ENVIRONMENTAL ASSESSMENT

FOR BRAC 05 RECOMMENDATION FOR CLOSURE, DISPOSAL AND REUSE OF U.S. ARMY RESERVE CENTER AND ARMY MAINTENANCE SUPPORT ACTIVITY #76,

NIAGARA FALLS, NEW YORK

prepared for

U.S. Army Reserve 99th Regional Support Command

prepared by

U.S. Army Corps of Engineers

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May 2012

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FINDING OF NO SIGNIFICANT IMPACT

BRAC 2005 RECOMMENDATION FOR CLOSURE, DISPOSAL AND REUSE OF U.S. ARMY RESERVE CENTER AND ARMY MAINTENANCE SUPPORT ACTIVITY #76 NIAGARA FALLS, NEW YORK

On September 8, 2005, the Defense Base Closure and Realignment (BRAC) Commission recommended closure of the Niagara Falls U.S. Army Reserve Center (USARC) and realignment of essential missions to a new USARC to be constructed at a Niagara Falls Air Reserve Station. This recommendation was made in conformance with the provisions of the BRAC Act of 1990, as amended (Public Law, 101-510). The deactivated USARC property is excess to Army military needs and will be disposed of according to applicable laws, regulations, and national policy.

The U.S. Army Corps of Engineers, Mobile District, has prepared an Environmental Assessment (EA) for the U.S. Army Reserve, 99th Regional Support Command which identifies, documents, and evaluates environmental effects of the proposed closure, disposal and reuse of the Niagara Falls USARC and Area Maintenance Support Activity (AMSA) #76. The EA has been developed in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code § 4321 et seq.), *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Part 1500-1508), and *Environmental Analysis of Army Actions* (32 CFR Part 651). The 2006 Base Realignment Closure Manual for Compliance with the National Environmental Policy Act was used for guidance in preparing the EA.

1.0 PROPOSED ACTION

The Proposed Action is the closure and disposal of surplus property made available by the realignment of the Niagara Falls USARC. Redevelopment and reuse of the surplus USARC property would occur as a secondary action under disposal.

Under BRAC law, the Army was required to close the Niagara Falls USARC and AMSA #76 not later than September 15, 2011. The Niagara Falls USARC and AMSA #76 closed on September 15, 2011 and the Army will dispose of the property. As a part of the disposal process, the Army screened the property for reuse with the Department of Defense (DoD) and other federal agencies. No federal agency expressed an interest in reusing this property for another purpose.

2.0 ALTERNATIVES CONSIDERED

The EA evaluated the following three alternatives:

Traditional Reuse and Disposal (Preferred Alternative). Under the Traditional Army Disposal and Reuse Alternative, the Army would make a below fair market value Economic Development Conveyance (EDC) of the entire USARC parcel to the Town of Niagara for reuse. In its approved reuse plan (2008) supplemented by its December 2011 EDC application, the Town of Niagara LRA recommended a mix of commercial and industrial uses for the property as summarized below.

- Building 4 (the hangar on the property) would be marketed to aviation and aerospace firms as a potential location for aircraft modifications, renovations, research and testing, overhauls and storage of air cargo. Buildings 4N and 4S (both attached to the hangar) would be included in

solicitations of interest to provide space for offices, classroom training, engineering, computer operations, locker rooms, and storage.

- The remainder of the site would be utilized on a building-by-building basis for a mix of commercial and industrial uses that are permitted under the Town's zoning ordinance, including users such as metal fabricators, maintenance business, professional service firms, training providers, storage operations, motor vehicle service stations or aviation support type business such as food caterers, a commissary, avionics shop or other maintenance operations.

In order for the USARC site to be used in an effective manner several capital improvements would be needed. These would include demolishing five minor structures totaling 9,900 SF (Building 19 – 1,600 SF; Building 20 – 2,550 SF; Building 23 – 2,000 SF; Building 25 – 1,750 SF; and Building 26 – 2,000 SF); refurbishing interior building spaces, including making them Americans with Disabilities Act (ADA) compliant; installing utility meters for individual buildings on site; replacing the hangar doors and roof on Building 4; repaving the aircraft apron on the east side of Building 4; installing fencing between the site and the airfield; repaving vehicular areas on the site; restriping parking areas; and installing signage for the facility.

With the demolition of the five smaller buildings, the total amount of leasable space would be 146,360 SF. Based on zoning; proximity to the Niagara Falls International Airport; the age, quality, condition, and configuration of the space to be leased; as well as competition in the local real estate market, the LRA expects demand for the property to be modest and estimates that reuse of the USARC site would generate approximately 149 to 251 jobs.

Although these are the current plans, the LRA would remain flexible to the dictates of the market to take advantage of any opportunities to create new jobs. This may include demolition of additional buildings and construction of new build-to-suit space for tenants or prospective tenants. Long term, the site may also include a hotel. However, the development of a hotel on the site is at this time only conceptual, for it is not mentioned in the Town of Niagara LRA's EDC application and it is not accounted for in their economic analysis for redevelopment of the site. Since development of a hotel on the site is only conceptual at this time, it is not analyzed as part of this alternative; however, it is analyzed as a potential cumulative effect in the *Cumulative Effects Summary* section of the EA.

Caretaker Status Alternative. The Army secured the USARC and AMSA #76 after the military mission ended on September 15, 2011 to ensure public safety and the security of remaining government property and to complete any required environmental remediation actions. From the time of operational closure until conveyance of the property, the Army would provide sufficient maintenance to preserve and protect the site for reuse in an economical manner that facilitates redevelopment. Because the USARC was not transferred by September 15, 2011, the Army reduced maintenance levels to the minimum level for surplus government property as specified in 41 CFR 101-47.402, 41 CFR 101-47-4913, and Army Regulation 420-70 (Buildings and Structures).

No Action Alterative. Under the No Action alternative, the Army would continue operations at the USARC at levels similar to those that occurred prior to the BRAC Commission's recommendations for closure becoming final. Implementation of the No Action alternative is not possible due to the BRAC Commission's recommendation to close the USARC and AMSA #76 having the force of law and the fact that the property is currently in caretaker status.

3.0 ENVIRONMENTAL ANALYSIS

The EA, which is incorporated by reference into this Finding of No Significant Impact (FNSI), evaluated the potential effects of the action and no action alternatives on seven resource areas of environmental and

socioeconomic concern: land use, geology and soils, water resources, socioeconomics (including environmental justice and protection of children), transportation, utilities and hazardous and toxic substances. The following paragraphs summarize the expected effects associated with the Preferred Alternative for each resource, as discussed in the EA. Fifteen other resource areas were not evaluated in-depth because they are either not present on or near the Niagara Falls USARC property, they are present but would not be impacted by any of the alternatives, or the proposed action would have little or no measureable environmental affect on the resources.

Land Use. Long-term direct impacts to land use that would not be significant are anticipated. The USARC property would change from a military site to industrial and commercial facilities and would be consistent with zoning, ordinances, community land use plans, and existing land uses in the vicinity of the property. The Army would include land use restrictions in property transfer documents to mitigate potential exposure of construction workers to impacted groundwater on the southeast portion of the property, and while these restrictions may alter how construction activities occur, they would not affect the planned reuse of the property.

Geology and Soils. Long-term direct impacts on geology and soils that are not significant would occur under the Preferred Alternative. Demolition and construction of structures on the site would disturb soils, but this action is not considered significant since soils in the project area have been previously disturbed and the majority of the site consists of impervious surfaces.

Water Resources. Approximately 95 percent of the site is covered by impervious surface and no new impervious surfaces would occur under the Preferred Alternative. Following an approved storm water pollution prevention plan and a State Pollution Discharge Elimination System General Permit for Storm Water Discharges Associated with Industrial Activity would result in no significant impacts to the nearby surface waters of Cayuga Creek or groundwater. If a Floodplain Development Permit is required for new construction along the northern boundary of the property of renovation to Building 4N, adhering to the provisions of the permit would prevent long-term significant impacts to the floodplain or to the facility itself.

Socioeconomics (including environmental justice and protection of children). There would be no significant impact on socioeconomic resources. There would be no change in the population of the region of influence, no disproportionately high and/or adverse impacts on minority or low income populations, and no adverse impacts to children in the area. Reuse of the property would provide both short-term beneficial impacts to the local economy during construction activities and operation of the facilities respectively.

Transportation. There would be no significant direct or indirect impact on traffic. Some short-term adverse impacts could occur during demolition and renovation activities, but these would be temporary and not significant. While reuse of the USARC would increase daily traffic to and from the site during weekdays, this increase would not be significant since local intersections are currently working at an acceptable Level of Service (LOS) and traffic generated from the reuse of the property would not increase the LOS to unacceptable levels.

Utilities. Overall effects on utilities would not be significant. Existing utility services provided to the site are expected to be adequate for future usage demand. Some highly localized, short-term disruptions would be expected as utility lines and linkages are adjusted or extended as necessary.

Hazardous and toxic substances. Potential impacts to hazardous and toxic substances from the traditional disposal and reuse of the USARC would be expected to have no significant effect, though they would be long-term. Due to the known or suspected ACM materials and LBP on the structures, occupancy, use, and, if the buildings are renovated or demolished, abatement and disposal will be in

accordance with applicable federal and state regulations. The use of hazardous materials and handling of hazardous waste would also be managed in accordance with all applicable federal and state regulations. Based on the findings of soil and groundwater investigations completed in 2011, and Interim Remediation Activities that removed approximately 40 tons of contaminated soil and approximately 2,000 gallons of contaminated groundwater from the excavation, a Human Health Risk Assessment (HRRA) concluded that the only potential risk on the site to human health and the environment is a carcinogenic risk for construction workers exposed to contaminated groundwater during subsurface activities (e.g. site upgrades, new construction etc.). The HRRA recommended the development and implementation of a land use restriction in the form of a Site Management Plan as an adequate remedy to reduce the risk or exposure to contaminated groundwater for construction workers during construction. Therefore, to mitigate the potential exposure of construction workers to impacted groundwater on the southeast portion of the Property, the Army will place land use restrictions in the form of a Site Management Plan in the property transfer documents.

4.0 PUBLIC COMMENT

Interested parties were invited to review and comment on the EA and Draft FNSI during the 30-day comment period, June 6, 2012 through July 5, 2012. A Notice of Availability was published in the *Niagara Gazette* on June 6 and 7, 2012. During the 30-day comment period, no public comments were received on the Final EA and Draft FNSI.

5.0 CONCLUSION

Direct, indirect, and cumulative impacts of the Preferred Alternative, the Caretaker Status Alternative, and the No Action Alternative have been considered. The evaluation performed within the Environmental Assessment concludes that there would be no significant impact to the human or natural environment as a result of the implementation of any of the alternatives. Therefore, the issuance of a Finding of No Significant Impact is warranted, and preparation of an Environmental Impact Statement is not required.

Date: 12 March 2013

WILLIAM J.P. SLORA
LTC, EN
Regional Engineer
U.S. Army Reserve, 99th Regional Support Command

ENVIRONMENTAL ASSESSMENT

FOR BRAC 05 RECOMMENDATION FOR CLOSURE, DISPOSAL AND REUSE OF U.S. ARMY RESERVE CENTER AND ARMY MAINTENANCE SUPPORT ACTIVITY #76, NIAGARA FALLS, NEW YORK

Approved by:

99th Regional Support Command

for

JOSE E. CEPEDA
COL, EN
DPW Regional Engineer

JEFFREY HRZEC, GS13
Chief, ENN Division

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ENVIRONMENTAL ASSESSMENT

LEAD AGENCY: U.S. Army Reserve 99th Regional Support Command

TITLE OF PROPOSED ACTION: Environmental Assessment for BRAC 05 Recommendation for Closure, Disposal and Reuse of U.S. Army Reserve Center and Army Maintenance Support Activity #76 Niagara Falls, New York

AFFECTED JURISDICTIONS: Niagara County, New York

PREPARED BY: Steven J. Roemhildt, Colonel, U.S. Army Corps of Engineers, Mobile District, District Commander.

APPROVED BY: Jose E. Cepeda, Colonel, U.S. Army Reserve, 99th Regional Support Command, Regional Engineer.

ABSTRACT: On September 8, 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended closure of the Niagara Falls USARC and realignment of essential missions to a new U.S. Army Reserve Center (USARC) to be constructed at Niagara Falls Air Reserve Station in Niagara Falls, New York. These recommendations were approved by the President on September 15, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission's recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

The deactivated USARC property is excess to Army military needs and will be disposed of according to applicable laws, regulations, and national policy. Pursuant to the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations, the Army has prepared this Environmental Assessment (EA) to address the environmental and socioeconomic impacts of disposing of the property and reasonable, foreseeable reuse alternatives.

None of the predicted effects of the Proposed Action would result in significant impacts to the quality of the human or biological environment in Niagara Falls, NY. Moreover, mitigation would not be necessary to offset impacts. Therefore, preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact (FNSI) will be published in accordance with the NEPA.

REVIEW PERIOD: A notice of availability (NOA) for the EA and draft FNSI was published in The Niagara Gazette on June 6 and 7, 2012 announcing the beginning of the 30-day public review period from June 6, 2012 to July 5, 2012. In the NOA, interested parties are informed that the EA and Draft FNSI are available via the World Wide Web at http://www.hqda.army.mil/acsim/brac/env_ea_review.htm and at the Niagara Falls Public Library, 1425 Main Street, Niagara Falls, NY 14305. Interested parties are invited to submit comments on the EA and Draft FNSI during the 30-day public comment period via mail or email to the following:

Ms. Amanda Murphy
NEPA and Cultural Resources Specialist
United States Army Reserve 99th Regional Support Command
5231 South Scott Plaza
Fort Dix, NJ 08640
email: amanda.w.murphy.ctr@us.army.mil

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STATE OF NEW YORK
NIAGARA COUNTY,} SS,_____

Linda Elliott, of said county, being duly sworn, deposes and says that she is now and during the whole time hereinafter mentioned was the Clerk of

NIAGARA GAZETTE

A newspaper published in the County and State aforesaid, and that the annexed printed legal # 29156 was printed and published in said paper on the following dates:

06/06/2012 06/07/2012

Linda Elliott
Principal Clerk

Subscribed and sworn to before me this
11 June 2012

Patricia J King 07/27/2014

Notary Public Expiration Date

PATRICIA J. KING
Notary Public, State of New York
Qualified in Niagara County
My Commission Expires ~~March 30, 19~~

PUBLIC NOTICE OF AVAILABILITY

ENVIRONMENTAL ASSESSMENT AND DRAFT FINDING OF

NO SIGNIFICANT IMPACT FOR THE BRAC 05 CLOSURE, DISPOSAL, AND REUSE OF U.S. ARMY RESERVE CENTER AND ARMY MAINTENANCE SUPPORT ACTIVITY

NIAGARA FALLS, NEW YORK

Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (40 CFR 1500), and 32 CFR 651 Environmental Analysis of Army Actions, the U.S. Army Reserve (USAR) 99th Regional Support Command (RSC) conducted an Environmental Assessment (EA) of the potential environmental and socioeconomic effects associated with implementing the Defense Base Realignment and Closure (BRAC) Commission's recommendations for the U.S. Army Reserve Center (USARC) and Army Maintenance Support Activity (AMSA) #76, Niagara Falls, New York. The EA evaluated the potential environmental impacts associated with the closure, disposal, and reuse of the USARC.

Two reasonable alternatives were identified and evaluated in addition to the No Action Alternative: the Traditional Disposal and Reuse Alternative (Preferred) and the Caretaker Status Alternative. The Traditional Disposal and Reuse Alternative would close the Niagara Falls USARC and AMSA and transfer the property to the Town of Niagara as a below fair market value Economic Development Conveyance for reuse by aviation and aerospace firms (Building 4, the hangar, and its two attached buildings, 4N and 4S) and a mix of light industrial and commercial uses permitted by the Town of Niagara zoning (remainder of site on a building by building basis).

The EA and Draft Finding of No Significant Impact (FNSI) will undergo a 30-day public comment period, from the date of this publication. This is in accordance with requirements specified in 32 CFR Part 651.14 Environmental Analysis of Army Actions. During this period the public may submit written comments on the EA and draft FNSI.

The EA and draft FNSI are available for review on the World Wide Web at
http:/www.hqda.army.mil/acsim/brac/env_ea_review.htm

Printed copies of the EA and Draft FNSI can also be viewed at the Niagara Falls Public Library, 1425 Main Street; Niagara Falls, NY14305.

Comments on the EA and draft FNSI and requests for information should be submitted during the 30-day public comment period via mail or electronic mail to the Environmental Coordinator of the USAR 99th RSC at:

Ms. Amanda Murphy
USAR 99th RSC
5231 South Scott Plaza
Fort Dix, New Jersey 08640
Email: amanda.w.murphy.ctr@us.army.mil

#N29156 6/6,7/2012

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

On September 8, 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended closure of the Niagara Falls U.S. Army Reserve Center (USARC) and Army Maintenance Support Activity (AMSA) #76 and realignment of essential missions to a new USARC to be constructed at Niagara Falls Air Reserve Station. This recommendation was made in conformance with the provisions of the BRAC Act of 1990, (Public Law, 101-510) as amended. The deactivated USARC property is excess to Army military needs and will be disposed of according to applicable laws, regulations, and national policy. Pursuant to the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations, the Army has prepared this Environmental Assessment (EA) to address the environmental and socioeconomic impacts of disposing of the property and reasonable, foreseeable reuse alternatives.

ES.2 BACKGROUND AND SETTING

The Niagara Falls USARC is located within the Town of Niagara, New York in Niagara County in northwestern New York. The Town of Niagara is a 16.8-square-mile community located approximately 6 miles east of the City of Niagara Falls, New York and 20 miles north of the City of Buffalo, New York.

ES.3 PROPOSED ACTION

The proposed action is the disposal of surplus property made available by the realignment of the USARC and AMSA #76 in Niagara Falls, NY. Redevelopment and reuse of the surplus USARC property (the "Property") would occur as a secondary action under disposal.

Under BRAC law, the Army was required to close the Niagara Falls USARC and AMSA #76 not later than September 15, 2011. The Niagara Falls USARC and AMSA #76 closed on September 15, 2011 and the Army will dispose of the property. As a part of the disposal process, the Army screened the property for reuse with the Department of Defense (DoD) and other federal agencies. No federal agency expressed an interest in reusing this property for another purpose.

ES.4 ALTERNATIVES

Preferred Alternative: Traditional Disposal and Reuse

Under the Traditional Army Disposal and Reuse Alternative, the Army would make a below fair market value EDC of the entire USARC parcel to the Town of Niagara for reuse. In its approved reuse plan (2008) supplemented by its December 2011 EDC application, the Town of Niagara LRA recommended a mix of commercial and industrial uses for the property as summarized below. The EDC application, which contains the reuse plan, is included in Appendix A of this EA.

- Building 4 (the hangar on the property) would be marketed to aviation and aerospace firms as a potential location for aircraft modifications, renovations, research and testing, overhauls and storage of air cargo. Buildings 4N and 4S (both attached to the hangar) would be included in solicitations of interest to provide space for offices, classroom training, engineering, computer operations, locker rooms, and storage.

- The remainder of the site would be utilized on a building-by-building basis for a mix of commercial and industrial uses that are permitted under the Town's zoning ordinance, including users such as metal fabricators, maintenance business, professional service firms, training providers, storage operations, motor vehicle service stations or aviation support type business such as food caterers, a commissary, avionics shop or other maintenance operations.

In order for the USARC site to be used in an effective manner several capital improvements would be needed. These would include demolishing five minor structures totaling 9,900 SF (Building 19 – 1,600 SF; Building 20 – 2,550 SF; Building 23 – 2,000 SF; Building 25 – 1,750 SF; and Building 26 – 2,000 SF); refurbishing interior building spaces, including making them Americans with Disabilities Act (ADA) compliant; installing utility meters for individual buildings on site; replacing the hangar doors and roof on Building 4; repaving the aircraft apron on the east side of Building 4; installing fencing between the site and the airfield; repaving vehicular areas on the site; restriping parking areas; and installing signage for the facility.

With the demolition of the five smaller buildings, the total amount of leasable space would be 146,360 SF. Based on zoning; proximity to the Niagara Falls International Airport; the age, quality, condition, and configuration of the space to be leased; as well as competition in the local real estate market, the LRA expects demand for the property to be modest and estimates that reuse of the USARC site would generate approximately 149 to 251 jobs (Town of Niagara LRA, 2011).

Although, these are the current plans, the LRA would remain flexible to the dictates of the market to take advantage of any opportunities to create new jobs. This may include demolition of additional buildings and construction of new build-to-suit space for tenants or prospective tenants. Long term, the site may also include a hotel (CHA, 2011). However, the development of a hotel on the site is at this time only conceptual, for it is not mentioned in the Town of Niagara LRA's EDC application and it is not accounted for in their economic analysis for redevelopment of the site (Town of Niagara LRA, 2011). Since development of a hotel on the site is only conceptual at this time, it is not analyzed as part of this alternative; however, it is analyzed as a potential cumulative effect in the *Cumulative Effects Summary* section of this EA.

Caretaker Status Alternative

The Army secured the USARC and AMSA #76 after the military mission ended on September 15, 2011 to ensure public safety and the security of remaining government property. From the time of operational closure until conveyance of the property, the Army would provide sufficient maintenance to preserve and protect the site for reuse in an economical manner that facilitates redevelopment. If the USARC was not transferred by September 15, 2011, the Army would reduce maintenance levels to the minimum level for surplus government property as specified in 41 CFR 101-47.402, 41 CFR 101-47-4913, and Army Regulation 420-70 (Buildings and Structures).

No Action Alternative

Under the No Action alternative, the Army would continue operations at the USARC at levels similar to those that occurred prior to the BRAC Commission's recommendations for closure becoming final. Implementation of the No Action alternative is not possible due to the BRAC Commission's recommendation to close the USARC and Army Maintenance Support Activity (AMSA) #76 having the force of law. However, inclusion of the No Action alternative is prescribed by the CEQ regulations implementing NEPA, and serves as a benchmark against which the environmental impacts of the action alternatives may be evaluated. Therefore, the No Action alternative is evaluated in the EA.

ES.5 ENVIRONMENTAL CONSEQUENCES

Consequences of the Preferred Alternative: Traditional Disposal and Reuse

Under the Preferred Alternative there would be no significant effects on any of the environmental or related resource areas within the local or surrounding areas. All of the resource areas were evaluated to be at the No Effects or No Significant Effect levels.

Consequences of the Caretaker Status Alternative

Under the Caretaker Status Alternative, the Army would retain the USARC as-is with on-going maintenance and there would be no significant effects on any of the environmental or related resource areas within the local or surrounding areas. All of the resource areas were evaluated at the No Effects or No Significant Effect levels.

Consequences of the No Action Alternative

Under the No Action Alternative, the proposed closure, disposal and reuse of the property would not take place and there would be no significant effects on any of the environmental or related resource areas within the local or surrounding areas. All of the resource areas were evaluated to be at the No Effects or No Significant Effect levels.

A summary of impacts by resource area for the two action alternatives and the No Action Alternative is provided in Table ES-1.

Table ES-1. Summary of the Impacts of the Proposed Action Alternatives

Resource	Preferred Alternative	Caretaker Status Alternative	No Action Alternative
Land Use			
Regional Geographic Setting and Location	No effect.	No effect.	No effect.
Site Land Use	No significant effect.	No effect.	No effect.
Current and Future Development in the Region of Influence	No effect.	No effect.	No effect.
Coastal Zone	Resource not present	Resource not present	Resource not present
Aesthetic and Visual Resources	No effect.	No effect.	No effect.
Air Quality			
Ambient Air Quality Conditions	No significant effect.	No effect.	No effect.
Meteorology/Climate	No effect.	No effect.	No effect.
Air Pollutant Emissions at Project Site	No significant effect.	No effect.	No effect.
Regional Air Pollutant Emissions Summary	No significant effect.	No effect.	No effect.

Resource	Preferred Alternative	Caretaker Status Alternative	No Action Alternative
Noise	No significant effect.	No effect.	No effect.
Geology and Soils			
Geologic and Topographic Conditions	No effect.	No effect.	No effect.
Soils	No significant effect.	No significant effect.	No significant effect.
Prime Farmland	Resource not present	Resource not present	Resource not present
Water Resources			
Surface Water	No significant effect.	No effect.	No effect.
Wetlands	Resource not present	Resource not present	Resource not present
Hydrogeology/Groundwater	No significant effect.	No significant effect.	No significant effect.
Floodplains	No significant effect.	No effect.	No effect.
Storm water System	No effect.	No effect.	No effect.
Biological Resources			
Vegetation	No effect.	No effect.	No effect.
Wildlife	No effect.	No effect.	No effect.
Threatened, Endangered, and Sensitive Species	Resource not present	Resource not present	Resource not present
Cultural Resources			
Archaeology	Resource not present	Resource not present	Resource not present
Built Environment	Resource not present	Resource not present	Resource not present
Socioeconomics			
Economic Development	No significant effect.	No significant effect.	No effect.
Demographics	No effect.	No effect.	No effect.
Environmental Justice	No effect.	No effect.	No effect.
Protection of Children	No effect.	No effect.	No effect.
Transportation			

Resource	Preferred Alternative	Caretaker Status Alternative	No Action Alternative
Roadways and Traffic	No significant effect.	No effect.	No effect.
Public Transportation	No significant effect.	No effect.	No effect.
Utilities			
Potable Water Supply	No significant effect.	No effect.	No effect.
Sanitary Sewer System	No significant effect.	No effect.	No effect.
Electrical Service and Distribution	No significant effect.	No effect.	No effect.
Natural gas	No effect.	No effect.	No effect.
Communications	No significant effect.	No effect.	No effect.
Municipal Solid Waste	No significant effect.	No effect.	No effect.
Hazardous and Toxic Substances			
Uses of Hazardous Materials	No significant effect.	No effect.	No effect.
Storage and Handling Areas	No significant effect.	No effect.	No effect.
Site Contamination and Cleanup	No significant effect.	No significant effect.	No significant effect.
Cumulative Effects	No significant effect.	No effect.	No effect.

ES.6 MITIGATION RESPONSIBILITY AND PERMIT REQUIREMENTS

Beyond the placement of land use restrictions on the Property, no specific mitigation is required of the Army. Based on the findings of soil and groundwater investigations completed in 2011, Interim Remediation Activities removed approximately 40 tons of contaminated soil and approximately 2,000 gallons of contaminated groundwater from the excavation. Also, an approximate 8-foot long section of 6-inch diameter cast iron fire protection main was removed and the open ends of the pipe were fitted with a Fernco and polyvinyl chloride (PVC) cap prior to backfilling. A Human Health Risk Assessment (HRRA) concluded that the only potential risk on the site is a carcinogenic risk for construction workers exposed to contaminated groundwater during subsurface activities (e.g. site upgrades, new construction etc.). The HRRA recommended the development and implementation of a land use restriction in the form of a Site Management Plan as an adequate remedy to reduce the risk or exposure to contaminated groundwater for construction workers during construction. Therefore, the Army would impose in the transfer or conveyance of the USARC property appropriate land use restrictions to protect construction workers. The Army will document their proposed plan for a remedial action in the form of a land use restriction in a

"Proposed Plan." The "Proposed Plan" will be released for public review in the near future. Any comments received will be documented in the Decision Document.

ES.7 CONCLUSIONS

Based on the analysis performed in this EA, implementation of the proposed action under any of the action alternatives would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an Environmental Impact Statement is not required and issuance of a FNSI would be appropriate.

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1.0 INTRODUCTION

This Environmental Assessment (EA) analyzes the environmental impacts of the proposed closure, disposal and reuse of the United States Army Reserve Center (USARC) and Army Maintenance Support Activity (AMSA) #76 in Niagara Falls, New York (Figure 1-1). This EA was developed in accordance with the *National Environmental Policy Act of 1969* (NEPA) [42 United States Code (U.S.C.) § 4321 et seq.]; implementing regulations issued by the President's Council on Environmental Quality (CEQ), 40 *Code of Federal Regulations* (CFR) Parts 1500-1508; and *Environmental Analysis of Army Actions*, 32 CFR Part 651. The purpose of the EA is to inform decision makers and the public of the likely environmental consequences of the Proposed Action and alternatives.

1.1 PURPOSE AND NEED OF THE PROPOSED ACTION

On September 8, 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended closure of the USARC and AMSA #76 and realignment of essential missions to a new U.S. Armed Forces Reserve Center (AFRC) to be constructed on the existing site or on the Niagara Falls Air Reserve Station (ARS) in Niagara Falls, NY. The new AFRC was constructed at a site on the Niagara Falls ARS; therefore, the deactivated USARC property is excess to Army military need and will be disposed of according to applicable laws and regulations.

1.2 PUBLIC INVOLVEMENT

The Army is committed to open decision-making. The collaborative involvement of other agencies, organizations, and individuals in the NEPA process enhances issue identification and problem solving. In preparing this EA, the Army consulted with the State Historic Preservation Officer (SHPO), U.S. Fish and Wildlife Service (USFWS), Native American Tribes, federal, state and local regulatory agencies, state and local governments, non-governmental organizations, individuals and others as appropriate.

The 30-day public-review period begins by placing a Notice of Availability (NOA) of the final EA and a draft Finding of No Significant Impact (FNSI) in a local newspaper, *The Niagara Gazette*. The EA and draft FNSI are made available at the Niagara Falls Public Library, 1425 Main Street, Niagara Falls, NY 14305 and on the BRAC website at http://www.hqda.army.mil/acsim/brac/env_ea_review.htm. The Army invites the public and all interested and affected parties to review and comment on this EA and the draft FNSI. Comments and requests for information should be submitted to the Environmental Coordinator of the United States Army Reserve (USAR) 99th Regional Support Command (RSC): Ms. Amanda Murphy at United States Army Reserve 99th Regional Support Command, 5231 South Scott Plaza, Fort Dix, New Jersey 08640 or amanda.w.murphy.ctr@us.army.mil.

At the end of the public review period, the Army will review all comments received; compare environmental impacts associated with reasonable alternatives; revise the FNSI or the EA, if necessary; supplement the EA, if needed; and make a decision. If the impacts of the proposed action are not significant, the Army will execute the FNSI and the action can proceed immediately. If potential impacts are found to be significant, the Army may decide not to implement the proposed action, commit in the FNSI to mitigation reducing the anticipated impact(s) to a less than significant impact, or publish a Notice of Intent to prepare an Environmental Impact Statement in the Federal Register.

Figure 1-1. Niagara Falls USARC Location

2.0 DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the disposal of surplus property made available by the realignment of the USARC and AMSA #76 in Niagara Falls, NY. Redevelopment and reuse of the surplus USARC property (the "Property") would occur as a secondary action under disposal.

Under BRAC law, the Army was required to close the Niagara Falls USARC and AMSA #76 not later than September 15, 2011. The Niagara Falls USARC and AMSA #76 closed on September 15, 2011 and the Army will dispose of the property. As a part of the disposal process, the Army screened the property for reuse with the Department of Defense (DoD) and other federal agencies. No federal agency expressed an interest in reusing this property for another purpose.

2.1 BRAC COMMISSION'S RECOMMENDATION

The BRAC Commission's recommendation is to:

> *"Close the United States Army Reserve Center and Army Maintenance Support Activity, Niagara Falls, NY and construct a new Armed Forces Reserve Center on the existing site or on the former Niagara Falls Air Reserve Station, if a suitable site is available, in Niagara Falls, NY. The new AFRC shall have the capability to accommodate the NY National Guard units from the Niagara Falls Readiness Center, if the state of New York decides to relocate those National Guard units."* (BRAC Commission, 2005)

The environmental impacts resulting from the construction and operation of the new AFRC on the Niagara Falls ARS, Niagara Falls, NY are analyzed in *Environmental Assessment, Construction of an Armed Forces Reserve Center Complex and Implementation of BRAC 05 Realignment Actions in Niagara Falls, New York*, July 2007 (USACE, 2007a).

2.2 LOCAL REDEVELOPMENT AUTHORITY'S REUSE PLAN

The Town of Niagara, as the governmental entity that will have jurisdiction over the property after base closure, has been designated by the DoD as the Local Redevelopment Authority (LRA) for the USARC facility. According to the Federal Property Administrative Services Act of 1949 and the Base Closure Community Redevelopment and Homeless Assistance Act of 1994, the LRA screened this Federal Government surplus property by soliciting notices of interest from state and local governments, representatives of the homeless, and other interested parties. After reviewing two reuse proposals and recommendations and all public comments, the LRA recommended that the property be transferred to the Town of Niagara as a below fair market value Economic Development Conveyance (EDC) for reuse by aviation and aerospace firms (Building 4, the hangar, and its two attached buildings, 4N and 4S) and a mix of light industrial and commercial uses permitted by the Town of Niagara zoning (remainder of site on a building by building basis) (Appendix A). On February 12, 2008 the Draft Redevelopment Plan and Homeless Assistance Submission for U.S. Army Reserve Center/Area Maintenance Center #76, was approved by a resolution of the Niagara Town Board. The reuse planned was approved by the U.S. Department of Housing and Urban Development on April 1, 2009 (Town of Niagara LRA, 2011).

2.3 HISTORY AND DESCRIPTION OF THE NIAGARA FALLS USARC AND AMSA #76 (THE "PROPERTY")

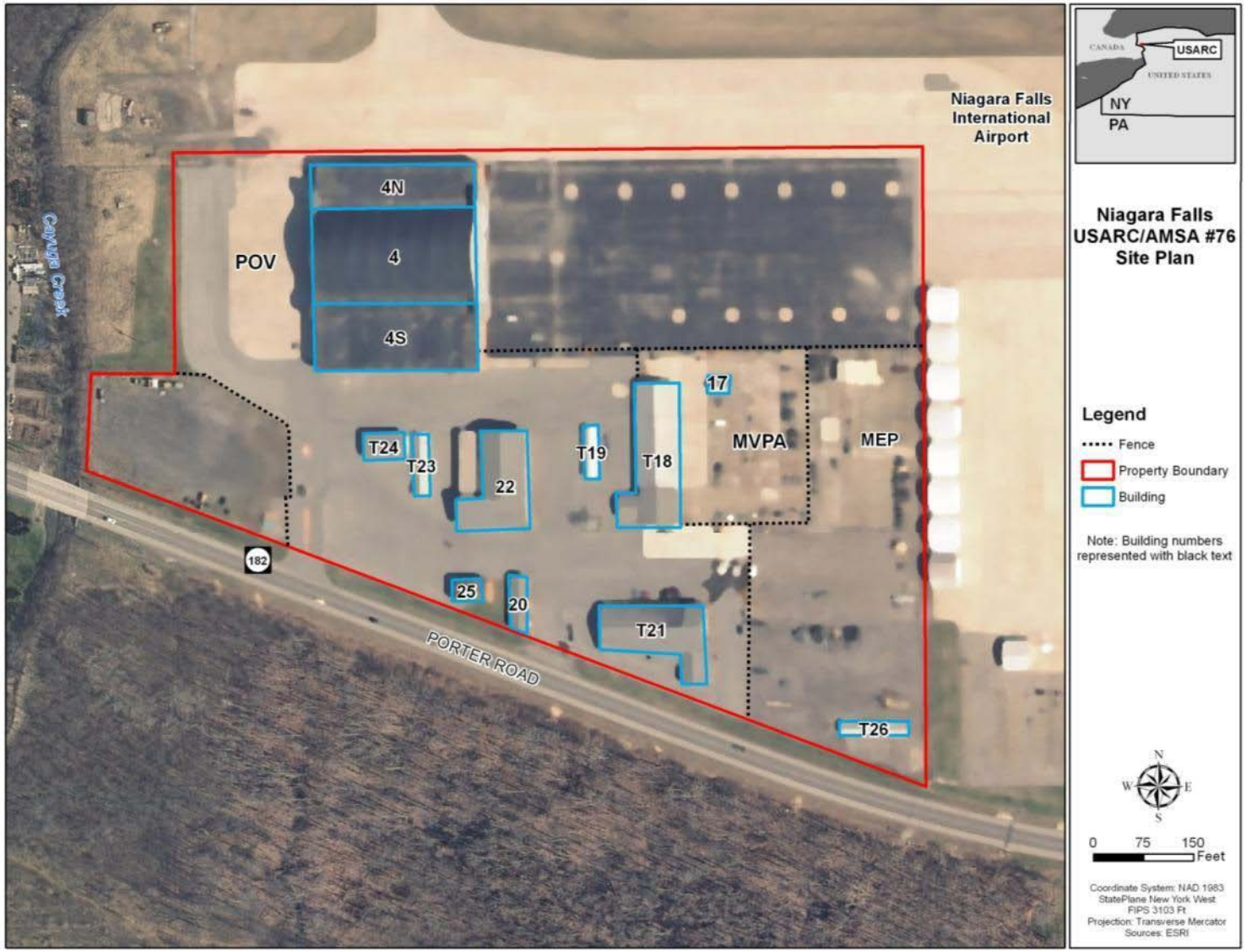
In 1959 the U.S. Army Reserve acquired 21.88 acres of property along the north side of Porter Road in Niagara County that was part of a Naval Air Reserve Station and put it into use as a U.S. Army Reserve Center. At that time, the site contained several buildings and a large aircraft hangar. Additional buildings were later built on the site. Although no documentation has been found that indicates the Navy's use of the site until after World War II, the Naval Aeronautical Organization for Fiscal Year 1948 report showed that a new facility would be added in the vicinity of the Syracuse-Buffalo, New York for Air Reserve training, and Niagara Falls was first listed among existing Naval Air Reserve Stations in the Naval Aeronautical Organization for Fiscal Year 1950 report (U.S. Army, 2011). Prior to use by the Navy, the site was a city-owned airport (U.S. Army, 2011). Since the U.S. Army Reserve officially acquired the land, various units with the U.S. Army Reserve have used the property including current units consisting of the 277th Quartermasters Corps (a refueling unit), the 865th Combat Support Hospital (a field medical unity), and the 1982nd Forward Surgical Unit (a field surgical unit) and AMSA #76.

The New York Army National Guard was a tenant on the property from 1972 to 1995, and from about 1970 to 1975 the site was also used for servicing Nike Ajax missile warheads (conventional warheads only) from missile batteries around the state of New York.

Currently the property consists of 14 structures, including ancillary structures such as a guardhouse, hazardous material sheds, and an electrical building, and three parking/equipment storage areas (Figure 2-1). The property is almost entirely covered by impervious surfaces such as building footprints, asphalt parking areas, and driveways. Small areas are grass covered (south-central area) or have a mix of grass and gravel, such as in the southwestern corner of the Property. Buildings on site include:

- Building 4 is a 33,750 square-foot (SF) hangar constructed in 1956. It is a large, metal-framed hangar with two-story buildings attached to the north (Building 4N – 27,000 SF) and south (Building 4S – 36,000 SF) sides. Currently these three buildings are used to store equipment such as tents, clothing, boots, vests, and other similar materials. There are also administrative offices, classrooms, a mailroom, bathrooms, a garage, an air compressor room, a kitchen, boiler/mechanical room, and a flight locker room among other things.
- Building 17 consists of a petroleum, oil and lubricant (POL) shed and an above ground storage tank (AST) for waste oil.
- Building T18 is an L-shaped, single story, 13,670 SF structure built in 1956 and expanded in 1990. The building houses an organizational maintenance shop (OMS) and an AMSA. Trench drains throughout the building connect to an oil/water separator (OWS) which connects to the sanitary sewer. In addition to the vehicle maintenance bays there are tool and storage rooms.
- Building T19 is a single-story, 1,600 SF Quonset Hut storage building.
- Building 20 is a single-story, 2,550 SF storage building. It also contains a natural gas-fired boiler room and electronics service room.
- Building T21 is a single-story, 13,540 SF building that currently serves as offices and an OMS with two vehicle maintenance bays. The OMS has trench drains leading to an OWS which is connected to the sanitary sewer system. This building also has a boiler room, classrooms, offices, bathrooms, and storage areas.
- Building 22 is a two-story, 20,000 SF building used for storage, classroom training, and administrative tasks. The building also has a kitchen and dining hall. The second floor consists of classrooms and office space, storage room for flight gear and bathrooms.
- Building T23 is a single-story, 2,000 SF storage building.

Figure 2-1. Niagara Falls Site Plan



- Building T24 is a single story, 2,400 SF storage shed with two metal roll-up vehicular doors. The building has electricity and heat but no plumbing.
- Building 25 is a single story, 1,750 SF building originally constructed as the heating plant for the property. It is currently used as a storage building.
- Building T26 is a single story, 2,000 SF building constructed of a metal frame as well as metal siding and roof. It is primarily used to store equipment.
- There is also a one-story, one bay wide and one bay deep electrical building on the property and a small guard shed at the entrance to the property.

In addition to the buildings there is a vehicle wash rack outside of Building 18 (the AMSA) and three OWS on the property.

Prior to closure, the Army units stationed at the site were made up of 412 reservists who drilled on the weekends and 35 full-time employees. The facilities on the site were used for vehicle maintenance; classroom training of reservists; and storage of equipment such as boots, clothing, tents, medical supplies, oil and lubricants and other materials used to support troops in the field.

3.0 ALTERNATIVES TO THE PROPOSED ACTION

A key principle of NEPA is that agencies are to give full consideration to all reasonable alternatives to a proposed action. Considering alternatives helps to avoid unnecessary impacts and allows analysis of reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be affordable, capable of implementation, and satisfactory with respect to meeting the purpose of and need for the action. The following discussion identifies alternatives considered by the Army and identifies whether they are feasible and, hence, subject to detailed evaluation in this EA.

3.1 PREFERRED ALTERNATIVE: TRADITIONAL ARMY DISPOSAL AND REUSE

Under the Traditional Army Disposal and Reuse Alternative, the Army would make a below fair market value EDC of the entire USARC parcel to the Town of Niagara for reuse. In its approved reuse plan (2008) supplemented by its December 2011 EDC application, the Town of Niagara LRA recommended a mix of commercial and industrial uses for the property as summarized below. The EDC application, which contains the reuse plan, is included in Appendix A of this EA.

- Building 4 (the hangar on the property) would be marketed to aviation and aerospace firms as a potential location for aircraft modifications, renovations, research and testing, overhauls and storage of air cargo. Buildings 4N and 4S (both attached to the hangar) would be included in solicitations of interest to provide space for offices, classroom training, engineering, computer operations, locker rooms, and storage.

- The remainder of the site would be utilized on a building-by-building basis for a mix of commercial and industrial uses that are permitted under the Town's zoning ordinance, including users such as metal fabricators, maintenance business, professional service firms, training providers, storage operations, motor vehicle service stations or aviation support type business such as food caterers, a commissary, avionics shop or other maintenance operations.

In order for the USARC site to be used in an effective manner several capital improvements would be needed. These would include demolishing five minor structures totaling 9,900 SF (Building 19 – 1,600 SF; Building 20 – 2,550 SF; Building 23 – 2,000 SF; Building 25 – 1,750 SF; and Building 26 – 2,000 SF); refurbishing interior building spaces of the remaining buildings, including making them Americans with Disabilities Act (ADA) compliant; installing utility meters for individual buildings on site; replacing the hangar doors and roof on Building 4; repaving the aircraft apron on the east side of Building 4; installing fencing between the site and the airfield; repaving vehicular areas on the site; restriping parking areas; and installing signage for the facility.

With the demolition of the five smaller buildings, the total amount of leasable space would be 146,360 SF. Based on zoning; proximity to the Niagara Falls International Airport; the age, quality, condition, and configuration of the space to be leased; as well as competition in the local real estate market, the LRA expects demand for the property to be modest and estimates that reuse of the USARC site would generate approximately 149 to 251 jobs (Town of Niagara LRA, 2011).

Although, these are the current plans, the LRA would remain flexible to the dictates of the market to take advantage of any opportunities to create new jobs. This may include demolition of additional buildings and construction of new build-to-suit space for tenants or prospective tenants. Long term, the site may also include a hotel (CHA, 2011). However, the development of a hotel on the site is at this

time only conceptual, for it is not mentioned in the Town of Niagara LRA's EDC application and it is not accounted for in their economic analysis for redevelopment of the site (Town of Niagara LRA, 2011). Since development of a hotel on the site is only conceptual at this time, it is not analyzed as part of this alternative; however, it is analyzed as a potential cumulative effect in the *Cumulative Effects Summary* section of this EA.

3.2 CARETAKER STATUS ALTERNATIVE

The Army secured the USARC and AMSA #76 after the military mission ended on September 15, 2011 to ensure public safety and the security of remaining government property and to complete any required environmental remediation actions. From the time of operational closure until conveyance of the property, the Army would provide sufficient maintenance to preserve and protect the site for reuse in an economical manner that facilitates redevelopment. Because the USARC was not transferred by September 15, 2011, the Army reduced maintenance levels to the minimum level for surplus government property as specified in 41 CFR 101-47.402, 41 CFR 101-47-4913, and Army Regulation 420-70 (Buildings and Structures).

3.3 NO ACTION ALTERNATIVE

Under the No Action alternative, the Army would continue operations at the USARC at levels similar to those that occurred prior to the BRAC Commission's recommendations for closure becoming final. Implementation of the No Action alternative is not possible due to the BRAC Commission's recommendation to close the USARC and AMSA #76 having the force of law and the fact that the property is currently in caretaker status. However, inclusion of the No Action alternative is prescribed by the CEQ regulations implementing NEPA, and serves as a benchmark against which the environmental impacts of the action alternatives may be evaluated. Therefore, the No Action alternative is evaluated in the EA.

3.4 ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER ANALYSIS

3.4.1 Early Transfer and Reuse Before Cleanup is Completed

Under this alternative, the Army would take advantage of various property transfer and disposal methods that allow the reuse of contaminated property to occur before all remedial actions have been completed. One method is to transfer the property to a new owner who agrees to perform, or to allow the Army to perform, all remedial actions required under applicable Federal and state requirements. This alternative would require concurrence of the appropriate environmental agency and the governor of the affected state. The property must be suitable for the new owner's intended use, and the intended use must be consistent with protection of human health and the environment.

The Environmental Condition of Property (ECP) Report for the USARC property (CH2MHILL, 2007) initially classified the Property as an ECP Category 7 (an area or parcel of real property that is unevaluated or requires additional evaluation) due to reports of a former landfill on the Property, published reports on the Nike missile program indicating that there is the potential for environmental effects related to Nike missile operations and maintenance, and an outstanding recommendation from a 1994 Preliminary Assessment (PA) to perform sediment sampling in Cayuga Creek to evaluate discharges from floor drains into the storm sewer from Building 4 prior to oil water separators (OWS) being installed. A Supplemental Phase 1 Assessment concluded that "no definitive evidence was obtained that confirms the presence of a landfill on the Property." (CH2MHILL, 2009). Though no evidence of a landfill was found, the Supplemental Phase 1 Assessment continued to classify the Property as an ECP Category 7 primarily due to a polychlorinated biphenyl (PCB) investigation going on at that time (CH2MHILL. 2009).

