FINAL

5 YEAR REVIEW REPORT

109th AIRLIFT WING
NEW YORK AIR NATIONAL GUARD
SCOTIA, NEW YORK

Prepared For:

Headquarters Air National Guard
Joint Base Andrews, Maryland

July 2016

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BB&E, Inc.
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LIST OF ACRONYMS

109 AW	109th Airlift Wing
amsl	Above Mean Seal Level
ANG	Air National Guard
AOC	area of concern
BB&E	BB&E Inc.
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
CVOC	Chlorinated Volatile Organic Compounds
DGI	Data Gap Investigation
DPT	Direct Push Technology
EOS	Edible Oil Substrate
ERP	Environmental Restoration Program
EPA	Environmental Protection Agency
EVO	emulsified vegetable oil
ft	feet
FYR	Five Year Review
IRA	Interim Removal Action
IRP	Installation Restoration Program
ISCO	in-situ chemical oxidation
LTM	long-term monitoring
MDL	method detection limit
mg/kg	milligram per kilogram
NFA	No Further Action
NGB	National Guard Bureau
NPL	National Priorities List
NYANG	New York Air National Guard
NYSDEC	New York State Department of Environmental Conservation
%	percent
PAH	polyaromatic hydrocarbons
PCE	tetrachloroethylene
ppb	parts per billion
ppm	parts per million
RA	remedial action
RACR	Remeidal Action Completion Report
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
ROD	Record of Decision
RSCO	Recommended Soil Cleanup Objective
SCA	Schenectady County Airport
SCGs	Standards Criteria and Guidance Values
SCO	Site Close-Out
UU	Unrestricted Use

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FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFCATION		
Site name: 109th Airlift Wing, Schenectady County Airport		
EPA ID:		
Region:	**State:** NY	**City/ County:** Scotia/Schenectady
SITE STATUS		
NPL status: Non-NPL		
Remediation status: RAO-LTM		
Multiple Ous? Yes	**Construction completion date:** 05/2014	
Has site been put into reuse? No		
REVIEW STATUS		
Lead agency:		
Federal Agency	National Guard Bureau	
Author name: Jim Colmer		
Author title: Environmental Engineer	Author affiliation: BB&E Inc.	
Review period: 2007-2015		
Date(s) of site inspection: 9/17/2015		
Type of review: voluntary, Post-SARA		
Review number: First		
Triggering action: Voluntary review		
Triggering action Date (*from WasteLAN*): 09/2007		
Due date (*five years after triggering action date*): 09/2012		

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1.0 INTRODUCTION

The purpose of the Five Year Review (FYR) is to assess the effectiveness of the remedy as described in decision documents and determine whether the remedy at a site is protective of human health and the environment. In addition, FYR reports identify issues found during the review, if any, and identifies recommendations to address them.

1.1 AUTHORITY FOR CONDUCTING THE FIVE YEAR REPORT

Non-National Priorities List (NPL) Federal facilities – EO 12580, paragraphs 2(d) and (e), give remedial responsibilities, and therefore FYR responsibilities, to the Federal agency or department having jurisdiction, custody, or control. Since Installation Restoration Program (IRP) Sites 3 and 6 are non-NPL sites located at an Air National Guard (ANG) base, the ANG is the lead agency responsible for the FYR.

1.2 FIVE YEAR REVIEW PREPARATION

This review has been prepared by BB&E Inc. (BB&E) and it is the first FYR to be conducted for IRP Sites 3 and 6 at the 109th Airlift Wing (109 AW), Schenectady County Airport in Scotia, New York.

1.3 REPORT OUTLINE

This report was prepared in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and National Guard Bureau (NGB) guidance. In addition to this introductory section, this report consists of the following primary components: Background and Site Chronology; Technical Assessment; Recommendations; and Protectiveness Statement. Note that the tables and figures included in this report were adapted from those provided by BEM and the ANG, which were created for other reports, as referenced in Section 6.0.

The New York State Department of Environmental Conservation (NYSDEC) has been involved in serving the interest of the general public at these sites. As such, the ANG, as the lead agency, has determined that broader public participation is not required as part of this FYR and is not addressed further in this report. The complete Administrative Record

can be viewed at the 109 AW Environmental Office or on-line at http://afcec.publicadmin-record.us.af.mil.

1.4 FIVE YEAR REVIEW SITE VISIT

BB&E was contracted by the ANG to conduct FYR activities at the 109 AW, New York Air National Guard (NYANG) at the Schenectady County Airport in Schenectady County, New York. The FYR Site Visit was conducted on 17 September 2015, by the FYR Team.

1.5 FIVE YEAR REVIEW TEAM MEMBERS

The FYR Team was comprised of various individuals representing the interests of the local community, State of New York, and the ANG. The FYR Team members also have diverse technical and policy backgrounds that contributed to technical assessment and effectiveness evaluation presented in this report. **Table 1-1** lists the FYR Team members.

2.0 BACKGROUND AND SITE CHRONOLOGY

The following section discusses the chronological order and background information on the site including a general description of the 109 AW property, the environmental setting, land use at the base, history of soil and groundwater contamination, and the basis for taking action at the 109 AW.

2.1 BASE DESCRIPTION

The 109 AW is located in the southeast portion of the Schenectady County Airport (SCA) in Scotia, New York (**Figure 2-1**). The site is bounded by the SCA to the north and west, Maple Avenue to the south, and a residential development to the east. The federal government leases the land from the SCA and licenses the land back to the NYANG. The lease extends through June 30, 2042. The base covers an area of approximately 128.9 acres, located approximately 2 miles northeast of Scotia, New York.

Cleanup of contaminated areas has taken place over the last decade in order to prevent further environmental impacts. Soil and groundwater has been impacted at Sites 3 and 6 by past releases from aircraft fueling, maintenance, operation activities, and training exercises. The focus was to cleanup chlorinated volatile organic compound (CVOC) impacted ground water at Site 6, tetrachloroethylene (PCE) impacted soils at Site 6 and xylene impacted soils at Site 3 along the drainage ditch. The soils within the boundaries of Sites 3 and 6 were remediated to unrestricted use (UU). The property use of Sites 3 and 6 will remain the same, which serves as the primary runoff drainage ditch for the installation and SCA. **Figure 2-2** indicates the total area of these two (2) sites is approximately 1.64 acres.

2.2 IRP SITE 3 HISTORY AND DESCRIPTION

Site 3 (Drum Burial Area) is located near the former sewage treatment plant and sand filter (**Figure 2-2**). This area was identified when buried drums were discovered during construction activities. Site 3 covers a small area of approximately 0.68 acre and is bounded to the north by a drainage ditch and to the south and west by chain link fence (BEM, 2015a).

Site 3 was initially identified in April 1990, when four metal drums were unearthed by a construction crew performing routine repairs to a gravel road located adjacent to and east of the Base sewage treatment plant. The drums and a small quantity of soil were removed for offsite disposal at the time however, due to the potential for additional buried wastes in the area, it was added as an area of concern (AOC) and designated Site 3.

Between May and September 2007, a total of 390 cubic yards of contaminated soils were removed from the five planned excavation areas from Site 3. Each soil excavation was advanced in approximately 2-foot (ft) to 3-ft intervals from the ground surface to the planned depth of excavation. Two excavation areas were completed to the planned depth of 5-ft below grade. The other three excavation areas were ultimately advanced to competent bedrock at approximately 7 ft below grade. During excavation, buried drums, automobile parts, and scrap metal were uncovered and disposed of accordingly. Additionally, an estimated volume of 310 cubic yards of polyaromatic hydrocarbons (PAH) contaminated sediment was removed from the drainage ditch. Stained soils were encountered along the bank at a depth of approximately 4-ft while sloping the banks of the ditch after sediment excavation. No further action was recommended for three of the five areas. A risk assessment was recommended for the remaining two areas and the drainage ditch bank due to residual contamination associated with acetone and total xylene, respectively (Earth Tech Northeast, Inc. 2007).

A Data Gap Investigation (DGI) was conducted in October 2011 to delineate soil impacted with concentrations of xylenes exceeding the NYSDEC Recommended Soil Cleanup Objective (RSCO) UU level at Site 3 that would require future excavation. Delineation results indicated that soil samples obtained from three of the 14 boring locations were reported above the NYSDEC RSCO UU level of 0.26 parts per million (ppm) or milligrams per kilogram (mg/kg) for xylene in soil (BEM 2012a).

2.3 IRP SITE 6 HISTORY AND DESCRIPTION

Site 6 (Suspected Spill Area) consists of an area of contaminated soil and groundwater located northwest of the former sewage treatment plant and sand filter. Site 6 covers an area of approximately 0.96 acres and is bounded by the drainage ditch to the west, to the

north by monitoring well 6MW-21, and to the south by monitoring well 6MW-20. Further northwest Site 6 is bound by a chain link fence and an access roadway to the ANG airfield to the northeast. Site 6 is located upgradient and to the north of Site 3 (**Figure 2-2**) (BEM, 2015a).

