet Pile Mobilization	1	Lump Sum	$30,000	$30,000	
Temporary Facilities	1	Lump Sum	$5,000	$5,000	
Sheet Pile Materials	4620	SF	$33	$152,460	Sheet pile to 21 feet, 220 linear feet
Sheet Pile Installation/Removal, bracing install/removal	4620	SF	$15	$69,300	
Excavation & Handling of Soils (includes 15% for sloping)	18200	CY	$20	$364,000	
Stockpile Storage Area	1	LS	$10,000	$10,000	
Confirmation Soil Sampling	52	Sample	$100.00	$5,200	assume 1 per 350 CY, including validation
Community Air Monitoring	67	Day	$1,000	$67,000	assume 250 CY excacation per day, plus 10%
Confirmation Sampling (including data validation)	67	Sample	$150	$10,050	
Clean Fill Material	18200	CY	$9	$163,800	
Place & Compact	18200	CY	$6	$109,200	
Seeding	24000	SF	$0.50	$12,000	
Frac Tank Rental	81	DY	$35.00	$2,835	Excavation time plus 2 weeks for water handling and disposal afterwards
Carbon Units, Hose&Bag filters, Disposal of spent media	1	Allowance	$15,000	$15,000	
Pump Rental	17	WK	$500	$8,500	
Weekly Maintenance and Operation	17	WK	$500	$8,500	
Well Installation- Install 8 Mon Wells Post Excavation	8	Each	$1,800.00	$14,400	Allowance based on AECOM experience at other sites
Misc. Supplies and PPE (Well Installation)	1	LS	$1,000.00	$1,000	
Drum Disposal (Well Installation)	2	Each	$250.00	$500	
Engineering Procurement & Coordination	40	hours	$100	$4,000	
Engineering Oversight	110	days	$1,000	$110,000	assume 1 full time and 1 half time staff throughout excavation, equipment mob/demob, well installation, wastewater handling
Project Management	250	hours	$125	$31,250	assume 2 hours per day during field activities + 30 hours for procurement/coordination
SUBTOTAL (without disposal)				**$1,218,995**	
Disposal Scenario 1					
Transportation and Disposal; 0% of Soils (Non-HAZ)	0	Ton	$85	$0	
Transportation and Disposal: 100% of Soils (HAZ)	18200	Ton	$200	$3,640,000	
Disposal Scenario 2					
Transportation and Disposal; 25% of Soils (Non-HAZ)	4550	Ton	$85	$386,750	
Transportation and Disposal: 75% of Soils (HAZ)	13650	Ton	$200	$2,730,000	
Disposal Scenario 3					
Transportation and Disposal; 50% of Soils (Non-HAZ)	9100	Ton	$85	$773,500	
Transportation and Disposal: 50% of Soils (HAZ)	9100	Ton	$200	$1,820,000	
		Scenario 1	**Scenario 2**	**Scenario 3**	
CAPITAL COST SUBTOTAL		**$4,896,945**	**$4,373,695**	**$3,850,445**	
Contingency	**30%**	$1,469,084	$1,312,109	$1,155,134	
TOTAL CAPITAL COSTS		**$6,366,029**	**$5,685,804**	**$5,005,579**	

Excavation (Alternative 2)
Former Scott Aviation Facility - Lancaster, NY

FUTURE COSTS					
Future Year 1					
Low Flow Sampling Rental Equipment	6	Days	$500	$3,220	Semi-annual sampling one year after excavation
Sampling Staff	10	Person-Days	$950	$9,500	10 wells, assume 2 wells per person per day
Laboratory Analyses (VOC)	22	Samples	$100	$2,200	2 YSI, 2 peristaltic pumps, 2 water levels, 2 Turb Meters, PID (Pine Environmental, 12-20-11)
Rental Vehicle	6	days	$75	$450	
Mileage/Misc Expenses	2	Allowance	$500	$1,000	
Data Evaluation and Summary Report	60	hours	$100	$6,000	
SUBTOTAL FUTURE YEAR 1				$22,370	
Contingency	**30%**			$6,711	
TOTAL FUTURE YEAR 1				$29,081	
Future Year 2					
Performance Monitoring	0.5	Future Year 1	$16,370	$8,185	annual sampling in year 2 (half costs for labor, rental, and lab from year 1)
Data Evaluation and Summary Report	60	hours	$100	$6,000	
SUBTOTAL FUTURE YEAR 2				$14,185	
Contingency	**30%**			$4,256	
TOTAL FUTURE YEAR 2				$18,441	

Assume semi-annual sampling for 5 years and annual sampling until Year 30

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	1	$29,081	1.00	$29,081	
2	1	$18,441	0.96	$17,646	
FUTURE COST TOTALS		$18,441		$17,646	

ALTERNATIVE COST SUMMARY			
	Scenario 1	**Scenario 2**	**Scenario 3**
Total Capital Cost	$6,366,029	$5,685,804	$5,005,579
Total Future Costs	$18,441	$18,441	$18,441
TOTAL COST	**$6,384,469**	**$5,704,244**	**$5,024,019**
TOTAL NET PRESENT VALUE COST	**$6,383,675**	**$5,703,450**	**$5,023,225**

Focused In-Situ Chemical Oxidation with Monitored Natural Attenuation (Alternative 4A)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN & PERMITTING					
Remedial Design	200	hours	$115	$23,000	design includes dewatering and sheeting
Permit Preparation	80	hours	$115	$9,200	
SUBTOTAL				$32,200	
DRILLING AND INJECTION WELL INSTALLATION					
Driller Mobilization/Demobilization (include Decon Pad)	1	Lump Sum	$1,500	$1,500	Assume 2 rigs mobilized
Drill Rig and Labor	10	rig-days	$1,500	$15,000	Assume direct-push rig for well installation (110'/d) plus per diem
1.5" Prepack Screens (5' length) for injection wells	125	each	$125	$15,625	55 shallow inj wells, 15 deep injection wells (4-14', 15-21') = 1100 feet of drilling
1.5" PVC Riser and materials for injection wells	500	LF	$8	$4,000	Riser 5' and 15' = 500 feet; 2 x 5' screens per shallow well + 1 x 5' screen for deep well
Protective Stick Ups	70	wells	$100	$7,000	
Drums	11	drums	$75	$825	Assume 1 drum per 8 wells
CAMP Equipment Rental	1	week	$500	$500	Assume 1 PID and 1 Dust Track (Pine Environmental 12-20-11)
Soil Disposal	11	drums	$300	$3,300	
Engineering Procurement & Coordination	30	hours	$100	$3,000	
SUBTOTAL				$50,750	
MONITORED NATURAL ATTENUATION - WELL INSTALLATION AND BASELINE SAMPLING					
Engineering Design, MNA Workplan, Oversight	1	Lump Sum	$29,000	$29,000	See MNA Backup Cost Estimate
MNA Well Installation and Subcontractors	1	Lump Sum	$19,500	$19,500	See MNA Backup Cost Estimate
Baseline MNA Sampling Event	1	Lump Sum	$30,095	$30,095	See MNA Backup Cost Estimate
SUBTOTAL				$78,595	
EXCAVATION AND FIELD ACTIVITIES					
Equipment Mobilization	1	Lump Sum	$25,000	$25,000	
Sheet Pile Mobilization	1	Lump Sum	$30,000	$30,000	
Temporary Facilities	1	Lump Sum	$5,000	$5,000	
Sheet Pile Materials	1500	SF	$33	$49,500	Sheet pile to 15 feet, 100 linear feet
Sheet Pile Installation/Removal, bracing install/removal	1500	SF	$15	$22,500	
Excavation & Handling of Soils (includes 15% for sloping)	4800	CY	$20	$96,000	
Stockpile Storage Area	1	LS	$10,000	$10,000	
Confirmation Soil Sampling	14	Sample	$100	$1,400	assume 1 per 350 CY, including validation
Community Air Monitoring	21	Day	$1,000	$21,000	assume 250 CY excacation per day, plus 10%
Confirmation Sampling (including data validation)	21	Sample	$150	$3,150	
Clean Fill Material	4800	CY	$9	$43,200	
Place & Compact	4800	CY	$6	$28,800	
Seeding	7000	SF	$0.50	$3,500	
Frac Tank Rental	35	DY	$35.00	$1,225	Excavation time plus 2 weeks for water handling and disposal afterwards
Carbon Units, Hose&Bag filters, Disposal of spent media	1	Allowance	$15,000	$15,000	
Pump Rental	7	WK	$500	$3,500	
Weekly Maintenance and Operation	7	WK	$500	$3,500	
Well Installation- Install 8 Mon Wells Post Excavation	4	Each	$1,500.00	$6,000	
Misc. Supplies and PPE (Well Installation)	1	LS	$1,000.00	$1,000	
Drum Disposal (Well Installation)	2	Each	$250.00	$500	
Engineering Procurement & Coordination	40	hours	$100	$4,000	
Engineering Oversight	56	days	$1,000	$56,000	assume 1 full time and 1 half time staff throughout excavation, equipment mob/demob, well installation, wastewater handling
Project Management	142	hours	$125	$17,750	assume 2 hours per day during field activities + 30 hours for procurement/coordination
SUBTOTAL (without disposal)				$447,525	
Disposal Scenario 1					
Transportation and Disposal; 0% of Soils (Non-HAZ)	0	Ton	$85	$0	
Transportation and Disposal: 100% of Soils (HAZ)	4800	Ton	$200	$960,000	
Disposal Scenario 2					
Transportation and Disposal; 25% of Soils (Non-HAZ)	1200	Ton	$85	$102,000	
Transportation and Disposal: 75% of Soils (HAZ)	3600	Ton	$200	$720,000	
Disposal Scenario 3					
Transportation and Disposal; 50% of Soils (Non-HAZ)	2400	Ton	$85	$204,000	
Transportation and Disposal: 50% of Soils (HAZ)	2400	Ton	$200	$480,000	
		Scenario 1	**Scenario 2**	**Scenario 3**	
CAPITAL COST SUBTOTAL		**$1,569,070**	**$1,431,070**	**$1,293,070**	
Contingency	**30%**	$470,721	$429,321	$387,921	
TOTAL CAPITAL COSTS		**$2,039,791**	**$1,860,391**	**$1,680,991**	

Focused In-Situ Chemical Oxidation with Monitored Natural Attenuation (Alternative 4A)
Former Scott Aviation Facility - Lancaster, NY

FUTURE COSTS					
Future Year 1 - 5 (Annual Cost)					
MNA Sampling	1	Event	$30,095	$30,095	See MNA Backup Cost Estimate (assume 2 MNA events for 5 years)
SUBTOTAL FUTURE YEAR 1 - 5				$30,095	
Contingency	30%			$9,029	
TOTAL FUTURE YEAR 1 - 5				$39,124	
Future Year 6 - 20 (Annual Cost)					Perform MNA Annual Sampling
Performance Monitoring with Summary Report	1	Event	$30,095	$30,095	
Contingency	30%			$9,029	
TOTAL FUTURE YEAR 6-20				$39,124	

Assume semi-annual sampling for 5 years and annual sampling until Year 30

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	2	$39,124	1.00	$39,124	
2	2	$39,124	0.96	$37,439	
3	2	$39,124	0.92	$35,827	
4	2	$39,124	0.88	$34,284	
5	2	$39,124	0.84	$32,807	
6	1	$39,124	0.80	$31,395	
7	1	$39,124	0.77	$30,043	
8	1	$39,124	0.73	$28,749	
9	1	$39,124	0.70	$27,511	
10	1	$39,124	0.67	$26,326	
11	1	$39,124	0.64	$25,193	
12	1	$39,124	0.62	$24,108	
13	1	$39,124	0.59	$23,070	
14	1	$39,124	0.56	$22,076	
15	1	$39,124	0.54	$21,126	
16	1	$39,124	0.52	$20,216	
17	1	$39,124	0.49	$19,345	
18	1	$39,124	0.47	$18,512	
19	1	$39,124	0.45	$17,715	
20	1	$39,124	0.43	$16,952	
FUTURE COST TOTALS		$743,347		$492,694	

ALTERNATIVE COST SUMMARY

	Scenario 1	Scenario 2	Scenario 3
Total Capital Cost	$2,039,791	$1,860,391	$1,680,991
Total Future Costs	$743,347	$743,347	$743,347
TOTAL COST	**$2,783,138**	**$2,603,738**	**$2,424,338**
TOTAL NET PRESENT VALUE COST	**$2,532,485**	**$2,353,085**	**$2,173,685**

Enhanced Bioremediation (Alternative 3)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN, PERMITTING					
Remedial Design	175	hours	$115	$20,125	
Permit Preparation	80	hours	$115	$9,200	
SUBTOTAL				**$29,325**	
DRILLING AND INJECTION WELL INSTALLATION					
Driller Mobilization/Demobilization (include Decon Pad)	1	Lump Sum	$1,500	$1,500	Assume 2 rigs mobilized
Drill Rig and Labor	39	rig-days	$1,500	$58,500	Assume direct-push rig for well installation (110'/d) plus per diem
1.5" Prepack Screens (5' length) for injection wells	443	each	$125	$55,375	180 shallow inj wells, 83 deep injection wells (4-14', 15-21') = 4,265 feet of drilling
1.5" PVC Riser and materials for injection wells	2215	LF	$8	$17,720	Riser 5' and 15' = 2525 feet; 2 x 5' screens per shallow well + 1 x 5' screen for deep well
Protective Stick Ups	263	wells	$100	$26,300	
Drums	33	drums	$75	$2,475	Assume 1 drum per 8 wells
CAMP Equipment Rental	4	week	$500	$2,000	Assume 1 PID and 1 Dust Track (Pine Environmental 12-20-11)
Soil Disposal	33	drums	$300	$9,900	
Engineering Procurement & Coordination	30	hours	$100	$3,000	
Engineering Oversight	468	hours	$100	$46,800	assume 2 staff (Geologist/Scientist 3) for oversight and CAMP; 10 hrs/day + 20% for markout, misc
Project Management	45	hours	$125	$5,625	assume 2 hours per day during field activities + 6 hours for procurement/coordination
SUBTOTAL				**$229,195**	
BIOREMEDIATION INJECTION (ROUND 1)					Labor, equipment, and mobilization costs based on 2011 Redox Tech quote
Injection Subcontractor (mobilization)	1	Lump Sum	$20,000	$20,000	Assume injection volume equal to 20% of total pore volume
Injection Subcontractor (labor and equipment)	54	days	$3,500	$189,000	Assume injection rate of 1.5 gpm based on soil types and AECOM experience
					Field injection days assumes 6 active injection points, 5.5 hrs/day injection time, and 2 days each for mob/demob
Carbon Substrate/Chemicals					
Water Soluble Oil	26	drums	$1,200	$31,200	Chemical costs from Tersus Environmental Quote (March 2012)
Bioremediation Nutrients	26	5g pail	$225	$5,850	
Quick release carbon substrate	13	gallons	$1,000	$13,000	
Injection Subcontractor (per diem)	54	days	$525	$28,350	Assume 3 person crew for subcontractor
Engineering Procurement & Coordination	40	hours	$100	$4,000	assume Engineer 3/4
Engineering Oversight	54	days	$1,000	$54,000	assume Geologist/Scientist 3 for oversight
Engineering Oversight	10	days	$1,150	$11,500	assume 20% for Engineer 3/4
Project Management	24	hours	$125	$3,000	assume 1.5 hours per day during field activities + 24 hours for procurement/coordination
Misc Oversight Materials and PPE	1	Lump Sum	$300	$300	Log book, gloves, face shield, eye wash station
Injection Oversight Rental Equipment	11	weeks	$250	$2,750	Assume no formal CAMP; assume 1 PID & 1 water level meter (Pine Environmental 12-20-11)
Rental Vehicle for Oversight	11	weeks	$175	$1,925	assume pick up truck or SUV (base rental and gas/mileage etc..)
Field Test Kits/Monitoring Supplies	1	Allowance	$1,500	$1,500	
Travel Expenses	1	Allowance	$2,000	$2,000	mileage, per diem for PM and ISCO Engineer
SUBTOTAL				**$368,375**	
BIOAUGMENTATION					
Injection Labor	22	Days	$1,000	$22,220	assume 0.4 Liters of microbe culture solution per injection well
Bioaugmentation Inoculum	105.2	Liters	$450	$47,560	assume bioaugment 12 wells per day
Materials and Equipment	22	Days	$350	$7,700	pumps, deaeration supplies
Rental Vehicle	23	days	$75	$1,725	assume pick up truck or SUV (base rental and gas/mileage etc..)
Mileage/Misc Expenses	1	Allowance	$500	$500	
SUBTOTAL				**$79,705**	

Enhanced Bioremediation (Alternative 3)
Former Scott Aviation Facility - Lancaster, NY

PERFORMANCE MONITORING (Per Round)					
Low Flow Sampling Rental Equipment	3	Days	$500	$1,720	
Sampling Staff	6	Person-Days	$950	$5,700	10 wells, assume 2 wells per person per day
Laboratory Analyses (VOC,TOC,M/E/E, metals)	12	Samples	$400	$4,800	2 YSI, 2 peristaltic pumps, 2 water levels, 2 Turb Meters, PID (Pine Environmental, 12-20-11)
Rental Vehicle	4	days	$75	$300	
Mileage/Misc Expenses	1	Allowance	$500	$500	
Data Evaluation and Summary Report	60	hours	$100	$6,000	assume pick up truck or SUV (base rental and gas/mileage etc..)
SUBTOTAL				**$19,020**	
CAPITAL COST SUBTOTAL				**$744,640**	Assume 2 performance monitoring sampling events 3 and 9 months after injection
Contingency	**30%**			$223,392	
TOTAL CAPITAL COSTS				**$968,032**	

FUTURE COSTS					
Future Year 1					
Performance Monitoring with Summary Report	2	Event	$19,020	$38,040	
SUBTOTAL FUTURE YEAR 1				$38,040	
Contingency	**30%**			$11,412	
TOTAL FUTURE YEAR 1				$49,452	
Future Year 2					
Remediation Design Addendum	60	hours	$115	$6,900	
Bioremediation Injection (Round 2)	(assume 50% of round 1)			$184,188	Labor, equipment, chemicals, oversight
Performance Monitoring with Summary Report	2	Event	$19,020	$38,040	
SUBTOTAL FUTURE YEAR 2				$229,128	
Contingency	**30%**			$68,738	
TOTAL FUTURE YEAR 2				$297,866	
Future Year 3					
Performance Monitoring with Summary Report	2	Event	$19,020	$38,040	
SUBTOTAL FUTURE YEAR 3				$38,040	
Contingency	**30%**			$11,412	
TOTAL FUTURE YEAR 3				$49,452	
Future Year 4					
Remediation Design Addendum	60	hours	$115	$6,900	
Bioremediation Injection (Round 3)	(assume 50% of round 2)			$92,094	Labor, equipment, chemicals, oversight
Performance Monitoring with Summary Report	2	Event	$19,020	$38,040	
SUBTOTAL FUTURE YEAR 4				$137,034	
Contingency	**30%**			$41,110	
TOTAL FUTURE YEAR 4				$178,144	
Future Year 5 - 9 (Annual Cost)					
Performance Monitoring with Summary Report	(assume same as PM Round 1)			$19,020	assume annual performance monitoring sampling
Contingency	**30%**			$5,706	
TOTAL FUTURE YEAR 5 - 9				$24,726	

Assume semi-annual sampling for 5 years and annual sampling until Year 30

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	1	$49,452	1.00	$49,452	
2	1	$297,866	0.96	$285,039	
3	1	$49,452	0.92	$45,285	
4	1	$178,144	0.88	$156,107	
5	1	$24,726	0.84	$20,734	
6	1	$24,726	0.80	$19,841	
7	1	$24,726	0.77	$18,987	
8	1	$24,726	0.73	$18,169	
9	1	$24,726	0.70	$17,387	
10	1	$24,726	0.67	$16,638	
FUTURE COST TOTALS		$673,818		$598,188	

ALTERNATIVE COST SUMMARY	Total Cost	Net Present Value
Capital Cost	$968,032	$968,032
Future Costs	$673,818	$598,188
TOTAL	**$1,641,850**	**$1,566,220**

In-Situ Chemical Oxidation (Alternative 4)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN, PERMITTING, PILOT TEST EVALUATION					
ISCO Pilot Test	1	Lump Sum	$125,000	$125,000	Assume all costs for design, monitoring, chemicals, and injection labor and equipment
Remedial Design and PilotTest Evaluation	175	hours	$115	$20,125	
Permit Preparation	80	hours	$115	$9,200	
SUBTOTAL				**$154,325**	
DRILLING AND INJECTION WELL INSTALLATION					
Driller Mobilization/Demobilization (include Decon Pad)	1	Lump Sum	$1,500	$1,500	Assume 2 rigs mobilized
Drill Rig and Labor	39	rig-days	$1,500	$58,500	Assume direct-push rig for well installation (110'/d) plus per diem
1.5" Prepack Screens (5' length) for injection wells	443	each	$125	$55,375	180 shallow inj wells, 83 deep injection wells (4-14', 15-21') = 4,265 feet of drilling
1.5" PVC Riser and materials for injection wells	2215	LF	$8	$17,720	Riser 5' and 15' = 2525 feet; 2 x 5' screens per shallow well + 1 x 5' screen for deep well
Protective Stick Ups	263	wells	$100	$26,300	
Drums	33	drums	$75	$2,475	Assume 1 drum per 8 wells
CAMP Equipment Rental	4	week	$500	$2,000	Assume 1 PID and 1 Dust Track (Pine Environmental 12-20-11)
Soil Disposal	33	drums	$300	$9,900	
Engineering Procurement & Coordination	30	hours	$100	$3,000	
Engineering Oversight	468	hours	$100	$46,800	assume 2 staff (Geologist/Scientist 3) for oversight and CAMP; 10 hrs/day + 20% for markout, misc
Project Management	45	hours	$125	$5,625	assume 2 hours per day during field activities + 6 hours for procurement/coordination
SUBTOTAL				**$229,195**	
ISCO INJECTION (ROUND 1)					
ISCO Injection Subcontractor (mobilization)	1	Lump Sum	$20,000	$20,000	
ISCO Injection Subcontractor (labor)	54	days	$2,250	$121,500	Assume injection volume equal to 20% of total pore volume
ISCO Injection Subcontractor (equipment)	54	days	$2,025	$109,350	Assume injection rate of 1.5 gpm based on soil types and AECOM experience
Oxidant/Chemicals					Field injection days assumes 6 active injection points, 5.5 hrs/day injection time, and 2 days each for mob/demob
					ISCO labor, equipment, mobilization, and chemical costs based on 2011 ISOTEC quote for similar size site in V
Persulfate	257300	pounds	$2	$439,983	
NaOH (25%)	345700	pounds	$0	$76,054	
Catalyst	0	gallons	$1	$0	
ISCO Injection Subcontractor (per diem)	54	days	$525	$28,350	Assume 3 person crew for subcontractor
Engineering Procurement & Coordination	40	hours	$100	$4,000	assume Engineer 3/4
Engineering Oversight	54	days	$1,000	$54,000	assume Geologist/Scientist 3 for oversight
Engineering Oversight	10	days	$1,150	$11,500	assume 20% for Engineer 3/4
Project Management	105	hours	$125	$13,125	assume 1.5 hours per day during field activities + 24 hours for procurement/coordination
Misc Oversight Materials and PPE	1	Lump Sum	$300	$300	Log book, gloves, face shield, eye wash station
Injection Oversight Rental Equipment	11	weeks	$250	$2,750	Assume no formal CAMP; assume 1 PID & 1 water level meter (Pine Environmental 12-20-11)
Rental Vehicle for Oversight	11	weeks	$175	$1,925	assume pick up truck or SUV (base rental and gas/mileage etc..)
Persulfate Field Test Kits	5.4	Each	$115	$621	FMC, 10 tests each (including shipping)
Travel Expenses	1	Allowance	$2,000	$2,000	mileage, per diem for PM and ISCO Engineer
SUBTOTAL				**$885,458**	
PERFORMANCE MONITORING (ROUND 1)					
Low Flow Sampling Rental Equipment	3	Days	$500	$1,720	Assume groundwater sampling event 6 months after injection
Sampling Staff	6	Person-Days	$950	$5,700	10 wells, assume 2 wells per person per day
Laboratory Analyses (VOC,metals @ 30% of wells)	12	Samples	$150	$1,800	2 YSI, 2 peristaltic pumps, 2 water levels, 2 Turb Meters, PID (Pine Environmental, 12-20-11)
Rental Vehicle	4	days	$75	$300	
Mileage/Misc Expenses	1	Allowance	$500	$500	
Data Evaluation and Summary Report	60	hours	$100	$6,000	assume pick up truck or SUV (base rental and gas/mileage etc..)
SUBTOTAL				**$16,020**	
CAPITAL COST SUBTOTAL				**$1,284,998**	
Contingency	**30%**			$385,499	
TOTAL CAPITAL COSTS				**$1,670,497**	

In-Situ Chemical Oxidation (Alternative 4)

Former Scott Aviation Facility - Lancaster, NY

FUTURE COSTS					
Future Year 1					
Remediation Design Addendum	60	hours	$115	$6,900	
ISCO Injection (Round 2)	(assume 65% of round 1)			$575,548	Labor, equipment, chemicals, oversight
Performance Monitoring with Summary Report (Round 2)	(assume same as PM Round 1)			$16,020	
SUBTOTAL FUTURE YEAR 1				$598,468	
Contingency	**30%**			$179,540	
TOTAL FUTURE YEAR 1				$778,008	
Future Year 2					
Remediation Design Addendum	60	hours	$115	$6,900	
ISCO Injection (Round 3)	(assume 65% of round 2)			$374,106	Labor, equipment, chemicals, oversight
Performance Monitoring with Summary Report (Round 3)	(assume same as PM Round 1)			$16,020	
SUBTOTAL FUTURE YEAR 2				$397,026	
Contingency	**30%**			$119,108	
TOTAL FUTURE YEAR 2				$516,134	
Future Year 3 - 6 (Annual Cost)					
Performance Monitoring with Summary Report	(assume same as PM Round 1)			$16,020	assume annual performance monitoring sampling
Contingency	**30%**			$4,806	
TOTAL FUTURE YEAR 3- 6				$20,826	

Assume semi-annual sampling for 5 years and annual sampling until Year 30

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	1	$778,008	1.00	$778,008	
2	1	$516,134	0.96	$493,908	
3	1	$20,826	0.92	$19,071	
4	1	$20,826	0.88	$18,250	
5	1	$20,826	0.84	$17,464	
6	1	$20,826	0.80	$16,712	
FUTURE COST TOTALS		$599,438		$565,404	

ALTERNATIVE COST SUMMARY	Total Cost	Net Present Value
Capital Cost	$1,670,497	$1,670,497
Future Costs	$599,438	$565,404
TOTAL	**$2,269,935**	**$2,235,902**

Focused In-Situ Chemical Oxidation with Monitored Natural Attenuation (Alternative 4A)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN, PERMITTING, PILOT TEST EVALUATION					
ISCO Pilot Test	1	Lump Sum	$125,000	$125,000	Assume all costs for design, monitoring, chemicals, and injection labor and equipment
Remedial Design and PilotTest Evaluation	150	hours	$115	$17,250	
Permit Preparation	80	hours	$115	$9,200	
SUBTOTAL				**$151,450**	
DRILLING AND INJECTION WELL INSTALLATION					
Driller Mobilization/Demobilization (include Decon Pad)	1	Lump Sum	$1,500	$1,500	Assume 2 rigs mobilized
Drill Rig and Labor	10	rig-days	$1,500	$15,000	Assume direct-push rig for well installation (110'/d) plus per diem
1.5" Prepack Screens (5' length) for injection wells	125	each	$125	$15,625	55 shallow inj wells, 15 deep injection wells (4-14', 15-21') = 1100 feet of drilling
1.5" PVC Riser and materials for injection wells	500	LF	$8	$4,000	Riser 5' and 15' = 500 feet; 2 x 5' screens per shallow well + 1 x 5' screen for deep well
Protective Stick Ups	70	wells	$100	$7,000	
Drums	11	drums	$75	$825	Assume 1 drum per 8 wells
CAMP Equipment Rental	1	week	$500	$500	Assume 1 PID and 1 Dust Track (Pine Environmental 12-20-11)
Soil Disposal	11	drums	$300	$3,300	
Engineering Procurement & Coordination	20	hours	$100	$2,000	
Engineering Oversight	120	hours	$100	$12,000	assume 2 staff (Geologist/Scientist 3) for oversight and CAMP; 10 hrs/day + 20% for markout, misc
Project Management	16	hours	$125	$2,000	assume 2 hours per day during field activities + 6 hours for procurement/coordination
SUBTOTAL				**$63,750**	
MONITORED NATURAL ATTENUATION - WELL INSTALLATION AND BASELINE SAMPLING					
Engineering Design, MNA Workplan, Oversight	1	Lump Sum	$29,000	$29,000	See MNA Backup Cost Estimate
MNA Well Installation and Subcontractors	1	Lump Sum	$19,500	$19,500	See MNA Backup Cost Estimate
Baseline MNA Sampling Event	1	Lump Sum	$30,095	$30,095	See MNA Backup Cost Estimate
SUBTOTAL				**$78,595**	
ISCO INJECTION (ROUND 1)					
ISCO Injection Subcontractor (mobilization)	1	Lump Sum	$20,000	$20,000	
ISCO Injection Subcontractor (labor)	17	days	$2,250	$38,250	Assume injection volume equal to 20% of total pore volume
ISCO Injection Subcontractor (equipment)	17	days	$2,025	$34,425	Assume injection rate of 1.6 gpm based on soil types and AECOM experience
Oxidant/Chemicals					Field injection days assumes 6 active injection points, 5.5 hrs/day injection time, and 2 days each for mob/demob
					ISCO labor, equipment, mobilization, and chemical costs based on 2011 ISOTEC quote for similar size site in VT
Persulfate	68100	pounds	$2	$116,451	
NaOH (25%)	91500	pounds	$0	$20,130	
Catalyst	0	gallons	$1	$0	
ISCO Injection Subcontractor (per diem)	17	days	$525	$8,925	Assume 3 person crew for subcontractor
Engineering Procurement & Coordination	40	hours	$100	$4,000	assume Engineer 3/4
Engineering Oversight	17	days	$1,000	$17,000	assume Geologist/Scientist 3 for oversight
Engineering Oversight	3	days	$1,150	$3,450	assume 20% for Engineer 3/4
Project Management	49.5	hours	$125	$6,188	assume 1.5 hours per day during field activities + 24 hours for procurement/coordination
Misc Oversight Materials and PPE	1	Lump Sum	$300	$300	Log book, gloves, face shield, eye wash station
Injection Oversight Rental Equipment	4	weeks	$250	$1,000	Assume no formal CAMP; assume 1 PID & 1 water level meter (Pine Environmental 12-20-11)
Rental Vehicle for Oversight	4	weeks	$175	$700	assume pick up truck or SUV (base rental and gas/mileage etc.)
Persulfate Field Test Kits	2	Each	$115	$230	FMC, 10 tests each (including shipping)
Travel Expenses	1	Allowance	$2,000	$2,000	mileage, per diem for PM and ISCO Engineer
SUBTOTAL				**$273,049**	
PERFORMANCE MONITORING (ROUND 1)					
Low Flow Sampling Rental Equipment	3	Days	$500	$1,720	Assume groundwater sampling event 6 months after injection
Sampling Staff	6	Person-Days	$950	$5,700	10 wells, assume 2 wells per person per day
Laboratory Analyses (VOC,metals @ 30% of wells)	12	Samples	$150	$1,800	2 YSI, 2 peristaltic pumps, 2 water levels, 2 Turb Meters, PID (Pine Environmental, 12-20-11)
Rental Vehicle	4	days	$75	$300	
Mileage/Misc Expenses	1	Allowance	$500	$500	
Data Evaluation and Summary Report	60	hours	$100	$6,000	assume pick up truck or SUV (base rental and gas/mileage etc.)
SUBTOTAL				**$16,020**	
CAPITAL COST SUBTOTAL				**$582,864**	
Contingency	**30%**			$174,859	
TOTAL CAPITAL COSTS				**$757,723**	

Focused In-Situ Chemical Oxidation with Monitored Natural Attenuation (Alternative 4A)
Former Scott Aviation Facility - Lancaster, NY

FUTURE COSTS					
Future Year 1					
Remediation Design Addendum	60	hours	$115	$6,900	
ISCO Injection (Round 2)	(assume 100% of round 1)			$273,049	Labor, equipment, chemicals, oversight
Performance Monitoring with Summary Report (Round 2)	(assume same as PM Round 1)			$16,020	
MNA Sampling	1	Event	$30,095	$30,095	See MNA Backup Cost Estimate (assume 1 MNA event in addition to ISCO Performance Monitoring)
SUBTOTAL FUTURE YEAR 1				$326,064	
Contingency	**30%**			$97,819	
TOTAL FUTURE YEAR 1				$423,883	
Future Year 2					
Remediation Design Addendum	60	hours	$115	$6,900	
ISCO Injection (Round 3)	(assume 65% of round 2)			$177,482	Labor, equipment, chemicals, oversight
Performance Monitoring with Summary Report (Round 3)	(assume same as PM Round 1)			$16,020	
MNA Sampling	1	Event	$30,095	$30,095	See MNA Backup Cost Estimate (assume 1 MNA event in addition to ISCO Performance Monitoring)
SUBTOTAL FUTURE YEAR 2				$230,497	
Contingency	**30%**			$69,149	
TOTAL FUTURE YEAR 2				$299,645	
Future Year 3 - 5 (Annual Cost)					Perform MNA Semi-Annual Sampling
Performance Monitoring with Summary Report	2	Event	$30,095	$60,190	
Contingency	**30%**			$18,057	
TOTAL FUTURE YEAR 3- 5				$78,247	
Future Year 6 - 20 (Annual Cost)					Perform MNA Annual Sampling
Performance Monitoring with Summary Report	1	Event	$30,095	$30,095	
Contingency	**30%**			$9,029	
TOTAL FUTURE YEAR 6-20				$39,124	

Assume semi-annual sampling for 5 years and annual sampling until Year 30

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	1	$423,883	1.00	$423,883	
2	1	$299,645	0.96	$286,742	
3	1	$78,247	0.92	$71,653	
4	1	$78,247	0.88	$68,568	
5	1	$78,247	0.84	$65,615	
6	1	$39,124	0.80	$31,395	
7	1	$39,124	0.77	$30,043	
8	1	$39,124	0.73	$28,749	
9	1	$39,124	0.70	$27,511	
10	1	$39,124	0.67	$26,326	
11	1	$39,124	0.64	$25,193	
12	1	$39,124	0.62	$24,108	
13	1	$39,124	0.59	$23,070	
14	1	$39,124	0.56	$22,076	
15	1	$39,124	0.54	$21,126	
16	1	$39,124	0.52	$20,216	
17	1	$39,124	0.49	$19,345	
18	1	$39,124	0.47	$18,512	
19	1	$39,124	0.45	$17,715	
20	1	$39,124	0.43	$16,952	
FUTURE COST TOTALS		$1,121,239		$844,915	

ALTERNATIVE COST SUMMARY	Total Cost	Net Present Value
Capital Cost	$757,723	$757,723
Future Costs	$1,121,239	$844,915
TOTAL	**$1,878,962**	**$1,602,637**

Focused In-Situ Chemical Oxidation with Enhanced Bioremediation (Alternative 4B)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN, PERMITTING, PILOT TEST EVALUATION					
ISCO Pilot Test	1	Lump Sum	$125,000	$125,000	Assume all costs for design, monitoring, chemicals, and injection labor and equipment
Remedial Design and PilotTest Evaluation	200	hours	$115	$23,000	
Permit Preparation	80	hours	$115	$9,200	
SUBTOTAL				**$157,200**	
DRILLING AND INJECTION WELL INSTALLATION					
Driller Mobilization/Demobilization (include Decon Pad)	1	Lump Sum	$1,500	$1,500	Assume 2 rigs mobilized
Drill Rig and Labor	39	rig-days	$1,500	$58,500	Assume direct-push rig for well installation (110'/d) plus per diem
1.5" Prepack Screens (5' length) for injection wells	443	each	$125	$55,375	180 shallow inj wells, 83 deep injection wells (4-14', 15-21') = 4,265 feet of drilling
1.5" PVC Riser and materials for injection wells	2215	LF	$8	$17,720	Riser 5' and 15' = 2525 feet; 2 x 5' screens per shallow well + 1 x 5' screen for deep well
Protective Stick Ups	263	wells	$100	$26,300	
Drums	33	drums	$75	$2,475	Assume 1 drum per 8 wells
CAMP Equipment Rental	4	week	$500	$2,000	Assume 1 PID and 1 Dust Track (Pine Environmental 12-20-11)
Soil Disposal	33	drums	$300	$9,900	
Engineering Procurement & Coordination	30	hours	$100	$3,000	
Engineering Oversight	468	hours	$100	$46,800	assume 2 staff (Geologist/Scientist 3) for oversight and CAMP; 10 hrs/day + 20% for markout, misc
Project Management	45	hours	$125	$5,625	assume 2 hours per day during field activities + 6 hours for procurement/coordination
SUBTOTAL				**$229,195**	
FOCUSED ISCO INJECTION (ROUND 1)					
ISCO Injection Subcontractor (mobilization)	1	Lump Sum	$20,000	$20,000	
ISCO Injection Subcontractor (labor)	17	days	$2,250	$38,250	Assume injection volume equal to 20% of total pore volume
ISCO Injection Subcontractor (equipment)	17	days	$2,025	$34,425	Assume injection rate of 1.6 gpm based on soil types and AECOM experience
Oxidant/Chemicals					Field injection days assumes 6 active injection points, 5.5 hrs/day injection time, and 2 days each for mob/demob
					ISCO labor, equipment, mobilization, and chemical costs based on 2011 ISOTEC quote for similar size site in VT
Persulfate	68100	pounds	$2	$116,451	
NaOH (25%)	91500	pounds	$0	$20,130	
Catalyst	0	gallons	$1	$0	
ISCO Injection Subcontractor (per diem)	17	days	$525	$8,925	Assume 3 person crew for subcontractor
Engineering Procurement & Coordination	40	hours	$100	$4,000	assume Engineer 3/4
Engineering Oversight	17	days	$1,000	$17,000	assume Geologist/Scientist 3 for oversight
Engineering Oversight	3	days	$1,150	$3,450	assume 20% for Engineer 3/4
Project Management	49.5	hours	$125	$6,188	assume 1.5 hours per day during field activities + 24 hours for procurement/coordination
Misc Oversight Materials and PPE	1	Lump Sum	$300	$300	Log book, gloves, face shield, eye wash station
Injection Oversight Rental Equipment	4	weeks	$250	$1,000	Assume no formal CAMP; assume 1 PID & 1 water level meter (Pine Environmental 12-20-11)
Rental Vehicle for Oversight	4	weeks	$175	$700	assume pick up truck or SUV (base rental and gas/mileage etc..)
Persulfate Field Test Kits	2	Each	$115	$230	FMC, 10 tests each (including shipping)
Travel Expenses	1	Allowance	$2,000	$2,000	mileage, per diem for PM and ISCO Engineer
SUBTOTAL				**$273,049**	
PERFORMANCE MONITORING (ROUND 1)					
Low Flow Sampling Rental Equipment	3	Days	$500	$1,720	Assume groundwater sampling event 6 months after injection
Sampling Staff	6	Person-Days	$950	$5,700	10 wells, assume 2 wells per person per day
Laboratory Analyses (VOC,metals @ 30% of wells)	12	Samples	$150	$1,800	2 YSI, 2 peristaltic pumps, 2 water levels, 2 Turb Meters, PID (Pine Environmental, 12-20-11)
Rental Vehicle	4	days	$75	$300	
Mileage/Misc Expenses	1	Allowance	$500	$500	
Data Evaluation and Summary Report	60	hours	$100	$6,000	assume pick up truck or SUV (base rental and gas/mileage etc..)
SUBTOTAL				**$16,020**	
CAPITAL COST SUBTOTAL				**$675,464**	
Contingency	**30%**			$202,639	
TOTAL CAPITAL COSTS				**$878,103**	