In 2008, a liquid later determined to contain PCBs was observed flowing out of the 24-inch storm water pipe along the southeastern portion of property into a drainage swale off-site along Porter Road. In 2008 and 2009, an investigation to establish the spill boundaries and delineate the contaminated area was conducted. Sampling data indicated that PCB contamination extended beyond the sampling area and that concentrations were more than triple the regulatory threshold (PARS, 2009). In 2009, a remedial action in the form of a soil excavation occurred and 134 tons of PCB contaminated soil was removed in the off-site drainage swale. Post-excavation soils samples were below the maximum contamination level of 1 milligram per kilogram (mg/kg) established by the New York State Department of Environmental Conservation (NYSDEC) (PARS, 2009). In 2009, a Site Inspection occurred to investigate the origin of PCBs on the site. During the Site Inspection additional contaminants were found in soil and groundwater samples taken in the southeast portion of the property that were in concentrations above New York restricted commercial soil cleanup objectives and New York Class GA Groundwater Criteria (all fresh groundwater in NY is classified as GA, and its defined best use is as a source of potable water) (PARS, 2011). As a result, additional soil and groundwater investigations were conducted in the Remedial Investigation (RI), an interim remedial action (IRA) was performed, and a Human Health Risk Assessment (HHRA) and Feasibility Study were conducted (PARS, 2012). See Appendix C for the *Final – Remedial Investigation/Interim Remedial Action Report and Human Health Risk Assessment*.

The IRA consisted of removal of approximately 40 tons of contaminated soil and approximately 2,000 gallons of contaminated groundwater from the excavation (PARS, 2012). Also, an approximate 8-foot long section of 6-inch diameter cast iron fire protection main was removed and the open ends of the pipe were fitted with a Fernco and polyvinyl chloride (PVC) cap prior to backfilling. The HRRA was conducted to evaluate the potential risks to human health from exposure to volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and PCBs in subsurface soils and groundwater. The HRRA concluded that the only potential carcinogenic risk on the site would be to construction workers from exposure to groundwater during subsurface activities (e.g. site upgrades, new construction etc.), and that the risk was only slightly above the U.S. Environmental Protection Agency (U.S. EPA) acceptable exposure risk range. As an adequate remedy to reduce the risk or exposure to groundwater for construction workers during construction, the HRRA recommended that a land use restriction, in the form of a Site Management Plan, be developed based on the planned redevelopment and use of the site and implemented by the future owner of the Property. The Army will document their proposed plan for a remedial action in the form of a land use restriction in a "Proposed Plan." The "Proposed Plan" will be released for public review in the near future. Any comments received will be documented in the Decision Document.

Regarding potential impacts from the maintenance of Nike missiles in Building 4 and outstanding sediment sampling in Cayuga Creek; the report cited in the ECP indicating "disposal practices…could have included storage in drums as well as "unofficial" disposal to the ground and subsurface" pertained to Nike missile battery sites and not Nike maintenance facilities like the USARC site (Law Engineering Testing Company, 1986). There have been no reports of stressed vegetation at any of the outfalls in Cayuga Creek, nor has there been any evidence of industrial discharge leaving the property via the storm system associated with Building 4 that would indicate any contamination occurred as a result of maintenance operations in Building 4. Additionally, during a 2011 RI the NYSDEC informed the Army that sediment sampling at Outfalls 1, 2 and 3 in Cayuga Creek was not required due to accessibility issues and outfall's position below the creek's water line (PARS, 2012).

Any previous spills associated with activities on the Property have been remediated and are considered complete. Therefore, no further site investigations are warranted for this Property, and land use restrictions would be included in the property deed for transfer, providing adequate protection for

construction workers from contaminated groundwater. Therefore, the Property will be classified as an ECP Category 4 (an area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred an all remedial actions necessary to protect human health and the environment have been taken) at the time of property transfer. Since no further remediation actions would be needed this alternative is not carried forward for further analysis.

3.4.2 Other Reuse Alternatives

The LRA screened this Federal Government surplus property by soliciting notices of interest from state and local governments, representatives of the homeless, and other interested parties, as required by the Federal Property Administrative Services Act of 1949, the Base Closure Community Redevelopment and Homeless Assistance Act of 1994, and the Redevelopment and Homeless Assistance Act of 1994. The LRA received two notices of interest to consider.

- The Niagara County Community College initially expressed interest in the property to the U.S. Department of Education in late summer of 2006 (Town of Niagara LRA, 2008). Though discussions took place between the LRA and the Niagara County Community College, after considering the size and nature of the facility, the Community College ultimately decided that the installation was not suited for its education programs and in September of 2006 confirmed that they no longer had interest in the property (Town of Niagara LRA, 2008).
- Niagara Falls Redevelopment, LLC (NFR), a private development corporation, expressed interest in reusing the property for activities such as air cargo, basing of general aviation aircraft, training, catering services etc. However, while the NFR had specific uses and users in mind for the property, they considered such information proprietary and did not share it with the LRA. Without this information, the LRA could not determine the eligibility and feasibility of NFR's proposal, the benefit to the community, or what repairs and improvements to the property would be needed to transition the property. Therefore, the LRA did not further consider NFR's expressed interest in the property as a viable alternative.

No notices of interest were received from homeless providers.

In addition to alternative concepts from outside parties, the LRA also considered three other internally developed alternative concepts for the property as described below (Town of Niagara LRA, 2008):

- *Conversion to Air Cargo Transportation Center*. While there is the potential for air cargo operations to grow at the Niagara Falls International Airport, air cargo volume is expected to remain fairly level over the near term future because of the sluggish U.S. economy, competition from other modes of traffic and high oil prices. Existing air cargo activity in Western New York is modest in comparison to many other areas and considerable marketing would have to be done to entice airfreight forwarders to consider a Niagara Falls location since the air cargo industry is very reticent change and investments in other airports have already been made and contracts negotiated (Town of Niagara LRA, 2008). In addition to the limited air cargo activity in the area, modern air cargo facilities are highly specialized buildings that utilize state-of-the-art technology and mechanical systems. Given the age and configuration of the existing facilities, without demolition of Buildings 4N and 4S (both attached to Building 4 – the hangar) and substantial reconstruction of the hangar to add truck bays, and aircraft loading and unloading bays, the property would have only limited value as a cargo terminal. The size and configuration of the remaining buildings on the property also do not lend themselves well to air cargo activities. Additionally, a recent agreement between the Niagara Frontier Transportation and Niagara Cargo Port will see Niagara Cargo build and market new cargo facilities at the Niagara Falls International Airport. If these new modern facilities are built, the value of the

USARC hangar as an air cargo facility would likely be diminished. Due to the modest air cargo activity in the area, the planned construction of new cargo facilities at the Niagara Falls International Airport, and the existing configuration of the hangar on the property, this alternative was dismissed by the LRA.

- *Conversion for aircraft modification, renovation, testing, overhaul and storage*. Under this alternative, the facilities would be marketed to private sector firms engaged in aeronautic research, aircraft renovation, and aircraft maintenance and storage. While there are many firms involved in specialized aviation and aerospace activities throughout the U.S. and Canada, finding a match for a firm's business needs with the location and facilities at the USARC would not be easy. It would also require significant investment to repair and improve the facilities to attract these types of firms. Additionally, the buildings other than the hangar are not necessarily suitable for activities complementary and ancillary to aviation-related businesses such as research and design, engineering, and testing because of their design and separation from one another. For these reasons, this alternative was dismissed as a stand-alone alternative; however, aspects of this alternative were considered and made a part of the Preferred Alternative.
- *Conversion of site to Mixed Commercial and Industrial Uses*. Under this alternative the property would be marketed for use by a mix of commercial and industrial uses such as professional administrative offices, service industries, and light industry. However, demand for older buildings, particularly for what would be considered Class C office space is very soft in the local market place and tenants are seeking higher quality space. Because demand for older office space is soft and the expense involved in remodeling and renovating various structures to meet potential tenant standards might exceed revenues to be generated through leases of the property, this alternative was dismissed as a stand-alone alternative by the LRA.; however, aspects of it were considered and made a part of the Preferred Alternative.

Since the other reuse alternatives were not selected by the LRA as their official Reuse Plan, they are not carried forward for further analysis in this EA.

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4.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

4.1 ENVIRONMENTAL RESOURCES ELIMINATED FROM FURTHER CONSIDERATION

Section 651.14 of the Army NEPA Regulations (32 CFR Part 651) states the NEPA analysis should reduce or eliminate discussion of minor issues to help focus analyses. This approach minimizes unnecessary analysis and discussion during the NEPA process and in analysis documents. The CEQ Regulations for implementing NEPA (40 CFR Parts 1500 - 1508) emphasize the use of the scoping process (*see e.g.*, 40 CFR § 1500.4(g)), not only to identify significant environmental issues deserving of study, but also to deemphasize insignificant issues, narrowing the scope of the environmental assessment/environmental impact statement process. The following impact topics are not carried forward for further analysis in this EA because either they are not present on or near the USARC property, they are present but would not be impacted by any of the alternatives, or the proposed action would have little or no measurable environmental affect on these resources.

4.1.1 Environmental resources that are not present

None of the Alternatives would have direct, indirect or cumulative impacts on these environmental resources, because these resources do not exist on or near the Property:

Wetlands – Approximately 95 percent of the Niagara Falls USARC property is covered by impervious surfaces and according to the U.S. Fish and Wildlife's National Wetlands Inventory online-mapper there are no wetlands located on the site. The nearest wetlands are a palustrine wetland located across Porter Road approximately 105 feet to the south of the USARC, a palustrine wetland located approximately 260 feet to the north of the USARC, and a palustrine wetland located approximately 260 feet northwest of the USARC associated with Cayuga Creek.

Coastal Barriers and Zones –The USARC property is not included in the coastal zone management plan, nor is it in the coastal zone of New York (NYSDOS, 2004).

National and State Parks – There are no national or state parks adjacent to the USARC property. The nearest National Historic Site is the Johann Williams Farm located approximately 1.2 miles to the southeast of the USARC property. Reservoir State Park, approximately 4 miles to the northwest is the nearest state park.

Wilderness Areas and Wildlife Refuges – There are no National Wilderness areas in Niagara County or the surrounding areas. The Iroquois National Wildlife Refuge is located approximately 35 miles to the west of the USARC property.

National Wild and Scenic Rivers – There are no rivers in western New York that are designated as National Wild and Scenic Rivers.

Federal- and State-Listed Threatened, Endangered, or Candidate Species –A list of federally-listed species for Niagara County was obtained from the USFWS website as well as an official response letter (see Appendix F). According to the USFWS, the bald eagle (delisted, but still receives protection under the Bald and Golden Eagle Protection Act) and the Eastern prairie fringed orchid (*Platanthera leucophaea*) (threatened) are listed species known or likely to occur in Niagara County, NY. The USARC property is located in an urban area adjacent to the Niagara Falls International Airport and impervious surfaces cover approximately 95 percent of the property with grass and gravel areas comprising the rest of

the site. With no trees, the bald eagle would only be transient to the site. The Eastern prairie fringed orchid is noted as Historic on the USFWS Niagara County list. According to the Determination of Threatened Status for Eastern and Western Prairie Fringed Orchids (50 CFR Part 17) and the USFWS' species profile (USFWS, 2007), the Eastern prairie fringed orchid was historically found in New York, but is currently no longer found in the state, and no critical habitat has been designated for the species.

Critical Habitat – The property is in an urban setting, impervious surfaces cover approximately 95 percent of the site providing no natural habitat, and the U.S. Fish and Wildlife Service has not designated critical habitat on or in the vicinity of the property (Appendix F).

Prime and Unique Farmlands – The property is not prime or unique farmland as defined by 7 CFR 658.2(a), because the definition of farmland does not include land already in or committed to urban development.

Cultural, Historic, and Archeological Resources – the Army conducted a Phase 1A archaeological survey of the property in 2007 and found the project site to contain low potential for prehistoric or historical archaeological resources (PARS and LBG, 2007). In 2011, the Army conducted a historic resource inventory of the buildings on the project site and determined that there are no historic properties present on the project site. By letter dated June 23, 2011 the Army conveyed its determination that the proposed action would have no adverse effect on any cultural, historic, or archeological resources to the State Historic Preservation Officer (SHPO). The SHPO concurred with this determination on October 27, 2011 (Appendix F).

4.1.2 Environmental resources that are present, but not impacted

None of the Alternatives would have direct, indirect or cumulative impacts on these environmental resources, because no demolition, renovation, construction or landscaping activities are planned that would alter or affect these resources:

Vegetation – The USARC property is approximately 95 percent impervious surface with grass and gravel comprising the rest of the site. Therefore no vegetation would be impacted by the proposed action.

Wildlife – The USARC property is approximately 95 percent impervious area and located in an urban environment providing no natural habitat on the property. Species habituated to urban settings such as some birds (sparrows, starlings, robins etc) and some mammals (mice, rabbits etc) likely visit the site, but would not be impacted by the proposed action.

4.1.3 Environmental resources are present, but the proposed action would have little or no measureable effect on these resources

Aesthetics and Visual resources –While demolition of five structures on the site totaling 9,000 SF would occur under the proposed action, the overall aesthetics and visual resources of the area would not be impacted because the USARC property is located within an industrial setting adjacent to the Niagara Falls International Airport, and the site would still be dominated by impervious surfaces and a number of other large buildings on the site. If additional older buildings are replaced in the future with new modern buildings the overall aesthetics and visual resources of the site would be improved.

Air – Niagara County is in basic non-attainment for ozone. Ozone is classified as a secondary pollutant because it is not directly emitted by a source. Therefore, when determining potential impacts the emissions for the ozone precursor pollutants nitrogen oxides (NO_x) and volatile organic compounds (VOC) are taken into consideration. Under the Preferred Alternative, impacts to air quality would occur from the addition of a maximum 215 commuters. Using the EPA's *MOBILE6* modeling program for the

2013 Niagara County Fleet, emission rates for ozone precursors and greenhouse gases (GHG) (i.e. carbon dioxide [CO_2]) for cars would be:

NO_x = 0.496 grams/mile (g/mi)

VOC = 0.854 g/mi

CO_2 = 368.1 g/mi

For light duty gas trucks, including Sport Utility Vehicles (SUVs), emission rates would be:

NO_x = 0.646 g/mi

VOC = 0.952 g/mi

CO_2 = 478.4 g/mi

This analysis uses the national fleet average and assumes that 40 percent of commuters would drive a car while 60 percent would drive a pick-up truck or SUV. Using the assumption of two trips a day at 20 miles per trip (40 miles round trip) and an additional 10 miles a day to go off site to eat lunch (total of 50 miles traveled per day) for 240 days per year, the estimated increase in annual emissions as a result of the Preferred Alternative would be:

NO_x = 1.667 tons per year (TPY)

VOC = 2.596 TPY

CO_2 = 1,235.08 TPY

Additionally, temporary emissions would be expected from the construction and renovations associated with the Preferred Alternative, however these emissions would be negligible and would not result in an adverse impact on air quality in the region.

The estimated increase shows that the emissions associated with renovation, demolition, and operation of facilities under the Preferred Alternative, when compared to the *de minimis* values for this basic ozone non-attainment area, fall well below the *de minimis* levels of 100 TPY for NO_x and 50 TPY for VOCs, even under the initial conservative assumptions that were employed. As a result, the Proposed Action is not subject to the General Conformity Rule requirements. Appendix D contains a draft Record of Non-Applicability.

Additionally, the Preferred Alternative would not produce a significant amount of GHG emissions. This alternative would be expected to cause direct emissions of 988.07 metric tons of CO_2 annually, which is below the recommended screening level for including a quantitative and qualitative assessment of GHG emissions of 25,000 metric tons of CO_2 emissions annually.

This action would not represent a net incremental addition to the global climate change phenomenon.

Noise **–**The USARC property is located in an industrial setting zoned for light industrial use and reuse of the property would be consistent with that zoning and comply with the town's noise ordinance. Sources of noise on the property include commuter traffic Heating, Ventilation, and Air Conditioning (HVAC) and mechanical equipment. Under the No Action alternative noise sources and level would not change. Under the Caretaker Alternative, noise levels would decrease without any daily commuter traffic or use of the property. Under the Preferred Alternative, reuse of the property would not likely change the types of

noise sources, which would still be daily commuter traffic, HVAC, and the use of mechanical equipment; however, with a greater daily use of the site, there would be a slight, but not likely measurable, increase in noise on the site. Demolition activities to remove several small old and outdated buildings as well as building renovations and possibly some construction activities would create temporary noise impacts. If additional buildings are demolished in the future and replaced with new buildings, these demolition and construction activities would also result in temporary noise impacts. Contractors, however, would need to adhere to noise regulations for construction equipment and work hours, ensuring no significant impact to surrounding areas. Additionally, the property is immediately adjacent to the Niagara Falls International Airport which is the dominant source of noise in the immediate vicinity. The nearest sensitive receptor is a residence located approximately 200 feet away south of the USARC property across Porter Road.

Public Services – None of the Alternatives would have a significant direct, indirect, or cumulative impact on these public services, because the level of service is currently below the providers' capacity to provide service and any changes in demand would be negligible:

- **Niagara Falls Municipal Police Department, 1925 Main Street, Niagara Falls, New York, 14305:** Currently, the police department consists of 155 sworn officers and 30 civilian staff. The addition of approximately 251 workers at the USARC site would have no significant effect on the ability of the police department to provide adequate service to the City of Niagara Falls (Chella, 2011).
- **Niagara Falls Fire Department, 3115 Walnut Avenue, Niagara Falls, New York, 14301:** Currently, the fire department consists of 135 members, with five fire stations located throughout Niagara Falls. The Preferred Alternative would not affect the fire departments ability to provide service to City of Niagara Falls (Niagara Falls Fire Department, 2011).
- **Niagara Falls Memorial Medical Center, 621 Tenth Street, Niagara Falls, New York, 14304:** The exact number of rooms and doctors present at the Niagara Falls Memorial Medical Center is unknown. However, the center is the main provider of healthcare in the greater Niagara area and adding approximately 251 jobs under the Preferred Alternative would have no significant effect on the ability of the medical center to continue to provide sufficient medial access to the Niagara community (Niagara Falls Memorial Medical Center, 2011).

4.2 ENVIRONMENTAL RESOURCES CARRIED FORWARD FOR ANALYSIS

The following sections describe the current environmental conditions of the areas that would be affected should the Proposed Action be implemented. They also analyze the potential effects arising from implementing the Proposed Action. The description of environmental conditions represents the baseline conditions, or the "as is" or "before the action" conditions at the installation and is defined as the level of operations and environmental conditions as of 2011. The baseline facilitates subsequent identification of changes in conditions that would result from the realignment. The environmental consequences portion represents the culmination of scientific and analytic analysis of potential effects arising from implementing the Proposed Action. Direct, indirect, and cumulative effects of the Proposed Action are also addressed.

For each environmental resource area the baseline conditions are presented first followed immediately thereafter by evaluation of the potential impacts of the two action and the No Action alternatives. Where appropriate and definable, a specific Region of Influence (ROI) is indicated for a given resource area. Environmental effects are characterized as either direct or indirect. Direct effects are those caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Effects are also characterized as short-

term or long-term in duration, with short-term effects being defined as occurring during construction phases, and long-term effects occurring for longer periods of time.

4.3 LAND USE

4.3.1 Affected Environment

This section describes existing land use conditions on and surrounding the Niagara Falls USARC. It considers natural land uses and land uses that reflect human modification. Natural land use classifications include wildlife areas, forests, and other open or undeveloped areas. Human land uses include residential, commercial, industrial, utilities, agricultural, recreational, and other developed uses. Management plans, policies, ordinances, and regulations determine the types of uses that are allowable, or protect specially designated or environmentally sensitive uses. The following sections discuss the regional geographic setting and location, site land use, surrounding land use, and current and future development.

4.3.1.1 Regional Geographic Setting and Location

The Niagara Falls USARC is located within the Town of Niagara, New York in Niagara County in northwestern New York (Figure 1-1). The Town of Niagara is a 16.8-square-mile community located approximately 6 miles east of the City of Niagara Falls, New York and 20 miles north of the City of Buffalo, New York.

4.3.1.2 Site Land Use

In 1955, the U.S. Army Reserve acquired 21.88 acres of property that was part of the Naval Air Reserve Station and put it into use as a USARC. Currently the property consists of 14 structures including ancillary structures such as a guardhouse, hazardous material sheds and an electrical building, and three parking/equipment storage areas. The site functions as a maintenance and training facility and equipment storage center. Prior to closure, the site functioned as a maintenance and training facility and equipment storage center. The USARC units that trained at the facility are a part of the 277th Quartermasters Corps, the 865th Combat Support Hospital and the 1982nd Forward Surgical Unit and the AMSA #76. There were 35 full-time employees and 412 reservists that reported on weekends.

4.3.1.3 Surrounding Land Use

The area surrounding the USARC is zoned as light industrial. The nearest residence is approximately 200 feet to the southeast of the property on the opposite side of Porter Road. The nearest residential community is approximately 1,000 feet to the south of the USARC. Immediately to the south of the property on the other side of Porter Road is woodland. To the west of the property is Cayuga Creek with commercial development beyond that. To the north and east, the property is bordered by the Niagara Falls International Airport (CH2MHILL, 2007).

4.3.1.4 Current and Future Development in the Region of Influence

Currently there are no projects or developments occurring in the immediate vicinity of the site. The vacant land located directly south of the site, is listed for sale as commercial property, however, the property has not yet been sold and remains vacant. Recent developments have occurred along Military Road approximately 1.5 miles southeast of the site including the construction of a Wal-Mart, Chili's Restaurant and Olive Garden Restaurant (Bragg, 2011).

4.3.2 Environmental Consequences

The intensity of impacts to land use was determined using the following thresholds:

No Effect – No impacts to surrounding land use from the proposed project.

No Significant Effect – The impact to land use would be measurable or perceptible, but would be limited to a relatively small change in land use that is still consistent with the surrounding land uses and would conform with zoning and community land use plans and policies.

Significant Effect – The impact to land use would be substantial. Land uses are expected to substantially change in the short- and long-term. The action would not be consistent with the surrounding land use and would not conform with zoning and community land use plans and policies.

4.3.2.1 Preferred Alternative: Traditional Disposal and Reuse

Under the Traditional Disposal and Reuse Alternative, the Niagara Falls USARC buildings and real estate would be transferred to the Town of Niagara. Building 4 would be marketed for use as a location for aircraft modifications, renovations, research and testing, overhauls and storage of air cargo. The attached Buildings 4N and 4S would be marketed for use as offices, classrooms, storage and for engineering and computer operations. The remainder of the site would be marketed for use on a building-by-building basis for a mixture of commercial and industrial operations permitted under the Town's zoning ordinance. Since the future use of the site as industrial/commercial space is similar to surrounding land uses and consistent with the current and allowable land use of the site, no significant effects are expected. Investigations into the contamination on the southeast portion of the Property are complete and IRA removed approximately 40 tons of contaminated soils. However, a HRRA found that construction workers conducting subsurface activities (e.g. site upgrades, demolition, new construction etc.) would be at risk from exposure to impacted groundwater. Due to this risk the Army would include land use restrictions in the property transfer documents to mitigate potential exposure of construction workers to impacted groundwater. While these restrictions would likely have short-term impacts on how construction activities occur, they would not be significant, and they would not preclude any long-term planned reuse of the site.

Overall, impacts to land use from closure, disposal, and reuse would be both short- and long-term, and not significant as land use of the Property would change from a military site to industrial and commercial facilities.

4.3.2.2 Caretaker Status Alternative

Under the Caretaker Status Alternative, land use would change from an active military reserve center to a facility under caretaker status. Maintenance activities to preserve and protect the facilities would take place. These activities would not conflict with applicable ordinances, existing land use plans, or surrounding land use and would result in no effect on land use.

4.3.2.3 No Action Alternative

Under the No Action Alternative, the Army would continue use of the Niagara Falls USARC at pre-closure levels, and no land use changes or impacts would occur, resulting in no effect to land use.

4.4 GEOLOGY AND SOILS

4.4.1 Affected Environment

This section describes the existing geology and soil conditions in the area of the Niagara Falls USARC. Geologic and topographic conditions are discussed first, followed by soils.

4.4.1.1 Geologic and Topographic Conditions

The USARC is located in the Erie-Ontario Lowlands Physiographic Province. The region is characterized by relatively flat topography and dissected by the east-west trending Niagara Escarpment, which is located about five miles north of the USARC. The Niagara Falls area is underlain by glacial sediment consisting mainly of till and lacustrine silt and clay, approximately 5-80 feet thick. The glacial deposits overlay weathered dolomite and limestone of the Lockport Group (Niagaran Series of Middle Silurian age). The Lockport Group is underlain by approximately 100 feet of shale and limestone (Clinton Group), which is underlain by about 110 feet of sandstone and shale (Medina Group) (PARS, 2011).

Based on the Tonawanda West United States Geologic Service (USGS) topographic quadrangle, the elevation of the USARC site is approximately 575 feet above mean sea level. The topography at the site is relatively flat with a slight gradient to the west/southwest towards Cayuga Creek.

4.4.1.2 Soils

While approximately 95 percent of the USARC site is covered by impervious surfaces such as concrete, asphalt, and building footprints (Engineering Technology Associates, Inc. 1994) the underlying soils at the site consist of two types: Lakemont silty clay loam (85 percent of the area on site) and the Fonda mucky silt loam (15 percent of the area on site) (Engineering Technology Associates, Inc. 1994). Both soil types are described as fine-to moderately fine-textured, of flow permeability, and a prolonged high water table at 0 to 0.5 feet below ground surface (bgs). Due to the high clay content, these soils are subject to ponding. In addition to native soils, a site inspection conducted in the southeast portion of the site in November 2010 also encountered non-cohesive fill material from 0 to 4 feet bgs, and in some locations it extended from 8 to 15 feet bgs. The fill material encountered comprised a course-grained mixture of sand and gravel with varying amounts of fine-grained silt and clay. Varying amounts of brick, slag, concrete, rebar, asphalt and wood were observed within the matrix as well (PARS, 2011). It is also possible that fill material exists in other portions of the site as well, as it may have been used to fill in low lying areas along the banks of Cayuga Creek (CH2MHILL, 2009).

4.4.2 Environmental Consequences

To assess the intensity of impacts to geology, topography, and soils in the area of the project sites, the following impact thresholds were used.

> ***No Effect*** **-** Geology, topography, or soils would not be impacted or the impact to these resources would be below or at the lower levels of detection. Any impacts would be slight.
>
> ***No Significant Effect*** **-** Impacts to geology, topography, or soils would be detectable. Impacts to undisturbed areas would be proportionally small to the site.
>
> ***Significant*** **-** Impacts on geology, topography, or soils would be readily apparent and result in a change to the character of the resource over a relatively wide area. Mitigation measures would be necessary to offset adverse impacts and may or may not be successful.

4.4.2.1 Preferred Alternative: Traditional Disposal and Reuse

Geologic and Topographic Conditions – No effects to geologic or topographic conditions would be expected. The site is relatively flat, previously disturbed and is approximately 95 percent covered by impervious surfaces. Demolition of buildings, replacement of the concrete apron by Building 4, and any potential future construction on the site would not require large amounts of leveling, grading, excavation, and compaction of soils. Alterations of the general topographic character of the site would not occur.

Soils – No significant adverse impacts to soils would be expected, though impacts would be long-term. Soils found within the footprints of any buildings to be demolished, the concrete apron to be replaced, and any future buildings to be constructed would likely have been previously affected by activities associated with construction of the existing facilities on the site.

4.4.2.2 Caretaker Status Alternative

Under the Caretaker Status Alternative no demolition of buildings, replacement of the concrete apron, or new construction would occur, thus there would be no changes or effect to the geologic or topographic character of the site.

4.4.2.3 No Action Alternative

Under the No Action Alternative, no ground disturbing activities would take place as a result of normal operations; therefore there would be no effect to the geology or topography of the site.

4.5 WATER RESOURCES

4.5.1 Affected Environment

The following sections provide a summary of the general condition and character of water resources found on the USARC property and on adjacent areas within the Town of Niagara, NY.

4.5.1.1 Surface Waters

There are no surface waters within the property boundary of the USARC site. Cayuga Creek, a tributary of the Niagara River, flows south just west of the property and receives storm water from the site. Ultimately Cayuga Creek drains into the Niagara River approximately 5 miles upstream of the American and Horse Shoe Falls as part of the Lake Erie River Basin.

4.5.1.2 Hydrogeology/Groundwater

The aquifers of the Lake Erie-Niagara River Basin are primarily carbonate-rock aquifers, characteristic of the Central Lowland Province of western New York. Glacial deposits act as a confining unit for the weathered bedrock aquifers below. Water is stored and moves mainly in secondary fractures. The aquifers typically produce only small to moderate amounts of water to wells. Minerals in solution are calcite, dolomite, gypsum, and halite, resulting in hard and salty groundwater. Much of the groundwater contains sulfate and chloride ions in excess of 250 milligrams per liter, so quality of water is poor and deteriorates further with depth. Groundwater must be treated for most uses. The soils on the site are subject to ponding and the water table in the vicinity of the site is typically at a depth of less than four feet bgs (CH2MHILL, 2007). During a site inspection conducted in the southeast portion of the site in November 2010, ground water was encountered at depths ranging from two to six feet bgs in soil probes and exploratory excavations. It was concluded that the perched groundwater conditions at the site were likely due to coarse-grained fill material overlying less permeable native fine-grained clay (PARS, 2011).

4.5.1.3 Floodplains

A review of the Federal Emergency Management Agency Flood Insurance Rate Map dated September 17, 2010 indicates that the extreme northern portion of the property, including a portion of Building 4N lies within the 100-year floodplain (Figure 4-1).

Figure 4-1. 100-Year Floodplain in Vicinity of Niagara Falls USARC

4.5.2 Environmental Consequences

To assess the intensity of impacts to water resources in the area of the project sites, the following impact thresholds were used:

> ***No Effect*** – Current water quality and hydrologic conditions would not be altered or conditions do not exist for impacts to occur.
>
> ***No Significant Effect*** – Impacts (chemical, physical, or biological effects) would be either not detectable, or detectable, but at or below water quality standards or criteria. Alterations in water quality and hydrologic conditions relative to historical baseline may occur, however, only on a localized and short-term basis.
>
> ***Significant Effect*** – Impacts (chemical, physical, or biological effects) would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; and/or chemical, physical, or biological water quality standards or criteria would be locally, slightly and singularly, exceeded on either a short-term or prolonged basis.

4.5.2.1 Preferred Alternative: Traditional Disposal and Reuse

Surface Waters - Building renovations, demolition, and potentially some new construction could occur under the reuse of the property. Employing best management practices during demolition and construction of structures would prevent potential impacts to Cayuga Creek from runoff. Currently, approximately 95 percent of the site is covered by impervious surfaces and no new impervious surfaces would occur under the Preferred Alternative. It is anticipated that the new property owner would be required to hold a State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity and implement a storm water pollution prevention plan (SWPPP) for the property. By implementing and following a SWPPP and complying with a SPDES permit, there would be long-term, no significant impacts to nearby surface waters under the Preferred Alternative.

Hydrology/Groundwater – Long-term, no significant impacts to hydrology or groundwater would be expected under the Preferred Alternative. Demolition and any new construction, as well as operation of facilities would adhere to existing applicable groundwater protection protocols as required under the Safe Drinking Water Act. Approximately 95 percent of the site is covered by impervious surfaces and complying with a SPDES permit and implementing a SWPPP would help prevent any contaminated storm water from leaving the site and infiltrating the groundwater off-site.

Floodplains –The 100-year flood plain encroaches only slightly (approximately 75 feet) upon the northern boundary of the site. Given the small area that it encroaches upon the Property and the amount of open space on the site to the south of the floodplain, any new construction would likely be able to avoid impacting the floodplain. If construction need to encroach upon the floodplain, then a floodplain development permit from the Town of Niagara would be required. The floodplain also encroaches upon Building 4N, if renovations to the building equals or exceed 50 percent of the market value of the structure before the start of the renovation, then a floodplain development permit would be required from the Town of Niagara. By adhering to the provisions of the floodplain development permit would minimize impacts to the floodplain and result in long-term, no significant impacts.

4.5.2.2 Caretaker Status Alternative

There would be long-term, no significant impact to surface water, groundwater or floodplains under the Caretaker Status Alternative. Operations would no longer occur on the property, reducing the likelihood

of spills or other discharges that could impact Cayuga Creek. While the site would no longer be occupied, the Army would still own the property and would still need to comply with its SPDES permit, preventing adverse impacts to Cayuga Creek. There would be no change to the buildings on the site, so there would be no impact to the 100-year floodplain.

4.5.2.3 No Action Alternative

Under the No Action Alternative pre-closure operations would continue on the property. No rehabilitation of the buildings or new construction is currently planned and there would be no new impervious surfaces created. As a result, there would be no impact to any water resources.

4.6 SOCIOECONOMICS

Socioeconomic analysis considers factors affecting the quality of life and financial well being of the surrounding community where residents live, work, shop, and play. These factors include employment, income, housing, and public services such as fire, police, hospitals, schools, and parks. The ROI is Niagara County, New York.

The Affected Environment and Environmental Consequences sections of the socioeconomics resource area of this EA are presented in limited detail due to the fact that jobs created by the potential reuse would be expected to come from within the ROI and not require people to move into the local area from outside the ROI. Since the Proposed Action would not require people to relocate into the ROI or require people to leave the ROI, housing and public services are not included for full analysis. There would be no change to these socioeconomic resources.

4.6.1 Affected Environment

4.6.1.1 Economics

Table 4-1 compares the general ethnic and economic characteristics of the local community to the state and the nation, based on the most recent U.S. Census data (U.S. Census 2011a, b, and c). According to the Census, the types of occupations for the labor force in the surrounding area include mainly educational services, health care and social assistance, manufacturing, and retail trade. In recent years, several well-known companies including Occidental, Nabisco, Birdseye, and Delphi all closed or downsized their facilities in Niagara County (Niagara County, 2011). However, positive economic development in the tourism sector has become a catalyst in the development of downtown Niagara Falls, and the Seneca Niagara Casino and Hotel is one of Niagara County's largest employers (Niagara County, 2011). The three largest employers in Niagara County are the Niagara Falls ARS, Delphi Harrison Thermal Systems, and the Seneca Niagara Casino and Hotel (Town of Niagara LRA, 2008).

4.6.1.2 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* directs Federal agencies to analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities.

As shown in the Table 4-1, the ROI has a lower percentage of minority populations and a similar percentage of low-income populations when compared to New York State or the U.S. The largest minority population is Black or African American. Niagara County's minority population (11.5 percent) is lower the nation (36.3 percent the state (41.7 percent). Median household income in Niagara County ($42,580) is lower than the national ($50,222) and state ($54,554) averages; however, the percentage of

the population living below the poverty level in the county (13.9 percent) is lower than both the nation (14.3 percent) and the state (14.2 percent).

4.6.1.3 Protection of Children

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* directs Federal agencies to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Table 4-1. Socioeconomic Data for Niagara County, New York State, and the U.S. (2009)

	Niagara County	New York	United States
Population (2010 data)	216,469	19,378,102	308,745,538
Median household income	$42,580.	$54,554	$50,221.
Persons below poverty level*	13.9%	14.2%	14.3%
Unemployment rate	7.7%	8.0%	9.1%
White	88.5%	65.7%	72.4%
Overall % minority population	11.5%	41.7%	36.3%
Black or African American	6.9%	15.9%	12.6%
American Indian & Alaskan Native	1.1%	.6%	0.9%
Hispanic	2.2%	17.6%	16.3%
Asian	.8%	7.3%	4.8%
Native Hawaiian and other Pacific Islander	0.0%	0.0%	0.2%
Other race	0.4%	7.4%	6.2%
Two or more races	2.2%	3.0%	2.9%

Source: U.S. Census 2011a, b, and c

Notes: *This is persons below poverty level for whom poverty status was determined.

The property is fenced and there are no schools or childcare facilities in the vicinity of the site. The nearest residence is located approximately 200 feet southeast of the property on the opposite side of Porter Road. The nearest residential community is approximately 1,000 feet to the south of the USARC site. The USARC property is bordered on three sides by wooded land and commercial development associated with Niagara Falls International Airport (Town of Niagara LRA, 2008). Directly across Porter Road on the south side of the property is another stretch of forested property.

4.6.2 Environmental Consequences

The economic effects of implementing the preferred alternative are estimated using the Economic Impact Forecast System (EIFS) model, a computer-based economic tool that calculates multipliers to estimate the direct and indirect effects resulting from a given action. Based on the input data and calculated multipliers, the model estimates changes in sales volume, income, employment, and population in the ROI, accounting for the direct and indirect effects of the action.

For purposes of this analysis, a change is considered significant if it falls outside the historical range of the ROI's economic variation. To determine the historical range of economic variation, the EIFS model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data for the ROI and calculates fluctuations in sales volume, income, employment, and population patterns. The historical extremes for the ROI become the thresholds of significance (i.e., the RTVs) for social and economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered to be significant. Appendix E discusses this methodology in more detail.

4.6.2.1 Preferred Alternative: Traditional Disposal and Reuse

4.6.2.1.1 Economic Development

Based on EIFS, reuse of the USARC property under the Preferred Alternative would have a slight beneficial socioeconomic impact both in the short-term during construction activities as well as long-term through the creation of jobs. The results of the EIFS analysis are provided in Appendix E. Given that the Preferred Alternative includes flexibility for the LRA to take advantage of any opportunities to create new jobs, additional demolition of buildings and construction of new build-to-suit space for tenants or prospective tenants beyond those analyzed in the EIFS model would increase the beneficial economic impact to the ROI. Should future construction activities be approved, additional beneficial impacts would include the construction dollars spent on materials and construction labor within the ROI as well as any additional long-term positions beyond the 149-251 expected under the current reuse plan. The exact salary of the proposed long-term positions is not known, therefore this analysis assumed the median salary of the new positions would be equivalent to the current median salary of Niagara county, or $42,000 annually. Therefore, the Preferred Alternative would have beneficial impacts from job creation and would not impact the median income of the ROI.

4.6.2.1.2 Environmental Justice

Reuse of the property under the Preferred Alternative would not result in adverse impacts to any demographic group residing or working within the ROI; therefore, there would be no disproportionately high and/or adverse impact on minority populations or low income populations.

4.6.2.1.3 Protection of Children

The Preferred Alternative would not likely pose any adverse or disproportionate health or safety risks to children living in the vicinity of USARC property. There are no schools or childcare facilities in the vicinity of the property and the property would remain fenced and gated to prevent children from entering the property.

4.6.2.2 Caretaker Status Alternative

This alternative would have a small, temporary, adverse socioeconomic impact because while the property is unoccupied it would not be generating any economic input to the local economy. However, given that it was an Army Reserve Center mostly used on the weekend by reservists with only a small full-time workforce during the week, the impact would not be significant. The property would remain

fenced and gated, preventing children from entering the property. Therefore, no adverse impacts would be expected to children.

4.6.2.3 No Action Alternative

No direct or indirect effects would be expected. Under the No Action Alternative, the installation working population and installation expenditures would remain unchanged from pre-closure levels. As a result, economic activity levels and ROI population growth would not change. In addition, there would continue to be no disproportionately high and adverse impacts to minority or low income populations. Thus, the No Action Alternative would not result in any environmental justice impacts. The property would remain fenced and gated, preventing access to the site by children. Therefore, there would be no adverse impacts to children under the No Action Alternative.

4.7 TRANSPORTATION

4.7.1 Affected Environment

This section describes the existing transportation conditions at and surrounding the Niagara Falls USARC. Roadways and traffic are discussed first, followed by site and public transportation.

4.7.1.1 Level of Service Definition

The level of service (LOS) of a signalized intersection is defined in terms of control delay per vehicle (seconds per vehicle). Control delay is the portion of total delay experienced by a motorist that is attributable to the traffic signal. It is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The LOS criteria for signalized intersections, as defined in the Highway Capacity Manual (HCM) (Transportation Research Board, 2000), are provided in Table 4-2.

LOS A describes operations with minimal delays, up to 10 seconds per vehicle, while LOS F describes operations with delays in excess of 80 seconds per vehicle. Under LOS F, excessive delays and longer queues are common as a result of over-saturated conditions (i.e., demand rates exceeding the capacity). Delays experienced at LOS A, B, C, or D (below 55 seconds per vehicle) are generally considered acceptable. LOS E and F represent unacceptable operating conditions.

Table 4-2. Signalized Intersection LOS Criteria

LOS	Control Delay per Vehicle (Seconds Per Vehicle)
A	≤ 10
B	> 10 to 20
C	> 20 to 35
D	> 35 to 55
E	> 55 to 80
F	> 80

Source: Transportation Research Board, 2000.

4.7.1.2 Roadways and Traffic

The Niagara Falls USARC is located adjacent to and north of New York State Route 182 (NY 182 or Porter Road) approximately ½ mile east of the intersection of NY 182 and United States Route 62 (US 62

or Niagara Falls Boulevard) (Figure 4-2). Tuscarora Road approaches NY 182 from the south and intersects NY 182 approximately 1,500 feet west of the USARC. Portions of the Niagara Falls International Airport are located north and east of the USARC. A small creek (Cayuga Creek) separates the USARC from commercial facilities located west of the facility, and a mix of undeveloped parcels, residential and commercial uses occupy land south of the facility. Public vehicle access to USARC is only via NY 182.

Vehicular access to the area of the USARC is via Interstate Routes, New York State Routes and local roads. Interstate 190 and US 62 are the principal routes serving the USARC. Interstate 190 (I-190) extends north-south in the area of the USARC and is located approximately 2.5 miles west of the facility. US 62 is a major four-lane east-west roadway south of the facility. Access from I-190 to the facility is via US 62 (Niagara Falls Boulevard) or NY 182 (Porter Road) which is a two-lane road that provides the main access to the facility. The La Salle Expressway and River Road extend east-west and are located approximately two miles south of the facility. Access to the USARC from La Salle Expressway or River Road is via Williams Road. Williams Road is a north-south four-lane road that intersects at a signalized intersection with US 62 approximately ½ miles east of the facility. Tuscarora Road is a north-south two-lane road that intersects at a signalized intersection with NY 182 west of the facility.

According to the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC), the functional classification of US 62 is principal arterial and Porter Road is minor arterial in the vicinity of the USARC (GBNRTC, 2007). Annual Average Daily Traffic (AADT) volumes are available from GBNRTC for the road network in the City of Niagara Falls. In 2010, AADT volumes along NY 182 were 9,225 vehicles, and in 2009, AADT volumes along US 62 were 17,700 vehicles. In 2010, AADT volumes along Tuscarora Road were 3,000 vehicles, and in 2008, volumes along Williams Road were 12,100 vehicles (GBNRTC, 2011).

According to GBNRTC's 2035 Long Range Transportation Plan Update approved on May 2010, US 62 and NY 182 currently support a satisfactory LOS C or better within the vicinity of the project site.

The US 62 /Williams Road signalized intersection is at the entrance to the NFIA. In 2004 a traffic study was conducted by McFarland-Johnson Inc. to determine the current capacity and LOS for this intersection. The US 62 /Williams Road intersection currently supports an acceptable LOS C (NFTA, 2007).

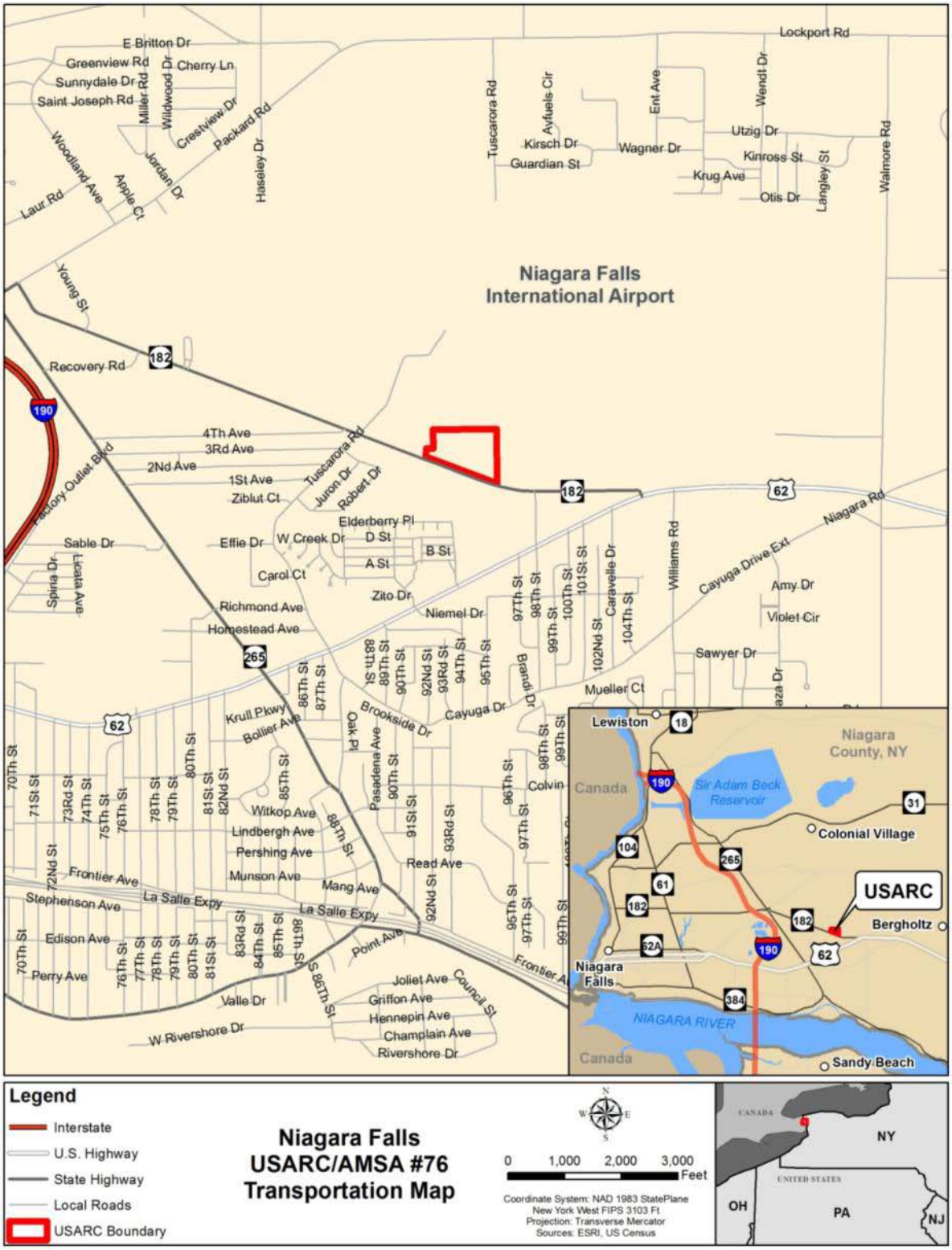
4.7.1.3 Site Transportation

The entrance to the USARC is off NY 182 (Porter Road) near the west end of the facility. The entrance is gated and a security booth is located adjacent to the entrance road. No roads are located on the USARC. Expanses of asphalt surface, used for parking and circulation with the facility, occupy the areas between buildings on the site.