During a Remedial Investigation (RI) in June 1999 at Site 3, CVOCs were detected in groundwater samples collected from monitoring wells upgradient of Site 3. Subsequent investigations reported a distinct dissolved CVOC plume in the groundwater that was determined to be unrelated to historical activity at Site 3. This area was added to the Environmental Restoration Program (ERP) and designated Site 6.

Between May and September 2007, Site 6 soils that were previously identified as within the CVOC groundwater 50 parts per billion (ppb) plume were excavated. The stockpiled soils were screened, sampled and returned to the excavation as backfill based on the analytical results which indicated all analyzed CVOCs were below NYSDEC RSCO Standards Criteria and Guidance Values (SCGs) (BEM 2013).

During the soil removal activities at Site 6, a horizontal infusion gallery was constructed to perform injection activities as part of an in situ pilot test to evaluate the use of enhanced bioremediation to treat the CVOC plume at Site 6. In August, 2007, the pilot test was conducted. Edible Oil Substrate (EOS) and Vitamin B12 supplement was gravity fed into the vertical riser pipes of the infusion gallery. Five groundwater monitoring events were performed to assess groundwater quality. One round of groundwater samples were collected prior to the infusion activities while four quarterly rounds of groundwater samples were collected post-infusion. The overall conclusions were the injection of EOS and the Vitamin B12 Supplement had a beneficial effect on decreasing the concentration of CVOCs in the groundwater at Site 6. The amount of contaminants in Site 6 has been reduced as a result of the initial infusion of the substrate. An increase in CVOC concentrations was identified in two of the wells (6MW-22 and 6MW-25) in the infusion gallery area during the final sampling event in September 2008. This increase is attributable to CVOCs being flushed from the coarse aggregate which was separated by screening from the fine grained material, then reintroduced into the excavation. Despite

this increase in CVOCs, the overall trend was contaminant reduction and breakdown through de-chlorination (BEM 2015a).

In 2007, two soil gas samples were collected to characterize the potential for soil vapor migration from the dissolved CVOC plume at Site 6 to Building 18, the closest indoor air receptor. Building 18 is located 475 ft cross-gradient to the Site 6 groundwater plume.

The sampling results indicated that no CVOCs were reported above their respective laboratory method detection limit (MDL) for either soil gas sample.

A DGI was conducted in October 2011 to delineate soil impacted with concentrations of CVOCs exceeding the NYSDEC RSCO UU level at Site 6 that would require future excavation. Delineation results indicated that soil samples obtained from two of the five boring locations were reported above the NYSDEC RSCO UU level for multiple CVOCs in soil (BEM, 2012a).

2.4 IRP SITES 3 AND 6 REMEDIAL ACTION

While IRP Sites 3 and 6 have separate descriptions (see above Sections 2.2 and 2.3), their proximity to one another is favorable for presenting Remedial Action (RA) data together in this section. There have been numerous site activities and reports generated for IRP Sites 3 and 6 that describe the impacts of historical contamination at the Sites. **Table 2-1** represents the Site 3 and 6 chronologies of these activities and reports. This report will focus on the most resent site conditions as described in the Record of Decision (ROD) and any subsequent investigations or restoration activities.

A ROD was prepared in March 2012 for Sites 3 and 6. The ROD documented that soil contamination at Site 3 would be treated by delineation, removal and off-site disposal of soil contaminated with xylene associated with the “Creek Bank B” drainage ditch sample and installation of a non-permeable geomembrane along the southern bank of the drainage ditch to isolate the Site 3 soils from any potential recontamination from upgradient sources. No further action (NFA) was documented for the soils associated with the interim removal action (IRA) excavation areas. At Site 6, soils near sample location EX-6-1-SW-07 would be removed.

The ROD also documented that the groundwater contamination at Site 6 would be treated by in-situ remediation and would use either enhanced bioremediation (infusion of food-grade additives to the subsurface environment to enhance the growth of reductive organisms and promote the metabolic dechlorination process to environmentally benign compounds) or chemical oxidation (infusion of a chemical to react with the contaminants of concern (COCs) to produce innocuous substances), and associated closure sampling. **Table 2-2** lists the COCs for Sites 3 and 6.

In June 2013, remedial actions were implemented to remove contaminated soil from Sites 3 and 6 and begin groundwater treatment at Site 6. Soil excavation at Sites 3 and 6 were conducted in accordance with the Remedial Action Work Plan (RAWP) and excavation limits defined by the DGI. A total of 911.74 tons of xylene contaminated soils from Site 3 and CVOC contaminated soils from Site 6 were removed and disposed of during the implementation of the remedial actions set forth in the RAWP. An additional 24.34 tons of discolored soil was removed and disposed of during the installation of the Geomembrane at Site 3.

Site 3 soil was removed to bedrock within the excavation limits to a depth of 11 ft below ground surface (bgs) at the southern extent of the excavation while the northern portion of the excavation was excavated to a depth of five ft bgs and post-excavation soil samples confirmed that soil above NYSDEC RSCO UU levels were removed. Soil was excavated at Site 6 to bedrock along the drainage ditch/creek to a depth of 5 ft bgs at the eastern extent of the excavation while the depth of excavation on the west was flush with the creek bed. Post-excavation samples confirmed that contaminated soil was removed and soil remaining is below the NYSDEC RSCO UU levels. (BEM 2015a).

All soils above NYSDEC RSCO UU levels have been removed and RA objectives for soils have been achieved at Sites 3 and 6. The location of Sites 3 and 6 including the extent of material removed is shown in **Figures 2-3** and **2-4**, respectively. **Table 2-3** summarizes the post excavation samples collected at Sites 3 and 6.

Groundwater remediation and monitoring activities were also conducted at Site 6 to treat groundwater contaminated with CVOCs. The remedial actions included two rounds of in-

situ chemical oxidation (ISCO) of sodium permanganate, two rounds of groundwater performance sampling, and, monthly groundwater monitoring. The first injection event took place June 17, 2013 to June 20, 2013 consisting of 9,712 gallons of sodium permanganate injection. Of the 9,712 gallons, 9,012 gallons were injected at a 10 percent (%) concentration of sodium permanganate into the injection gallery. The remaining 700 gallons was injected at a 5% solution via direct push. The second injection event occurred May 5, 2014 to May 8, 2014 in which 7,504 gallons of sodium permanganate was injected at a 5% concentration. The injection gallery received 6,804 gallons and the remaining 700 gallons was injected via direct push. Two groundwater performance sampling events were conducted approximately three months following the injections in September 2013 and August 2014, respectively. In addition, five monthly groundwater monitoring rounds were conducted from September 2014 – January 2015 in order to gather data about the CVOC plume to determine a trend. Overall, the data confirmed the presence of the CVOC plume on-site but was insufficient to determine the trend analysis of the groundwater plume. (BEM 2015b). Contamination remaining on-site is limited to CVOCs in groundwater encountered between 3 and 9 ft bgs. **Table 2-4** and **Figure 2-5** summarize the groundwater contamination remaining at the site when considering the data collected between September 2014 and January 2015.

Based on the results of the remedial action and groundwater monitoring samples collected at Site 6, groundwater contamination is still present at Site 6 above NYSDEC Groundwater Criteria for UU levels. Groundwater remediation is not complete for Site 6, therefore, an Execution Plan has been proposed to address the remaining contamination. See Section 4.2 for a summary of the proposed execution plan to address remaining groundwater contamination.

2.5 HYDROLOGY

2.5.1 Local Hydrology

Glacial deposits at the NYANG Base consist predominately of clay and silt overlying a shallow fractured bedrock zone. Groundwater depths reported in monitoring wells screened at the soil/bedrock interface ranged between 4 and 6 ft bgs. Hydraulic

conductivity tests conducted in these monitoring wells reported groundwater flow velocities estimated between 2 and 25 ft per year consistent with typical groundwater flow velocities found in fractured bedrock or a silt/clayey fine sand (BEM 2012b).

2.5.2 Regional Hydrology

The Schenectady Aquifer (also referred to as the Great Flats Aquifer, the Schenectady Sole Source Aquifer, and other names) is the sole source of potable water to five municipalities and approximately 90 % of Schenectady County residents. Municipal well fields utilizing this groundwater resource include the City of Schenectady, Town of Rotterdam (including a separate well field at Rotterdam Junction), Town of Glenville, Village of Scotia and part of the Town of Niskayuna. Pumping wells are approximately 50 ft deep and located over four miles west of the Base. Most of the water supplies are from groundwater encountered in the highly permeable unconsolidated glacial deposits which overlie somewhat impermeable bedrock. The Base and surrounding residents are all connected to the Town of Glenville public water system; no residents adjacent to the Base use private wells as a potable water supply.

The Base is situated near, but not over, the eastern end of the Schenectady Aquifer. The aquifer underlying the site is in general finer grained, less productive, and less subject to recharge when compared to Schenectady Aquifer. Regionally, groundwater flow tends to follow topographic controls flowing to the south and southeast approximately 1,000 ft towards the Mohawk River. Groundwater recharge occurs almost wholly from precipitation. Under natural conditions, the water table fluctuates on a seasonal basis depending on precipitation and discharge. Both consolidated and unconsolidated deposits in Schenectady County are aquifers, even though their saturation and production characteristics vary greatly (BEM 2012b).