Focused In-Situ Chemical Oxidation with Enhanced Bioremediation (Alternative 4B)
Former Scott Aviation Facility - Lancaster, NY

FUTURE COSTS					
Future Year 1					
Remediation Design Addendum	60	hours	$115	$6,900	
ISCO Injection (Round 2)	(assume 100% of round 1)			$273,049	Labor, equipment, chemicals, oversight
Performance Monitoring with Summary Report (Round 2)	(assume same as PM Round 1)			$16,020	ISCO Performance Monitoring
SUBTOTAL FUTURE YEAR 1				$295,969	
Contingency	**30%**			$88,791	
TOTAL FUTURE YEAR 1				$384,759	
Future Year 2					
Remediation Design Addendum	60	hours	$115	$6,900	
ISCO Injection (Round 3)	(assume 65% of round 2)			$177,482	Labor, equipment, chemicals, oversight
<u>Enhanced Bioremediation Injection</u>					
Injection Subcontractor (mobilization)	1	Lump Sum	$20,000	$20,000	Assume injection volume equal to 20% of total pore volume
Injection Subcontractor (labor and equipment)	41	days	$3,500	$143,500	Assume injection rate of 1.5 gpm based on soil types and AECOM experience
					Field injection days assumes 6 active injection points, 5.5 hrs/day injection time, and 2 days each for mob/demob
Carbon Substrate/Chemicals					
Water Soluble Oil	21	drums	$1,200	$25,200	Chemical costs from Tersus Environmental Quote (March 2012)
Bioremediation Nutrients	21	5g pail	$225	$4,725	
Quick release carbon substrate	10.5	gallons	$1,000	$10,500	
Injection Subcontractor (per diem)	41	days	$525	$21,525	Assume 3 person crew for subcontractor
Engineering Procurement & Coordination	40	hours	$100	$4,000	assume Engineer 3/4
Engineering Oversight	41	days	$1,000	$41,000	assume Geologist/Scientist 3 for oversight
Engineering Oversight	8	days	$1,150	$9,200	assume 20% for Engineer 3/4
Project Management	24	hours	$125	$3,000	assume 1.5 hours per day during field activities + 24 hours for procurement/coordination
Misc Oversight Materials and PPE	1	Lump Sum	$300	$300	Log book, gloves, face shield, eye wash station
Injection Oversight Rental Equipment	9	weeks	$250	$2,250	Assume no formal CAMP; assume 1 PID & 1 water level meter (Pine Environmental 12-20-11)
Rental Vehicle for Oversight	9	weeks	$175	$1,575	assume pick up truck or SUV (base rental and gas/mileage etc..)
Field Test Kits/Monitoring Supplies	1	Allowance	$1,500	$1,500	
Travel Expenses	1	Allowance	$2,000	$2,000	mileage, per diem for PM and ISCO Engineer
SUBTOTAL				**$290,275**	
Bioremediation Performance Monitoring with Summary Report (Round 1)				$19,020	Same as Enhanced Bioremediation Performance Monitoring Round 1 (see Alternative 3)
SUBTOTAL FUTURE YEAR 2				$493,677	
Contingency	**30%**			$148,103	
TOTAL FUTURE YEAR 2				$641,779	
Future Year 3					
Performance Monitoring with Summary Report	2	Event	$19,020	$38,040	
SUBTOTAL FUTURE YEAR 3				$38,040	
Contingency	**30%**			$11,412	
TOTAL FUTURE YEAR 3				$49,452	
Future Year 4					
Remediation Design Addendum	60	hours	$115	$6,900	
Bioremediation Injection (Round 2)	(assume 50% of 1st bioremediation)			$145,138	Labor, equipment, chemicals, oversight
Performance Monitoring with Summary Report	2	Event	$175	$350	
SUBTOTAL FUTURE YEAR 4				$152,388	
Contingency	**30%**			$45,716	
TOTAL FUTURE YEAR 4				$198,104	
Future Year 5 - 10 (Annual Cost)					
Performance Monitoring with Summary Report	(assume same as PM Round 1)			$19,020	assume annual performance monitoring sampling
Contingency	**30%**			$5,706	
TOTAL FUTURE YEAR 5 - 10				$24,726	

Assume semi-annual sampling for 5 years and annual sampling until Year 30

Focused In-Situ Chemical Oxidation with Enhanced Bioremediation (Alternative 4B)
Former Scott Aviation Facility - Lancaster, NY

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	1	$384,759	1.00	$384,759	
2	1	$641,779	0.96	$614,143	
3	1	$49,452	0.92	$45,285	
4	1	$198,104	0.88	$173,598	
5	1	$24,726	0.84	$20,734	
6	1	$24,726	0.80	$19,841	
7	1	$24,726	0.77	$18,987	
8	1	$24,726	0.73	$18,169	
9	1	$24,726	0.70	$17,387	
10	1	$24,726	0.67	$16,638	
FUTURE COST TOTALS		$1,037,691		$944,783	

ALTERNATIVE COST SUMMARY	Total Cost	Net Present Value
Capital Cost	$878,103	$878,103
Future Costs	$1,037,691	$944,783
TOTAL	**$1,915,794**	**$1,822,885**

Monitored Natural Attenuation Cost Estimate (for Alternatives 2A and 4A)
Former Scott Aviation Facility - Lancaster, NY

DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL COST	ESTIMATE/SOURCE NOTES
CAPITAL COSTS					
ENGINEERING DESIGN AND OVERSIGHT					
MNA initial work plan/remedial action plan	100	hours	$115	$11,500	
Engineering Procurement & Coordination	30	hours	$100	$3,000	
Engineering Oversight	125	hours	$100	$12,500	assume 2 staff (Geologist/Scientist 3) for oversight and CAMP; 10 hrs/day + 25% for planning, markout and survey
Project Management	16	hours	$125	$2,000	assume 2 hours per day during field activities + 6 hours for procurement/coordination
SUBTOTAL				**$29,000**	
SUBCONTRACTORS					
Driller Mobilization/Demobilization (include Decon Pad)	1	Lump Sum	$1,500	$1,500	
Drill Rig and Labor (Auger Rig)	5	days	$1,800	$9,000	Install 5 new monitoring wells pairs (to depths of 15 and 21 feet)
PVC Well Materials (riser, screen, sand, grout, flush mount)	10	wells	$450	$4,500	Assume auger rig installs one well pair per day
CAMP Equipment Rental	1	week	$500	$500	Assume 1 PID and 1 Dust Track (Pine Environmental 12-20-11)
Soil Disposal	5	drums	$300	$1,500	
Survey New Wells and Map	1	allowance	$2,500	$2,500	
SUBTOTAL				**$19,500**	
CAPITAL COST SUBTOTAL				**$48,500**	
Contingency	**30%**			$14,550	
TOTAL CAPITAL COSTS				**$82,550**	

FUTURE COSTS					
MNA SAMPLING (1 ROUND)					
Low Flow Sampling Rental Equipment	5	Days	$500	$2,720	2 YSI, 2 peristaltic pumps, 2 water levels, 2 Turb Meters, PID (Pine Environmental, 12-20-11)
Sampling Staff	10	Person-Days	$950	$9,500	20 total wells, assume 2 wells per person per day
Laboratory Analyses	20	Samples	$550	$11,000	VOCs, metals, methane/ethane/ethene, TOC, alkalinity, sulfate, nitrate/nitrite, chloride, phosphate + 30% QA/QC, analytical costs from quotes received in 2012 by AECOM
Rental Vehicle	5	days	$75	$375	assume pick up truck or SUV (base rental and gas/mileage etc..)
Per Diem/Mileage/Misc Expenses	1	Allowance	$1,000	$1,000	
Data Evaluation and Summary Report	50	hours	$110	$5,500	
SUBTOTAL				**$30,095**	
Contingency	**30%**			$9,029	
TOTAL MNA SAMPLING EVENT				**$39,124**	

Monitored Natural Attenuation Cost Estimate (for Alternatives 2A and 4A)
Former Scott Aviation Facility - Lancaster, NY

Assume semi-annual sampling for 5 years and annual sampling until Year 30

Future Year	Events Per Year	Base Cost	NPV Discount Factor	Net Present Value	(assume Real Discount Rate of 4.5%)
1	2	$78,247	1.00	$78,247	
2	2	$78,247	0.96	$74,878	
3	2	$78,247	0.92	$71,653	
4	2	$78,247	0.88	$68,568	
5	2	$78,247	0.84	$65,615	
6	1	$39,124	0.80	$31,395	
6	1	$39,124	0.80	$31,395	
7	1	$39,124	0.77	$30,043	
8	1	$39,124	0.73	$28,749	
9	1	$39,124	0.70	$27,511	
10	1	$39,124	0.67	$26,326	
11	1	$39,124	0.64	$25,193	
12	1	$39,124	0.62	$24,108	
13	1	$39,124	0.59	$23,070	
14	1	$39,124	0.56	$22,076	
15	1	$39,124	0.54	$21,126	
16	1	$39,124	0.52	$20,216	
17	1	$39,124	0.49	$19,345	
18	1	$39,124	0.47	$18,512	
19	1	$39,124	0.45	$17,715	
20	1	$39,124	0.43	$16,952	
21	1	$39,124	0.41	$16,222	
22	1	$39,124	0.40	$15,524	
23	1	$39,124	0.38	$14,855	
24	1	$39,124	0.36	$14,216	
25	1	$39,124	0.35	$13,603	
26	1	$39,124	0.33	$13,018	
27	1	$39,124	0.32	$12,457	
28	1	$39,124	0.30	$11,921	
29	1	$39,124	0.29	$11,407	
30	1	$39,124	0.28	$10,916	
FUTURE COST TOTALS		$1,330,199		$798,584	

AECOM

TABLES

Table 1
Groundwater Elevation Data
Scott Aviation BCP Site

Monitoring Point Identification	Top of Casing Elevation	June 16, 2010		August 2, 2010		October 21, 2010		April 7, 2011		June 1, 2011	
		Depth to Groundwater (feet from TOC)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet from TOC)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet from TOC)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet from TOC)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet from TOC)	Groundwater Elevation (feet AMSL)
Monitoring Wells											
MW-30[1]	689.69	2.92	686.77	3.71	685.98	NA	NA	NA	NA	NA	NA
MW-35S	688.56	1.84	686.72	5.70	682.86	10.23	678.33	0.40	688.16	0.60	687.96
MW-35D	688.40	8.00	680.40	7.77	680.63	9.17	679.23	9.85	678.55	5.08	683.32
MW-36S	689.82	3.00	686.82	5.25	684.57	4.99	684.83	2.83	686.99	3.01	686.81
MW-36D	689.66	5.30	684.36	6.08	683.58	7.35	682.31	5.83	683.83	4.65	685.01
MW-37S	690.10	3.50	686.60	5.25	684.85	6.16	683.94	2.86	687.24	3.21	686.89
MW-37D	690.05	4.20	685.85	5.30	684.75	6.35	683.70	4.31	685.74	3.80	686.25
MW-38D	689.66	5.70	683.96	6.28	683.38	7.46	682.20	6.00	683.66	4.81	684.85
MW-39D	689.72	3.85	685.87	4.94	684.78	6.05	683.67	3.98	685.74	3.50	686.22
MW-40D	689.19	3.33	685.86	4.34	684.85	5.26	683.93	3.38	685.81	2.84	686.35
MW-41B	689.78	9.20	680.58	9.50	684.85	10.28	683.93	9.63	680.15	6.96	682.82
MW-42S	689.08	NA	NA	NA	NA	NA	NA	10.90	678.18	1.15	687.93
MW-43S	689.13	NA	NA	NA	NA	NA	NA	2.60	686.53	2.65	686.48
MW-44S	688.96	NA	NA	NA	NA	NA	NA	NA	NA	4.15	684.81
Piezometers											
A1-GP01-S	689.96	NA	NA	5.55	684.41	6.20	683.76	1.95	688.01	2.98	686.98
A1-GP02-S	689.82	3.05	686.77	5.30	684.52	5.50	684.32	3.20	686.62	3.53	686.29
A1-GP03-S	690.70	4.38	686.32	6.54	684.16	7.59	683.11	4.78	685.92	5.10	685.60
A1-GP04-S	690.46	3.61	686.85	6.12	684.34	8.80	681.66	3.80	686.66	3.80	686.66
A1-GP05-S	690.38	4.80	685.58	6.36	684.02	7.40	682.98	4.55	685.83	4.75	685.63
A1-GP06-S	687.71	3.40	684.31	3.20	684.51	3.92	683.79	2.23	685.48	2.10	685.61
A1-GP07-S	690.47	3.70	686.77	6.20	684.27	6.86	683.61	3.95	686.52	4.20	686.27
A1-GP08-S	689.68	2.75	686.93	5.04	684.64	5.80	683.88	2.70	686.98	2.87	686.81
A1-GP09-S	689.36	2.45	686.91	5.80	683.56	7.80	681.56	2.37	686.99	2.55	686.81
A1-GP10-S	689.10	1.27	687.83	3.92	685.18	2.40	686.70	2.03	687.07	2.55	686.55
A1-GP11-S	689.34	4.04	685.30	4.50	684.84	4.70	684.64	4.25	685.09	4.10	685.24
A1-GP12-S	689.5	2.28	687.22	2.98	686.52	3.32	686.18	2.77	686.73	2.78	686.72
A1-GP13-S	689.69	1.34	688.35	3.55	686.14	4.56	685.13	3.25	686.44	3.10	686.59
A1-GP14-S	689.43	1.50	687.93	3.04	686.39	2.20	687.23	1.75	687.68	2.60	686.83
A1-GP15-S	687.69	0.54	687.15	4.40	683.29	7.64	680.05	0.10	687.59	1.20	686.49
A1-GP16-S	689.86	3.00	686.86	5.21	684.65	5.80	684.06	2.89	686.97	3.00	686.86
A1-GP17-S	690.11	3.16	686.95	6.40	683.71	5.82	684.29	3.12	686.99	3.28	686.83
A1-GP18-S	690.37	6.90	683.47	5.25	685.12	5.25	685.12	3.90	686.47	3.70	686.67

Notes:
1. Well is screened across both shallow and deep overburden units.
TOC - Top of Casing
AMSL - Above Mean Sea Level
NA - Not Available
S - well is screened in shallow overburden
D - well is screened in deep overburden
B - well is screened in bedrock

Table 2
Surface Soil VOC Results
Scott Aviation BCP Site

Sample Designation	CAS Number	Unrestricted Use	Protection of Public Health	SS-MW-41B2-0-0.2		SS-MW-40D-0-0.2		SS-MW-38D-0-0.2		SS-DPT8-2C-(0-0.2)	
Laboratory Identification				RTE1487-05		RTE1487-06		RTE1487-07		RTF0541-01	
Date Sampled			Commercial Use	5/27/2010		5/27/2010		5/27/2010		6/2/2010	
BTEX Compounds (mg/Kg)											
Benzene	71-43-2	0.06	44	0.00046	UJ	0.00029	U	0.00032	U	0.00028	U
Ethylbenzene	100-41-4	1	390	0.00065	UJ	0.00041	U	0.00045	U	0.00039	U
Toluene	108-88-3	0.7	500	0.00071	UJ	0.00044	U	0.00049	U	0.00043	U
Xylene (mixed)	1330-20-7	0.26	500	0.0016	UJ	0.00099	U	0.0011	U	0.00095	U
Total BTEX (mg/Kg)	NA	NL	NL	---	U	---	U	---	U	---	U
Other VOCs (mg/Kg)											
1,1,1-Trichloroethane	71-55-6	0.68	500	0.00068	UJ	0.00043	U	0.00047	U	0.00041	U
1,1,2,2-Tetrachloroethane	79-34-5	NL	NL	0.0015	UJ	0.00095	U	0.0011	U	0.00092	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	NL	NL	0.0021	UJ	0.0013	U	0.0015	U	0.0013	U
1,1,2-Trichloroethane	79-00-5	NL	NL	0.0012	UJ	0.00076	U	0.00085	U	0.00073	U
1,1-Dichloroethane	75-34-3	0.27	240	0.0011	UJ	0.00072	U	0.00079	U	0.00069	U
1,1-Dichloroethene	75-35-4	0.33	500	0.0012	UJ	0.00072	U	0.0008	U	0.00069	U
1,2,4-trichlorobenzene	120-82-1	NL	NL	0.00057	UJ	0.00036	U	0.0004	U	0.00034	U
1,2-Dibromo-3-chloropropane	96-12-8	NL	NL	0.0047	UJ	0.0029	U	0.0033	U	0.0028	U
1,2-Dibromoethane	106-93-4	NL	NL	0.0012	UJ	0.00076	U	0.00084	U	0.00073	U
1,2-Dichlorobenzene	95-50-1	1.1	500	0.00074	UJ	0.00046	U	0.00051	U	0.00044	U
1,2-Dichloroethane	107-06-2	0.02	30	0.00047	UJ	0.0003	U	0.00033	U	0.00028	U
1-3 dichloropropane	78-87-5	NL	NL	0.0047	UJ	0.0029	U	0.0033	U	0.0028	U
1,3-Dichlorobenzene	541-73-1	2.4	280	0.00048	UJ	0.0003	U	0.00033	U	0.00029	U
1,4-Dichlorobenzene	106-46-7	1.8	130	0.0013	UJ	0.00082	U	0.00091	U	0.00079	U
Methyl ethyl ketone	78-93-3	0.12	500	0.0034	UJ	0.0022	U	0.0024	U	0.0021	U
2-Hexanone	591-78-6	NL	NL	0.0047	UJ	0.0029	U	0.0033	U	0.0028	U
4-Methyl-2-Pentanone	108-10-1	NL	NL	0.0031	UJ	0.0019	U	0.0021	U	0.0019	U
Acetone	67-64-1	0.05	500	0.0079	UJ	0.005	U	0.0055	U	0.0048	U
Bromodichloromethane	75-27-4	NL	NL	0.0013	UJ	0.00079	U	0.00087	U	0.00076	U
Bromoform	75-25-2	NL	NL	0.0047	UJ	0.0029	U	0.0033	U	0.0028	U
Bromomethane	74-83-9	NL	NL	0.00085	UJ	0.00053	U	0.00059	U	0.00051	U
Carbon Disulfide	75-15-0	NL	NL	0.0047	UJ	0.0029	U	0.0033	U	0.0028	U
Carbon tetrachloride	56-23-5	0.76	22	0.00091	UJ	0.00057	U	0.00063	U	0.00055	U
Chlorobenzene	108-90-7	1.1	500	0.0012	UJ	0.00078	U	0.00086	U	0.00075	U
Chloroethane	75-00-3	NL	NL	0.0021	UJ	0.0013	U	0.0015	U	0.0013	U
Chloroform	67-66-3	0.37	350	0.00058	UJ	0.00036	U	0.0004	U	0.00035	U
Chloromethane	74-87-3	NL	NL	0.00057	UJ	0.00036	U	0.00039	U	0.00034	U
cis -1,2-Dichloroethene	156-59-2	0.25	500	0.0012	UJ	0.00075	U	0.00083	U	0.00072	U
cis-1,3-Dichloropropene	10061-01-5	NL	NL	0.0014	UJ	0.00085	U	0.00094	U	0.00081	U
Cyclohexane	110-82-7	NL	NL	0.0013	UJ	0.00082	U	0.00091	U	0.00079	U
Dibromochloromethane	124-48-1	NL	NL	0.0012	UJ	0.00075	U	0.00083	U	0.00072	U
Dichlorodifluoromethane	75-71-8	NL	NL	0.00078	UJ	0.00049	U	0.00054	U	0.00047	U
Isopropylbenzene	98-82-8	NL	NL	0.0014	UJ	0.00089	U	0.00098	U	0.00085	U
Methyl acetate	79-20-9	NL	NL	0.0018	UJ	0.0011	U	0.0012	U	0.0011	U
Methyl tert-butyl ether	1634-04-4	0.93	500	0.00093	UJ	0.00058	U	0.00064	U	0.00055	U
Methylcyclohexane	108-87-2	NL	NL	0.0014	UJ	0.00089	U	0.00099	U	0.00086	U
Methylene chloride	75-09-2	0.05	500	0.013	UJ	0.0027	U	0.0065	U	0.019	U
Styrene	100-42-5	NL	NL	0.00047	UJ	0.00029	U	0.00033	U	0.00028	U
Tetrachloroethene	127-18-4	1.3	150	0.0094	UJ	0.0059	U	0.0065	U	0.00076	U
trans-1,2-Dichloroethene	156-60-5	0.19	500	0.00097	UJ	0.00061	U	0.00067	U	0.00058	U
trans-1,3-Dichloropropene	10061-02-6	NL	NL	0.0041	UJ	0.0026	U	0.0029	U	0.0025	U
Trichloroethene	79-01-6	0.47	200	0.0021	UJ	0.0013	U	0.0014	U	0.0012	U
Trichlorofluoromethane	75-69-4	NL	NL	0.00089	UJ	0.00056	U	0.00062	U	0.00053	U
Vinyl chloride	75-01-4	0.02	13	0.0011	UJ	0.00072	U	0.00079	U	0.00069	U
Total VOCs (mg/Kg) (Note 1)	NA	NL	NL	---	U	---	U	---	U	---	U

Notes:

NL = Not Listed

NA = Not analyzed, not applicable.

U = The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.

Bold value - compound detected at concentration greater than the Unrestricted Use SCO concentration.

Shaded value - compound detected at concentration greater than the Commercial SCO concentration.

Note 1 - Total VOCs includes BTEX compounds.

NYSDEC Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.

Table 3
Surface Soil SVOC Results
Scott Aviation BCP Site

Sample Designation / Laboratory Identification / Date Sampled	CAS Number	Unrestricted Use	Protection of Public Health Commercial Use	SS-MW-35S-0-0.2 RTE1487-01 5/26/2010		SS-MW-41B2-0-0.2 RTE1487-05 5/27/2010		SS-MW-40D-0-0.2 RTE1487-06 5/27/2010		SS-MW-38D-0-0.2 RTE1487-07 5/27/2010		SS-DPT8-2C-(0-0.2) RTF0541-01 6/2/2010	
PAH Compounds (mg/Kg)													
2-Methylnaphthalene	91-57-6	NL	NL	0.003	U	0.02	UJ	0.012	U	0.0027	U	0.047	U
Acenaphthene	83-32-9	20	500	0.003	U	0.39	J	0.14	J	0.021	J	0.21	J
Acenaphthylene	208-96-8	100	500	0.027	J	0.014	UJ	0.096	J	0.0018	U	0.031	U
Anthracene	120-12-7	100	500	0.06	J	1	J	0.44	J	0.055	J	0.53	J
Benzo(a)anthracene	56-55-3	1	5.6	0.24	J	**3.3**	**J**	**1.6**		0.24		**2.4**	**J**
Benzo(a)pyrene	50-32-8	1	1	0.24	J	**3.7**	**J**	**1.8**		0.27		**2.5**	**J**
Benzo(b)fluoranthene	205-99-2	1	5.6	0.28		**4.6**	**J**	**1.9**		0.3		**2.9**	**J**
Benzo(ghi)perylene	191-24-2	100	500	0.16	J	2.7	J	1.2		0.19	J	1.7	J
Benzo(k)fluoranthene	207-08-9	0.8	56	0.1	J	1.3	J	0.81	J	0.14	J	1.2	J
Chrysene	218-01-9	1	56	0.23	J	**3.4**	**J**	**1.6**		0.26		**2.2**	**J**
Dibenz(a,h)anthracene	53-70-3	0.33	0.56	0.036	J	**0.58**	**J**	0.29	J	0.042	J	0.4	J
Fluoranthene	206-44-0	100	500	0.51		7.6	J	3.2		0.52		4.7	
Fluorene	86-73-7	30	500	0.0058	U	0.42	J	0.17	J	0.022	J	0.17	J
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	5.6	0.14	J	**2.2**	**J**	**1.1**		0.16	J	1.4	J
Naphthalene	91-20-3	12	500	0.0042	U	0.028	UJ	0.016	U	0.0037	U	0.064	U
Phenanthrene	85-01-8	100	500	0.27		4.7	J	1.7		0.27		2.8	J
Pyrene	129-00-0	100	500	0.4		6	J	2.5		0.41		4.2	
Total PAHs (mg/Kg)	NA	NL	NL	2.693		41.89		18.546		2.9		27.31	
Other SVOCs (mg/Kg)													
1,1'-Biphenyl	92-52-4	NL	NL	0.016	U	0.1	UJ	0.062	U	0.014	U	0.24	U
2,2'-oxybis(1-Chloropropane)	108-60-1	NL	NL	0.026	U	0.17	UJ	0.1	U	0.023	U	0.4	U
2,4,5-Trichlorophenol	95-95-4	NL	NL	0.055	U	0.36	UJ	0.22	U	0.049	U	0.84	U
2,4,6-Trichlorophenol	88-06-2	NL	NL	0.017	U	0.11	UJ	0.065	U	0.015	U	0.25	U
2,4-Dichlorophenol	120-83-2	NL	NL	0.013	U	0.087	UJ	0.052	U	0.012	U	0.2	U
2,4-Dimethylphenol	105-67-9	NL	NL	0.068	U	0.45	UJ	0.27	U	0.06	U	1	U
2,4-Dinitrophenol	51-28-5	NL	NL	0.088	U	0.58	UJ	0.35	U	0.078	U	1.3	U
2,4-Dinitrotoluene	121-14-2	NL	NL	0.039	U	0.26	UJ	0.15	U	0.035	U	0.6	U
2,6-Dinitrotoluene	606-20-2	NL	NL	0.062	U	0.41	UJ	0.24	U	0.055	U	0.94	U
2-Chloronaphthalene	91-58-7	NL	NL	0.017	U	0.11	UJ	0.066	U	0.015	U	0.26	U
2-Chlorophenol	95-57-8	NL	NL	0.013	U	0.085	UJ	0.05	U	0.011	U	0.2	U
2-Methylphenol (o-cresol)	95-48-7	0.33	500	0.0077	U	0.051	UJ	0.03	U	0.0069	U	0.12	U
2-Nitroaniline	88-74-4	NL	NL	0.081	U	0.53	UJ	0.32	U	0.072	U	1.2	U
2-Nitrophenol	88-75-5	NL	NL	0.011	U	0.076	UJ	0.045	U	0.01	U	0.18	U
3,3'-Dichlorobenzidine	91-94-1	NL	NL	0.22	U	1.5	UJ	0.87	U	0.2	U	3.4	U
3-Nitroaniline	99-09-2	NL	NL	0.058	U	0.38	UJ	0.23	U	0.051	U	0.88	U
4,6-Dinitro-2-methylphenol	534-52-1	NL	NL	0.087	U	0.58	UJ	0.34	U	0.077	U	1.3	U
4-Bromophenyl phenyl ether	101-55-3	NL	NL	0.08	U	0.53	UJ	0.32	U	0.071	U	1.2	U
4-Chloro-3-methylphenol	59-50-7	NL	NL	0.01	U	0.069	UJ	0.041	U	0.0092	U	0.16	U
4-Chloroaniline	106-47-8	NL	NL	0.074	U	0.49	UJ	0.29	U	0.065	U	1.1	U
4-Chlorophenyl phenyl ether	7005-72-3	NL	NL	0.0054	U	0.036	UJ	0.021	U	0.0048	U	0.082	U
4-Methylphenol (p-cresol)	106-44-5	0.33	500	0.014	U	0.093	UJ	0.055	U	0.012	U	0.21	U
4-Nitroaniline	100-01-6	NL	NL	0.028	U	0.19	UJ	0.11	U	0.025	U	0.43	U
4-Nitrophenol	100-02-7	NL	NL	0.061	U	0.4	UJ	0.24	U	0.054	U	0.93	U
Acetophenone	98-86-2	NL	NL	0.013	U	0.086	UJ	0.051	U	0.011	U	0.2	U
Atrazine	1912-24-9	NL	NL	0.011	U	0.074	UJ	0.044	U	0.0099	U	0.17	U
Benzaldehyde	100-52-7	NL	NL	0.028	U	0.18	UJ	0.11	U	0.024	U	0.42	U
bis(2-Chloroethoxy)methane	111-91-1	NL	NL	0.014	U	0.091	UJ	0.054	U	0.012	U	0.21	U
bis(2-Chloroethyl) ether	111-44-4	NL	NL	0.022	U	0.14	UJ	0.085	U	0.019	U	0.33	U
bis(2-Ethylhexyl) phthalate	117-81-7	NL	NL	0.081	U	0.54	UJ	0.32	U	0.072	U	1.2	U
Butyl benzyl phthalate	85-68-7	NL	NL	0.068	U	0.45	UJ	0.27	U	0.06	U	1	U
Caprolactam	105-60-2	NL	NL	0.11	U	0.72	UJ	0.43	U	0.096	U	1.7	U
Carbazole	86-74-8	NL	NL	0.019	J	0.7	J	0.25	J	0.038	J	0.32	J
Dibenzofuran	132-64-9	7	350	0.0026	U	0.19	J	0.01	U	0.0023	U	0.04	U
Diethyl phthalate	131-11-3	NL	NL	0.0076	U	0.05	UJ	0.03	U	0.0067	U	0.12	U
Dimethyl phthalate	84-66-2	NL	NL	0.0066	U	0.043	UJ	0.026	U	0.0058	U	0.1	U
Di-n-butyl phthalate	84-74-2	NL	NL	0.087	U	0.58	UJ	0.34	U	0.077	U	1.3	U
Di-n-octyl phthalate	117-84-0	NL	NL	0.0059	U	0.039	UJ	0.023	U	0.0052	U	0.09	U
Hexachlorobenzene	118-74-1	0.33	6	0.012	U	0.083	UJ	0.049	U	0.011	U	0.19	U
Hexachlorobutadiene	87-68-3	NL	NL	0.013	U	0.085	UJ	0.051	U	0.011	U	0.2	U
Hexachlorocyclopentadiene	77-47-4	NL	NL	0.076	U	0.5	UJ	0.3	U	0.067	U	1.2	U
Hexachloroethane	67-72-1	NL	NL	0.019	U	0.13	UJ	0.077	U	0.017	U	0.3	U
Isophorone	78-59-1	NL	NL	0.013	U	0.083	UJ	0.049	U	0.011	U	0.19	U
Nitrobenzene	98-95-3	NL	NL	0.011	U	0.074	UJ	0.044	U	0.0099	U	0.17	U
N-Nitrosodi-n-propylamine	621-64-7	NL	NL	0.02	U	0.13	UJ	0.078	U	0.018	U	0.3	U
N-Nitrosodiphenylamine	86-30-6	NL	NL	0.014	U	0.091	UJ	0.054	U	0.012	U	0.21	U
Pentachlorophenol	87-86-5	0.8	6.7	0.086	U	0.57	UJ	0.34	U	0.077	U	1.3	U
Phenol	108-95-2	0.33	500	0.026	U	0.18	UJ	0.1	U	0.023	U	0.4	U
Total SVOCs (mg/Kg) (Note 1)	**NA**	NL	NL	2.712		42.78		18.796		2.938		27.63	

Notes:
NL = Not Listed
NA = Not analyzed, not applicable.
U = The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the Unrestricterd Use SCO concentration.
Shaded value - compound detected at concentration greater than the Commercial SCO concentration.
NYSDEC Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.
(Note 1) - Total SVOCs includes all of the PAH and SVOC compounds.

Table 4
Surface Soil Metals Results
Scott Aviation BCP Site

Sample Designation Laboratory Identification Date Sampled	CAS Number	Unrestricted Use	Protection of Public Health Commercial Use	SS-MW-35S-0-0.2 RTE1487-01 5/26/2010		SS-MW-41B2-0-0.2 RTE1487-05 5/27/2010		SS-MW-40D-0-0.2 RTE1487-06 5/27/2010		SS-MW-38D-0-0.2 RTE1487-07 5/27/2010		SS-DPT8-2C-(0-0.2) RTF0541-01 6/2/2010	
Aluminum	7429-90-5	NL	NL	12600		20900	J	9280		13500		5570	
Antimony	7440-36-0	NL	NL	21.9	UJ	28.3	UJ	17.2	UJ	19.5	UJ	18.4	U
Arsenic	7440-38-2	13	16	6.5		12	J	3.5		5.5		4.7	
Barium	7440-39-3	350	400	48.7		142	J	66.7		81.1		112	
Beryllium	7440-41-7	7.2	590	0.601		0.776	J	0.356		0.495		0.487	
Cadmium	7440-43-9	2.5	9.3	0.293	U	**19.9**	**J**	1.33		1.77		**23.5**	
Calcium	7440-70-2	NL	NL	2670		21800	J	9220		11500		160000	D08
Chromium	7440-47-3	30[c]	1500	14.6		**322**	**J**	**38.8**		**50.1**		**575**	
Cobalt	7440-48-4	NL	NL	6.01		12.2	J	5.26		7.56		3.92	
Copper	7440-50-8	50	270	15.1		**123**	J	43.1		38		**147**	
Iron	7439-89-6	NL	NL	17100		34500	J	13900		20700		16200	
Lead	7439-92-1	63	1,000	37.9		305	J	81.3		58.6		**768**	
Magnesium	7439-95-4	NL	NL	2180		8050	J	4940		5780		14700	
Manganese	7439-96-5	1,600	10,000	152	J	607	J	309	J	366	J	370	
Total Mercury	7439-97-6	0.18	2.8	0.0615		**0.569**	**J**	0.0861		0.0243	U	0.113	
Nickel	7440-02-0	30	310	15.3		**83.9**	**J**	14.5		20.8		**621**	
Potassium	7440-09-7	NL	NL	827		2490	J	920		1410		498	
Selenium	7782-49-2	3.9	1,500	5.9	U	7.5	UJ	4.6	U	5.2	U	4.9	U
Silver	7440-22-4	2	1,500	0.731	U	1.36	J	0.575	U	0.648	U	NA	
Sodium	7440-23-5	NL	NL	205	U	264	UJ	161	U	182	U	206	
Thallium	7440-28-0	NL	NL	8.8	U	11.3	UJ	6.9	U	7.8	U	7.4	U
Vanadium	7440-62-2	NL	NL	21.7		34.7	J	15.8		22.5		11.8	
Zinc	7440-66-6	109	10,000	73.2		**646**	**J**	**221**		**159**		**448**	

Notes:
NL = Not Listed
NA = Not analyzed
U = The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
D08 =
Bold value - compound detected at concentration greater than Unrestricted Use SCO.
Shaded value - compound detected at concentration greater than the Commercial SCO.
NYSDEC Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.