4.7.1.4 Public Transportation

Niagara Frontier Transportation Authority (NFTA) provides public transportation in Niagara Falls and Buffalo, including public bus service with bus stops at various locations around the cities. NFTA Route 55 extends along US 62 (Niagara Falls Boulevard) with service to the Niagara Falls International Airport. The bus stop is located approximately ½ mile east of the USARC.

Figure 4-2. Area Transportation Map



4.7.2 Environmental Consequences

The following criteria have been developed to assess the intensity of transportation impacts for each of the alternatives:

> ***No Effect*** – No alterations of traffic patterns and trends would result from the action.
>
> ***No Significant Effect*** – Short- or long-term alterations of traffic patterns and trends would result from the action. The intersections may reach capacity but this change would be temporary or managed through improvements.
>
> ***Significant Effect*** – Traffic patterns would be permanently altered from the action. The intersections would reach capacity and extensive delays would develop.

4.7.2.1 Preferred Alternative: Traditional Disposal and Reuse

Traffic: Existing traffic to the USARC is generated by the commuting of 412 reservists on the weekends and 35 full time employees during the work week. With the closing of the existing facilities, the reservists and employees are now relocated into new facilities on the Niagara Falls ARS along Lockport Road located north of the Niagara Falls International Airport. (The relocation of employees and reservists has already been analyzed in a separate EA for the construction of those new facilities and will not be addressed in this analysis). Under the Preferred Alternative, the facility would be transferred to Town of Niagara for potential reuse by aviation and aerospace firms and a mix of light industrial and commercial uses permitted by the Town of Niagara zoning.

Closing the facility would eliminate the daily vehicle traffic on the site for the current 35 workers and the weekend traffic for the 412 reservists. Since these personnel are moving to new facilities on the north side of Niagara Falls International Airport, their use of the local transportation network is analyzed as a cumulative effect with the proposed action in Section 4.10 – Cumulative Effects Summary. It is expected that total build-out of the USARC property under the Preferred Alternative would generate between 149 and 251 jobs at the site.

Trip Generation: Trip generation for the proposed reuse of the USARC site was conducted for the weekday and the Saturday weekend based on the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 8th Edition. ITE Land Use Code 715 (Single Tenant Office Building) was used for projections for the 35 existing USARC employees. For the proposed reuse by aviation and aerospace firms and a mix of light industrial and commercial uses, the ITE Trip Generation Manual does not provide guidelines for this combined type of land uses. Therefore, three land uses were used to project the trips for the proposed developments. ITE Land Use Code 760 (Research & Development Center) was used to project trips for the proposed Building 4 (for reuse by aviation and aerospace firms); ITE Land Use Code 710 (General Office Building) was used to project trips for the proposed Buildings 4N and 4S (for reuse by offices, classroom training, engineering, computer operations, locker rooms, and storage); and ITE Land Use Code 110 (General Light Industrial) was used to project trips for the proposed mix of commercial and industrial developments.

Trip generation estimates were developed for the typical weekday AM and PM peak hours, and weekend based on a survey of developments with different land uses and a regression analysis. The net increase in weekday peak hour vehicles projected for the Preferred Alternative is summarized in Table 4-3 and Table 4-4 assuming the generation of 149 and 251 new jobs, respectively. As shown on Table 4-3 and Table 4-4, the Preferred Alternative would generate between 154 and 203 new vehicle trips during the AM peak hour and between 186 and 227 new vehicle trips during the PM peak hour on weekdays, assuming 149 and 251 new jobs, respectively.

In addition, based on the mix of existing USARC full-time personnel (35) and part-time (weekend) reservists (412), the following working assumptions were made to estimate the existing trips that would be relocated from the immediate vicinity of the USARC property to the new facilities on the Niagara Falls ARS:

- Assume that all the full time personnel (35) access the USARC site on weekdays and the 412 reservists access the USARC site on weekends (USACE, 2007a).
- Assume three drill weekends a month, which would result in a maximum of 200 reservists accessing the site on the maximum drill weekend (USACE, 2007a).
- Also it was assumed four vehicle trips for each reservist to account for lunch break.

Based on the working assumptions described above, and as shown on Table 4-3 and Table 4-4, 35 and 48 weekday vehicle trips would be removed from Porter Road and shifted to Lockport Road during the AM and PM peak hours respectively. During the weekend approximately 800 daily vehicle trips (two trips in and two trips out for 200 reservists) associated with the existing USARC would be removed from Porter Road and shifted to Lockport Road to access the new facilities on the Niagara Falls ARS.

Table 4-3. Additional Trips Generated by the Preferred Alternative – 149 Employees

Facility	ITE Code	Amount	AM			PM			Saturday Daily Trips
			In	Out	Total	In	Out	Total	
Existing trips relocated to new facilities on the Niagara Falls ARS									
USARC (Existing)	715	35 Employees	31	4	**35**	7	41	**48**	**0**
USARC (Existing)	N/A	412 Reservists	0	0	**0**	0	0	**0**	**800**
New trips									
Reuse (Buildings 4N & 4S)	710	50 Employees	30	5	35	4	32	36	160
Reuse (Building 4)	760	50 Employees	32	4	36	13	65	78	50
Reuse (Commercial & Industrial)	110	49 Employees	69	14	83	15	57	72	117
Net Increase			**131**	**23**	**154**	**42**	**154**	**186**	**327**

Source: ITE Trip Generation Manual, 8th Edition.

Table 4-4. Additional Trips Generated by the Preferred Alternative – 251 Employees

Facility	ITE Code	Amount	AM			PM			Saturday Daily Trips
			In	Out	Total	In	Out	Total	
Existing trips relocated to new facilities on the Niagara Falls ARS									
USARC (Existing)	715	35 Employees	31	4	**35**	7	41	**48**	**0**
USARC (Existing)	N/A	412 Reservists	0	0	**0**	0	0	**0**	**800**
New trips									
Reuse (Buildings 4N & 4S)	710	84 Employees	45	7	52	5	49	54	170
Reuse (Building 4)	760	84 Employees	51	7	58	15	76	91	66
Reuse (Commercial & Industrial)	110	83 Employees	77	16	93	17	65	82	130
Net Increase			**173**	**30**	**203**	**37**	**190**	**227**	**366**

Source: ITE Trip Generation Manual, 8th Edition.

It is anticipated that closing the existing USARC and reusing the property according to the Town of Niagara's Reuse Plan, which would involve some demolition and construction activities as well as interior renovations, would have long-term, no significant effects on traffic. However, some short-term adverse impacts could occur depending on the measures taken to manage disruptions, such as restricting construction materials deliveries to off-peak traffic hours and designating sufficient parking and storage space for construction related vehicles and materials.

After full build out, it is estimated that vehicles would enter and exit the site via NY 182 (Porter Road) by traveling through the Tuscarora Road/NY 182 signalized intersection or the US 62 (Niagara Falls Boulevard)/Williams Road signalized intersection. It is not expected that these intersections would experience significant effects due to traffic generated under the Traditional Disposal and Reuse Alternative. It is estimated that approximately 2 cars per minute would be passing through these intersections during the PM peak hour as a result of implementing the Traditional Disposal and Reuse Alternative (worst case scenario, Table 4-4: 227 vehicles per hour).

Only a portion of the new vehicle trips would access the facility via US 62/Williams Road. The addition of fewer than 150 vehicle trips in the morning or afternoon in one direction would not have a significant effect on the traffic patterns or significantly impact trends. A typical roadway would need a higher additional volume of traffic to affect the LOS. Since the US 62 and Williams Road intersection is currently working at an acceptable LOS C, conditions under the Preferred Alternative are not expected to have a significant impact on traffic conditions, or result in a change of LOS that would be noticeable to the driving public. Long-term, no significant effects to traffic are anticipated as a result of implementing the Preferred Alternative.

Although, this analysis is based on the current plans, the demolition of additional buildings and construction of new build-to-suit space for tenants or prospective tenants may occur in the future. These additional demolition / construction activities would result in the addition of more jobs and could generate more traffic activity that could cause short-term and long-term adverse alterations of traffic patterns in the

future. These short-term adverse alterations from construction / demolition activities could be mitigated through measures taken to manage disruptions, such as requiring most of the construction vehicles delivering materials to do so during off-peak traffic hours and designating sufficient parking and storage space for construction related vehicles and materials. Also, all construction traffic would follow special routing and management procedures during this period. Therefore, construction related traffic impacts are not considered significant. The long-term adverse alterations on traffic patterns depend on the number of additional jobs generated by the construction of additional buildings. Since NY182 and US62 are currently working at an acceptable LOS C or better, it is expected that small increments on additional traffic would not result in long-term significant effects to traffic in the future.

4.7.2.2 Caretaker Status Alternative

No adverse impacts to traffic would be expected under the Caretaker Status Alternative since the USARC would be closed and no reuse of the site would occur. Some beneficial impacts would occur as a result of decreasing the amount of weekday and weekend traffic generated by the site. Maintenance activities at the property would have no effects on transportation.

4.7.2.3 No Action Alternative

Implementation of the No Action Alternative would not alter the existing transportation infrastructure at the USARC or in surrounding areas. Therefore, no effects would be expected.

4.8 UTILITIES

4.8.1 Affected Environment

The ROI is defined as utility services at the Niagara Falls USARC site and any potential effects on public utility service providers in the area. Local municipal and commercial utility entities provide all major utilities (water, sewer, natural gas, electricity) at the property.

All federal agencies are required to adhere to Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performance. This Executive Order requires each agency to implement a Strategic Sustainability Performance Plan which includes a reduction in energy intensity for agency buildings and the increased use of renewable energy (Federal Register, 2009).

4.8.1.1 Potable Water Supply

Niagara Falls USARC has no active potable water wells. The property's primary potable water is acquired from the City of Niagara Falls (CH2MHILL, 2007). Water from these sources comes from the Niagara River, is pre-treated prior to it reaching the property, and meets all U.S. EPA potable water standards.

The water acquired from the Niagara Falls system is delivered to the USARC via a 12"-16" line. The supply enters Building 21, which is the central point for water distribution for the entire property. Currently, some buildings have had the service disconnected. The water line is relatively new, approximately 12 years old, and is in satisfactory condition (Town of Niagara LRA, 2008). The average water pressure supplied to the property is approximately 75 pounds per square inch (psi).

Fire protection (sprinkler) systems are located in all structures except Buildings 19, 23 and T-26. Two fire protection water loops exist on site, one serving the south and west areas and another heading north and serving the north side of the Building 4 hanger and office areas.

4.8.1.2 Sanitary Sewer Service

The Town of Niagara provides sanitary sewer service to the property. The primary source of wastewater directed to the sewer system during operation of the USARC included non-process wastewater (bathrooms, sinks, etc), the discharge from oil/water separators, and vehicle washing and maintenance runoff (CH2MHILL, 2007).

The sewer system is vitrified clay and was installed in 1956. Currently, the condition of the line is unknown and an evaluation was recommended in the Reuse plan. No sewer problems currently exist (Town of Niagara LRA, 2008).

4.8.1.3 Electrical Service and Distribution

Electric service is supplied by National Grid. National Grid extends electric from the trunk line to a sub-station on the property. A transformer vault is located in the Hanger Building (Town of Niagara LRA, 2008).

Power is fed to the site via an overhead medium voltage line to an open tube bus substation where it terminates in an enclosed switch. Service continues underground to Building 4 where the voltage is stepped down to 480/227 volts (V) and 208/120V via two transformers (Town of Niagara LRA, 2008).

4.8.1.4 Storm Water System

Drainage at the property flows across the pavement to inlet structures (catch basins) and is then piped to Cayuga Creek. Some storm water is also conveyed to a drainage swale along Porter Road that is eventually conveyed to Cayuga Creek as well. There are no drainage issues on the Property (Town of Niagara LRA, 2008).

4.8.1.5 Natural Gas

The gas supplier to the property is National Fuel Gas. National Fuel Gas owns the service from the connection point to the meter; after the meter, the line is privately owned inside the facility. The underground gas lines in the facility are steel and are cathodically protected. Cathodic protection protects the pipes against corrosion. The lines are approximately 20 years old (Town of Niagara LRA, 2008).

A single point main gas meter and regulator set are located on the south wall of Building 21. The 2-inch high pressure gas service is regulated and metered to feed a 3-inch diameter medium pressure gas main and is then distributed through an underground steel piping system to the site buildings. Building gas loads include heating boilers and some forced air heating equipment. No gas-fired kitchen equipment (ranges, griddles, etc) was observed (Town of Niagara LRA, 2008).

4.8.1.6 Communications

Telephone service enters the property at Building 25, the former powerhouse, and is distributed underground to the other buildings on site. This is a basic copper service used for telephone only. The service is 5-6 years old and is in good condition (Town of Niagara LRA, 2008).

4.8.1.7 Solid Waste

Solid waste is collected and shipped offsite by a commercial contractor (USAR, 2001).

4.8.2 Environmental Consequences

Effects on infrastructure are considered in terms of increases in demands on systems and the ability of existing systems to meet those demands. Potential effects to the environment could occur if the existing systems are insufficient to handle the increased demands requiring construction and operation of a new system. Utility demands include both renovation and operations usage. Individual segments that comprise the totality of the infrastructure are discussed below.

To assess the intensity of impacts to utilities the following impact thresholds were used for each utility:

No effect – The proposed action does not impact the human or natural environment.

No Significant Effect – An impact to the human and/or natural environment would occur, but it is less than thresholds indicated below for "significant effect."

Significant Effect – thresholds for significance are defined below:

General Utility Construction – Impacts from construction of utilities would be considered potentially significant if expected to cause human health and safety issues considerably above industry norms or Army acceptable standards and there were no ways to mitigate the disruptions.

Potable Water Supply – Impacts would be considered potentially significant if the proposed action or alternatives would require more potable water than could be reliably provided by the combination of available potable water sources, leading to shortages, or if regulatory limitations on withdrawals or the treatment plant would potentially be exceeded. Major systemic distribution constraints could also be potentially significant; however, the fact that major investments would be required to provide potable water reliably would not necessarily constitute a significant impact if the investments were reasonable for the overall magnitude of proposed construction, or to provide needed restoration or modernization, and would prevent shortages or harm to the environment.

Wastewater System – Impacts would be considered potentially significant if the proposed action or alternatives would require more wastewater treatment capacity than could be reliably provided by the municipal wastewater treatment system, potentially leading to the discharge of effluents in excess of standards, or if regulatory limitations on the wastewater effluent would potentially be exceeded. Major shortfalls in collection capacity could also be potentially significant; however, the fact that major investments would be required to collect wastewater reliably would not necessarily constitute a significant impact if the investments were reasonable for the overall magnitude of proposed construction, or to provide needed restoration or modernization, and would prevent overflows or harm to the environment.

Energy Sources – Impacts would be considered potentially significant if the proposed action or alternatives would require energy in quantities that would exceed local and/or regional capacities for supply, leading to potentially unreliable service or shortfalls of power or other energy that could affect the USARC's mission. Major systemic distribution constraints could also be potentially significant; however, the fact that major investments would be required to provide energy reliably would not necessarily constitute a significant impact if the investments were reasonable for the overall magnitude of proposed renovation, or to provide needed restoration or modernization, and would prevent shortages that could affect the USARC's mission.

Communications – Impacts would be considered potentially significant if the proposed action or alternatives would require communication systems to meet mission requirements that could not be provided without major modifications to the existing communications systems.

Municipal Solid Waste – Impacts would be considered potentially significant if the proposed action or alternatives would require collection and/or disposal that could not be provided in a reliable manner, which could cause waste to accumulate or be disposed of in a manner that could adversely affect human health or the environment.

4.8.2.1 Preferred Alternative: Traditional Disposal and Reuse

Overall effects on utilities as a result of implementation of the Preferred Alternative would not be significant, since existing utility services are expected to be adequate for future usage demands. Some highly localized, short-term disruptions would be expected as utility lines and linkages are adjusted or extended as necessary. The impact on utilities from the potential for more construction or demolition to meet market flexibility needs would need to be analyzed on a case by case basis, but it would be expected that any additional tenant would conform to the light industrial zoning code and would be a similar use to the USARC. An expansion of buildings would be expected to increase the demand on utility providers, but within the current capacity. Therefore, the impacts would be long-term and not significant. Under the Preferred Alternative, the Property would no longer be owned by the Federal government and therefore adherence to Executive Order 13514 would no longer be required, though the LRA may still pursue sustainable energy use on their own. Eliminating the requirement for sustainable energy usage at the property would result in long-term adverse impacts to utilities but they would not be significant.

Potable Water Supply – Adverse impacts would be long-term and not significant. There are existing potable water supply lines nearby that can provide potable water to the proposed reuse facilities. The change in use would not be expected to substantially increase the amount of potable water required for the property, as it would remain as a light industrial use.

Sanitary Sewer System – Adverse impacts would be long-term and not significant. The amount and type of sanitary sewer discharge would be expected to be similar to discharges from the pre-closure operation of the USARC. However, the reuse plan noted that the plumbing system at the property is well maintained but aging and may be inadequate for a major change in use of the property. Though an upgrade may be required, no significant impacts would be expected from the reuse of the property.

Electric Distribution System – Similar to the sanitary sewer system, the reuse plan noted that the electric system is aging and, while it is in satisfactory condition, an upgrade may be required to adequately meet the needs of a new tenant. Electrical demand from the new tenants would be expected to be similar to the pre-closure maintenance, classroom, and light industrial uses on the property and it is expected that National Grid, which supplies power regionally in the northeast, would be able to accommodate the similar demand. Adverse impacts would therefore be long-term and not significant.

Storm Water System – Adverse impacts would be short- and long-term and not significant. There is not expected to be an increase in impervious surface which already covers 95 percent of the site; therefore, the expected load for storm water runoff would be similar to existing conditions.

It is anticipated that the new property owner would be required to hold a SPDES Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity, similar to the permit held by the USAR, and implement a SWPPP for the property. If any utility upgrades require trenching or other construction activities, a SPDES permit for construction would be required. Through the adherence to provisions specified in an appropriate SPDES permit and site specific SWPPP, it is expected that there

would be no significant impacts on the storm water system as a result of implementing the Preferred Alternative. Impacts would be short-term during construction activities and long-term during the operation of the facilities.

Natural Gas - It is expected that demand for natural gas would be similar to the demand under pre-closure operations as the USARC and that no new major supply lines would be necessary. No adverse impacts to natural gas systems would result from the Preferred Alternative.

Communications – The existing communications system on the property adequately met the needs of the USARC's pre-closure operations. Given a similar light industrial reuse of the property, it is expected that communications providers in the area would continue to be able to provide adequate services to the site. Therefore, impacts would be long-term and not significant.

Solid Waste – Solid waste generation would be at volumes and management would be handled in a similar fashion to pre-closure operations. During the proposed demolition of buildings and necessary renovation of the existing buildings, more solid waste would be produced than the current load. This would also occur with any future demolition and new construction on the site; however, the duration of additional solid waste during demolition, renovation, and construction of buildings would be short-term and would be accommodated by local landfills. Therefore, there would be no significant effect on solid waste.

4.8.2.2 Caretaker Status Alternative

Under the Caretaker Status Alternative, there would be no adverse effects to utility systems. Impacts to utility systems would be beneficial in that there would be a significant reduction in or elimination of demand for utility resources.

4.8.2.3 No Action Alternative

Under the No Action Alternative, there would be no change to utility resources as operations would continue at pre-closure activity levels. As a result, there would be no effect on utilities.

4.9 HAZARDOUS AND TOXIC SUBSTANCES

This section addresses potential site contamination issues; the use, handling, and storage of hazardous and toxic substances and the generation and disposal of hazardous materials associated with the proposed operations and at the Niagara Falls USARC facility. Hazardous materials are substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present a substantial danger to public health or the environment if released. These typically include reactive materials such as explosives, ignitables, toxics (such as pesticides), and corrosives (such as battery acid). When improperly stored, transported, or otherwise managed, hazardous materials can significantly affect human health and safety and the environment.

4.9.1 Affected Environment

Hazardous Substances.

Available records indicate that several buildings on the site have been historically used to store hazardous materials and POLs such as acid batteries, paints, methanol, fuel oil, lubricating oil, gear oil, waste oil, rifle bore cleaner, transmission fluid, acids, antifreeze, motor oil, gasoline, diesel, and acetylene and oxygen gas cylinders (CH2MHILL, 2007).

Building 4. Building 4 was used to service and maintain helicopters and airplanes by the Navy from its construction in 1956 to about 1970. From about 1970 until 1991, the Army used Building 4 for helicopter maintenance. USARC personnel indicated that the New York Army National Guard (NYARNG) used the hangar to park, service, and maintain two aviation companies, reduced to one aviation company of 21 UH-1 helicopters. USARC personnel also indicated that from about 1970 to 1975, Building 4 served as a Nike missile support center where conventional missile warheads were serviced and maintained from locations in the state of New York. From the late 1970s to about 1994, the 42nd Aviation Battalion, part of NYARNG, used and serviced about 30 helicopters in the hangar. The 865th Combat Support Hospital, which includes hospital units, a petroleum company, and a drill sergeant unit, used the building to store equipment, and for administrative, educational, and logistical purposes. Reservists of the 865th Combat Support Hospital historically used Building 4 for drill activities on weekends throughout the year (CH2MHILL, 2007).

Building 17. Building 17 was formerly used to store containers of POL products such as engine oil, lubricating oil, antifreeze, grease (including aircraft grease), diesel, hydraulic fluid, and gasoline; and windshield washer fluid (CH2MHILL, 2007).

Building 18. An OMS and the AMSA were formerly housed in Building 18. The OMS was used to perform vehicle maintenance and to store related equipment, tools, POL, and hazardous waste prior to offsite disposal by a licensed contractor. Materials stored include engine oil, used oil, degreasing solvents, brake cleaning fluid, penetrating grease, lubricant sprays, adhesives, fiberglass resin, paint, insect killer and repellent, primer, isopropyl alcohol, denatured alcohol, coolant cleaner, floor cleaners, and methanol (CH2MHILL, 2007).

The AMSA was previously used to store used oil, engine oil, lubricants, paints, rust prevention sprays, spill kits, gasoline, diesel, vehicle batteries, crushed oil filters, a parts washer, nonpetroleum-based soap, and used rags The AMSA reportedly generated, on average, approximately 50 gallons of used engine oil, 10 gallons of antifreeze, 5 gallons of hydraulic fluid, and 5 gallons of waste diesel monthly (CH2MHILL, 2007).

Building 20. A battery room in Building 20 previously stored 1-gallon acid batteries, hydraulic oil, and washer fluid (CH2MHILL, 2007).

Building 21. Two maintenance bays in Building 21 were used to perform light vehicle maintenance. Flammables cabinets were used to store engine oil, diesel, lubricant oil, and gasoline in cans and small containers. Waste oil was also stored. Activities in Building 21 reportedly generated a minimal quantity of used oil each month (CH2MHILL, 2007).

Building 22. Flammable storage cabinets in Building 22 were used to store small cans of spray paint, rifle bore cleaner, glass cleaner, bleach, pine oil disinfectant, floor wax, and an assortment of household cleaners (CH2MHILL, 2007).

Storage Sheds. Storage sheds in the military equipment parking (MEP) area northeast of Building 21 housed 55-gallon drums that contained used motor oil and antifreeze. Two similar storage sheds were located in the military vehicle parking area (MVPA) east of Building 18. In the MVPA, one shed contained POL, including waste oil, antifreeze, diesel, diesel waste, and parts cleaners (CH2MHILL, 2007).

Underground Storage Tanks (USTs)/Aboveground Storage Tanks (ASTs)

There are no existing USTs located on site property. A 528-gallon waste oil AST installed around 1990 is located near Building 17. The AST is located within a concrete containment structure and formerly received used oil from the AMSA shop and OMS. Site records and former site personnel indicate that up to seven USTs and three ASTs were formerly located on the Property. All of the tanks reportedly have been removed, and no evidence of tanks were observed during the geophysical investigation as part of the Site Inspection that occurred in 2010 (PARS, 2011). Documented spills previously occurred from former 550-gallon and 1,000-gallon waste oil USTs. Both USTs received regulatory closure. A 200 gallon release of No. 2 fuel oil occurred during an UST removal. The spill was remediated and no further action was required. The incident was closed in March 1992. Documented removals and closure are not available for six of the tanks (CH2MHILL, 2007).

Polychlorinated biphenyls (PCBs)

No surveys of PCB-containing equipment have been performed for the Property (CH2MHILL, 2007). One pad-mounted dry transformer is located in Building 22. An overhead dry transformer is located close to the northeast corner of the first floor of Building 22. Another pad-mounted dry transformer is located in an enclosed area within Room 104, Building 21. An electrical room, located in the northeast corner of the first floor, Building 4S, contains dry transformers and associated equipment. All transformers observed appeared in good condition. Property personnel indicated that none of the transformers contained PCBs (CH2MHILL, 2007).

In 1991, a transformer fell and broke, releasing 120 gallons of transformer oil which contained 250 parts per million (ppm) of PCB into a storm sewer drain located east of Building 22. Surface paving materials, soils, and storm drain materials were remediated after the spill. NYSDEC indicated that the spill had been adequately remediated that same year (CH2MHILL, 2007).

Asbestos Containing Material (ACM)

A 2004 ACM survey identified ACM in Buildings 4, 19, 21, 22, 23, and 26, in floor tile, floor tile mastic, fire doors, piping thermal system insulation, vent ducts, and roofing mastic. According to personnel, no ACM abatement has been performed (CH2MHILL, 2007). An asbestos visual survey is planned prior to transfer of the Property (Dell'Olio pers. comm., 2012).

Lead-based paint (LBP)

Buildings 4, 18 through 23, 25, and 26 were constructed before 1981 and therefore potentially contain LBP. No LBP surveys have been conducted at the building on site. Facilities constructed before 1981 are likely to contain LBP. Buildings 17 and 24 were constructed after 1981 (CH2MHILL, 2007).

Radiological Materials

A radiological survey was performed at the USARC on December 12, 2011. A subsequent report and memorandum concluded that no further action is required with respect to the radioactive devices or materials identified and that the site is free of radiological concerns (Department of the Army, 2011) (Appendix B).

Radon

A radon survey was conducted at the site in August 1998. Radon test results indicated radon levels between 0.1 and 0.2 picoCuries per liter (pCi/L) which is well below the U.S. EPA recommended action level of 4 pCi/L (CH2MHILL, 2007).

Munitions and Explosives of Concern (MEC)

The 2007 ECP indicated that a review of available records, the site reconnaissance, and interviews with USARC personnel, no munitions and explosives of concern (MEC) are present on the Property. Nike missiles with conventional warheads were historically serviced and maintained in the hangar part of Building 4. The principal munitions associated with Nike missiles included the missiles themselves and propellants and fuels associated with the missile components. The exact components of the warheads serviced, missile propellants, and fuels used (if any) at the site were not detailed in documents reviewed during the preparation of the 2007 ECP report (CH2MHILL, 2007).

No evidence was identified to indicate that firing ranges are currently located or have been historically located on site property (CH2MHILL, 2007).

4.9.1.1 Hazardous Materials Use

CERCLA hazardous substances pursuant to CERCLA §101(14) (42 United States Code 960 (14)) were previously used on the property site. Chemicals formerly used and stored at the USARC site were associated with aircraft and vehicle maintenance, Nike missile servicing, and facility maintenance activities and janitorial services. No specific records were available regarding hazardous substances used in site operations. Chemicals typically used in aircraft maintenance and to service Nike missiles include solvents such as tetrachloroethylene (PCE); trichloroethylene (TCE); benzene; carbon tetrachloride; 1,1,1-trichloroethane (TCA) and 1,1,2-TCA; nitric acid; sodium dichromate; sulfuric acid; zinc chromate; and paint. The solvents were typically used in cleaning, corrosion removal, painting, and preparation of parts. Sodium dichromate and zinc chromate were used in metal cleaning and paints, respectively. Sulfuric acid was used in lead acid batteries. Metallic selenium was used in rectifier parts. The Nike Ajax missiles used a 28-volt silver-cadmium battery that used potassium hydroxide as the electrolyte (CH2MHILL, 2007).

Historical site reports indicate aircraft service mechanics used Stoddard solvent to clean aircraft parts until about 1991. A July 2003 USACE-Hazardous, Toxic and Radiological Waste (HTRW)-Categorical Exclusion (CX) report on Nike missile batteries indicated the service and maintenance of Nike missiles routinely involved use of POL and hazardous substances, including TCE (CH2MHILL, 2007).

4.9.1.2 Hazardous Waste Storage/Handling Areas and Contaminated Sites

The 2007 ECP report indicated there may be a landfill on the Property. The ECP cited a 1994 PA (Engineering Technology Associates Inc, 1994) that discussed a 1970's funding request to replace corroding water lines on the Property which blamed the corrosion failures on an underlying landfill located on the Property. However, an engineering study revealed that the probable reason for the failed piping was mechanical failure due to water hammer because the installation failed to maintain the jockey pump on the fire water system (Minvielle pers. comm., 2012). There is also no historical evidence to support the presence of a landfill on the Property as several excavation operations on the Property did not reveal any evidence of one, and historical topographic maps and aerial photographs do not show any waste management activities taking place on the Property (Minvielle pers. comm., 2012). Additionally, after a chain-of-title review and several interviews with city and state officials a Supplemental Phase I Assessment conducted in 2009 to further investigate the potential presence of a landfill, found no definitive evidence that confirmed the presence of a landfill on the Property (CH2MHILL, 2009).

The 2007 ECP report noted that several published reports on the Nike missile program indicate there is the potential for environmental effects related to Nike missile operations and maintenance. It also noted that drainage from the Building 4 hangar, where maintenance was historically conducted on Nike missile conventional warheads, reportedly flowed into storm drains for several decades before the installation of

the OWS near Building 4, and that the 1994 PA recommended sediment sampling in Cayuga Creek to evaluate discharges from Building 4 floor drains into the storm sewer (CH2MHILL, 2007).

While the ECP did not find any information indicating that sediment sampling had occurred, there have been no reports of stressed vegetation at any of the outfalls, nor any evidence of industrial discharge leaving the property via the storm system associated with Building 4 that would indicate any contamination occurred as a result of maintenance operations in Building 4. Additionally, during a 2011 RI the NYSDEC informed the Army that sediment sampling at Outfalls 1, 2 and 3 was not required due to accessibility issues and outfall's position below the creek's water line (PARS, 2012).

Three spills have been documented on the Property associated with USTs (CH2MHILL, 2007). During the removal of a 550-gallon UST associated with a wash rack outside Building 18 in September 1999, TCE was detected in the soil at concentrations exceeding the NYSDEC allowable soil concentration, but below the NYSDEC recommended soil cleanup objective of 700 parts per billion (ppb). During the removal of a 1,000-gallon UST in September 2009, the tank was turned over in the excavation pit, allowing groundwater to flow into and out of the tank. Soil and water samples from the excavation indicated the presence of polycyclic aromatic hydrocarbons; however, they were at levels significantly less than the recommended soil clean-up objective (CH2MHILL, 2007). The closure report recommended no further action for both tanks, and the both received regulatory closure on February 22, 2000. On October 18, 1999, 200 gallons of No. 2 fuel oil were release while a UST was being removed. The tank contents were stored in a concrete vault, and sorbents were use to hold the spill. The sorbents were later disposed of, and not further action was required. The spill received regulatory closure on March 6, 1992 (CH2MHILL, 2007)

In 1991, a transformer fell and broke, releasing 120 gallons of transformer oil which contained 250 parts per million (ppm) of PCB into a storm sewer drain located east of Building 22. Surface paving materials, soils, and storm drain materials were remediated after the spill. NYSDEC indicated that the spill had been adequately remediated that same year (CH2MHILL, 2007).

On June 24, 2008, a milky white substance was observed discharging from a 24-inch diameter pipe at an outfall located immediately southeast of the property. PCB was detected in the soil samples collected from the drainage swale at concentrations ranging from non-detect to 1,060 mg/kg. The storm water outfall was investigated and remediated with approximately 134 tons of PCB impacted soil removed from the drainage swale. The 24-inch storm sewer was cleaned and post –excavation soil samples from the drainage swale were below the maximum contaminant level of 1 mg/kg per NYSDEC regulations (PARS, 2011).

In 2010, a Site Inspection was conducted at the USARC property to evaluate potential sources of the PCBs that were detected in 2008. The inspection included a one acre site in the southeast portion of the USACE property at the locations of the former USTs at Building 2 and in the vicinity of the former fire protection main; exploratory excavations to investigate the former fire protection main; and the collection of and analysis of soil and water samples to evaluate potential impacts related to the former USTs and fire protection main (PARS, 2011).

Soil sampling detected semi-volatile organic compounds (SVOC) at concentrations exceeding the NYSDEC Unrestricted and Restricted Use Soil Cleanup Objectives. Chromium, iron, and PCBs were detected at concentrations exceeding the Unrestricted use Soil Cleanup Objectives. Follow-up soil sampling in December 2010 detected acetone in five samples at concentrations exceeding the Unrestricted Use Soil Cleanup Objective and was identified as a possible laboratory contaminant. Barium was detected in one soil sample at a concentration that exceeds the Residential and Commercial Restricted use Soil Cleanup Objectives, and manganese and chromium were detected in several samples at concentrations

exceeding the Residential Restricted Use Soil Cleanup Objectives. PCBs were detected in five soil samples exceeding the Residential and Commercial restricted Use Soil Cleanup Objective and in seven soil samples concentrations exceeded the Unrestricted Soil Cleanup Objective.

Analysis of water collected from a 6-inch diameter pipe indicated the presence of several compounds including toluene, naphthalene, PCBs and chromium in concentrations exceeding the NYSDEC Class GA objectives (PARS, 2011). Analysis of groundwater indicated the presence of two VOCs, four SVOCs, and PCBs at several sampling locations at concentrations exceeding NYSDEC Class GA Criteria. Additionally, at one of the exploratory excavations, petroleum product was observed within the fill material of the excavation and on the surface of the groundwater (PARS, 2011).

Based on the results of the Site Inspection, a RI/IRA/HRRA/Feasibility Study was initiated and removed and disposed of approximately 40 tons of contaminated soil and approximately 2,000-gallons of contaminated groundwater from the excavation. An 8-foot section of the 6-inch diameter pipe in the excavation was also removed and the open ends of the pipe were fitted with a Fernco and PVC cap prior to backfilling. No further investigations are warranted for this site as a HRRA for the site identified exposure to impacted groundwater by construction workers as the only risk to human health and the environment and recommended that a land use restriction in the form of a Site Management Plan be developed and implemented as mitigation for limiting exposure to construction workers.

4.9.1.3 Environmental Condition of Property

The 2007 ECP Report for the USARC property (CH2MHILL, 2007) initially classified the Property as an ECP Category 7 (an area or parcel of real property that is unevaluated or requires additional evaluation) due to reports of a former landfill on the Property, published reports on the Nike missile program indicating that there is the potential for environmental effects related to Nike missile operations and maintenance, and an outstanding recommendation from a 1994 Preliminary Assessment (PA) to perform sediment sampling in Cayuga Creek to evaluate discharges from floor drains into the storm sewer from Building 4 prior to oil water separators (OWS) being installed. A Supplemental Phase 1 Assessment concluded that “no definitive evidence was obtained that confirms the presence of a landfill on the Property.” (CH2MHILL, 2009). Though no evidence of a landfill was found, the Supplemental Phase 1 Assessment continued to classify the Property as an ECP Category 7 primarily due to a PCB investigation going on at that time (CH2MHILL. 2009). As noted above under Section 4.9.1.2, further soil and groundwater investigations resulted in IRA activities, and a HRRA recommended that a land use restriction in the form of a Site Management Plan be developed and implemented as mitigation to limit exposure of construction workers to contaminated groundwater.

No further site investigations are warranted for this Property and land use restrictions would be included in the property deed for transfer, providing adequate protection for construction workers. Therefore, the Property will be classified as an ECP Category 4 (an area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred an all remedial actions necessary to protect human health and the environment have been taken) at the time of property transfer.

4.9.2 Environmental Consequences

For the purposes of assessing the intensity of impacts related to hazardous and toxic substances, the following impact thresholds were developed:

> ***No Effect –*** There would be no increase in the amount of hazardous materials or waste handled, stored, used, or disposed of. There would be no interference with the implementation of the

selected remedy for site contamination, no unacceptable risk to human health and the environment, and no worsening of the condition of site contaminants.

No Significant Effect – Action would result in an increase in the amount of materials or waste to be handled, stored, used, or disposed; but all hazardous or toxic materials and/or wastes could be safely and adequately managed in accordance with all applicable regulations and policies, with limited exposures or risks. Action would potentially interfere with remedy implementation or cause worsening of site contamination, but with applicable mitigation measures, protection of human health and the environment would be ensured and worsening in the condition of site contamination would be prevented.

Significant Effect – Action would result in a substantial increase (more than 100 percent) in the amount of materials or waste to be handled, stored, used, or disposed of, and this could not be safely or adequately handled or managed by the proposed staffing, resulting in unacceptable risk, exceedance of available waste disposal capacity, or probable regulatory violation. Action would interfere with the remedy implementation (including long term protectiveness where relevant) for site contamination, result in unacceptable risk to human health and the environment, or result in worsening or improvement in contaminant conditions (i.e., migration v. source removal/isolation.

4.9.2.1 Preferred Alternative: Traditional Disposal and Reuse

Implementation of the Preferred Alternative would result in long-term, no significant adverse effects in relation to hazardous and toxic substances. Due to potential exposure of construction workers performing subsurface activities (e.g. site upgrades, demolition, construction etc.) to impacted groundwater on the southeast portion of the Property, the Army would place land use restrictions in the property transfer documents to ensure no future activities in the area with known contaminated groundwater would pose a risk to human health and the environment.

Asbestos. ACM is known to be present in several buildings on the USARC property. Upon transfer of the property, the LRA would be responsible for properly managing any ACM, including the proper abatement and disposal of it if encountered during the renovation or demolition of buildings, in accordance with all applicable federal and state regulations. Thus, no significant effects would be expected.

Lead-Based Paint. LBP is known to be present on several buildings on the USARC property. Upon transfer of the property, the LRA would be responsible for properly managing any LBP, including the proper abatement and disposal of it if encountered during the renovation or demolition of buildings, in accordance with all applicable federal and state regulations. Thus, no significant effects are expected.

Munitions and Explosives of Concern. Based on a review of existing records and available information, there is no evidence that MEC are present on the property. Thus, no impacts to the health and safety of anyone using the facility would occur.

PCBs. Based on the previous investigations there is no known PCB Containing Equipment on the property; however, PCB contaminated soils and groundwater were found on the southeast portion of the Property. Site investigations have been completed and soil was remediated as part of an IRA .The Army would incorporate land use restrictions into the property transfer documents to limit any potential adverse impacts to construction workers from exposure to groundwater. Therefore, impacts would be long-term but not significant.

Radiological Materials. A radiological survey was completed in December 2011 and found the site to be free of radiological concerns (Department of the Army, 2011). Therefore, there would be no effects related to radiological material.

Underground Storage Tanks. All known USTs have been removed from the USARC property and all associated remedial actions have been completed. There are no effects related to USTs.

Waste Disposal Sites. Though previously reported that there may have been a landfill on the site, further investigation concluded that "no definitive evidence was obtained that confirms the presence of a landfill on the Property" and that fill material was likely used to cover low-lying areas along the banks of Cayuga Creek (CH2MHILL, 2009).

As indicated in the LRA's reuse plan, the USARC site would be marketed for similar aviation related businesses and light industrial uses. As such, it is likely that hazardous materials would be used on the site and hazardous waste generated. The exact types and amounts of hazardous materials that would be used and the wastes generated is not known at this time. However, it expected that there would be no significant impact from the use of hazardous materials or the disposal of hazardous waste under the proposed reuse plan since the handling of these materials would managed in accordance with all applicable federal and state regulations

Overall, potential impacts to hazardous and toxic substances from the traditional disposal and reuse of the USARC would be expected to have no significant effect. Due to the known or suspected ACM materials and LBP on the structures, occupancy, use, and, if the buildings are renovated or demolished, abatement and disposal will be in accordance with applicable federal and state regulations. The use of hazardous materials and handling of hazardous waste would also be managed in accordance with all applicable federal and state regulations, and land use restrictions would be incorporated into the property transfer documents to limit the potential exposure of construction workers to impacted groundwater.

4.9.2.2 Caretaker Status Alternative

Implementation of the Caretaker Status Alternative would result in no adverse effects. Under this alternative, the site would continue to be maintained by the Army, but there would be no storage of hazardous materials on site. Implementation of the Caretaker Status Alternative would require closure of the facility and result in reduced demand for both hazardous materials and hazardous wastes management compared to those used during the operational status. Soil and groundwater investigations are complete and with no actions planned that would require ground disturbing activities, there would be no potential exposure of construction workers to impacted groundwater.

4.9.2.3 No Action Alternative

Under the No Action Alternative, operations would continue at pre-closure activity levels and no change would be expected regarding hazardous materials or hazardous wastes management.

4.10 CUMULATIVE EFFECTS SUMMARY

A cumulative impact is defined as "the impacts on the environment that result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertake such other actions" (40 CFR 1508.7). The section goes on to note: "such impacts can result from individually minor but collectively significant actions taking place over a period of time." Cumulative impacts associated with implementation of the Proposed Action would include any impacts from other on-going actions that would be incremental to the impacts of the proposed action alternatives.

Currently there are no projects or development occurring in the immediate vicinity of the site. Vacant land to the south across Porter Road is listed for sale as commercial property; however, the property has not been sold yet and remains vacant. Recent developments that have occurred along Military Road

approximately 1.5 miles southeast of the site include the construction of a Wal-Mar, Chili's Restaurant, and Olive Garden Restaurant (Bragg, 2011). The Niagara Falls International Airport also opened a new 69,430 SF airline terminal building in 2009.The 412 reservists and 35 full time employees previously employed at the USARC site as well as the 129 reservists and 10 full time employees of the NY Army National Guard unit from Niagara Falls, NY now report to the new 71,720 SF AFRC and 17,476 SF OMS/AMSA that was constructed along Lockport Road on the Niagara Falls ARS to the north of USARC site. For future projects, there is a concept for a 10,300 SF hotel on the USARC site; therefore, it is being analyzed for its potential cumulative impacts.

4.10.1 Preferred Alternative: Traditional Disposal and Reuse

Overall, implementing the proposed action under the Preferred Alternative would not likely cause any long-term significant impacts.

The proposed action, when considered with the other development projects in the immediate vicinity, would result in long-term adverse impacts to transportation resources in the area, though it would not be a significant impact as the LOS would remain within acceptable limits. The new USARC facility would shift the existing USARC daily vehicle traffic for the current weekday workers and the weekend traffic for the reservists from NY 182 to Lockport Road to access the new facilities located to the north of the Niagara Falls International Airport. It is anticipated that vehicles coming from the north-west and south-west would access Lockport Road traveling on Packard Road (along the western boundary of the Niagara Falls ARS) and vehicles coming from the north-east and south-east would access Lockport Road traveling on Wallmore Road (along the eastern boundary of the Niagara Falls ARS) and Wall Road. As a result it is assumed that most of the existing USARC traffic and the new NY Army National Guard unit traffic would not use NY 182/Tuscarora Road, US 62/NY 182, and US 62/Williams Road signalized intersections to access the new facilities just north of the Niagara Falls International Airport, thus helping to minimize the adverse cumulative impact on the local roads around the redeveloped USARC property.

The development of a 10,300 SF hotel on the USARC site and other development projects would increase the demand for access along the local major roadways in the vicinity of the USARC property. The incremental increase in traffic flow from the proposed action and other developments in the area would affect the two signalized intersections (US 62/Williams Road and Tuscarora Road/NY 182). With a current LOS C at US 62/Williams Road intersection, and LOS C or better at NY 182 (Porter Road) and US 62 (Niagara Falls Boulevard), the long-term cumulative impact of the proposed action would not likely increase the LOS to unacceptable levels and would therefore not be significant.

The cumulative impacts from the proposed action in conjunction with the other development projects would have a beneficial impact on socioeconomics as the projects are designed to increase commercial employment and local expenditures in the ROI.

4.10.2 Caretaker Status Alternative

Implementation of the Caretaker Status Alternative would avoid new impacts that could interact with the impacts of other projects in the vicinity of the USARC. Therefore, there would be no cumulative impacts associated with the Caretaker Status Alternative.

4.10.3 No Action Alternative

Implementation of the No Action Alternative would avoid new impacts that could interact with the impacts of other developments in the vicinity of the USARC property. Therefore, there would be no cumulative impacts associated with the No Action Alternative.

4.11 MITIGATION SUMMARY

Beyond the placement of land use restrictions on the Property, no specific mitigation is required of the Army. Based on the findings of soil and groundwater investigations completed in 2011, Interim Remediation Activities removed approximately 40 tons of contaminated soil and approximately 2,000 gallons of contaminated groundwater from the excavation. Also, an approximate 8-foot long section of 6-inch diameter cast iron fire protection main was removed and the open ends of the pipe were fitted with a Fernco and polyvinyl chloride (PVC) cap prior to backfilling. A HRRA concluded that the only potential risk on the site is a carcinogenic risk for construction workers exposed to contaminated groundwater during subsurface activities (e.g. site upgrades, new construction etc.). The HRRA recommended the development and implementation of a land use restriction in the form of a Site Management Plan as an adequate remedy to reduce the risk or exposure to contaminated groundwater for construction workers during construction. Therefore, the Army would impose in the transfer or conveyance of the USARC property appropriate land use restrictions to protect construction workers. The Army will document their proposed plan for a remedial action in the form of a land use restriction in a "Proposed Plan." The "Proposed Plan" will be released for public review in the near future. Any comments received will be documented in the Decision Document.

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5.0 FINDINGS AND CONCLUSIONS

The purpose of the Proposed Action is to implement the Army's proposal to dispose of the Property following closure of the USARC and AMSA #76 in Niagara Falls, NY as directed by the BRAC Commission.

Traditional disposal via a below fair market value EDC to the Town of Niagara followed by property reuse by aviation and aerospace firms (Building 4 and its two attached buildings (4N and 4S) and a mix of light industrial and commercial uses permitted by the Town of Niagara zoning (remainder of site on a building by building basis) is the Army's Preferred Alternative. Direct, indirect, and cumulative impacts of the Preferred Alternative, the Caretaker Status Alternative, and the No Action Alternative have been considered. The evaluation performed within this EA concludes that there would be no significant impact to the human or natural environment as a result of the implementation of any of the alternatives. Therefore, the issuance of a Finding of No Significant Impact is warranted, and preparation of an Environmental Impact Statement is not required.

A summary of impacts by resource area for the Action and No Action Alternatives is provided in Table 5-1.