2.6 STRATIGRAPHY

The rocks underlying Schenectady County consist of alternating layers of shale and sandstone, originally deposited in shallow Ordovician seas as clays, silts, and sands. These sediments were buried by younger sediments, consolidated, then raised above sea level and subjected to erosion and weathering. Folding and faulting of strata are present

in the eastern and western parts of the County. The topography of the bedrock surface reflects the scouring action of moving ice during Pleistocene glaciation.

Surface elevations at the 109 AW range from approximately 300 to 390 ft above mean sea level (amsl). The 109 AW is located in east-central New York within the Mohawk Valley section of the Hudson Mohawk Lowlands physiographic province. The Mohawk River and its tributaries are entrenched within their valleys, providing significant relief in the Schenectady area. This lowland region formed between the metamorphic rocks of the Adirondack Mountains to the north, the erosion-resistant limestones of the Helderberg escarpment defining Catskill Mountains to the south, and the slate-schist belt of the Renselaer-Taconic upland to the east. The present topography resulted from the erosion of the southward-dipping outcrop belt of weak Ordovician rocks below stronger cuesta-forming Silurian and Devonian limestones. (ANEPTEK 2000).

2.7 SURFACE WATER

Surface water at the 109 AW is collected by the storm sewer and discharged into an unnamed creek which ultimately discharges to the Mohawk River south of the Base. The Base lies 0.5 mile northwest of the Mohawk River in the lower reaches of the Mohawk River Valley and approximately 10 miles west of the Mohawk Rivers confluence with the Hudson River. The floodplain of the Mohawk River is 0.25 mile south of the Base. Surface drainage is well developed in the upland areas and in the lowlands adjacent to the Mohawk River. In the vicinity of the Base, the main tributary of the Mohawk River is the Alplaus Kill, located 0.75 mile east of the Base. The Base is not located in the 100-year floodplain of either of these two drainages. (ANEPTEK 2000). None of the Base structures or facilities is located within the 100-year floodplain of either the Mohawk River or the Alplaus Kill. The 109 AW has a State Pollutant Discharge Elimination System Permit in force for point-source storm water runoff.

Sites 3 and 6 are located adjacent to a surface water drainage ditch that is classified by NYSDEC as waters of the state. The ditch is designated as a Class C Stream, indicating that the ditch may support a trout population. Due to this designation, the ditch is classified as a protected stream and is subject to the stream protection provisions of New

York's Protection of Waters regulations set forth in Title 5 of Article 15 of New York's Environmental Conservation Law.

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3.0 TECHNICAL ASSESSMENT

The following are responses to three technical assessment questions raised by the Comprehensive Five-Year Review Guidance (U.S. Environmental Protection Agency [EPA], 2001) with regard to the evaluation of current activities and future NFA decisions for soil and groundwater at the Sites 3 and 6 at the 109 AW.

3.1 QUESTION A: IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

The goal of the current RAs is to achieve unrestricted future uses for Sites 3 and 6, as specified in the 2012 ROD.

Based on the data reviewed and discussion with FYR team members, the RA operations have been successful in reducing contaminants in soil at IRP Sites 3 and 6 to below NYSDEC RSCO UU levels. Groundwater contamination is still present at Site 6 above NYSDEC Groundwater Criteria for UU levels; therefore, reduction of contamination in groundwater at Site 6 to achieve RA objectives is still in progress. RA objectives for the 109 AW, as outlined in the ROD (BEM, 2012b), are as follows. RA objectives are further discussed in Section 3.2.

Site 3:

- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent migration in surface water of upgradient contaminants associated with the drainage ditch weir system from impacting soils.

Site 6:

- Prevent ingestion/direct contact with contaminated soil.

- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

3.1.1 Sites 3 and 6 Soils

All RA objectives for soils have been achieved for IRP Sites 3 and 6. Based on the results of the remedial action and post excavation samples collected at both Sites 3 and 6, soil contamination resulting from historical operations at Site 3 and Site 6 has been removed from the Sites and no soil contamination remains at Sites 3 and 6 above the NYSDEC UU regulatory levels. The results of the soil removal activities was reported in a Remedial Action Completion Report (RACR) for Sites 3 and 6 Soil, which was approved by NYSDEC on April 1, 2015.

As mentioned above, **Figures 2-3 and 2-4** show the extent of material removed at Sites 3 and 6, respectively. **Table 2-3** summarizes the post excavation samples collected at Sites 3 and 6.

3.1.2 Site 6 Groundwater

Reduction of contamination in groundwater at Site 6 to achieve RA objectives is still in progress. The RA operations for Site 6 groundwater included chemical injection of sodium permanganate and groundwater monitoring was recommended in the RAWP dated April 30, 2013 (with revisions provided May 10, 2013). Two rounds of ISCO injections were completed in June 2013 and May 2014 and groundwater performance sampling events were conducted approximately three months following each injection event in September 2013 and August 2014, respectively. Five monthly groundwater

monitoring rounds were conducted from September 2014 – January 2015. Based on the results of the remedial action and groundwater monitoring samples collected at Site 6, groundwater contamination is still present at Site 6 above NYSDEC Groundwater Criteria for UU levels. The analytical results indicate that the contamination remaining on-site is limited to CVOCs in groundwater encountered between 3 and 9 ft bgs.

A comparison of August 2008 data from groundwater monitoring events following the enhanced bioremediation in situ pilot test and September 2013 data following the initial ISCO injection indicates an overall reduction in the dissolved CVOC concentrations for Site 6 monitoring wells; however, a comparison of the analytical results from the post-ISCO injection monitoring events in September 2013 and August 2014 indicates an increase in contaminant trend after completion of the second ISCO injection. The following five monthly groundwater monitoring events, conducted between September 2014 and January 2015, confirmed the presence of the CVOC plume on-site but was insufficient to determine the trend analysis of the groundwater plume. When considering data collected at the three primary and contaminated wells 6MW-20, 6MW-22 and 6MW-25 from 2008 to 2015, it appears that the CVOC groundwater plume is decreasing. **Table 3-1** details the sampling results of the three primary contaminated wells.

Table 2-4 and **Figure 2-5 s**ummarize the groundwater contamination remaining at the site when considering the data collected between September 2014 and January 2015.

Based on the results of the remedial action and groundwater monitoring samples collected at Site 6, groundwater contamination is still present at Site 6 above NYSDEC Groundwater Criteria for UU levels. Groundwater remediation is not complete for Site 6; therefore, an Execution Plan has been proposed to address the remaining contamination. See Section 4.2 for a summary of the proposed Execution Plan to address remaining groundwater contamination.

3.2 QUESTION B: ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEANUP LEVELS, AND REMEDIAL ACTION OBJECTIVES (RAOs) USED AT THE TIME OF REMEDY STILL VALID?

Based on input from the FYR team, exposure assumptions for groundwater and soil, as cited in the ROD, are still considered valid for closure and unrestricted use for Sites 3 and 6.

There have been no changes in the land use that would affect the protectiveness of the continuing RA and long-term monitoring (LTM) or the future NFA status of the site. The intended land use, as outlined in the 2012 ROD, for Sites 3 and 6 is as military and industrial/commercial tenants and is not likely to change in the future. Currently, there are no on-site residents located at Sites 3 and 6. Operations of the airbase will continue as currently implemented at the installation and is not likely to change in the future.

3.2.1 Sites 3 and 6 Soils

The general RA objective for the 109 AW is to ensure contaminant concentrations in the soils at Site 3 and 6 are protective of human health and the environment. Soil was identified in the decision documents as a medium that must be addressed by remedial action, with PCE and xylenes listed as COCs for the soil as shown on **Table 2-2**. As of the July 2015 FYR Site Visit, no new contaminants have been identified as COCs outside of those listed on **Table 2-2**.

RA operations have been conducted to remediate IRP Sites 3 and 6 soils to below NYSDEC UU regulatory levels.

All RA objectives for the 109 AW soils, as outlined in the ROD (BEM, 2012b) and stated above in Section 3.1, have been achieved for IRP Sites 3 and 6. Sites 3 and 6 soils were removed in June 2013 and post-excavation soil samples confirmed that soil above NYSDEC RSCO UU levels were removed. The results of the soil removal activities were reported in a RACR for Sites 3 and 6 Soil, which was approved by NYSDEC on April 1, 2015.

3.2.2 Site 6 Groundwater

The general RA objective for the 109 AW is to ensure contaminant concentrations in the groundwater plume at Site 6 are protective of human health and the environment. Groundwater was identified in the decision documents as a medium that must be addressed by remedial action, with CVOCs listed as COCs for the groundwater. No COCs have been identified in surface water. **Table 2-2** lists the COCs at the 109 AW. As of the July 2015 FYR Site Visit, no new contaminants have been identified as COCs outside of those listed on **Table 2-2**.

RA operations have been conducted to remediate IRP Site 6 groundwater to below NYSDEC UU regulatory levels. RA objectives for the 109 AW groundwater, as outlined in the ROD (BEM, 2012b), are as follows:

Site 6:

- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.