Table 5
Surface Soil PCBs and Pesticides Results
Scott Aviation BCP Site

Sample Designation / Laboratory Identification / Date Sampled	CAS Number	Unrestricted Use	Protection of Public Health Commercial	SS-MW-35S-0-0.2 RTE1487-01 5/26/2010		SS-MW-41B2-0-0.2 RTE1487-05 5/27/2010		SS-MW-40D-0-0.2 RTE1487-06 5/27/2010		SS-MW-38D-0-0.2 RTE1487-07 5/27/2010		SS-DPT8-2C-(0-0.2) RTF0541-01 6/2/2010	
Organochlorine Pesticides (mg/Kg)													
Aldrin	309-00-2	0.005	0.68	0.0006	U	0.0082	UJ	0.00095	U	0.0053	U	0.0047	U
alpha-BHC	319-84-6	0.02	3.4	0.00044	U	0.006	UJ	0.0007	U	0.0039	U	0.0034	U
beta-BHC	319-85-7	0.036	3	0.00026	U	0.0036	UJ	0.00042	U	0.0023	U	0.0021	U
delta-BHC	319-86-8	0.04	500	0.00032	U	0.0044	UJ	0.0018	J	0.0028	U	0.0025	U
Chlordane (alpha)	5103-71-9	0.094	24	0.0012	U	0.017	UJ	0.0019	U	0.011	U	0.0095	U
Chlordane	NL	NL	NL	0.0054	U	0.074	UJ	0.0086	U	0.048	U	0.042	U
4,4'-DDD	72-54-8	0.0033	92	0.00048	U	0.0065	UJ	0.0016	J	0.0042	U	0.0037	U
4,4'-DDE	72-55-9	0.0033	62	0.00037	U	0.005	UJ	0.00058	U	0.0032	U	0.0029	U
4,4'-DDT	50-29-3	0.0033	47	0.0014	J	0.0034	UJ	0.00039	U	0.0022	U	0.009	J
Dieldrin	60-57-1	0.005	1.4	0.00059	U	0.008	UJ	0.00093	U	0.0052	U	0.0046	U
Endosulfan I	959-98-8	2.4	200	0.00031	U	0.0042	UJ	0.0039	U	0.0027	U	0.0024	U
Endosulfan II	33213-65-9	2.4	200	0.00044	U	0.006	UJ	0.0007	U	0.0039	U	0.0034	U
Endosulfan sulfate	1031-07-8	2.4	200	0.00046	U	0.0062	UJ	0.00072	U	0.004	U	0.0035	U
Endrin	72-20-8	0.014	89	0.00034	U	0.034	UJ	0.00053	U	0.003	U	0.0026	U
Endrin aldehyde		NL	NL	0.00063	U	0.0086	UJ	0.00099	U	0.0055	U	0.0049	U
Endrin keytone	NL	NL	NL	0.0006	U	0.0082	UJ	0.00095	U	0.0053	U	0.0047	U
gamma-BHC (Lindane)	58-89-9	0.1	9.2	0.00043	U	0.0058	UJ	0.00067	U	0.0037	U	0.0033	U
gamma-Chlordane	NL	NL	NL	0.00078	U	0.011	UJ	0.0012	U	0.0068	U	0.006	U
Heptachlor	76-44-8	0.042	15	0.00038	U	0.0052	UJ	0.0006	U	0.0034	U	0.003	U
Heptachlor epoxide	NL	NL	NL	0.00063	U	0.0086	UJ	0.001	U	0.0056	U	0.0049	U
Methoxychlor	NL	NL	NL	0.00034	U	0.0046	UJ	0.00053	U	0.003	U	0.0026	U
Toxaphene	NL	NL	NL	0.014	U	0.19	UJ	0.022	U	0.13	U	0.11	U
PCBs (mg/Kg)													
Aroclor 1016	12674-11-2	NL	NL	0.0048	U	0.033	UJ	0.0038	U	0.0042	U	0.0037	U
Aroclor 1221	11104-28-2	NL	NL	0.0048	U	0.033	UJ	0.0038	U	0.0042	U	0.0037	U
Aroclor 1232	11141-16-5	NL	NL	0.0048	U	0.033	UJ	0.0038	U	0.0042	U	0.0037	U
Aroclor 1242	53469-21-9	NL	NL	0.0053	U	0.036	UJ	0.0042	U	0.0047	U	0.0041	U
Aroclor 1248	12672-29-6	NL	NL	0.0048	U	0.033	UJ	0.0038	U	0.0042	U	0.0037	U
Aroclor 1254	11097-69-1	NL	NL	0.0052	U	0.11	J	0.021	J	0.034		0.004	U
Aroclor 1260	11096-82-5	NL	NL	0.011	U	0.15	J	0.034	J	0.01	U	0.038	J
Total PCBs (mg/Kg)	NA	0.1	1	---	U	**0.26**		0.055		0.034		0.038	

Notes:
NL = Not Listed
NA = Not analyzed
U = The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than Unrestricted Use.
Shaded value - compound detected at concentration greater than the Commercial SCO.
NYSDEC Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.

Table 6
Subsurface Soil VOC Results
Scott Aviation BCP Site

Sample Designation Laboratory Identification Date Sampled	CAS Number	Unrestricted Use	Protection of Public Health Commercial Use	SS-MW-35S-6-7 RTE1487-02 5/26/2010	SS-DUPLICATE-1 RTE1487-03 5/26/2010	SS-DPT8-1A-(0-2) RTF0541-02 6/2/2010	SS-DPT8-1B-(2-4) RTF0541-03 6/2/2010	SS-DPT8-2A-(0-2) RTF0541-04 6/2/2010	SS-DPT8-2B-(2-4) RTF0541-05 6/2/2010	SS-DPT8-3B-(6-8) RTF0541-06 6/2/2010	SS-DPT8-3A-(0-2) RTF0541-07 6/2/2010	SS-MW-36D-(8-9) RTF0542-02 6/4/2010
BTEX Compounds (mg/Kg)												
Benzene	71-43-2	0.06	44	0.0003 U	0.00034 U	0.00033 U	0.00029 U	0.0022 U	0.0012 U	0.00029 U	0.0003 U	0.00029 U
Ethylbenzene	100-41-4	1	390	0.00042 U	0.00048 U	0.00046 U	0.019	0.0031 U	0.0017 U	0.00041 U	0.00043 U	0.0004 U
Toluene	108-88-3	0.7	500	0.00046 U	0.00052 U	0.0067 U	0.006 U	0.048 J	0.041 J	0.0059 U	0.0062 U	0.0058 U
Xylene (mixed)	1330-20-7	0.26	500	0.001 U	0.0012 U	0.0035 J	0.0063 J	0.064 J	0.0042 U	0.00099 U	0.0063 J	0.00098 U
Total BTEX (mg/Kg)	NA	NL	NL	--- U	--- U	0.0035	0.0253	0.112	0.041	--- U	0.0063	--- U
Other VOCs (mg/Kg)												
1,1,1-Trichloroethane	71-55-6	0.68	500	0.00044 U	0.0005 U	0.00049 U	0.00043 U	0.0032 U	0.0018 U	0.00043 U	0.00045 U	0.00042 U
1,1,2,2-Tetrachloroethane	79-34-5	NL	NL	0.00098 U	0.0011 U	0.0011 U	0.00097 U	0.0072 U	0.0041 U	0.00095 U	0.001 U	0.00095 U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	NL	NL	0.0014 U	0.0016 U	0.0015 U	0.0014 U	0.01 U	0.0057 U	0.0013 U	0.0014 U	0.0013 U
1,1,2-Trichloroethane	79-00-5	NL	NL	0.00079 U	0.0009 U	0.00088 U	0.00077 U	0.0058 U	0.0033 U	0.00077 U	0.00081 U	0.00076 U
1,1-Dichloroethane	75-34-3	0.27	240	0.00074 U	0.00084 U	0.013	0.052	0.0054 U	0.0031 U	0.00072 U	0.00076 U	0.00071 U
1,1-Dichloroethene	75-35-4	0.33	500	0.00074 U	0.00085 U	0.00082 U	0.00073 U	0.0054 U	0.0031 U	0.00072 U	0.00076 U	0.00071 U
1,2,4-trichlorobenzene	120-82-1	NL	NL	0.00037 U	0.00042 U	0.00041 U	0.00036 U	0.0027 U	0.0015 U	0.00036 U	0.00038 U	0.00035 U
1,2-Dibromo-3-chloropropane	96-12-8	NL	NL	0.003 U	0.0035 U	0.0034 U	0.003 U	0.022 U	0.013 U	0.0029 U	0.0031 U	0.0029 U
1,2-Dibromoethane	106-93-4	NL	NL	0.00078 U	0.00089 U	0.00086 U	0.00076 U	0.0057 U	0.0032 U	0.00076 U	0.0008 U	0.00075 U
1,2-Dichlorobenzene	95-50-1	1.1	500	0.00047 U	0.00054 U	0.00053 U	0.00047 U	0.0035 U	0.002 U	0.00046 U	0.00049 U	0.00046 U
1,2-Dichloroethane	107-06-2	0.02	30	0.0003 U	0.00035 U	0.0032 J	0.0003 U	0.0022 U	0.0013 U	0.0003 U	0.00031 U	0.00029 U
1-3 dichloropropane	78-87-5	NL	NL	0.003 U	0.0035 U	0.0034 U	0.003 U	0.022 U	0.013 U	0.0029 U	0.0031 U	0.0029 U
1,3-Dichlorobenzene	541-73-1	2.4	280	0.00031 U	0.00036 U	0.00035 U	0.00031 U	0.0023 U	0.0013 U	0.0003 U	0.00032 U	0.0003 U
1,4-Dichlorobenzene	106-46-7	1.8	130	0.00085 U	0.00097 U	0.00094 U	0.00083 U	0.0062 U	0.0035 U	0.00082 U	0.00087 U	0.00082 U
Methyl ethyl ketone	78-93-3	0.12	500	0.0022 U	0.0025 U	0.0044 J	0.004 J	0.03 J	0.0092 U	0.0022 U	0.0056 J	0.0021 U
2-Hexanone	591-78-6	NL	NL	0.003 U	0.0035 U	0.0034 U	0.003 U	0.022 U	0.013 U	0.0029 U	0.0031 U	0.0029 U
4-Methyl-2-Pentanone	108-10-1	NL	NL	0.002 U	0.0023 U	0.0022 U	0.002 U	0.015 U	0.0082 U	0.0019 U	0.002 U	0.0019 U
Acetone	67-64-1	0.05	500	0.0051 U	0.0058 U	0.034 U	0.04 U	**3.8**	**3**	0.029 U	0.042 U	0.029 U
Bromodichloromethane	75-27-4	NL	NL	0.00081 U	0.00093 U	0.0009 U	0.0008 U	0.0059 U	0.0034 U	0.00079 U	0.00083 U	0.00078 U
Bromoform	75-25-2	NL	NL	0.003 U	0.0035 U	0.0034 U	0.003 U	0.022 U	0.013 U	0.0029 U	0.0031 U	0.0029 U
Bromomethane	74-83-9	NL	NL	0.00054 U	0.00062 U	0.00061 U	0.00054 U	0.004 U	0.0023 U	0.00053 U	0.00056 U	0.00053 U
Carbon Disulfide	75-15-0	NL	NL	0.003 U	0.0035 U	0.0034 U	0.003 U	0.022 U	0.013 U	0.0029 U	0.0031 U	0.0029 U
Carbon tetrachloride	56-23-5	0.76	22	0.00058 U	0.00067 U	0.00065 U	0.00058 U	0.0043 U	0.0024 U	0.00057 U	0.0006 U	0.00056 U
Chlorobenzene	108-90-7	1.1	500	0.0008 U	0.00091 U	0.00089 U	0.00079 U	0.0059 U	0.0033 U	0.00078 U	0.00082 U	0.00077 U
Chloroethane	75-00-3	NL	NL	0.0014 U	0.0016 U	0.0034 J	0.0098	0.01 U	0.0057 U	0.0013 U	0.0014 U	0.0013 U
Chloroform	67-66-3	0.37	350	0.00037 U	0.00043 U	0.00042 U	0.00037 U	0.0027 U	0.0015 U	0.00036 U	0.00038 U	0.00036 U
Chloromethane	74-87-3	NL	NL	0.00036 U	0.00042 U	0.00041 U	0.00036 U	0.0027 U	0.0015 U	0.00036 U	0.00037 U	0.00035 U
cis -1,2-Dichloroethene	156-59-2	0.25	500	0.00077 U	0.00088 U	0.00086 U	0.00076 U	0.0057 U	0.0032 U	0.00075 U	0.00079 U	0.00075 U
cis-1,3-Dichloropropene	10061-01-5	NL	NL	0.00087 U	0.00099 U	0.00097 U	0.00086 U	0.0064 U	0.0036 U	0.00085 U	0.00089 U	0.00084 U
Cyclohexane	110-82-7	NL	NL	0.00085 U	0.00097 U	0.00094 U	0.00083 U	0.0062 U	0.025 U	0.00082 U	0.00087 U	0.00082 U
Dibromochloromethane	124-48-1	NL	NL	0.00077 U	0.00088 U	0.00086 U	0.00076 U	0.0057 U	0.0032 U	0.00075 U	0.00079 U	0.00075 U
Dichlorodifluoromethane	75-71-8	NL	NL	0.0005 U	0.00057 U	0.00056 U	0.00049 U	0.0037 U	0.0021 U	0.00049 U	0.00051 U	0.00048 U
Isopropylbenzene	98-82-8	NL	NL	0.00091 U	0.001 U	0.001 U	0.0009 U	0.0067 U	0.0038 U	0.00089 U	0.00094 U	0.00088 U
Methyl acetate	79-20-9	NL	NL	0.0011 U	0.0013 U	0.0013 U	0.0011 U	0.0082 U	0.0047 U	0.0011 U	0.0012 U	0.0011 U
Methyl tert-butyl ether	1634-04-4	0.93	500	0.00059 U	0.00068 U	0.00066 U	0.00058 U	0.0044 U	0.0025 U	0.00058 U	0.00061 U	0.00057 U
Methylcyclohexane	108-87-2	NL	NL	0.00092 U	0.001 U	0.001 U	0.0009 U	0.0067 U	0.0038 U	0.00089 U	0.00094 U	0.00089 U
Methylene chloride	75-09-2	0.05	500	0.019 U	0.022 U	0.019 U	0.019 U	**0.14** J	**0.079** J	0.019 U	0.012 U	0.019 U
Styrene	100-42-5	NL	NL	0.0003 U	0.00035 U	0.00034 U	0.0003 U	0.0022 U	0.0013 U	0.00029 U	0.00031 U	0.00029 U
Tetrachloroethene	127-18-4	1.3	150	0.006 U	0.00093 U	0.0009 U	0.0008 U	0.0059 U	0.0034 U	0.00079 U	0.00083 U	0.00078 U
trans-1,2-Dichloroethene	156-60-5	0.19	500	0.00062 U	0.00071 U	0.00069 U	0.00061 U	0.0046 U	0.0026 U	0.00061 U	0.00064 U	0.0006 U
trans-1,3-Dichloropropene	10061-02-6	NL	NL	0.0027 U	0.003 U	0.003 U	0.0026 U	0.02 U	0.011 U	0.0026 U	0.0027 U	0.0026 U
Trichloroethene	79-01-6	0.47	200	0.0013 U	0.0015 U	0.0015 U	0.0013 U	0.0098 U	0.0055 U	0.0013 U	0.0014 U	0.0013 U
Trichlorofluoromethane	75-69-4	NL	NL	0.00057 U	0.00065 U	0.00064 U	0.00056 U	0.0042 U	0.0024 U	0.00056 U	0.00059 U	0.00055 U
Vinyl chloride	75-01-4	0.02	13	0.00074 U	0.00084 U	0.00082 U	0.00073 U	0.0054 U	0.0031 U	0.00072 U	0.00076 U	0.00071 U
Total VOCs (mg/Kg) (Note 1)	NA	NL	NL	--- U	--- U	0.0275	0.0911	4.082	3.12	--- U	0.0119	--- U

Notes:

NL = Not Listed

NA = Not analyzed, not applicable.

U = The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.

J = The associated numerical value is an estimated quantity.

Bold value - compound detected at concentration greater than the Unrestricted Use SCO concentration.

Shaded value - compound detected at concentration greater than the Commercial SCO concentration.

Note 1 - Total VOCs includes BTEX compounds.

NYSDEC Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.

Table 7
Subsurface Soil SVOC Results
Scott Aviation BCP Site

Sample Designation	CAS Number	Unrestricted Use	Protection of Public Health	SS-MW-35S-6-7	SS-DUPLICATE-1	SS-MW-37D-6-7	SS-DPT8-1A-(0-2)	SS-DPT8-1B-(2-4)	SS-DPT8-2A-(0-2)	SS-DPT8-2B-(2-4)	SS-DPT8-3B-(6-8)	SS-DPT8-3A-(0-2)	SS-MW-39D-(5-6)	SS-MW-36D-(8-9)
Laboratory Identification				RTE1487-02	RTE1487-03	RTE1487-08	RTF0541-02	RTF0541-03	RTF0541-04	RTF0541-05	RTF0541-06	RTF0541-07	RTF0542-01	RTF0542-02
Date Sampled			Commercial Use	5/26/2010	5/26/2010	5/28/2010	6/2/2010	6/2/2010	6/2/2010	6/2/2010	6/2/2010	6/2/2010	6/3/2010	6/4/2010
PAH Compounds (mg/Kg)														
2-Methylnaphthalene	91-57-6	NL	NL	0.0025 U	0.0028 U	0.0031 U	0.055 U	0.012 U	0.0027 U	0.0027 U	0.0024 U	0.013 U	0.0025 U	0.0024 U
Acenaphthene	83-32-9	20	500	0.0024 U	0.0027 U	0.003 U	0.054 U	0.012 U	0.01 J	0.0026 U	0.0023 U	0.013 U	0.0024 U	0.0024 U
Acenaphthylene	208-96-8	100	500	0.0017 U	0.02 J	0.0021 U	0.037 U	0.0083 U	0.0018 U	0.0018 U	0.0016 U	0.0087 U	0.0017 U	0.0016 U
Anthracene	120-12-7	100	500	0.0053 U	0.037 J	0.0065 U	0.12 U	0.026 U	0.031 J	0.0056 U	0.0051 U	0.027 U	0.0052 U	0.0052 U
Benzo(a)anthracene	56-55-3	1	5.6	0.0036 U	0.17 J	0.0044 U	0.53 J	0.018 U	0.094 J	0.0038 U	0.0034 U	0.018 U	0.0035 U	0.0035 U
Benzo(a)pyrene	50-32-8	1	1	0.005 U	0.19 J	0.0061 U	0.11 U	0.025 U	0.079 J	0.0053 U	0.0048 U	0.026 U	0.0049 U	0.0049 U
Benzo(b)fluoranthene	205-99-2	1	5.6	0.004 U	0.21 J	0.0049 U	0.089 U	0.02 U	0.096 J	0.0043 U	0.0038 U	0.021 U	0.004 U	0.0039 U
Benzo(ghi)perylene	191-24-2	100	500	0.0025 U	0.13 J	0.0031 U	0.055 U	0.012 U	0.056 J	0.0026 U	0.0024 U	0.013 U	0.0024 U	0.0024 U
Benzo(k)fluoranthene	207-08-9	0.8	56	0.0023 U	0.081 J	0.0028 U	0.05 U	0.011 U	0.035 J	0.0024 U	0.0022 U	0.012 U	0.0022 U	0.0022 U
Chrysene	218-01-9	1	56	0.0021 U	0.18 J	0.0026 U	0.55 J	0.01 U	0.09 J	0.0022 U	0.002 U	0.011 U	0.002 U	0.002 U
Dibenz(a,h)anthracene	53-70-3	0.33	0.56	0.0024 U	0.027 J	0.003 U	0.054 U	0.012 U	0.0026 U	0.0026 U	0.0023 U	0.013 U	0.0024 U	0.0024 U
Fluoranthene	206-44-0	100	500	0.003 U	0.35	0.0037 U	0.67 J	0.015 U	0.21 J	0.0032 U	0.0029 U	0.015 U	0.003 U	0.0029 U
Fluorene	86-73-7	30	500	0.0048 U	0.0053 U	0.0059 U	0.11 U	0.023 U	0.016 J	0.0051 U	0.0045 U	0.025 U	0.0047 U	0.0046 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	5.6	0.0057 U	0.12 J	0.0071 U	0.13 U	0.028 U	0.047 J	0.0061 U	0.0055 U	0.029 U	0.0056 U	0.0056 U
Naphthalene	91-20-3	12	500	0.0034 U	0.0038 U	0.0042 U	0.076 U	0.017 U	0.0037 U	0.0037 U	0.0033 U	0.018 U	0.0034 U	0.0034 U
Phenanthrene	85-01-8	100	500	0.0043 U	0.19 J	0.0054 U	0.54 J	0.021 U	0.19 J	0.0046 U	0.0041 U	0.022 U	0.0043 U	0.0042 U
Pyrene	129-00-0	100	500	0.0013 U	0.29	0.0017 U	0.79 J	0.0066 U	0.22	0.0014 U	0.0013 U	0.0069 U	0.0013 U	0.0013 U
Total PAHs (mg/Kg)	NA	NL	NL	--- U	1.995	--- U	3.08	--- U	1.174	--- U	--- U	--- U	--- U	--- U
Other SVOCs (mg/Kg)														
1,1'-Biphenyl	92-52-4	NL	NL	0.013 U	0.014 U	0.016 U	0.28 U	0.063 U	0.014 U	0.014 U	0.012 U	0.066 U	0.013 U	0.013 U
2,2'-oxybis(1-Chloropropane)	108-60-1	NL	NL	0.022 U	0.024 U	0.027 U	0.48 U	0.11 U	0.023 U	0.023 U	0.021 U	0.11 U	0.021 U	0.021 U
2,4,5-Trichlorophenol	95-95-4	NL	NL	0.045 U	0.05 U	0.056 U	1 U	0.22 U	0.048 U	0.048 U	0.043 U	0.23 U	0.044 U	0.044 U
2,4,6-Trichlorophenol	88-06-2	NL	NL	0.014 U	0.015 U	0.017 U	0.3 U	0.067 U	0.015 U	0.015 U	0.013 U	0.07 U	0.013 U	0.013 U
2,4-Dichlorophenol	120-83-2	NL	NL	0.011 U	0.012 U	0.013 U	0.24 U	0.053 U	0.012 U	0.012 U	0.01 U	0.056 U	0.011 U	0.011 U
2,4-Dimethylphenol	105-67-9	NL	NL	0.056 U	0.062 U	0.069 U	1.2 U	0.28 U	0.06 U	0.06 U	0.053 U	0.29 U	0.055 U	0.054 U
2,4-Dinitrophenol	51-28-5	NL	NL	0.072 U	0.081 U	0.089 U	1.6 U	0.36 U	0.077 U	0.077 U	0.069 U	0.37 U	0.071 U	0.07 U
2,4-Dinitrotoluene	121-14-2	NL	NL	0.032 U	0.036 U	0.039 U	0.71 U	0.16 U	0.034 U	0.034 U	0.031 U	0.17 U	0.032 U	0.031 U
2,6-Dinitrotoluene	606-20-2	NL	NL	0.05 U	0.056 U	0.062 U	1.1 U	0.25 U	0.054 U	0.054 U	0.048 U	0.26 U	0.05 U	0.049 U
2-Chloronaphthalene	91-58-7	NL	NL	0.014 U	0.015 U	0.017 U	0.31 U	0.068 U	0.015 U	0.015 U	0.013 U	0.072 U	0.014 U	0.014 U
2-Chlorophenol	95-57-8	NL	NL	0.011 U	0.012 U	0.013 U	0.23 U	0.052 U	0.011 U	0.011 U	0.01 U	0.054 U	0.01 U	0.01 U
2-Methylphenol (o-cresol)	95-48-7	0.33	500	0.0063 U	0.0071 U	0.0078 U	0.14 U	0.031 U	0.0068 U	0.0068 U	0.0061 U	0.033 U	0.0063 U	0.0062 U
2-Nitroaniline	88-74-4	NL	NL	0.066 U	0.074 U	0.082 U	1.5 U	0.33 U	0.071 U	0.071 U	0.063 U	0.34 U	0.065 U	0.065 U
2-Nitrophenol	88-75-5	NL	NL	0.0094 U	0.011 U	0.012 U	0.21 U	0.047 U	0.01 U	0.01 U	0.009 U	0.049 U	0.0093 U	0.0092 U
3,3'-Dichlorobenzidine	91-94-1	NL	NL	0.18 U	0.2 U	0.22 U	4 U	0.89 U	0.19 U	0.19 U	0.17 U	0.94 U	0.18 U	0.18 U
3-Nitroaniline	99-09-2	NL	NL	0.047 U	0.053 U	0.059 U	1.1 U	0.23 U	0.051 U	0.051 U	0.045 U	0.25 U	0.047 U	0.046 U
4,6-Dinitro-2-methylphenol	534-52-1	NL	NL	0.071 U	0.08 U	0.088 U	1.6 U	0.35 U	0.076 U	0.076 U	0.068 U	0.37 U	0.07 U	0.07 U
4-Bromophenyl phenyl ether	101-55-3	NL	NL	0.066 U	0.073 U	0.081 U	1.5 U	0.32 U	0.07 U	0.07 U	0.063 U	0.34 U	0.065 U	0.064 U
4-Chloro-3-methylphenol	59-50-7	NL	NL	0.0085 U	0.0095 U	0.01 U	0.19 U	0.042 U	0.0091 U	0.0091 U	0.0081 U	0.044 U	0.0084 U	0.0083 U
4-Chloroaniline	106-47-8	NL	NL	0.061 U	0.068 U	0.075 U	1.3 U	0.3 U	0.065 U	0.065 U	0.058 U	0.31 U	0.06 U	0.059 U
4-Chlorophenyl phenyl ether	7005-72-3	NL	NL	0.0044 U	0.0049 U	0.0054 U	0.097 U	0.022 U	0.0047 U	0.0047 U	0.0042 U	0.023 U	0.0043 U	0.0043 U
4-Methylphenol (p-cresol)	106-44-5	0.33	500	0.011 U	0.013 U	0.014 U	0.25 U	0.057 U	0.012 U	0.012 U	0.011 U	0.059 U	0.011 U	0.011 U
4-Nitroaniline	100-01-6	NL	NL	0.023 U	0.026 U	0.028 U	0.51 U	0.11 U	0.025 U	0.025 U	0.022 U	0.12 U	0.023 U	0.022 U
4-Nitrophenol	100-02-7	NL	NL	0.05 U	0.056 U	0.062 U	1.1 U	0.25 U	0.053 U	0.053 U	0.048 U	0.26 U	0.049 U	0.049 U
Acetophenone	98-86-2	NL	NL	0.011 U	0.012 U	0.013 U	0.23 U	0.052 U	0.011 U	0.011 U	0.01 U	0.055 U	0.01 U	0.01 U
Atrazine	1912-24-9	NL	NL	0.0092 U	0.01 U	0.011 U	0.2 U	0.045 U	0.0098 U	0.0098 U	0.0088 U	0.047 U	0.0091 U	0.009 U
Benzaldehyde	100-52-7	NL	NL	0.023 U	0.025 U	0.028 U	0.5 U	0.11 U	0.024 U	0.024 U	0.022 U	0.12 U	0.022 U	0.022 U
bis(2-Chloroethoxy)methane	111-91-1	NL	NL	0.011 U	0.013 U	0.014 U	0.25 U	0.055 U	0.012 U	0.012 U	0.011 U	0.058 U	0.011 U	0.011 U
bis(2-Chloroethyl) ether	111-44-4	NL	NL	0.018 U	0.02 U	0.022 U	0.39 U	0.088 U	0.019 U	0.019 U	0.017 U	0.092 U	0.018 U	0.017 U
bis(2-Ethylhexyl) phthalate	117-81-7	NL	NL	0.091 J	0.074 U	0.082 U	1.5 U	0.33 U	0.41	0.49	0.22	0.34 U	0.95	0.11 J
Butyl benzyl phthalate	85-68-7	NL	NL	0.055 U	0.062 U	0.069 U	1.2 U	0.27 U	0.059 U	0.059 U	0.053 U	0.29 U	0.055 U	0.054 U
Caprolactam	105-60-2	NL	NL	0.089 U	0.1 U	0.11 U	2 U	0.44 U	0.095 U	0.095 U	0.085 U	0.46 U	0.088 U	0.087 U
Carbazole	86-74-8	NL	NL	0.0024 U	0.02 J	0.003 U	0.053 U	0.012 U	0.014 J	0.0026 U	0.0023 U	0.012 U	0.0024 U	0.0023 U
Dibenzofuran	132-64-9	7	350	0.0021 U	0.0024 U	0.0027 U	0.048 U	0.011 U	0.0023 U	0.0023 U	0.0021 U	0.011 U	0.0021 U	0.0021 U
Diethyl phthalate	131-11-3	NL	NL	0.0062 U	0.007 U	0.0077 U	0.14 U	0.031 U	0.0067 U	0.0067 U	0.006 U	0.032 U	0.0062 U	0.0061 U
Dimethyl phthalate	84-66-2	NL	NL	0.0054 U	0.006 U	0.0067 U	0.12 U	0.027 U	0.0058 U	0.0058 U	0.0052 U	0.028 U	0.0053 U	0.0053 U
Di-n-butyl phthalate	84-74-2	NL	NL	0.071 U	0.08 U	0.088 U	1.6 U	0.35 U	0.076 U	0.076 U	0.068 U	1.3 U	0.071 U	0.07 U
Di-n-octyl phthalate	117-84-0	NL	NL	0.0048 U	0.0054 U	0.006 U	0.11 U	0.024 U	0.0052 U	0.0052 U	0.0046 U	0.025 U	0.0048 U	0.0047 U
Hexachlorobenzene	118-74-1	0.33	6	0.01 U	0.011 U	0.013 U	0.23 U	0.051 U	0.011 U	0.011 U	0.0098 U	0.053 U	0.01 U	0.01 U
Hexachlorobutadiene	87-68-3	NL	NL	0.011 U	0.012 U	0.013 U	0.23 U	0.052 U	0.011 U	0.011 U	0.01 U	0.055 U	0.01 U	0.01 U
Hexachlorocyclopentadiene	77-47-4	NL	NL	0.062 U	0.07 U	0.077 U	1.4 U	0.31 U	0.067 U	0.067 U	0.06 U	0.32 U	0.062 U	0.061 U
Hexachloroethane	67-72-1	NL	NL	0.016 U	0.018 U	0.02 U	0.35 U	0.079 U	0.017 U	0.017 U	0.015 U	0.083 U	0.016 U	0.016 U
Isophorone	78-59-1	NL	NL	0.01 U	0.012 U	0.013 U	0.23 U	0.051 U	0.011 U	0.011 U	0.0099 U	0.053 U	0.01 U	0.01 U
Nitrobenzene	98-95-3	NL	NL	0.0091 U	0.01 U	0.011 U	0.2 U	0.045 U	0.0098 U	0.0098 U	0.0088 U	0.047 U	0.009 U	0.0089 U
N-Nitrosodi-n-propylamine	621-64-7	NL	NL	0.016 U	0.018 U	0.02 U	0.36 U	0.081 U	0.017 U	0.017 U	0.016 U	0.084 U	0.016 U	0.016 U
N-Nitrosodiphenylamine	86-30-6	NL	NL	0.011 U	0.013 U	0.014 U	0.25 U	0.056 U	0.012 U	0.012 U	0.011 U	0.058 U	0.011 U	0.011 U
Pentachlorophenol	87-86-5	0.8	6.7	0.071 U	0.079 U	0.088 U	1.6 U	0.35 U	0.076 U	0.076 U	0.068 U	0.37 U	0.07 U	0.069 U
Phenol	108-95-2	0.33	500	0.022 U	0.024 U	0.027 U	0.48 U	0.11 U	0.023 U	0.023 U	0.021 U	0.11 U	0.021 U	0.021 U
Total SVOCs (mg/Kg) (Note 1)	**NA**	NL	NL	0.091	2.015	--- U	3.08	--- U	1.598	0.49	0.22	--- U	0.95	0.11

Notes:
NL = Not Listed
NA = Not analyzed, not applicable.
U = The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the Unrestricterd Use SCO concentration.
Shaded value - compound detected at concentration greater than the Commercial SCO concentration.
NYSDEC Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.
(Note 1) - Total SVOCs includes all of the PAH and SVOC compounds.

Table 8
Subsurface Soil Metals Results
Scott Aviation BCP Site

Sample Designation	**CAS Number**	**Unrestricted Use**	**Protection of Public Health**	**SS-MW-35S-6-7**	**SS-DUPLICATE-1**	**SS-MW-37D-6-7**	**SS-DPT8-1A-(0-2)**	**SS-DPT8-1B-(2-4)**	**SS-DPT8-2A-(0-2)**	**SS-DPT8-2B-(2-4)**	**SS-DPT8-3B-(6-8)**	**SS-DPT8-3A-(0-2)**	**SS-MW-39D-(5-6)**	**SS-MW-36D-(8-9)**
Laboratory Identification				**RTE1487-02**	**RTE1487-03**	**RTE1487-08**	**RTF0541-02**	**RTF0541-03**	**RTF0541-04**	**RTF0541-05**	**RTF0541-06**	**RTF0541-07**	**RTF0542-01**	**RTF0542-02**
Date Sampled			**Commercial Use**	**5/26/2010**	**5/26/2010**	**5/28/2010**	**6/2/2010**	**6/2/2010**	**6/2/2010**	**6/2/2010**	**6/2/2010**	**6/2/2010**	**6/3/2010**	**6/4/2010**
Aluminum	7429-90-5	NL	NL	11000	9380	15100	24500	11200	24100	14500	10500	13600	12000	9760
Antimony	7440-36-0	NL	NL	17.2 UJ	21.9 UJ	23.1 UJ	21.5 U	16.6 U	19.8 U	20.7 U	16.6 U	18.8 U	19 U	16.5 U
Arsenic	7440-38-2	13	16	7.7	4.3	12.1	14.7	5.5	7.9	8.3	7.7	5.5	7.7	6.2
Barium	7440-39-3	350	400	72.5	37.7	98.5	90.5	83.5	82.2	98.2	118	84.4	92.1	81.3
Beryllium	7440-41-7	7.2	590	0.483	0.353	0.67	0.505	0.531	0.487	0.68	0.5	0.564	0.576	0.483
Cadmium	7440-43-9	2.5	9.3	0.315	0.381	0.371	**18.6**	0.874	**18**	0.317	0.276	0.944	0.372	0.238
Calcium	7440-70-2	NL	NL	48200	2280	47000	7820	57500	45300	59200	58500	2700	63200	55600
Chromium	7440-47-3	30[c]	1500	15.5	11.3	21.2	**932**	24	**1140**	20.9	15.4	**299**	19.3	14.8
Cobalt	7440-48-4	NL	NL	8.01	4.6	13.3	9.53	9.52	22.8	13.7	13.2	10.3	7.97	8.22
Copper	7440-50-8	50	270	24	11.8	30.9	**577**	23.4	**859**	26.8	21.5	16	24.1	18.7
Iron	7439-89-6	NL	NL	22100	12500	30300	27700	20900	20900	26500	21500	23300	24000	18800
Lead	7439-92-1	63	1,000	10.6	28.5	15.2	337	13.9	**547**	12.4	11.1	31.3	10.5	9.4
Magnesium	7439-95-4	NL	NL	15400	1710	17500	4270	18500	24400	18200	19400	2930	18700	19900
Manganese	7439-96-5	1,600	10,000	337 J	124 J	473 J	291	513	603	809	730	555	352	406
Total Mercury	7439-97-6	0.18	2.8	0.0253 U	0.0409	0.09	**5.09 D08**	0.047	**0.566**	0.0263 U	0.0243	0.0612	0.026 U	0.0243 U
Nickel	7440-02-0	30	310	23.9	11.3	**34.4**	**43**	25.2	**101**	**32.1**	**32.3**	15.8	24.1	22.2
Potassium	7440-09-7	NL	NL	1970	641	2900	1150	2420	1220	2120	2200	1290	2500	2370
Selenium	7782-49-2	3.9	1,500	4.6 U	5.8 U	6.2 U	5.7 U	4.4 U	5.3 U	5.5 U	4.4 U	5 U	5.1 U	4.4 U
Silver	7440-22-4	2	1,500	0.573 U	0.73 U	0.77 U	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	NL	NL	174	204 U	224	273	221	244	199	203	175 U	213	192
Thallium	7440-28-0	NL	NL	6.9 U	8.8 U	9.2 U	8.6 U	6.7 U	7.9 U	8.3 U	6.7 U	7.5 U	7.6 U	6.6 U
Vanadium	7440-62-2	NL	NL	20	15.2	27.8	26.3	21.4	22.6	26.1	20.1	27.1	24.5	18.8
Zinc	7440-66-6	109	10,000	61	60.3	80.5	**1630 D08**	65.9	**1460 D08**	71.8	61.9	103	67.6	59.9

Notes:
NL = Not Listed
NA = Not analyzed
U = The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
D08 =
Bold value - compound detected at concentration greater than Unrestricted Use SCO.
Shaded value - compound detected at concentration greater than the Commercial SCO.
NYSDEC Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.