Table 5-1. Summary of the Impacts of the Alternatives

Resource	Preferred Alternative	Caretaker Status Alternative	No Action Alternative
Land Use			
Regional Geographic Setting and Location	No effect.	No effect.	No effect.
Site Land Use	No significant effect.	No effect.	No effect.
Current and Future Development in the Region of Influence	No effect.	No effect.	No effect.
Coastal Zone	Resource not present	Resource not present	Resource not present
Aesthetic and Visual Resources	No effect.	No effect.	No effect.
Air Quality			
Ambient Air Quality Conditions	No significant effect.	No effect.	No effect.
Meteorology/Climate	No effect.	No effect.	No effect.
Air Pollutant Emissions at Project Site	No significant effect.	No effect.	No effect.
Regional Air Pollutant Emissions Summary	No significant effect.	No effect.	No effect.
Noise	No significant effect.	No effect.	No effect.
Geology and Soils			

Resource	Preferred Alternative	Caretaker Status Alternative	No Action Alternative
Geologic and Topographic Conditions	No effect.	No effect.	No effect.
Soils	No significant effect.	No significant effect.	No significant effect.
Prime Farmland	Resource not present	Resource not present	Resource not present
Water Resources			
Surface Water	No significant effect.	No effect.	No effect.
Wetlands	Resource not present	Resource not present	Resource not present
Hydrogeology/Groundwater	No significant effect.	No significant effect.	No significant effect.
Floodplains	No significant effect.	No effect.	No effect.
Storm water System	No effect.	No effect.	No effect.
Biological Resources			
Vegetation	No effect.	No effect.	No effect.
Wildlife	No effect.	No effect.	No effect.
Threatened, Endangered, and Sensitive Species	Resource not present	Resource not present	Resource not present
Cultural Resources			
Archaeology	Resource not present	Resource not present	Resource not present
Built Environment	Resource not present	Resource not present	Resource not present
Socioeconomics			
Economic Development	No significant effect.	No significant effect.	No effect.
Demographics	No effect.	No effect.	No effect.
Environmental Justice	No effect.	No effect.	No effect.
Protection of Children	No effect.	No effect.	No effect.
Transportation			
Roadways and Traffic	No significant effect.	No effect.	No effect.
Public Transportation	No significant effect.	No effect.	No effect.
Utilities			

Resource	Preferred Alternative	Caretaker Status Alternative	No Action Alternative
Potable Water Supply	No significant effect.	No effect.	No effect.
Sanitary Sewer System	No significant effect.	No effect.	No effect.
Electrical Service and Distribution	No significant effect.	No effect.	No effect.
Natural gas	No effect.	No effect.	No effect.
Communications	No significant effect.	No effect.	No effect.
Municipal Solid Waste	No significant effect.	No effect.	No effect.
Hazardous and Toxic Substances			
Uses of Hazardous Materials	No significant effect.	No effect.	No effect.
Storage and Handling Areas	No significant effect.	No effect.	No effect.
Site Contamination and Cleanup	No significant effect.	No significant effect.	No significant effect.
Cumulative Effects	No significant effect.	No effect.	No effect.

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6.0 LIST OF PREPARERS

Name	Title	Education/Responsibility	Experience
Wendy Aviles	Senior Transportation Planner	B.S. Civil Engineering, M.E. (Master in Engineering) Transportation. Responsible for Transportation Section	11 years
Rebecca Byron	Environmental Planner	MURP Urban and Regional Planning, B.S. Environmental Science and Policy. Responsible for Socioeconomic and Utilities.	6 years
Doug Pierson	Senior Planner	M.A. Geography Responsible for Transportation Section	13 years
David Plakorus	Environmental Planner	MBA, M.A Urban and Regional Planning, B.A. History. Responsible for Land Use	2 years
Catherine Price	Senior Environmental Engineer	B.S. Chemistry, B.S. Chemical Engineering. Responsible for Hazardous Wastes and Toxic Substances.	29 years
Spence Smith	Environmental Scientist	B.S. Zoology, M.A. Biology. Project Manager. Responsible for Soils, Water Resources and all sections prepared by Louis Berger staff.	14 years

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7.0 AGENCIES CONTACTED

This section identifies local, state and federal agencies that were contacted or consulted during the EA process.

Federal Officials and Agencies

U.S. Fish and Wildlife Service

Native American Tribes

Tuscarora Indian Nation

Seneca Nation of Indians

Tonawanda Band of Seneca Indians

State Officials and Agencies

State Historic Preservation Officer

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9.0 ACRONYMS

AADT	Annual Average Daily Traffic
ACM	Asbestos Containing Material
ADA	Americans with Disabilities Act
AFRC	Armed Forces Reserve Center
AMSA	Army Maintenance Support Activity
ARS	Air Reserve Station
AST	Aboveground Storage Tank
bgs	below ground surface
BRAC	Base Realignment and Closure
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO_2	Carbon Dioxide
CX	Categorical Exclusion
DoD	Department of Defense
EA	Environmental Assessment
ECP	Environmental Condition of Property
EDC	Economic Development Conveyance
EIFS	Economic Impact Forecast System
ETA	Early Transfer Authority
FNSI	Finding of No Significant Impact
GBNRTC	Greater Buffalo-Niagara Falls Regional Transportation Council
GHG	Greenhouse Gas
g/mi	grams per mile
HCM	Highway Capacity Manual
HHRA	Human Health Risk Assessment

HTRW	Hazardous, Toxic and Radiological Waste
HVAC	Heating, Ventilation, and Air Conditioning
I	Interstate
IRA	Interim Remedial Action
ITE	Institute of Transportation Engineers
LBP	Lead Based Paint
LOS	Level of Service
LRA	Local Redevelopment Authority
MEC	Munitions and Explosives of Concern
MEP	Military Equipment Parking
MVPA	Military Vehicle Parking Area
NEPA	National Environmental Policy Act
NFR	Niagara Falls Redevelopment LLC
NFTA	Niagara Falls Transportation Authority
NO_x	Nitrongen Oxide
NOA	Notice of Availability
NYARNG	New York Army National Guard
NYSDEC	New York State Department of Environmental Conservation
OMS	Organizational Maintenance Shop
OWS	Oil/Water Separator
PA	Preliminary Assessment
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethylene
pCi/L	picoCuries per Liter
ppb	parts per billion
ppm	parts per million
POL	Petroleum, Oil, and Lubricant
psi	pounds per square inch

PVC	Polyvinyl Chloride
ROI	Region of Influence
RSC	Regional Support Command
RTV	Rational Threshold Value
SHPO	State Historic Preservation Officer
SPDES	State Pollution Discharge Elimination System
SUV	Sport Utility Vehicle
SVOC	Semi-Volatile Organic Compound
SWPPP	Storm Water Pollution Prevention Plan
TCA	1,1,1-trichloroethane
TCE	Trichloroethylene
TPY	Tons Per Year
USACE	U.S. Army Corps of Engineers
USAR	U.S. Army Reserve
USARC	U.S. Army Reserve Center
U.S.C.	United States Code
U.S. EPA	United States Environmental Protection Agency
USGS	U.S. Geologic Service
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
V	Volt
VOC	Volatile Organic Compound

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APPENDIX A

USARC/AMSA #76 NIAGARA FALLS, NEW YORK

REUSE PLAN

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EDC APPLICATION (FINAL)

NIAGARA FALLS ARMY RESERVE CENTER
EDC BUSINESS PLAN

December 15, 2011

Prepared by:

Town of Niagara
Local Redevelopment Authority
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This study was prepared under contract with the Town of Niagara, with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the Town of Niagara and does not necessarily reflect the views of the Office of Economic Adjustment.

I. INTRODUCTION

In 2005, the Base Realignment and Closure (BRAC) Commission recommended that the Niagara Falls Army Reserve Center/Area Maintenance Center #76 (NFARC) in the Town of Niagara, New York be closed, as part of the Reserve Component Transformation in New York. Many of the activities of the Reserves were transferred to a new joint-use facility located nearby. The NFARC site includes an estimated 20 acres of land and approximately 160,000 square feet of space in ten buildings. The facility fronts on Porter Road in Niagara, and abuts the Niagara Falls International Airport.

The Town of Niagara Local Redevelopment Authority is seeking to acquire the site and improvements from the United States through a less than fair market value Economic Development Conveyance (EDC). The LRA is uniquely positioned to redevelop the site in a cooperative manner with the private sector and potential public users, particularly the regional airport authority, in order to create new employment opportunities and to support existing public and private enterprises in the western New York region.

RKG Associates, Inc., in association with Jeffrey Donohoe Associates (JDA), Weston Solutions (Weston) and Clough, Harbor, and Associates (CHA), was retained by the Town of Niagara's Local Redevelopment Authority (LRA) to develop this application.

II. EDC OVERVIEW

As required by CFR 32 § 174.9 (Economic Development Conveyances), the Town of Niagara Local Redevelopment Authority (LRA) is pleased to present this application for a less than fair market value EDC of the former Niagara Falls Army Reserve Center (NFARC) located on Porter Road in the Town of Niagara, New York.

The LRA proposes to acquire all available real and personal property at the NFARC via an EDC, with a structured payment agreement which will allow the Army to participate in the successful redevelopment of the site, while minimizing the Army's risk. An EDC is necessary to generate new employment opportunities for the Town of Niagara and the larger region. This redevelopment of the site by the LRA will help replace the jobs lost as a result of the BRAC 2005 recommendation to close the NFARC in Niagara and to help revitalize the local economy. As discussed below, the redevelopment of the NFARC will require the LRA to invest in the marketing and promotion of the site as a competitive location for business investment, maintenance of the site and selective demolition.

As required under the statute, the Town of Niagara LRA is the designated Local Reuse Authority for the NFARC. The Town of Niagara Local Redevelopment Authority was recognized as the implementing Local Redevelopment Authority for the Army Reserve Center by the Office of

Economic Adjustment, as indicated in a letter dated March 31, 2011 from Patrick J. O'Brien, Director of the Office of Economic Adjustment. A copy of Mr. O'Brien's letter is included in Appendix A.

The Implementation LRA consists of the entire Town of Niagara's legislative body (Town Council) with additional expert community members. The table below lists the current members of the LRA.

First Name	Last Name	TITLE/PUBLIC POSITION
Daniel	Bristol – non-voting	Exec. Director
Steven	Richards	Chairman/Town Supervisor
Patrick	Brown	Member/President, Brown CPA, LLC
Carmen	Granto	Member/NFTA Commissioner
Marc	Carpenter	Member/Deputy Supervisor/Councilman
Robert	Clark	Member/Town Councilman
Samuel	Ferraro	Member/Niagara County Economic Development
Robert	Herman	Member/Town Highway Superintendent
Michael	Risman	Member/Town Counsel/Hodgson & Russ, LLC
Danny	Sklarski	Member/Town Councilman
Charles	Teixeira	Member/Town Councilman
Guenter	Feught	Member/President Emeritus Canadian Steel Corp.
Judith	Gatto	Member/VP HSBC Bank USA, Inc.

In addition to the RKG Associates team, legal counsel is provided to the LRA by Attorney George Schlossberg of the firm Kutak Rock LLP in Washington. DC, and Attorney Michael Risman of the firm Hodgson Russ LLP, of Buffalo, NY. The LRA voted to submit this EDC Application to the Army at its meeting on October 25, 2011. See meeting notes in Appendix A.

A. Description of the Property

This EDC application requests all of the excess real and personal property at the NFARC which is able to be transferred by the government under current environmental laws and regulations. It is estimated that this includes approximately 19.85 acres of real property, as well as the existing improvements (approximately 160,000 square feet located in ten structures) and related personal property associated with this acreage. The inclusion of available personal property is considered to be an important component of the LRA's ability to implement the reuse plan for the property, as the existing personal property will make the property more marketable, and enhance the ability to operate, manage, market and maintain the site. More rapid property occupancy by job-generating uses will help accelerate recovery and enhance the financial viability of the organization. Additional graphics of the requested acreage appears in Appendix B.

It is the LRA's understanding that the Army is moving forward with an environmental characterization and remediation program for the southeast corner of the property. This area is estimated to include approximately 1.8 acres of land, as well as Building 26, a 2,000 square foot

storage facility.[1] As such, the LRA envisions a phased acquisition of the property, whereby environmentally clean property will be conveyed to the LRA, possibly as early as January 27, 2012. The remaining property, estimated to be approximately 1.8 acres, would be acquired by the LRA after remediation activities are completed or upon concurrence by regulatory authorities to convey under a Finding of Suitability to Transfer (FOST).

The largest building on the property, Building 4, contains approximately 96,750 square feet, or approximately 62% of the total built space. It includes a 33,750 square foot high-bay aircraft hangar with a poured-in-place barrel arched roof, along with two attached 2-story office and shop

[1] The Army's environmental analysis has not yet determined the extent of the suspected contamination or the affected property. The 1.8 acre parcel has been proposed by the LRA as a reasonable parcelization around the suspected area, based on existing fencelines and other demarcation, for purposes of moving ahead with the EDC. It can be changed based on the findings of the on-going investigation.

additions. The remaining buildings are one and two story office and shop facilities or small storage buildings.

A detailed analysis of the physical condition of the NFARC property is contained within a report entitled "Technical Memorandum: Baseline Conditions; Niagara Falls Army Reserve Center - EDC Business Plan; June 17, 2011" by RKG Associates, Inc. This report also contains a detailed analysis of the environmental condition of the property as well as market and economic information relating to the redevelopment. A copy of this report is included as Appendix C.

The Business and Operations Plan calls for the demolition of five of the smaller, older buildings on the property (totaling approximately 9,900 square feet) to support reuse of the other, more marketable facilities, which total approximately 146,360 square feet. Major infrastructure improvements that will be required prior to or during re-occupancy include building renovations, paving of aircraft aprons, parking area striping, replacement of roofs, security fencing and utility metering.

B. Intended Uses for the Property

The redevelopment of the NFARC site is expected to be consistent with the approved Reuse Plan for the property, and the more recent information collected and analyzed as part of this EDC. According to the Reuse Plan,

> *"Building 4, the large hangar, will be marketed to aviation and aerospace firms as a location for aircraft modifications, renovations, research and testing, overhaul and storage of air cargo. Building 4N and 4S, both of which are attached to the hangar, will be included in solicitations of interest and will provide space for offices, classroom training space, engineering, computer operations, locker rooms and storage. Given that the Niagara Falls International Airport is adjacent to the USARC and the reason the facility was built on that site, continued expansion and improvement of the airport should be a major driver for the reuse of the USARC.*
>
> *The remainder of the site will be utilized, on a building-by-building basis, for a mix of commercial and industrial uses that are permitted under the Town's zoning ordinance. As cited earlier, potential users of the buildings may include light industrial and commercial users such as metal fabricators, maintenance businesses, professional service firms, training providers, storage operations, motor vehicle service stations and a variety of others. Activity at the adjacent airport may also spur aviation support-type businesses such as food caterers, a commissary, avionics shop or other maintenance operations."*

The ability to reuse the hangar facility (Building 4) and adjacent apron areas for active aviation uses (approximately three acres), as envisioned in the Reuse Plan, will require a so-called "through-the-fence" access agreement with the Niagara Frontier Transportation Authority (NFTA).[2] Without

[2] Detailed information is provided in FAA Advisory Circular No. 150/5190-7, Exclusive Rights and Minimum Standards for Commercial Aeronautical Activities and FAA Order 5190.6B, Airport Compliance Requirements (Chapters 6 and 12).

access to the airfield, via an agreement with NFTA, the hangar would be marketable primarily as a warehouse building. It is anticipated that the LRA will work with NFTA on behalf of tenants that require access to the airport to get required FAA approval. Fees charged by NFTA for this access, as required under FAA regulations, will be passed through to tenants. The LRA is confident that the airport will support and accommodate through the fence access for bonafide aviation users that benefit and support the airport and that help create new jobs in the region. A member of the NFTA Board of Commissioners and a member of NFTA's Aviation Committee sit as members of the LRA.

The primary focus of the LRA will be to utilize the site to enhance economic performance and job creation in the region. This effort will include the reuse of many existing facilities, and may also include the development of new facilities on-site. The LRA has received some initial interest in the NFARC site, as a result of the public's knowledge of and participation in the reuse planning process. Public and private sector entities have expressed interest in aviation and non-aviation facilities. However, until conveyance occurs, the LRA cannot begin more detailed discussions or negotiations with these potential users.

These intended uses are allowed under the existing Light Industrial (LI) zoning for the site. The LI zoning permits a wide variety of uses including manufacturing, offices, assembly, warehousing and research & development.[3] In addition, special permits can be obtained for beneficial uses that fall outside of the stated zoning regulations, following the Town of Niagara regulatory process.

Although the current plan calls for reuse of Building 4 and four additional buildings, the LRA must and will remain flexible to the dictates of the market, in order to take advantage of any opportunities to create new jobs. This may include demolition of the remaining buildings and site preparation to develop new build-to-suit space for a prospective tenant or tenants, including the development of speculative aviation-related or R&D facilities. Long term, it is envisioned that much of the site will be redeveloped with new aviation-related, light industrial and flex-space buildings to serve a variety of businesses.

The potential availability of state and federal economic development funding for tenant-specific projects will drive the financial feasibility of this approach. Towards that end, the LRA has worked closely with the Niagara County Department of Economic Development to begin preparation of required grant applications from a variety of sources. In mid-November, the Western New York Economic Development Council released its final strategic plan for the region, which included specific reference to the redevelopment of the Niagara Falls Army Reserve Center by the Town of Niagara as a priority project, and earmarked $2.5 million for capital improvements from 2012 State economic development and brownfields funds. A copy of this report can be found online at http://nyworks.ny.gov/content/western-new-york. However, the grant application process cannot be completed until the LRA gains control of the property, either by deed or by a signed MOA.

[3] See Section II E of the Reuse Plan for a complete list of allowed uses.

C. Economic Impact of the Closure on the Community

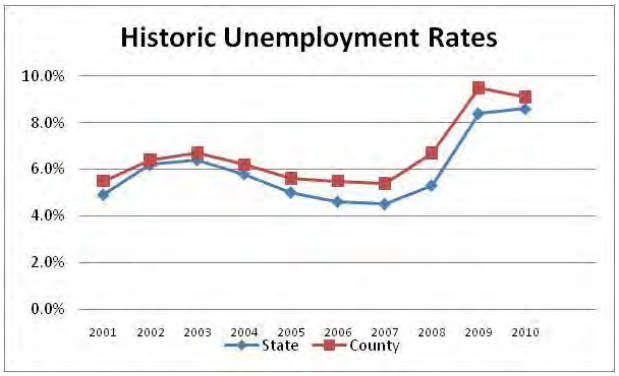
The Department of Defense activities are critically important components of the regional economy as a whole. As detailed in the Army's environmental assessment of developing a new Reserve Center, the net impacts associated with the relocation of the Reserve Center are minimal, citing "the construction of the new facilities on the installation will be the sole contributor to short-term increased economic activity due to the associated increase in expenditures on labor and materials during the building period."[4]

According to the *2005 Defense Base Closure and Realignment Commission Report*, the closure of the NFARC will result in the loss of just one direct job, as much of the existing activity will be relocated to the new Reserve Center. While this may seem an insignificant loss, the region's history of lagging the State of New York in terms of employment, and the ability to use the ARC to create an economic engine to help the region perform more consistently, are seen as key factors in the overall impact on the community and the larger region.

D. Job Losses and the Need for Recovery

The closure of the NFARC represented a limited loss of jobs for the community and the region. Since the Army Reserve is relocating to a new combined location nearby, there were virtually no jobs lost within the region. The BRAC Commission's final report indicates just one military job lost at the site.

However, according to the most recent unemployment information for Niagara County from the New York State Department of Labor, there were 10,264 unemployed persons in the County in 2010. This indicates an unemployment rate of 9.1%, one-half of a percentage point higher than the State of New York's unemployment rate of 8.6%. As shown in the graphic to the right, the County's unemployment rate has been consistently higher than the State's since 2001. Some of the improvement in the County's unemployment rate is attributable to a reduction in the labor force. The labor force was 109,383 in 2001, and peaked at 113,681 in 2008. Since that time, the labor force has declined, falling to 112,269 at the end of 2010. This means that despite a loss of more than 700 jobs between 2009 and 2010, the County's unemployment rate decreased from 9.5% in 2009 to 9.1% in 2010.



As discussed in later sections of this document, the proposed EDC transfer of property at the NFARC is expected to support as many as 149 to 250 high quality jobs within fifteen years. The addition of 200 jobs to the local employment base, with no change in labor force, would reduce the

[4] *U.S. Army Corps of Engineers, Mobile District Affected Environment and Consequences, Environmental Assessment – Niagara Falls AFRC, NY 4-40, July 2007, Page 4-39*

unemployment rate by 0.18%, bringing Niagara County's unemployment rate more in line with the State of New York.

E. Adopted Redevelopment Plan

The redevelopment plan for the NFARC was submitted to the Department of the Army and the Department of Housing and Urban Development in 2008. The redevelopment plan was reviewed and approved by the U.S. Department of Housing and Urban Development (HUD) on April 1, 2009. A complete copy of the approved redevelopment plan is included in electronic format in Appendix D. A copy of the approval letter from HUD is included in Appendix E.

The Reuse Plan envisions that the largest building on the property, Building 4 which consists of a former aircraft hangar (Building 4H) and the attached office/shop/classroom spaces (Buildings 4N and 4S), will be marketed to "aviation and aerospace firms as a location for aircraft modifications, renovations, research and testing, overhaul and storage". The remainder of the site is expected to be marketed to users that can benefit from the availability of lower cost space, while being less impacted by the negative attributes of the facilities. The focus is expected to be on commercial, R&D and light industrial uses, possibly in support of aviation or aerospace activity located in the region. These uses are consistent with the existing LI zoning for the property and are consistent with prior uses of the facilities by the Army.

F. Financial Condition of the LRA and Prospects for Redevelopment

As described above, the LRA consists of the entire Niagara Town Council along with other appointed members who bring expertise on financing, economic development and other disciplines. By inclusion of the entire Town Council, all LRA actions carry the full weight of the Town of Niagara. Detailed information regarding the Town can be found on the website - www.townofniagara.com.

It is anticipated that the redevelopment of the ARC will be managed through the Town of Niagara's Industrial Development Agency (IDA). According to its annual report, the IDA "*is a not-for-profit, public benefit corporation authorized under the laws of New York State and the New York State Industrial Development Agency Act and is a component unit of the Town of Niagara, New York. The Agency was established to promote, develop, encourage and assist in the acquisition, construction, reconstruction, importing, maintaining, equipping and furnishing of industrial, manufacturing, warehousing, commercial and research facilities; thereby advancing job opportunities, general prosperity and economic welfare of the people of New York State generally, and the Town of Niagara and surrounding area specifically*."

The IDA currently has no debt and a strong balance sheet. At the end of 2010, the IDA had almost $190,000 in cash. In addition, the IDA has a history of job creation without incurring debt. During 2010, the IDA closed on three projects which created 159 permanent non-construction jobs. Total cost for these projects was almost $4.3 million. These projects were self-financed (by the target companies along with grant sources), with no bonds issued by the IDA. The IDA has the experience and market understanding to help the Town of Niagara realize its vision for the ARC property. The

IDA's experience will help in negotiating with potential tenants, accessing financing for specific projects, implementation of a marketing plan and ensuring that viable redevelopment opportunities receive sufficient support resulting in new job creation. Appendix F contains financial information on the Town of Niagara and the Industrial Development Agency.

The LRA views the prospects for the redevelopment of the NFARC as good. The high profile and visibility of the project has resulted in multiple inquiries for both aviation and non-aviation uses. The LRA recognizes that the redevelopment of the site is a long term project which could require five to ten years to implement. As discussed elsewhere in this application, the LRA has developed a strategy for redeploying the property's assets while demolishing unmarketable and uninhabitable facilities. In addition, the LRA plans to invest in upgrading pavements to enhance the subject property.

G. Job Generation

The redevelopment of the NFARC is expected to result in employment gains, as the facilities at NFARC are converted to new uses. As discussed elsewhere in this application, it is anticipated that the reuse of the hangar and adjacent office and classroom facilities will occur during the initial five years of the project, assuming an agreement can be reached with NFTA to make aviation reuse of the hangar viable. These facilities constitute the largest block of floor space, and should result in the highest level of job creation at the NFARC. The Table below summarizes the estimated job creation in each facility.

		Jobs per 1,000 SF		Jobs	
Building	**SF**	**Low**	**High**	**Low**	**High**
4H	33,750	0.6	1	20	34
4N	27,000	1.5	2.5	41	68
4S	36,000	1.5	2.5	54	90
18	13,670	0.7	1.2	10	16
21	13,540	0.7	1.2	9	16
22	20,000	0.7	1.2	14	24
24	2,400	0.7	1.2	2	3
Total	**146,360**			149	251

Source: Jeffrey Donohoe Associates Figures may not add due to rounding

It should be noted that additional short-term jobs will be created as a result of construction and renovation projects within most of the facilities targeted for reuse. However, since the LRA does not plan to renovate spaces for tenants, these jobs will result from expenditures by the tenants, rather than the LRA. The LRA's primary capital expenditures are focused on repaving and demolition activities, which are expected to generate between three and eight construction jobs. In contrast, upgrades by tenants are likely to be in the range of $5 million or more, and will create substantially more construction jobs. The majority of job creation activity is expected to occur during the first five years of the project. At full occupancy, it is estimated that the project could support between 149 and 251 direct jobs on-site. Depending on the type of tenant, these jobs could include high-paying, skilled employment opportunities in the aerospace/aviation or R&D fields.

III. BUSINESS PLAN

The cash flow analysis for the redevelopment of NFARC is focused on reuse of the existing buildings in "as-is" condition. The LRA seeks to limit its financial exposure by utilizing grant funding for major improvements and operational support. The LRA may initially market the properties at a relatively low price, with the expectation that tenants will fund their own renovations to the facilities. The availability of grant funds or loan proceeds, either to the LRA or directly to tenants will be the primary source of funding for capital improvements. Early year deficits are expected to be funded by the LRA, through the IDA. The operating revenues will be closely monitored, and capital improvements such as demolition of unmarketable structures and repaving of grounds will be driven primarily by initial funding provided by the IDA, available grant funding or from operating cash flows as appropriate. The LRA intends to monitor its cash flows closely, and if necessary, delay capital improvements until cash is available to complete these programs. Payments to the Army are due and will be made starting at the end of year 6 but may be made earlier if cash flows are sufficient to justify early payments to the Army..

A. Real Estate Leasing

As part of the baseline analysis for the redevelopment of the NFARC, an evaluation of the regional real estate market was prepared along with a detailed evaluation of the physical condition of the buildings and site, and is reported in the baseline conditions report (Appendix C). Significant findings from that analysis include:

- The quality of existing buildings is generally considered to be below average. The hangar building will require significant investment in order to repair its heating system and roof. The large hangar doors will also need to be replaced in the near future, which will result in a large cost to the tenant and reduce the ability to pay market rates.
- The office and training spaces which are adjacent to the hangar require significant upgrades in order to be usable. In addition, there is some degree of interdependency between the buildings, such as shared use of bathrooms.
- Many existing facilities face a variety of code compliance issues, including both life safety codes and handicapped accessibility codes. For the types of uses envisioned, the cost of meeting these requirements is considered reasonable.
- In general, the storage and warehousing facilities on the site are in fair condition. Facilities are generally small, with three facilities between 13,000 and 20,000 square feet, with the remaining facilities being less than 2,600 square feet.
- A review of pavements on the site indicates that the majority of surfaces are in fair to poor condition. As such, it is anticipated that the LRA will need to invest in repaving portions of the site as funds are available.
- Some demolition will be required to eliminate substandard and/or unusable facilities. It is anticipated that five facilities which total less than 10,000 square feet will be demolished.
- The regional market for this type of space is currently relatively weak with high vacancy and low lease/sale rates. Absorption is anticipated to average approximately 25,000 to 30,000

square feet per year. The adjacency to the airport will serve to differentiate the site from competitive properties and enhance marketability.

- The Town, acting through its Industrial Development Authority, can provide potential financing as well as reduced electric rates to prospective tenants, thereby increasing the attractiveness of the site compared to other competitive venues.
- Revenues from real estate leasing are projected to begin at $67,500 in the first year, and peak at approximately $285,000 at full occupancy in Year 5. Annual per square foot lease rates for buildings are projected to range from $1.50 for the shop and warehouse building to $2.00 per square foot for the hangar and office/classroom spaces.

Absorption – Due to the site's location and affiliation with a major airport, and the LRA's marketing efforts aimed at aviation-related users, it is anticipated that the LRA will be able to lease an average of approximately 30,000 square feet per year, thereby requiring approximately 5 years to absorb all of the available space (146,000 SF). It is expected that the hangar space in Building 4 will lease in the first year, based on feedback from the market. The office, shop and classroom space in the adjoining portions of Building 4 (4N and 4S) will take longer to fill. Building 4S is expected to be leased in Year 2 and Building 4N is expected to be leased in Year 4. The ability to lease all or portions of Building 4 will depend on the type of tenants that can be found and the ability to acquire through-the-fence access for aviation users. The other buildings are expected to be leased up on a staggered basis over the first five years. Alternatively, if one or more potential tenants require new build-to-suit space, and grant or other funding is available, then the LRA may demolish existing buildings to make land available for such uses.

Gross Real Estate Revenues – Gross real estate revenues include the projected revenues from leasing of facilities. Overall, gross real estate revenues are projected to be approximately $67,500 in the first year, increasing to $284,685 annually by Year 5, for a total of $3.7 million over the 15 year forecast period.

Payment to Army - Payments to the government (Army) at the rate of $66,000 per year begin at the end of Year 6 and continue until Year 10, for a total payout price of $330,000, based on the terms of the 04Oct2011 Army- Town of Niagara EDC Agreement – Deal Points and subsequent discussions between the Town and the Army BRAC team. A Promissory Note for this amount will be provided by the Town of Niagara. The LRA reserves the right to accelerate payments to the Army as cash flow permits. Any excess revenues generated by the project prior to repayment of Promissory Note, as determined by audit will be used for economic development purposes on the site as required under 32 CFR 174.9 (d)(8)(K). A copy of the EDC Deal Points is included in Appendix H, and incorporated into this application by reference.

Operating Costs – Operating costs for the redevelopment will include contract employees for the LRA (part-time Project Director and Property Manager positions) as well as marketing costs, supplies, travel and office supplies/equipment. In addition, the Business Plan includes an allowance for insurance, legal support and costs for carrying vacant buildings during the marketing period.

Capital Improvements – It is anticipated that the LRA and/or tenants will have to invest significant funds in capital improvements at the NFARC site. Specifically, it is anticipated that at least four facilities will be demolished during the early years of the project. Major improvements include interior building refurbishment, the installation of utility meters for individual buildings, replacement of the hangar doors and the roof on Building 4, and repaving of the aircraft apron on the east side of the hangar. In addition, funds have been included for fencing between the site and the airfield, vehicular paving on the site, restriping of parking areas and signage for the facility. Total estimated capital improvements, excluding building renovations, is estimated at approximately $1.6 million, expended in the first 5 years of activity. Building renovation costs, to be assumed by tenants, are anticipated to be on the order of $400,000 to $500,000 (minimum). The LRA will fund approximately $100,000 in capital costs for building demolition, pavement striping and signage, and will actively seek grant and/or tenant commitments for the remainder.

Administrative Funding from OEA – In addition to real estate revenues, the business plan assumes funding from the Office of Economic Adjustment (OEA). Typically, OEA will fund a base year of operations at the time of transfer, followed by reduced budgets each year. In most cases, the base year budget is reduced 75% in the second year, to 50% in the third year and to 25% in the fourth year. For the NFARC LRA, a base year operating budget of $100,000 has been assumed.

More detailed information regarding the projected absorption of specific buildings and the development of land parcels is contained in the pro forma included in the Business Plan section of this EDC application.

B. Revenues

Overall, the redevelopment of the NFARC is expected to generate the majority of its revenues from leasing of the buildings on the site. The LRA anticipates that it will take approximately 5 years to fully lease up the remaining 146,360 square feet. Revenue may also be generated through leasing of land for equipment storage, parking or temporary uses; however, no revenue is shown due to the high degree of uncertainty regarding these potential uses.

Real estate revenues are projected to total approximately $900,000 during the first five years of the project. By Year 10, the cumulative real estate revenue is projected to exceed $2.3 million, and payments to the Army in Years 6 through 10 will be $330,000. Through the fifteen year planning horizon, real estate revenues to the LRA are expected to be $3.7 million.

Tenants requiring through-the-fence access to the Niagara Falls International Airport will be charged a premium based on the cost to the LRA that the airport operator, NFTA, will require be paid based on FAA regulations. It is anticipated that NFTA will charge fees based on square footage associated with aeronautical activities, similar to the current fee structure now in place, which is estimated to be in a range of $0.60 to $0.75 per square foot.

C. Operating Costs

The redevelopment of NFARC will require that the LRA invest in management, marketing, maintenance and facility improvements. The costs of managing and operating the facility will decline as occupancy increases. Among the expenses budgeted for the redevelopment of the NFARC are:

LRA Director/Property Manager – These positions are budgeted on a contract basis (non-employee) at an initial annual cost of $81,000, which includes a part-time (60%) LRA director and part-time (60%) facilities manager. The role of the director will be to market and manage the real estate assets as well as provide administrative duties regarding grants and IDA participation. The facility manager's role will be to oversee property maintenance and renovation/demolition activities. These roles will step down to 40% time in the second and third years, then to 20% thereafter.

Conferences and Travel – The redevelopment of NFARC will require that the LRA/Town staff stay up-to-date regarding issues associated with base closure and redevelopment, and to stay current on marketing issues and available economic development incentive programs from the State and Federal government. A budget of $2,500 in the first year, declining to $500 per year has been included to reflect attendance at various marketing venues and for travel to meetings, etc.

Supplies and Equipment – An annual budget of $1,500 in the first year, and $1,250 subsequently has been included to reflect the need for office equipment, computer supplies, and other operational supplies.

Marketing Materials – In order to effectively promote the site for redevelopment, it will be necessary to develop promotional materials for distribution to potential tenants, economic development professionals and members of the public. An initial budget of $10,000 has been included for development of materials. The budget is reduced to $5,000 for the next two years, and is further reduced to $750 annually as the occupancy increases at the site.

Legal Support – A budget of $20,000 has been included for legal services during the initial year of the project, primarily to develop a lease protocols for the property and to review other legal documents and agreements. For the ensuing four years, the budget is reduced to $10,000 in the second year, then to $7,500 and $5,000 annually. This budget for legal services does not include potential extraordinary costs associated with issues arising from the Army's environmental mitigation actions or subsequent activities.

Insurance – An allowance for general liability insurance has been included, consistent with good risk management practices. For purposes of the budget, an allowance of $15,000 has been included for the initial year, stepping down to $5,000 annually at full

occupancy Environmental liability insurance is not included, as it is assumed that the Army will convey a "clean" site as per all Federal and State requirements.

Carrying Costs – The acquisition of buildings will result in some portion of the facilities being vacant each year. In order to maintain the facilities in a marketable condition, it will be necessary to provide some level of utilities to each facility. For budgetary purposes, an average of $1.00 per square foot has been included for vacant facilities each year during the lease-up period.

Grounds Maintenance – This cost is for general repairs and maintenance of the common areas around the property, including snow plowing and lawn mowing. It is estimated at $15,000 in the first two years and $10,000 annually thereafter.

Contingencies – In every new enterprise, unforeseen expenses occur. In order to prepare the LRA for the possibility of unplanned-for expenses, an allowance of 10% of other expenses has been included for each year of the forecast. This cost totals just over $128,000 over the fifteen year forecast period.

D. Capital Costs

As discussed above, the redevelopment of the NFARC will require substantial capital expenditures for the buildings and grounds in order to market them effectively. The capital items that will need to be addressed, and the anticipated sources of funding for them include the following:

Demolition – Five minor structures totaling 9,900 square feet will be razed over the first four years, making way for additional parking and improving the aesthetics of the site. Cost has estimated at $69,300 or $7.00 per square foot. The LRA will be responsible for these costs.

Utility Meters – The site is currently served with single point-of-entry for all utilities (water, sewer, gas, electric). In order to effectively measure usage for individual tenants, new meters will be required at an estimated cost of $50,000. This work will be done in Years 2 and 3, with funding provided by economic development grant funds or from the providers.

Building Refurbishment – Each of the buildings will require, at a minimum, basic refurbishment at an estimated cost of $3.00 per square foot for painting and minor repairs. These are assumed to be tenant costs (reflected in the relatively low achievable rent levels for the space "as-is"). ADA compliance will also be required in many of the facilities, which is also considered a tenant improvement cost. Tenant fit-out costs may be substantially more, depending on a business' specific space needs. At some point the HVAC systems in the buildings will need updating or replacement. *It is anticipated that these costs will be funded from a combination of economic development grants/loan proceeds and higher lease rates for improved space .*

Building 4 Roof – The membrane roof on the arch hangar portion of Building 4 was damaged on multiple occasions by high winds. The Army repaired the damage, but evidence of leakage and the overall age and condition of the roofs indicate that total replacement will be required within the first two years. The cost is estimated at $8.00 per square foot or a total of $486,000. This is anticipated to be funded from economic development grant funds.

Hangar Door Replacement – The large, multi-panel doors on both ends of the hangar are in poor condition and will require replacement during the first few years. This is also necessary for energy efficiency purposes. The cost per door has been estimated at $250,000 and is expected to be funded from economic development grant sources.

East Apron Paving – As noted in the Existing Conditions report, the paving on the east side of the hangar is in very poor condition and is not suitable for aviation uses. This will need to be replaced in Year 4 (concurrent with replacement of the east hangar door) at a cost of $350,000 (100,000 square feet @ $3.50). Potential sources of funding include economic development grants or possible FAA funding if the project is included in the airport's master plan and CIP.

Other Paving – Portions of the parking areas around the base will require replacement over the first few years of activity. A total of $100,000 is allocated for this need, funded from economic development grants. In addition, pavement striping will be needed to adequately park vehicles and provide safe egress through the site at an estimated cost of $20,000, to be borne by the LRA.

Fencing – New and replacement fencing is required on both sides of Building 4 to separate aviation and non-aviation uses, at an estimated cost of $75,000 including security gates. This cost will be included in the economic development grant package.

Signage – The LRA will be required to fund up to $15,000 over the first two years for site signage to attract potential tenants.

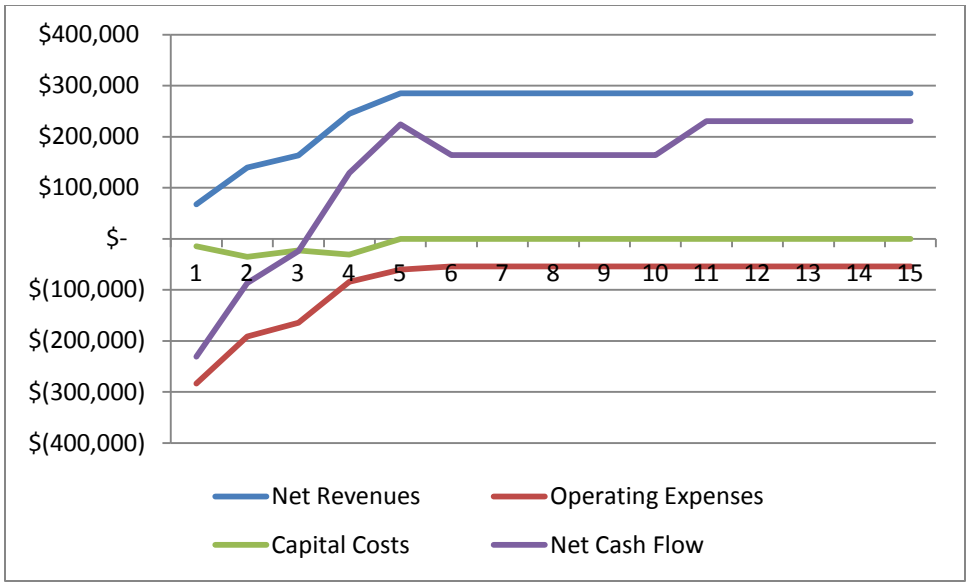
The EDC assumes that much of the needed capital improvements will be funded from grant sources or by tenants. These include replacement of the roof on the large hangar building (#4) as well as new hangar doors and demolition to prepare the site for new users. The LRA is confident that state and federal grants will be available for these projects. The redevelopment of the Army Reserve Center by the Town of Niagara was designated in November as a *Priority Project* by the New York State Regional Development Council, and a total of $2.5 million was earmarked for funding of needed projects from state and federal sources. Application for this grant funding will begin as soon as the LRA has control of the property, either through deed, interim lease or signed agreement. In the event that funding for these projects is delayed, the LRA anticipates delaying the implementation of the capital improvement program.

E. Development Timetable and Phasing Schedule

The proposed redevelopment of the NFARC is a project which will require a focused marketing effort, creative management and a commitment from the LRA and the Town of Niagara to support the project. The development cash flow analysis considers the initial fifteen year term of the project. As discussed in the revenue section, it is anticipated that the majority of reusable existing buildings will be leased within the initial five years of the project. The plan also relies upon an agreement with NFTA to provide through-the-fence access to make the hangar marketable from an aviation perspective. It is anticipated that either the LRA or the tenants requiring through-the-fence access will be required to pay the NFTA for that privilege. NFTA's rates for access have not yet been negotiated, but are anticipated to be on the order of $0.60 to $0.75 per square foot of building and/or ground space utilized for aviation purposes.

As discussed above, real estate activities are projected to generate approximately $3.7 million in gross revenues over the next fifteen years, before payment of $330,000 to the Army. However, the revenues from real estate activities will be offset by a variety of operating costs, including management, marketing, legal and insurance costs, along with the LRA's share of capital improvements.

The graphic below depicts the projected total revenues and total operating expenses on an annual basis. As shown in the figure, the redevelopment is projected to incur deficits in the first three years. By the end of Year 3, the cumulative operating deficit is projected to be more than $342,000 before major capital improvements . Beyond Year 3, the redevelopment is expected to operate at a profit, which increases as building occupancy increases and the carrying cost for vacant facilities decreases. In order to overcome this operating deficit, two sources of funding are anticipated – continued grant funding from the Office of Economic Adjustment (OEA) totaling $250,000 for LRA administration, management, maintenance and marketing, allocated over the first four years according to OEA's typical formula, as well as a $150,000 investment by the Town of Niagara Industrial Development Authority. This latter investment will be repaid with interest from cash flows beginning in Year 3. This funding will help to ensure that the property is maintained in a condition which will allow it to be competitive in the regional marketplace for economic development opportunities.



If all capital costs are included in the analysis, including those anticipated to be funded from various grant sources, the total deficit is nearly $1.8 million, occurring in Year 4. However, major capital improvements will not be made until funding is available and tenants are in hand.

F. Cash Flow Analysis

As discussed throughout this report, the redevelopment of the NFARC is expected to require as much as five years to achieve reuse of the existing buildings. Carrying the vacant facilities until they are successfully reused will require the LRA to invest significant funds in maintenance and operating costs, in order to maintain the properties in marketable condition.

Real estate leasing activities are projected to generate more than $3.7 million in revenues for the LRA during the first fifteen years of the redevelopment. During the early years of the project, reuse of the hangar is a critical component of the LRA's potential for success. The marketability of the hangar is closely tied to reaching agreement with the NFTA for through-the-fence access for the users of the hangar. If no agreement can be reached with NFTA, the hangar will have to be marketed as warehouse space (at less than the anticipated $2 per square foot lease rate). It is important to note that although an above-market rent may be achievable for Building 4 with "through-the-fence" access to the airport, any overage will likely need to be passed through to the NFTA as a fee for such access rights. NFTA's currently quoted land lease rates are on the order of $0.60 to $0.75 per square foot per year for building footprint and active aviation areas. For just the hangar (not including the attached office buildings) and apron areas on either end, the cost could be as much as $150,000 per year, adding nearly $4 psf to the hangar tenant's total "rent". By FAA regulations, through-the-fence agreements must at least equal on-airport lease rates.

Significant operating costs will be incurred to operate, manage, market and maintain the facility. Personnel costs are the largest expense category, estimated to cost $513,000 combined over fifteen

years. Carrying costs for vacant buildings, legal and insurance costs are also projected to cost almost $500,000 during the fifteen year forecast period.

G. Economic Viability

The market study includes detailed information regarding the anticipated market demand for the existing facilities at the NFARC. Some of the key market findings from the real estate market analysis include:

- With a few exceptions, the buildings, utilities, and features of the Reserve Center are relatively old, with many buildings built 40-50 years ago. Buildings of this age are typically considered to be functionally obsolete, particularly as they relate to compliance with the Americans with Disabilities Act (ADA).
- The site is fully served by adequate utilities (water, sewer, electric, telecom, natural gas) which enter the site in one location and primarily distributed underground to the various buildings and facilities. Future multi-tenancy of the facilities will require sub-metering of these utilities or replacement with individual services.
- The site is directly adjacent and accessible to the taxiways and runways of Niagara Falls International Airport (KIAG). Future users seeking access to the airport will require an agreement with the owner/operator of the airport, Niagara Falls Transportation Authority (NFTA), in conjunction with the LRA, for access to these facilities.
- The condition of the Reserve Center's buildings is similar to the area's stock of industrial and commercial real estate, which is also older in nature and relatively large. The similarity of the Army's facilities to typical industrial and commercial space may make it difficult to compete against a large supply of comparable space. In addition, given the relatively low rent levels in the area, renovations to the site's buildings (on a speculative basis) may be cost-prohibitive. The value of the buildings under a public sale scenario would be very low, and even if sold, it is likely that they would be used for warehouse-type activities which do not create significant employment opportunities.
- Local demographics indicate a declining population and household income levels, which has put downward pressure on real estate demand.
- The area is also experiencing a shift from industrial employment to service and knowledge-based employment, further depressing demand for older industrial and commercial space and making the potential for a successful public sale and private redevelopment less likely..
- The local industrial and commercial real estate market is in a state of general equilibrium, with relatively low and stable rents, vacancy rates, and generally minimal net absorption. This means that while local demand is supporting *existing* space, it would likely have a difficult time supporting *new* space over a generally acceptable amount of time. New development would most likely come in the form of build-to-suit space that is designed with a predetermined tenant in mind.
- KIAG is a relatively competitive airport within the region, in terms of its physical characteristics and services. However, the demand for additional hangar and fixed base

operations space, as well as specialty aviation-dependent activity, is expected to be limited in the short to mid-term.

Based on the findings of the market study, creating new, well-paying jobs at NFARC will require the resources that only the LRA and the Town of Niagara can bring, including expertise in redevelopment, access to capital funding from state and national grant sources, and local support for entrepreneurs and businesses through the Industrial Development Authority.

Absorption of the existing buildings is projected to be somewhat steady over the initial five years of the project. The lease-up period of five years equates to just under 30,000 square feet annually. Some additional revenues are possible from land leasing activities, primarily as outdoor storage and lay-down area, however, these are not included in the financial analysis due to the inability to forecast them with accuracy.

Operating and maintenance expenses are projected to total nearly $1.4 million during the first fifteen years of the redevelopment. The cumulate deficit, before internal and external funding for operations, but before major capital improvements, is projected to be more than $340,000 by the end of Year 3.

As summarized in other portions of this document, the operating revenues are expected to be sufficient to cover operating costs for the desired level of maintenance for the property, after an initial startup period of three years. Included in the estimated costs are some capital improvements to the site, notably demolition of less than 10,000 square feet or space, as well as repaving and striping. However, the LRA will have to closely monitor revenues, in order to ensure fiscal soundness of the project. If revenues fall short of projections, the LRA will have to proactively seek to reduce operating and maintenance costs, until cash flows are sufficient to operate, manage, maintain and market the property.