Based on the results of the remedial action and groundwater monitoring samples collected at Site 6, groundwater contamination is still present at Site 6 above NYSDEC Groundwater Criteria for UU levels. Groundwater remediation is not complete for Site 6 and reduction of contamination in groundwater at Site 6 to achieve RAs is still in progress; therefore, an Execution Plan has been proposed to address the remaining contamination. See Section 4.2 for a summary of the proposed Execution Plan to address remaining groundwater contamination.

3.2.3 Vapor Intrusion

In 2007, two soil gas samples were collected to characterize the potential for soil vapor migration from the dissolved CVOC plume at Site 6 to Building 18, the closest indoor air receptor. Building 18 is located 475 ft cross-gradient to the Site 6 groundwater plume.

The sampling results indicated that no CVOCs were reported above their respective laboratory MDL for either soil gas sample.

3.3 QUESTION C: HAS ANY OTHER INFORMATION COME TO LIGHT THAT CALLS INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

Based on input from the 5-YR Review team, there have been no additional information since the implementation of the RA that would affect the protectiveness of the continuing RA and LTM or the future NFA status of the site.

3.4 TECHNICAL ASSESSMENT SUMMARY

Based on the data reviewed and discussion with FYR team members, the continuing RA operations and LTM have been successful in reducing contaminants at IRP Sites 3 and 6.

All RA objectives for soils have been achieved for IRP Sites 3 and 6. Sites 3 and 6 soils were removed in June 2013 and post-excavation soil samples confirmed that soil above NYSDEC RSCO UU levels were removed. The results of the soil removal activities were reported in a RACR for Sites 3 and 6 Soil, which was approved by NYSDEC on April 1, 2015.

However, despite implementation of RAs at Site 6, as described in the RAWP, to treat groundwater contaminated with CVOCs, groundwater contamination is still present at Site 6 above NYSDEC Groundwater Criteria for UU regulatory levels. The RAs included two rounds of ISCO injections of sodium permanganate, two rounds of groundwater performance sampling, and, monthly groundwater monitoring.

Exposure assumptions for groundwater and soil, as cited in the ROD, are still considered valid for closure and NFA status for Sites 3 and 6.

4.0 RECOMMENDATIONS

The following recommendations and follow-up actions are suggested for the findings identified during the first FYR.

4.1 SITES 3 AND 6 SOILS

Sites 3 and 6 soils were removed in June 2013 and post-excavation soil samples confirmed that soil above NYSDEC RSCO UU levels were removed. The results of the soil removal activities were reported in a RACR for Sites 3 and 6 soil, which was approved by NYSDEC on April 1, 2015. All RA objectives for soils have been achieved for Sites 3 and 6.

4.2 SITE 6 GROUNDWATER

Groundwater contamination is still present at Site 6 above NYSDEC Groundwater Criteria for UU levels. Groundwater remediation is not complete for Site 6; therefore, an Execution Plan has been proposed to address the remaining contamination.

As discussed during the FYR Site Visit (**Appendix A**), the proposed approach to reduce CVOC contamination is to conduct a bioremediation injection event using the existing infusion infrastructure and Direct Push Technology (DPT) injection points. It is anticipated that the following steps will be completed in order to reduce CVOC contamination.

- Following completion of an RA/LTM/Site Close-Out (SCO) Work Plan, a baseline groundwater sampling event will be conducted to confirm current site conditions and establish a baseline against which to evaluate remedial progress.

- Treatment of the remaining groundwater contaminants will be implemented through amendment injections using approximately 20 temporary DPT injection points and 5 existing infusion wells to stimulate microbial degradation of residual chlorinated solvent groundwater contamination. Approximately 600 gallons of diluted emulsified vegetable oil (EVO) solution into each DPT point/infusion well (a total of approximately 15,000 gal).

- In conjunction with EVO injections, up to two liters of a Dehalococcoides-containing bioaugment will be injected at each DPT point/infusion well to supplement the native microbial population.

- Immediately following injections, quarterly performance monitoring events will be conducted to confirm short-term attainment and maintenance of anaerobic conditions and allow for quick corrective response, if required, and to evaluate ongoing biodegradation and track progress toward site closure. Following three quarterly events, performance monitoring events will be reduced to a semiannual basis.

- Once CVOCs have reached remedial goals, quarterly closure sampling events will be conducted to demonstrate that contaminant rebound is not occurring and satisfy requirements of the 2012 ROD.

- Following NFA approval, monitoring wells, infusion wells, and horizontal infusion well lateral will be abandoned and field closure activities will be documented in an SCO Report.

5.0 PROTECTIVENESS STATEMENT

The remedy for soils at Sites 3 and 6 is complete and is protective of human health and the environment.

The remedy for groundwater at Sites 6 is expected upon completion to be protective of human health and the environment.

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6.0 NEXT REVIEW SCHEDULE

The next FYR is planned for 2019 unless groundwater concentrations of CVOCs below NYSDEC UU regulatory levels have been achieved at Site 6.

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7.0 REFERENCES

Aneptek Corporation, 2000. *Final Remedial Investigation Report Site 2 – Site 3 – Site 6 Stratton Air National Guard Base.* September.

BEM Systems, Inc. (BEM), 2012a. *Data Gap Investigation Technical Memorandum for Sites 3 and 6 for the 109th Airlift Wing, Schenectady Air National Guard Base (SANGB), Scotia, New York.* February.

BEM, 2012b. *Environmental Restoration Program Final Record of Decision for Sites 3 & 6, 109th Airlift Wing, New York Air National Guard Base, Scotia, New York.* March.

BEM, 2013. *Final Remedial Action Work Plan for Sites 3 and 6, 109th Airlift Wing, New York Air National Guard, Schenectady Air National Guard Base, Scotia, NY.* April.

BEM, 2015a. *Remedial Action Completion Report for Soil at Sites 3 and 6 Schenectady Air National Guard Base. DERP Scotia, NY.* March.

BEM, 2015b. *Draft Remedial Action Completion/Final Engineering Report for Groundwater at Site 6 Schenectady Air National Guard Base.* October.

Earth Tech Northeast, Inc. 2007. *Final Interim Removal Action Completion Report Site 3 & Site 6, New York Air National Guard, Schenectady Air National Guard Base, Scotia, NY.* December.

U.S. Environmental Protection Agency, 2001. *Comprehensive Five-Year Review Guidance*. June 2001.

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TABLES

TABLE 1-1: FYR TEAM MEMBERS

Name	Organization	Email	Phone	Role
Ms. Jody Murata	NGB/A7OR	jody.a.murata.civ@mail.mil	240-612-8120	ANG Program Manager
Lt Col Ty Randall	109 AW	ty.a.randall.mil@mail.mil	518-344-2505	109 AW Deputy Commander
Mr. Gregg Wagzmer	109 AW	gregg.s.wagzmer.nfg@mail.mil	518-788-4883	109 AW CES
Lt Col Rob Donaldsoı	109 AW	robert.e.donaldson.mil@mail.mil	518-331-8281	109 AW CES
Mr. Brian Jankauskas	NYSDEC	brian.jankauskas@dec.ny.gov	518-402-9620	NYSDEC Project Manager
Mr. John Swartwout	NYSDEC	john.swartwout@dec.ny.gov	518-402-9620	NYSDEC Section Chief
Mr. Mike Poligone	Leidos	poligonem@leidos.com	865-405-8332	Leidos Project Manager
Mr. James Colmer	BB&E	jcolmer@bbande.com	248-489-9636	FYR Project Manager
Ms. Veronica Allen	BB&E	vallen@bbande.com	248-489-9636	FYR Engineer

TABLE 2-1: IRP SITE 3 AND 6 CHRONOLOGIES

Year	Activity
1990	Road repair unearthed metal drums (Site 3)
1999	Remedial Investigation at Site 3 – CVOCs detected in groundwater upgradient of Site 3.
2002	Site 6 Supplemental Data Collection – identified distinct dissolved CVOC plume in groundwater. Added to IRP and designated as Site 6
2007	Interim RI – soil and debris removed from Site 3. Soil screening/testing and installation of a horizontal infusion gallery as part of an in situ enhanced bioremediation pilot test at Site 6.
2007	Enhanced Bio Remediation Pilot Test at Site 6
2007	Soil Gas Sampling
2011	DGI – delineate xylene-impacted soils at Site 3 and CVOC-impacted soils at Site 6
2012	Record Of Decision Completed for Sites 3 and 6
2013	Remedial Action Work Plan (RAWP) for Sites 3 and 6
2013	Community Participation Plan
2013	Remedial Action (RA)– Soil Excavation and Disposal for Sites 3 and 6, Geomembrane Installation for Site 3, Injection Activities and Performance Sampling for Site 6
2014	Remedial Action Work Plan(a)
2014	RA - Injection Activities and Performance Sampling for Site 6
2014 - 2015	Monthly Groundwater Monitoring
2015	RA Completion Report for Sites 3 and 6 Soil - approved by NYSDEC on April 1, 2015
2015	Draft RA Completion Report for Sites 6 Groundwater