Table 9
Subsurface Soil Pesticides and PCBs Results
Scott Aviation BCP Site

Sample Designation	CAS Number	Unrestricted Use	Protection of Public Health	SS-MW-35S-6-7	SS-DUPLICATE-1	SS-MW-37D-6-7	SS-DPT8-2C-(0-0.2)	SS-DPT8-1A-(0-2)	SS-DPT8-1B-(2-4)	SS-DPT8-2A-(0-2)	SS-DPT8-2B-(2-4)	SS-DPT8-3B-(6-8)	SS-DPT8-3A-(0-2)	SS-MW-39D-(5-6)	SS-MW-36D-(8-9)
Laboratory Identification				RTE1487-02	RTE1487-03	RTE1487-08	RTF0541-01	RTF0541-02	RTF0541-03	RTF0541-04	RTF0541-05	RTF0541-06	RTF0541-07	RTF0542-01	RTF0542-02
Date Sampled			Commercial Use	5/26/2010	5/26/2010	5/28/2010	6/2/2010	6/2/2010	6/2/2010	6/2/2010	6/2/2010	6/2/2010	6/2/2010	6/3/2010	6/4/2010
Organochlorine Pesticides (mg/Kg)															
Aldrin	309-00-2	0.005	0.68	0.0005 U	0.00056 U	0.00062 U	0.0047 U	0.028 U	0.0005 U	0.0027 U	0.00054 U	0.00049 U	0.0026 U	0.0005 U	0.00049 U
alpha-BHC	319-84-6	0.02	3.4	0.00036 U	0.00041 U	0.00045 U	0.0034 U	0.02 U	0.00036 U	0.002 U	0.0004 U	0.00036 U	0.0019 U	0.00036 U	0.00036 U
beta-BHC	319-85-7	0.036	3	0.00022 U	0.00025 U	0.00027 U	0.0021 U	0.012 U	0.00022 U	0.0012 U	0.00024 U	0.00021 U	0.0011 U	0.00022 UJ	0.00021 U
delta-BHC	319-86-8	0.04	500	0.00027 U	0.0003 U	0.00033 U	0.0025 U	0.015 U	0.00027 U	0.0014 U	0.00029 U	0.00026 U	0.0014 U	0.00027 UJ	0.00026 U
Chlordane (alpha)	5103-71-9	0.094	24	0.001 U	0.0011 U	0.0013 U	0.0095 U	0.056 U	0.001 U	0.0054 U	0.0011 U	0.00099 U	0.0052 U	0.001 U	0.00098 U
Chlordane	NL	NL	NL	0.0045 U	0.005 U	0.0056 U	0.042 U	0.25 U	0.0045 U	0.024 U	0.0049 U	0.0044 U	0.023 U	0.0045 U	0.0044 U
4,4'-DDD	72-54-8	0.0033	92	0.00039 U	0.00044 U	0.00049 U	0.0037 U	0.022 U	0.00099 J	0.0021 U	0.00043 U	0.00039 U	0.002 U	0.00039 U	0.00038 U
4,4'-DDE	72-55-9	0.0033	62	0.0003 U	0.00034 U	0.00038 U	0.0029 U	0.017 U	0.0003 U	0.0016 U	0.00033 U	0.0003 U	0.0016 U	0.0003 U	0.0003 U
4,4'-DDT	50-29-3	0.0033	47	0.00021 U	0.00023 U	0.00026 U	0.009 J	0.011 U	0.00021 U	0.0011 U	0.00022 U	0.0002 U	0.0011 U	0.00021 U	0.0002 U
Dieldrin	60-57-1	0.005	1.4	0.00048 U	0.00055 U	0.0006 U	0.0046 U	0.027 U	0.00049 U	0.006 J	0.00053 U	0.00048 U	0.0025 U	0.00049 U	0.00047 U
Endosulfan I	959-98-8	2.4	200	0.00025 U	0.00029 U	0.00032 U	0.0024 U	0.014 U	0.00026 U	0.0014 U	0.00028 U	0.00025 U	0.0013 U	0.00025 U	0.00025 U
Endosulfan II	33213-65-9	2.4	200	0.00036 U	0.00041 U	0.00045 U	0.0034 U	0.02 U	0.00036 U	0.002 U	0.0004 U	0.00036 U	0.0019 U	0.00036 U	0.00036 U
Endosulfan sulfate	1031-07-8	2.4	200	0.00038 U	0.00042 U	0.00047 U	0.0035 U	0.021 U	0.00038 U	0.002 U	0.00041 U	0.00037 U	0.0019 U	0.00038 U	0.00037 U
Endrin	72-20-8	0.014	89	0.00028 U	0.00031 U	0.00035 U	0.0026 U	0.015 U	0.00028 U	0.0015 U	0.0003 U	0.00027 U	0.0014 U	0.00028 U	0.00027 U
Endrin aldehyde		NL	NL	0.00052 U	0.00058 U	0.00064 U	0.0049 U	0.029 U	0.00052 U	0.0028 U	0.00056 U	0.00051 U	0.0027 U	0.00052 UJ	0.0005 U
Endrin keytone	NL	NL	NL	0.0005 U	0.00056 U	0.00062 U	0.0047 U	0.028 U	0.0005 U	0.0027 U	0.00054 U	0.00049 U	0.0026 U	0.0005 U	0.00049 U
gamma-BHC (Lindane)	58-89-9	0.1	9.2	0.00035 U	0.0004 U	0.00044 U	0.0033 U	0.02 U	0.00035 U	0.0019 U	0.00038 U	0.00035 U	0.0018 U	0.00035 U	0.00034 U
gamma-Chlordane	NL	NL	NL	0.00064 U	0.00072 U	0.0008 U	0.006 U	0.036 U	0.00064 U	0.0035 U	0.0007 U	0.00063 U	0.0033 U	0.00064 U	0.00063 U
Heptachlor	76-44-8	0.042	15	0.00032 U	0.00036 U	0.00039 U	0.003 U	0.018 U	0.00032 U	0.0017 U	0.00035 U	0.00031 U	0.0016 U	0.00032 U	0.00031 U
Heptachlor epoxide	NL	NL	NL	0.00052 U	0.00059 U	0.00065 U	0.0049 U	0.029 U	0.00052 U	0.0028 U	0.00057 U	0.00051 U	0.0027 U	0.00052 U	0.00051 U
Methoxychlor	NL	NL	NL	0.00028 U	0.00031 U	0.00035 U	0.0026 U	0.015 U	0.00028 U	0.0015 U	0.0003 U	0.00027 U	0.0014 U	0.00028 U	0.00027 U
Toxaphene	NL	NL	NL	0.012 U	0.013 U	0.015 U	0.11 U	0.65 U	0.012 U	0.063 U	0.013 U	0.012 U	0.06 U	0.012 U	0.011 U
PCBs (mg/Kg)															
Aroclor 1016	12674-11-2	NL	NL	0.0039 U	0.0044 U	0.0049 U	0.0037 U	0.044 U	0.004 U	0.017 U	0.0043 U	0.0039 U	0.041 U	0.004 U	0.0039 U
Aroclor 1221	11104-28-2	NL	NL	0.0039 U	0.0044 U	0.0049 U	0.0037 U	0.044 U	0.004 U	0.017 U	0.0043 U	0.0039 U	0.041 U	0.004 U	0.0039 U
Aroclor 1232	11141-16-5	NL	NL	0.0039 U	0.0044 U	0.0049 U	0.0037 U	0.044 U	0.004 U	0.017 U	0.0043 U	0.0039 U	0.041 U	0.004 U	0.0039 U
Aroclor 1242	53469-21-9	NL	NL	0.0044 U	0.0049 U	0.0055 U	0.0041 U	0.049 U	0.0044 U	0.019 U	0.0048 U	0.0043 U	0.045 U	0.0044 U	0.0043 U
Aroclor 1248	12672-29-6	NL	NL	0.004 U	0.0045 U	0.0049 U	0.0037 U	0.044 U	0.004 U	0.017 U	0.0043 U	0.0039 U	0.041 U	0.004 U	0.0039 U
Aroclor 1254	11097-69-1	NL	NL	0.0043 U	0.0048 U	0.0053 U	0.004 U	0.047 U	0.0043 U	0.018 U	0.0047 U	0.0042 U	0.044 U	0.0043 U	0.0042 U
Aroclor 1260	11096-82-5	NL	NL	0.0094 U	0.011 U	0.012 U	0.038 J	0.28 J	0.0095 U	0.099 J	0.01 U	0.0093 U	0.097 U	0.0095 U	0.0093 U
Total PCBs (mg/Kg)	NA	0.1	1	--- U	--- U	--- U	0.038	**0.28**	--- U	0.099	--- U	--- U	--- U	--- U	--- U

Notes:
NL = Not Listed
NA = Not analyzed
U = The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than Unrestricted Use.
Shaded value - compound detected at concentration greater than the Commercial SCO.
NYSDEC Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.

Table 10
Groundwater VOC Results
Scott Aviation BCP

Sample Designation / Laboratory Identification / Date Sampled	CAS Number	NYSDEC Groundwater Guidance or Standard Value[1]	RI August 2010 – Shallow Overburden														
Sample Designation			MW-30	MW-35S	MW-36S	Duplicate MW-36S	MW-37S	A1-GP01-S	A1-GP02-S	A1-GP03-S	A1-GP04-S	A1-GP05-S	A1-GP06-S	A1-GP07-S	A1-GP08-S	A1-GP09-S	A1-GP10-S
Laboratory Identification			RTH0401-01	RTH0401-07	RTH0401-02	RTH0401-06	RTH0401-10	RTH0401-14	RTH0401-15	RTH0401-16	RTH0401-17	RTH0401-18	RTH0401-19	RTH0401-20	RTH0402-01	RTH0402-02	RTH0402-03
Date Sampled			8/3/2010	8/2/2010	8/3/2010	8/2/2010	8/3/2010	8/4/2010	8/4/2010	8/4/2010	8/4/2010	8/4/2010	8/4/2010	8/4/2010	8/4/2010	8/3/2010	8/3/2010
BTEX Compounds (ug/L)																	
Benzene	71-43-2	1 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	**1.4** J	5 U	100 U	250 U	120 U	5 U	6,200 U
Toluene	100-41-4	5 s	5 U	5 U	5 U	5 U	20 U	**340** J	1,000 U	2,000 U	**1.6** J	5 U	100 U	250 U	120 U	5 U	6,200 U
Ethylbenzene	108-88-3	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	**0.75** J	5 U	100 U	250 U	120 U	5 U	6,200 U
Xylenes (total)	1330-20-7	5 s	15 U	15 U	15 U	15 U	60 U	3,800 U	3,000 U	6,000 U	15 U	15 U	300 U	750 U	380 U	15 U	19,000 U
Total BTEX Compounds (ug/L)	NA	NL	--- U	--- U	--- U	--- U	--- U	340	--- U	--- U	3.75	--- U	--- U	--- U	--- U	--- U	--- U
Other VOCs (ug/L)																	
1,1,1-Trichloroethane	71-55-6	5 s	5 U	5 U	5 U	5 U	**200**	**7,500**	1,000 U	**39,000**	**14**	**98**	**1,700**	250 U	120 U	5 U	**84,000**
1,1,2,2-Tetrachloroethane	79-34-5	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5 s	5 U	5 U	5 U	5 U	**6.3** J	**1,000** J	1,000 U	2,000 U	**1.7** J	5 U	**1,900**	250 U	120 U	5 U	**1,900** J
1,1,2-Trichloroethane	79-00-5	1 s	5 U	5 U	5 U	5 U	20 U	**180** J	1,000 U	2,000 U	**0.59** J	5 U	**16** J	250 U	120 U	5 U	6,200 U
1,1-Dichloroethane	75-34-3	5 s	**2.4** J	5 U	5 UJ	5 UJ	**440**	**2,000**	1,000 U	**6,200**	**13**	**38**	**3,200**	250 U	120 U	5 U	**48,000**
1,1-Dichloroethene	75-35-4	5 s	5 U	5 U	5 U	5 U	**20**	**760** J	1,000 U	**5,600**	**20**	**21**	**270**	250 U	120 U	5 U	**2,000** J
1,2,4-Trichlorobenzene	120-82-1	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
1,2-Dibromo-3-chloropropane	96-12-8	0.04 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
1,2-Dibromoethane	106-93-4	0.0006 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
1,2-Dichlorobenzene	95-50-1	3 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
1,2-Dichloroethane	107-06-2	0.6 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
1,2-Dichloropropane	78-87-5	1 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
1,3-Dichlorobenzene	541-73-1	3 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
1,4-Dichlorobenzene	106-46-7	3 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
2-Butanone	78-93-3	50 g	25 U	25 U	25 U	25 U	100 U	6,200 U	5,000 U	10,000 U	25 U	25 U	500 U	1,200 U	620 U	25 U	31,000 U
2-Hexanone	591-78-6	50 g	25 U	25 U	25 U	25 U	100 U	6,200 U	5,000 U	10,000 U	25 U	25 U	500 U	1,200 U	620 U	25 U	31,000 U
4-Methyl-2-pentanone	108-10-1	NL	25 U	25 U	25 U	25 U	100 U	6,200 U	5,000 U	10,000 U	25 U	25 U	500 U	1,200 U	620 U	25 U	31,000 U
Acetone	67-64-1	50 g	25 U	**3.8** J	25 U	25 U	100 U	6,200 U	5,000 U	10,000 U	25 U	25 U	500 U	1,200 U	620 U	25 U	31,000 U
Bromodichloromethane	75-27-4	50 g	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Bromoform	75-25-2	50 g	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Bromomethane	74-83-9	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Carbon disulfide	75-15-0	60 g	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Carbon tetrachloride	56-23-5	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Chlorobenzene	108-90-7	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Chloroethane	75-00-3	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Chloroform	67-66-3	7 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Chloromethane	74-87-3	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
cis-1,2-Dichloroethene	156-59-2	5 s	**7.7**	5 U	**1.5** J	**1.4** J	20 U	**15,000**	**10,000**	**12,000**	**3,100**	**22**	**130**	**1,300**	**2,400**	5 U	6,200 U
cis-1,3-Dichloropropene	10061-01-5	0.4 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Cyclohexane	110-82-7	NL	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Dibromochloromethane	124-48-1	50 g	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Dichlorodifluoromethane	75-71-8	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	**33** J	250 U	120 U	5 U	6,200 U
Isopropylbenzene	98-82-8	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Methyl acetate	79-20-9	NL	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Methyl tert-butyl ether	1634-04-4	10 g	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Methylcyclohexane	108-87-2	NL	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Methylene chloride	75-09-2	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Styrene	100-42-5	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Tetrachloroethene	127-18-4	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	**1.8** J	5 U	100 U	250 U	120 U	5 U	6,200 U
trans-1,2-Dichloroethene	156-60-5	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	**190** J	2,000 U	**35**	**0.96** J	100 U	250 U	120 U	5 U	6,200 U
trans-1,3-Dichloropropene	10061-02-6	0.4 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Trichloroethene	79-01-6	5 s	**1.6** J	5 U	**0.58** J	**0.58** J	**3** J	**340** J	**20,000**	**2,400**	**13,000**	**2.4** J	**200**	**2,900**	**1,900**	**0.88** J	6,200 U
Trichlorofluoromethane	75-69-4	5 s	5 U	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	5 U	5 U	100 U	250 U	120 U	5 U	6,200 U
Vinyl chloride	75-01-4	2 s	**5.9**	5 U	5 U	5 U	20 U	1,200 U	1,000 U	2,000 U	**480** J	**1.2** J	**20** J	**69** J	**49** J	0.9 U	6,200 U
Total VOCs (ug/L)2	NA	NL	17.6	3.8	2.08	1.98	669	27,120	30,190	65,200	16,669.84	183.56	7,469	4,269	4,349	0.88	135,900

Notes:
1. Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC, 1998, with addenda through 2004].
2. Total VOCs includes BTEX compounds.
NA = Not analyzed, not applicable
NL = Not listed
U = The material was analyzed for but not detected at, or above, the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the reporting limit
Shaded value - Compound detected in a concentration greater than the groundwater standard value.
s = Standard Value
g = Guidance Value

Table 10
Groundwater VOC Results
Scott Aviation BCP

Sample Designation			RI August 2010								SRI April 2011			SRI June 2011	
			Shallow Overburden								Shallow Overburden			Shallow Overburden	
Sample Designation	CAS	NYSDEC Groundwater Guidance or	A1-GP11-S	A1-GP12-S	A1-GP13-S	A1-GP14-S	A1-GP15-S	A1-GP16-S	A1-GP17-S	A1-GP18-S	MW-42S	MW-43S	Duplicate MW-43S	MW-44S	Duplicate MW-44S
Laboratory Identification	Number	Standard Value[1]	RTH0402-04	RTH0402-05	RTH0402-06	RTH0402-07	RTH0402-08	RTH0402-09	RTH0402-10	RTH0402-11	480-3472-2	480-3472-3	480-3472-1FD	480-5581-1	480-5581-5
Date Sampled			8/3/2010	8/3/2010	8/3/2010	8/3/2010	8/2/2010	8/2/2010	8/3/2010	8/2/2010	4/7/2011	4/7/2011	4/7/2011	6/1/2011	6/1/2011
BTEX Compounds (ug/L)															
Benzene	71-43-2	1 s	50 U	100 U	**34** J	**5.5**	5 U	25 U	5 U	5 U	**1.9**	1 UJ	**0.44**	1 U	1 U
Toluene	100-41-4	5 s	50 U	100 U	**63**	5 U	5 U	25 U	5 U	5 U	**1100**	**1.5**	**1.5**	1 U	1 U
Ethylbenzene	108-88-3	5 s	50 U	100 U	**120**	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	1330-20-7	5 s	150 U	300 U	**2,000**	15 U	15 U	75 U	15 U	15 U	1 U	**1.7** J	**1.5** J	2 U	2 U
Total BTEX Compounds (ug/L)	NA	NL	--- U	--- U	2,217	5.5	--- U	--- U	--- U	--- U	1,102	3.2	3.4	--- U	--- U
Other VOCs (ug/L)															
1,1,1-Trichloroethane	71-55-6	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	**25000**	**15**	**17**	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5 s	**14** J	100 U	**17** J	5 U	5 U	25 U	5 U	5 U	**1700**	**7.4**	**6**	1 U	1 U
1,1,2-Trichloroethane	79-00-5	1 s	50 U	100 U	**13** J	5 U	5 U	25 U	5 U	5 U	**240** J	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	5 s	**68**	**14** J	**620**	**1** J	5 U	25 U	5 U	5 U	**8550**	**13**	**14**	1 U	1 U
1,1-Dichloroethene	75-35-4	5 s	**6.5** J	**17** J	**46** J	5 U	5 U	25 U	5 U	5 U	**6100**	**3.5** J	**2** J	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	96-12-8	0.04 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	106-93-4	0.0006 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	95-50-1	3 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	0.6 s	50 U	100 U	**14** J	5 U	5 U	25 U	5 U	5 U	**76**	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	1 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	3 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	3 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	78-93-3	50 g	250 U	500 U	250 U	25 U	25 U	120 U	25 U	25 U	**510** J	**3.3** J	**3**	10 U	10 U
2-Hexanone	591-78-6	50 g	250 U	500 U	250 U	25 U	25 U	120 U	25 U	25 U	**11**	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	108-10-1	NL	250 U	500 U	250 U	25 U	25 U	120 U	25 U	25 U	**3.5** J	5 U	5 U	5 U	5 U
Acetone	67-64-1	50 g	250 U	500 U	250 U	**5.2** J	**3.4** J	120 U	25 U	25 U	**400**	**13**	**15**	10 U	10 U
Bromodichloromethane	75-27-4	50 g	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	50 g	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	75-15-0	60 g	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	**9**	**1.1**	**0.99** J	1 U	1 U
Carbon tetrachloride	56-23-5	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	5 s	50 U	100 U	**180**	**0.62** J	5 U	25 U	5 U	5 U	**100** J	**12**	**11**	1 U	1 U
Chloroform	67-66-3	7 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	**4.8**	1 U	1 U	1 UJ	0.46 J
Chloromethane	74-87-3	5 s	50 U	100 U	50 U	5 J	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	5 s	**1,000**	**2,900**	**2,200**	**0.88** J	5 U	**69**	5 U	5 U	**1000**	**34**	**33**	1 U	1 U
cis-1,3-Dichloropropene	10061-01-5	0.4 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	110-82-7	NL	50 U	100 U	**5.7** J	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	124-48-1	50 g	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	75-71-8	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 UJ	**12** J	1 U	1 U
Isopropylbenzene	98-82-8	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Methyl acetate	79-20-9	NL	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	1634-04-4	10 g	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Methylcyclohexane	108-87-2	NL	50 U	100 U	**36** J	5 U	5 U	25 U	5 U	5 U	1 U	**0.69** J	**0.61**	1 U	1 U
Methylene chloride	75-09-2	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	**11**	1 U	1 U	1 U	1 U
Styrene	100-42-5	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	**5.6**	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	156-60-5	5 s	**28** J	**120**	**28** J	**6.2**	5 U	25 U	5 U	5 U	**31**	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	10061-02-6	0.4 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	5 s	**700**	**1,500**	**11** J	5 U	5 U	25 U	5 U	5 U	**13000**	**15**	**16**	1 U	1 U
Trichlorofluoromethane	75-69-4	5 s	50 U	100 U	50 U	5 U	5 U	25 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	75-01-4	2 s	**60**	**240**	**2,200**	**11**	5 U	**5** J	5 U	5 U	**27**	**19**	**22**	1 U	1 U
Total VOCs (ug/L)2	NA	NL	1,877	4,791	7,588	30.4	3.4	74	--- U	--- U	57,881	140.19	156.04	--- U	0.46

Notes:
1. Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC, 1998, with addenda through 2004].
2. Total VOCs includes BTEX compounds.
NA = Not analyzed, not applicable
NL = Not listed
U = The material was analyzed for but not detected at, or above, the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the reporting limit
Shaded value - Compound detected in a concentration greater than the groundwater standard value.
s = Standard Value
g = Guidance Value

Table 10
Groundwater VOC Results
Scott Aviation BCP

Sample Designation	CAS	NYSDEC	MW-30	MW-35S	MW-36S	GW-DUPLICATE-1	MW-37S	A1-GP01-S	A1-GP02-S	A1-GP03-S	A1-GP04-S	A1-GP05-S	A1-GP06-S	A1-GP07-S	A1-GP08-S	A1-GP09-S	A1-GP10-S	A1-GP11-S	A1-GP12-S
			June 2010																
			Shallow Overburden																
Laboratory Identification		Groundwater Guidance or	RTF1140-16	RTF1140-14	RTF1140-05	RTF1140-03	RTF1140-19	RTF1213-18	RTF1213-13	RTF1213-15	RTF1213-09	RTF1213-17	RTF1213-14	RTF1213-08	RTF1213-10	RTF1213-11	RTF1213-05	RTF1213-01	RTF1213-02
Date Sampled	Number	Standard Value (Note 1)	6/18/2010	6/17/2010	6/17/2010	6/17/2010	6/18/2010	6/22/2010	6/22/2010	6/21/2010	6/22/2010	6/21/2010	6/21/2010	6/22/2010	6/22/2010	6/22/2010	6/21/2010	6/21/2010	6/21/2010
BTEX Compounds (ug/L)																			
Benzene	71-43-2	1 s	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	20 U	20 U	20 U	20 U	0.41 U	8.2 U	16 U	10 U	0.41 U	0.41 U	0.5 J	0.41 U
Toluene	100-41-4	5 s	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	1500	26 U	26 U	26 U	0.51 U	10 U	20 U	13 U	0.51 U	8	0.51 U	0.51 U
Ethylbenzene	108-88-3	5 s	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	100 J	37 U	37 U	37 U	0.74 U	15 U	30 U	18 U	0.74 U	2 J	0.74 U	0.74 U
Xylenes (total)	1330-20-7	5 s	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	790	33 U	33 U	33 U	0.66 U	13 U	26 U	16 U	0.66 U	16	0.66 U	0.66 U
Total BTEX Compounds (ug/L)	NA	NL	--- U	--- U	--- U	--- U	--- U	2390	--- U	--- U	--- U	--- U	--- U	--- U	--- U	--- U	26	0.5	--- U
Other VOCs (ug/L)																			
1,1,1-Trichloroethane	71-55-6	5 s	0.82 U	0.82 U	0.82 U	0.82 U	130	37000	41 U	18000	41 U	56	620	33 U	20 U	0.82 U	55000	2 J	0.82 U
1,1,2,2-Tetrachloroethane	79-34-5	5 s	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	11 U	11 U	11 U	11 U	0.21 U	4.3 U	8.5 U	5.3 U	0.21 U	0.21 U	0.21 U	0.21 U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5 s	0.31 U	0.31 U	0.31 U	0.31 U	4.4 J	4400	15 U	15 U	15 U	0.31 U	660	12 U	7.7 U	0.31 U	1400 J	1.7 J	0.44 J
1,1,2-Trichloroethane	79-00-5	1 s	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	210 J	12 U	58 J	12 U	0.23 U	4.6 U	9.2 U	5.8 U	0.23 U	84	0.83 J	0.23 U
1,1-Dichloroethane	75-34-3	5 s	2.1 J	0.38 U	0.38 U	0.38 U	50	3300	19 U	3800	19 U	28	890	15 U	9.6 U	0.38 U	43000	33	6
1,1-Dichloroethene	75-35-4	5 s	0.29 U	0.29 U	0.29 U	0.29 U	5.8	3100	15 U	3100	15 U	11	63 J	12 U	7.3 U	0.29 U	1300 J	2.2 J	5.2
1,2,4-Trichlorobenzene	120-82-1	5 s	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	20 U	20 U	20 U	20 U	0.41 U	8.2 U	16 U	10 U	0.41 U	0.41 U	0.41 U	0.41 U
1,2-Dibromo-3-chloropropane	96-12-8	0.04 s	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	20 U	20 U	20 U	20 U	0.39 U	7.9 U	16 U	9.8 U	0.39 U	0.39 U	0.39 U	0.39 U
1,2-Dibromoethane	106-93-4	0.0006 s	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	36 U	36 U	36 U	36 U	0.73 U	15 U	29 U	18 U	0.73 U	0.73 U	0.73 U	0.73 U
1,2-Dichlorobenzene	95-50-1	3 s	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	40 U	40 U	40 U	40 U	0.79 U	16 U	32 U	20 U	0.79 U	0.79 U	0.79 U	0.79 U
1,2-Dichloroethane	107-06-2	0.6 s	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	29 J	11 U	59 J	11 U	0.21 U	4.3 U	8.6 U	5.4 U	0.21 U	77	0.21 U	0.21 U
1,2-Dichloropropane	78-87-5	1 s	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	36 U	36 U	36 U	36 U	0.72 U	14 U	29 U	18 U	0.72 U	0.72 U	0.72 U	0.72 U
1,3-Dichlorobenzene	541-73-1	3 s	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	39 U	39 U	39 U	39 U	0.78 U	16 U	31 U	20 U	0.78 U	0.78 U	0.78 U	0.78 U
1,4-Dichlorobenzene	106-46-7	3 s	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	42 U	42 U	42 U	42 U	0.84 U	17 U	34 U	21 U	0.84 U	0.84 U	0.84 U	0.84 U
2-Butanone	78-93-3	50 g	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	160 J	66 U	66 U	66 U	1.3 U	26 U	53 U	33 U	1.3 U	96	1.3 U	1.3 U
2-Hexanone	591-78-6	50 g	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	62 U	62 U	62 U	62 U	1.2 U	25 U	50 U	31 U	1.2 U	1.2 U	1.2 U	1.2 U
4-Methyl-2-pentanone	108-10-1	NL	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	100 U	100 U	100 U	100 U	2.1 U	42 U	84 U	52 U	2.1 U	2.6 J	2.1 U	2.1 U
Acetone	67-64-1	50 g	3 U	3 U	3 U	4.2 J	3 U	200 J	150 U	150 U	150 U	3 U	60 U	120 U	75 U	3 U	3 U	3 U	3 U
Bromodichloromethane	75-27-4	50 g	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	19 U	19 U	19 U	19 U	0.39 U	7.7 U	15 U	9.6 U	0.39 U	0.39 U	0.39 U	0.39 U
Bromoform	75-25-2	50 g	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	13 U	13 U	13 U	13 U	0.26 U	5.1 U	10 U	6.4 U	0.26 U	0.26 U	0.26 U	0.26 U
Bromomethane	74-83-9	5 s	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	34 U	34 U	34 U	34 U	0.69 U	14 U	28 U	17 U	0.69 U	0.69 U	0.69 U	0.69 U
Carbon disulfide	75-15-0	60 g	0.19 U	1.4 J	1.2 J	1.2 J	2 J	9.7 U	9.7 U	9.7 U	9.7 U	0.19 U	3.9 U	7.8 U	4.8 U	0.19 U	0.87 J	0.19 U	0.19 U
Carbon tetrachloride	56-23-5	5 s	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	13 U	13 U	13 U	13 U	0.27 U	5.3 U	11 U	6.7 U	0.27 U	0.27 U	0.27 U	0.27 U
Chlorobenzene	108-90-7	5 s	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	38 U	38 U	38 U	38 U	0.75 U	15 U	30 U	19 U	0.75 U	0.75 U	0.75 U	0.75 U
Chloroethane	75-00-3	5 s	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	16 U	16 U	16 U	16 U	0.32 U	6.5 U	13 U	8.1 U	0.32 U	10000 U	0.32 U	0.32 U
Chloroform	67-66-3	7 s	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	17 U	17 U	17 U	17 U	0.34 U	6.7 U	13 U	8.4 U	0.34 U	7.3	0.34 U	0.34 U
Chloromethane	74-87-3	5 s	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	17 U	17 U	17 U	17 U	0.35 U	6.9 U	14 U	8.6 U	0.35 U	0.46 J	0.35 U	0.35 U
cis-1,2-Dichloroethene	156-59-2	5 s	6.4	0.81 U	2.6 J	2.4 J	0.81 U	22000	6400	7100	3000	16	32 J	2000	1100	0.81 U	10000 U	520	1100
cis-1,3-Dichloropropene	10061-01-5	0.4 s	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	18 U	18 U	18 U	18 U	0.36 U	7.1 U	14 U	8.9 U	0.36 U	0.36 U	0.36 U	0.36 U
Cyclohexane	110-82-7	NL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	9 U	9 U	9 U	9 U	0.18 U	3.6 U	7.2 U	4.5 U	0.18 U	0.18 U	0.18 U	0.18 U
Dibromochloromethane	124-48-1	50 g	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	16 U	16 U	16 U	16 U	0.32 U	6.4 U	13 U	8.1 U	0.32 U	0.32 U	0.32 U	0.32 U
Dichlorodifluoromethane	75-71-8	5 s	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U	34 U	34 U	34 U	34 U	0.68 U	14 U	27 U	17 U	0.68 U	1.2 J	0.68 U	1.2 J
Isopropylbenzene	98-82-8	5 s	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	40 U	40 U	40 U	40 U	0.79 U	16 U	32 U	20 U	0.79 U	0.79 U	0.79 U	0.79 U
Methyl acetate	79-20-9	NL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	25 U	25 U	25 U	25 U	0.5 U	10 U	20 U	13 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl tert-butyl ether	1634-04-4	10 g	0.16 U	0.16 U	0.16 U	0.16 U	0.62 J	8 U	8 U	8 U	8 U	0.16 U	3.2 U	6.4 U	4 U	0.16 U	0.16 U	0.16 U	0.16 U
Methylcyclohexane	108-87-2	NL	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	8 U	8 U	8 U	8 U	0.16 U	3.2 U	6.4 U	4 U	0.16 U	0.16 U	0.16 U	0.16 U
Methylene chloride	75-09-2	5 s	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	22 U	22 U	22 U	22 U	0.44 U	8.8 U	18 U	11 U	0.44 U	17	0.44 U	0.44 U
Styrene	100-42-5	5 s	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	36 U	36 U	36 U	36 U	0.73 U	15 U	29 U	18 U	0.73 U	0.73 U	0.73 U	0.73 U
Tetrachloroethene	127-18-4	5 s	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	18 U	18 U	18 U	18 U	0.36 U	7.3 U	15 U	9.1 U	0.36 U	1.2 J	0.36 U	0.36 U
trans-1,2-Dichloroethene	156-60-5	5 s	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	80 J	94 J	45 U	45 U	0.9 U	18 U	36 U	22 U	0.9 U	1.3 J	11	29
trans-1,3-Dichloropropene	10061-02-6	0.4 s	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	18 U	18 U	18 U	18 U	0.37 U	7.4 U	15 U	9.2 U	0.37 U	0.37 U	0.37 U	0.37 U
Trichloroethene	79-01-6	5 s	1.4 J	0.46 U	7.2	7.1	5.5	4500	11000	1500	14000	1.6 J	46 J	4900	1600	0.46 U	92	300	600
Trichlorofluoromethane	75-69-4	5 s	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U	44 U	44 U	44 U	44 U	0.88 U	18 U	35 U	22 U	0.88 U	0.88 U	0.88 U	0.88 U
Vinyl chloride	75-01-4	2 s	4.9 J	0.9 U	0.9 U	0.9 U	0.9 U	63 J	45 U	45 U	160 J	0.9 U	18 U	44 J	22 U	0.9 U	41	33	130
Total VOCs (ug/L) (Note 2)	NA	NL	14.8	1.4	11	14.9	198.32	77432	17494	33558	17160	112.6	2311	6944	2700	--- U	101147.9	904.23	1871.84

Notes:
NA = Not analyzed, not applicable
NL = Not listed
U = The material was analyzed for but not detected at, or above, the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the reporting limit
Shaded value - Compound detected in a concentration greater than the groundwater standard value.
s = Standard Value
g = Guidance Value
Note 1 - Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC, 1998, with addenda through 2004].
Note 2 - Total VOCs includes BTEX compounds.

Table 10
Groundwater VOC Results
Scott Aviation BCP

Sample Designation	CAS	NYSDEC	A1-GP13-S	A1-GP14-S	A1-GP15-S	A1-GP16-S	A1-GP17-S	A1-GP18-S	MW-35D	MW-36D	MW-37D	MW-38D	MW-39D	MW-40D	GW-DUPLICATE-2	MW-41B2	MW-30	MW-35S	MW-36S
			June 2010														August 2010		
			Shallow Overburden						Deep Overburden							Bedrock	Shallow Overburden		
Laboratory Identification	Number	Groundwater Guidance or	RTF1213-04	RTF1213-03	RTF1140-09	RTF1140-08	RTF1140-06	RTF1140-18	RTF1140-15	RTF1140-04	RTF1140-20	RTF1213-12	RTF1140-17	RTF1213-06	RTF1213-07	RTF1140-07	RTH0401-01	RTH0401-07	RTH0401-02
Date Sampled		Standard Value (Note 1)	6/21/2010	6/21/2010	6/17/2010	6/17/2010	6/17/2010	6/18/2010	6/17/2010	6/17/2010	6/18/2010	6/22/2010	6/18/2010	6/21/2010	6/21/2010	6/17/2010	8/3/2010	8/2/2010	8/3/2010
BTEX Compounds (ug/L)																			
Benzene	71-43-2	1 s	**22**	**1.3 J**	0.41 U	2 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	20 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
Toluene	100-41-4	5 s	**43**	0.51 U	0.51 U	2.6 U	**0.51 J**	0.51 U	0.51 U	0.51 U	0.51 U	**300**	0.51 U	0.51 U	0.51 U	**1.3 J**	0.51 U	0.51 U	0.51 U
Ethylbenzene	108-88-3	5 s	**96**	0.74 U	0.74 U	3.7 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	**270**	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U
Xylenes (total)	1330-20-7	5 s	**1600**	0.66 U	0.66 U	3.3 U	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	**730 J**	0.66 U	**1.1 J**	**1.1 J**	**0.71 J**	0.66 U	0.66 U	0.66 U
Total BTEX Compounds (ug/L)	NA	NL	1761	1.3	--- U	--- U	0.51	--- U	--- U	--- U	--- U	1300	--- U	1.1	1.1	2.01	--- U	--- U	--- U
Other VOCs (ug/L)																			
1,1,1-Trichloroethane	71-55-6	5 s	**2.2 J**	0.82 U	0.82 U	4.1 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	41 U	**17**	**23**	**22**	0.82 U	0.82 U	0.82 U	0.82 U
1,1,2,2-Tetrachloroethane	79-34-5	5 s	0.21 U	0.21 U	0.21 U	1.1 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	11 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5 s	**6.6**	0.31 U	0.31 U	1.5 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	15 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
1,1,2-Trichloroethane	79-00-5	1 s	**7**	0.23 U	0.23 U	1.2 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	12 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
1,1-Dichloroethane	75-34-3	5 s	**400**	0.38 U	0.38 U	1.9 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	19 U	**4.7 J**	**260**	**240**	0.38 U	**2.4 J**	0.38 U	0.38 UJ
1,1-Dichloroethene	75-35-4	5 s	**10**	0.29 U	0.29 U	1.5 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	15 U	**2.3 J**	**1.8 J**	**1.7 J**	0.29 U	0.29 U	0.29 U	0.29 U
1,2,4-Trichlorobenzene	120-82-1	5 s	0.41 U	0.41 U	0.41 U	2 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	20 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
1,2-Dibromo-3-chloropropane	96-12-8	0.04 s	0.39 U	0.39 U	0.39 U	2 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	20 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
1,2-Dibromoethane	106-93-4	0.0006 s	0.73 U	0.73 U	0.73 U	3.6 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	36 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U
1,2-Dichlorobenzene	95-50-1	3 s	0.79 U	0.79 U	0.79 U	4 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	40 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U
1,2-Dichloroethane	107-06-2	0.6 s	**6.8**	0.21 U	0.21 U	1.1 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	11 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
1,2-Dichloropropane	78-87-5	1 s	0.72 U	0.72 U	0.72 U	3.6 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	36 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U
1,3-Dichlorobenzene	541-73-1	3 s	0.78 U	0.78 U	0.78 U	3.9 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	39 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U
1,4-Dichlorobenzene	106-46-7	3 s	0.84 U	0.84 U	0.84 U	4.2 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	42 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U
2-Butanone	78-93-3	50 g	1.3 U	1.3 U	1.3 U	6.6 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	66 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
2-Hexanone	591-78-6	50 g	1.2 U	1.2 U	1.2 U	6.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	62 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
4-Methyl-2-pentanone	108-10-1	NL	2.1 U	2.1 U	**9.3 J**	10 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	100 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Acetone	67-64-1	50 g	**7 J**	3 U	23 J	15 U	3 U	3 U	**4.1 J**	3 U	3 U	150 U	3 U	**3.4 J**	3 U	**5.7 J**	3 U	**3.8 J**	3 U
Bromodichloromethane	75-27-4	50 g	0.39 U	0.39 U	0.39 U	1.9 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	19 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
Bromoform	75-25-2	50 g	0.26 U	0.26 U	0.26 U	1.3 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	13 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
Bromomethane	74-83-9	5 s	0.69 U	0.69 U	0.69 U	3.4 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	34 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Carbon disulfide	75-15-0	60 g	0.19 U	0.19 U	**0.52 J**	0.97 U	0.19 U	0.19 U	**0.71 J**	0.19 U	0.19 U	9.7 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Carbon tetrachloride	56-23-5	5 s	0.27 U	0.27 U	0.27 U	1.3 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	13 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
Chlorobenzene	108-90-7	5 s	0.75 U	0.75 U	0.75 U	3.8 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	38 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
Chloroethane	75-00-3	5 s	**160**	0.32 U	0.32 U	1.6 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	16 U	0.32 U	**1.4 J**	**1.3 J**	0.32 U	0.32 U	0.32 U	0.32 U
Chloroform	67-66-3	7 s	0.34 U	0.34 U	0.34 U	1.7 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	17 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Chloromethane	74-87-3	5 s	0.35 U	0.35 U	0.35 U	1.7 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	17 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
cis-1,2-Dichloroethene	156-59-2	5 s	**550**	0.81 U	0.81 U	**19 J**	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	**4400**	0.81 U	**1.2 J**	**1.2 J**	0.81 U	**7.7**	0.81 U	**1.5 J**
cis-1,3-Dichloropropene	10061-01-5	0.4 s	0.36 U	0.36 U	0.36 U	1.8 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	18 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
Cyclohexane	110-82-7	NL	**2.5 J**	0.18 U	0.18 U	0.9 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	9 U	0.18 U	0.18 U	0.18 U	**2.3 J**	0.18 U	0.18 U	0.18 U
Dibromochloromethane	124-48-1	50 g	0.32 U	0.32 U	0.32 U	1.6 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	16 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Dichlorodifluoromethane	75-71-8	5 s	0.68 U	0.68 U	0.68 U	3.4 U	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U	34 U	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U
Isopropylbenzene	98-82-8	5 s	0.79 U	0.79 U	0.79 U	4 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	40 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U
Methyl acetate	79-20-9	NL	0.5 U	0.5 U	0.5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl tert-butyl ether	1634-04-4	10 g	0.16 U	0.16 U	0.16 U	0.8 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	8 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Methylcyclohexane	108-87-2	NL	**23**	0.16 U	0.16 U	0.8 U	**0.56 J**	0.16 U	0.16 U	0.16 U	0.16 U	8 U	0.16 U	0.16 U	0.16 U	**5.1**	0.16 U	0.16 U	0.16 U
Methylene chloride	75-09-2	5 s	**8.3**	0.44 U	0.44 U	2.2 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	22 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
Styrene	100-42-5	5 s	0.73 U	0.73 U	0.73 U	3.6 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	36 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U
Tetrachloroethene	127-18-4	5 s	**0.6 J**	0.36 U	0.36 U	1.8 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	**230 J**	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
trans-1,2-Dichloroethene	156-60-5	5 s	**13**	**1.3 J**	0.9 U	4.5 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	45 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
trans-1,3-Dichloropropene	10061-02-6	0.4 s	0.37 U	0.37 U	0.37 U	1.8 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	18 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
Trichloroethene	79-01-6	5 s	**3.9 J**	0.46 U	0.46 U	2.3 U	0.46 U	0.46 U	0.46 U	**2.1 J**	0.46 U	**11000**	0.46 U	**2.8 J**	**2.8 J**	0.46 U	**1.6 J**	0.46 U	**0.58 J**
Trichlorofluoromethane	75-69-4	5 s	0.88 U	0.88 U	0.88 U	4.4 U	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U	44 U	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U
Vinyl chloride	75-01-4	2 s	**770**	**4 J**	0.9 U	4.5 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	45 U	0.9 U	0.9 U	0.9 U	0.9 U	**5.9**	0.9 U	0.9 U
Total VOCs (ug/L) (Note 2)	NA	NL	3731.9	6.6	9.82	19	1.07	--- U	4.81	2.1	--- U	16930	24	294.7	270.1	13.1	17.6	3.8	2.08

Notes:
NA = Not analyzed, not applicable
NL = Not listed
U = The material was analyzed for but not detected at, or above, the reporting limit. The asso
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the reporting limit
Shaded value - Compound detected in a concentration greater
s = Standard Value
g = Guidance Value
Note 1 - Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC
Note 2 - Total VOCs includes BTEX compounds.