As shown in the pro-forma cash flow analysis, the total operating profit (cash flow) for the forecast period is projected to be almost $422,000, including payments to the Army of $330,000. Assuming that most major capital items (totaling $1.56 million) can be funded through grants or by tenants, the total profit to the LRA over the 15 year period is nearly $2.2 million.

More detailed information is included in the business plan spreadsheets, which appear in Appendix G of this report.

H. Market Value

The Army has indicated that this will be a “less than fair market value” EDC. Although it is believed that the Army has had the property appraised, the results of that appraisal were not shared with the LRA. The LRA has not had the property appraised. However, an estimate of the property’s value can be ascertained by analyzing the anticipated cash flow from the redevelopment. As shown in Appendix G, the Net Cash Flow, before extraordinary capital improvement costs or LRA/grant funding, ranges from -$230,871 in the first year and stabilizes at $164,235 in Year 6. The net present value (NPV) of this 15 year cash flow stream, discounted at 15% to account for the excessive risk

associated with the redevelopment, is $367,420. Thus, the $330,000 price for the property, as specified in the 4 Oct 2011 EDC Deal Points memorandum, would be considered below fair market value. It should be noted that if the major capital improvements are included in the cash flow, the NPV is substantially negative.

I. Necessary Capital Improvements

As part of the development of the Business Plan for the redevelopment of the NFARC, capital improvement costs were prepared.

Demolition - It is anticipated that a number of facilities will have to be demolished in order for the redevelopment of the site to be implemented. In particular, facilities which are considered unmarketable and/or uninhabitable (due to lack of heat or other infrastructure) are expected to be demolished. Facilities expected to be demolished include:

Capital Costs	Bldg#	SF	Total
Demo	19	1,600	$ 11,200
Demo	20	2,550	$ 17,850
Demo	23	2,000	$ 14,000
Demo	25	1,750	$ 12,250
Demo	26	2,000	$ 14,000
Total	**5**	**9,900**	**$ 69,300**

Repaving, Striping and Signage – As discussed in the baseline analysis of conditions, the existing pavement at the NFARC is in only fair condition. Since this is a site-wide issue, the LRA plans to address the need for repaving and striping over a multi-year period. Overall, these projects are budgeted at $470,000, and are expected to be completed as funds are available. For planning purposes, the expenditures are budgeted over a four year period, with the largest expenditure occurring when the East Apron is reconstructed. Signage expenditures of $15,000 are anticipated during the first two years of the redevelopment.

The Table below provides a summary of the anticipated capital improvement needs for the project. As shown in the Table, the overall capital improvement program calls for more than $1,660,000 in expenditures, not including costs for building fit-out or ADA compliance, which may add another $1.5 to $2.0 million. Improvements to Building 4 account for more than 50% of capital expenditures. The capital improvement cost estimates summarized in the Table below are all stated in 2011 dollars. These costs do not include any extraordinary expenditures for mitigation of Asbestos Containing Materials or Lead Based Paint found within the buildings.

Capital Costs		1	2	3	4	5	
LRA Funded	unit						**Total**
Demo #19	1,600	$ -	$ 11,200	$ -	$ -	$ -	$ 11,200
Demo #20	2,550	$ -	$ -	$ 17,850	$ -	$ -	$ 17,850
Demo #23	2,000	$ -	$ 14,000	$ -	$ -	$ -	$ 14,000
Demo #25	1,750	$ -	$ -	$ -	$ 12,250	$ -	$ 12,250
Demo #26	2,000	$ -	$ -	$ -	$ 14,000	$ -	$ 14,000
Pavement Striping	20,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ -	$ 14,000
Signage		$ 10,000	$ 5,000	$ -	$ -	$ -	$ 14,000
Tenant Funded							
Bldg Refurbishment		tenant cost					$ 14,000
ADA compliance		tenant cost					$ 14,000
Grant Funded							
Utility Meters		$ -	$ 25,000	$ 25,000	$ -	$ -	$ 50,000
Bldg 4 Roof	60,750	$ -	$ 486,000				$ 486,000
East Hangar Door replacem	1	$ -	$ -	$ -	$ 250,000	$ -	$ 250,000
West Hangar Door replacer	1	$ -	$ -	$ 250,000	$ -	$ -	$ 250,000
Fencing - west apron	250	$ -	$ -	$ 25,000	$ -	$ -	$ 25,000
Fencing - east hangar	250	$ -	$ -	$ -	$ 50,000	$ -	$ 50,000
Repaving - East Apron	100,000	$ -	$ -	$ -	$ 350,000	$ -	$ 350,000
Repaving - parking areas	50,000	$ -	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 100,000
Total Capital Costs		**$ 15,000**	**$ 571,200**	**$ 347,850**	**$ 706,250**	**$ 25,000**	**$ 1,665,300**

As noted in the Reuse Plan and in the Baseline Conditions Analysis (see Appendix), the age and condition of the buildings will require prospective tenants and/or the LRA to make certain improvements prior to occupancy. This may range from minor painting and repairs to more substantial renovation work involving lighting, plumbing, HVAC and partitioning. Until specific tenant requirements are known, accurately estimating these costs is not possible. Therefore, the LRA approach in this Business Plan is to lease the facilities on an "as-is" basis at low lease rates, with the tenants responsible for any required fit-up, including meeting ADA and life safety code issues, unless grant funding is found to complete this work prior to tenancy.

It is the intention of the LRA to work closely with prospective tenants to assist in obtaining funding for the building renovation costs, including the Town's ability to acquire/support grant funding to individual companies, or its ability to borrow project specific funds with repayment from lease terms.

For example, a $1.00 increase in a new employer's lease rate earmarked for debt service on a loan from the Town of Niagara IDA or other state or local economic development agency, could support up to $8.00 in building renovations or upgrades (as well as working capital support or worker training). Flexibility and the ability to leverage federal, state and local funding sources will be key to the successful redevelopment of the Army Reserve Center by the Town of Niagara. As discussed elsewhere, the NFARC project has been identified as a high priority for economic development

funding from the State of New York. The availability of grant funding for capital improvements (as well as potential funding for company operations and workforce training) will allow the LRA to offer attractive space and lease rates to firms that will create high-wage and sustainable employment opportunities for residents of the Town and region.

J. Local Investment and Proposed Financing Strategies

As discussed elsewhere in this Application, the redevelopment of the NFARC is expected to be largely self-financed through internally generated real estate leasing revenues, along with external grant funding for capital improvements. However, the business plan anticipates a deficit of more than $340,000 during the first three years of the project (not including grant-funded items). This level of funding is expected to be provided through the Town's Industrial Development Agency (IDA), along with additional DoD grants from the Office of Economic Adjustment. The LRA and the IDA both support the redevelopment of the NFARC property for job creation purposes, and are willing to invest the necessary funds to ensure that the project is competitive within the regional marketplace.

The IDA has an established track record of supporting job creation activities in the community. In addition, the agency has strong financial statements and borrowing capacity which could support the redevelopment of the NFARC. The IDA had more than $189,000 in cash on hand at the end of 2010. OEA has traditionally continued to help fund other BRAC LRA's through the key post-transfer implementation process.

As necessary, the LRA will also prioritize expenditures, in order to aggressively manage deficits from operations. For example, some capital projects can be postponed and the quality of marketing materials can be adjusted to reflect available funds.

K. Proposed Consideration

The LRA proposes to pay the Army a total of $330,000 in cash to acquire the entirety of the NFARC property. The conveyance is envisioned to occur in two parts: the first is the transfer of the known clean property, estimated to be approximately 18 acres; and the second parcel, estimated to be approximately 1.8 acres, to be transferred within ninety days after the Army has completed all site remediation efforts and obtained all approvals from cognizant federal and state agencies. Consistent with the agreement previously negotiated with the Army (14Oct2011 Deal Points), the LRA proposes to pay the Army $66,000 annually beginning five years after the initial property transfer, and continuing for a total of five annual payments. The agreed-upon payment schedule, memorialized in a Promissory Note made by the LRA and/or the Town of Niagara Industrial Development Agency, will help the LRA to stabilize its cash flow as a result of lease-up activities during the initial five years of the project.

Further, this approach will help to limit the economic risk to the community and the LRA, by postponing the need to pay the Army with up-front funds. Specifically, the Army will participate in the success of the redevelopment effort, being paid from cash flows of the project. Should the LRA

be successful in accelerating lease-up of the site and net revenues exceed those shown in the financial analysis, the LRA at its option, may be able to pay any outstanding balance of the purchase price ahead of schedule.

Consistent with EDC requirements as specific in the Base Redevelopment and Realignment Manual (BRRM) and 32 CFR, Part 174.9 (D)(8)(k), the LRA anticipates using net proceeds from real estate activities for a variety of functions to support economic redevelopment of the property for a period of seven (7) years from deed transfer. Among the uses envisioned for the funds are:

- Road construction and public buildings.
- Transportation management facilities.
- Storm and sanitary sewer construction.
- Police and fire protection facilities and other public facilities.
- Utility construction.
- Building rehabilitation.
- Historic property preservation.
- Pollution prevention equipment or facilities.
- Demolition.
- Disposal of hazardous materials generated by demolition.
- Landscaping, grading, and other site or public improvements.
- Planning for or the marketing of the development and reuse of the installation.
- Debt service on bonded debt or other loans taken by the LRA to fund capital improvements and operating costs.

The financial statements of the LRA will be audited annually by a Certified Public Accounting firm with the resulting report shared with the Army, as required under 32 CFR, Part 174.10 and the Army will recoup from the LRA any proceeds that are not used for economic development within, at a minimum, the 7-year period following initial EDC conveyance. The independent audit will identify all sources and uses of funding for the project during the previous year. The financial analysis shown in Appendix G shows a total of approximately $500,000 reinvested in the property over the mandatory seven year period, in addition to the Army payment of $330,000

The LRA will accept title to the property within 30 days of the Army's presentation of the deed for those portions of the property that are covered by a Finding of Suitability for Transfer (FOST).

IV. LRA'S LEGAL AUTHORITY

The Town of Niagara was recognized as the Local Reuse Authority by the Department of Defense's Office of Economic Adjustment, in a letter issued by Patrick O'Brien, Director of the Office of Economic Adjustment on March 31, 2011. A copy of the letter is included in Appendix A. The LRA (which includes the entire Town Council) authorized the request to acquire the subject property via Economic Development Conveyance by a unanimous vote on October 25, 2011.

A. Proof of Financial Capacity and Capability

The Town of Niagara has a track record of fiscal responsibility under the direction of Supervisor Steve Richards. This is reflected in the Town's bond rating, which was recently increased from BAA1 to A1. This is significant, given the difficult economic climate of the region and the country as a whole. More importantly, the Town of Niagara is the only community in the County which has received a credit rating increase in the recent past. A ratings increase, during a time of national recession and fiscal uncertainty, is considered recognition of the Town's outstanding financial management practices and strong commitment to fiscal prudence.

The Business Plan demonstrates that the redevelopment of the NFARC can be accomplished using primarily cash flows generated through on-site real estate revenues from leasing of buildings and land. Though the project is expected to incur a deficit during the early years of the project, the deficit of approximately $342,000, will be covered by continued OEA grant funding for LRA operations along with a $150,000 bridge loan from the Town Industrial Development Agency until the project achieves breakeven in Year 4.

The LRA's plan for the property includes capital improvements in the form of demolition of some unmarketable structures, site signage, repaving and restriping. The LRA has the ability to delay these projects if cash flow is insufficient to support the capital improvement plans.

B. Why an EDC is the Appropriate Transfer Authority

The LRA has explored a variety of transfer options for the excess property at the NFARC. When first declared excess by the Army, the federal screening process was completed by the Army to solicit interest in the property from other federal agencies. It is the LRA's understanding that no other agency, including the Federal Aviation Administration, indicated an interest acquisition of the NFARC property. The LRA conducted a thorough public reuse planning process in 2008, as required under BRAC regulations, which included outreach to homeless providers and other public agencies and organizations interested in obtaining property through a Public Benefit Conveyance. No agencies submitted a Notice of Interest and HUD approved the Reuse Plan on April 1, 2009.

This EDC Application is a result of consultation with the Army, evaluation by the LRA and its consulting team, and consideration of appropriate transfer mechanisms for the property. The following sections discuss other applicable conveyance mechanisms.

Conservation Conveyances. The majority of the site is covered with pavement. In addition, there are no known environmentally sensitive areas on the property which might be suitable for a conservation conveyance. As such, the LRA determined that this approach was not appropriate for any portions of the site.

Public Benefit Conveyances. As discussed above, the Town of Niagara engaged in an open reuse planning process, which included outreach to homeless providers and other entities eligible for Public Benefit Conveyance of the NFARC property. In addition, the property underwent screening to other Defense agencies and other Federal departments, as part of the Army's required process

before the property could be declared surplus. No expressions of interest (NOI) were received by the Town or LRA for transfer of the property (in whole or in part) via any available public benefit conveyance mechanism.

Public Sales. As discussed elsewhere in this Application, the community is committed to using the NFARC property to create jobs in order to provide increased economic activity and economic benefits to the larger region. Disposal of the property via public sale could limit the community's ability to influence job creation on the site, as control of the reuse of the property would pass to a third party. The LRA plans to support the reuse of the property, in part, by bringing needed economic development grant funding for capital improvements. For the multiple reasons pointed out in the market assessment section above, disposal through public sale would likely result in a low value for the property, with potential buyers unable to invest the large sums necessary to improve the property, resulting in either land-banking the property for an indeterminate period of time or use of the buildings for warehouse storage, resulting in little or no job creation for the community. The long-term absorption of the property (5 years+) would likely deter typical private developers. Even with the full support of the Town, private parties would not be able to access all of the necessary grant funding to undertake the capital improvements for the property. The redevelopment of NFARC ***by the Town of*** Niagara has been designated as a high priority project in the new Western New York Economic Development Strategy, thereby making it eligible for funding from state and federal sources. The availability of these funds is considered critically important in making the NFARC property competitive from a market perspective.

V. APPENDICES

A. Appendix A – Designation of Town of Niagara as the LRA by the Office of Economic Adjustment

B. Appendix B – Site Graphics

C. Appendix C – Baseline Conditions Report - July 17, 2011

D. Appendix D – Approved Reuse Plan

E. Appendix E – HUD Approval Letter

F. Appendix F – Town of Niagara IDA Information

G. Appendix G - Business Plan Spreadsheets

H. Appendix H – 04Oct11 Army-Town of Niagara Agreement – EDC Deal Points

APPENDIX A - EDC Application

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

RECEIVED

APR 0 4 2011

TOWN OF NIAGARA
SUPERVISOR'S OFFICE

MAR 3 1 2011

Mr. Steven C. Richards
Supervisor
Town of Niagara
7105 Lockport Road
Niagara Falls, NY 14305

Dear Mr. Richards:

On behalf of the Secretary of Defense, this letter serves as recognition of the Town of Niagara as the Local Redevelopment Authority for purposes of implementing the local redevelopment plan for the Niagara Falls United States Army Reserve Center/Area Maintenance Support Activity 76.

Questions pertaining to this recognition or requests for assistance to guide your implementation activity may be directed to Bryant Monroe, Office of Economic Adjustment BRAC Program Lead, at 703-604-5150.

Sincerely,

Patrick J. O'Brien
Director
Office of Economic Adjustment

cc:
DASA (Installations, Housing and Partnerships)
DAS HUD (Special Needs Program)

Minutes of Implementation LRA – October 25th, 2011

Attendees:

Michael A. Casale (representing Mr. Ferraro, County Development)
Robert Clark
Danny Sklarski
Patrick Brown
Craig Seymour
Michael Risman
Marc Carpenter
Liuenter Feucht
Carmen Granto
Steve Richards, Chairman LRA
Charles Teixeira
Non – voting present: Craig Seymour RKG ASSOC. , Daniel Bristol, Ex Director, LRA
Member Absent: Judith Gatto

Meeting opened: 6:10 pm by Chairman Richards

Opening Remarks, Overview and Discussion of formal Economic Development Conveyance Application to US ARMY – Daniel Bristol, Chairman Richards, Craig Seymour

Resolution to approve the EDC application and forward by Chairman Richards to US ARMY BRAC TEAM

Motion to approve: Robert Clark Seconded: Marc Carpenter

Yeas – Unanimous Nays – None

Resolution to approve application for Grant to support LRA implementation of 250,000.00 to DOD/OEA

Motion to approve: Charles Teixereira , Seconded: Robert Clark

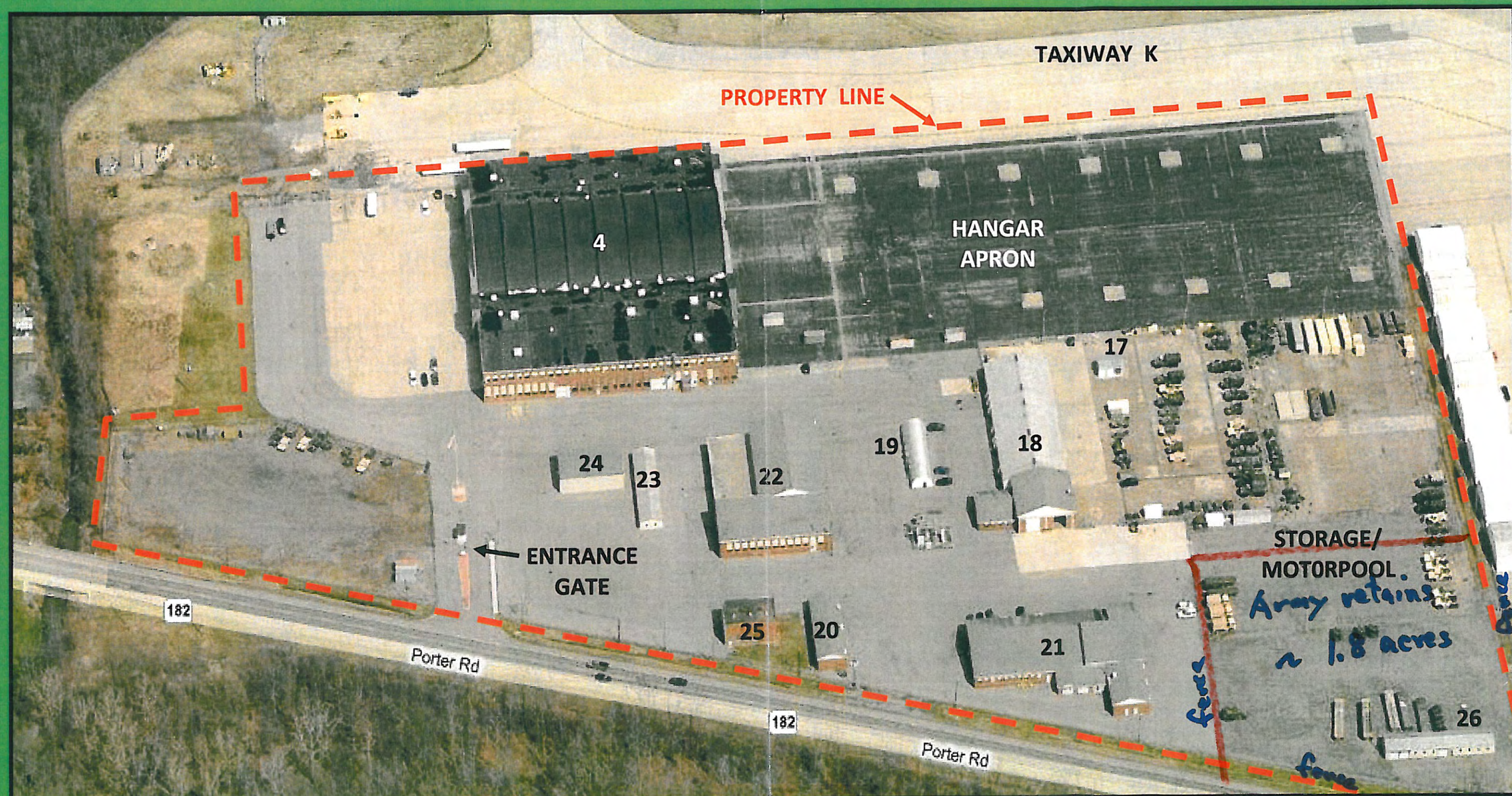
Yeas- Unanimous Nays – None

Motion to Adjourn 7:35 Carmen Granto, Seconded Marc Carpenter

Respectfully submitted

s/n Dan Bristol, Executive Director_____

NIAGARA FALLS ARMY RESERVE CENTER

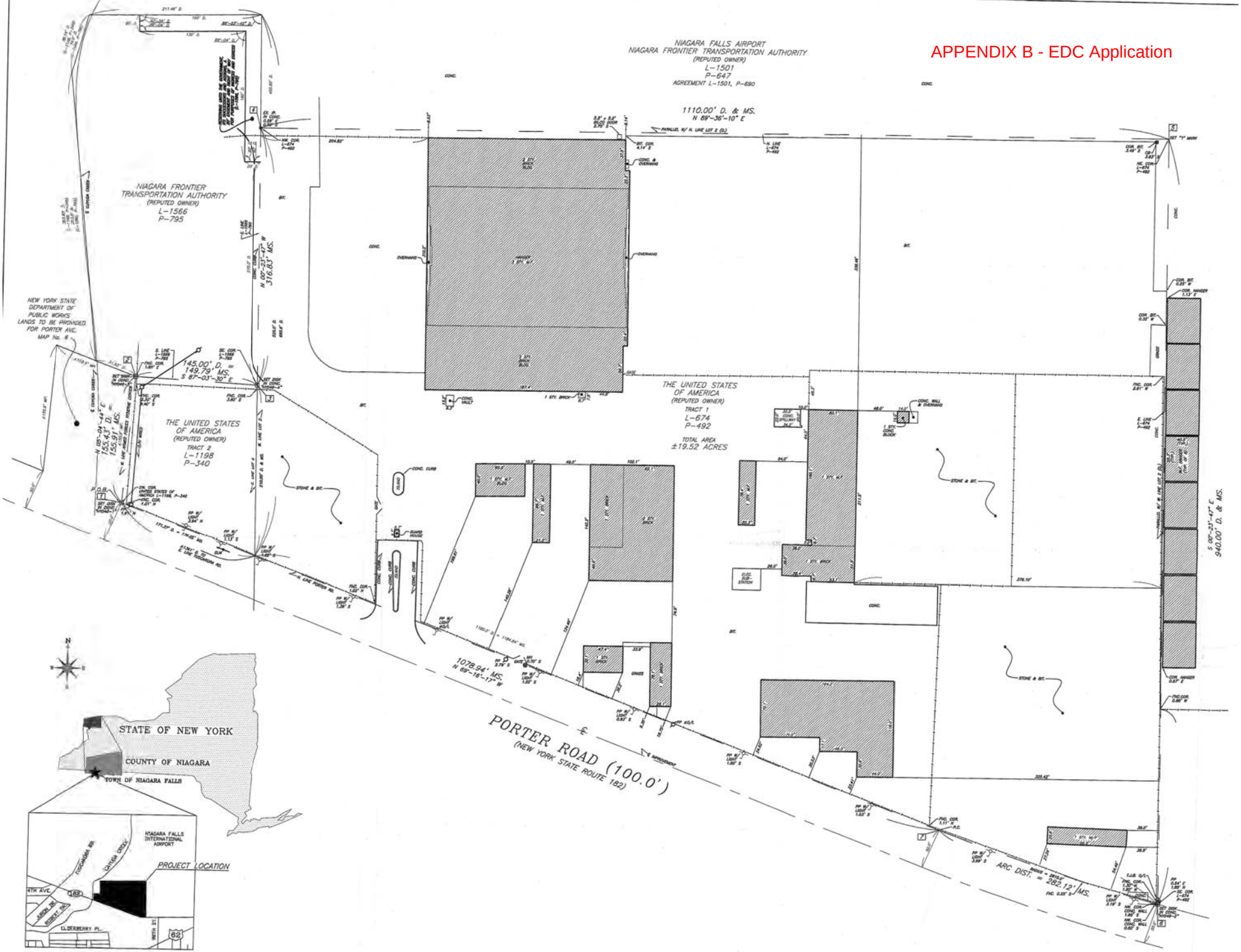


RKG ASSOCIATES INC

ECONOMIC PLANNING & REAL ESTATE CONSULTANTS

CHA

APPENDIX B - EDC Application



RKG ASSOCIATES INC

TECHNICAL MEMORANDUM
BASELINE CONDITIONS

NIAGARA FALLS ARMY RESERVE CENTER
EDC BUSINESS PLAN

June 17, 2011

Prepared for:

Town of Niagara
Local Redevelopment Authority

Attention: Dan Bristol, Executive Director

Prepared by:

RKG Associates, Inc.
Economic, Planning and Real Estate Consultants
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www.rkgassociates.com

Economic
Planning
and
Real Estate
Consultants

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I. INTRODUCTION

RKG Associates, Inc., in association with Jeffrey Donohoe & Associates (JDA), Weston Solutions (Weston) and Clough, Harbor, and Associates (CHA), was retained by the Town of Niagara's Local Redevelopment Authority (LRA) to develop a plan for the conveyance of the U.S. Army Reserve Center and Area Maintenance Facility #76 ("the site"). The approximately 22 acre site is located at 9400 Porter Road in the Town of Niagara, directly adjacent to the Niagara Falls International Airport with access to the airport's runway system. In order to establish and support a strategy for this conveyance, RKG Associates created the following baseline conditions report. The report covers four main topics:

- Existing Conditions of the Site's Facilities and Buildings
- Environmental Conditions
- Airport Market Conditions
- Real Estate Market Conditions

The site was the subject of a 2005 Base Realignment and Closure (BRAC) action which called for the closure and movement of the Army Reserve's activities to a new location located nearby. A Redevelopment Plan was completed in 2008 which concluded that the preferred reuse of the site was for light industrial and commercial activities along with possible aviation-related uses, and that the Town of Niagara seek an Economic Development Conveyance of the property from the government. The Army Reserve recently completed its relocation and the site is unoccupied.

Defining the baseline conditions is essential in preparing for the conveyance process. Understanding existing and forecast demand for different types of land uses will be instrumental in defining the best way to reuse the property. In addition, it will also be useful in assessing *which* entity should receive the property, as well as the *timing* and *means* of conveyance.

CHA's site conditions report includes an analysis of the site's wet and dry utilities, pavement and building characteristics. Weston analyzed the environmental conditions of the site relative to the Army's ability to transfer the property. RKG's airport market conditions include a review of Niagara Falls International Airport's (KIAG) characteristics, including its physical facilities and amenities as well as its competitiveness within the regional airport market. It also connects these findings with the feasibility of an aviation-related reuse of the site. The real estate market conditions section reviews supply and demand of real estate in the Town of Niagara and surrounding area and explains how these factors influence the potential reuse of the site.

CHA found that the utilities and buildings on-site vary in age and condition, with some things (like electrical distribution service) having been updated in the last few years, while others, such as many of the buildings, are 40-50 years old. The age of these structures often makes them functionally obsolete as the needs of aviation and industrial users have changed

significantly since the era in which these were built. The single point-of-entry and underground distribution system for most utilities will result in the need for sub-metering if multiple tenants use the property.

Weston researched existing data on the environmental history of the site including the available Army documentation on conditions. They found that there had been reported issues with PCB's, petroleum products as well as the presence of asbestos materials and lead based paint. The Army is continuing to undergo testing and analysis of the site in preparation for an Environmental Assessment that is underway. Clean up of certain sites is anticipated into the future, which will impact the reuse of the base to some extent.

RKG found that the Niagara Falls International Airport (KIAG) maintains a competitive position in relation to other airports in the region in regards to its physical facilities and services. However, it was also noted that demand for additional aircraft hangar space may be limited, and that the market for such space appears to be at a point of equilibrium (supply is in line with demand). In addition, current economic conditions have limited the use of recreational aircraft, and in turn have limited the demand for additional space for fixed base operations.

In regards to the local real estate market, RKG found that the region's real estate supply of industrial and commercial facilities was largely older in nature, with almost all of the existing stock being built before 2000. In addition, lease rates for commercial and industrial properties remain low, at levels that preclude new construction. Vacancy rates for these properties are also low, indicating that while the market is utilizing much of the available space, there appears to be insufficient demand to justify the investment in *new* space. In addition, as the age and quality of the buildings on-site are so similar to much of the commercial and industrial real estate available throughout the Town, the site may have trouble attracting new tenants within a reasonable amount of time.

II. FACILITIES & BUILDINGS

This section provides an overview of each of the existing buildings at the Niagara Falls Army reserve Center, with a summary of the condition and utilities. The location of the major buildings is shown in Figure 1 below. Building uses and sizes are shown in the following Table 1.

Figure 1 - Niagara Falls ARC Building Identification

The site has direct paved access to the Niagara Falls International Airport's taxiways and runways from the north side of the site. This access is currently fenced with a gate on the west side of Building 4 (Hangar).

Table 1 – Building Use and Size

Building	Existing/Intended Use	Square Footage
4	Airplane Hangar	33,750
4N	Offices and Classrooms	27,000
4S	Offices, Classrooms and Shops	36,000
18	Maintenance Shop	13,670
19	Storage	1,600
20	Storage	2,550
21	Maintenance Shop and Offices	13,540
22	Storage, Offices, Classrooms and Mess Hall	20,000
23	Storage	2,000
24	Storage	2,400
25	Storage (Former Boiler House/Steam Plant)	1,750
26	Storage	2,000
Total		154,260

A. Existing Utilities and Storm Water Drainage

1. Water Service

Six of the buildings at the facility have municipal water service, including Buildings 4, 18, 20, 21, 22 and 25. Each of these buildings contain separate domestic and fire protection water service entry points. Connection to the municipal water supply system enters the property from a single location in Building 21. From there, separate mains for domestic and fire protection are distributed to the other buildings on site. Thus, for multiple users of the site, additional metering would be required, as well as potential utility easements depending on potential future ownership.

Figure 2 below depicts the general location of water and sewer utilities and storm water drainage facilities on the property, as well as the property boundaries.

2. Sanitary Sewer Service

Municipal sanitary sewer service is provided along Porter Road. The line is Vitrified Clay and is estimated to be over 50 years old. Each of the individual buildings on site that have water service are connected to the sanitary sewer via a mix of cast iron bell and spigot sanitary drain pipes or galvanized pipe and cast iron fittings. The existing condition of these lines is unknown, but currently no issues or problems have been reported. The age of the sanitary system varies with the building age and dates back as far as 1956.

3. Storm Water Drainage

Essentially 100% of the property is paved. Therefore the site includes a comprehensive closed drainage system running throughout the facility. The gravity drainage system includes a typical system of catch basins, inlets, and drainage pipes ranging in size from

6” to 36” diameter. In general the drainage flows from south to north, and then east to west to a primary out flow to Cayuga Creek. This main outflow is from a 36” diameter pipe that runs along the northern property boundary with the Airport. Two additional outflows to the Creek are also provided that drain the southwestern portion of the property.

4. Former Steam Heating System

Originally, the entire site was centrally heated by a single boiler house (Building 25). Steam was generated and distributed to the other buildings by way of underground piping and condensate returned in the same manner. It is likely that the original steam and condensate lines were abandoned in place when the main high-pressure boiler was taken out of service. The heating system was decentralized approximately 25 years ago, when natural gas service was installed and individual heating systems installed in each building.

5. Gas Service

Natural Gas Service is similar to water services, in that there is one point of entry to the property located at Building 21 and lines are distributed to and from individual buildings by way of the common entry point. Storage buildings 19, 23, and 26 do not contain gas service.

Figure 3 depicts the general location of gas, electric, and telephone utilities on the property.

6. Electrical Service

Electrical service to the site is fed overhead with medium voltage lines to an on-site substation. There is one meter for the entire property that is located in a small shed inside the substation. From the substation, service is routed underground to a transformer vault located in the northeast corner of Building 4. From that location, distribution of the power was previously achieved by using overhead wires supplying each building. However, less than ten years ago, distribution of the power was changed to underground by installing a system of conduits.

7. Communication Systems

Telephone service was also once routed overhead, but now uses the same conduit system installed when the electrical service distribution was moved underground. Service enters at Building 25 and is branched to the other buildings from this single point of entry to the site.

Figure 2 - Water & Sewer Locations

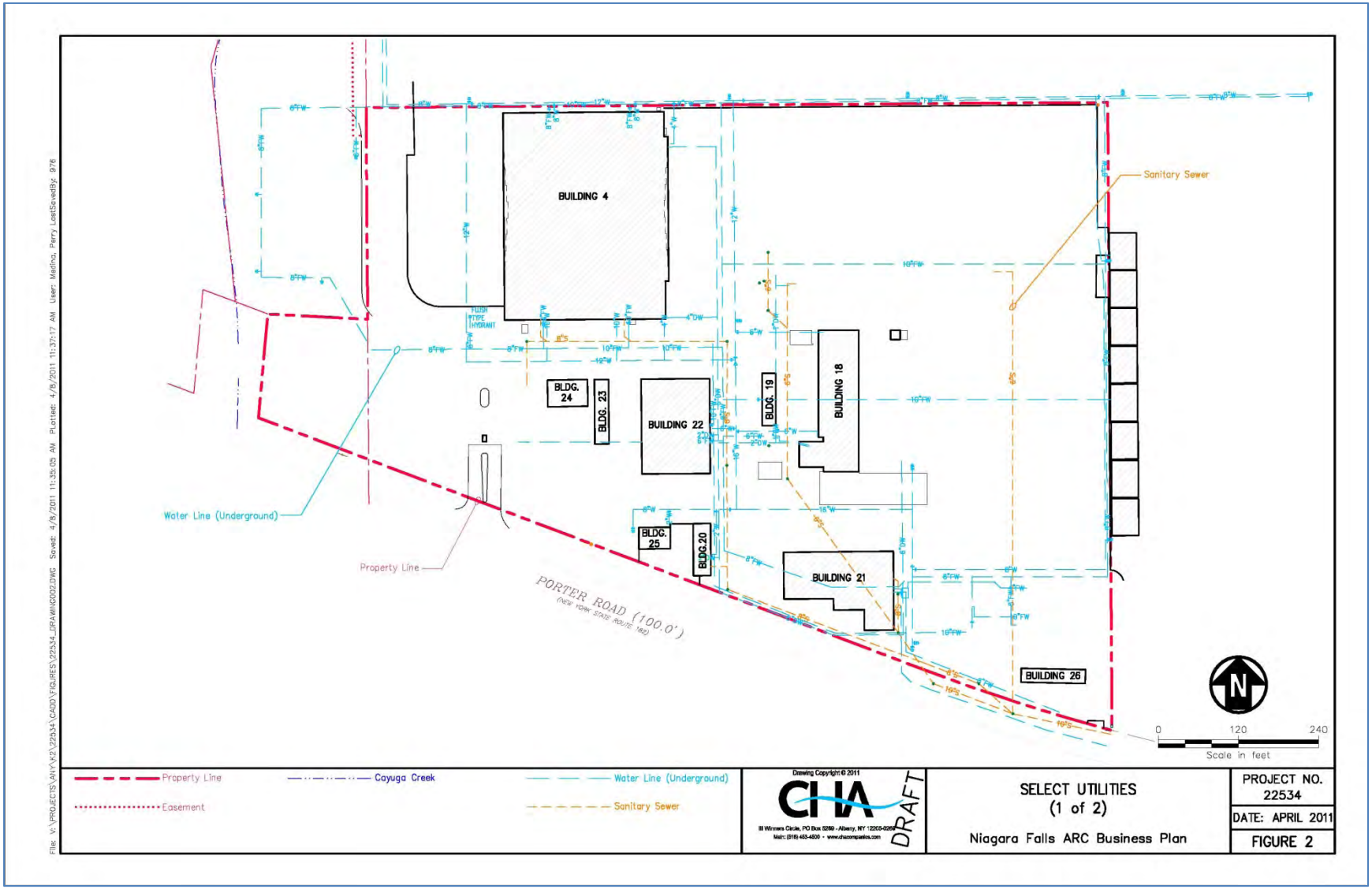
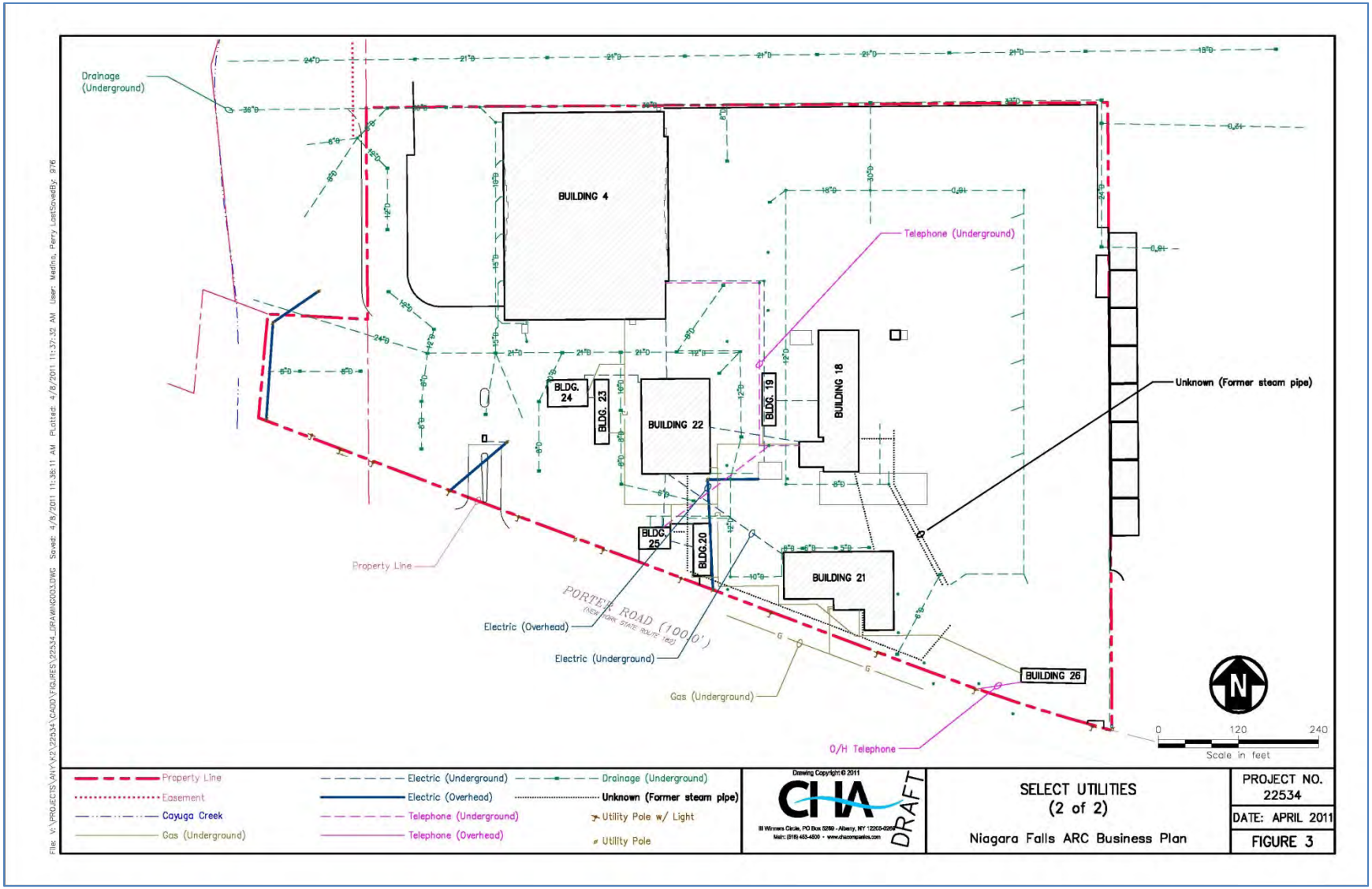


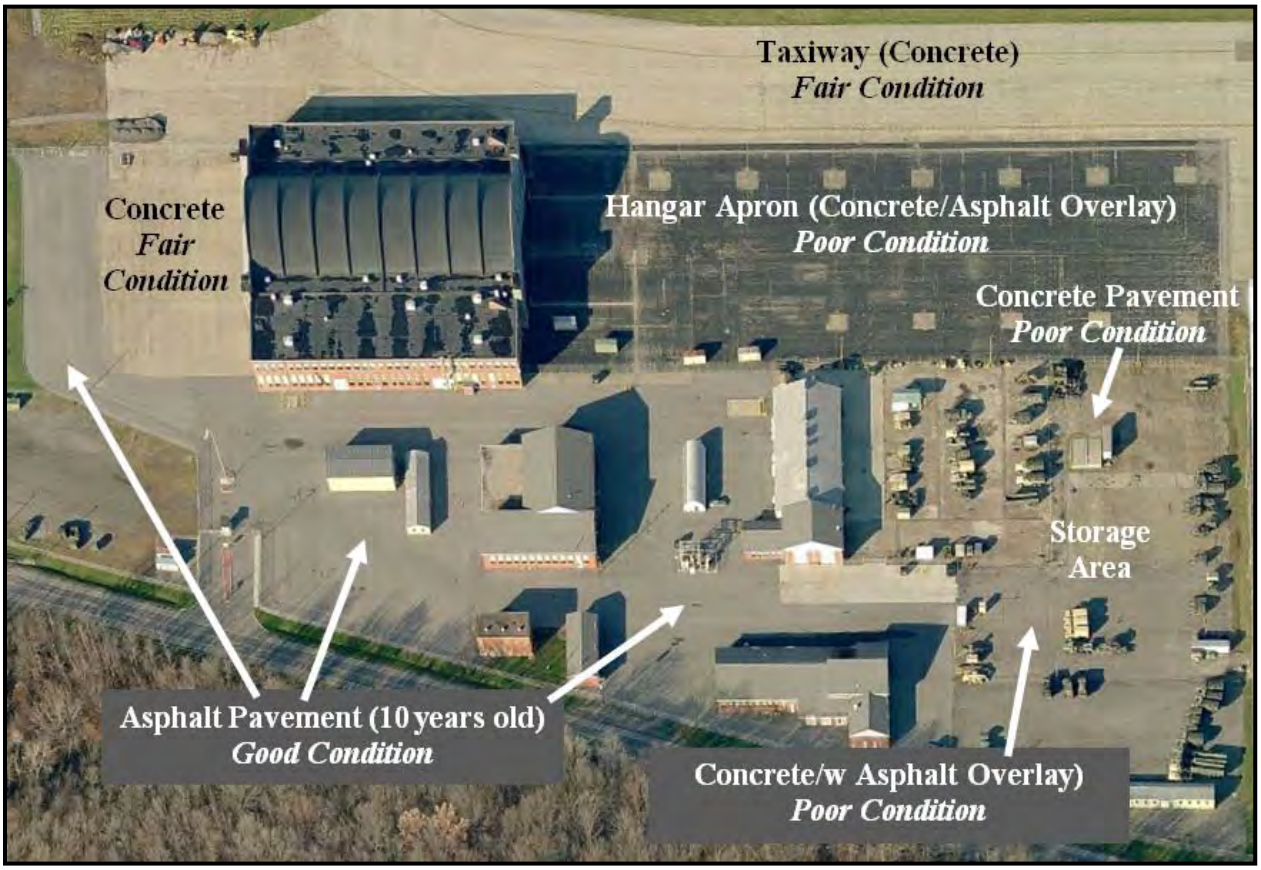
Figure 3 – Other Utility Locations



B. Pavement Conditions

Pavement conditions vary on the property, as can be seen in the illustration below. Although a detailed pavement assessment was not conducted, a visual pavement condition review was adequate to consider facility reuse applications.

The Army completed a relatively comprehensive asphalt resurfacing of the areas surrounding the existing buildings. This resurfacing was conducted after the electric power conduits were installed, and thus is approximately 10 years in age. These asphalt areas remain in good condition, with surface weathering, but no substantial cracking or other surface damage. Reuse of the buildings may commence without the need for pavement rehabilitation at this time. This resurfacing included the location from Porter Road, north to Building 4 (hangar). Note that the Maintenance Shop – Building 18 contains concrete aprons on its south and east sides to support the pavement loads of heavy service vehicles and trucks. The concrete pads are in good condition.



The hangar apron pavement (the aircraft apron east of Building 4) is in poor condition, with loose material on the pavement surface that would be detrimental aviation use (i.e., with aircraft under power). The pavement consists of a concrete pavement section of up to 14" over a clay subgrade, with a 2" asphalt overlay. Coring obtained by the LRA during the initial reuse planning effort found that some locations of the apron contain only 5" or 7" of concrete, which would be inadequate for heavy aircraft. The asphalt overlay is failing and

should be replaced at a minimum; however, a more comprehensive pavement evaluation should be conducted if regular heavy aircraft use (over 100,000 lbs) is anticipated. The apron also contains 13 concrete "hard stands" that were previously used for Army helicopter parking positions. Such hard stands rarely serve a role in any facility reuse.

Immediately north and west of Building 4 are concrete pavement surfaces of approximately 20 years in age. The pavement condition remains fair; however, rehabilitation will be needed within a 10 year period. The concrete pavement to the north is airport property, and thus the responsibility of NFTA.

Finally, the vehicle storage area on the east side of the facility contains a mix of older pavements in generally poor condition. These pavements include concrete areas, concrete with an asphalt overlay, and asphalt and gravel pavements. Any reuse of this area (except for equipment storage) would likely required significant pavement rehabilitation.

It should also be noted that the facility does not include formally designated vehicle parking areas, driveways, or pedestrian walkways. Once vehicles travel past the entryway, they proceed at will to their destination and park adjacent to buildings in an orderly, but unstructured method. This is common within controlled access facilities. However, if the property is subdivided for multiple owners and/or tenants, presumably with various numbers employees and visitors, the lack of designated vehicle thoroughfares and parking is a consideration from a safety and liability standpoint. Depending on the ultimate reuse of the facility, vehicle right of ways and parking may be adequately designated via surface painted markings and some limited signage at a low cost. If the reuse included more substantial ground traffic, particularly by non-employees, vehicles activity may require physical separations from buildings and pedestrian activity (e.g. raised curbs, medians, etc.).

C. BUILDING #4

Building 4 is the Aircraft Hangar. Buildings 4N and 4S are directly adjacent to the hangar on the north and south sides, respectively. Access to Buildings 4N and 4S is possible from either inside the hangar, or from separate points of entry to each building.

1. Building Description

The hangar measures approximately 225 feet by 150 feet. The building consists of nine cast-in-place concrete arches that span 150 feet and measure 52 feet high at the center. Roof covering is a single ply membrane type, and appears to be in good condition. The east and west ends of the building are composed of steel framing and corrugated metal siding, and include large sliding metal doors with 10-light vertical metal windows. These massive doors are original to the structure, and while they still operate according to the site maintenance manager, their operation is not encouraged unless necessary. Investment

in repairs or replacement of these doors is likely if they are to be used regularly in any reuse application.

2. Building Improvements

The floor of the hangar is an 11-inch thick concrete slab on grade. This slab also contains an in-slab loop heating system. Low pressure steam heats water that is then circulated through pipes cast in the floor slab. Approximately 10 years ago, the heat exchanger, loop circulation pump, and loop piping were replaced according the site maintenance manager. To replace the loop piping, trenches were cut at the north and south edges of the building to expose the piping and then new piping was "sleeved" into the existing lines.