TABLE 2-2: CONTAMINANTS OF CONCERN AND CLEANUP CRITERIA

Contaminant of Concern	Cleanup Criteria	Maximum Detected (Sample Location)
Soil (mg/kg)		
Tetrachloroethene	1.3	3.4 (EX-6-1-SW-07)
Xylenes	0.26	5.8 (Creek Bank B)
Groundwater (ug/L)		
Tetrachlorethene	**5**	10 (MW-20)
Trichloroethene	**5**	14 (MW-24)
Cis-1,2-Dichloroethene	**5**	390 (MW-22)
Vinyl Chloride	**2**	580 (MW-25)

Notes: Maximum detected concentration for groundwater based on August 2008 sample results
mg/kg – milligrams per kilogram
µg/l – micrograms per liter

TABLE 2-3: SITES 3 AND 6 SOILS REMEDIAL PERFORMANCE/DOCUMENTATION SAMPLES

Sample ID	Depth (feet)	Contaminant	NYSDEC SCO UU (mg/Kg)	Result (mg/Kg)
S3-PE01	6.5 – 7.0	Total Xylenes	0.26	0.0011 U
S3-PE01 Duplicate	6.5 – 7.0	Total Xylenes	0.26	0.00074 U
S3-PE02	7.5 – 8.0	Total Xylenes	0.26	0.00070 U
S3-PE03	8.5 – 9.0	Total Xylenes	0.26	0.0060 J
S3-PE04	5.5 – 6.0	Total Xylenes	0.26	0.0016 U
S6-PE01	4.5 – 5.0	TCE	0.47	0.0042
		PCE	1.3	0.0097
		cis-1,2-DCE	0.25	0.020
		Vinyl Chloride	0.02	0.0011 U
S6-PE02	2.0 – 2.5	TCE	0.47	0.0011 J
		PCE	1.3	0.0018 J
		cis-1,2-DCE	0.25	0.0078
		Vinyl Chloride	0.02	0.0012 J
S6-PE03	0.5 – 1.0	TCE	0.47	0.00071 U
		PCE	1.3	0.0010 U
		cis-1,2-DCE	0.25	0.00076 U
		Vinyl Chloride	0.02	0.00082 U

Notes: J – Result is detected below the reporting limit and/or is an estimated concentration based on data assessment. Samples collected 13-19 June 2013.
U – Analyte analyzed for but undetected at the corresponding method detection or quantitation limit.
PCE – Tetrachlorethene
TCE – Trichloroethene
cis-1,2-DCE -- Cis-1,2-Dichloroethene

TABLE 2-4: GROUNDWATER CVOC EXCEEDANCES REMAINING ON-SITE

Contaminant	NYSDEC Groundwater Standard (µg/L)[1]	Maximum Concentration Detected[2] (µg/L)
PCE	5	81
TCE	5	19
Cis-1,2-DCE	5	120
Vinyl Chloride	2	12

Notes:
1 - µg/L = microgram per liter
2 – Based on data collected between September 2014 and January 2015

TABLE 3-1: GROUNDWATER CONCENTRATIONS DETECTED AT SITE 6 FROM 2008 TO JANUARY 2015

Well ID	Contaminant	Aug 2008 (µg/L)[1]	Sep 2013 (µg/L)	Aug 2014 (µg/L)	Sep 2014 (µg/L)	Oct 2014 (µg/L)	Nov 2014 (µg/L)	Dec 2014 (µg/L)	Jan 2015 (µg/L)
6MW-20	PCE	**10**	**0.32J**	**0.33J**	**0.31J**	**0.25U**	**0.25U**	**4**	**5.2**
	TCE	**8.5**	0.51J	1.2	0.88J	0.29J	0.35J	1.9	1.9
	cis-1,2-DCE	**330D**	**22**	**19**	**19**	**7.8**	**7.1**	**9.2**	**6.8**
	VC	**8.2**	**2.6**	**4.3**	**6**	**7.7**	**2.8J**	0.73J	1U
6MW-22	PCE	2.5	NA	NA	NA	NA	NA	**6.5**	**6.8**
	TCE	**6.8**	NA	NA	NA	NA	NA	**7**	**7**
	cis-1,2-DCE	**390D**	NA	NA	NA	NA	NA	**16**	**19**
	VC	**35**	NA	NA	NA	NA	NA	0.5U	0.61
6MW-25	PCE	2	4.5	NA	**52**	4.7	**5.6**	**81**	**47**
	TCE	1.8	**5**	NA	**8.1**	0.27J	0.93J	**19**	**10**
	cis-1,2-DCE	**370D**	**220**	NA	**36**	1.9	2.7	**120**	**68**
	VC	**580D**	**79**	NA	0.5U	0.5U	0.5U	**12**	**5.8**

Notes:
1 - µg/L = microgram per liter
2 – D = Result of Diluted Sample
3 – J = Laboratory data qualifier indicating sample result is an estimated value
4 – U = Analyte analyzed for but undetected at the corresponding method detection or quantitation limit
5 – NA = No sampling event conducted
6 - bold indicates results exceed NYSDEC cleanup standard.

FIGURES

LEGEND

AIR NATIONAL GUARD FACILITIES BOUNDARIES

0 1,000 2,000 FEET

DATA SOURCES:
AERIAL: (C) 2010 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS
DESIGN: EARTH TECH / AECOM (2008)
ROADS: ESRI (2010)

NEW YORK AIR NATIONAL GUARD
109TH AIRLIFT WING
SCOTIA, NEW YORK

5 - YR REVIEW REPORT
SITES 3 & 6

FIGURE 2-1
109th AW LOCATION MAP

DATE: APRIL 2016

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LEGEND

- AIR NATIONAL GUARD FACILITIES BOUNDARIES
- SITE 3
- SITE 6

0 500 1,000 FEET

DATA SOURCES:
AERIAL: (C) 2010 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS
DESIGN: EARTH TECH / AECOM (2008)
ROADS: ESRI (2010)

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SCOTIA, NEW YORK

5 - YR REVIEW REPORT
SITES 3 & 6

FIGURE 2-2
IRP SITES 3 & 6 LOCATION

DATE: APRIL 2016

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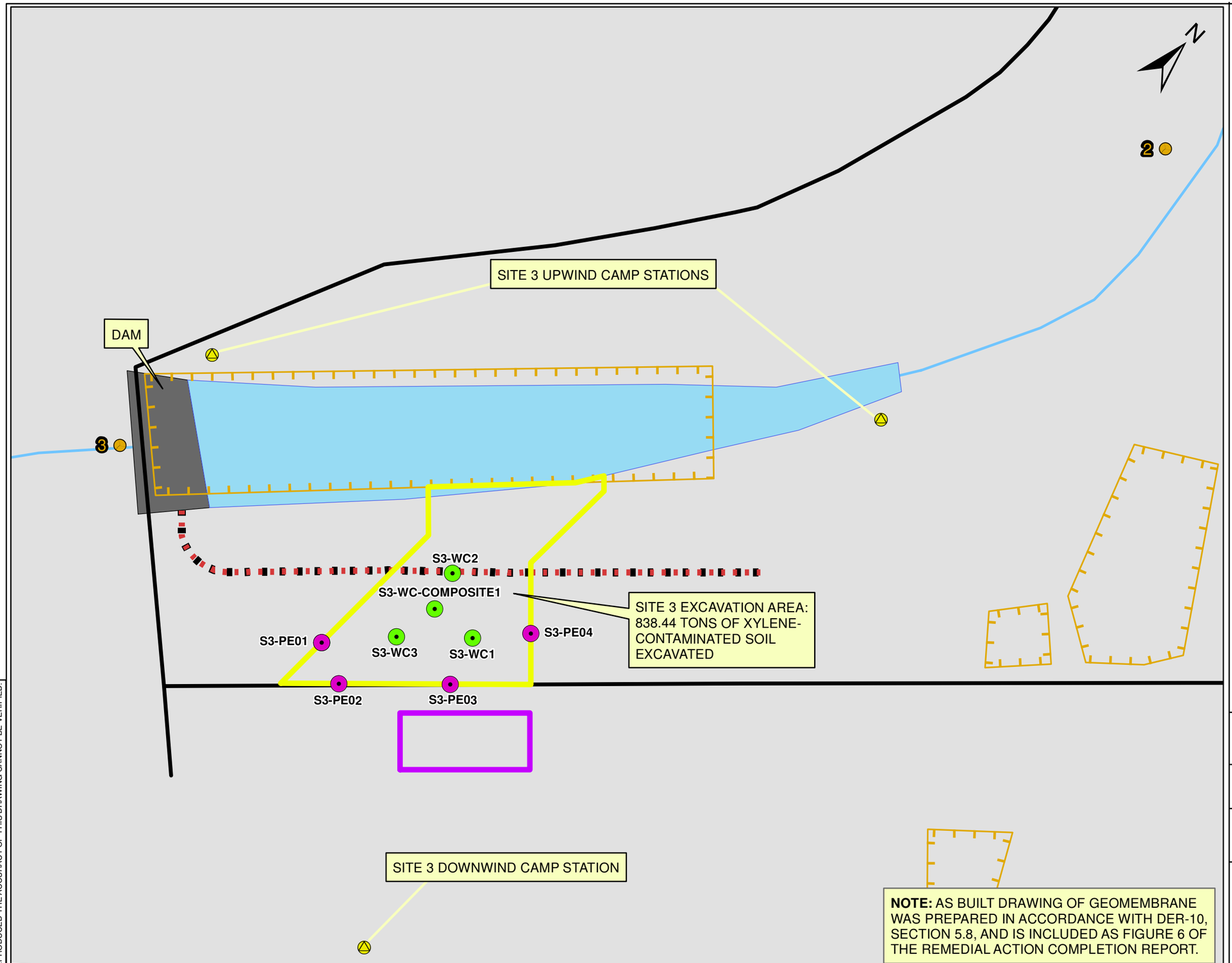

NOTE: AS BUILT DRAWING OF GEOMEMBRANE WAS PREPARED IN ACCORDANCE WITH DER-10, SECTION 5.8, AND IS INCLUDED AS FIGURE 6 OF THE REMEDIAL ACTION COMPLETION REPORT.