Table 10
Groundwater VOC Results
Scott Aviation BCP

Sample Designation / Laboratory Identification / Date Sampled	CAS Number	NYSDEC Groundwater Guidance or Standard Value (Note 1)	August 2010 Shallow Overburden GW-DUPLICATE-1 RTH0401-06 8/2/2010	MW-37S RTH0401-10 8/3/2010	A1-GP01-S RTH0401-14 8/4/2010	A1-GP02-S RTH0401-15 8/4/2010	A1-GP03-S RTH0401-16 8/4/2010	A1-GP04-S RTH0401-17 8/4/2010	A1-GP05-S RTH0401-18 8/4/2010	A1-GP06-S RTH0401-19 8/4/2010	A1-GP07-S RTH0401-20 8/4/2010	A1-GP08-S RTH0402-01 8/4/2010	A1-GP09-S RTH0402-02 8/3/2010	A1-GP10-S RTH0402-03 8/3/2010	A1-GP11-S RTH0402-04 8/3/2010	A1-GP12-S RTH0402-05 8/3/2010	A1-GP13-S RTH0402-06 8/3/2010	A1-GP14-S RTH0402-07 8/3/2010	A1-GP15-S RTH0402-08 8/2/2010
BTEX Compounds (ug/L)																			
Benzene	71-43-2	1 s	0.41 U	1.6 U	100 U	82 U	160 U	1.4 J	0.41 U	8.2 U	20 U	10 U	0.41 U	510 U	4.1 U	8.2 U	34 J	5.5	0.41 U
Toluene	100-41-4	5 s	0.51 U	2 U	340 J	100 U	200 U	1.6 J	0.51 U	10 U	26 U	13 U	0.51 U	640 U	5.1 U	10 U	63	0.51 U	0.51 U
Ethylbenzene	108-88-3	5 s	0.74 U	3 U	180 U	150 U	300 U	0.75 J	0.74 U	15 U	37 U	18 U	0.74 U	920 U	7.4 U	15 U	120	0.74 U	0.74 U
Xylenes (total)	1330-20-7	5 s	0.66 U	2.6 U	160 U	130 U	260 U	0.66 U	0.66 U	13 U	33 U	16 U	0.66 U	820 U	6.6 U	13 U	2000	0.66 U	0.66 U
Total BTEX Compounds (ug/L)	NA	NL	--- U	--- U	340	--- U	--- U	3.75	--- U	--- U	--- U	--- U	--- U	--- U	--- U	--- U	2217	5.5	--- U
Other VOCs (ug/L)																			
1,1,1-Trichloroethane	71-55-6	5 s	0.82 U	200	7500	160 U	39000	14	98	1700	41 U	20 U	0.82 U	84000	8.2 U	16 U	8.2 U	0.82 U	0.82 U
1,1,2,2-Tetrachloroethane	79-34-5	5 s	0.21 U	0.85 U	53 U	43 U	85 U	0.21 U	0.21 U	4.3 U	11 U	5.3 U	0.21 U	270 U	2.1 U	4.3 U	2.1 U	0.21 U	0.21 U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5 s	0.31 U	6.3 J	1000 J	62 U	120 U	1.7 J	0.31 U	1900	15 U	7.7 U	0.31 U	1900 J	14 J	6.2 U	17 J	0.31 U	0.31 U
1,1,2-Trichloroethane	79-00-5	1 s	0.23 U	0.92 U	180 J	46 U	92 U	0.59 J	0.23 U	16 J	12 U	5.8 U	0.23 U	290 U	2.3 U	4.6 U	13 J	0.23 U	0.23 U
1,1-Dichloroethane	75-34-3	5 s	0.38 UJ	440	2000	77 U	6200	13	38	3200	19 U	9.6 U	0.38 U	48000	68	14 J	620	1 J	0.38 U
1,1-Dichloroethene	75-35-4	5 s	0.29 U	20	760 J	59 U	5600	20	21	270	15 U	7.3 U	0.29 U	2000 J	6.5 J	17 J	46 J	0.29 U	0.29 U
1,2,4-Trichlorobenzene	120-82-1	5 s	0.41 U	1.6 U	100 U	82 U	160 U	0.41 U	0.41 U	8.2 U	20 U	10 U	0.41 U	510 U	4.1 U	8.2 U	4.1 U	0.41 U	0.41 U
1,2-Dibromo-3-chloropropane	96-12-8	0.04 s	0.39 U	1.6 U	98 U	79 U	160 U	0.39 U	0.39 U	7.9 U	20 U	9.8 U	0.39 U	490 U	3.9 U	7.9 U	3.9 U	0.39 U	0.39 U
1,2-Dibromoethane	106-93-4	0.0006 s	0.73 U	2.9 U	180 U	150 U	290 U	0.73 U	0.73 U	15 U	36 U	18 U	0.73 U	910 U	7.3 U	15 U	7.3 U	0.73 U	0.73 U
1,2-Dichlorobenzene	95-50-1	3 s	0.79 U	3.2 U	200 U	160 U	320 U	0.79 U	0.79 U	16 U	40 U	20 U	0.79 U	990 U	7.9 U	16 U	7.9 U	0.79 U	0.79 U
1,2-Dichloroethane	107-06-2	0.6 s	0.21 U	0.86 U	54 U	43 U	86 U	0.21 U	0.21 U	4.3 U	11 U	5.4 U	0.21 U	270 U	2.1 U	4.3 U	14 J	0.21 U	0.21 U
1,2-Dichloropropane	78-87-5	1 s	0.72 U	2.9 U	180 U	140 U	290 U	0.72 U	0.72 U	14 U	36 U	18 U	0.72 U	900 U	7.2 U	14 U	7.2 U	0.72 U	0.72 U
1,3-Dichlorobenzene	541-73-1	3 s	0.78 U	3.1 U	200 U	160 U	310 U	0.78 U	0.78 U	16 U	39 U	20 U	0.78 U	980 U	7.8 U	16 U	7.8 U	0.78 U	0.78 U
1,4-Dichlorobenzene	106-46-7	3 s	0.84 U	3.4 U	210 U	170 U	340 U	0.84 U	0.84 U	17 U	42 U	21 U	0.84 U	1000 U	8.4 U	17 U	8.4 U	0.84 U	0.84 U
2-Butanone	78-93-3	50 g	1.3 U	5.3 U	330 U	260 U	530 U	1.3 U	1.3 U	26 U	66 U	33 U	1.3 U	1600 U	13 U	26 U	13 U	1.3 U	1.3 U
2-Hexanone	591-78-6	50 g	1.2 U	5 U	310 U	250 U	500 U	1.2 U	1.2 U	25 U	62 U	31 U	1.2 U	1600 U	12 U	25 U	12 U	1.2 U	1.2 U
4-Methyl-2-pentanone	108-10-1	NL	2.1 U	8.4 U	520 U	420 U	840 U	2.1 U	2.1 U	42 U	100 U	52 U	2.1 U	2600 U	21 U	42 U	21 U	2.1 U	2.1 U
Acetone	67-64-1	50 g	3 U	12 U	750 U	600 U	1200 U	3 U	3 U	60 U	150 U	75 U	3 U	3800 U	30 U	60 U	30 U	5.2 J	3.4 J
Bromodichloromethane	75-27-4	50 g	0.39 U	1.5 U	96 U	77 U	150 U	0.39 U	0.39 U	7.7 U	19 U	9.6 U	0.39 U	480 U	3.9 U	7.7 U	3.9 U	0.39 U	0.39 U
Bromoform	75-25-2	50 g	0.26 U	1 U	64 U	51 U	100 U	0.26 U	0.26 U	5.1 U	13 U	6.4 U	0.26 U	320 U	2.6 U	5.1 U	2.6 U	0.26 U	0.26 U
Bromomethane	74-83-9	5 s	0.69 U	2.8 U	170 U	140 U	280 U	0.69 U	0.69 U	14 U	34 U	17 U	0.69 U	860 U	6.9 U	14 U	6.9 U	0.69 U	0.69 U
Carbon disulfide	75-15-0	60 g	0.19 U	0.78 U	48 U	39 U	78 U	0.19 U	0.19 U	3.9 U	9.7 U	4.8 U	0.19 U	240 U	1.9 U	3.9 U	1.9 U	0.19 U	0.19 U
Carbon tetrachloride	56-23-5	5 s	0.27 U	1.1 U	67 U	53 U	110 U	0.27 U	0.27 U	5.3 U	13 U	6.7 U	0.27 U	330 U	2.7 U	5.3 U	2.7 U	0.27 U	0.27 U
Chlorobenzene	108-90-7	5 s	0.75 U	3 U	190 U	150 U	300 U	0.75 U	0.75 U	15 U	38 U	19 U	0.75 U	940 U	7.5 U	15 U	7.5 U	0.75 U	0.75 U
Chloroethane	75-00-3	5 s	0.32 U	1.3 U	81 U	65 U	130 U	0.32 U	0.32 U	6.5 U	16 U	8.1 U	0.32 U	400 U	3.2 U	6.5 U	180	0.62 J	0.32 U
Chloroform	67-66-3	7 s	0.34 U	1.3 U	84 U	67 U	130 U	0.34 U	0.34 U	6.7 U	17 U	8.4 U	0.34 U	420 U	3.4 U	6.7 U	3.4 U	0.34 U	0.34 U
Chloromethane	74-87-3	5 s	0.35 U	1.4 U	86 U	69 U	140 U	0.35 U	0.35 U	6.9 U	17 U	8.6 U	0.35 U	430 U	3.5 U	6.9 U	3.5 U	0.74 J	0.35 U
cis-1,2-Dichloroethene	156-59-2	5 s	1.4 J	3.2 U	15000	10000	12000	3100	22	130	1300	2400	0.81 U	1000 U	1000	2900	2200	0.88 J	0.81 U
cis-1,3-Dichloropropene	10061-01-5	0.4 s	0.36 U	1.4 U	89 U	71 U	140 U	0.36 U	0.36 U	7.1 U	18 U	8.9 U	0.36 U	440 U	3.6 U	7.1 U	3.6 U	0.36 U	0.36 U
Cyclohexane	110-82-7	NL	0.18 U	0.72 U	45 U	36 U	72 U	0.18 U	0.18 U	3.6 U	9 U	4.5 U	0.18 U	220 U	1.8 U	3.6 U	5.7 J	0.18 U	0.18 U
Dibromochloromethane	124-48-1	50 g	0.32 U	1.3 U	81 U	64 U	130 U	0.32 U	0.32 U	6.4 U	16 U	8.1 U	0.32 U	400 U	3.2 U	6.4 U	3.2 U	0.32 U	0.32 U
Dichlorodifluoromethane	75-71-8	5 s	0.68 U	2.7 U	170 U	140 U	270 U	0.68 U	0.68 U	33 J	34 U	17 U	0.68 U	850 U	6.8 U	14 U	6.8 U	0.68 U	0.68 U
Isopropylbenzene	98-82-8	5 s	0.79 U	3.2 U	200 U	160 U	320 U	0.79 U	0.79 U	16 U	40 U	20 U	0.79 U	990 U	7.9 U	16 U	7.9 U	0.79 U	0.79 U
Methyl acetate	79-20-9	NL	0.5 U	2 U	130 U	100 U	200 U	0.5 U	0.5 U	10 U	25 U	13 U	0.5 U	630 U	5 U	10 U	5 U	0.5 U	0.5 U
Methyl tert-butyl ether	1634-04-4	10 g	0.16 U	0.64 U	40 U	32 U	64 U	0.16 U	0.16 U	3.2 U	8 U	4 U	0.16 U	200 U	1.6 U	3.2 U	1.6 U	0.16 U	0.16 U
Methylcyclohexane	108-87-2	NL	0.16 U	0.64 U	40 U	32 U	64 U	0.16 U	0.16 U	3.2 U	8 U	4 U	0.16 U	200 U	1.6 U	3.2 U	36 J	0.16 U	0.16 U
Methylene chloride	75-09-2	5 s	0.44 U	1.8 U	110 U	88 U	180 U	0.44 U	0.44 U	8.8 U	22 U	11 U	0.44 U	550 U	4.4 U	8.8 U	50 U	0.44 U	0.44 U
Styrene	100-42-5	5 s	0.73 U	2.9 U	180 U	150 U	290 U	0.73 U	0.73 U	15 U	36 U	18 U	0.73 U	910 U	7.3 U	15 U	7.3 U	0.73 U	0.73 U
Tetrachloroethene	127-18-4	5 s	0.36 U	1.5 U	91 U	73 U	150 U	1.8 J	0.36 U	7.3 U	18 U	9.1 U	0.36 U	460 U	3.6 U	7.3 U	3.6 U	0.36 U	0.36 U
trans-1,2-Dichloroethene	156-60-5	5 s	0.9 U	3.6 U	220 U	190 J	360 U	35	0.96 J	18 U	45 U	22 U	0.9 U	1100 U	28 J	120	28 J	6.2	0.9 U
trans-1,3-Dichloropropene	10061-02-6	0.4 s	0.37 U	1.5 U	92 U	74 U	150 U	0.37 U	0.37 U	7.4 U	18 U	9.2 U	0.37 U	460 U	3.7 U	7.4 U	3.7 U	0.37 U	0.37 U
Trichloroethene	79-01-6	5 s	0.58 J	3 J	340 J	20000	2400	13000	2.4 J	200	2900	1900	0.88 J	570 U	700	1500	11 J	0.46 U	0.46 U
Trichlorofluoromethane	75-69-4	5 s	0.88 U	3.5 U	220 U	180 U	350 U	0.88 U	0.88 U	18 U	44 U	22 U	0.88 U	1100 U	8.8 U	18 U	8.8 U	0.88 U	0.88 U
Vinyl chloride	75-01-4	2 s	0.9 U	3.6 U	220 U	180 U	360 U	480 J	1.2 J	20 J	69 J	49 J	0.9 U	1100 U	60	240	2200	11	0.9 U
Total VOCs (ug/L) (Note 2)	NA	NL	1.98	669.3	27120	30190	65200	16669.84	183.56	7469	4269	4349	0.88	135900	1876.5	4791	7587.7	30.4	3.4

Notes:
NA = Not analyzed, not applicable
NL = Not listed
U = The material was analyzed for but not detected at, or above, the reporting limit. The asso
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the reporting limit
Shaded value - Compound detected in a concentration greater
s = Standard Value
g = Guidance Value
Note 1 - Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC
Note 2 - Total VOCs includes BTEX compounds.

Table 10
Groundwater VOC Results
Scott Aviation BCP

			August 2010										
			Shallow Overburden			Deep Overburden							Bedrock
Sample Designation		**NYSDEC**	**A1-GP16-S**	**A1-GP17-S**	**A1-GP18-S**	**MW-35D**	**MW-36D**	**MW-37D**	**MW-38D**	**MW-39D**	**MW-40D**	**GW-DUPLICATE-2**	**MW-41B2**
Laboratory Identification	**CAS**	**Groundwater Guidance or**	**RTH0402-09**	**RTH0402-10**	**RTH0402-11**	**RTH0401-08**	**RTH0401-09**	**RTH0401-11**	**RTH0401-12**	**RTH0401-03**	**RTH0401-13**	**RTH0402-13**	**RTH0401-04**
Date Sampled	**Number**	**Standard Value (Note 1)**	**8/2/2010**	**8/3/2010**	**8/2/2010**	**8/2/2010**	**8/2/2010**	**8/3/2010**	**8/4/2010**	**8/3/2010**	**8/3/2010**	**8/3/2010**	**8/2/2010**
BTEX Compounds (ug/L)													
Benzene	71-43-2	1 s	2 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	82 U	0.41 U	1.6 U	0.41 U	0.41 U
Toluene	100-41-4	5 s	2.6 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	100 U	0.51 U	2 U	0.51 U	**2 J**
Ethylbenzene	108-88-3	5 s	3.7 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	150 U	0.74 U	3 U	0.74 U	0.74 U
Xylenes (total)	1330-20-7	5 s	3.3 U	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	**260 J**	0.66 U	2.6 U	0.66 U	0.66 U
Total BTEX Compounds (ug/L)	NA	NL	--- U	--- U	--- U	--- U	--- U	--- U	260	--- U	--- U	--- U	2
Other VOCs (ug/L)													
1,1,1-Trichloroethane	71-55-6	5 s	4.1 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	160 U	**13**	**25**	**26**	0.82 U
1,1,2,2-Tetrachloroethane	79-34-5	5 s	1.1 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	43 U	0.21 U	0.85 U	0.21 U	0.21 U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5 s	1.5 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	62 U	0.31 U	1.2 U	**2 J**	0.31 U
1,1,2-Trichloroethane	79-00-5	1 s	1.2 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	46 U	0.23 U	0.92 U	0.23 U	0.23 U
1,1-Dichloroethane	75-34-3	5 s	1.9 U	0.38 U	0.38 U	0.38 U	0.38 UJ	0.38 U	77 U	**5.8**	**550**	**1100**	0.38 U
1,1-Dichloroethene	75-35-4	5 s	1.5 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	59 U	**3.1 J**	**6 J**	**3.9 J**	0.29 U
1,2,4-Trichlorobenzene	120-82-1	5 s	2 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	82 U	0.41 U	1.6 U	0.41 U	0.41 U
1,2-Dibromo-3-chloropropane	96-12-8	0.04 s	2 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	79 U	0.39 U	1.6 U	0.39 U	0.39 U
1,2-Dibromoethane	106-93-4	0.0006 s	3.6 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	150 U	0.73 U	2.9 U	0.73 U	0.73 U
1,2-Dichlorobenzene	95-50-1	3 s	4 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	160 U	0.79 U	3.2 U	0.79 U	0.79 U
1,2-Dichloroethane	107-06-2	0.6 s	1.1 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	43 U	0.21 U	0.86 U	**0.71 J**	0.21 U
1,2-Dichloropropane	78-87-5	1 s	3.6 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	140 U	0.72 U	2.9 U	0.72 U	0.72 U
1,3-Dichlorobenzene	541-73-1	3 s	3.9 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	160 U	0.78 U	3.1 U	0.78 U	0.78 U
1,4-Dichlorobenzene	106-46-7	3 s	4.2 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	170 U	0.84 U	3.4 U	0.84 U	0.84 U
2-Butanone	78-93-3	50 g	6.6 U	1.3 U	1.3 U	1.3 U	**200**	1.3 U	260 U	1.3 U	5.3 U	1.3 U	1.3 U
2-Hexanone	591-78-6	50 g	6.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	250 U	1.2 U	5 U	1.2 U	1.2 U
4-Methyl-2-pentanone	108-10-1	NL	10 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	420 U	2.1 U	8.4 U	2.1 U	2.1 U
Acetone	67-64-1	50 g	15 U	3 U	3 U	3 U	**21 J**	**7.7 J**	600 U	**4 J**	12 U	**7.4 J**	**6.8 J**
Bromodichloromethane	75-27-4	50 g	1.9 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	77 U	0.39 U	1.5 U	0.39 U	0.39 U
Bromoform	75-25-2	50 g	1.3 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	51 U	0.26 U	1 U	0.26 U	0.26 U
Bromomethane	74-83-9	5 s	3.4 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	140 U	0.69 U	2.8 U	0.69 U	0.69 U
Carbon disulfide	75-15-0	60 g	0.97 U	0.19 U	0.19 U	**0.69 J**	**0.93 J**	**1.1 J**	39 U	0.19 U	**4 J**	**3.7 J**	**1.1 J**
Carbon tetrachloride	56-23-5	5 s	1.3 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	53 U	0.27 U	1.1 U	0.27 U	0.27 U
Chlorobenzene	108-90-7	5 s	3.8 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	150 U	0.75 U	3 U	0.75 U	0.75 U
Chloroethane	75-00-3	5 s	1.6 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	65 U	0.32 U	1.3 U	**2.9 J**	0.32 U
Chloroform	67-66-3	7 s	1.7 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	67 U	0.34 U	1.3 U	0.34 U	0.34 U
Chloromethane	74-87-3	5 s	1.7 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	69 U	0.35 U	1.4 U	0.35 U	0.35 U
cis-1,2-Dichloroethene	156-59-2	5 s	**69**	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	**13000**	0.81 U	3.2 U	**2 J**	0.81 U
cis-1,3-Dichloropropene	10061-01-5	0.4 s	1.8 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	71 U	0.36 U	1.4 U	0.36 U	0.36 U
Cyclohexane	110-82-7	NL	0.9 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	36 U	0.18 U	0.72 U	0.18 U	**1.5 J**
Dibromochloromethane	124-48-1	50 g	1.6 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	64 U	0.32 U	1.3 U	0.32 U	0.32 U
Dichlorodifluoromethane	75-71-8	5 s	3.4 U	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U	140 U	0.68 U	2.7 U	0.68 U	0.68 U
Isopropylbenzene	98-82-8	5 s	4 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	160 U	0.79 U	3.2 U	0.79 U	0.79 U
Methyl acetate	79-20-9	NL	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	100 U	0.5 U	2 U	0.5 U	0.5 U
Methyl tert-butyl ether	1634-04-4	10 g	0.8 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	32 U	0.16 U	0.64 U	0.16 U	0.16 U
Methylcyclohexane	108-87-2	NL	0.8 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	32 U	0.16 U	0.64 U	0.16 U	**3.5 J**
Methylene chloride	75-09-2	5 s	2.2 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	88 U	0.44 U	1.8 U	0.44 U	0.44 U
Styrene	100-42-5	5 s	3.6 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	150 U	0.73 U	2.9 U	0.73 U	0.73 U
Tetrachloroethene	127-18-4	5 s	1.8 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	**130 J**	0.36 U	1.5 U	0.36 U	0.36 U
trans-1,2-Dichloroethene	156-60-5	5 s	4.5 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	180 U	0.9 U	3.6 U	0.9 U	0.9 U
trans-1,3-Dichloropropene	10061-02-6	0.4 s	1.8 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	74 U	0.37 U	1.5 U	0.37 U	0.37 U
Trichloroethene	79-01-6	5 s	2.3 U	0.46 U	0.46 U	0.46 U	**0.74 J**	0.46 U	**2100**	0.46 U	1.8 U	**1.9 J**	0.46 U
Trichlorofluoromethane	75-69-4	5 s	4.4 U	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U	180 U	0.88 U	3.5 U	0.88 U	0.88 U
Vinyl chloride	75-01-4	2 s	**5 J**	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	180 U	0.9 U	3.6 U	**1.2 J**	0.9 U
Total VOCs (ug/L) (Note 2)	NA	NL	74	--- U	--- U	0.69	222.67	8.8	15490	25.9	585	1151.71	14.9

Notes:
NA = Not analyzed, not applicable
NL = Not listed
U = The material was analyzed for but not detected at, or above, the reporting limit. The asso
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the reporting limit
Shaded value - Compound detected in a concentration greater
s = Standard Value
g = Guidance Value
Note 1 - Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC
Note 2 - Total VOCs includes BTEX compounds.

Table 11
Groundwater SVOC Results
Scott Aviation BCP Site

			June 2010								August 2010							
			Shallow Overburden				Deep Overburden		Bedrock		Shallow Overburden				Deep Overburden		Bedrock	
Sample Identification		NYSDEC	MW-36S		GW-DUPLICATE-1 (MW-36S)		MW-39D		MW-41B2		MW-36S		GW-DUPLICATE-1 (MW-36S)		MW-39D		MW-41B2	
Laboratory Identification	CAS	Groundwater Guidance or	RTF1140-05		RTF1140-03		RTF1140-17		RTF1140-07		RTH0401-02		RTH0401-06		RTH0401-03		RTH0401-04	
Date Sampled	Number	Standard Value (Note 1)	6/17/2010		6/17/2010		6/18/2010		6/17/2010		8/3/2010		8/2/2010		8/3/2010		8/2/2010	
PAH Compounds (ug/L)																		
2-Methylnaphthalene	91-57-6	NL	0.59	U	0.59	U	0.57	U	0.58	U	0.57	U	0.58	U	0.57	U	0.58	U
Acenaphthene	83-32-9	20 g	0.4	U	0.41	U	0.39	U	0.39	U	0.39	U	0.4	U	0.39	U	0.39	U
Acenaphthylene	208-96-8	NL	0.37	U	0.38	U	0.36	U	0.37	U	0.36	U	0.37	U	0.36	U	0.37	U
Anthracene	120-12-7	50 g	0.27	U	0.28	U	0.26	U	0.27	U	0.27	U	0.27	U	0.26	U	0.27	U
Benzo(a)anthracene	56-55-3	0.002 g	0.35	U	0.36	U	0.34	U	0.35	U	0.34	U	0.35	U	0.34	U	0.35	U
Benzo(a)pyrene	50-32-8	ND	0.46	U	0.47	U	0.44	U	0.45	U	0.45	U	0.46	U	0.44	U	0.45	U
Benzo(b)fluoranthene	205-99-2	0.002 g	0.33	U	0.34	U	0.32	U	0.33	U	0.33	U	0.33	U	0.32	U	0.33	U
Benzo(ghi)perylene	191-24-2	NL	0.34	U	0.35	U	0.33	U	0.34	U	0.33	U	0.34	U	0.33	U	0.34	U
Benzo(k)fluoranthene	207-08-9	0.002 g	0.72	U	0.72	U	0.69	U	0.7	U	0.7	U	0.71	U	0.69	U	0.7	U
Chrysene	218-01-9	0.002 g	0.32	U	0.33	U	0.31	U	0.32	U	0.32	U	0.32	U	0.31	U	0.32	U
Dibenz(a,h)anthracene	53-70-3	NL	0.41	U	0.42	U	0.4	U	0.4	U	0.4	U	0.41	U	0.4	U	0.4	U
Fluoranthene	206-44-0	50 g	0.39	U	0.4	U	0.38	U	0.38	U	0.38	U	0.39	U	0.38	U	0.38	U
Fluorene	86-73-7	50 g	0.35	U	0.36	U	0.34	U	0.35	U	0.34	U	0.35	U	0.34	U	0.35	U
Indeno(1,2,3-cd)pyrene	193-39-5	0.002 g	0.46	UJ	0.47	UJ	0.44	UJ	0.45	UJ	0.45	U	0.46	U	0.44	U	0.45	U
Naphthalene	91-20-3	10 g	0.75	U	0.75	U	0.72	U	0.73	U	0.73	U	0.74	U	0.72	U	0.73	U
Phenanthrene	85-01-8	50 g	0.43	U	0.44	U	0.42	U	0.42	U	0.42	U	0.43	U	0.42	U	0.42	U
Pyrene	129-00-0	50 g	0.33	U	0.34	U	0.32	U	0.33	U	0.33	U	0.33	U	0.32	U	0.33	U
Total PAHs (ug/L)	NA	NL	---	U	---	U	---	U	---	U	---	U	---	U	---	U	---	U
Other SVOCs (ug/L)																		
1,1'-Biphenyl	92-52-4	5 s	0.64	U	0.65	U	0.62	U	0.63	U	0.62	U	0.63	U	0.62	U	0.63	U
2,2'-oxybis(1-Chloropropane)	108-60-1	NL	0.51	U	0.51	U	0.49	U	0.5	U	0.5	U	0.5	U	0.49	U	0.5	U
2,4,5-Trichlorophenol	95-95-4	NL	0.47	U	0.48	U	0.45	U	0.46	U	0.46	U	0.47	U	0.45	U	0.46	U
2,4,6-Trichlorophenol	88-06-2	NL	0.6	U	0.6	U	0.58	U	0.59	U	0.58	U	0.59	U	0.58	U	0.59	U
2,4-Dichlorophenol	120-83-2	5 s	0.5	U	0.5	U	0.48	U	0.49	U	0.49	U	0.5	U	0.48	U	0.49	U
2,4-Dimethylphenol	105-67-9	50 g	0.49	U	0.5	U	0.47	U	0.48	U	0.48	U	0.49	U	0.47	U	0.48	U
2,4-Dinitrophenol	51-28-5	10 g	2.2	U	2.2	U	2.1	U	2.1	U	2.1	U	2.2	U	2.1	U	2.1	U
2,4-Dinitrotoluene	121-14-2	5 s	0.44	U	0.44	U	0.42	U	0.43	U	0.43	U	0.43	U	0.42	U	0.43	U
2,6-Dinitrotoluene	606-20-2	5 s	0.39	U	0.4	U	0.38	U	0.38	U	0.38	U	0.39	U	0.38	U	0.38	U
2-Chloronaphthalene	91-58-7	10 g	0.45	U	0.46	U	0.43	U	0.44	U	0.44	U	0.45	U	0.43	U	0.44	U
2-Chlorophenol	95-57-8	NL	0.52	U	0.52	U	0.5	U	0.51	U	0.51	U	0.51	U	0.5	U	0.51	U
2-Methylphenol	95-48-7	NL	0.39	U	0.4	U	0.38	U	0.38	U	0.38	U	0.39	U	0.38	U	0.38	U
2-Nitroaniline	88-74-4	5 s	0.41	U	0.42	U	0.4	U	0.4	U	0.4	U	0.41	U	0.4	U	0.4	U
2-Nitrophenol	88-75-5	NL	0.47	U	0.48	U	0.45	U	0.46	U	0.46	U	0.47	U	0.45	U	0.46	U
3,3'-Dichlorobenzidine	91-94-1	5 s	0.39	U	0.4	U	0.38	U	0.38	U	0.38	U	0.39	U	0.38	U	0.38	U
3-Nitroaniline	99-09-2	5 s	0.47	U	0.48	U	0.45	U	0.46	U	0.46	U	0.47	U	0.45	U	0.46	U
4,6-Dinitro-2-methylphenol	534-52-1	NL	2.2	U	2.2	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U
4-Bromophenyl phenyl ether	101-55-3	NL	0.44	U	0.45	U	0.42	U	0.43	U	0.43	U	0.44	U	0.42	U	0.43	U
4-Chloro-3-methylphenol	59-50-7	NL	0.44	U	0.45	U	0.42	U	0.43	U	0.43	U	0.44	U	0.42	U	0.43	U
4-Chloroaniline	106-47-8	5 s	0.58	U	0.58	U	0.56	U	0.57	U	0.56	U	0.57	U	0.56	U	0.57	U
4-Chlorophenyl phenyl ether	7005-72-3	NL	0.34	U	0.35	U	0.33	U	0.34	U	0.33	U	0.34	U	0.33	U	0.34	U
4-Methylphenol	106-44-5	NL	0.35	U	0.36	U	0.34	U	0.35	U	0.34	U	0.35	U	0.34	U	0.35	U
4-Nitroaniline	100-01-6	5 s	0.25	U	0.25	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U

Table 11
Groundwater SVOC Results
Scott Aviation BCP Site

			June 2010				August 2010			
			Shallow Overburden		Deep Overburden	Bedrock	Shallow Overburden		Deep Overburden	Bedrock
Sample Identification		**NYSDEC**	**MW-36S**	**GW-DUPLICATE-1 (MW-36S)**	**MW-39D**	**MW-41B2**	**MW-36S**	**GW-DUPLICATE-1 (MW-36S)**	**MW-39D**	**MW-41B2**
Laboratory Identification	**CAS**	**Groundwater Guidance or**	**RTF1140-05**	**RTF1140-03**	**RTF1140-17**	**RTF1140-07**	**RTH0401-02**	**RTH0401-06**	**RTH0401-03**	**RTH0401-04**
Date Sampled	**Number**	**Standard Value (Note 1)**	**6/17/2010**	**6/17/2010**	**6/18/2010**	**6/17/2010**	**8/3/2010**	**8/2/2010**	**8/3/2010**	**8/2/2010**
4-Nitrophenol	100-02-7	NL	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U
Acetophenone	98-86-2	NL	0.53 U	0.53 U	0.51 U	0.52 U	0.52 U	0.52 U	0.51 U	0.52 U
Atrazine	1912-24-9	7.5 s	0.45 U	0.46 U	0.43 U	0.44 U	0.44 U	0.45 U	0.43 U	0.44 U
Benzaldehyde	100-52-7	NL	0.26 U	0.26 U	0.25 U	0.26 U	0.26 U	0.26 U	0.25 U	0.26 U
bis(2-Chloroethoxy)methane	111-91-1	5 s	0.34 U	0.35 U	0.33 U	0.34 U	0.33 U	0.34 U	0.33 U	0.34 U
bis(2-Chloroethyl) ether	111-44-4	1 s	0.39 U	0.4 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	0.38 U
bis(2-Ethylhexyl) phthalate	117-81-7	5 s	1.8 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Butyl benzyl phthalate	85-68-7	50 g	0.41 U	0.42 U	0.4 U	0.4 U	0.4 U	0.41 U	0.4 U	0.4 U
Caprolactam	105-60-2	NL	2.2 U	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Carbazole	86-74-8	NL	0.29 U	0.3 U	0.28 U	0.29 U	0.29 U	0.29 U	0.28 U	0.29 U
Di-n-butyl phthalate	84-74-2	50 s	**0.54 J**	**0.4 J**	0.29 U	**0.35 J**	9.6 U	9.7 U	9.4 U	9.6 U
Di-n-octyl phthalate	117-84-0	NL	0.46 U	0.47 U	0.44 U	0.45 U	0.45 U	0.46 U	0.44 U	0.45 U
Dibenzofuran	132-64-9	NL	0.5 U	0.5 U	0.48 U	0.49 U	0.49 U	0.5 U	0.48 U	0.49 U
Diethyl phthalate	131-11-3	50 g	0.22 U	0.22 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
Dimethyl phthalate	84-66-2	50 g	0.35 U	0.36 U	0.34 U	0.82 J	0.34 U	0.35 U	0.34 U	0.35 U
Hexachlorobenzene	118-74-1	0.4 s	0.5 U	0.5 U	0.48 U	0.49 U	0.49 U	0.5 U	0.48 U	0.49 U
Hexachlorobutadiene	87-68-3	0.5 s	0.67 U	0.67 U	0.64 U	0.65 U	0.65 U	0.66 U	0.64 U	0.65 U
Hexachlorocyclopentadiene	77-47-4	5 s	0.58 U	0.58 U	0.56 U	0.57 U	0.56 U	0.57 U	0.56 U	0.57 U
Hexachloroethane	67-72-1	5 s	0.58 U	0.58 U	0.56 U	0.57 U	0.56 U	0.57 U	0.56 U	0.57 U
Isophorone	78-59-1	50 g	0.42 U	0.43 U	0.41 U	0.41 U	0.41 U	0.42 U	0.41 U	0.41 U
N-Nitrosodi-n-propylamine	621-64-7	50 g	0.53 U	0.53 U	0.51 U	0.52 U	0.52 U	0.52 U	0.51 U	0.52 U
N-Nitrosodiphenylamine	86-30-6	50 g	0.5 U	0.5 U	0.48 U	0.49 U	0.49 U	0.5 U	0.48 U	0.49 U
Nitrobenzene	98-95-3	0.4	0.28 U	0.29 U	0.27 U	0.28 U	0.28 U	0.28 U	0.27 U	0.28 U
Pentachlorophenol	87-86-5	1 s	2.2 U	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Phenol	108-95-2	1 s	0.38 U	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.37 U	0.38 U
Total SVOCs (ug/L) (Note 2)	NA	NL	0.54	0.4	--- U	0.35	--- U	--- U	--- U	--- U

Notes:
NA = Not Analyzed
NL = Not Listed
U = The material was analyzed for but not detected at, or above, the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the reporting limit.
Shaded value - Compound detected above regulatory guidance value.
s = Standard Value
g = Guidance Value
(Note 1) - Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC, 1998, with addenda through 2004].
(Note 2) - Total for SVOCs inlcudes PAHs.