3. Building 4S

Building 4S is attached to the south elevation of Building 4, and is approximately 80 feet by 225 feet. This is a two-story building with a compressed second story due to high ceilings on the first floor. Structural framing is cast-in-place concrete beams and columns. The floor and roof are framed with what appear to be concrete T-beams while some areas are framed with structural steel and masonry walls. The roof is flat with metal coping, and is covered with a single ply membrane similar to Building 4. The building is enclosed with the use of a brick facade. Windows at the first floor are large vertical type each with three metal upper panels and a single two-light slider window. Second story windows have a metal panel in the upper sash and a two-light window in the lower sash. All windows have concrete sills. The South elevation has two roll-up metal doors. There is also several single-leaf flush metal "man doors." Building 4S has its own wet-type pendant sprinkler system fed from the fire protection service line entry at the south wall of the hangar next to the boiler room.

4. Building 4N

Building 4N is attached to the North elevation of Building 4 and is approximately 60 feet by 225 feet. This is also a two-story building with structural framing, roof covering and brick facade enclosure identical to Building 4S. Windows are similar to those in the second story of Building 4S, having a metal panel in the upper sash and a two-light sliding window in the lower sash. There is also several single-leaf flush metal "man doors." Buildings 4S and 4N contain classrooms and office space.

D. BUILDING #18

Building 18 was constructed in 1960 and is divided into three sections. The southern portion of the building is one-story and consists of two sections, a classroom/office area and a maintenance shop. This part of the building is constructed of concrete block faced with brick. The maintenance shop and classroom/office space both have a gabled roof covered in asphalt shingles. The gable end exteriors are covered in aluminum siding.

Originally, the maintenance shop had a flat roof constructed with 16-inch wide precast roof decking situated on steel beams at roughly 8 foot centers spanning north and south. The gabled wood truss structure was added in the 1980's. A 16 foot high ceiling allows ample room to bring in large equipment through the two large metal roll-up garage doors on the South elevation. Windows have concrete sills and are large three-light metal-sash types with metal panels in the upper sashes.

At the West elevation of the maintenance shop is the attached classroom/office section. This is a single story structure with wall sections, ceiling and roof framing identical to those in the maintenance shop. Ceiling height in the classroom/office section is approximately eight feet. Windows in this area are two-light with metal sashes and metal panels in the upper sash.

The northern section of the building is a one-story larger maintenance shop. This section of the building is a pre-engineered metal building structure on a concrete foundation. The building is enclosed with corrugated metal siding, and a gable roof structure covered in corrugated metal roofing. The East elevation has five metal roll-up garage doors with one-light fixed windows. The North and West elevations each have a single roll-up garage door. There are also several single-leaf flush metal "man doors," one at the North elevation and seven at the West elevation. Metal awnings cover each "man door" at the West elevation.

Building 18 is also serviced by a fire protection system. The heating system is a single low pressure steam boiler and feed system connected to the existing steam piping. Building 18 also has a 3 ton split air-cooled air conditioning system. This system is installed in the maintenance shop offices along the West wall. The condensing unit is located outside the building while the air handler is set above the offices. Central cooling is not common at the

site, so this system may enhance the attractiveness of Building 18 for reuse. Approximate square footage of Building 18 is 13,670.

The asphalt shingled roofs of Building 18 are approximately 15 years old, and will require removal and replacement in the near future. Interior spaces of the North maintenance shop may require repairs and/or upgrades shortly due to continued high use of the space.

Off the northwest corner of Building 18 is a small storage building known as Building 17 tha was used for the storage of hazardous materials, as described in the Environmental section.

South elevation

East elevation

West elevation, shop section

West elevation, office section

North elevation

E. BUILDING #19

Building 19 was constructed in 1970 between Buildings 18 and 22. This is a Quonset hut storage building, one story in height and measuring 20 feet wide by 80 feet deep. The building is situated on a concrete block foundation and covered in corrugated metal siding. Vinyl siding and one single-leaf flush metal "man door" are located at the North and South elevations. There are five single-hung horizontal wood windows and one single-leaf flush metal "man door," all with corrugated metal awnings along the West elevation.

There are no mechanical services to Building 19. The gas service has been cut and capped to the building, and there is also no electrical service to the building. Building 19 also lacks fire protection common to most of the other buildings. This building is used solely for storage. Given the fair to poor condition of the building, removal of this structure may be recommended if storage space is not needed or significant improvements are not made.

South elevation

East elevation

West elevation

West & North elevation

F. BUILDING #20

Building 20 was constructed in 1968. It is situated near the southern border of the property along Porter Road. The building is rectangular in shape and measures approximately 25 feet wide by 102 feet deep. Constructed on a poured concrete slab, this building is framed with concrete block covered with brick. Building 20 has a wood truss gabled roof structure, similar to that of Building 18, placed over the original flat roof structure during the 1980's. The original roof framing is made up of 12-inch metal bar joists at 24-inch centers, spanning east/west with 16-inch precast roof decking. The current gable roof is covered with asphalt shingles while the gable ends have aluminum siding. A suspended ceiling grid and tiles provide approximately nine feet of clearance inside.

There are four single-leaf flush metal "man doors," two with square lights and two without, and four single-hung metal sash replacement windows with metal panels in the upper sashes at the East elevation. The North and South elevations both have one single-hung horizontal window while the West elevation has four of these windows.

Building 20 contains a fire protection system common to most buildings on the site. There is a single low pressure steam boiler and feed system used to heat this building which appears to be in good condition. Since no central cooling systems exist for an entire building, there are window mounted air conditioners installed to provide cooling. The asphalt shingled roof of Building 20 is approximately 15 years old, and will require and additional layer or removal and replacement in the near future.

North elevation

East elevation

G. BUILDING #21

Building 21 was constructed in 1960, is approximately 13,540 square feet and serves as offices and a maintenance shop. It is situated near the Southern property border along Porter Road. This building also serves as the sole connection point for municipal water and natural gas services; these utilities enter the site through Building 21 and are then distributed to the other buildings.

The building is "L" shaped and is constructed upon a poured concrete foundation with a brick exterior. This is a one story building with the eastern end of the building height being taller than the Western end. Building 21 has a wood truss gabled roof structure placed over the original flat roof in the 1980's, similar to those of Buildings 18 & 20. Again, the asphalt shingled roof is approximately 15 years old, and will require attention likely at the same time as the other shingled roofs on site.

The western section of the building contains offices with suspended ceilings while the Eastern section maintenance shop has exposed ceiling deck with bar joist framing. Single-leaf flush metal "man doors," some with glass and some without, and single-hung metal sash windows with metal panels in the upper sashes are common throughout the structure. At the east end of the building, roll-up metal garage doors are located at the North and East elevations to provide easy access to the maintenance shop bays. Windows at the maintenance shop area are three-light metal types with metal panels in the upper panels and awning windows in the lower sash. There are maintenance related offices located at the South elevation (rear) of the shop area. Also, there is a three-bay wide projection at the rear of the building containing two smaller metal roll-up garage doors.

Building 21 contains a wet-type fire protection system, like most other buildings on site. Heating is achieved by a single low pressure steam boiler and feed system that appears to be in good condition. This building also contains a three ton packaged water-cooled cooling unit installed in the office area. Several window mounted air conditioners are also installed. As previously mentioned, central cooling is not common to most areas on site and could be an attractive feature for reuse possibilities.

North elevation

North & east elevation

East & partial south elevation

South elevation

Base gas service entry point

South elevation

H. BUILDING #22

Building 22 is a rectangular building that sits between Buildings 19 and 23 and contains approximately 20,000 square feet of space. The building is divided into three sections. A one-story mess hall makes up the south portion of the building. The northern section of the building contains a one-story storage wing with a two-story storage and office wing directly adjacent. At the two-story section, the storage area is on the first floor while the office area is located on the second. Building 22 is constructed of concrete block covered in brick and sits on a poured concrete foundation. There are three different roof types: a shed roof with asphalt shingles at the mess hall, a flat roof at the one-story storage area and a gabled roof with asphalt shingles at the two-story storage and office wing. The roof structures at the two-story portion and the mess hall have wooden truss framing added over the original flat roofs, similar to that of other buildings on site.

The South elevation has a single-leaf flush type "man door" with a rectangular view light, and twelve three-light metal windows. The upper two sashes of these windows have metal panels while the lower sashes contain operable windows. The West elevation is made up of the mess hall portion at the South end and the one-story storage wing at the North end. Also at the West elevation is the second story of the storage and office area of the building. Windows in the mess hall section are the same as those in the South elevation. There is also a single-leaf flush panel door with a square light. The one-story storage wing has twelve two-light meal windows with metal panels in the upper sashes and one single-leaf flush-panel door while the two-story section has fourteen windows. At the North elevation, the building is divided into the one-story storage wing and the two-story storage and office area.

All windows at this elevation are the two-light metal sash with metal panels in the upper sash type. There are six of these windows at the one-story storage wing, five at the first floor of the storage and office area and four at the second floor. There is also a single-leaf flush panel metal door with a large square light at the office and storage section. At the East elevation is the two-story office and storage wing and the mess hall at the Southern end. The windows at the two-story portion are identical to those at the North and West elevations, with eleven such windows on the first story and fourteen at the second. There are also two recessed entrances to the storage and office area, each with a single-leaf flush-panel metal door and single square light. This elevation also provides the main entrance to the mess hall, double-leaf flush-type metal doors with one-light square windows in each leaf.

The asphalt shingled roofs are approximately 15 years old, and will require attention likely at the same time as the other shingled roofs on site. Building 22 is serviced by a fire protection system, likemost other buildings on site. However, this building has a combination of wet and dry systems. Sprinklers servicing the northern part of the building operate on a wet-type system while the mess hall and kitchen are protected by a dry system. The sprinkler heads in the mess hall and kitchen are currently located above the new suspended ceiling system. This situation prevents the system from reacting to a fire below. The sprinkler heads should be dropped below the ceiling in order to be exposed to the occupied space that they are designed to protect.

Although this building has a kitchen in the mess hall area, no gas-fired kitchen equipment was observed. The gas service feeds the single low pressure boiler and feed system. This system appears to be in fair condition. Building 22 also has some spot cooling areas achieved with the use of window mounted packaged air conditioners. Electrical service is provided by an underground conduit, branch service from the transformer vault in Building 4S; power is then distributed to other buildings on site using underground conduits.

South & East elevations

East & North elevations

North elevation

West & North elevations

BUILDING #23

Building 23 is a one-story rectangular shaped storage building situated between Building 22 and Building 24. It measures 100 feet long by 20 feet wide. This is a wood framed building on a poured concrete foundation. Corrugated metal covers the exterior walls and roof. There is a metal roll-up door with three oval lights at the North and West elevations. The East elevation has eleven one-light fixed wood windows while the West elevation has ten such windows, and the South elevation contains two. A single-leaf flush panel "man door" is present at the East and West elevations.

Limited services are present at Building 23. No fire protection system exists, and while there is a gas line to the building, no heating equipment is installed. Electrical service is limited given the building is used only for storage. This building is in poor condition, and without the continued need for storage or plans to rehabilitate the structure, it could be razed.

North elevation

East elevation

South & West elevation

I. BUILDING #24

Building 24 is the newest building on site and was constructed in 1994 and is in very good to excellent condition. Rectangular in plan, the building is a one story pre-engineered building with 2,400 square feet. Similar to other buildings, Building 24 has a poured concrete foundation. The walls are enclosed with corrugated metal panels. The roof is a gabled structure with minimal pitch covered with corrugated metal roofing.

There are no windows in this building. The North elevation has two meal roll-up garage doors while the East and West elevations each have a single-leaf flush metal "man door" with a single square light in the upper portion. Building 24 contains a wet-type fire protection system. Domestic water and sanitary sewer may be available, but do not appear to be in use currently as the building is only used for storage. Gas service to the building feeds the single forced air unit heater. This building contains a 100 amp branch service panel sufficient for current use as a storage building.

North elevation

East elevation

West elevation

South elevation

J. BUILDING #25

Constructed in 1960, Building 25 was originally used as the boiler house when the site had a single central heating system. Steam was distributed to the other buildings with underground piping and condensate returned in the same manner. The building is used for storage now that the heating system has been decentralized and gas lines service individual buildings and their heating systems. It is likely that the original steam and condensate lines were abandoned in place when the main high-pressure boiler was taken out of service.

This is a one-story building situated along the Southern property boundary along Porter Road, next to Building 20. While the building is one-story, there is a mezzanine area at the Eastern side. The building is constructed of concrete block on a poured concrete foundation clad in brick and corrugated metal siding. Brick covers the North, South and East elevations while the corrugated metal siding covers the West elevation. The roof is flat and is assumed to have a single ply membrane covering similar to that of other flat roofs on site.

The North elevation has one single-hung wood sash window, one single-leaf paneled “man door” with a two-light window, a roll-up metal garage door with four oval lights and two square-shaped vents located in line with the top of the overhead door. There is a small window in the restroom along the East elevation at the rear of the building. The West elevation has no windows or doors, while the South elevation has three single-hung wood-sash windows and a single-leaf paneled “man door” with a two-light window identical to the one in the front of the building.

Gas service to the building feeds the single forced air unit heater, and also contains a 100 amp branch service panel, similar to Building 24. A wet-type fire protection system similar to other buildings on site exists within this building. Building 25 also serves as the single point of entry for the telephone service on site. Service enters at this building and is then distributed to the other buildings by way of an underground conduit system. This system was installed less than 10 years ago when the electric was also moved underground. Based upon reuse demands for the site, upgrades to this system may be necessary. Fortunately, as the underground conduit system includes spare conduits to enable service upgrades.

North and West elevation

K. BUILDING #26

Building 26 is located near the southern property border along Porter Rd. This building is situated at the far Eastern end of the property, and is similar to Building 23. The building is 20 feet wide and 100 feet long, and is a wood framed structure with a poured concrete foundation. The gabled roof structure is covered with corrugated metal. Siding is also corrugated metal. The East and West elevations each have a single one-light fixed wood window while the North elevation has twelve such windows and the South elevation has seven. The South elevation also has a single-leaf flush metal "man door" and three metal roll-up garage doors.

Limited services are present at Building 26. No fire protection system exists, and while there is a gas line to the building, no heating equipment is installed. Electrical service is limited given the building is only used for storage. Building 26 is also the only building on site to still have an overhead electrical feed. The building is currently used for storage only. This building is in poor condition, and without the continued need for storage or plans to rehabilitate the structure, it could be razed.

South elevation

West elevation

III. ENVIRONMENTAL CONDITIONS

A. Introduction

This section evaluates the environmental conditions that may be encountered during redevelopment on the Niagara Falls U.S. Army Reserve Center (Site) located at 9400 Porter Road in the Town of Niagara, New York. These evaluations and recommendations are based on a review of the following documents:

- Preliminary Assessment Report. Prepared in February 1994 by Engineering Technologies Associates, Inc.,
- Underground Storage Tank Removal and Closure Report. Prepared in December 1999 by Sverdrup Environmental, Inc.,
- Asbestos Inspection Report. Prepared in December 2004 by Environmental Enterprise Group, Inc.,
- Stormwater Pollution Prevention Plan Update Niagara Falls USARC (NY 046) Niagara Falls, NY. Prepared in February 2006 by Browne AE&T Group.
- EDR Radius Map Report. Prepared in July 2006 by Environmental Data Resources, Inc.,
- PCB Spill Delineation Report for Outfall 5 Stormwater Culvert Cleanup and Ditch Remediation. Prepared in May 2009 by PARS Environmental, Inc.,
- Supplemental Phase I Assessment. Prepared in August 2009 by CH2MHILL,
- Remedial Action Report. Prepared in March 2010 by PARS Environmental, Inc. and
- Quality Assurance Project Plan/Sampling Plan. Prepared in November 2010 by PARS Environmental, Inc.
- Site Inspection Report Building 2 and Fire Protection Main. Prepared in March 2011 by PARS Environmental, Inc.
- Phase I Environmental Site Assessment of the adjacent Niagara Falls International Airport (NFIA) Cargo Development Niagara Falls, New York prepared in July 2009 by Panamerican Environmental, Inc.

B. Site Description

The Site is approximately 22 acres in size and is located in an industrial area of Niagara Falls, NY. The Site is almost entirely covered by impervious surfaces and contains 11 buildings including an 85,000 square foot (SF) aircraft maintenance hangar (Building 4), a number of several concrete block or brick buildings ranging in size from 9,720 to 1,600 SF (Buildings 18, 19, 20, 21, 22, 23, 24, 25 and 26), a Petroleum Oil and Lubricant (POL) storage shed (Building 17), two wooden storage sheds, two CONEX storage containers and three asphalt-paved parking/equipment storage areas. An electrical switchyard is located in the south central portion of the Site. Site personnel indicated that the switchyard does not contain transformers and that the switchgear and breakers are of the dry type and do not contain polychlorinated biphenyls (PCBs).

The Site is bordered to the South by Porter Road, to the north and east by the Niagara Falls International Airport (NFIA) and to the west by the former NIFA West Fuel Farm.

The installation is owned by the United States Army Corps of Engineers (U.S. ACE), New York District and is a sub-installation of Fort Drum. Site tenants include the 277th Quartermaster Company, the 865th Combat Support Hospital, the 1982nd Forward Surgical Unit, Area Maintenance Support Unit 76 and the New York Army National Guard (NYARNG). The NY Army National Guard occupies about 50 percent of the developed portion of the Site including Building 4 which is used as a helicopter hangar.

The Site is currently used for maintenance of vehicles and aircraft, storage of equipment (tents, boots, clothing and field medical supplies) vehicle parts, petroleum, oil and lubricants (POL) paints, and batteries. Several buildings contain classrooms that are used for training NYARNG personnel.

The Site is serviced by municipal water and sewer service which has been provided by the City of Niagara Falls since the Site was developed in the late 1930's. Gas and electricity are provided by commercial suppliers. There are no water supply wells or septic systems located on the Site or surrounding properties.

C. Environmental Setting

The Site is located in the Erie-Ontario Lowlands Physiographic Province. The area is characterized by relatively flat topography and is dissected by east-west trending escarpments. The Site is located approximately 5 miles south of the Niagara Escarpment. Soils on the site consist of Lakemont silty clay loam and Fonda mucky silt loam. These soils have low permeability rates and are subject to ponding. Historic information cited in several Phase I reports indicates that non-uniform soil conditions were encountered on the Site during excavation activities, indicating that portions of the Site has been filled. Some evidence points of filling of low lying areas adjacent to Cayuga Creek. Permeability of the fill material may be greater than that of native soils.

The Niagara Falls area is underlain by glacial sediments consisting predominantly of till and lacustrine silt and clay deposits which are between 5 and 80 feet thick. Bedrock consists of weathered dolomite and limestone, shale and limestone, and sandstone and shale of the Niagaran Series.

The topography of the site is nearly level. Surface runoff from the Site is collected by a stormwater drainage system which discharges to Cayuga Creek, an intermittent stream which flows to the Niagara River. Five stormwater outfalls have been identified at the Site. Three outfalls (OF-1 through OF-3) discharge directly to the Creek, whereas two outfalls (OF-4 and OF-5) discharge to a drainage swale located along the eastern property boundary. This swale flows west along the north side of Porter Road before discharging to Cayuga Creek.

Depth to groundwater at the Site ranges from less than 4 feet bgs to 6.5 feet bgs. Shallow groundwater flow is believed to be to the west, toward Cayuga Creek. The relatively impermeable nature of the Site's soils (due to high clay content) can cause prolonged high groundwater conditions where the groundwater is within 6 inches of the surface.

The glacial deposits act as a confining unit for the underlying weathered bedrock aquifer. Hydraulic conductivity in the underlying limestone bedrock layer averages 40 feet per day. The hydraulic properties of the limestone are controlled by fractures and solution cavities with the greatest conductivity in the upper weathered zone or along bedding planes and fracture zones. The rock matrix transmits negligible amounts of groundwater due to its low primary porosity.

D. Summary of Major Findings

1. Environmental Conditions on Adjacent Properties

Land to the south of the property is undeveloped, and has no records of environmental incidents. The Niagara Falls International Airport abuts the Site to the East, North and West.

Niagara Falls International Airport

The land east of the Site is a storage and General Aviation area owned by Niagara Frontier Transportation Authority. The "East Fuel Farm" was located on the NFTA property approximately 2,100 feet east of the eastern boundary of the Site. The East Fuel Farm contained eight USTs, (Tanks 301 through 308) including three 10,000 gallon tanks containing 100 octane aviation gasoline, two 30,000 gallon USTs containing Jet A, and one 6,000 UST and two 4,000-gallon USTs with unknown contents.

Six groundwater monitoring wells (MW-1 through MW-5) were installed around the East Fuel Farm in 1992. A petroleum odor was detected at one well (MW-5) where a surface spill was identified. Groundwater samples were collected from these wells in 1994. Benzene and napthalene were detected in a sample collected from well MW-5. Low concentrations of trichloroethylene (TCE) were detected in samples collected from wells MW-1 through MW-3.

Two additional USTs containing gasoline (capacity unknown) were discovered near the East Fuel Farm in 1993. The East Farm USTs and the two additional USTs were removed around 1996. No information was available regarding soil contamination identified during removal of the East tank Farm USTs. Concentrations of petroleum in soil surrounding the two additional tanks exceeded NYDEC guidelines but was allowed to remain in place.

The East Fuel Farm USTs were replaced between 1996 and 1997 with three 20,000 gallon tanks containing Jet A, one 15,000-gallon UST containing 100 octane aviation gasoline, one 4,000-gallon UST containing diesel fuel and one 4,000-gallon UST containing gasoline.

The property west of the Site is also owned by NFTA and is currently undeveloped and covered by grass except for an abandoned concrete block building, a concrete island, and a grass-covered mound topped by a small concrete structure. Cayuga Creek is located immediately west of this property which was formerly the airport's "West Fuel Farm". The West Fuel Farm contained two 210,000-gallon capacity USTs (Tanks 309 and 310),

six 25,000-gallon USTs (Tanks 311 though 314), a pump house, fuel loading manifold, gas/water separator building and fuel truck loading stand. The West Fuel Farm tanks are not listed on the State UST database.

The mound on the West Fuel Farm property is Tank 309, whereas as the block shed is the former gas/water separator building. The concrete island of the former truck loading stand is located immediately east of the block shed. Tank 309 is reported to have stored Jet Fuel A. No information was available on the material (assumed to be aviation fuel) stored in the other USTs or on environmental contamination encountered during their removal. Available documents indicate that Tank 210 and the six 25,000-gallon USTs and associated piping and fuel transfer equipment were removed between 1989 and 1990. Tank 209 remained in place and was converted to a water storage tank in 1995. The conversion process involved cleaning the tank, removing or cleaning, grouting and sealing fuel lines, and removing the pump house and fuel unloading manifold.

Four monitoring wells (MW-1 through MW-4) were placed around Tank 209 in 1992. During well installation, petroleum odor was detected at the water table (approximately 6 feet below ground surface) in wells MW-1, MW-2 and MW-3. Analysis of groundwater conducted in 1994 detected benzene in samples collected from MW-1 and MW-2.

A facility located less than 0.125 miles east north-east of the Site (on the NFIA property) identified as CECOS, International, Inc. removed and closed one 2,000-gallon and one 6,000-gallon UST containing diesel fuel prior to April 1991. Four ASTs of approximately 250 to 300 gallons capacity are currently located at this facility.

A spill that involved the release of 2000 gallons of Aqueous Film Forming Foam (AFFF) occurred on the NFIA property on August 2, 2010. NYSDEC records indicate that the spill occurred on impervious surfaces, was cleaned up, and is now considered closed. Typical constituents of AFFF foam include (by weight) 85 to 90 percent water, 2 to 4 percent propylene or ethylene glycol mixed with tert-butyl ether, 1 to 2 percent inorganic salts (magnesium sulfate) with the remaining portion composed of proprietary hydrocarbon and fluorosurfactants. Composition varies slightly between manufacturers. The foam is used in fighting Class A (flammable liquid) fires and is non-hazardous. The greatest environmental risk resulting from a release of this material is the biological and chemical oxygen demand resulting from its decomposition, which may impact aquatic life, and the generation of methane from degradation of glycol if the material enters groundwater.

Other Adjacent Properties

Spills or releases of oil or hazardous materials were recorded on one other adjacent properties. A transformer was damaged by a lightning strike on a utility pole at 9401 Porter Road less than 0.125 miles west of the Site. Approximately 3 gallons of transformer oil was recovered and the spill was closed.

According to the Environmental Condition of Property (ECP) Report, land uses adjacent to the Site have not changed substantially over time.

2. Regulatory Agency Data Base Review

A review of regulatory agency databases for the Site and surrounding properties was performed by EDR on July 13, 2006 and indicated the following:

- The Site was not on the National Priorities List (NPL) and no NPL sites were located within 1 mile of the Site.
- There site is not on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Listing System (CERCLIS). No CERCLIS sites are located within 0.5 miles of the Site.
- The Site is not listed as a Resource Conservation and Recovery Act (RCRA) Corrective Action Site or as a RCRA Treatment, Storage and/or Disposal Site (TSDF). No RCRA corrective action or TSDF Sites are located with 1 mile or 0.5 miles, respectively, of the Site.
- The Site is listed as a RCRA small quantity hazardous waste generator (SQG). No other small or large quantity generators are located within 0.25 miles of the Site.
- The Site is listed on the Federal Emergency Response Notification System List due to a PCB spill that occurred in 1991 (See Section B4).
- The Site is not listed as a State Hazardous Waste Site (HWS), and there are no listed HWS properties within 1 mile of the Site.
- State records indicate that the Site does not have a registered landfill, incinerator or transfer station within its boundaries. No property within 0.5 miles of the Site is so registered.
- Seven Leaking Underground Storage Tank (LUST) sites are located within 0.5 miles of the Site. The closest LUST site is 1,400 feet south-southwest of the Site at a lower elevation. All other reported LUST sites are also at a lower elevation that the Site.
- One spill incident involving 50 gallons of jet fuel was recorded at the NIFA in December 1999. The spill was due to a malfunction on an automatic shut off during filling of a fuel truck, and was subsequently cleaned up. The NYSDEC spill list database indicates this incident was closed in March 2000.

3. Hazardous Substances and Hazardous Waste:

Hazardous substances are stored, used and generated at the Site. The Site is a Small Quantity Hazardous Waste Generator (EPA ID Number NY5210524273).

Past Storage, Use and Disposal: Information contained in the ECP Report indicated that the Site was formerly used for the maintenance of aircraft, Nike Missiles and vehicles. Hazardous materials typically involved in the maintenance of Nike Missiles include solvents, (tetrachloroethylene [PCE], trichloroethene, [TCE], 1,1,1-trichloroethane [TCA] and 1,1,2-TCA, carbon tetrachloride, and benzene), sulfuric and nitric acid, sodium dichromate and zinc chromate, selenium, and paints. Nike Ajax missiles contained silver-cadmium batteries that used a potassium hydroxide electrolyte.

Materials used in the maintenance of vehicles and aircraft include POLs, gasoline, diesel fuel, oils, hydraulic, transmission and brake fluids, antifreeze, paints, Stoddard solvent, and cylinders of compressed gasses (acetylene and oxygen) used in welding and cutting metal.

Current Storage, Use and Disposal: Current Site activities include maintenance of vehicles and aircraft. Available records indicate that hazardous materials stored on the site and used in these activities include POLs, batteries, paints, methanol, chlorinated and non-chlorinated solvents, acids, diesel fuel, kerosene, gasoline, antifreeze, motor oil, gear oil, transmission fluid, hydraulic oil, windshield washer fluid, rifle bore cleaner, epoxy and polyester resins, cleaning supplies, pesticides, and compressed gas cylinders containing acetylene and oxygen.
On average, the Site generates 50 gallons of used engine oil, 10 gallons of antifreeze, 5 gallons of hydraulic fluid, and 5 gallons of waste diesel fuel every month.

4. Aboveground Storage Tanks:

Information on current and former Above Ground Storage Tanks (ASTs) on the Site was obtained from the ECP report and the NYSDEC environmental database.

Current ASTs: The New York Department of Environmental Services (NYDES) environmental data base indicates the presence of one 528-gallon AST on the Site. This AST is located adjacent to the POL shed (Building 17) and is used to store waste oil.

Former ASTs: The Environmental Condition of Property Report identified three former 250-gallon ASTs on the Site that stored fuel oil. These tanks, which were located at Buildings 19, 23, and 26, were removed in 1989 or 1990. No additional information was available on these tanks.

5. Underground Storage Tanks:

There are currently no UST on the Site. Available records indicate that thirteen USTs were formerly present on the Site, including:

- Former Building 2 was the location of a former vehicle fueling facility and the Site's former fire protection pump house. The vehicle fueling facility was associated with two 20,000-gallon and one 15,000-gallon USTs. One smaller UST (estimated capacity less than 2,000 gallons, contents unknown) was also located in this area. Two additional USTs (capacity and contents unknown) were located beneath the pump house floor and may have been used to store fuel for the fire pump engines. There are no available records regarding the removal of these USTs or if releases occurred that impacted soil and groundwater. The location is shown in Figure 4.

  A Work Plan dated November 2010 describes a subsurface investigation performed determine if contamination is present in the vicinity of Former Building 2 due to the presence of the USTs. The investigation was implemented in November and December 2010. Analysis of soil samples collected from thirteen soil borings advanced in the vicinity of the former USTs indicated that VOC and SVOC

concentrations were below NYSDEC unrestricted use cleanup objectives. PAH concentrations detected in a soil sample collected from a test pit (TP-1) located near the former USTs exceeded residential use objectives. PCB concentrations in soil samples collected from one boring (SS-13) placed at the location of the former 20,000-gallon USTs contained a total PCB concentration that slightly exceeded residential soil cleanup objectives.

Figure 4

- A 600-gallon waste oil UST located near Building 4 was removed in 1984 or 1985. A spill was registered during removal of this UST. Soil analysis conducted during the removal detected concentrations of PAHs less than NYSDEC soil cleanup objectives. This UST is considered closed.

- Two 25,000-gallon USTs containing fuel oil was located south and east of Building 25 which were removed in 1987 or 1988. No records are available documenting the removal of these USTs.

- One large capacity UST (no information was available on the actual capacity) storing gasoline was located at a former building (possibly Building 2) located near Building 21. This UST was removed in 1984 or 1985. No additional records are available to document either the removal of this UST or if a release of product to the environment was observed during removal.

- One 3,000-gallon UST containing gasoline was removed in July 1990. No information was available on the former location, removal or contamination associated with this UST; however, available records indicate this UST is closed.

- One 10,000 gallon UST and one 20,000-gallon UST were removed in 1991. These USTs stored fuel oil and were contained in vaults. A release of 200 gallons of fuel oil occurred during removal of one of these tanks (available records do not specify which one). The release was contained in the vault and cleaned up. This spill was closed in 1992.

- Two USTs associated with oil waste separators (OWS), a 550-gallon UST associated with the Building 19 OWS and a 1,000-gallon UST associated with the Building 4 OWS were removed in September 1999. Releases occurred during removal of both these tanks; however the releases were remediated and achieved regulatory closure.

6. Polychlorinated Biphenyls:

No surveys of PCB-containing equipment have been performed for the Site. However, the ECP Report indicated that transformers currently on the Site do not contain PCBs.

Building 22 Transformer: In 1991, a spill incident involving a PCB-containing transformer occurred at the Site which released approximately 120 gallons of oil containing 250 ppm PCB into a storm drain located east of Building 22. Surface paving, soils and storm drain system material were removed and disposed of subsequent to the spill. NYSDEC records indicate that this spill incident was closed.

Former Building 2 and Fire Protection Main: In 2008 A PCB spill was identified in the drainage ditch that borders the southern portion of the Site. This delineation and remediation of this spill is documented in the March 2010 Remedial Action Report prepared by PARS Environmental, Inc. (see Figure 4).

"On June 24, 2008 a milky-white to yellowish substance was observed at the headwall (Outfall No. 5) of a 24-inch diameter corrugated metal (CMP). The drainage pipe is approximately 260 feet long and is oriented in a north-south direction along the boundary between the Site and the NFTA property. The pipe terminates at a drainage swale that discharges to Cayuga Creek approximately 1,500 feet west of the headwall. NYDEC was notified and Spill No. 0803478 was assigned to the incident."

During investigation of the spill, a 6-inch diameter cast iron pipe was discovered entering the 24-inch CMP from the west at a location approximately 65 feet north of the headwall. This pipe was later determined to be the drain for a former 500,000-gallon fire protection reservoir. The pipe was discharging a clear oily liquid to the 24-inch CMP. A blockage in the drain pipe, subsequently identified as a valve, was found approximately 20 feet west of where it discharged into the 24"-diameter CMP. Free oil was encountered during excavation of the valve area. Analysis of the oil determined that it consisted of diesel-range petroleum contaminated with 2.1 mg/L Aroclor 1254. The pipe was plugged during the investigation to prevent further leakage of oil.

Analysis of sediment samples collected from the point where the 6-inch drain pipe discharged to the CMP detected 220 milligrams per kilogram (mg/kg) PCBs (Aroclor

1254). Analysis of the yellowish substance identified at the outlet of the CMP contained 2.81 micrograms per liter (g/L) Aroclor 1254.

Subsequent investigations of the sediment in the drainage swale conducted in October 2008 and March 2009 detected Aroclor 1254 concentrations ranging from non-detect to 1,060 mg/kg, with the highest concentrations proximate to where the 24-inch CMP discharged to the swale. Aroclor 1260 was detected in one sediment sample at a concentration of 2.98 micrograms per kilogram (g/kg). Additional sediment and soil samples collected from the drainage swale in August 2009 determined that an area approximately 180 feet long and 8 feet wide contained PCB concentrations exceeding 1 mg/kg, indicating that the area required remediation.

Remediation involved cleaning out sediments from the entire 260 foot length of the 24-inch CMP and excavating PCB contaminated soil from the impacted are of the drainage swale. Approximately 10.86 tons of sediment and soil containing greater than 50 mg/kg PCB were disposed of at a landfill licensed under 40 CFR 761 to accept bulk PCB remediation waste. Approximately 123.33 tons of sediment containing less than 50 mg/kg total PCB was disposed of at a state licensed landfill. Post excavation sampling indicated that PCB concentrations in the remediated area were below the NYSDEC 1 mg/kg cleanup level. The March 2010 Remedial Action Report requested that NYSEC close the spill file for the release in the drainage ditch.

In November and December 2010 PARS implemented an investigation to further determine the extent of oil and PCB contamination associated with the 6-inch drain pipe and the former Building 2 USTs. The investigation included a geophysical survey of the area, drilling of soil borings, excavation of test pits and collection and analysis of soil and groundwater samples. Investigation findings were reported in the March 2011 Site Inspection Report.

The geophysical investigation determined that the 6-inch drain line continued to the West as a fire protection main that lead from the former fire protection water supply reservoir to the fire pump room in former Building 2. This investigation also identified the outline of the former fire protection water supply reservoir. PCBs (Aroclor 1254 and 1260) were detected in soil samples collected from seven out of eight soil borings located within the footprint of the former water storage reservoir. Concentrations detected at four of these locations exceed the NYSDEC residential cleanup soil objectives. Free oil was encountered in a test pit (TP-12) excavated at the valve which is located on the reservoir drainage line approximately 20 feet west of the intersection of the 6-inch pipeline and the 24-inch CMP.

During test pit excavation, a catch basin was discovered in the center of the former water storage reservoir. The 6-inch drain pipe was observed discharging water into this basin. A sample of this water indicated that it contained 7.04 ug/L total PCB. A groundwater sample collected from the test pit where the oil was encountered (TP-12, located near the valve) contained 2.42 ug/L total PCB. Both PCB concentrations exceeded the NYSDEC

GA groundwater criteria of 0.09 ug/L (total PCB). The PCB at both locations was composed of Aroclor 1254 and Aroclor 1260.

7. Oil Water Separators and Catch Basins:

Oil waters separators (OWS) are present at the following locations on the Site:

- The vehicle wash rack OWS was installed between 1986 and 1998 and collects drainage from the wash rack and maintenance bays in Building 18. A 550-gallon UST associated with this OWS was removed in 1999. This OWS currently discharges into the sanitary sewer.
- The Building 4 OWS was installed in 1994 and is located near the Southwest corner of Building 4. This OWS consists of a 6-foot by 15-foot concrete tank and is connected to floor drains in Building 4 (hangar building). A 1,000-gallon UST associated with this OWS was removed in 1999. This OWS currently discharges to the sanitary sewer.
- The Building 21 OWS was installed in 1956 and is located outside the east wall of the building. This OWS receives discharge from vehicle washing and maintenance activities inside Building 21 and drains to the sanitary sewer.

Numerous catch basins are present in the Site's stormwater system. None of these catch basins are currently known to be associated with environmental contamination. Prior to installation of the OWS near Buildings 4 and 18, aircraft and vehicle wash water discharged directly into the storm drain system and was directed to Cayuga Creek.

The December 2010 investigation of Building 2 and the former fire protection main discovered a catch basin located in the center of the former reservoir. The 6-inch cast iron pipe the drained the former reservoir (and discharged to the 24-inch CMP) was discharging water into this basin. The water draining from the pipe contained VOCs, which were not detected in the groundwater samples collected from test pits located near the east end of the pipe. The water discharging to the catch basin also contained PCBs, PAHs and phenol at concentrations that exceeded NYSDEC Class GA Objectives.

8. Radiological Materials:

Radiation monitoring equipment (Radiac AN/PDR-T1B meters) was formerly stored in an enclosed portion of Building 20. These meters are reported to contain an internal radioactive source that is sealed within each unit. A radioactive material sticker was affixed to the door of the room where these meters were stored. The devices were serviced and calibrated off site. The ECP stated there was minimal risk of a release of radioactive materials to the environment from these instruments. No further investigation of radiological materials at the Site was available.

9. Solid Wastes and Landfills:

A Preliminary Assessment (PA) performed on the Site in 1994 quoted previous studies that indicated the Site was formerly a landfill. The PA cited intrusive investigations of the property, performed for other purposes that did not demonstrate evidence of a landfill. The PA recommended additional records reviews and sampling on the Site to determine

if a landfill may have previously been present. No sampling appears to have been performed to date. However, a Supplemental Phase I assessment was conducted in August 2009 that involved interviews with NYSDEC staff, the Site manager, the U.S. Army Reserve Center, the NFTA Director of Environmental Health Safety and Quality, the Town of Niagara Falls Tax Assessor and the Town Historian. In addition historical maps were inspected at the Niagara Fall Public Library.

Based on the review of the historic maps and the above referenced interviews the Supplemental Phase I concluded there is no definitive evidence that a landfill previously occupied the Site. The non-uniform soils that were encountered during excavations to install utilities may be the result of fill placement in low areas along the banks of Cayuga Creek rather than the deposition of solid waste or trash.

10. Asbestos:

An asbestos survey was conducted on the Site in 2004. This survey identified ACM in Buildings 4, 19, 21, 22, 23 and 26. ACM included floor tile, mastic, fire doors, thermal insulation on piping and vent ducts, and roofing material. The survey report did not recommend removal of the identified ACM and is assumed to represent current conditions at the Site.

11. Lead-Based Paint:

The age of construction of Buildings 4 through 19, 23, 25, and 26 was prior to 1981, indicating that they may contain lead based paint (LBP). The site inspection conducted in August 2006 for preparation of the ECP Report noted that the paint in these buildings was in good condition with the exception of the southeast portion of Building 19 which contained paint chips on the floor and walls, apparently the result of water damage.

12. Munitions and Explosives of Concern:

The review of available records and interviews with Site personnel conducted during preparation of the ECP Report indicated that Munitions and Explosives of Concern (MEC) are not present on the Site. No information was available pertaining to warheads on the Nike Missiles formerly serviced on the Site. There are no firing ranges on the Site, and no evidence that a firing range previously existed.

E. Identification of Data Gaps

Review of available environmental documents pertaining to the Site identified the following data gaps.

1. Former Building 2: Concentration of PCBs and PAHs exceeding the NYSDEC residential soil cleanup objectives were detected in the vicinity of the former UST locations at Building 2. The source and extent of this contamination is not known.

2. Former Water Storage Reservoir and Fire Protection Main: The source and extent of free oil identified in the vicinity of the valve on the 6-inch diameter reservoir drainage

pipeline has not been identified. The extent of PCBs in soil and groundwater within the footprint of the former fire protection reservoir and along the six-inch diameter former fire protection main has not been fully delineated.

3. Groundwater Flow Direction on the Site: The direction of shallow groundwater flow at the Site has not been accurately determined.

4. West Fuel Farm: Releases of petroleum to soil and groundwater have been documented at the West Fuel Farm. It is unknown if this contamination has migrated onto the Site.

5. Former UST Locations: No records are available regarding the presence or absence of environmental contamination associated with the removal of two 25,000-gallon USTs located south and east of Building 25 and a large UST storing gasoline that was present at a former building (possibly Building 2) located near Building 21.

6. Hangar 4: No information is available on the presence of absence of chlorinated solvents in soil or groundwater in the vicinity of Building 4. Maintenance of Nike Missiles took place in Hangar 4 from 1970 to 1975. Chlorinated solvents are reported to have been used in these operations. Prior to 1994, floor drains in this buildings discharge to the stormwater system. Leaks may have been present in these pipes that resulted in a release of these solvents to soil or groundwater

F. Recommendations

1. Pre-Demolition Abatement of Asbestos and Building Associated Hazards

Asbestos: ACM is present in Buildings 4, 19, 21, 22, 23 and 26 and includes floor tile, mastic, fire doors, thermal insulation on piping and vent ducts, and roofing material. This ACM will require abatement if Site redevelopment plans involve demolition of these buildings.

Lead Based Paint: Buildings 4 through 18, 23, 25, and 26 were constructed prior to 1981, indicating that they may contain LBP. The presence of LBP must be considered if building demolition is proposed as part of Site redevelopment.

Other Building Hazards: Buildings contain fluorescent light fixtures, transformers, thermostats, and other fixtures and equipment that could contain PCBs, DEHP, mercury or other hazardous materials. This equipment should be identified and removed prior to building demolition.

2. Soil and Groundwater Investigations

Former Building 2: The area in the vicinity of Former Building 2 requires further soil and groundwater investigation to determine the source and extent of PCB and PAH contamination.

Former Water Storage Reservoir and Fire Protection Main: Additional investigation is required to determine the source and extent of free oil identified in the vicinity of the valve on the 6-inch diameter reservoir drainage pipeline. Additional investigation is also required to identify the extent of PCBs in soil and groundwater within the footprint of the

former fire protection reservoir and along the six-inch diameter former fire protection main.

Groundwater Flow Direction on the Site: Permanent monitoring wells should be installed at the Site to clearly establish the direction of shallow groundwater flow.

West Fuel Farm and NFIA Property: Soil borings and groundwater monitoring wells should be placed along the boundary of the Site and the former West Fuel Farm to confirm that releases of petroleum documented at the West Fuel Farm have not migrated onto the Site. Installation of soil gas probes and monitoring for methane is recommended to ensure that the release of AFFF on the NIFA property has not entered groundwater and generated elevated concentrations of methane through its decomposition.

Former UST Locations: Additional review of NYSDEC records, interviews with Site staff and review of Site records and plans should be undertaken to identify the location of the two 25,000-gallon USTs formerly located south and east of Building 25 and a large UST storing gasoline that was present at a former building (possibly Building 2) located near Building 21. This review should be followed up by a soil and groundwater investigation to determine if residual contamination is present.

Hangar 4: A limited soil and groundwater investigation should be conducted in the vicinity of Hangar 4 to determine if soil and groundwater is contaminated with solvents associated with former maintenance operations at this building.

IV. AIRPORT MARKET CONDITIONS

This section provides an analysis of the current market conditions for airport facilities and services within the Greater Niagara and Buffalo region. The purpose of this analysis is to provide a summary of airport market conditions to help inform potential "airside" redevelopment options for the ARC property. This analysis is divided into four sections, including:

- An overview of the Niagara Falls International Airport (KIAG);
- A analysis of other airports within the Greater Niagara-Buffalo region that are competitive to KIAG relative to airport infrastructure and services;
- An overview of airport-dependent and aviation-related uses that have been suggested by end-users for the ARC property; and,
- Market findings and conclusions.

In order to obtain data and information for this analysis, two approaches were relied upon. The first consisted of an analysis of airport facility information provided by Airnav.com (an online airport information provider), websites and other documents. The second method included interviews with airport owners and operations staff, fixed base operators, potential airport development investors, and others.

A. Niagara Falls International Airport

Since its opening in 1928 as a municipal airfield, KIAG has served many purposes and has gone through several transformations. During World War II the airport began being used by the United States Air Force which expanded the facility's infrastructure to include larger runways, taxiways, a control tower, and instrument landing system. The military still has a significant presence on the airport (on the north side of the facility) including the 914th Tactical Airlift Wing of the U.S. Air Force Reserve, and the 107th Air Refueling Wing of the New York State Air National Guard.

The south side of the airport is considered the more public side of the facility which has been owned since 1970 by the Niagara Frontier Transportation Authority (NFTA) which purchased it from the City of Niagara Falls. Primarily catering to general aviation (GA) flights, air charter and commercial flights and a small number of cargo operations, the facility averages 97 operations per day with 38% being local GA operations, 36% being transient GA operations, and 20% being military[1]. The airport is currently home to 64 based aircraft with approximately half being single engine aircraft.

The airfield system at KIAG consists of three runways. The main runway (10L/28R) is 9,829 x 150 feet and is the fourth largest runway in New York. Runway 6/24 is 5,189 x 150 feet and considered a crosswind visual approach runway. Runway 10R/28L is 3,973 x 75 feet is primarily used by GA aircraft and permits simultaneous operations between these aircraft and commercial carriers. The three runways are supported by a system of 13 active taxiways.

[1] According to Airnav.com. The 2008 Redevelopment Plan reported that the airport averaged 121 ops per day.

To accommodate air charter and commercial passengers, a new 70,000 square foot (SF) airport terminal was built in 2009. KIAG currently has three air charter commercial carriers operating out of the facility, including Vision Airlines, DirectAir, and Spirit Airlines. These carriers offer direct service to various destinations in South Carolina (Myrtle Beach) and Florida (Miami, Fort Lauderdale, etc.), and cater largely to Canadian tourists from the greater Toronto market due to relatively low prices and direct flights to Florida.

Niagara Falls Aviation, LLC provides fixed base operator (FBO) services including aircraft refueling, deicing, water services, repair, maintenance and storage. The FBO also provides ground handling services for the air charter commercial carriers.

Access to the ARC site and airport is through Porter Road (Route 182) and is within approximately one-mile of Exit 23 of Interstate 190.

B. Airport Facilities Comparison

The following section compares KIAG's facilities with those of other regional airports in order to provide a baseline of information to determine the regional competitiveness of the airport. The airports which were compared to KIAG included:

- Buffalo Lancaster Regional Airport (Lancaster, NY);
- Buffalo Airfield (Buffalo, NY);
- Akron Airport (Akron, NY);
- North Suburban Buffalo Airport (Lockport, NY); and,
- Buffalo Niagara International Airport (Buffalo, NY).