LEGEND

- POST EXCAVATION
- WASTE CLASSIFICATION
- CAMP AIR MONITORING LOCATIONS
- TURBIDITY READINGS
- GEOMEMBRANE
- FENCE
- STREAM
- FORMER SOIL EXCAVATION AREA
- BACKFILL STAGING AREA
- SITE 3 EXCAVATION AREA
- SURFACE WATER
- DAM

NOTES:
BACKFILL WAS PLACED AND COMPACTED THROUGHOUT THE ENTIRE EXTENT OF THE EXCAVATION LIMITS TO GRADE. MATERIAL REMOVED AS PART OF THE GEOMEMBRANE INSTALLATION WAS SCREENED WITH A PID; SOME MATERIAL WAS REUSED AS BACKFILL.
AN ADDITIONAL 24.34 TONS OF CONTAMINATED SOIL WAS EXCAVATED AND DISPOSED OF OFF-SITE DURING GEOMEMBRANE INSTALLATION.

0 20 40 Feet

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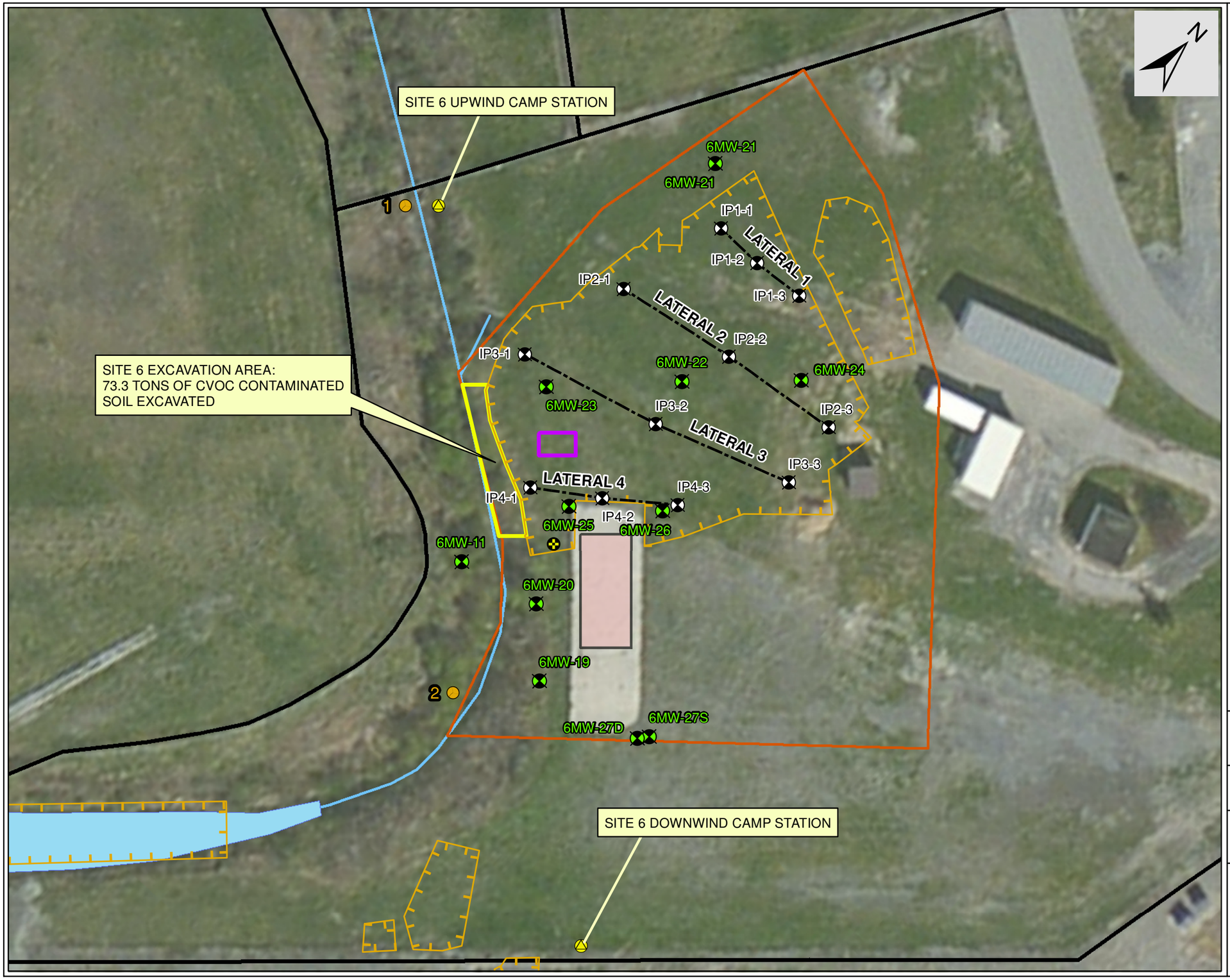
109TH AIRLIFT WING
SCOTIA, NEW YORK

5 - YR REVIEW REPORT
SITES 3 AND 6

FIGURE 2-3
SITE 3 LOCATION AND SOIL REMOVAL

DATE: APRIL 2016



LEGEND

- CAMP AIR MONITORING LOCATIONS
- COLLECTION SUMP
- TURBIDITY READINGS
- MONITORING WELL
- INFUSION WELL
- FENCE
- STREAM
- HORIZONTAL INFUSION WELL LATERALS
- EXCAVATED SOIL STOCKPILE LOCATION
- SITE 6 EXCAVATION AREA
- FORMER SOIL EXCAVATION
- BACKFILL STAGING AREA
- SITE 6
- SURFACE WATER

NOTES:
BACKFILL WAS PLACED AND COMPACTED THROUGHOUT THE ENTIRE EXTENT OF THE EXCAVATION LIMITS TO GRADE.
BACKFILL STOCKPILED ON-SITE TEMPORARILY DURING BACKFILL ACTIVITIES.
CVOC - CHLORINATED VOLITILE ORGANIC COMPOUNDS

0 40 80
FEET

DATA SOURCES:
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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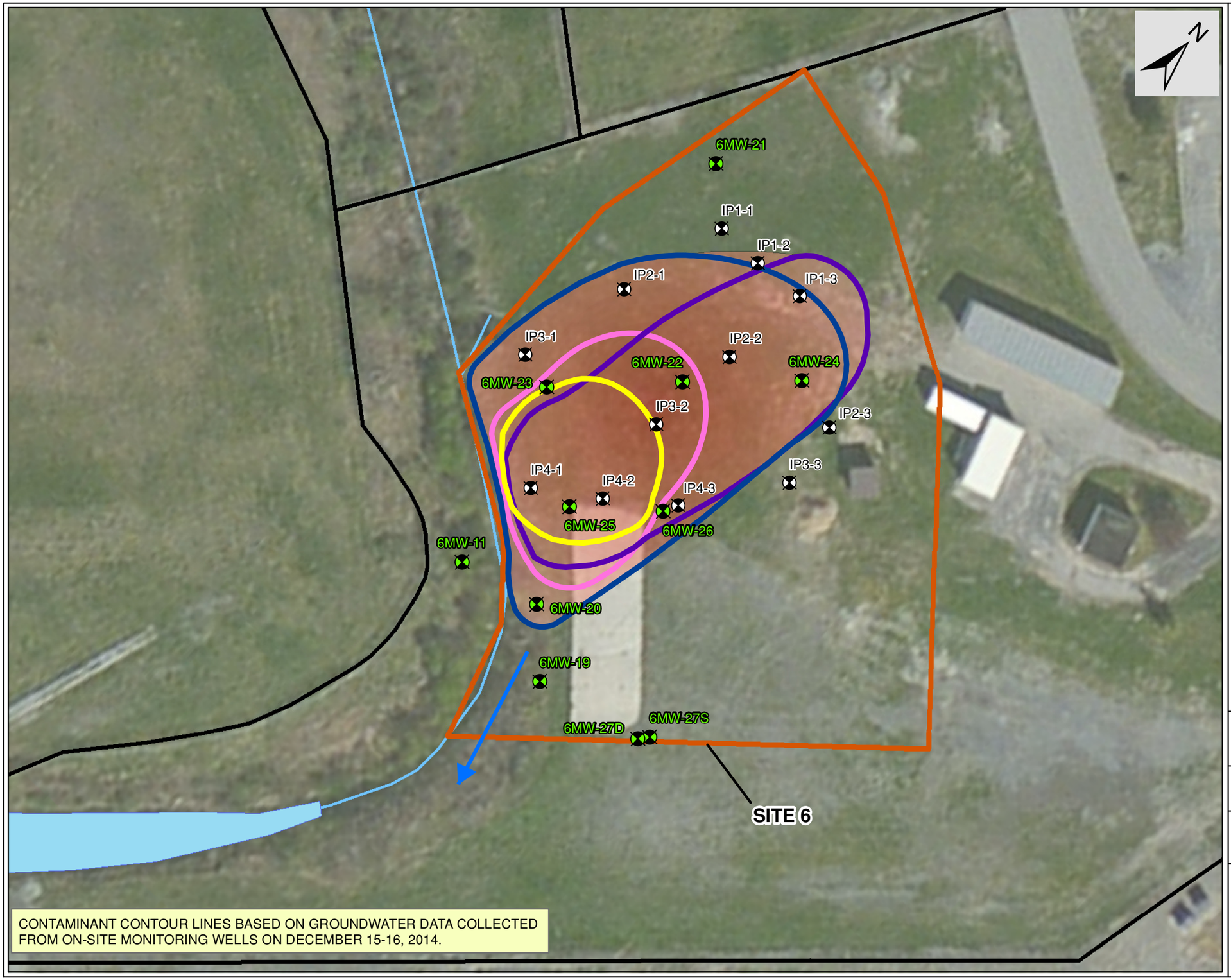
109TH AIRLIFT WING
SCOTIA, NEW YORK