Table 12
Groundwater Metals Results
Scott Aviation BCP Site

			June 2010					August 2010				
			Shallow Overburden			Deep Overburden	Bedrock	Shallow Overburden			Deep Overburden	Bedrock
Sample Identification		**NYSDEC**	**MW-30**	**MW-36S**	**GW-DUPLICATE-1 (MW-36S)**	**MW-39D**	**MW-41B2**	**MW-30**	**GW-DUPLICATE-1 (MW-36S)**	**MW-36S**	**MW-39D**	**MW-41B2**
Laboratory Identification	**CAS**	**Groundwater Guidance or**	**RTF1140-16**	**RTF1140-05**	**RTF1140-03**	**RTF1140-17**	**RTF1140-07**	**RTH0401-01**	**RTH0401-06**	**RTH0401-02**	**RTH0401-03**	**RTH0401-04**
Date Sampled	**Number**	**Standard Value (Note 1)**	**6/18/2010**	**6/17/2010**	**6/17/2010**	**6/18/2010**	**6/17/2010**	**8/3/2010**	**8/2/2010**	**8/3/2010**	**8/3/2010**	**8/2/2010**
Metals (ug/L)												
Aluminum	7429-90-5	NL	200 U	200 U	200 U	200 U	**1940**	200 U	200 U	200 U	200 U	**203**
Antimony	7440-36-0	3 s	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Arsenic	7440-38-2	25 s	**19**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	7440-39-3	1,000 s	**208**	**81.4**	**80.3**	**144**	**79.2**	**205**	**85**	**83**	**148**	**44.7**
Beryllium	7440-41-7	3 g	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Cadmium	7440-43-9	5 s	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	7440-70-2	NL	**64,800**	**110,000**	**107,000**	**45,000**	**60,200**	**67,700**	**110,000**	**107,000**	**47,200**	**51,700**
Chromium	7440-47-3	50 s	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Cobalt	7440-48-4	NL	**4.4**	**8.8**	**9**	4 U	4 U	**4.7**	**7.5**	**7.2**	4 U	4 U
Copper	7440-50-8	200 s	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron	7439-89-6	300 s	**7780**	**53**	50 U	**1170**	**1,430**	**4,510**	50 U	50 U	**3510**	**582**
Lead	7439-92-1	25 s	5 U	5 U	5 U	5 U	5 U	5 UJ	**5.5 J**	5 UJ	5 UJ	5 UJ
Magnesium	7439-95-4	35,000 s	**62,500**	**109,000**	**105,000**	**61,500**	**54,300**	**68,100**	**114,000**	**111,000**	**65,700**	**25,400**
Manganese	7439-96-5	300 s	**55.4**	**33.3**	**31.6**	**67.8**	**45.2**	**57.7**	**65.9**	**63.1**	**79.8**	**32.1**
Mercury	7439-97-6	0.7 s	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	7440-02-0	100 s	**15.6**	10 U	10 U	10 U	10 U	**15.4**	10 U	10 U	10 U	10 U
Potassium	7439-97-6	NL	**2,500**	**1,230**	**1,120**	**2,870**	**9,710**	**2,870**	**3,400**	**3,270**	**2,760**	**8,960**
Selenium	7782-49-2	10 s	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	7440-22-4	50 s	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	7440-23-5	20,000 s	**47,700**	**50,000**	**49,000**	**35,900**	**132,000**	**49,800**	**50,300**	**48,800**	**36,400**	**135,000**
Thallium	7440-28-0	0.5 g	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	7440-62-2	NL	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	7440-66-6	2,000 g	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

NA = Not analyzed, not applicable

NL = Not listed

U = The material was analyzed for but not detected at, or above, the reporting limit. The associated numerical value is the sample quantitation limit.

J = The associated numerical value is an estimated quantity.

Bold value - compound detected at concentration greater than the reporting limit, **shaded** value

Shaded value Compound detected at a concentration greater than the standard or guidance value.

s = Standard Value

g = Guidance Value

Note(1) - Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC, 1998, with addenda through 2004].

Table 13
Groundwater PCBs and Pesticides Results
Scott Aviation BCP Site

		June 2010				**August 2010**			
		Shallow Overburden		**Deep Overburden**	**Bedrock**	**Shallow Overburden**		**Deep Overburden**	**Bedrock**
Sample Identification	**NYSDEC**	**MW-36S**	**GW-DUPLICATE-1**	**MW-39D**	**MW-41B2**	**MW-36S**	**GW-DUPLICATE-1**	**MW-39D**	**MW-41B2**
Lab ID	**Groundwater Guidance or**	**RTF1140-05**	**RTF1140-03**	**RTF1140-17**	**RTF1140-07**	**RTH0401-02**	**RTH0401-06**	**RTH0401-03**	**RTH0401-04**
Date Sampled	**Standard Value (Note 1)**	**6/17/2010**	**6/17/2010**	**6/18/2010**	**6/17/2010**	**8/3/2010**	**8/2/2010**	**8/3/2010**	**8/2/2010**
Pesticide Compounds (µg/L)									
4,4'-DDD	0.3 s	0.0088 U	0.0088 U	0.0087 U	0.0088 U	0.0089 U	0.0088 U	0.0087 U	0.0087 U
4,4'-DDE	0.2 s	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
4,4'-DDT	0.2 s	0.011 U	0.011 U	0.01 U	0.01 U	0.049 U	**0.040 J**	0.01 U	0.01 U
Aldrin	ND s	0.0063 U	0.0063 U	0.0062 U	0.0063 U	0.0064 U	0.0063 U	0.0062 U	0.0062 U
alpha-BHC	0.01 s	0.0063 U	0.0063 U	0.0062 U	0.0063 U	0.0064 U	0.048 U	0.0062 U	0.0062 U
alpha-Chlordane	NL	**0.023 J**	**0.019 J**	0.014 U	0.014 U	0.014 U	**0.016 J**	0.014 U	0.014 U
beta-BHC	0.04 s	0.024 U	0.024 U	0.023 U	0.024 U	0.049 U	0.024 U	0.023 U	0.023 U
Chlordane	0.05 s	0.028 U	0.028 U	0.027 U	0.028 U	0.028 U	0.028 U	0.027 U	0.027 U
delta-BHC	0.04 s	0.0097 U	0.0097 U	0.0095 U	0.0096 U	0.0098 U	**0.013 NJ**	**0.015 J**	**0.012 J**
Dieldrin	0.004 s	0.0094 U	0.048 U	0.0092 U	0.0093 U	0.0095 U	0.0094 U	0.0092 U	0.0092 U
Endosulfan I	NL	0.011 U	0.011 U	0.01 U	0.01 U	**0.093 NJ**	**0.072 J**	0.01 U	0.01 U
Endosulfan II	NL	0.012 U	0.012 U	0.011 U	0.011 U	0.049 U	0.012 U	0.011 U	0.011 U
Endosulfan sulfate	NL	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Endrin	ND s	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U
Endrin aldehyde	5 s	0.016 U	0.016 U	0.015 U	0.016 U	0.016 U	0.016 U	0.015 U	0.015 U
Endrin ketone	5 s	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U	0.012 U	0.011 U	0.011 U
gamma-BHC (Lindane)	0.05 s	0.0058 U	0.0058 U	0.0057 U	0.0057 U	0.0058 U	**0.011 NJ**	**0.011 NJ**	0.0057 U
gamma-Chlordane	NL	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U	**0.013 NJ**	0.01 U	0.01 U
Heptachlor	0.04 s	0.0082 U	0.0082 U	0.008 U	0.0081 U	0.0083 U	0.0082 U	0.008 U	0.008 U
Heptachlor epoxide	0.03 s	0.0051 U	0.0051 U	0.005 U	0.005 U	**0.049 NJ**	**0.026 NJ**	0.005 U	0.005 U
Methoxychlor	35 s	0.014 U	0.014 U	0.013 U	0.013 U	0.014 U	0.014 U	0.013 U	0.013 U
Toxaphene	0.06 s	0.12 U	0.12 U	0.11 U	0.11 U	0.12 U	0.12 U	0.11 U	0.11 U
PCB Compounds (µg/L)									
Aroclor 1016	NL	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Aroclor 1221	NL	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Aroclor 1232	NL	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Aroclor 1242	NL	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Aroclor 1248	NL	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Aroclor 1254	NL	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Aroclor 1260	NL	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Total PCBs (µg/L)	**0.09 (Note 2)**	--- U	--- U	--- U	--- U	--- U	--- U	--- U	--- U

Notes:
NL = Not Listed
ND - Detections are greater than the groundwater standard value.
U = The material was analyzed for but not detected at, or above, the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
NJ = Presumptively present at estimated quantity.
µg/L = micrograms per liter
Bold value - compound detected at concentration greater than the reporting limit, **shaded** value - compound detected above regulatory guidance value.
Shaded value - Compound detected in a concentration greater than the groundwater standard value.
s = Standard Value
g = Guidance Value
Note(1) - Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC, 1998, with addenda through 2004].
Note(2) - Applies to the sum of PCB compounds.

Table 14
Groundwater VOC Results in Temporary Piezometers and Catch Basins
Scott Aviation BCP

Sample Designation		NYSDEC	June 2010								August 2010		June 2011									
Sample Designation		NYSDEC	TP-1		TP-2		TP-3		TP-4		TP-2		TP-5-06/01/2011		CB-1-06/01/2011		CB-1-06/16/2011		CB-E-06/16/2011		CB-W-06/16/2011	
Laboratory Identification	CAS	Groundwater Guidance or	RTF1140-12		RTF1140-13		RTF1140-10		RTF1140-11		RTH0402-12		480-5581-1		480-5581-1		480-6205-1		480-6205-3		480-6205-2	
Date Sampled	Number	Standard Value[1]	6/17/2010		6/17/2010		6/17/2010		6/17/2010		8/2/2010		6/1/2011		6/1/2011		6/16/2011		6/16/2011		6/16/2011	
BTEX Compounds (ug/L)																						
Benzene	71-43-2	1 s	5	U	5	U	25	U	25	U	25	U	0.41	U	0.41	U	0.41	U	**0.7**	**J**	2.1	U
Toluene	100-41-4	5 s	5	U	5	U	25	U	25	U	25	U	0.51	U	**1.9**		0.51	U	0.51	U	**61**	
Ethylbenzene	108-88-3	5 s	5	U	5	U	25	U	25	U	25	U	0.74	U	0.74	U	0.74	U	0.74	U	3.7	U
Xylenes (total)	1330-20-7	5 s	15	U	15	U	25	U	25	U	75	U	0.66	U	**1**	**J**	0.66	U	0.66	U	3.3	U
Total BTEX Compounds (ug/L)	NA	NL	---	U	---	U	---	U	---	U	---	U	---	U	**2.9**		---	U	**0.7**		**61**	
Other VOCs (ug/L)																						
1,1,1-Trichloroethane	71-55-6	5 s	**63**		**74**		25	U	25	U	**230**		**83**		**420**		**120**		**230**		4.1	U
1,1,2,2-Tetrachloroethane	79-34-5	5 s	5	U	5	U	25	U	25	U	25	U	0.21	U	0.21	U	0.21	U	0.21	U	1.1	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5 s	**240**		**290**		25	U	25	U	**1200**		**60**	**J**	**400**	**J**	**220**		**140**		1.6	U
1,1,2-Trichloroethane	79-00-5	1 s	5	U	5	U	25	U	25	U	25	U	0.23	U	**1.6**		**0.87**	**J**	**10**		1.2	U
1,1-Dichloroethane	75-34-3	5 s	**1.4**	**J**	**0.64**	**J**	25	U	25	U	25	U	**12**		**53**		**18**		**110**		1.9	U
1,1-Dichloroethene	75-35-4	5 s	**4.8**	**J**	**5.7**		25	U	25	U	**20**	**J**	**7.2**		**41**		**14**		**93**		1.5	U
1,2,4-Trichlorobenzene	120-82-1	5 s	5	U	5	U	25	U	25	U	25	U	0.41	U	0.41	U	0.41	U	0.41	U	2.1	U
1,2-Dibromo-3-chloropropane	96-12-8	0.04 s	5	U	5	U	25	U	25	U	25	U	0.39	U	0.39	U	0.39	U	0.39	U	2	U
1,2-Dibromoethane	106-93-4	0.0006 s	5	U	5	U	25	U	25	U	25	U	0.73	U	0.73	U	0.73	U	0.73	U	3.7	U
1,2-Dichlorobenzene	95-50-1	3 s	5	U	5	U	25	U	25	U	25	U	0.79	U	0.79	U	0.79	U	0.79	U	4	U
1,2-Dichloroethane	107-06-2	0.6 s	5	U	5	U	25	U	25	U	25	U	0.21	U	0.21	U	0.21	U	**2**		1.1	U
1,2-Dichloropropane	78-87-5	1 s	5	U	5	U	25	U	25	U	25	U	0.72	U	0.72	U	0.72	U	0.72	U	3.6	U
1,3-Dichlorobenzene	541-73-1	3 s	5	U	5	U	25	U	25	U	25	U	0.78	U	0.78	U	0.78	U	0.78	U	3.9	U
1,4-Dichlorobenzene	106-46-7	3 s	5	U	5	U	25	U	25	U	25	U	0.84	U	0.84	U	0.84	U	0.84	U	4.2	U
2-Butanone	78-93-3	50 g	25	U	25	U	120	U	120	U	120	U	1.3	U	1.3	U	1.3	U	1.3	U	6.6	U
2-Hexanone	591-78-6	50 g	25	U	25	U	120	U	120	U	120	U	1.2	U	1.2	U	1.2	U	1.2	U	6.2	U
4-Methyl-2-pentanone	108-10-1	NL	25	U	25	U	120	U	120	U	120	U	2.1	U	2.1	U	2.1	U	2.1	U	11	U
Acetone	67-64-1	50 g	**9**	**J**	**6.4**	**J**	120	U	120	U	120	U	3	U	**61**		**390**	J	3	U	**15**	**J**
Bromodichloromethane	75-27-4	50 g	5	U	5	U	25	U	25	U	25	U	0.39	U	0.39	U	0.39	U	0.39	U	2	U
Bromoform	75-25-2	50 g	5	U	5	U	25	U	25	U	25	U	0.26	U	0.26	U	0.26	U	0.26	U	1.3	U
Bromomethane	74-83-9	5 s	5	U	5	U	25	U	25	U	25	U	0.69	U	0.69	U	0.69	U	0.69	U	3.5	U
Carbon disulfide	75-15-0	60 g	**0.8**	**J**	5	U	25	U	25	U	25	U	0.19	U	0.19	U	0.19	U	0.19	U	0.95	U
Carbon tetrachloride	56-23-5	5 s	5	U	5	U	25	U	25	U	25	U	0.27	U	0.27	U	0.27	U	0.27	U	1.4	U
Chlorobenzene	108-90-7	5 s	5	U	5	U	25	U	25	U	25	U	0.75	U	0.75	U	0.75	U	0.75	U	3.8	U
Chloroethane	75-00-3	5 s	5	U	5	U	25	U	25	U	25	U	0.32	U	**2.8**		**0.6**	**J**	**10**		1.6	U
Chloroform	67-66-3	7 s	5	U	5	U	25	U	25	U	25	U	0.34	U	0.34	U	0.34	U	0.34	U	1.7	U
Chloromethane	74-87-3	5 s	5	U	5	U	25	U	25	U	25	U	0.35	U	0.35	U	0.35	U	0.35	U	1.8	U
cis-1,2-Dichloroethene	156-59-2	5 s	**3.8**	**J**	**0.83**	**J**	25	U	25	U	25	U	**23**		**140**		**51**		**1200**		4.1	U
cis-1,3-Dichloropropene	10061-01-5	0.4 s	5	U	5	U	25	U	25	U	25	U	0.36	U	0.36	U	0.36	U	0.36	U	1.8	U
Cyclohexane	110-82-7	NL	5	U	5	U	25	U	25	U	25	U	0.18	U	0.18	U	0.18	U	0.18	U	0.9	U
Dibromochloromethane	124-48-1	50 g	5	U	5	U	25	U	25	U	25	U	0.32	U	0.32	U	0.32	U	0.32	U	1.6	U
Dichlorodifluoromethane	75-71-8	5 s	5	U	5	U	25	U	25	U	25	U	0.68	U	0.68	U	0.68	U	0.68	U	3.4	U
Isopropylbenzene	98-82-8	5 s	5	U	5	U	25	U	25	U	25	U	0.79	U	0.79	U	0.79	U	0.79	U	4	U
Methyl acetate	79-20-9	NL	5	U	5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U
Methyl tert-butyl ether	1634-04-4	10 g	5	U	5	U	25	U	25	U	25	U	0.16	U	0.16	U	0.16	U	0.16	U	0.8	U
Methylcyclohexane	108-87-2	NL	5	U	5	U	25	U	25	U	25	U	0.16	U	0.16	U	0.16	U	0.16	U	0.8	U
Methylene chloride	75-09-2	5 s	5	U	5	U	25	U	25	U	25	U	0.44	U	0.44	U	0.44	U	**1.2**		2.2	U
Styrene	100-42-5	5 s	5	U	5	U	25	U	25	U	25	U	0.73	U	0.73	U	0.73	U	0.73	U	3.7	U
Tetrachloroethene	127-18-4	5 s	5	U	5	U	25	U	25	U	25	U	0.36	U	**0.5**	**J**	0.36	U	**8.8**		1.8	U
trans-1,2-Dichloroethene	156-60-5	5 s	5	U	5	U	25	U	25	U	25	U	0.9	U	**1.8**		**1.5**		**4.6**		4.5	U
trans-1,3-Dichloropropene	10061-02-6	0.4 s	5	U	5	U	25	U	25	U	25	U	0.37	U	0.37	U	0.37	U	0.37	U	1.9	U
Trichloroethene	79-01-6	5 s	**2.1**	**J**	**0.9**	**J**	25	U	25	U	25	U	**8.8**		**59**		**18**		**60**		2.3	U
Trichlorofluoromethane	75-69-4	5 s	5	U	5	U	25	U	25	U	25	U	0.88	U	0.88	U	0.88	U	0.88	U	4.4	U
Vinyl chloride	75-01-4	2 s	5	U	5	U	25	U	25	U	25	U	**1.6**		**8.4**		**1.4**		**22**		4.5	U
Total VOCs (ug/L)[2]	NA	NL	**325**		**378**		---	U	---	U	**1450**		**196**		**1,192**		**835**		**1892**		**76**	

Notes:
1. Guidance or Standard Values - NYSDEC, Division of Water, TOGS (1.1.1) [NYSDEC, 1998, with addenda through 2004].
2. Total VOCs includes BTEX compounds.
NA = Not analyzed, not applicable
NL = Not listed
U = The material was analyzed for but not detected at, or above, the reporting limit. The associated numerical value is the sample quantitation limit.
J = The associated numerical value is an estimated quantity.
Bold value - compound detected at concentration greater than the reporting limit
Shaded value - Compound detected in a concentration greater than the groundwater standard value.
s = Standard Value
g = Guidance Value

Table 15
Air TO-15 Results
Scott Aviation BCP Site

Type of Sample	CAS No.	AMBIENT		AMBIENT		SUBSLAB		INDOOR		SUBSLAB		INDOOR		SUBSLAB		INDOOR		75th Percentile	90th Percentile
Sample ID		**AS-1**		**AS-DUPLICATE**		**SS-1-SUBSLAB**		**SS-1-INDOOR**		**SS-2-SUBSLAB**		**SS-2-INDOOR**		**SS-3-SUBSLAB**		**SS-3-INDOOR**			
Laboratory ID		**RTF0696-01**		**RTF0696-06**		**RTF0696-03**		**RTF0696-02**		**RTF0696-04**		**RTF0696-05**		**RTF0696-08**		**RTF0696-07**			
Sampling Date		**6/2/2010**		**6/2/2010**		**6/2/2010**		**6/2/2010**		**6/2/2010**		**6/2/2010**		**6/2/2010**		**6/2/2010**			
Compound (µg/m³)																			
1,1,1-Trichloroethane	71-55-6	1.1	UJ	**3.4**	**J**	**42**		1.1	U	**430**		**2.5**		**2.6**		1.1	U	10.8	20.6
1,1,2,2-Tetrachloroethane	79-34-5	1.4	U	1.4	U	34	U	1.4	U	6.9	U	1.4	U	1.4	U	1.4	U	NL	NL
1,1,2-Trichloroethane	79-00-5	1.1	U	1.1	U	27	U	1.1	U	5.5	U	1.1	U	1.1	U	1.1	U	<1.4	<1.5
1,1-Dichloroethane	75-34-3	0.81	U	0.81	U	**100**		0.81	U	**73**		0.81	U	**2.8**		0.81	U	<0.5	<0.7
1,1-Dichloroethene	75-35-4	0.79	UJ	**0.83**	**J**	20	U	0.79	U	**67**		**0.87**		0.79	U	0.79	U	<1.1	<1.4
1,2,4-Trichlorobenzene	120-82-1	3.7	U	3.7	U	89	U	3.7	U	19	U	3.7	U	3.7	U	3.7	U	<1.2	<6.8
1,2,4-Trimethylbenzene	95-63-6	0.98	UJ	**1.4**	**J**	25	U	0.98	U	**180**		**1.2**		**20**		0.98	U	5.1	9.5
1,2-Dibromoethane	106-93-4	1.5	U	1.5	U	38	U	1.5	U	7.7	U	1.5	U	1.5	U	1.5	U	<1.4	<1.5
1,2-Dichlorobenzene	95-50-1	1.2	U	1.2	U	30	U	1.2	U	6.0	U	1.2	U	1.2	U	1.2	U	<1.0	<1.2
1,2-Dichloroethane	107-06-2	0.81	U	0.81	U	20	U	0.81	U	4.0	U	0.81	U	0.81	U	0.81	U	<0.7	<0.9
1,2-Dichloropropane	78-87-5	0.92	UJ	**1.6**	**J**	23	U	0.92	U	4.6	U	0.92	U	0.92	U	0.92	U	<1.6	<1.6
1,3,5-Trimethylbenzene	108-67-8	0.98	U	0.98	U	25	U	0.98	U	**64**		0.98	U	**8.4**		0.98	U	<4.6	3.7
1,3-Butadiene	106-99-0	1.1	U	1.1	U	27	U	1.1	U	5.5	U	1.1	U	1.1	U	1.1	U	<2.7	<3.0
1,3-Dichlorobenzene	541-73-1	1.2	U	1.2	U	30	U	1.2	U	6.0	U	1.2	U	1.2	U	1.2	U	<1.1	<2.4
1,4-Dichlorobenzene	106-46-7	1.2	U	1.2	U	30	U	1.2	U	6.0	U	1.2	U	1.2	U	1.2	U	<1.4	5.5
2,2,4-trimethylpentane	540-84-1	0.93	U	0.93	U	23	U	0.93	U	4.7	U	0.93	U	0.93	U	0.93	U	NL	NL
2-Chlorotoluene	95-49-8	1.0	U	1.0	U	26	U	1.0	U	5.2	U	1.0	U	1.0	U	1.0	U	NL	NL
4-ethyltoluene	622-96-8	0.98	U	0.98	U	25	U	0.98	U	**26**		0.98	U	**1.9**		0.98	U	<3.1	3.6
Allyl chloride	107-05-1	1.6	U	1.6	U	38	U	1.6	U	7.8	U	1.6	U	1.6	U	1.6	U	NL	NL
Benzene	71-43-2	0.64	UJ	**2.4**	**J**	16	U	0.64	U	**35**		**2.3**		**7.0**		0.64	U	5.1	9.4
Bromodichloromethane	75-27-4	1.3	U	1.3	U	34	U	1.3	U	6.7	U	1.3	U	1.3	U	1.3	U	NL	NL
Bromoform	75-25-2	2.1	U	2.1	U	52	U	2.1	U	10	U	2.1	U	2.1	U	2.1	U	NL	NL
Bromomethane	74-83-9	0.78	U	0.78	U	19	U	0.78	U	3.9	U	0.78	U	0.78	U	0.78	U	<1.1	<1.7
Carbon disulfide	75-15-0	1.6	U	1.6	U	37	U	1.6	U	7.8	U	1.6	U	**31**		1.6	U	2.1	4.2
Carbon tetrachloride	56-23-5	1.3	U	1.3	U	31	U	1.3	U	6.3	U	1.3	U	1.3	U	1.3	U	<1.1	<1.3
Chlorobenzene	108-90-7	0.92	U	0.92	U	23	U	0.92	U	4.6	U	0.92	U	0.92	U	0.92	U	<0.8	<0.9
Chloroethane	75-00-3	1.3	U	1.3	U	32	U	1.3	U	6.6	U	1.3	U	1.3	U	1.3	U	<1.0	<1.1
Chloroform	67-66-3	0.98	U	0.98	U	24	U	0.98	U	4.9	U	0.98	U	0.98	U	0.98	U	<1.2	1.1
Chloromethane	74-87-3	**1.3**		**1.2**		25	U	**1.2**		5.2	U	**1.3**		1.0	U	**1.3**		3.1	3.7
cis-1,2-Dichloroethene	156-59-2	0.79	UJ	**1.5**	**J**	**32**		0.79	U	**390**		**1.6**		0.79	U	0.79	U	<1.2	<1.9
cis-1,3-Dichloropropene	10061-01-5	0.91	U	0.91	U	23	U	0.91	U	4.5	U	0.91	U	0.91	U	0.91	U	<2.0	<2.3
Cyclohexane	110-83-8	0.69	UJ	**1.1**	**J**	17	U	0.69	U	**480**		0.69	U	**18**		0.69	U	NL	NL
Dibromochloromethane	124-48-1	1.7	U	1.7	U	43	U	1.7	U	8.5	U	1.7	U	1.7	U	1.7	U	NL	NL
Ethylbenzene	100-41-4	0.87	UJ	**1.3**	**J**	22	U	**2.0**		**56**		**1.5**		**4.8**		**1.0**		3.4	5.7
Freon 11	75-69-4	**1.4**		**1.7**		28	U	**1.3**		**24**		**1.6**		**1.3**		**1.6**		6.7	18.1
Freon 113	76-13-1	**2.0**		**2.5**		**5200**		**6.2**		**1300**		**2.8**		1.5	U	**1.9**		NL	NL
Freon 114	76-14-2	1.4	U	1.4	U	35	U	1.4	U	7.0	U	1.4	U	1.4	U	1.4	U	NL	NL
Freon 12	75-71-8	**3.0**		**4.0**		59	U	**3.1**		12	U	**3.0**		**5.4**		**12**		10.5	16.5
Heptane	142-82-5	0.82	UJ	**1.1**	**J**	20	U	0.82	U	**200**		**0.98**		**34**		0.82	U	NL	NL
Hexachloro-1,3-butadiene	87-68-3	2.1	U	2.1	U	53	U	2.1	U	11	U	2.1	U	2.1	U	2.1	U	<2.5	<6.8
Hexane	110-54-3	1.8	UJ	**2.4**	**J**	42	U	1.8	U	**240**		**2.5**		**32**		1.8	U	NL	NL
m&p-Xylene	179601-23-1	1.7	UJ	**4.3**	**J**	43	U	**7.4**		**290**		**4.8**		**34**		**3.0**		12.2	22.2
Methylene chloride	75-09-2	1.7	U	1.7	U	42	U	1.7	U	8.7	U	1.7	U	1.7	U	**17**		5	10
o-Xylene	95-47-6	0.87	UJ	**1.4**	**J**	22	U	**1.5**		**91**		**1.7**		**12**		**1.0**		4.4	7.9
Styrene	100-42-5	0.85	U	0.85	U	21	U	0.85	U	4.3	U	0.85	U	0.85	U	0.85	U	<2.3	1.9
Tetrachloroethylene	127-18-4	1.4	U	1.4	U	34	U	1.4	U	**670**		1.4	U	1.4	U	1.4	U	5.9	15.9
Toluene	108-88-3	**1.1**	**J**	**11**	**J**	19	U	**21**		**120**		**9.8**		**27**		**1.5**		25.9	43
trans-1,2-Dichloroethene	156-60-5	0.79	U	0.79	U	**40**		0.79	U	**12**		0.79	U	0.79	U	0.79	U	NL	NL
trans-1,3-Dichloropropene	10061-02-6	0.91	U	0.91	U	23	U	0.91	U	4.5	U	0.91	U	0.91	U	0.91	U	<1.2	<1.3
Trichloroethene	79-01-6	1.1	UJ	**1.5**	**J**	**150**		1.1	U	**640**		**1.5**		**4.5**		1.1	U	1.2	4.2
Vinyl Bromide	593-60-02	0.87	U	0.87	U	22	U	0.87	U	4.4	U	0.87	U	0.87	U	0.87	U	NL	NL
Vinyl chloride	75-01-4	0.51	U	0.51	U	13	U	0.51	U	2.6	U	0.51	U	0.51	U	0.51	U	<1.0	<1.9

Notes:

All units in micrograms per cubic meter (µg/m³)

1 - Typical background indoor air values for commercial office buildings, conducted by the US EPA from 1994 to 1996 (Building Assessment and Survey Evaluation (BASE) Database).

2 - Sample AS-DUPLICATE is a duplicate sample of AS-1.

Bold - Compound detected in a concentration greater than the method reporting limits.

Exceeds BASE Database Indoor Air Values 75th Percentile

Exceeds BASE Database Indoor Air Values 90th Percentile

NL - Not listed - data not available for background concentrations for these compounds.

U - The compound was analyzed for, but was not detected above the method reporting limit.

J - The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Table 16
Air TO-15 Results
Scott Aviation BCP Site

Sample ID		AS-1		AS-DUPLICATE		SS-1-SUBSLAB		SS-1-INDOOR		SS-2-SUBSLAB		SS-2-INDOOR		SS-3-SUBSLAB		SS-3-INDOOR	
Laboratory ID	CAS	RTF0696-01		RTF0696-06		RTF0696-03		RTF0696-02		RTF0696-04		RTF0696-05		RTF0696-08		RTF0696-07	
Sampling Date	Number	6/2/2010		6/2/2010		6/2/2010		6/2/2010		6/2/2010		6/2/2010		6/2/2010		6/2/2010	
Compound (µg/m³)																	
1,1,1-Trichloroethane	71-55-6	1.1	UJ	**3.4**	**J**	**42**		1.1	U	**430**		**2.5**		**2.6**		1.1	U
Carbon tetrachloride	56-23-5	1.3	U	1.3	U	31	U	1.3	U	6.3	U	1.3	U	1.3	U	1.3	U
Tetrachloroethene	127-18-4	1.4	U	1.4	U	34	U	1.4	U	**670**		1.4	U	1.4	U	1.4	U
Trichloroethene	79-01-6	1.1	UJ	**1.5**	**J**	**150**		1.1	U	**640**		**1.5**		**4.5**		1.1	U

Notes:
All units in micrograms per cubic meter (µg/m³)
Sample AS-DUPLICATE is a duplicate sample of AS-1.
U - The material was analyzed for but not detected at or above the reporting limit. The associated numerical value is the sample quantitation limit.
J - Estimated Concentration.
Bold - Compound detected in a concentration greater than the method reporting limit.

Take reasonable and practical actions to identify source(s) and reduce exposures
Monitoring required based on NYSDOH Guidance (2006)
Mitigation required based on NYSDOH Guidance (2006)

Table 17
Exposure Pathway Analysis
Former Scott Aviation BCP

Receptor	Exposure Medium	Exposure Pathway	Pathway Not Considered Complete	Pathway Considered Potentially Complete, But Not Likely to Result in Exposure	Pathway Potentially Complete and will be Addressed in the AAR for the Site	Rationale for Inclusion or Exclusion
On-site AVOX workers, Outdoor Maintenance Worker or Utility Worker	On-site Surface Soil (0-2 inches)	Ingestion	---	X	---	Outdoor Maintenance and Utility Workers who mow the grass on the site may be exposed to residuals in surface soil or particulates, therefore the exposure pathway is considered potentially complete. Since surface soil concentrations are low, and the work areas are covered with grass and the workers would only be on site for a short time, exposure is not likely.
		Dermal Contact	---	X	---	
		Inhalation of Particulates	---	X	---	
		Inhalation of Volatiles in Ambient Air	---	X	---	Outdoor Maintenance and Utility Workers may be infrequently exposed to ambient air VOCs emanating from on-site VOC impacts near the surface; however, exposure is not likely due to atmospheric mixing, and dilution of the VOCs in ambient air.
	On-site Subsurface Soil (>2 inches)	Ingestion	X	---	---	Outdoor Maintenance Workers and Utility Workers are not likely to contact subsurface soils during their workday. In addition, subsurface soil was not found to be significantly impacted.
		Dermal Contact	X	---	---	
		Inhalation of Particulates	X	---	---	
		Inhalation of Volatiles in Ambient Air	X	---	---	
	Groundwater	Ingestion	X	---	---	Outdoor Maintenance Workers are not likely to contact groundwater during their workday.
		Dermal contact	X	---	---	
		Inhalation of Volatiles in Ambient Air	X	---	---	
	Surface Water	Ingestion	---	X	---	Outdoor Workers may be exposed to surface water during storm events in the Spring; however, exposure is not likely as it is unlikely that the grass mowing or other maintenance work would be performed where surface water is present. In addition, only a small portion of the Site collects surface water and only in the Spring season, which would serve to limit surface water contact with residuals.
		Dermal contact	---	X	---	
	Soil Vapor/ Indoor Air	Inhalation of Volatiles in Ambient Air	---	X	---	Soil vapor intrusion is not a current concern at AVOX Plant 1 but could potentially become a concern if conditions of the slab or site use change.
On-site Outdoor Subsurface Utility Workers	On-site Surface Soil (0-2 inches)	Ingestion	---	X	---	Outdoor Utility Workers who repair or maintain equipment at the site may be exposed to residuals in surface soil or particulates, therefore the exposure pathway is considered potentially complete. Since most of the site is covered with grass and vegetation, the impacts are covered, and the workers would only be on site for a short time, exposure is not likely.
		Dermal contact	---	X	---	
		Inhalation of Particulates	---	X	---	
		Inhalation of Volatiles in Ambient Air	---	X	---	
	On-site Subsurface Soil (>2 inches)	Ingestion	---	X	---	Outdoor Subsurface Utility Workers may be exposed to impacts in subsurface soil, dust, or VOCs in ambient air while completing excavation work related to on-Site subsurface utilities. However, subsurface soil was not significantly impacted, therefore exposure is not likely.
		Dermal contact	---	X	---	
		Inhalation of Particulates	---	X	---	
		Inhalation of Volatiles in Ambient Air	---	X	---	
	Groundwater	Ingestion	---	---	X	Outdoor Subsurface Utility Workers may be exposed to COCs in groundwater and VOCs in ambient air while completing excavation work in the Site. The pathway will be addressed in the Analysis of Alternatives discussion of potential remedial actions for the site.
		Dermal contact	---	---	X	
		Inhalation of Volatiles in Ambient Air	---	---	X	
	Surface Water	Ingestion	---	X	---	Outdoor Subsurface Utility Workers may be exposed to surface water during storm events in the Spring; however, exposure is not likely as it is unlikely that work would be performed where surface water is present. In addition, only a small portion of the Site collects surface water and only in the Spring season, which would serve to limit surface water contact with COCs.
		Dermal contact	---	X	---	
Site Visitor or Trespasser	On-site Surface Soil (0-2 inches)	Ingestion	---	X	---	On-site Visitors and Trespassers may be exposed to residuals in surface soil and VOCs in ambient air while visiting the site; however, the site is covered with grass and vegetation, the Visitors or Trespassers would only be on site for a short time, and part of the Site is fenced in, therefore exposure is not likely.
		Dermal contact	---	X	---	
		Inhalation of Particulates	---	X	---	
		Inhalation of Volatiles in Ambient Air	---	X	---	
	On-site Subsurface Soil (>2 inches)	Ingestion	X	---	---	On-site Visitors or Trespassers would not be exposed to subsurface soil while visiting the site.
		Dermal contact	X	---	---	
		Inhalation of Particulates	X	---	---	
		Inhalation of Volatiles in Ambient Air	X	---	---	
	Groundwater	Ingestion	X	---	---	On-site Visitors or Trespassers would not be exposed to groundwater while visiting the site.
		Dermal contact	X	---	---	
		Inhalation of Volatiles in Ambient Air	X	---	---	
	Surface Water	Ingestion	X	---	---	On-site Visitors or Trespassers may potentially be exposed to surface water while visiting the site; however, surface water only pools on the site in the Spring, and any contact would be likely to be for only a brief period of time, therefore exposure is not likely.
		Dermal contact	X	---	---	

Table 18
Preliminary Screening of Technologies for Groundwater
Former Scott Aviation Facility Area 1

Overview of Groundwater Impacts	
Shallow Groundwater (Overburden Aquifer): **Comingled CVOC, BTEX impacts south and west of Plant 1 (Area 1). One well had an exceedance of a heptachlor epoxide (pesticide). Limited sodium, magnesium, and iron impacts.** **Deep Groundwater (Overburden Aquifer):** **Comingled CVOC, BTEX impacts southwest of Plant 1. Limited sodium, magnesium, and iron impacts.** **Bedrock Aquifer:** **Limited sodium, magnesium, and iron impacts.**	**GRAs and subsequent screening apply to CVOCs and BTEX in the shallow and deep overburden aquifer. The single pesticide exceedance may be addressed during remediation of the groundwater plume (within the boundaries of the VOC plume). Metals are attributed to naturally occurring geochemistry and likely represent regional conditions.**

General Response Actions	Technology	Process	Description	Applicability to Area 1
No Action	(n/a)	(n/a)	(n/a)	**Applicable - Retained as a baseline to compare other remedial alternatives against.**
Limited Action	Institutional Controls	Environmental Easement Zoning / Ordinance Current Site Use Site Management Plan	Non-physical means of enforcing a restriction on the site that limits exposure and use of impacted groundwater and prevents actions that would interfere with the remedial program.	**Applicable- May be required in addition to remediation, depending on future site use and selected remedy.**
	Environmental Monitoring	Groundwater Monitoring Monitored Natural Attenuation	Monitoring natural attenuation mechanisms, and plume mobility. Assumes plume is stable.	**Applicable- May first require mitigation of storm sewer pathway**
Containment	Physical Containment	Slurry Wall, Solidification, Sheet Pile	Geotechnical methods for the isolation of source areas, thus preventing the ongoing migration of contaminants. Methods include sheet pile walls, diaphragm walls and bentonite slurry walls. Barrier will likely alter natural groundwater flow paths.	Not Applicable- This is a passive technology that would not treat VOCs within the plume, and therefore volatilization and indoor air exposures would remain. Requires significant civil works to install barrier wall. May be feasible in future phase if remediation works are unsuccessful.
	Hydraulic Containment	Induced Drawdown - Pump and Treat	Proven method for containment of dissolved phase contaminants. Extraction wells intercept groundwater and recirculate back to upgradient injection locations until contaminants have attenuated.	Not Applicable- Low permeability soils make this technology infeasible. Requires installation of extraction wells, and relies completely on attenuation for remediation. Requires long-term infrastructure and operation which does not meet Site objectives.
In-situ Treatment	Biological Treatment	Aerobic	Aerobic bioremediation enhances biodegradation of with the addition of oxygen and/or limiting nutrients to subsurface.	**Potentially Applicable - Aerobic bioremediation process will not treat all site contaminants and is only applicable to BTEX compounds or specific CVOCs (e.g., chloroethane, vinyl chloride) found in groundwater at the Site. Could be applied as a polish step after another remedial technology.**
		Anaerobic	Anaerobic bioremediation enhances anaerobic reductive degradation by adding electron donor (carbon substrate and/or nutrients) to stimulate the microbial activity of dechlorinating bacteria.	**Applicable - Anaerobic bioremediation is highly effective for CVOCs found in groundwater at the Site, but is generally not effective for BTEX. Based on presence of daughter products, reductive degradation may be occurring naturally. Process could also be applied as a polish step after another remedial technology.**
		Bioaugmentation	Bioaugmentation comprises adding a known contaminant-degrading microbial culture (e.g. KB-1) to accelerate the bioremediation process.	**Potentially Applicable- Different bacteria would be required for different site contaminant classes (BTEX vs. CVOCs), and each require different groundwater conditions and/or enhancements. Additional microbial cultures may enhance and/or increase the rate of biodegradation at the Site.**
	Chemical Treatment	In-situ Chemical Oxidation (Injection) In-Situ Chemical Oxidation (Soil Mixing)	Apply chemical oxidant into subsurface for oxidation/destruction of contaminants in soil and groundwater. Strong oxidants require careful handling procedures.	**Applicable- Chemical oxidation has been demonstrated to directly treat BTEX and CVOC contaminants; however, treatment of 1,1,1-TCA is more difficult than other CVOCs. Injection into lower permeability soils requires conservative design and more injection points. In-situ soil mixing allows for effective contact between oxidants and VOCs but may limit redevelopment schedule/reuse.**
		In-situ Chemical Reduction	Inject amendments to treat subsurface contaminants through reduction reactions (i.e., zero valent iron).	**Applicable- In-situ Chemical Reduction most commonly applied for CVOCs. Additives can be added to also encourage treatment of BTEX. In-situ chemical reduction also enhances bioremediation of CVOCs by reductive dechlorination.**

Table 18
Preliminary Screening of Technologies for Groundwater
Former Scott Aviation Facility Area 1

Overview of Groundwater Impacts	
Shallow Groundwater (Overburden Aquifer): **Comingled CVOC, BTEX impacts south and west of Plant 1 (Area 1). One well had an exceedance of a heptachlor epoxide (pesticide). Limited sodium, magnesium, and iron impacts.** **Deep Groundwater (Overburden Aquifer):** **Comingled CVOC, BTEX impacts southwest of Plant 1. Limited sodium, magnesium, and iron impacts.** **Bedrock Aquifer:** **Limited sodium, magnesium, and iron impacts.**	**GRAs and subsequent screening apply to CVOCs and BTEX in the shallow and deep overburden aquifer. The single pesticide exceedance may be addressed during remediation of the groundwater plume (within the boundaries of the VOC plume). Metals are attributed to naturally occurring geochemistry and likely represent regional conditions.**

General Response Actions	Technology	Process	Description	Applicability to Area 1
In-situ Treatment	Physical Treatment	Air Sparging	Strips VOCs from groundwater through addition of air below treatment zone, transferring VOCs to vapor phase for extraction and can enhance aerobic biodegradation by injecting air and providing oxygen source.	Not Applicable- Low permeability soils make this technology infeasible
		Electrical Resistive Heating (ERH)/Thermal Conductive Heating (TCH)	In-situ thermal remediation generates heat in-situ or applies heat directly to the subsurface, raising the temperature to above the boiling point of the target VOC contaminants (typically ~100°C or greater) and evaporating VOCs from the soil. Vapors are collected from the subsurface through soil vapor extraction wells for subsequent above-ground treatment.	**Applicable- In-situ thermal treatment is more expensive than other in-situ treatment processes, but can complete treatment in a shorter time frame. Technology is applicable to both unsaturated and saturated soil. HDPE storm sewer and utilities as well as active operations on the site may complicate design.**
		Pump and Treat	Impacted groundwater is pumped from the subsurface and treated ex-situ using air strippers, adsorption, and/or filtration	Not Applicable - Low permeability soils make this technology infeasible. Technology may provide plume containment but contaminant removal could be limited in diffusion-limiting clay geology. Pump and treat requires long-term infrastructure and operation which does not meet Site objectives.
		High Vacuum Multi-phase Extraction (MPE)	Utilize high vacuums to extract groundwater and expose impacted upper saturated zone soil for vapor extraction. Provides aggressive contaminant removal. Ideally applied in 48-hour continuous events.	Not Applicable- Low permeability soils make this technology infeasible
Removal	Excavation	Off-Site Disposal	Contaminated soils would be removed and transported to an off-site disposal facility.	**Applicable - Excavation of soil can be an effective alternative for well-delineated "hot spots" to reduce contaminant mass. Excavation is anticipated to be more expensive than in-situ treatment processes, but requires less treatment time . Technology is applicable to both unsaturated and saturated soil.**
		On-Site Treatment and Backfill	Contaminated soils will be excavated and thermally treated. The treated soils will be backfilled.	Not Applicable - Thermal soil treatment units are applicable for CVOCs and BTEX however, due to the small treatment area and volume, on-site treatment will not be cost effective.