The airports that were comparable to KIAG were selected as they reflect an approximate 45-minute drive time market area from the airport (and Niagara ARC site) – the most likely (and reasonable) locations for aircraft owners residing in the region to base their aircraft. The location of KIAG and the competitive airports are shown in Figure 1. In addition to the selected airports, there are other airports located within the region, such as Flying F Airfield, Pendleton Airport and Merkle Airfield (see Figure 1). However, these airports were not included as comparable due to either short runways, turf airstrips, lack fuel availability, or are private, non-public airports.

The key facility components that were compared at each of the airports included:

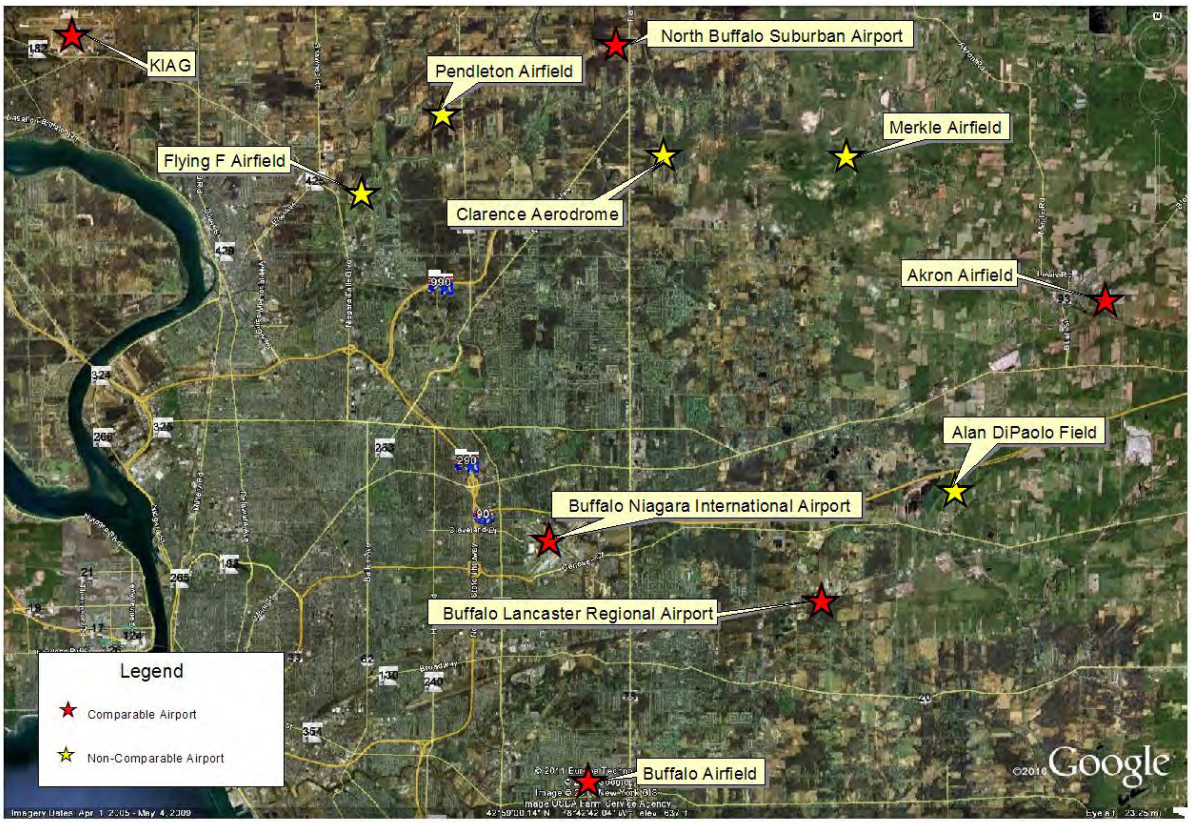
- Runways
- Operations and based aircraft
- Aircraft storage
- Roadway/highway access
- Fuel availability
- FBOs

The following provides a narrative summary of KIAG's facilities in comparison to the other regional airports. A summary of technical information is provided in Table 1.

1. Runways

A runway with a length of 5,000 feet is considered a benchmark minimum to attract corporate (transient or based) aircraft. With a 9,829 foot runway, and two other strips (one at over 5,100 feet), KIAG has the longest runway facilities of any of the comparable airports. Only Buffalo Niagara International Airport's landing facilities (at 8,827 feet and 7,161 feet) are comparable in size to KIAG. The other comparable airports have runways in varying lengths between approximately 2,000 feet to 3,300 feet. It should be noted that Buffalo Lancaster Regional Airport has plans to expand their runway from its current length of 3,200 feet to 5,500 feet in 2011.

Figure 1. KIAG and other Airports within the Greater Niagara-Buffalo Region



2. Operations and Based Aircraft

Based on estimates provided by Airnav.com, at 35,400, KIAG has the second fewest estimated annual operations as compared to the other regional airports. Only North Buffalo Suburban Airport (at 3,600) had fewer annual operations than KIAG. Buffalo Niagara International Airport clearly had the most annual operations at over 131,000, with the three remaining comparable airports having annual operations ranging between 45,000 and 55,000. With aircraft usage intrinsically linked to economic conditions,

airport operators and managers indicated that aircraft operations have started to increase modestly, and should continue to increase over the next year.

At 64, KIAG has the largest fleet of based aircraft of any of the comparable facilities, with Buffalo Lancaster Regional Airport (60) and Akron Airport (54) having the second and third largest based aircraft fleets. However, when the Air Force and Air National Guard's fleet of 17 aircraft based at KIAG are removed (as none of the other comparable airports have military aircraft), KIAG's based aircraft total of 47 is below Buffalo Lancaster Regional Airport, Akron Airport, and similar to Buffalo Niagara International Airport (42). Similar to operations fluctuating based on economic conditions, the number of based aircraft within the region has remained stable (at best) during the latest recession. Airport managers indicated that while some aircraft owners have sold their planes, many keep their aircraft but simply reduce (some almost entirely) their flying time due to high operating costs.

3. Aircraft Storage

Discussions with FBO officials and airport managers at each of the competitive airports indicated that the economic recession has negatively impacted their business operations. When asked about the current strength of their business operations, all interviewees indicated that business as either "fair" or "good". As indicated in the previous section, many aircraft owners have reduced their flying time (primarily recreational operators) due to rising fuel, maintenance, insurance and other operating costs. This reduction in aircraft usage has only modestly impacted the demand for aircraft storage across the region.

Airport managers and FBO operators at airports within the region indicated that there is currently limited demand for new indoor aircraft storage space (generally in the form of T-hangar condominiums or rentals)[2]. While many of the competitive airports throughout the region are at or near full capacity relative to indoor aircraft storage facilities, it appears that the existing supply of these facilities is currently meeting demand.

Recent aircraft storage hangar construction appears to have been most active at Buffalo Lancaster Regional Airport with 48 T-hangars being constructed over the past ten years with all units currently being occupied. Officials at the airport indicated that they are considering the construction of an additional 10 to 18 T-hangars, but have a small waiting list of 5 aircraft owners. Officials at Akron Airport have also considered building 6 new T-hangars, however, these units would replace existing aging units and not to capture new demand. Officials were uncertain as to whether the demand for additional hangar units will increase as the economy improves over the next few years. It should be noted that the preferred storage option for most recreational aircraft owners is a T-hangar (as opposed to a conventional hangar) as this type of hangar is a self-contained, secure, individual unit that eliminates the need to have an FBO line person move aircraft in order to facilitate access to a specific airplane.

[2] A T-hangar is defined as a building composed of partitioned units designed to house on aircraft in each unit and having single door openings for each unit. T-hangars are typically used for smaller single-engine aircraft.

Typically, due to the heavy financial investment required for aircraft ownership, many personal and corporate aircraft owners do not want their aircraft exposed to the elements. However, FBO and airport managers indicated that factors such as the rising cost of aircraft fuel and economic uncertainty have significantly reduced the demand for new facilities. Older T-hangar units are currently renting for $110 to $150 per month depending on the age and condition of the hangar, as well as available amenities (such as electricity). New(er) T-hangars are currently renting for about $250 per month. Other than the waiting list of five aircraft owners at Buffalo Lancaster Regional Airport, the other competitive facilities do not have a waiting list for hangars.

Officials at each of the competitive facilities indicated that the demand for aircraft tie-downs (a less expensive aircraft storage option) is currently meeting the available supply. Most airports in the region have only a few aircraft tied-down and many spots available should any aircraft owner need one. Market prices for tie-downs are very consistent between each of the competitive facilities at $30 to $35 per month.

4. Roadway/Highway Access

With the exception of Buffalo Niagara International Airport (I-90 and I-290), all of the competitive airports (including KIAG) do not have immediate access to an Interstate highway. As discussed in Section 2, access to the ARC site and KIAG is available through Porter Road (Route 182) and is within approximately one-mile of Exit 23 of Interstate 190. Having immediate access (or being relatively close) to an interstate highway is considered valuable for potential airport-dependent or aviation-related users.

5. Fixed Base Operators

With the exception of North Buffalo Suburban Airport and Buffalo Lancaster Regional Airport, all of the competitive facilities have a fixed base fixed base operator (FBO)[3] that offer a combination of any or all of the following services:

- Fuel sales;
- Aircraft maintenance;
- Aircraft storage;
- Charter service; and,
- Flight training.

6. Fuel Availability

KIAG and the Buffalo Niagara International Airport are the only facilities in the region to offer both AvGas (100LL) and jet fuel for sale. All of the other competitive facilities offer only AvGas. Table 2 provides a summary of facilities and attributes at each of the comparable airports within the market region.

[3] An FBO is the primary provider of services to general aviation aircraft and operators located at or adjacent to an airport. An FBO may offer services such as fuel sales, line services, aircraft maintenance and storage, etc.

Table 2 -Comparable Airports Located within the Regional Market Area

NAME	TOWN	BA	OPS/A	Runways	Length 1	Length 2	Length 3	FBO	FUEL		Distance from Niagara Falls Int'l	
Niagara Falls International Airport	Niagara Falls	64	35,405	3	9,829	5,189	3,973	Yes	100LL	JetA	25 miles	35 min
Buffalo Niagara Inernational Airport	Buffalo	42	131,400	2	8,827	7,161		Yes	100LL	JetA	N/A	N/A
Akron Airport	Akron	54	50,735	2	3,268	1,955		Yes	100LL		30 miles	50 min
Buffalo Airfield	West Seneca	23	55,115	1	2,668			Yes	100LL		31 miles	40 min
North Buffalo Suburban Airport	Lockport	31	3,588	1	2,830			No	100LL		16 miles	30 min
Buffalo-Lancaster Regional Airport	Lancaster	60	44,895	1	3,200			No	100LL		32 miles	45 min

Source: Airnav.com and RKG Associates, Inc.

C. Summary

The following points summarize the relevant airport market conditions for the Niagara ARC site:

- Compared to the competitive airports in the region, KIAG's facilities relative to runways (length and number), taxiways, terminal facilities, and fuel availability are excellent.
- The current supply of aircraft storage hangars, although at or near capacity, is meeting the current (and anticipated future) demand. Airport officials at the other competitive airports are uncertain as to whether the demand for additional hangar units will increase as the economy improves.
- Due to the current aircraft hangar storage market equilibrium, it is likely that the majority of any new hangar space added to the region would be cannibalized by existing aircraft owners (rather than attracting new tenants).
- Business activity at FBOs who serve the GA market is currently "fair" or "good". The lingering effects of the recession are still evident with many recreational aircraft owners cutting back on flying time and aircraft usage due to high operating costs.

V. REAL ESTATE MARKET CONDITIONS

This section provides an analysis of the baseline conditions within the Town of Niagara's industrial and office real estate market. Understanding the current "state of the market" is essential in determining the feasibility of redevelopment for the site. In order to illustrate these important conditions, RKG focused on the following four topics:

- Demographics
- Employment
- Real Estate Supply
- Real Estate Demand

Each of these four issues plays an essential role in establishing the conditions in a real estate market. RKG utilized a variety of data sources to describe these current market conditions, including:

- DemographicsNow—a leading demographics data clearinghouse
- The Town of Niagara's 2010 assessment database
- Loopnet—a recognized source of commercial real estate data
- CoStar—a national provider of real estate market research data
- New York State Department of Labor

A. Demographics

Demographics are the characteristics that define a population. The way in which these characteristics change over time should be considered in determining the potential demand for different uses on the site. RKG Associates gathered demographic data from DemographicsNow for the following four different geographies, or study areas:

- The Town of Niagara
- Niagara County
- New York State
- The United States of America

The demographics of New York State and the US are included to provide a frame of reference to the analysis, which pays more particular attention to the Town and County of Niagara.

1. Population

Population growth (or decline) impacts the demand for commercial real estate. Growing populations may need additional space in which to work, while declining populations can cause "slack" in a real estate market. The population of the United States has grown by about 1% since 1990, but this growth is not reflected in local trends (Figure 5).

Figure 5

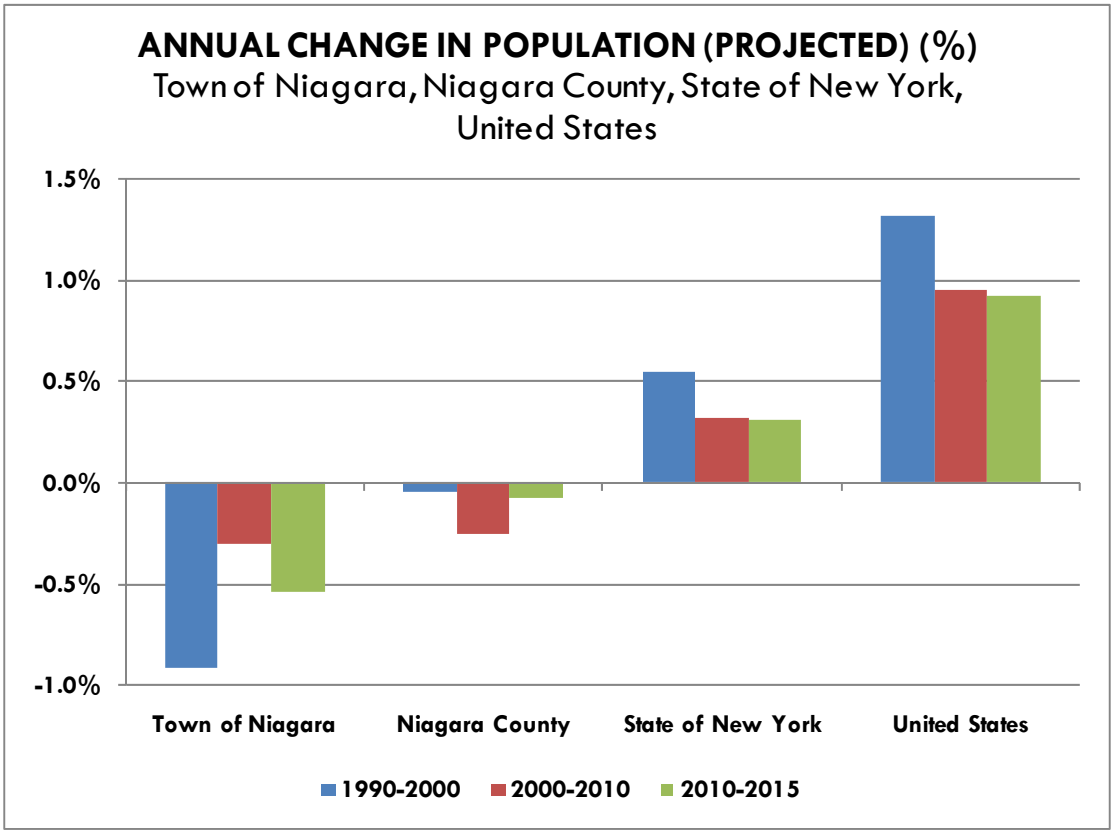


Table 3 – Population

	Trend		Projection	
	1990	**2000**	**2010**	**2015**
Town of Niagara	9,880	8,978	8,703	8,467
Niagara County	220,755	219,846	214,232	213,483
New York	17,990,458	18,976,457	19,582,749	19,890,921
United States	248,576,851	281,279,915	308,183,362	322,429,242

Source: DemographicsNow & RKG Associates, Inc.

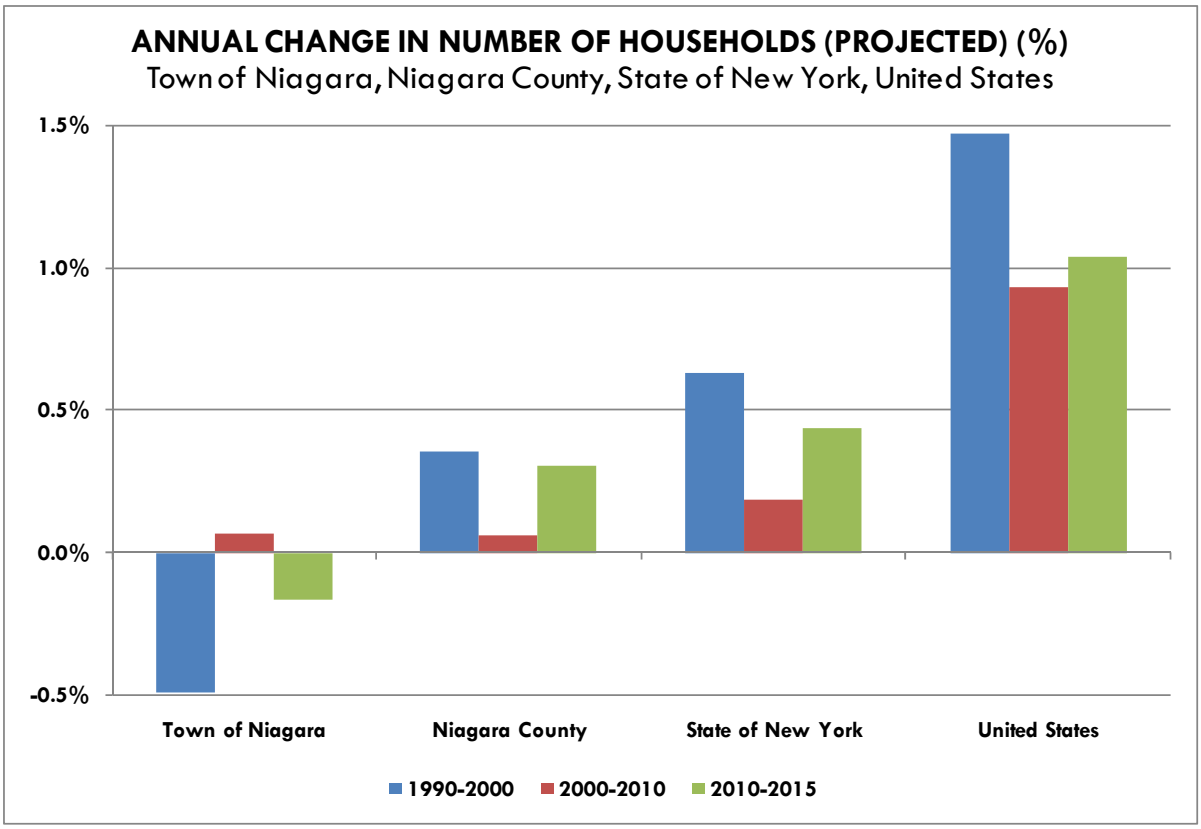
The Town of Niagara's population continued to decline to its current level of about 8,700 (Table 3), but at a slower rate than in previous years. A loss of about 0.5% is expected annually between now and 2015.

Niagara County population is relatively steady, with minimal losses during the last twenty years and similar conditions expected during the next five years. New York State's population is increasing at an even faster rate of about 0.25% annually. These local trends of population loss have likely had a negative impact on the demand for new real estate by increasing the vacancy of existing properties.

2. Households

Rates of change within the number of households are similar to the rates of population change within the four study areas (Figure 6). The notable exception is that Niagara's households are declining slower than its population, indicating that the Town is losing individuals faster than it is losing households, which numbered about 3,600 in 2010 (Table 4). This trend is repeated in the County as well, which is losing its population but gaining households.

Figure 6



This is likely due to the migration of younger, single people in search of more diverse economic opportunities in more populous areas, which is why this trend is not found at a state or national level.

Table 4 – Number of Households

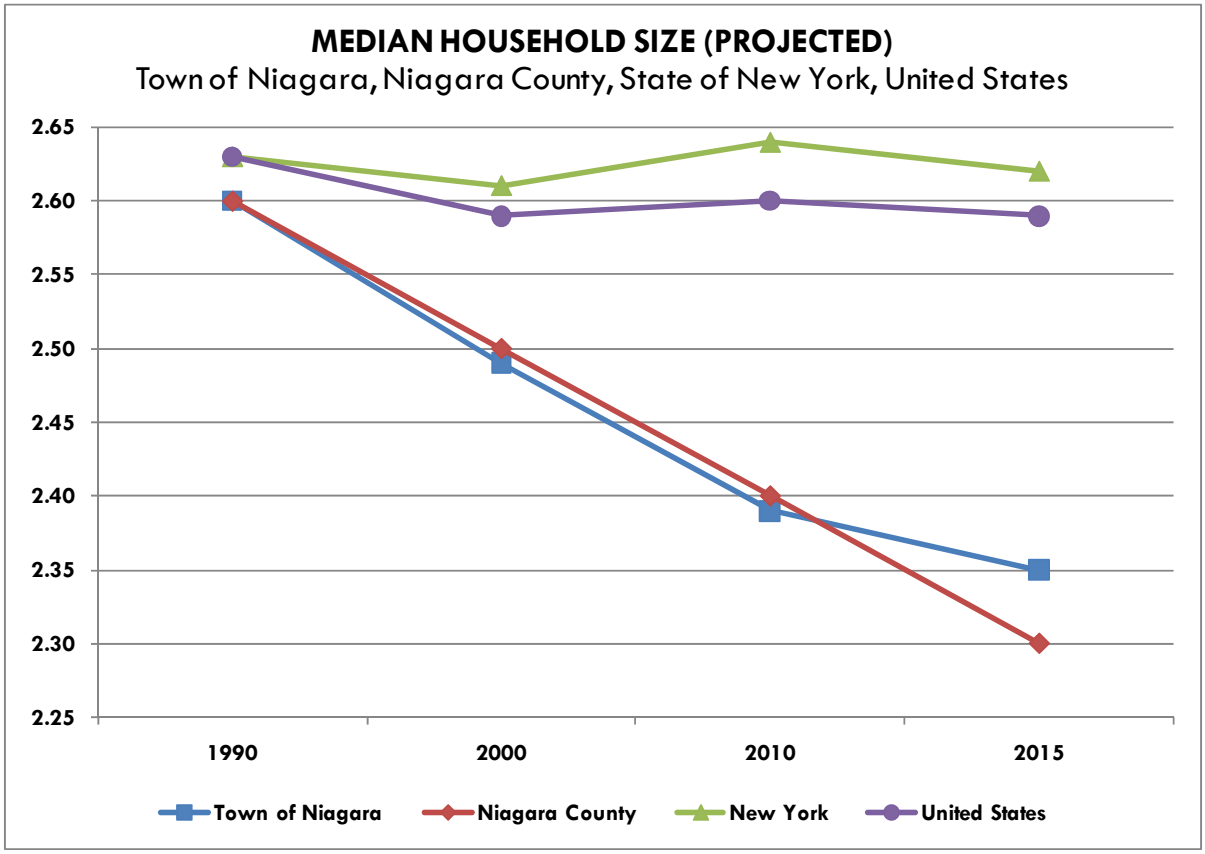
	Trend		Projection	
	1990	2000	2010	2015
Town of Niagara	3,798	3,611	3,635	3,605
Niagara County	84,808	87,846	88,399	89,749
New York	6,639,314	7,056,860	7,188,508	7,345,077
United States	91,891,212	105,417,477	115,256,007	121,251,985

Source: DemographicsNow & RKG Associates, Inc.

3. Household Size

Household size in the Town and County of Niagara continues to decline, while state and national levels have remained steady since 1990 (Figure 7). This decline from 2.60 in 1990 to an expected level of 2.30 in 2015 indicates that the loss in population and households is a loss of larger households, or (more likely) a lack of creation of smaller ones as younger citizens who would otherwise stay and form households migrate elsewhere.

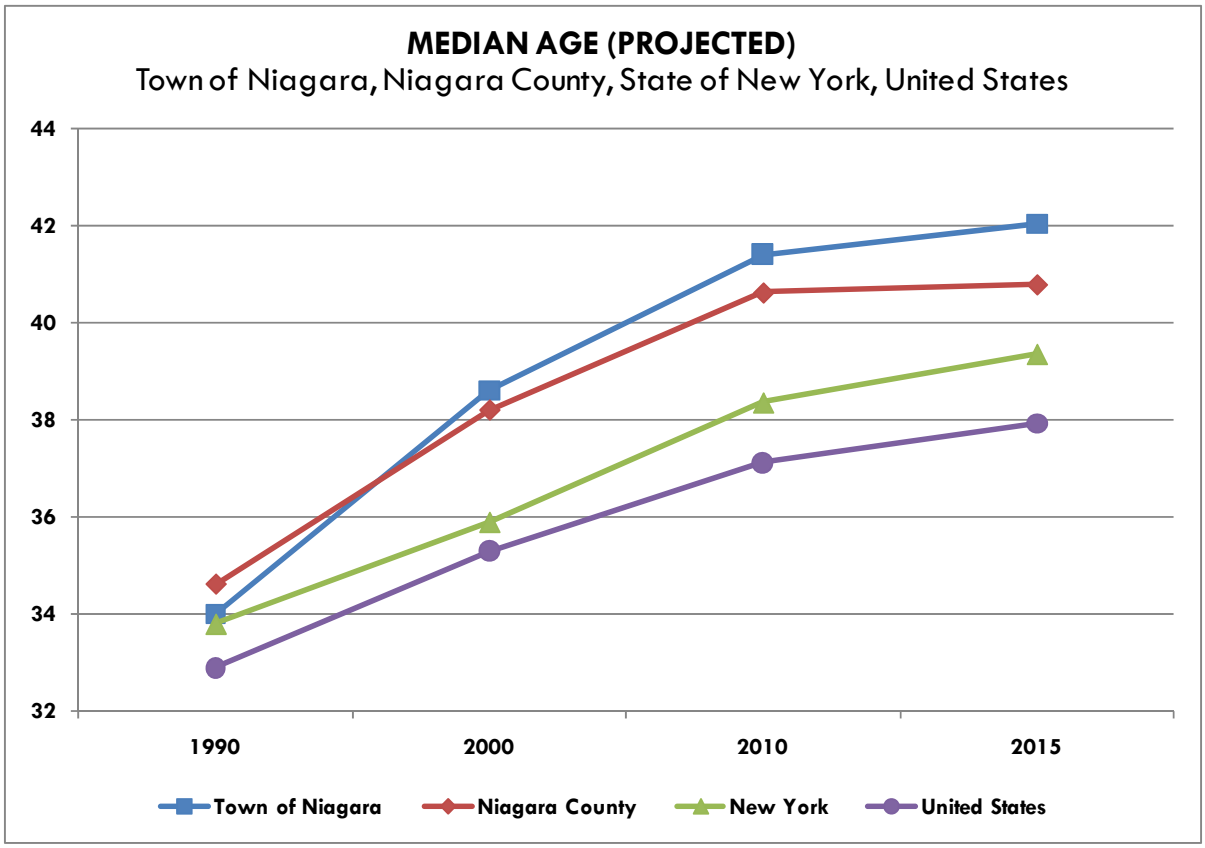
Figure 7



4. Median Age

Median age is a simple yet effective measure of the age of a given geography. The aging of America's Baby Boomer generation continues to increase the median age in many parts of the country, and the study areas are no exception. However, in addition to the typical "graying" of the population due to Baby Boomers, the Town of Niagara's median age of 41 is four years older than the national median age (Figure 8). This disparity confirms the finding of the Town's increased population loss relative to the loss of households. The population being lost from the Town is most likely its younger cohort, thereby increasing the median age of the area while reducing the population.

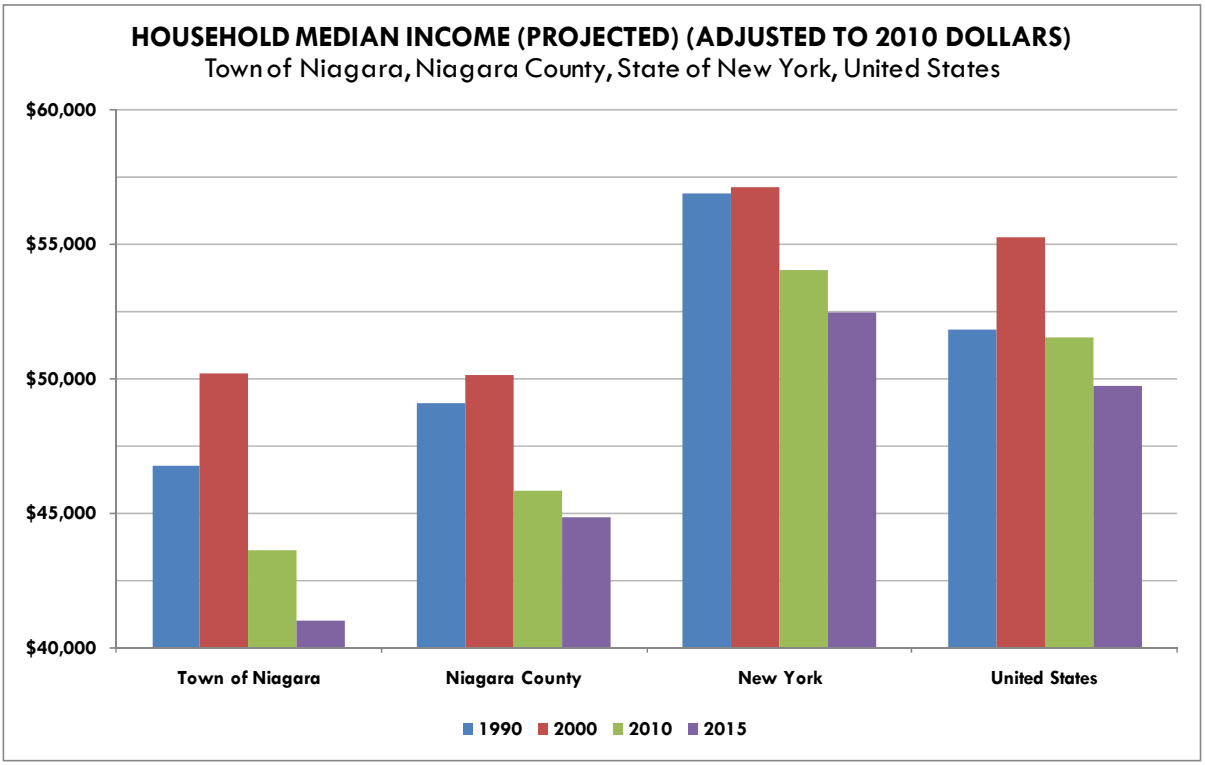
Figure 8



5. Household Income

Household income has declined across all study areas since 2000, but much more precipitously in the Town of Niagara, where the median household income is about $46,000 (Figure 9). This disparity between the Town of Niagara and the other three study areas is likely due to the continued movement of industrial manufacturing away from areas like Niagara to overseas or Sun Belt locations, which removes relatively well-paying jobs from the local economy.

Figure 9



6. Conclusion

The nature of Town of Niagara's demographic shifts is typical of those found in many parts of the American northeast. These areas are marked by:

- Declining or stabilized population
- Increasing median age
- Shrinking households
- Declining household income

Given these factors, it is essential that the redevelopment of the site be done in a way that is sensitive to Niagara's demographic condition.

B. Employment

Employment is a key driver of industrial and office real estate, as these land use types provide space for business operation. In this section, trends in Niagara County's employment, firms, and unemployment rate will be analyzed. Data was provided by the New York State Department of Labor.

1. Employment

Niagara County has experienced a net loss of about 10,000 jobs between 2000 and 2009 (Table 5). More than 80% of the losses experienced during this time were in sectors housed primarily in industrial real estate space, including manufacturing, transportation, and warehousing. During that time, however, gains were made in many office-based sectors. These include health care and social assistance, professional and technical services, and educational services. Similar to many other northeastern areas of the United States, Niagara County is transitioning from a largely manufacturing-based economy, to a smaller, service- and knowledge-based economy.

Table 5 – Number of Employees by Employment Sector, Niagara County

Employment Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change (Numerical)	Change (Percentage)
Health Care and Social Assistance	9,479	9,456	9,794	9,904	10,145	10,204	10,355	10,466	10,515	10,843	1,364	14.39%
Professional and Technical Services	1,475	1,522	1,576	1,569	1,423	1,479	1,587	1,623	1,626	1,735	260	17.63%
Educational Services	1,228	1,153	1,180	1,343	1,422	1,463	1,560	1,477	1,499	1,446	218	17.75%
Arts Entertainment and Recreation	818	814	817	866	871	865	903	945	913	934	116	14.18%
Wholesale Trade	1,457	1,444	1,432	1,393	1,424	1,488	1,496	1,574	1,525	1,499	42	2.88%
Utilities	624	621	737	693	640	670	678	787	727	657	33	5.29%
Unclassified	55	86	161	130	138	121	137	100	58	50	(5)	(9.09%)
Finance and Insurance	1,118	1,313	1,303	1,425	1,219	1,275	1,233	1,235	1,097	1,103	(15)	(1.34%)
Management of Companies and Enterprises	844	924	929	891	865	944	955	779	817	821	(23)	(2.73%)
Agriculture Forestry Fishing Hunting	648	656	614	560	600	621	582	580	590	590	(58)	(8.95%)
Other Services	2,586	2,625	2,691	2,798	2,717	2,720	2,639	2,645	2,587	2,508	(78)	(3.02%)
Administrative and Waste Services	3,185	2,647	2,375	2,570	2,947	3,218	3,067	3,623	3,409	3,085	(100)	(3.14%)
Real Estate and Rental and Leasing	633	701	676	665	667	677	677	644	574	513	(120)	(18.96%)
Accommodation and Food Services	6,092	5,839	5,997	5,912	5,884	5,992	5,909	6,009	5,861	5,809	(283)	(4.65%)
Construction	3,040	2,984	3,053	2,857	2,855	3,117	3,089	2,846	2,914	2,614	(426)	(14.01%)
Transportation and Warehousing	2,547	2,394	2,267	2,419	2,267	2,257	2,160	2,153	2,115	2,104	(443)	(17.39%)
Information	1,020	942	759	672	676	661	648	592	568	557	(463)	(45.39%)
Retail Trade	10,539	10,441	10,207	9,733	9,640	9,703	9,640	9,540	9,796	9,786	(753)	(7.14%)
Manufacturing	17,727	15,888	14,232	13,127	12,432	12,067	11,378	10,586	9,840	8,392	(9,335)	(52.66%)
TOTAL	**65,115**	**62,450**	**60,800**	**59,527**	**58,832**	**59,542**	**58,693**	**58,204**	**57,031**	**55,046**	**(10,069)**	**(15.46%)**

Source: New York State Department of Labor & RKG Associates, Inc.

2. Establishments

Changes in Niagara County's supply of firms has primarily mirrored its shifts in the number of jobs, with the biggest increases occurring in health care and social assistance, unclassified firms, administrative and waste services, and professional and technical services. However, the scale of the loss is much less drastic—only 10% of the County's firms were lost while almost 20% of its employment was lost (Table 6). The biggest losses have occurred in accommodation and food services, retail trade, manufacturing, and wholesale trade. Again, with the exception of the losses in accommodations, food services, and retail firms (lower-skilled service firms), the economy appears to be shifting towards a service and knowledge-based economy.

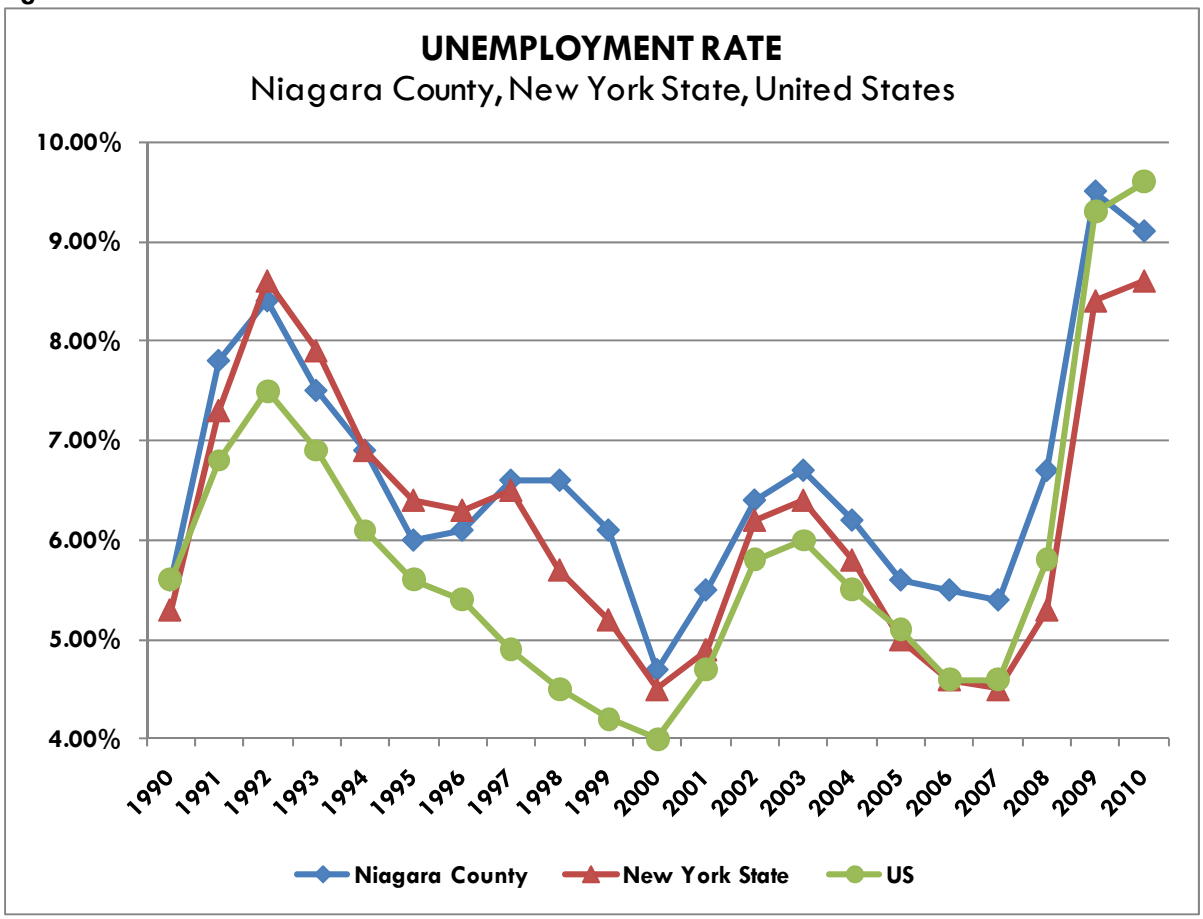
Table 6 - Number of Firms by Employment Sector, Niagara County

Employment Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change (Numerical)	Change (Percentage)
Health Care and Social Assistance	433	431	442	453	455	466	481	481	478	481	48	11.09%
Unclassified	30	66	121	118	128	131	133	117	55	78	48	160.00%
Administrative and Waste Services	216	220	212	210	210	225	232	246	257	262	46	21.30%
Professional and Technical Services	303	304	325	331	320	326	327	337	328	328	25	8.25%
Arts Entertainment and Recreation	75	77	77	84	85	84	81	80	88	91	16	21.33%
Management of Companies and Enterprises	21	23	26	26	25	28	28	28	26	26	5	23.81%
Real Estate and Rental and Leasing	109	110	112	114	118	115	116	115	119	113	4	3.67%
Educational Services	43	45	45	47	49	51	54	51	50	46	3	6.98%
Construction	485	485	474	470	462	464	470	479	503	487	2	0.41%
Information	45	45	44	43	43	41	43	43	45	46	1	2.22%
Utilities	11	11	9	9	7	7	7	8	10	10	(1)	(9.09%)
Agriculture Forestry Fishing Hunting	49	49	50	46	45	45	42	45	46	47	(2)	(4.08%)
Finance and Insurance	196	213	208	212	224	236	212	203	201	191	(5)	(2.55%)
Transportation and Warehousing	144	143	141	146	141	144	142	137	137	131	(13)	(9.03%)
Other Services	505	499	497	498	489	485	484	489	490	487	(18)	(3.56%)
Wholesale Trade	226	230	223	224	219	210	204	200	197	199	(27)	(11.95%)
Manufacturing	314	306	298	291	286	284	274	275	282	283	(31)	(9.87%)
Retail Trade	771	753	755	731	718	721	708	704	706	698	(73)	(9.47%)
Accommodation and Food Services	525	510	490	493	478	464	443	446	459	452	(73)	(13.90%)
TOTAL	**4,501**	**4,520**	**4,549**	**4,546**	**4,502**	**4,527**	**4,481**	**4,484**	**4,477**	**4,456**	**(45)**	**(1.00%)**

3. Unemployment Rate

Niagara County's unemployment rate had remained higher than the state and national rate since the late 1990s, but by no more than a single percentage point during any given year. In 2010, the County's unemployment rate actually dropped below the national rate while still remaining above the State figure (Figure 10). The relatively close relationship of the unemployment rates across study areas indicates that Niagara County's unemployment conditions are actually fairly similar to the country as a whole as well as the State.

Figure 10



4. Conclusion

The Town of Niagara is experiencing a restructuring in its employment. Manufacturing and other industrial-based jobs continue to migrate elsewhere, while some growth can be found in some service-based employment. In addition, local unemployment is fairly reflective of state and national trends.

C. Real Estate Supply

Real estate supply represents the amount of space currently available in the Town of Niagara, as well as the nature and age of that space. Understanding the type of existing real estate in a market is important as the redevelopment of the site is being considered. Data was provided by the Town of Niagara's Assessor's Office in the form of the 2010 Assessment Database.

1. Development Profile

In order to understand the Town's existing real estate supply, RKG profiled the assessed values and quantities of different land use types in the Assessment Database (Table 7 and Table 8). The aggregation of different land uses allows trends in the supply to become more visible. The data revealed the following findings:

- Almost 20% of Niagara's land area is commercial or industrial in nature.
- Vacant and residential land uses also consume about 20% each of the Town's acreage.
- Public service land consumes almost 30%, but this can be accounted for by the large land holdings of Niagara Falls International Airport.
- Industrial uses has one of the lowest average land values per acre at less than $6,000, but relatively high building value per parcel at more than $300,000. This is likely due to the relatively large nature of industrial buildings. Similar trends are found among commercial uses as well.
- Residential land uses hold almost 40% of the Town's total building value, commercial holds almost 25%, but industrial holds less than 3%. This is likely due to a relative lack of demand and a relatively aged supply.
- Vacant land is primarily comprised of residential land (almost 50%), followed by industrial (30%).
- Vacant commercial land has the highest value per acre of all the vacant land use types by at least a factor of three.

Table 7 – Development Profile, Town of Niagara

					2010 Assessed Value				
Property Class	Number of Parcels	Acres	% of Total Bldg Value	% of Total Acres	Building	Land	Total	Building Value per Parcel	Land Value per Acre
Residential	2,451	1,002	39.6%	17.6%	$147,528,640	$21,653,200	$169,181,840	$60,191	$21,615
Commercial	329	680	25.0%	11.9%	$92,940,600	$19,192,470	$112,133,070	$282,494	$28,228
Industrial	27	427	2.3%	7.5%	$8,398,795	$2,462,100	$10,860,895	$311,066	$5,768
Amusement	13	85	0.2%	1.5%	$578,400	$924,600	$1,503,000	$44,492	$10,825
Community Svcs	28	651	15.0%	11.4%	$55,746,800	$3,745,700	$59,492,500	$1,990,957	$5,753
Public Service	80	1,578	17.8%	27.7%	$66,211,135	$12,739,600	$78,950,735	$827,639	$8,072
Forest Lands	2	156	0.2%	2.7%	$812,400	$1,581,400	$2,393,800	$406,200	$10,127
Vacant Land	842	1,126	0.0%	19.7%	$0	$7,051,800	$7,693,700	$0	$6,261
TOTAL	**3,772**	**5,706**	**100.0%**	**100.0%**	**$372,216,770**	**$69,350,870**	**$442,209,540**	**$98,679**	**$12,155**

Source: Town of Niagara's Assessor's Office & RKG Associates, Inc.

Table 8 – Profile of Vacant Land, Town of Niagara

					2010 Assessed Value				
Vacant Land Type	Number of Parcels	Acres	% of Total Bldg Value	% of Total Vacant Acres	Building	Land	Total	Building Value per Parcel	Land Value per Acre
Farm Land	3	38	0.0%	3.4%	$0	$64,800	$113,500	$0	$1,686
Residential	659	563	0.0%	49.9%	$0	$2,923,900	$3,474,400	$0	$5,197
Commercial	121	173	0.0%	15.4%	$0	$2,786,600	$2,826,900	$0	$16,108
Industrial	59	352	0.0%	31.3%	$0	$1,276,500	$1,278,900	$0	$3,623
TOTAL	**842**	**1,126**	**0.0%**	**100.0%**	**$0**	**$7,051,800**	**$7,693,700**	**$0**	**$6,261**

Source: Town of Niagara's Assessor's Office & RKG Associates, Inc.

2. Development Trends

In order to understand the history of development activity in the Town, RKG further subdivided the assessor's data into three categories based on year built (Pre-2001, 2001-2005, and 2006-2009). As illustrated in Table 9, almost all real estate in the Town of

Niagara was constructed prior to 2001. In fact, according to the Town's assessment records, only 21 parcels have been developed since then (sixteen in 2001-2005 and five in 2006-2009), and all of them have been residential in use. While it is possible that the assessor's database may not be entirely complete, it is expected that the database nevertheless gives a reasonable indicator of development activity in the Town. In addition, based on the most recent CoStar real estate market reports and the Niagara County Center for Economic Development's website, there are no industrial or office properties under construction at this time in Niagara.

Given the declining nature of industrial employment in the Town and the fact that no industrial or commercial development appears to have occurred during the last decade, it is reasonable to assume that the existing stock of commercial and industrial real estate is older in nature and possibly obsolete.