5 -YR REVIEW REPORT
SITES 3 AND 6

FIGURE 2-4
SITE 6 LOCATION AND SOIL REMOVAL

AIR NATIONAL GUARD

DATE: APRIL 2016



Legend

- MONITORING WELL
- INFUSION WELL
- VC 2PPB CONTOUR LINE
- CIS-1,2-DCE 5PPB CONTOUR LINE
- TCE 5PPB CONTOUR LINE
- PCE 5PPB CONTOUR LINE
- FENCE
- GROUNDWATER FLOW DIRECTION
- STREAM
- SURFACE WATER
- SITE 6 GROUNDWATER CONTAMINATION PLUME
- SITE 6

NOTES:
PCE - TETRACHLOROETHENE
TCE - TRICHLOROETHYLENE
DCE - DICHLOROETHENE
VC - VINYL CHLORIDE
PPB - PARTS PER BILLION

0 40 80
FEET

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP,

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5-YR REVIEW REPORT
SITE 6 GROUNDWATER

FIGURE 2-5
GW CONTAMINANT DISTRIBUTION MAP

DATE: APRIL 2016

APPENDIX A

FYR SITE VISIT MEETING MINUTES

FINAL MEETING MINUTES

SCHENECTADY INSTALLATION KICKOFF MEETING FOR
FY15 EASTERN REGION
INSTALLATION RESTORATION PROGRAM ACTIVITIES
AT MULTIPLE AIR NATIONAL GUARD INSTALLATIONS
CONTRACT NUMBER
W9133L-14-D-0007
TASK ORDER 0004
17 SEPTEMBER 2015
1000 EASTERN DAYLIGHT TIME

See Attachment 1 for meeting participants.

Ms. Jody Murata, Contracting Officer Representative (COR), provided a few contractual reminders:

1. Ms. Stacy MacKay is the Air National Guard (ANG) Contracting Officer.
2. Ms. Susan Klypchak is the ANG Contract Administrator.
3. Ms. Murata is the ANG COR.
4. The ANG Contracting Officer is the only person authorized to make contractual changes.

Mr. Michael Poligone (Leidos) followed with the Leidos presentation. Hard copies of the presentation were provided to all participants physically present; slides had been emailed previously. Key points of discussion and decisions made based upon the Leidos presentation included:

- Slide 6 – Execution Plan. Site 6 soils have been remediated and no further action is required.
- Slide 11-14 – Discuss and Obtain Consensus on Approach. During a discussion of the injection process, Lt Col Ty Randall (109th Airlift Wing) made several points regarding the injection field work as follows:
    1. The work plan should include measures to mitigate releases to the drainage channel during the injection process. Mr. Poligone indicated that an interceptor trench or additional sumps will be installed between the injection points and the ditch. Also, injections will be performed at lower flow rates in areas close to the creek. Rainfall data will be reviewed and injections will be performed in July/August when historically lower rainfall events have been recorded.
    2. The contractor shall have all supplies and materials required to respond to a release immediately available during injection activities. Mitigation measures shall include a boom across the ditch upstream of the existing sheen monitor.

3. The contractor shall have personnel available for response actions even during off hours while injections are in process.

Mr. Brian Jankauskas (New York State Department of Environmental Conservation) mentioned that the prior releases were associated with direct push technology (DPT) injections in the vicinity of 6MW-21 and 6MW-25.

Mr. Poligone indicated that the Leidos monitoring program will include the six site monitoring wells that have historically had groundwater exceedances, as shown on Figure 1.

- Slide 15 – Coordination. Lt Col Randall made several points regarding project coordination:
  1. The heights of DPT rig, backhoe, and other equipment shall be submitted prior to field work to assess the need for notice to airmen (NOTAM).
  2. A pre-construction meeting should be held approximately 3-4 weeks prior to field work and a dig permit request should be submitted 2 weeks prior to field work.
  3. Mr. James Gabriel with Schenectady County will be notified and included in pre-construction meeting.

  Mr. Jankauskas mentioned that Environmental Protection Agency (EPA) notification will be required for injection field work and excavation activities near the ditch; a permit may be required as well, depending on distance.
- Slide 16 – Deliverables. Deliverables will be submitted by a File Exchange Service with email notification to each recipient. Ms. Murata will receive deliverables on CDs (two copies) and two hard copies of each final deliverable will be provided for the on-site administrative record.
- Slide 17 – Schedule. Baseline sampling will be conducted in spring 2015 and injection field work will occur in July/August 2015.

There was a brief discussion on the Site Management Plan (SMP); it was determined that the proposed Site 6 activities will not impact the SMP.

A site walk was conducted following the Leidos presentation. Items noted during this walk included:

- Mr. Jankauskas mentioned that water level data should be reviewed to mitigate sampling during periods of low groundwater levels.
- Mr. Gregg Waszmer (109th Airlift Wing) asked that vegetable oil containers be stored within secondary containment.
- The location for the proposed spill control boom was discussed.
- The operations of the existing sheen monitor, weir, and skimmer were discussed.
- The location of the proposed interceptor trench was discussed; the close proximity of monitoring wells and proposed interceptor trench to creek was noted.

Meeting minutes prepared by: Leidos, 301 Laboratory Road, Oak Ridge, TN 37830.

ATTACHMENT 1
MEETING SIGN-IN SHEET

Project Kickoff Meeting

Project: Schenectady Site 6 - Suspected Spill Area

Date: 17-Sep-2015

Place/Room: Schenectady ANGB

Time: 0100 EST

	PRINT NAME	ORGANIZATION	TITLE	PHONE	EMAIL
1.	Mike Poligone	Leidos	Project Mgr	865·405·8332	poligonem@leidos.com
2.	Jody Ann Murata	NGB/A7OR	Project Mgr	240·612-8120	jody.a.murata.civ@mail.mil
3.	Jim Colmer	BB:E	FYR Contractor	248-489-9636	JColmer@bbande.com
Phone 4.	Veronica Allen	BB:E	S:O Contractor	248 489 -9636	Vallen@bbande.com
5.	~~Ty~~ Randall	109 MSG	Env POC	518-344-2505	ty.a.randall.mil@mail.mil
6.	Gregg Waszmer	109 CES	MSLFM	518-788-4883	gregg.s.waszmer.ntg@mail.mil
7.	Rob Donaldson	109 CES	EC+BCE	518-331-8281	Robert.e.donaldson2.mil@mail.mil
8.	Brian Jankauskas	NYSDEC	Project Manager	518-402-9626	brian.jankauskas@dec.ny.gov
9.	John Swartwout	NYSDEC	Section Chief	518-402-9620	john.swartwout@dec.ny.gov
10.					
11.					
12.					
13.					
14.					

ATTACHMENT 2
LEIDOS KICKOFF PRESENTATION

REMEDIAL ACTION OPERATIONS, LONG TERM MONITORING, AND PROJECT CLOSEOUT AT SCHENECTADY SITE 6, 109TH AIRLIFT WING, STRATTON AIR NATIONAL GUARD BASE, SCOTIA, NEW YORK

Installation Kickoff Meeting

September 17, 2015

leidos

Schenectady – Site 6

Schenectady – Project Coordination

- Ms. Jody Ann Murata, NGB/A7OR
- LtCol Ty Randall, 109th Airlift Wing
- Mr. Brian Jankauskas, New York State Department of Environmental Conservation
- Ms. Veronica Allen, BB&E
- Mr. Michael Poligone, Leidos

Meeting Objectives

- Review Project Objectives for Schenectady Site 6
- Review Current Conditions
- Outline Execution Plan
- Discuss and Obtain Consensus on Approach
- Coordinate Responsibilities and Channels of Communication
- Determine Clearance, Permit, and Access Requirements

Schenectady ANGB – Site 6
Review Project Objectives

- Project goals include continued RAO with the overall goal of increasing remedial efficiencies and bringing the site to closure in the most expedient and efficient way possible.