Area 1 Catch Basin Network

Remedies listed as "Applicable" in Area 1 are applicable for the groundwater in the vicinity of the catch basin network. Currently, the catch basin network intercepts the groundwater table and conveys impacted groundwater to a nearby creek. The following remedies are potentially applicable depending on the remedial approach chosen from the list above:

-Seal catch basin structures and associated piping; and/or
-Remove stormwater utilities, regrade paved areas, and install drainage swale east of the Site to control Site stormwater

Conclusion

The following technologies were identified as applicable or potentially applicable for the site conditions and will undergo initial screening.
1) No Action (retained as a baseline)
2) Limited Action (Institutional Controls, Environmental Monitoring)
3) In-Situ Biological Treatment (Aerobic, Anaerobic, and/or Bioaugmentation)
4) In-Situ Chemical Oxidation
5) In-situ Chemical Reduction
6) In-situ Thermal Treatment
7) Excavation and Off-site Disposal

Table 19
Preliminary Screening of Technologies for Soil
Former Scott Aviation Facility Area 1

Overview of Soil Impacts	
<u>Surface Soil Impacts:</u> **Limited PAHs, metals from 0 to 0.2 ft bgs in sample locations south and west of Plant 1** **<u>Subsurface Soil Impacts:</u>** **Limited VOCs (acetone and methylene chloride) south of Plant 1, may be associated with laboratory contamination.**	**GRAs and subsequent screening apply to metals and PAHs in surface soil.**

General Response Actions	Technology	Process	Description	Applicability to Area 1
No action	(n/a)	(n/a)	(n/a)	**Applicable- Retained as a baseline to compare other remedial alternatives against.**
Limited action	Institutional Controls	Environmental Easement	Non-physical means of enforcing a restriction on the site that limits exposure to impacted materials and prevents actions that would interfere with the remedial program.	**Applicable- Limited surface soil impacts may be addressed by institutional controls and may be required for contamination left in place.**
		Zoning / Ordinance		
		Current Site Use		
		Site Management Plan		
Containment	On-Site Capping	Asphalt cap	Capping provides a physical barrier capable of limiting exposure to impacted soil. Capping may also provide a barrier which prevents infiltration of precipitation and subsequent leaching issues.	**Applicable- Based on limited surface soil impacts, capping may provide cost-effective remedy.**
		HDPE cap		
		Clay cap		
		Soil cover		
		RCRA Landfill		
In-situ treatment	In-situ Solidification	Bucket/blender, Auger Rig, Pressure Jet Grout - Portland, bentonite, fly ash, slag, activated carbon, blend	Solidification seeks to reduce the potential mobility of soil contaminants. Treatment is possible when mixed with solidification materials.	Not Applicable- Cost prohibitive based on limited soil impacts.
	Physical treatment	Solidification / Stabilization	Physical treatment technologies	Not Applicable - Due to the small treatment area and volume, on-site treatment will not be cost effective.
		Soil flushing		
		Surfactant enhanced recovery		
		Electro kinetic separation		
		Vitrification		
		Thermal resistivity		
		Electromagnetic heating		
		Heat enhanced recovery		
		Soil vapor extraction		
	Thermal treatment	Electrical Resistive Heating (ERH)/Thermal Conductive Heating (TCH)	In-situ thermal remediation generates heat in-situ or applies heat directly to the subsurface, raising the temperature to above the boiling point of the target VOC contaminants (typically ~100oC or greater) and evaporating VOCs from the soil. Vapors are collected from the subsurface through soil vapor extraction wells for subsequent above-ground treatment.	Not applicable- Technology does not address metals impacts.
Removal	Excavation	Off-site Disposal	Excavate soils from impacted areas, requires on-site treatment and/or disposal	**Applicable- Based on limited shallow soil impacts, excavation and disposal may provide cost-effective remedy.**
		On-Site Treatment and Backfill	Excavated soils treated on site by one of the treatment options listed above (in-situ treatment).	Not Applicable- Based on limited impacts in surface and shallow soil, technologies not practical for the Site.

Conclusion

The following technologies were identified as applicable or potentially applicable for the site conditions and will undergo initial screening:
1) No Action
2) Institutional Controls (Limited Action)
3) Capping (Containment)
4) Excavation and Off-site Disposal (Removal)

Table 20
Preliminary Screening of Technologies for Soil Vapor
Former Scott Aviation Facility Area 1

Overview of Soil Vapor Impacts				
Soil Vapor Impacts: **Soil vapor was sampled in three locations within the Plant 1 building. One location within the boiler room was identified as requiring mitigation for TCE exceedances.**			**GRAs and subsequent screening apply to CVOCs in the vicinity of the boiler room.**	
General Response Actions	**Technology**	**Process**	**Description**	**Applicability to Area 1 Building**
No action	(n/a)	(n/a)	(n/a)	**Applicable - Retained as a baseline to compare other remedial alternatives against.**
Engineering Control	Vapor Barrier	Seal/install barrier beneath building slab	A seal and/or barrier is installed to address the vapor intrusion pathway. The source is not treated, exposure is mitigated.	Not Applicable- May require demolition of existing slab to install barrier. May interrupt site operations for a considerable amount of time.
	Sub-slab Depressurization	Installation of an active or passive vapor mitigation system to provide alternative pathway to atmosphere	Installation of vapor collection points beneath the slab, piping routes vapor to atmosphere. Active or passive vacuum is applied for enhanced transport of vapors.	**Applicable- Can be installed in a minimally invasive way. Proven technology to mitigate soil vapor intrusion.**
	HVAC Modification	Room pressurization	HVAC system is modified to apply positive pressure to mitigate vapor intrusion.	**Potentially Applicable- Depending on building construction and room layout.**
		Passive ventilation	Mitigation occurs by dilution through increased ventilation.	**Potentially Applicable- Depending on building construction and room layout.**
Physical/Ex-situ Treatment	Soil vapor extraction and subsequent treatment	Will address contamination in unsaturated (vadose) zone and prevent impacted vapor from entering the building.	Installation of vapor collection points beneath the slab and/or exterior of the building, vapors are treated ex-situ.	Not Applicable - Based on low permeability of soil and shallow groundwater, may require several extraction points to get an effective radius of influence. May not be practical given site constraints.
Conclusion				
The following technologies were identified as applicable or potentially applicable for the site conditions and will undergo initial screening: **1) No Action (retained as a baseline)** **2) Sub-slab Depressurization (Exposure Mitigation)** **3) HVAC Modification (Exposure Mitigation)**				

Initial Screening of Remedial Technologies
Table 21a – No Action (all media)

No Action: No remedial activities are included under this alternative. No environmental sampling is performed. No actions are proposed to limit exposure to contaminants.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• None	• No action makes this the easiest technology alternative to implement	• No capital costs • No O&M costs
Disadvantages	**Disadvantages**	**Disadvantages**
• Does not mitigate on-site risk or mitigate exposures • Does not comply with SCGs • Does not reduce the contaminant concentrations, or limit plume mobility, toxicity, or volume of contamination. • No restriction on groundwater use would be implemented.	• Additional remedial actions may be required in the future	• Additional remedial actions may be required in the future

Conclusion: The No Action alternative is not protective of human health or the environment. It does not reduce on-site risk or mobility. However, it is used as a baseline in comparison with other alternatives. **This alternative will be retained for detailed analysis.**

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Initial Screening of Remedial Technologies
Table 21b – Limited Action (all media)

Limited Action: Limited action would include institutional controls to limit exposure to contamination and environmental monitoring to evaluate contaminant concentrations over time in order to quantify risk.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Mitigate on-site risk by reducing exposure to human and environmental receptors • Natural attenuation will reduce contaminant concentrations over time.	• Limited actions can make this response action easy to implement • Environmental sampling is standard practice for contaminated sites.	• Limited capital costs • Low O&M costs
Disadvantages	**Disadvantages**	**Disadvantages**
• Does not comply with all SCGs • Does not reduce the contaminant concentrations, or limit plume mobility, toxicity, or volume of contamination in a reasonable period of time.	• Additional remedial actions may be required in the future • Institutional controls can be difficult to implement for properties not owned by the responsible party and/or can inhibit property transaction.	• Additional remedial actions may be required in the future • O&M costs for monitoring and reporting may be required for a long time into the future.

Conclusion: Limited Action can be protective of human health and the environment by minimizing exposure to contaminants. However, it does not actively reduce contamination concentrations, mass, or mobility in a reasonable period of time. **This technology is not retained for detailed analysis as a stand-alone alternative. However, limited action including institutional controls and/or monitored natural attenuation may be useful to incorporate into other remedial alternatives.** .

Initial Screening of Remedial Technologies
Table 21c – Enhanced Biodegradation (groundwater)

Enhanced Biodegradation: Natural microbial processes are enhanced through the introduction of electron donors (enhancement) and/or microbial populations (bioaugmentation) via injection to reduce concentrations of VOCs.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Treatment technology has been shown to be effective in reducing mass of organic contaminants. • Does not generate large amounts of waste material.	• Easily implemented because remedial actions are limited to injection and monitoring.	• Lower capital cost than other remedial technologies being screened • Does not generate large amounts of waste material requiring disposal.
Disadvantages	**Disadvantages**	**Disadvantages**
• Site contaminants likely require both anaerobic (chlorinated VOCs) and aerobic (BTEX) treatment zones. • Short term effectiveness is likely to be low due to the likely presence highly concentrated source areas. • More toxic byproducts can be generated from incomplete biodegradation (i.e., vinyl chloride from TCE or chloroethane from 1,1,1-TCA).	• Delivery of injected substrates less effective in lower permeability soils • Additional remedial actions may be required in the future for polishing. • Processes create reducing environment which may mobilize inorganic contaminants.	• Bioaugmentation (addition of microbes) may be required if microbes required for complete dechlorination are not present • Long term monitoring costs required to demonstrate remediation effectiveness.

Conclusion: This alternative would protect human health and the environment by limiting exposure to contaminated groundwater and reducing contaminant mass and concentration in overburden groundwater over time. It has been effective at other sites with similar needs and can be relatively less expensive than other remedies undergoing screening. **This alternative is retained for detailed analysis**.

Initial Screening of Remedial Technologies
Table 21d – In-Situ Chemical Oxidation (groundwater)

In-Situ Chemical Oxidation: In-situ chemical oxidation (ISCO) acts to reduce the mass of organic contaminants through the direct injection of a strong oxidizing agent into the subsurface to breakdown contaminants into byproducts in the ground.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Treatment technology has been shown to be effective in reducing mass of BTEX and chlorinated VOCs. • Treatment is performed in a short time period. • Does not generate large amounts of waste material.	• Easily implemented because remedial actions are limited to oxidant injection and monitoring. • Does not require particular geochemical conditions.	• Capital costs are relatively low. • Does not generate large amounts of waste material requiring disposal.
Disadvantages	**Disadvantages**	**Disadvantages**
• 1,1,1-TCA (a primary site contaminant) is more difficult to oxidize than other VOCs • Change in groundwater pH and/or oxidation state can increase mobility of several metals.	• More than one oxidant injections may be required, depending on the oxidant chosen, and based on the elevated concentrations present. • Delivery of injected substrates less effective in lower permeability soils	• Long term monitoring costs required to demonstrate remediation effectiveness.

Conclusion: This alternative would protect human health and the environment by limiting exposure to contaminated groundwater and reducing contaminant mass and concentration in groundwater, and can be relatively less expensive than other remedies undergoing screening. **This alternative is retained for detailed analysis.**

Initial Screening of Remedial Technologies
Table 21e – In-Situ Chemical Reduction (groundwater)

<u>In-situ Chemical Reduction:</u> This technology applies zero valent iron (ZVI) along with a carbon substrate reduce the mass and concentration of chlorinated VOCs by treatment via biological, chemical, and physical processes.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Technology has been demonstrated to be effective in reducing mass of chlorinated VOCs. • Does not generate large amounts of waste material. • Contaminants treated in-situ by both biotic and abiotic reactions.	• Easily implemented because remedial actions are limited to injection and monitoring. • Does not require particular geochemical conditions.	• Does not generate large amounts of waste material.
Disadvantage	**Disadvantage**	**Disadvantage**
• Developing technology whose effectiveness has been demonstrated less frequently than other in-situ remediation technologies. • Technology not demonstrated for treatment of BTEX	• Injection of ZVI requires high injection pressures (100-300 psi) • Limited number of subcontractors who have equipment to inject ZVI • Delivery of injected substrates less effective in lower permeability soils • Processes create an extremely reducing environment which may mobilize inorganic contaminants.	• Capital costs are higher than other in-situ remediation technologies. • Long term monitoring costs required to demonstrate remediation effectiveness.

Conclusion: This alternative would protect human health and the environment by limiting exposure to contaminated groundwater and reducing contaminant mass and concentration in groundwater. However, due to the shallow groundwater table, the lower permeability of site soils, and the high injection pressures required, this technology is likely to lead to minor fracturing, preferential pathways, and/or daylighting which would limit effectiveness of the treatment. **Thus, this alternative is not retained for detailed evaluation; however, targeted use of ZVI could be considered for an enhanced bioremediation alternative for areas of highest concentrations.**

Initial Screening of Remedial Technologies
Table 21f – In-Situ Thermal Remediation (groundwater)

<u>In-situ Chemical Reduction:</u> This technology heats up the subsurface to increase the temperature above the boiling point of water to enhance stripping and volatilization of VOCs. Vapors are collected for treatment.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Effective in reducing contaminant source mass. Boiling points of site-specific VOCs are within the operating range of the technology. • Treatment of soil and groundwater is uniform in vertical and horizontal directions, regardless of soil type. • May be able to treat soil to below residential and non-residential remedial standards to avoid engineering controls and institutional controls. • Short operation time (several months) with low probability of contamination rebound	• Very timely to remediate residual contaminant source mass areas and residual groundwater in treatment areas. • Non-intrusive, except for installation of thermal points and vacuum extraction points. • Contaminated areas are relatively accessible. • No groundwater dewatering is required.	• No long term O&M costs • Lower costs associated with shorter anticipated monitoring time.
Disadvantages	**Disadvantages**	**Disadvantages**
• Limited effectiveness for treating VOCs in weathered bedrock/bedrock	• High demand for limited thermal remediation specialty contractors. • Thermal remediation system may require installation of additional electrical infrastructure. • Treatment or off-site disposal required for collected condensate. • Existing PVC utilities and wells will need to be abandoned and replaced with stainless steel wells. • Permits may be required for treatment and/or discharge of wastewater and/or vapor stream.	• High costs associated with electric demand and utilities required for heating. • High capital costs associated with design and construction of thermal remediation system. • New monitoring wells need to be installed constructed of steel materials. • Treatment and/or disposal of generated wastewater.

Conclusion: This alternative would protect human health and the environment by limiting exposure to contaminated groundwater and reducing contaminant mass and concentration in groundwater. However, this technology is significantly more expensive than other in-situ technologies. In addition, the storm sewer line and any other PVC utilities could be damaged by the high temperatures and would require complete replacement with materials resistant to high temperatures. **Thus, this alternative is not retained for detailed evaluation.**

Initial Screening of Remedial Technologies
Table 21g – Soil Excavation (soil and/or groundwater)

Soil Excavation: Under this technology, shallow soil and/or saturated soil within areas of contaminated groundwater would be excavated to remove contaminant source zones with the soil transported to an appropriate landfill or treatment facility. By removing the saturated soils, less contamination would be available to dissolve into groundwater and migrate off-site.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Effective for rapidly reducing contaminant mass. • Reduces the time to remediate lower concentrations of residual source mass using other remedial technologies. • May be able to meet residential and/or non-residential remedial standards to avoid engineering/institutional source area controls.	• Contamination source areas are accessible, especially for surface soils. • Excavation can be easily implemented with conventional construction equipment. • Very timely.	• Low cost to excavate using conventional construction equipment. • No O&M costs
Disadvantages	**Disadvantages**	**Disadvantages**
• May not be effective for all of the dissolved concentrations in groundwater. • Potential for short-term risks to workers and community from emissions during excavation and transport.	• Large volumes of soil may need to be excavated to remove all saturated areas. • Structural supports and management of utilities may be needed to excavate all areas. • High water table will require dewatering and treatment of groundwater. • Excavation of saturated soils will require more planning for dewatering and associated treatment and disposal.	• Large volume of soil likely needed, thus high disposal costs would be incurred. • High cost for disposal if soil is characterized as hazardous soil. • Need to import clean fill to backfill open excavations. • Cost associated with sheeting/shoring. • Cost associated with dewatering, treatment, and disposal.

Conclusion: Excavation and disposal is a very common procedure for remediation, but less so for addressing groundwater contamination. Due to the deep excavation likely required and the high costs associated with disposal with large volumes of soil, this alternative is not recommended for further evaluation.

Initial Screening of Remedial Technologies
Table 21h – Soil Capping (Containment) (soil)

<u>Soil Excavation:</u> Under this technology, contaminated shallow soil on the site would be contained beneath an engineered cap consisting of clean fill and geotextile materials to provide a physical barrier limiting exposure to impacted soil. Capping may also provide a barrier which prevents infiltration of precipitation and subsequent leaching issues.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Eliminates direct contact with contaminated soils. • Prevents infiltration of precipitation, controlling migration of soil contamination.	Implementation and success of capping is well documented.	• Transportation and disposal costs can be avoided. • Minimal O&M cost.
Disadvantages	**Disadvantages**	**Disadvantages**
• Does not reduce the toxicity or volume of the contaminants in place.	• Can limit site reuse, especially if soil cap areas need to be raised • Contamination left in place and will require future O&M and reporting. • Institutional controls may be required	• Site preparation such as reshaping and contouring may be needed outside of the cap areas. • Long term O&M and reporting required.

Conclusion Soil capping would reduce risk to human receptors from shallow contaminated soil. However, by leaving contamination in place, this technology would limit site reuse, require long-term O&M, and likely also require institutional controls. **This alternative is not retained for detailed evaluation.**

Initial Screening of Remedial Technologies
Table 21i – Sub-Slab Depressurization (soil vapor)

Sub-Slab Depressurization: Installation of vapor collection points beneath a building slab mitigates indoor air inhalation risk by routing vapor to atmosphere.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Proven technology to mitigate soil vapor intrusion.	• System installed in a minimally invasive way. • Technology is the preferred by regulators and practitioners compared to other engineering controls for soil vapor, especially for an existing building	• Low capital costs • Low O&M costs
Disadvantages	**Disadvantages**	**Disadvantages**
• Does not reduce contaminant concentrations or limit mobility, toxicity, or volume of contamination in the ground.	• Engineered controls will be required with any redevelopment over an area with vapor intrusion issues.	• Long term O&M costs

Conclusion: Sub-Slab Depressurization has been demonstrated to be protective of human health risks associated with vapor intrusion and inhalation. **This alternative will be retained for detailed analysis.**

Initial Screening of Remedial Technologies
Table 21j – HVAC Modification (soil vapor)

<u>HVAC Modification:</u> HVAC systems for buildings are modified to mitigate vapor intrusion by increasing ventilation and/or applying positive pressure in rooms.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Proven technology to mitigate soil vapor intrusion.	• Depending on building construction and room layout can be protective about vapor intrusion risks. •	• Potential low capital costs • Low O&M costs
Disadvantages	**Disadvantages**	**Disadvantages**
• Does not reduce contaminant concentrations or limit mobility, toxicity, or volume of contamination in the ground.	• Depending on building construction and room layout, HVAC modification may not fully mitigate vapor intrusion. • Can be difficult to implement on existing buildings • Engineered controls will be required with any redevelopment over an area with vapor intrusion issues.	• Long term O&M costs

Conclusion: HVAC modification has been demonstrated to be protective of human health risks associated with vapor intrusion and inhalation; however, this technology is not applicable to all buildings or rooms and is a less preferred alternative with environmental regulators. **This alternative will not be retained for detailed analysis.**

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Table 22
Criteria Comparison and Ranking of Remedial Alternatives
Former Scott Aviation Facility Area 1
Lancaster, New York

Alternative	Overall Protection of Human Health & the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, and Volume through Treatment	Short-Term Effectiveness	Implementability	Land Use	Green Remediation	GW Alternative Cost [1] (Net Present Value, $million)	Overall Ranking
Groundwater Remedial Alternatives (Ranking scale of 1 through 4, with 1 being most favorable and 4 being least favorable)										(Ranked 1-7 based on sum of ranking criteria)
Alternative 1 No Action	4 Alternative 1 would be least effective without any removal, immobilization, or containment of impacted materials, with only natural attenuation to treat impacted media without monitoring or administrative means to prevent exposure.	4 Chemical SCGs will be met over a longer period of time; however, the alternative does not include monitoring to assess concentrations in site media.	4 Alternative 1 would be least effective as it does not involve removal, immobilization or containment of impacted materials, without monitoring or administrative means to prevent exposure.	4 Alternative 1 would reduce volume and toxicity over time due to natural attenuation. However, alternative does not include monitoring to evaluate reduction.	1 Alternative 1 requires no action.	1 Alternative 1 requires no technical or administrative action, and therefore is easy to implement.	4 Alternative 1 includes no action. This alternative would have the least impact on the site area; however, known contamination remains in place reducing potential for redevelopment and potential property values.	4 Alternative 1 requires no action, but includes no removal, immobilization, or containment of impacted materials and does not include monitoring or administrative means to prevent exposure.	Not Ranked This alternative is required by DER-10 and is retained as a baseline alternative for comparison purposes. No cost generated.	**7**
Alternative 2 Excavation (unrestricted use alternative)	1 Alternative would be most protective with removal and off-site disposal of all contaminated material	1 Alternative would meet chemical specific SCGs in the shortest period of time. Action- and location-specific ARARs will be met.	1 Alternative (excavation) permanently removes contaminants.	2 Alternative will result in permanent reduction in mobility, but does not reduce volume or toxicity (unless treatment performed at disposal facility).	4 Alternative has high potential exposure to contamination during excavation to exposed materials, dust, and volatilized organic vapors. Site specific HASP and CAMP would to confirm that dust or volatilized organic vapors are within acceptable levels and specify additional engineering controls (e.g., use of water sprays and/or foam to suppress dust/vapors/odors) are needed. There is limited potential exposure to contamination during well installation and sampling.	4 Alternative could be implemented, but with difficulty associated with dewatering for working below water table and deep excavation work in soils immediately adjacent to existing buildings and utilities.	1 Alternative may have the most adverse short term impact; however, backfill and compaction of the excavation can be implemented to minmize effects to existing geotechnical properties. There will be significant temporary land use disruptions, but no land use restrictions when the work is completed.	4 Alternative would require off-site disposal of excavated material. Transportation of this material to an off-site landfill will have a large carbon footprint, especially since the nearest disposal facility is at least one hour drive from the site.	4 $5.1 - $6.5	**5**
Alternative 2A Excavation with Monitored Natural Attenuation	3 Alternative would be less protective because it does not involve the removal, immobilization, or containment of all impacted materials, with only monitored natural attenuation to treat impacted media. However, instiutional controls would limit exposure to ecological and human health receptors.	3 Chemical SCGs will be met over a longer period of time. Action- and location-specific ARARs will be met.	3 Alternative is effective at preventing/minimizing exposure; however, contamination left in place. Reduction in contamination by natural attenuation processes is permanent.	3 In the excavation area, Alternative would result in permanent reduction of mobility but does not reduce volume or toxicity (unless treatment performed at disposal facility). Volume and toxicity would be reduced over time due to natural attenuation.	3 Alternative has high potential exposure to contamination during excavation to exposed materials, dust, and volatilized organic vapors. Site specific HASP and CAMP would to confirm that dust or volatilized organic vapors are within acceptable levels and specify additional engineering controls (e.g., use of water sprays and/or foam to suppress dust/vapors/odors) are needed. There is limited potential exposure to contamination during well installation and sampling.	3 Alternative could be implemented, but with difficulty associated with dewatering for working below water table and deep excavation work in soils immediately adjacent to existing buildings and utilities.	3 Alternatives with monitored natural attenuation anticipated to attain SCGs in the longest period of time; thereby requiring land use restrictions on a larger area and for the longest period of time than other alternatives.	2 Alternative requires off-site disposal of excavated material, but a lower volume than Alternative 2. Alternative relies on natural processes in less contaminated areas to reduce volume, toxicity, and mobility, which is viewed favorably by DER 31. Limited environmental impact will occur from sampling activities at the site and laboratory activities.	3 $2.6 - $2.8	**6**
Alternative 3 Enhanced Bioremediation	2 Alternative would be protective by permanantely destroying site contaminants by biodegradation. This alternative may require several applications to achieve remediation.	2 Alternative would meet chemical specific SCGs in shorter time than only relying on natural processes, but longer than excavation or chemical oxidation alternatives. Action- and location-specific ARARs will be met.	2 Alternative permanently treats/removes contaminants by in-situ bioremediation. Several applications may be required to treat all mass and volume of contaminants.	1 Alternative will result in permanent reduction in volume, toxicity, and mobility through in-situ treatment.	1 Site remediation workers would face minimal risks associated with bioremediation injection; proper PPE will be used by workers. There is limited potential exposure to contamination during well installation and sampling.	2 Alternative could be implemented readily with a degree of certainty. Numerous bioremediation amendment products are commercially available, and no special equipment is required for bioremediation injection. Several applications may be necessary to achieve complete treatment. Design would need to consider difficulties of treating site overburden including lower permeability soils, shallow water table, and presence of subsurface utilities.	2 Alternative utilizes in-situ remediation to treat contamination in place. Injection wells or injection points will have minimal adverse impact to land use. Technology is anticipated to meet SCGs (and more area with less restricted land use) more quickly than natural attenuation alternatives.	2 Alternative B treats contaminants in the ground without any removal activities. Carbon footprint limited to injection pumps and mixers and sampling activities. Alternative enhances natural processes.	2 $1.9	**1**
Alternative 4 In-situ oxidation	2 Alternative would be protective by permanantely destroying site contaminants by oxidation. This alternative may require several applications to achieve remediation.	2 Alternative would meet chemical specific SCGs in shorter time than on alternatives relying on natural attenuation processes. Action- and location-specific ARARs will be met.	3 Alternative permanently treats/removes contaminants by in-situ oxidation. Several applications may be required to treat all mass and volume of contaminants. However, 1,1,1-TCA can be recalcitrant to some oxidants, and rebound can occur after ISCO injections.	1 Alternative will result in permanent reduction in volume, toxicity, and mobility through in-situ treatment.	2 Site remediation workers will be exposed to strong oxidants; proper PPE will be used by workers. There is limited potential exposure to contamination during injection, well installation, or sampling.	2 Alternative could be implemented readily with a degree of certainty. Several applications of oxidant treatment may be necessary to achieve complete treatment. Design would need to consider difficulties of treating site overburden including lower permeability soils, shallow water table, and presence of subsurface utilities.	2 Alternative utilizes in-situ remediation to treat contamination in place. Injection wells or injection points will have minimal adverse impact to land use. Technology is anticipated to meet SCGs (and more area with less restricted land use) more quickly than other in-situ alternatives.	2 Alternative treats contaminants in the ground without any removal activities. Carbon footprint limited to delivery of chemicals, injection pumps and mixers and sampling activities.	3 $2.2	**2**
Alternative 4A In-situ oxidation with Monitored Natural Attenuation	3 Alternative would be protective by permanantely destroying site contaminants by oxidation or other natural attenuation processes. This alternative would require several applications and extended time to achieve remediation criteria.	3 Chemical SCGs will be met over a longer period of time. Action- and location-specific ARARs will be met.	3 Alternative permanently treats/removes contaminants by in-situ oxidation and natural attenuation processes.	2 Alternative will result in permanent reduction in volume, toxicity, and mobility through in-situ treatment and natural attenuation processes.	2 Site remediation workers will be exposed to strong oxidants; proper PPE will be used by workers. There is limited potential exposure to contamination during injection, well installation, or sampling.	2 Alternative could be implemented readily with a degree of certainty. Several applications of oxidant treatment may be necessary to achieve complete treatment.	2 Alternatives with monitored natural attenuation anticipated to attain SCGs in the longest period of time; thereby requiring land use restrictions on a larger area and for the longest period of time than other alternatives.	1 Alternative treats contaminants in the ground without any removal activities. Carbon footprint limited to injection pumps and mixers and sampling activities. Alternative relies on natural processes in less contaminated areas to reduce volume, toxicity, and mobility, which is viewed favorably by DER 31. Alternative applies less chemicals to the subsurface than other alternatives.	1 $1.6	**3**
Alternative 4B In-situ oxidation with Enhanced Bioremediation	2 Alternative would be protective because it would permanantely destroy site contaminants by oxidation or bioremediation. This alternative may require several applications to achieve remediation.	2 Alternative would meet chemical specific SCGs in shorter time than on alternatives relying on natural attenuation processes. Action- and location-specific ARARs will be met.	2 Alternative permanently treats/removes contaminants by in-situ oxidation and bioremediation processes.	1 Alternative will result in permanent reduction in volume, toxicity, and mobility through in-situ treatment.	2 Site remediation workers will be exposed to strong oxidants; proper PPE will be used by workers. There is limited potential exposure to contamination during well installation and sampling.	3 Alternative could be implemented readily with a degree of certainty. Several applications of oxidant and/or bioremediation amendments may be necessary to achieve complete treatment.	2 Alternative utilizes in-situ remediation to treat contamination in place. Injection wells or injection points will not adversely impact land use, and this technology is anticipated to meet SCGs (and more area with less restricted land use) more quickly than natural attenuation alternatives.	2 Alternative treats contaminants in the ground without any removal activities. Carbon footprint limited to injection pumps and mixers and sampling activities.	3 $1.9	**3**

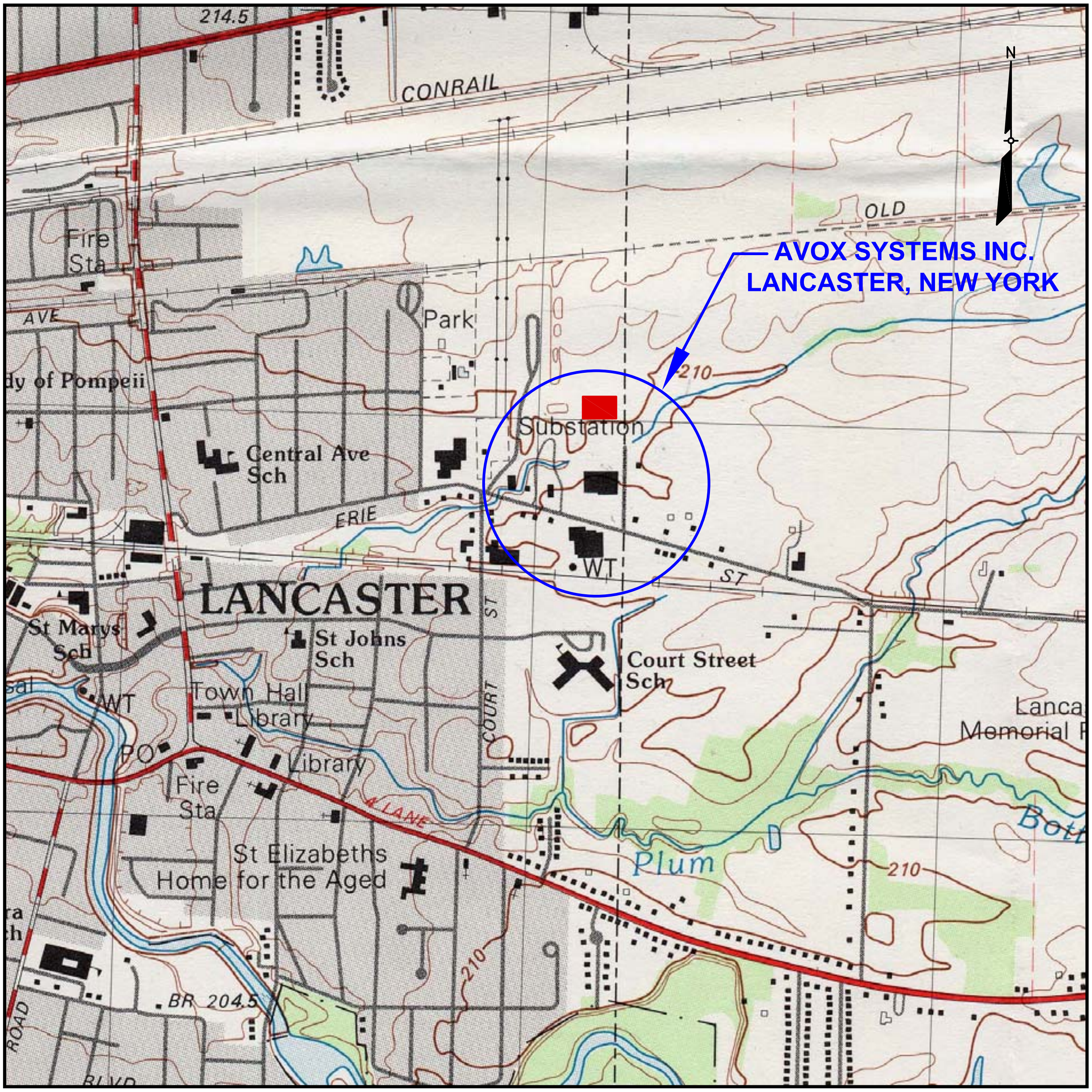
Notes:

1. For comparison of alternatives, Net Present Value costs reported in this table are for the Groundwater Alternative components only and do not include the common elements of surface excavation, sub-slab depressurization system, and storm sewer actions.

Table 23
Summary of Planning Level Costs for Remedial Alternatives
Former Scott Aviation Facility Area 1
Lancaster, New York

Alternative (Cost in Millions)	**Alternative 2 Excavation** (Unrestricted Use)		**Alternative 2A Focused Excavation + MNA**		**Alternative 3 Enhanced Bioremediation**	**Alternative 4 In-situ Chemical Oxidation**	**Alternative 4A Focused ISCO + MNA**	**Alternative 4B Focused ISCO + Enhanced Bioremediation**
Process Description	Excavation, dewatering, and off-site disposal of contaminated media (soil disposal assume 100% haz)	Excavation, dewatering, and off-site disposal of contaminated media (soil disposal assume 50% haz/50% non-haz)	Excavation, dewatering, and off-site disposal of area of most contaminanted groundwater, monitored natural attenuation for remainder of plume (soil disposal assume 100% haz)	Excavation, dewatering, and off-site disposal of area of most contaminanted groundwater, monitored natural attenuation for remainder of plume (soil disposal assume 75% haz)	Injection of amendments to enhance natural microbial processes in addition to adding microbe cultures to augment desired native microbe populations.	Injection of chemical oxidant into subsurface for oxidation/destruction of contaminants in soil and groundwater.	Injection of chemical oxidant into areas with most contaminated groundwater with monitored natural attenuation for remainder of plume	Injection of chemical oxidant into areas with most contaminated groundwater with enhanced bioremediation for remainder of plume
Total Capital Cost	$6.4	$5.0	$2.0	$1.9	$1.0	$1.7	$0.76	$0.88
Future Cost	$0.02	$0.02	$0.74	$0.74	$0.67	$0.60	$1.12	$1.04
TOTAL GW ALTERNATIVE COST	**$6.4**	**$5.0**	**$2.8**	**$2.6**	**$1.6**	**$2.3**	**$1.9**	**$1.9**
TOTAL NET PRESENT VALUE ALTERNATIVE COST	**$6.4**	**$5.0**	**$2.5**	**$2.4**	**$1.6**	**$2.2**	**$1.6**	**$1.8**
SHALLOW EXCAVATION COST	**$0.12**							
STORM SEWER	**Will be remediated by default by using any of the Alternatives listed above**							
SUB SLAB DEPRESSURIZATION	**$0.06**							
TOTAL COST CONTINGENCY AND SENSITIVITY (GW ALTERNATIVE + COMMON ELEMENTS)								
-30%	**$4.6**	**$3.6**	**$1.9**	**$1.8**	**$1.2**	**$1.7**	**$1.2**	**$1.4**
50%	**$9.8**	**$7.5**	**$3.8**	**$3.5**	**$2.3**	**$3.4**	**$2.4**	**$2.7**
Remedy Construction and Implementation Time (from Notice to Proceed)	6 - 18 months		6 - 12 months		3-5 years (2-3 Injection events)	3-4 years (2-3 ISCO Injection events)	3-4 years (2-3 ISCO Injection events)	3-4 years (2-3 ISCO Injection events)
Period of Performance - Remediation & Post-Remediation Monitoring	Assume 1 - 2 years performance monitoring sampling to demonstrate criteria attainment		Assume 20 years of monitored natural attenuation sampling demonstrate criteria attainment		Assume 3-5 years performance monitoring sampling after last injection for additional natural attenuation and to demonstrate criteria attainment	Assume 2-4 years performance monitoring sampling after ISCO for additional natural attenuation and to demonstrate criteria attainment	Assume 20 years of monitored natural attenuation sampling demonstrate criteria attainment	Assume 3-5 years performance monitoring sampling after last injection for additional natural attenuation and to demonstrate criteria attainment
Overall Time to Achieve Site Closure	3 years		21 years		6 - 10 years	5 - 8 years	23 years	8 - 10 years

FIGURES



SOURCE:
1982 GEOLOGIC SURVEY 7.5 X 15 MINUTE TOPOGRAPHIC QUADRANGLE
LANCASTER, NEW YORK

LEGEND

AVOX PLANT 3 ADDED AFTER PUBLICATION OF LANCASTER, NEW YORK TOPOGRAPHIC QUADRANGLE.

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SCALE IN FEET

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FIGURE 1
SITE LOCATION MAP

FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

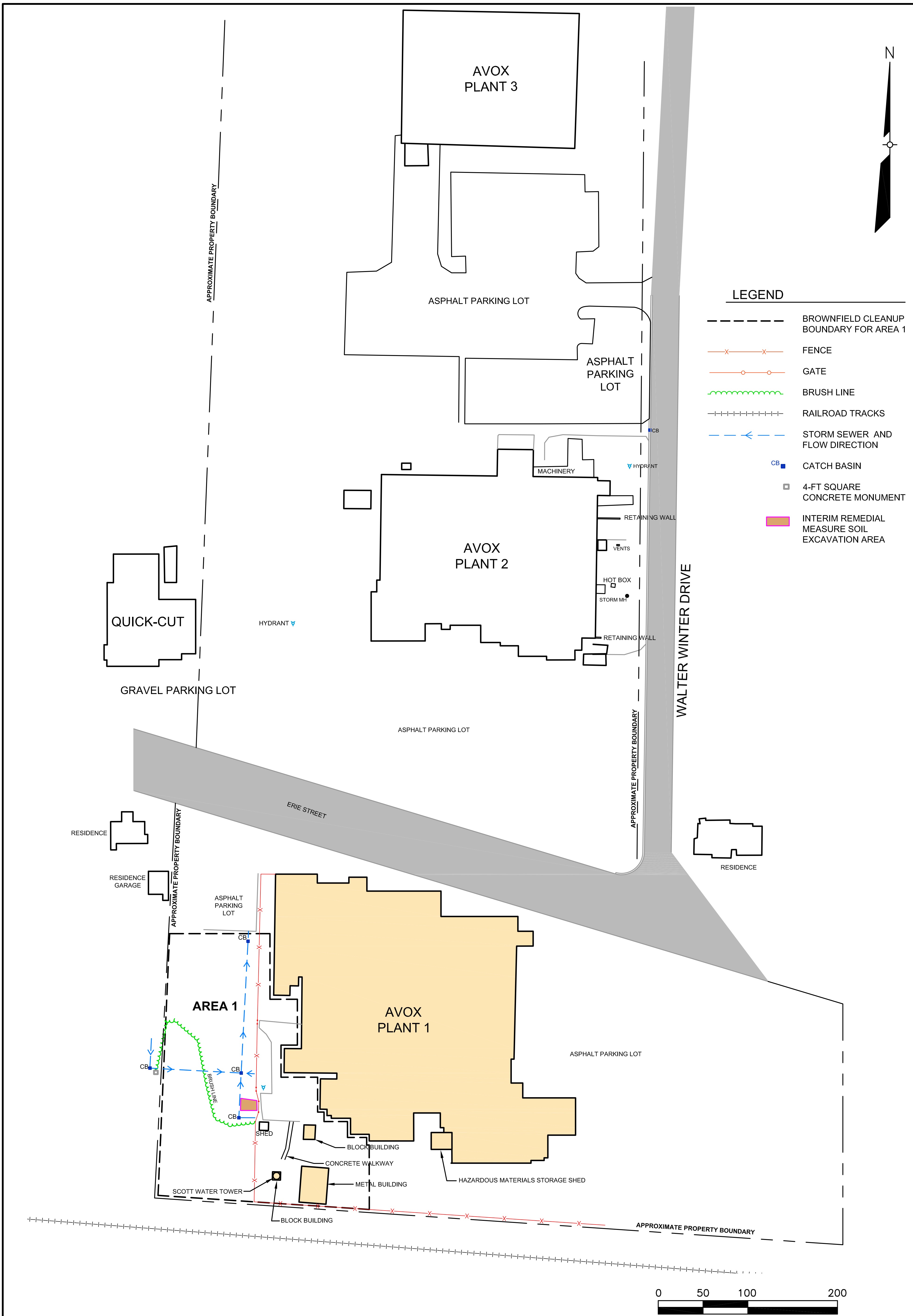

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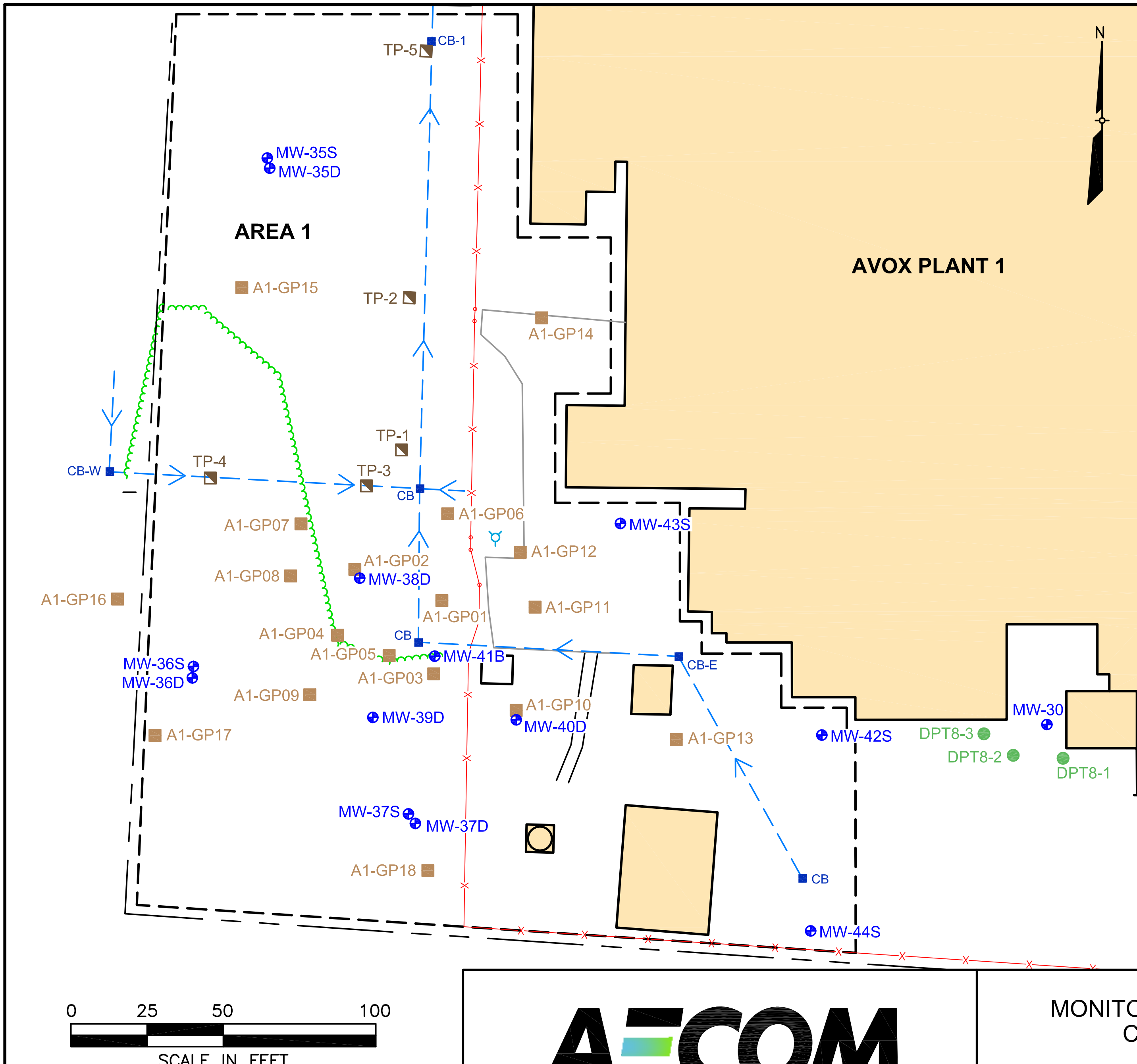
FIGURE 2
FACILITY LAYOUT MAP

FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

\\USGRNS01\data\work\60147012\CADD\60147012_064 Facility Layout Map.dwg, 10/18/2010 5:57:54 PM, splawnm



LEGEND

MW-35S	MONITORING WELL LOCATION (SURVEYED)
A1-GP13	PIEZOMETER LOCATION (SURVEYED)
DPT8-1	BORING LOCATION (SURVEYED)
TP-1	TEMPORARY PIEZOMETER LOCATION
	BROWNFIELD CLEANUP BOUNDARY FOR AREA 1
	FENCE
	BRUSH LINE
	STORM SEWER AND FLOW DIRECTION
CB	CATCH BASIN
	4-FT SQUARE CONCRETE MONUMENT

Location ID	Investigative Phase	Date Completed	Screen Interval (ft bgs)
MW-30	ESI Phase II	7/7/2005	10 - 20
A1-GP01S	PGA Phase I	2/27/2006	5 - 15
A1-GP02S		2/27/2006	5 - 15
A1-GP03S		2/27/2006	5 - 15
A1-GP04S		2/27/2006	5 - 15
A1-GP05S		2/27/2006	5 - 15
A1-GP06S		2/27/2006	5 - 15
A1-GP07S	PGA Phase II	5/16/2006	5 - 15
A1-GP08S		5/16/2006	5 - 15
A1-GP09S		5/16/2006	5 - 15
A1-GP10S		5/16/2006	5 - 15
A1-GP11S		5/15/2006	5 - 15
A1-GP12S[1]		5/16/2006	5 - 15
A1-GP13S	PGA Phase III	5/22/2007	5 - 15
A1-GP14S		5/22/2007	5 - 15
A1-GP15S		5/23/2007	5 - 15
A1-GP16S		5/23/2007	5 - 15
A1-GP17S		5/23/2007	5 - 15
A1-GP18S		5/24/2007	5 - 15
A1-GP12S[2]	RI	5/27/2010	5 - 15
MW-35S		5/26/2010	5 - 15
MW-35D		5/26/2010	21 - 26
MW-36S		6/4/2010	5 - 15
MW-36D		6/4/2010	16 - 21
MW-37S		5/28/2010	4.5 - 14.5
MW-37D		5/28/2010	15 - 20
MW-38D		6/3/2010	16 - 21
MW-39D		6/3/2010	15 - 20
MW-40D		6/2/2010	17.8 - 22.8
MW-40B		6/1/2010	24.8 - 34.8
TP-1		6/24/2010	2.9 - 5.4
TP-2		6/24/2010	1.5 - 4
TP-3		6/24/2010	1.4 - 3.9
TP-4		6/24/2010	1 - 3.5
MW-42S	SRI	3/28/2011	5 - 15
MW-43S		3/28/2011	5 - 15
MW-44S		5/19/2011	6 - 15
TP-5		5/19/2011	1 - 6

Notes:

1. This well was damaged and subsequently replaced during the RI field activities.
2. This well is a replacement well for the well with the same identification that was installed during Phase II of the PGA.

ft bgs - feet below ground surface
ESI - Environmental Site Investigation
PGA - Preliminary Groundwater Assessment
RI - Remedial Investigation
SRI - Supplimental Remedial Investigation

AECOM

FIGURE 3
MONITORING WELL, PIEZOMETER AND CATCH BASIN LOCATIONS

FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

L:\work\60147012\CADD\60147012_093 MW and Piezometer Locations.dwg, 3/19/2013 2:08:45 PM, Splawnm

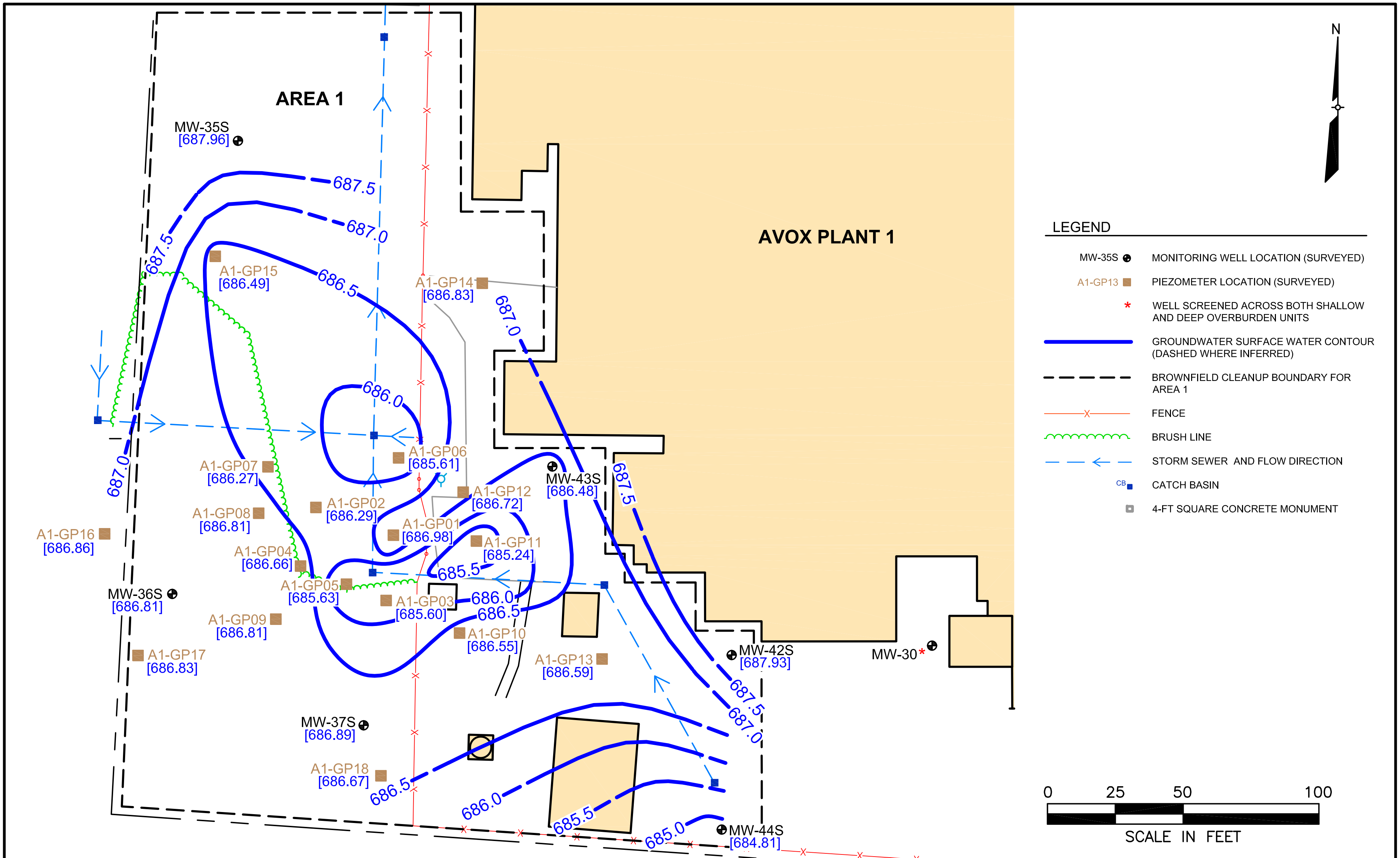


FIGURE 4
SHALLOW OVERBURDEN GROUNDWATER SURFACE ELEVATION CONTOURS
JUNE 1, 2011

FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

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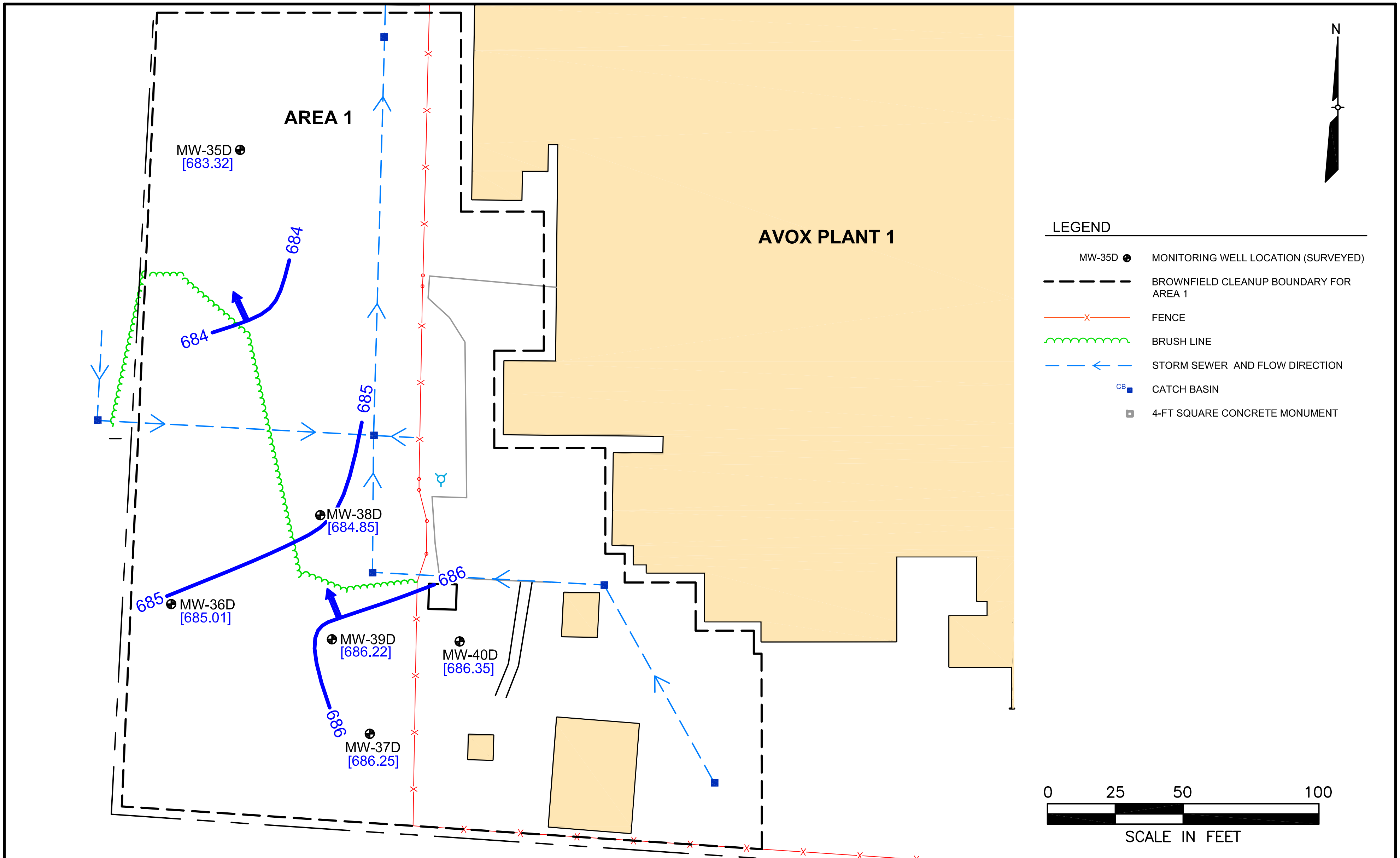

FIGURE 5
DEEP OVERBURDEN GROUNDWATER SURFACE ELEVATION CONTOURS
JUNE 1, 2011
FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

L:\work\60147012\CADD\60147012_103 Deep Overburden GW Surface Conts_Oct2010.dwg, 3/8/2013 8:22:00 AM, Splawnm

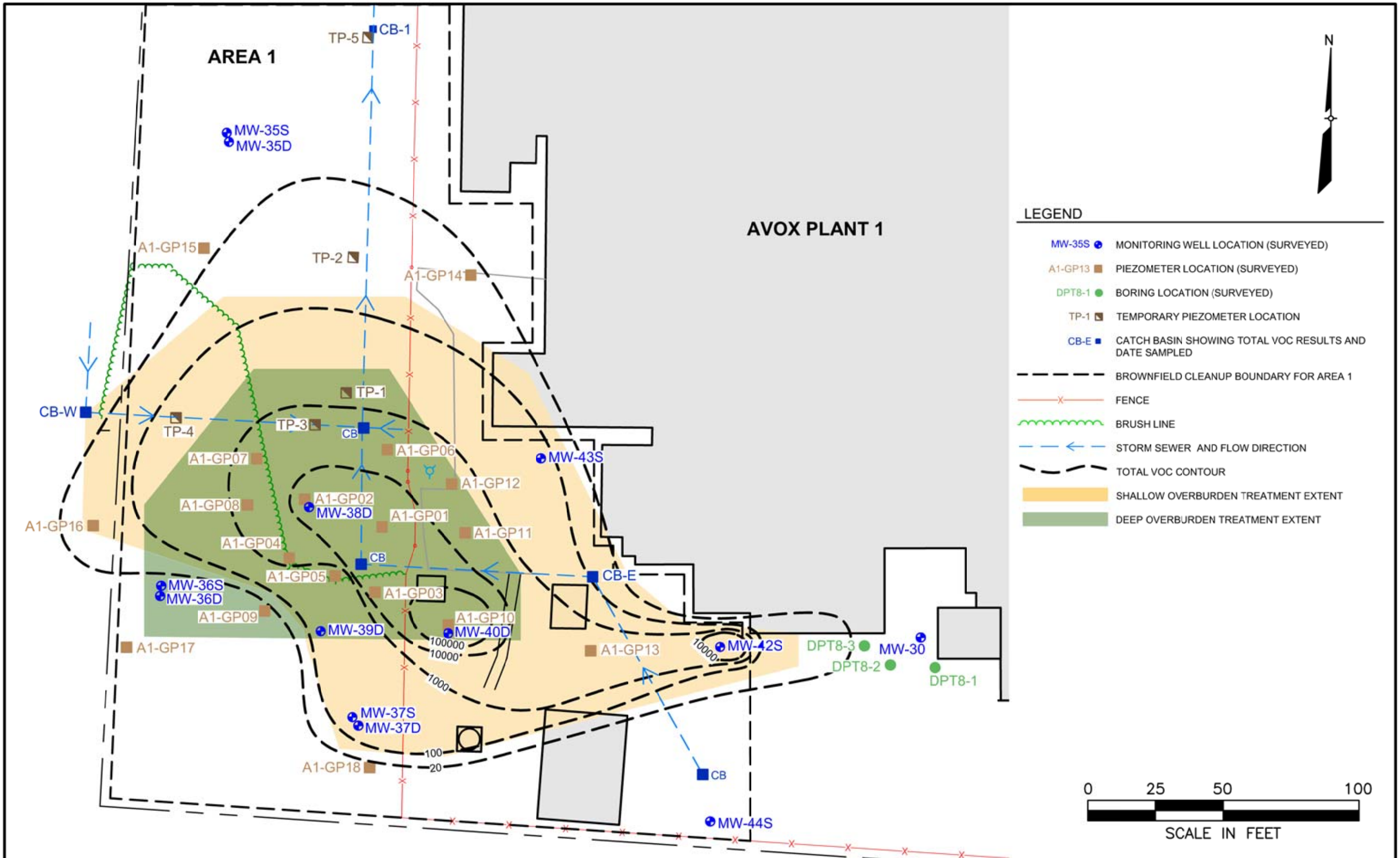

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FIGURE 6
PRELIMINARY GROUNDWATER REMEDIATION TREATMENT AREAS

FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

L:\work\60147012\CADD\60147012_100 Preliminary GW Remediation Treatment Areas.dwg, 3/19/2013 3:00:55 PM, Splawnm

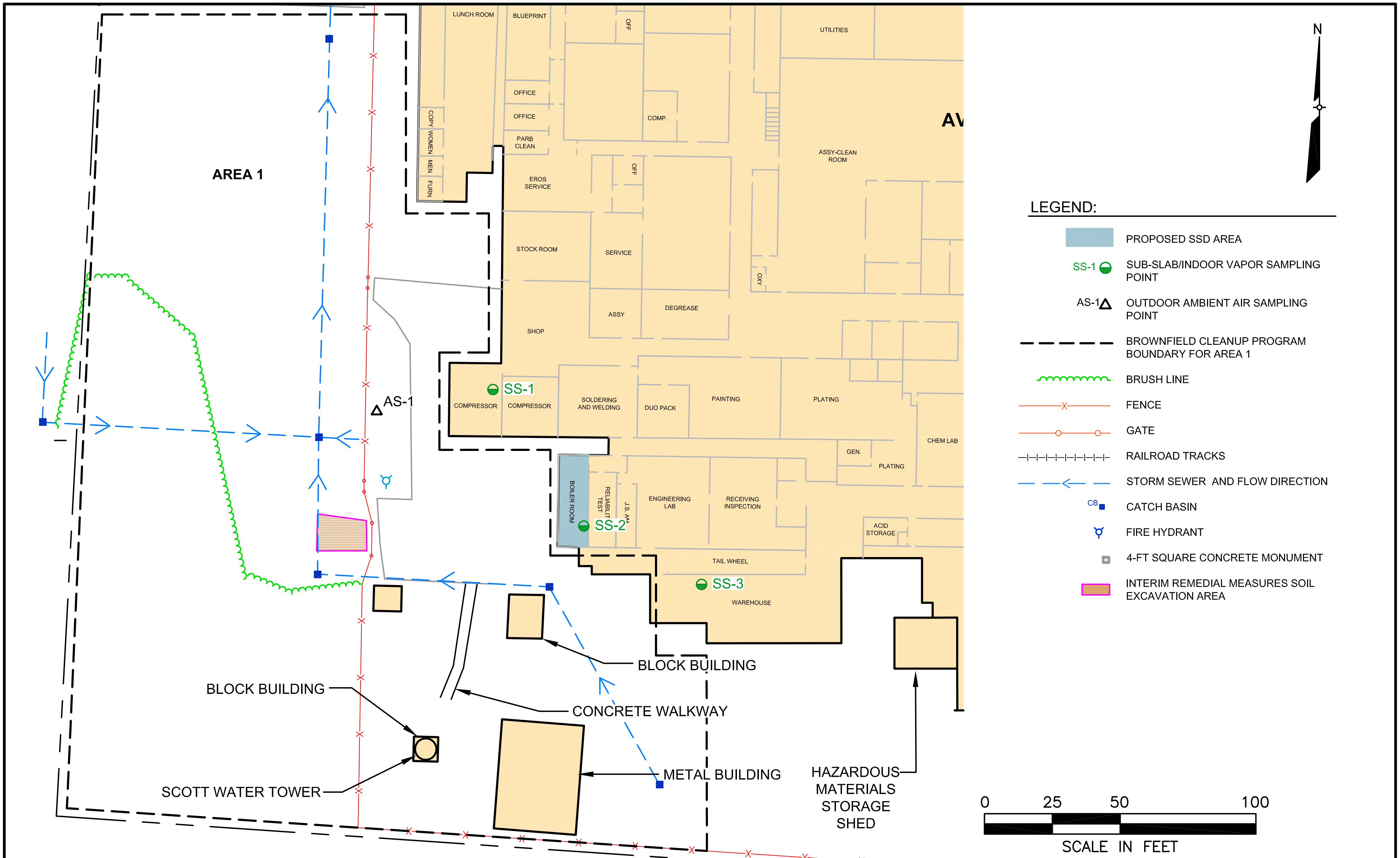

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FIGURE 7
PROPOSED SUB-SLAB DEPRESSURIZATION SYSTEM AREA

FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

L:\work\60147012\CADD\60147012_090 Proposed Sub-Slab Depressurization System Area.dwg, 3/19/2013 1:53:32 PM, Splawnm

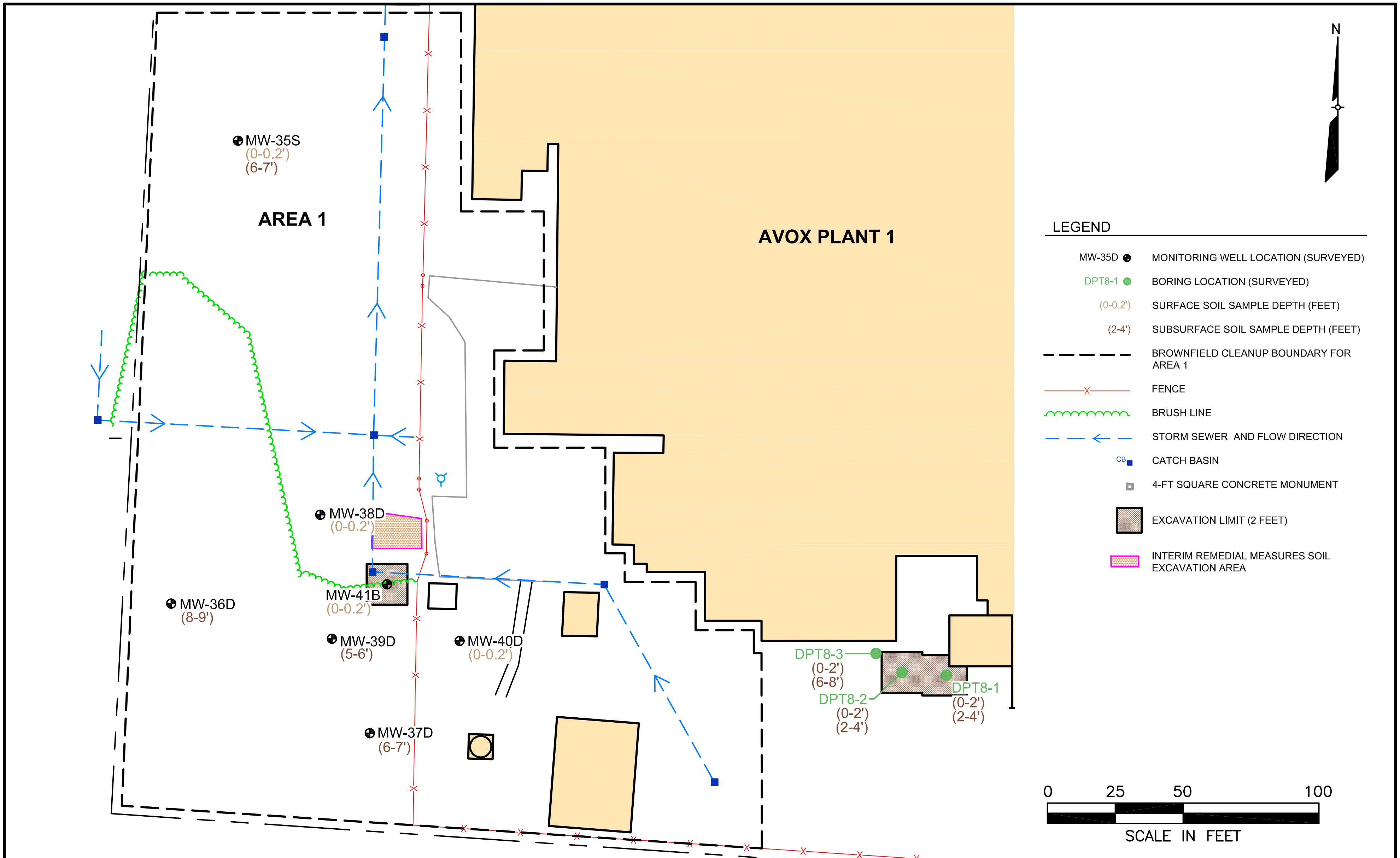

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FIGURE 8
PROPOSED SHALLOW EXCAVATION AREAS TO ACHIEVE COMMERCIAL USE

FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

L:\work\60147012\CADD\60147012_102 Proposed Shallow Excavation Areas to Acheive Unrestricted Use.dwg, 3/19/2013 3:12:59 PM, Splawnm

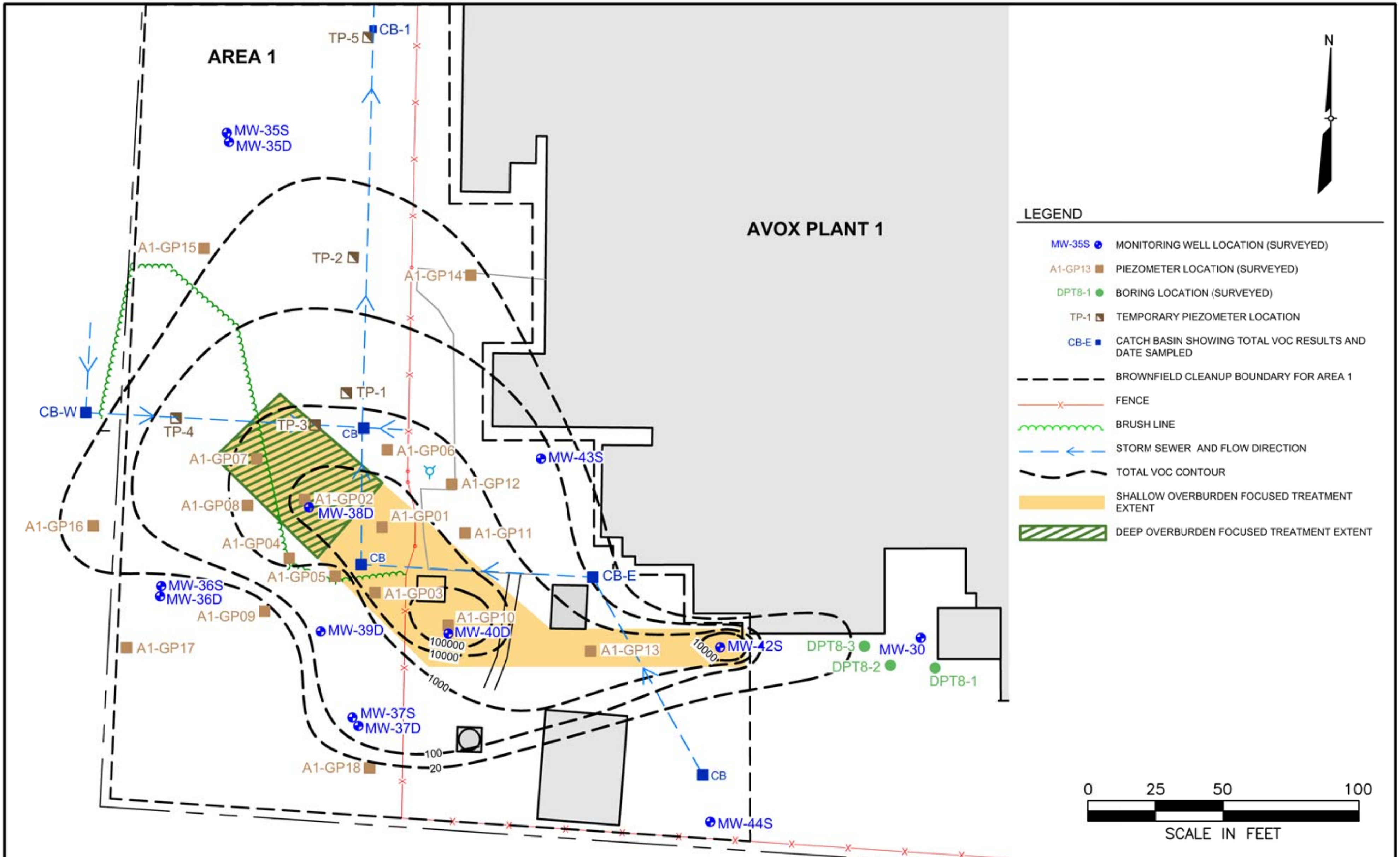

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FIGURE 9
PRELIMINARY GROUNDWATER REMEDIATION TREATMENT AREAS FOR MNA SUBALTERNATIVES

FORMER SCOTT AVIATION FACILITY AREA 1
LANCASTER, NEW YORK

L:\work\60147012\CADD\60147012_101 Preliminary GW Remediation Treatment Areas for MNA Subalts.dwg, 3/19/2013 2:07:10 PM, Splawnm