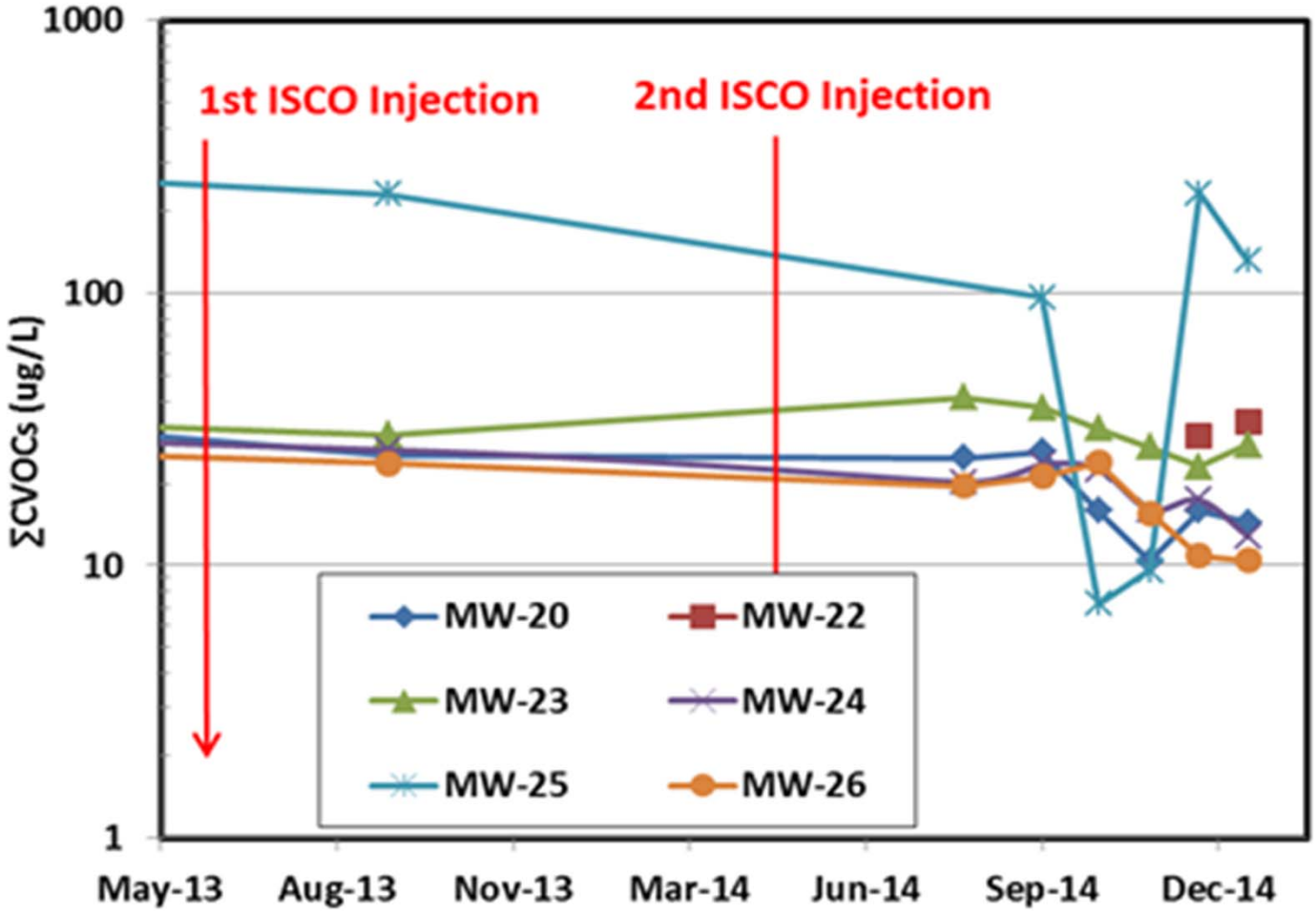
Schenectady ANGB – Site 6
Review Current Conditions

- Final remedies for historical CVOC impacts to soil and groundwater at Site 6 were established in the 2012 ROD.
- Soil remedial activities have been completed, and ANG requested formal NFA approval from NYSDEC (Dec 2007).
- Dissolved-phase CVOCs linger in site groundwater at concentrations exceeding one or more NYSDEC Ambient Groundwater Quality Standards (AGWQSs).
- Recent groundwater actions include a 2007 biostimulation pilot study and two rounds of ISCO injections (June 2013 and May 2014) via permanent horizontal (lateral) and vertical infusion wells and temporary DPT injection points

Schenectady ANGB – Site 6
Review Current Conditions

- Initial results of the 2007 biostimulation pilot study indicated average total **(∑) CVOC reductions of 63**%, with a maximum 94% reduction at well 6MW-23.
- When calculated over a longer period of time (2007 to 2013), the **∑CVOC reductions attributable to the biostimulation pilot study range from 34 to 83%**, with an average of 63%.
- **∑CVOC reductions attributable to ISCO treatment (based on 2013 to 2015 data) have been lower, ranging from 8 to 56%** and with an overall average of 41%.
- Rebound is evident in the most recent (January 2015) results for five of the six wells at which CVOCs still exceed the NYSDEC AGWQSs.

Schenectady ANGB – Site 6
Rationale for Proposed Approach



Schenectady ANGB – Site 6
Rationale for Proposed Approach

- Due to the slow rate of decline in CVOC concentrations over time and the contaminant rebound observed in the fall of 2014, **MNA alone would require a long period (e.g., decades)**
- Additional ISCO injections are not recommended as chemical oxidant injections had limited effectiveness and requires a large quantity of chemical oxidant due to both the natural organic carbon and remaining CVOC contaminants.
- In contrast, a bioremediation injection event using existing infusion infrastructure and DPT injection points is anticipated to support ongoing biodegradation of CVOCs for 2 to 3 years.
- The biostimulation approach poses no new implementation issues in regard to altering groundwater to anaerobic conditions and remains within the selected final remedy as documented in the ROD.

Schenectady ANGB – Site 6
Execution Plan

- RA-O/LTM/SCO Work Plan
- Baseline Sampling Event
- Remedial Action (treatment through biostimulation/ bioaugmentation)
- Groundwater Monitoring Events
- Groundwater Monitoring Reports
- SCO Activities: Injection and Monitoring Well Abandonment
- SCO Report

Schenectady ANGB – Site 6
Discuss and Obtain Consensus on Approach

- Following completion of an RA/LTM/SCO WP, Leidos will conduct a baseline groundwater sampling event at eight site wells to confirm current site conditions and establish a baseline against which to evaluate remedial progress.
- Treatment of the remaining groundwater contaminants will be implemented through amendment injections using approximately 20 temporary DPT injection points and 5 existing infusion wells to stimulate microbial degradation of residual chlorinated solvent groundwater contamination.
- Leidos proposes to inject ~600 gal of diluted emulsified vegetable oil (EVO) solution into each DPT point/infusion well (a total of ~15,000 gal).

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Discuss and Obtain Consensus on Approach

- Prior assays indicated moderate native populations of Dehalococcoides sp. (DHC) (102 to 104 cells/mL).
- In conjunction with EVO injections, up to 2 L of KB-1 or other DHC-containing bioaugment will be injected at each DPT point/infusion well to supplement the native microbial population.
- Following injections, Leidos will conduct performance monitoring events to evaluate ongoing biodegradation and track progress toward site closure.
- Performance monitoring events immediately following the injection event will be conducted on a quarterly basis to confirm short-term attainment and maintenance of anaerobic conditions and allow for quick corrective response, if required.

Schenectady ANGB – Site 6
Discuss and Obtain Consensus on Approach

- Figure 1 – Concentration of Contaminants of Concern in Performance Monitoring Wells. Handout.

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Discuss and Obtain Consensus on Approach

- Following three quarterly events, performance monitoring events will be reduced to a semiannual basis.
- Leidos will conduct quarterly closure sampling events once CVOCs have reached remedial goals to demonstrate that contaminant rebound is not occurring and satisfy requirements of the 2012 ROD.
- Following NFA approval, Leidos will then abandon monitoring wells, infusion wells, and horizontal infusion well lateral and document field closure activities in an SCO Report.

Schenectady ANGB – Site 6
Coordination

- Coordinate Responsibilities and Channels of Communication
- Determine Clearance, Permit, and Access Requirements

Schenectady ANGB – Site 6
Deliverables

- Draft, Draft Final, and Final Base-wide Work Plan
- Draft, Draft Final, and Final Performance Monitoring Reports
- Draft, Draft Final, and Final Compliance Monitoring Reports
- Draft, Draft Final, and RA-O Completion Report
- Draft, Draft Final, and Final SCO Reports

- Discuss submittal preferences

Schenectady ANGB – Site 6
Schedule

- RA-O/LTM/SCO Work Plan – Begin preparation in September 2015
- Field Activities – Spring 2016

Schenectady ANGB – Site 6
Further Discussion

Comments/Questions?

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