Table 9 – Development Trends by Year Built, Town of Niagara

Pre-2001

					2010 Assessed Value				
Property Class	Number of Parcels	Acres	% of Total Bldg Value	% of Total Acres	Building	Land	Total	Building Value per Parcel	Land Value per Acre
Residential	2,430	994	39.3%	17.4%	$145,217,540	$21,364,500	$166,582,040	$59,760	$21,491
Commercial	329	680	25.1%	11.9%	$92,940,600	$19,192,470	$112,133,070	$282,494	$28,228
Amusement	13	85	0.2%	1.5%	$578,400	$924,600	$1,503,000	$44,492	$10,825
Community Svcs	28	651	15.1%	11.4%	$55,746,800	$3,745,700	$59,492,500	$1,990,957	$5,753
Industrial	27	427	2.3%	7.5%	$8,398,795	$2,462,100	$10,860,895	$311,066	$5,768
Public Service	80	1,578	17.9%	27.7%	$66,211,135	$12,739,600	$78,950,735	$827,639	$8,072
Forest Lands	2	156	0.2%	2.7%	$812,400	$1,581,400	$2,393,800	$406,200	$10,127
Vacant Land	842	1,126	0.0%	19.8%	$0	$7,051,800	$7,693,700	$0	$6,261
TOTAL	**3,751**	**5,698**	**100.0%**	**100.0%**	**$369,905,670**	**$69,062,170**	**$439,609,740**	**$98,615**	**$12,120**

Source: Town of Niagara's Assessor's Office & RKG Associates, Inc.

2001-2005

					2010 Assessed Value				
Property Class	Number of Parcels	Acres	% of Total Bldg Value	% of Total Acres	Building	Land	Total	Building Value per Parcel	Land Value per Acre
Residential	16	5	100.0%	100.0%	$1,726,200	$213,600	$1,939,800	$107,888	$44,132
Commercial	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Amusement	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Community Svcs	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Industrial	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Public Service	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Forest Lands	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Vacant Land	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
TOTAL	**16**	**5**	**100.0%**	**100.0%**	**$1,726,200**	**$213,600**	**$1,939,800**	**$107,888**	**$44,132**

Source: Town of Niagara's Assessor's Office & RKG Associates, Inc.

2006-2009

					2010 Assessed Value				
Property Class	Number of Parcels	Acres	% of Total Bldg Value	% of Total Acres	Building	Land	Total	Building Value per Parcel	Land Value per Acre
Residential	5	3	100.0%	100.0%	$584,900	$75,100	$660,000	$116,980	$26,351
Commercial	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Amusement	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Community Svcs	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Industrial	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Public Service	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Forest Lands	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
Vacant Land	-	-	0.0%	0.0%	$0	$0	$0	$0	$0
TOTAL	**5**	**3**	**100.0%**	**100.0%**	**$584,900**	**$75,100**	**$660,000**	**$116,980**	**$26,351**

Source: Town of Niagara's Assessor's Office & RKG Associates, Inc.

D. Real Estate Demand

Indications of changes in real estate demand are often observed in the amount of money firms or individuals are willing to pay for space, how much empty space exists on the market, and how quickly new space is absorbed. As such, RKG analyzed trends in lease rates, vacancy rates, net absorption, and sales prices to determine the level of demand for office and industrial space in the Town of Niagara. Much of this data came from the 4Q 2010 CoStar Market Research reports for the Buffalo/Niagara Falls market, which also addresses the Niagara submarket.

1. Lease Rates

Industrial rents within the Niagara Falls submarket have been declining since the end of 2007 from a peak of about $4.70 per square foot (PSF) to a rate of about $3.50 PSF in the fourth quarter of 2010 (Figure 11). This rent level is relatively low for the Buffalo region, but this is likely due to the fact that almost all of the Niagara Falls submarket's industrial supply is warehouse space (which has a region-wide average rate of $3.97 PSF). Warehouse space commands a lower rent level than flex space, which has an average rent of $8.60 PSF in the region (Figure 12).

Figure 11

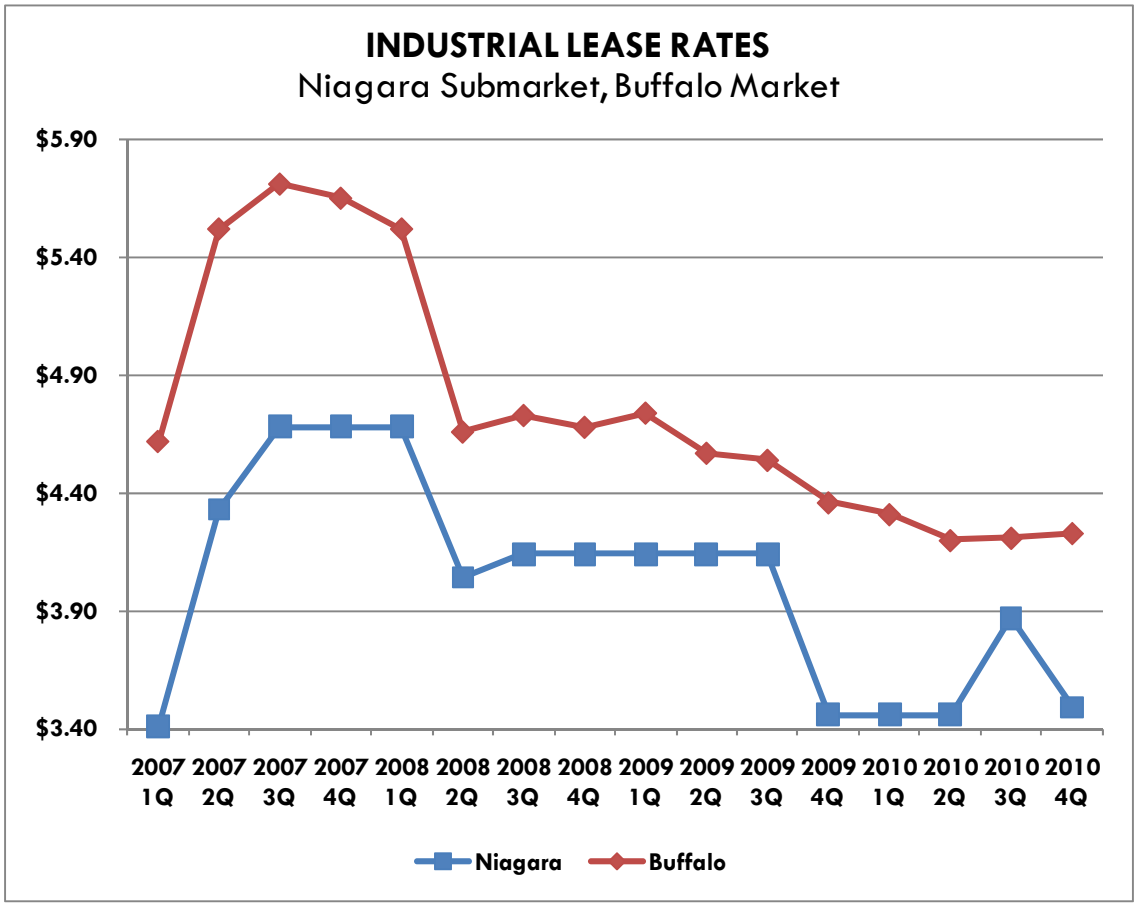
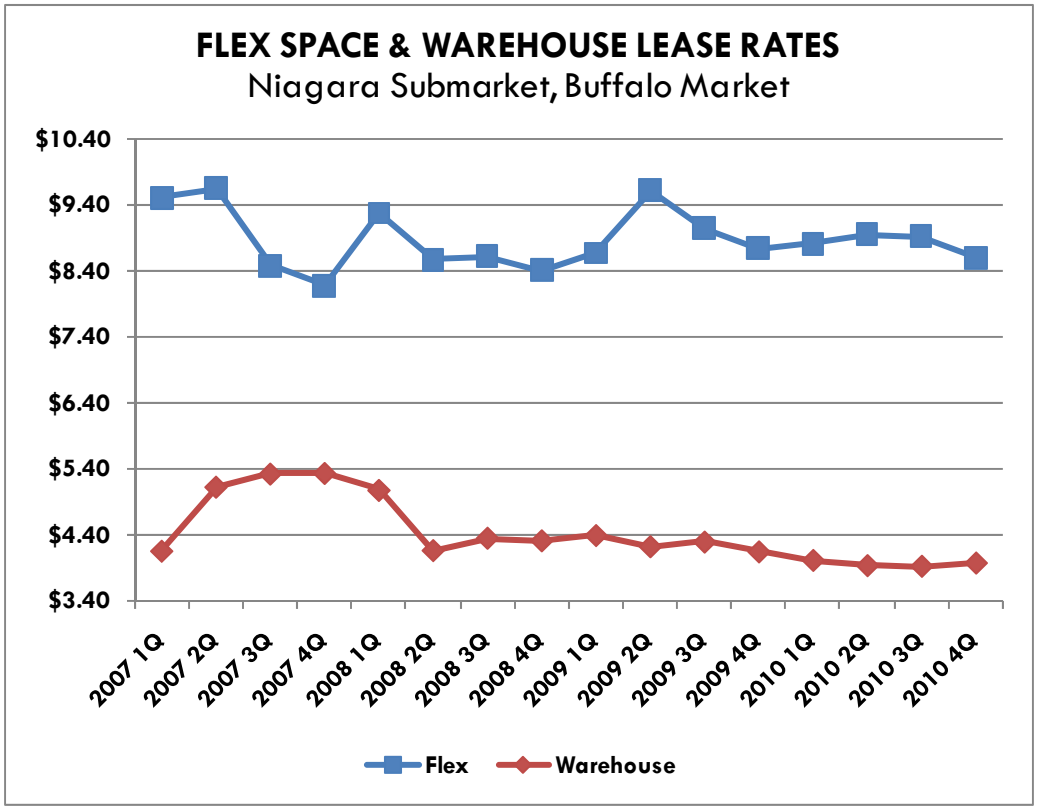


Figure 12



Office rents in the Niagara Falls submarket have been about $10 PSF for the past 24 months (Figure 14). Office, rents, like industrial rents, are low relative to the Buffalo region, but this is likely due to the quality of Niagara Falls office stock, which is over 90% Class B and C space (Figure 14). Some of the steadiness in Niagara Falls' office rents, in spite of the recession, may be due to a lack of new space while office-based employment slowly grows in the area.

Figure 13

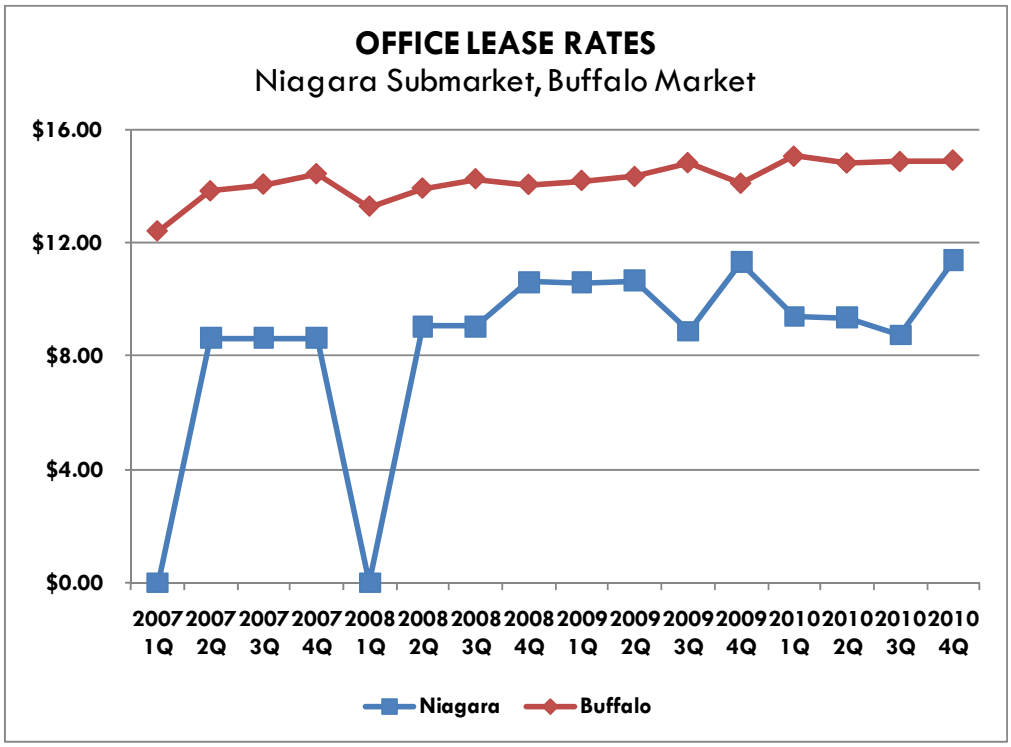
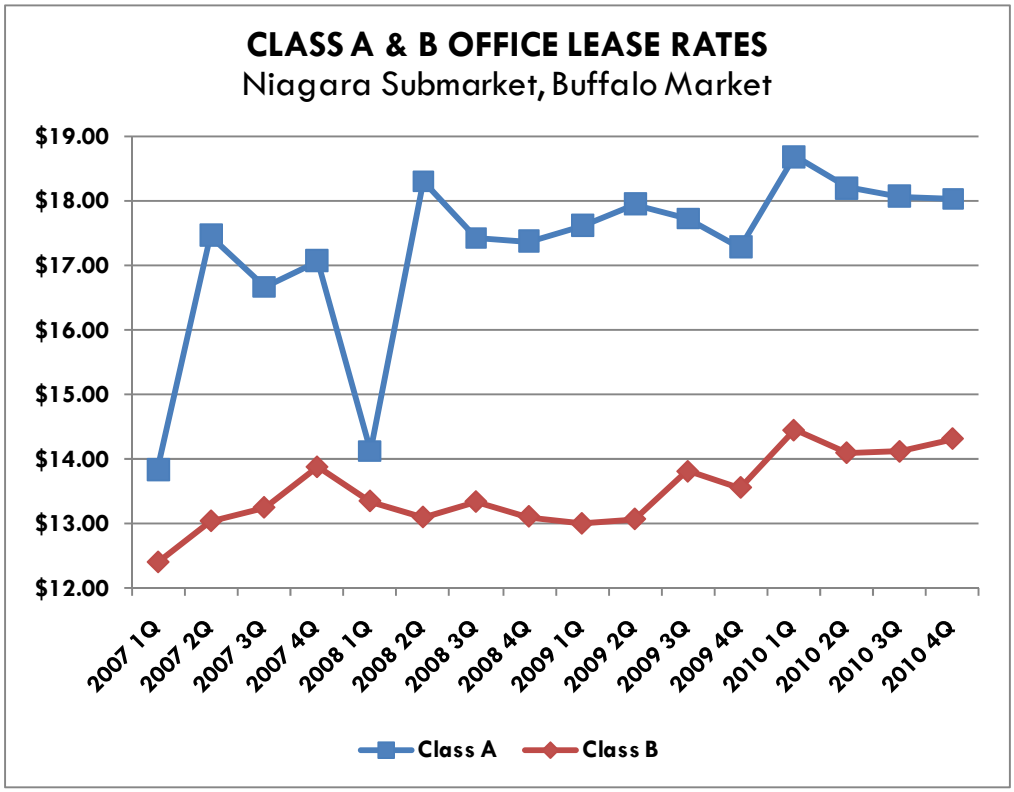


Figure 14



2. Vacancy Rates

Niagara Falls' industrial vacancy rate has been healthier than the region's since 2009, but has recently begun to increase towards a rate of 7% (the region's current rate) at the end of 2010 (Figure 15). Niagara Falls office vacancy rate is currently more than 14%, about five percentage points higher than the regional rate (Figure 16). This spread has existed since at least 2007, with Niagara Falls' rate ranging from one to five percentage points above the regional rate.

Figure 15

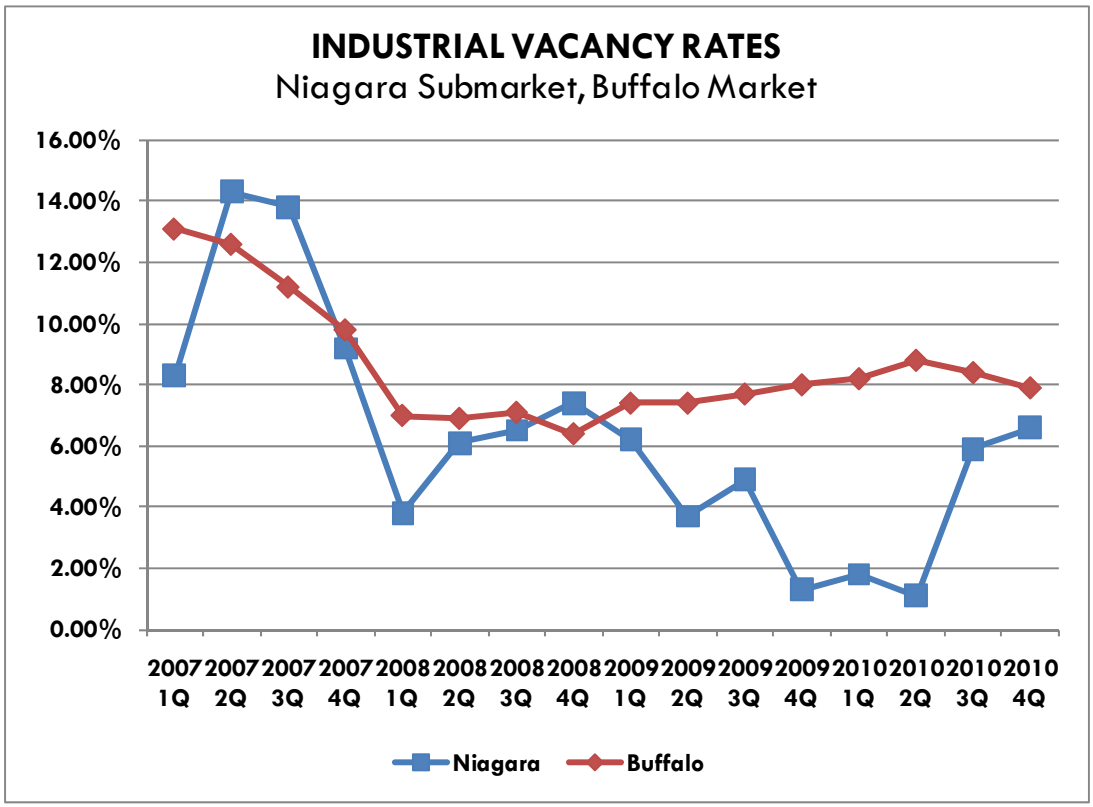
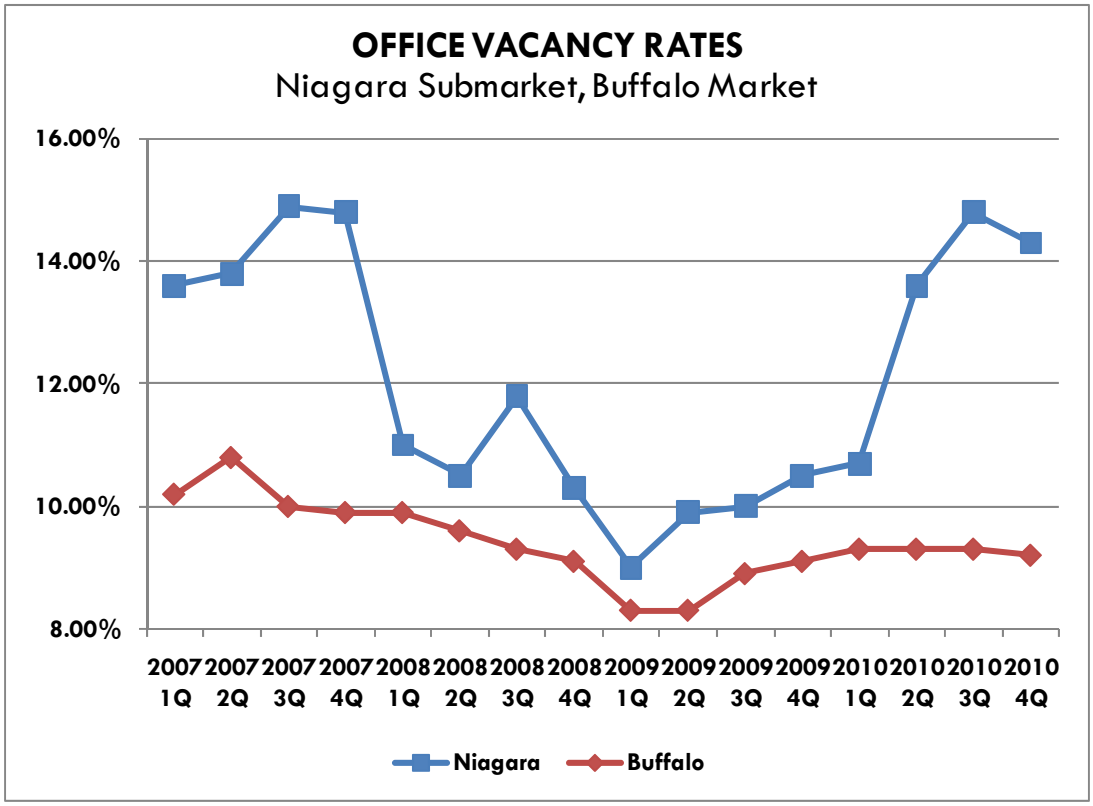


Figure 16



On the regional level, vacancy rates for flex space (18%) remain higher than those for warehouse space (7%) (Figure 17). This is an unusual finding, given that warehouse lease rates are relatively lower than flex space lease rates. Typically, lease rates are a positive indicator of demand—as demand rises, so do lease rates, while vacancy rates decline. This paradox is likely explained by a local demand for less expensive space and declining employment that requires "work" space found in flex industrial real estate.

This condition of higher demand for cheaper space is not found in the regional office market. Since at least 2007, vacancy rates for Class B space have been several percentage points higher than Class A's vacancy rate (Figure 18). At the end of 2010, the Class A rate was less than 7%, while the Class B rate was 11%.

Figure 17

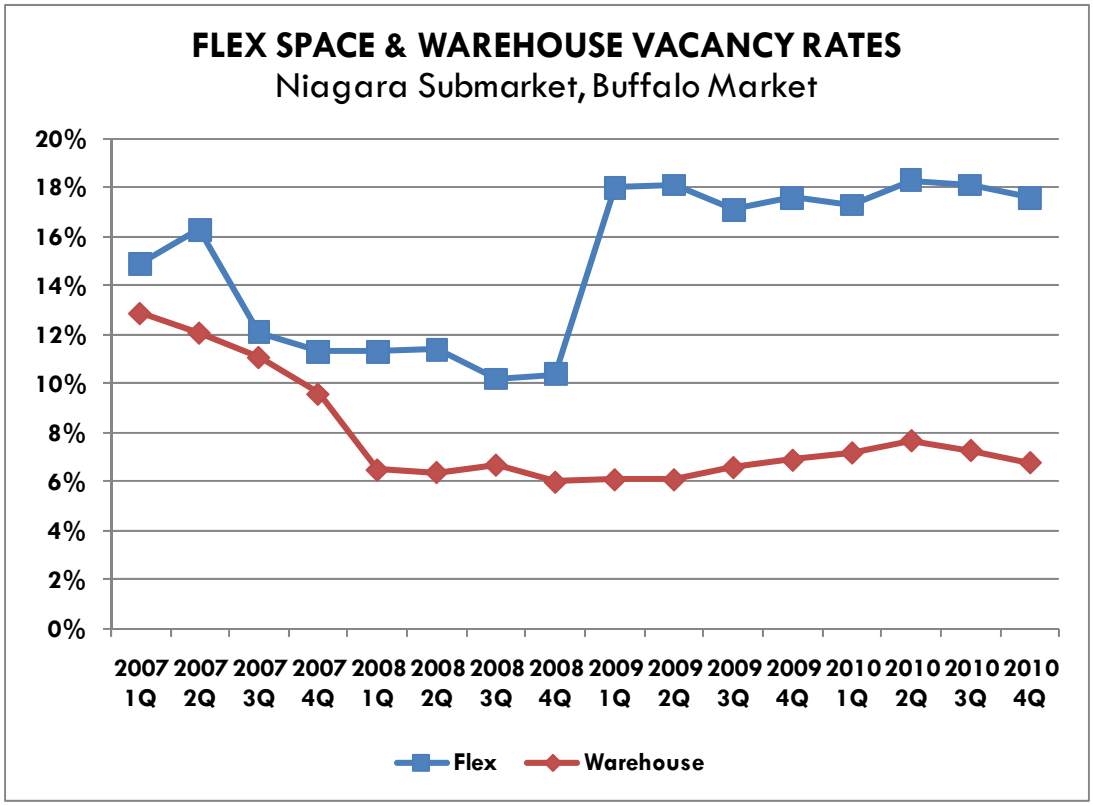
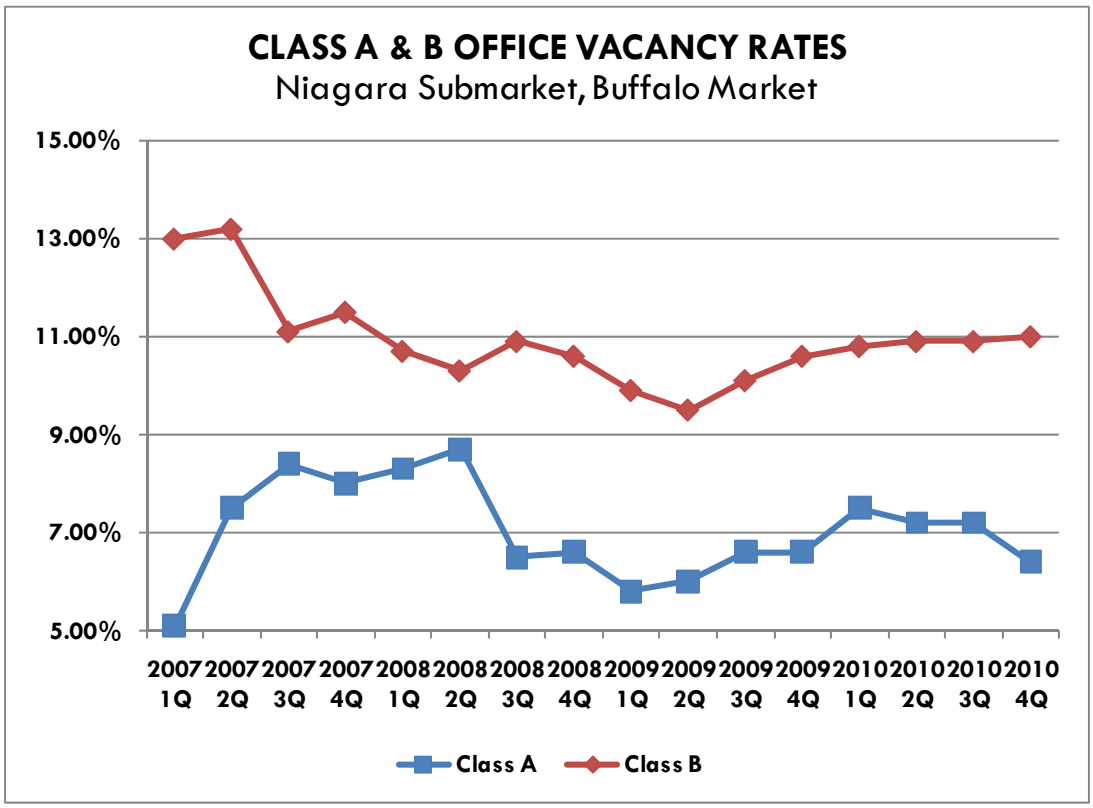


Figure 18

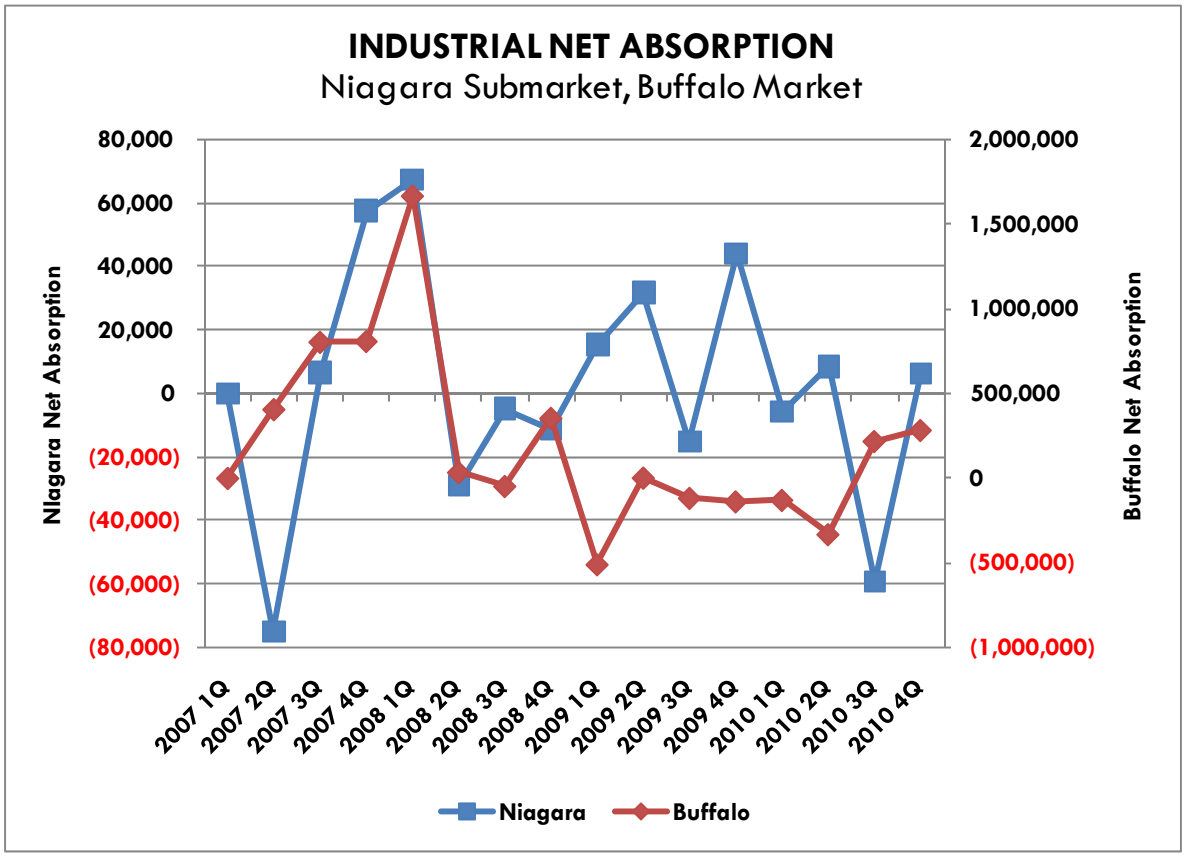


3. Net Absorption

Net absorption is defined as the net change in occupied space over a given period of time. For example, if a new tenant moves into a 50,000 square foot space, while an existing tenant moves out of a 100,000 square foot space, the net absorption in this case is negative 50,000 square feet. It is a measure of the demand exerted on the supply by new or expanding firms taking on more space.

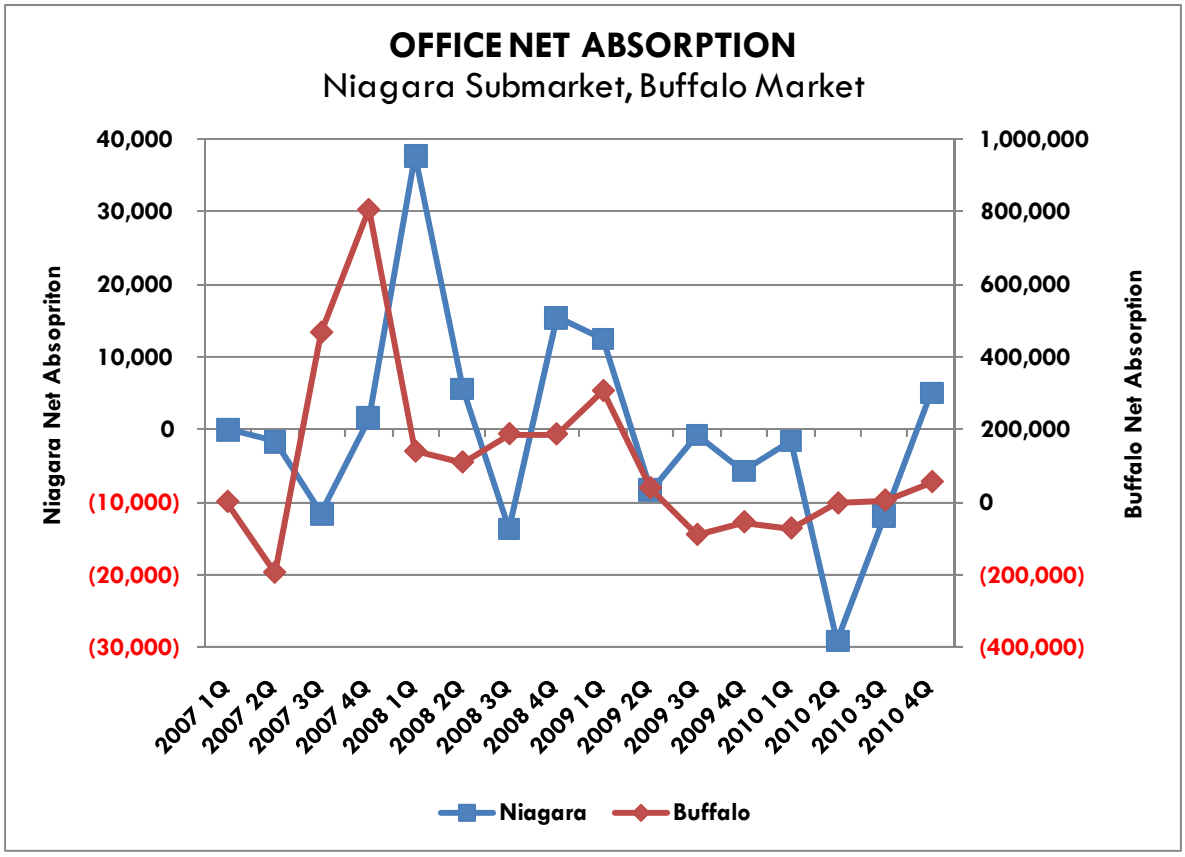
Net absorption of industrial space in the Niagara Falls submarket has averaged around zero during the last three years, indicating that the amount of space vacated roughly equals the amount of space lost. Under these conditions, the market is relatively stabilized, with little incentive for developers to produce additional space (Figure 19). This finding is supported by the relatively low vacancy and lease rates for the submarket's industrial space. Low vacancy indicates that there is demand for the existing space, but when accompanied by such low lease rates, also indicates that there is insufficient demand to support the creation of new space. The region, on the other hand, has typically been experiencing negative net absorption since 2008, most likely influenced by the recession that occurred during that time.

Figure 19



Niagara Falls' office market, like its industrial real estate, has experienced an average net absorption of around zero since 2007 (Figure 20). However, in this case, vacancy rates are higher than the regional rate, indicating that there is relatively less demand for office space in the submarket when compared to the submarket's position in the industrial market.

Figure 20



The absorption of flex industrial space has averaged around zero since 2007, while the net absorption of warehouse space has averaged around 200,000 square feet quarterly (Figure 21). The relatively high net absorption of warehouse space is likely due to a spike in absorption in the first quarter of 2008, most likely by a single major tenant. Similar conditions are found in the region's office market, with both Class A and B hovering around zero net absorption since 2008 (Figure 22). Overall, both the office and industrial market are experiencing minimal or even somewhat negative, net absorption.

Figure 21

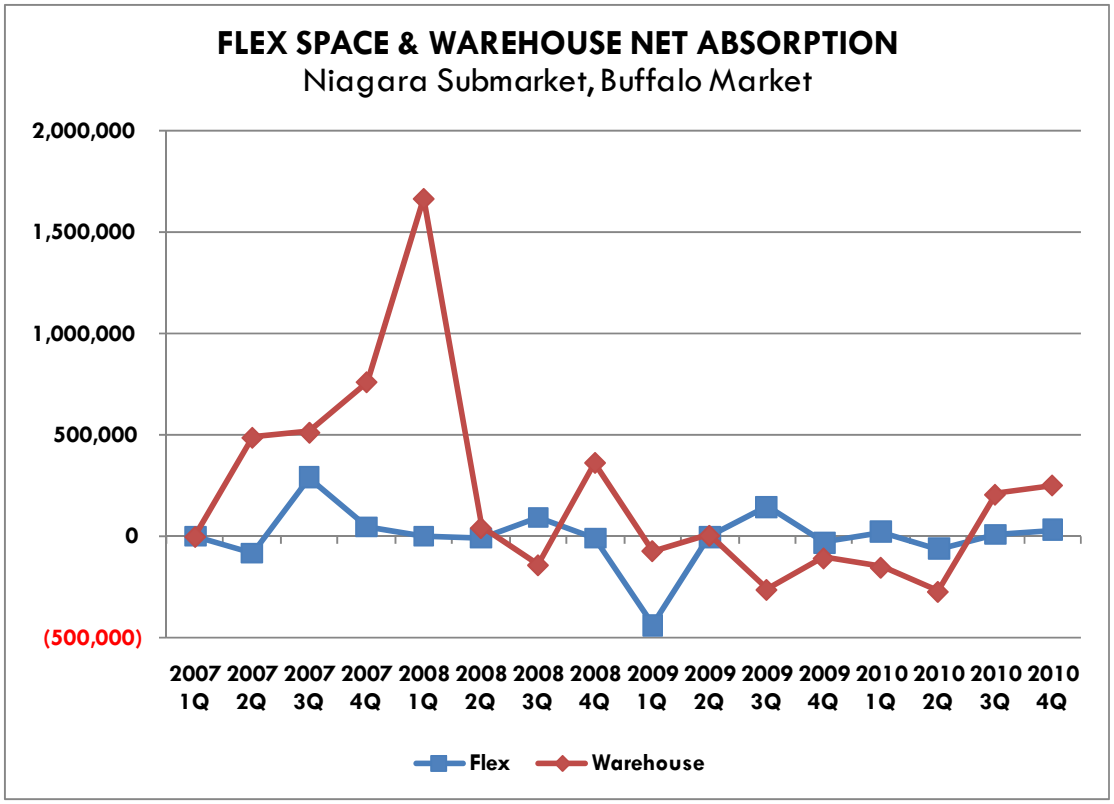
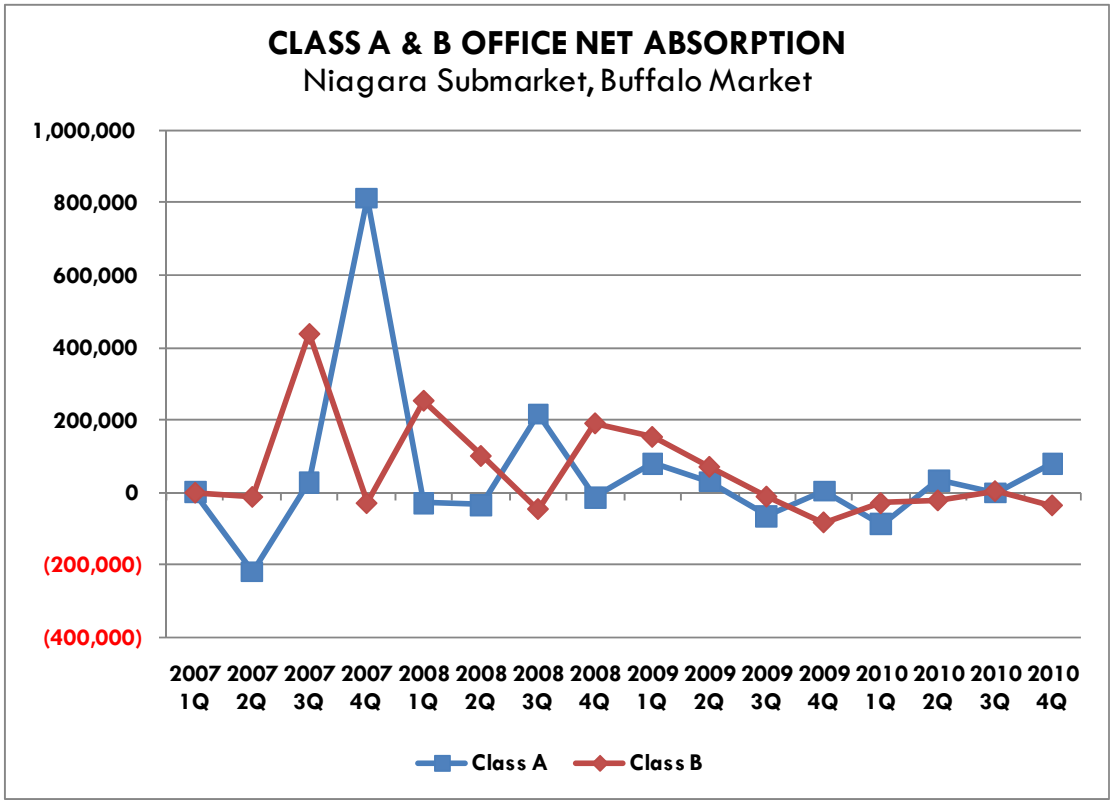


Figure 22



4. Sale Prices

In terms of commercial and industrial properties, sale price is an indicator of what an investor will pay for the future cash flows to the property through leasing the space to tenants. RKG utilized two different sources for sale price data. The first, Loopnet, was used as a source for sales data on improved properties, since its data included building square feet. In the case of vacant land assessment data was used, since it appears to be more complete. In either case, the data used herein is not exhaustive. There are properties that may not have been recorded or were intentionally ignored because of something unusual in their sales transaction that made them an outlier. Nevertheless, the property records that were utilized do include a reliable sample of sales since 2005.

RKG chose to use the metric of sale price per square foot of building space to measure sale price, a procedure which normalizes the sales price by the amount of floor area being purchased. Based on the sample sales, industrial sales averaged $33 per square foot, while office space averaged $51 per square foot (Table 10). The results from Loopnet indicate that improved commercial and industrial properties have averaged a sale price of $35 per square foot.[4]

Table 10 – Recent Sales of Improved Commercial & Industrial Properties, Town of Niagara

Location	Land Use Type	Square Feet	Year Built	Sale date	Sale Price	Price/Square Foot
2113 Factory Outlet Blvd	Industrial-Flex Space	8,782	1980	12/4/2008	$153,000.00	$17
2113 Factory Outlet Blvd	Industrial-Manufacturing	8,782	1968	6/23/2009	$210,000.00	$24
8555 Packard Rd	Industrial-Manufacturing	11,512	1958	11/28/2007	$205,000.00	$18
7815 Packard Rd	Industrial-Warehouse	1,084	1935	9/28/2007	$60,000.00	$55
6405 Packard Rd	Industrial-Warehouse	2,016	1997	5/4/2007	$180,000.00	$89
2040 Lockport Road	Industrial-Warehouse	6,743	1960	10/2/2006	$195,000.00	$29
8045 Quarry Rd	Industrial-Warehouse	8,400	1987	6/29/2006	$150,000.00	$18
5007 Sweet Home Rd	Industrial-Warehouse	11,422	1979	7/16/2005	$198,000.00	$17
4575 Witmer Industrial Estates	Industrial-Warehouse	12,500	1994	3/3/2008	$500,000.00	$40
2368 Maryland Ave	Industrial-Warehouse	12,690	1970	1/14/2010	$285,923.00	$23
2181 Lockport Rd	Industrial-Warehouse	20,550	1981	12/22/2010	$560,000.00	$27
6025 Porter Rd	Office	2,352	1974	5/14/2010	$130,000.00	$55
2931 Military Road	Office	2,600	1971	7/31/2008	$120,000.00	$46
INDUSTRIAL-AVERAGE SF AND PRICE/SF		**9,498**				**$33**
OFFICE-AVERAGE SF AND PRICE/SF		**2,476**				**$51**

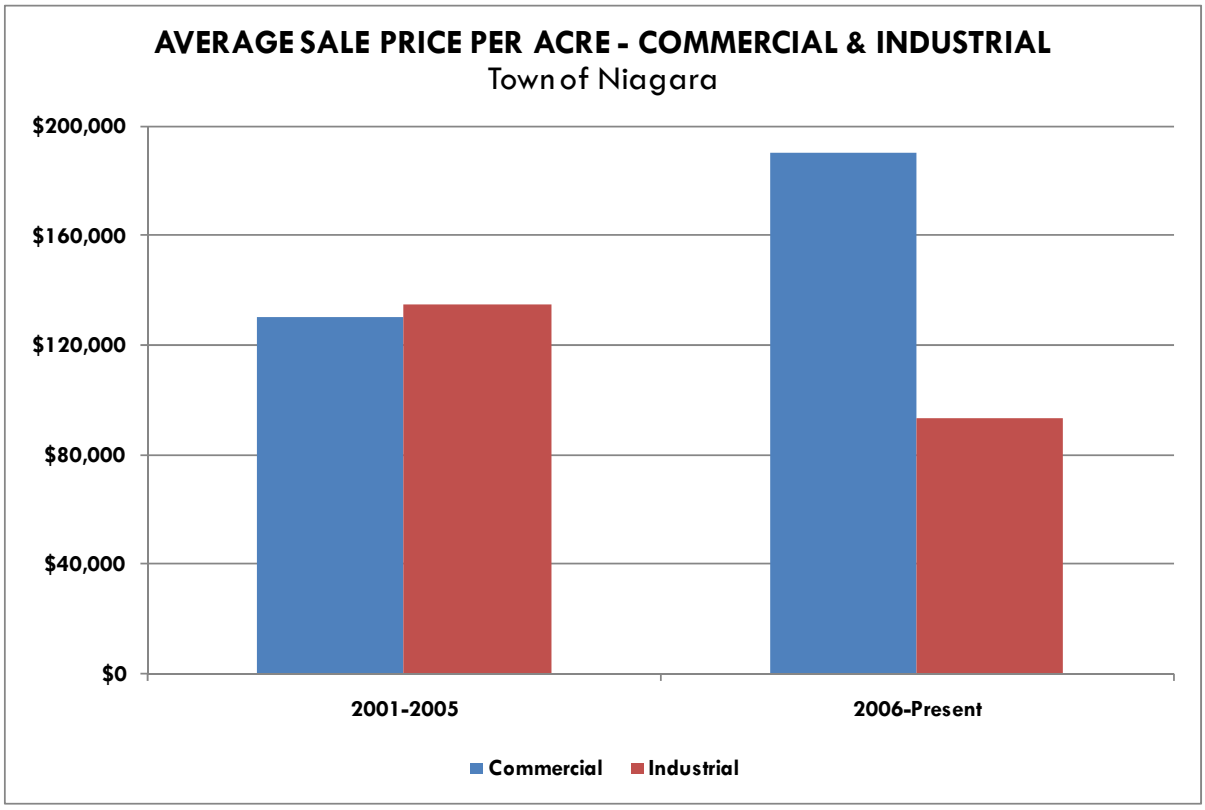
Source: Loopnet & RKG Associates, Inc.

For sales data on raw land, the Town's assessment database was utilized, since they appeared to be more comprehensive. RKG chose to measure the sale of vacant land using the sale price per acre. Like normalizing sales of improved properties, examining sales data on a per acre basis allows for a more even comparison of properties. In order to get a more accurate sense of sales activity, RKG removed sales records with a sales price of less than $10,000 or for which there was no sales date. The 2003 sale of 0.8 acres for $1.6 million to Wal-Mart was also removed, as it heavily skewed the data and was considered to be an outlier for the purposes of this analysis.

[4] As an indication of the lack of demand for new construction, the cost to build new today typically ranges from $45-75 for industrial/flex space and $60-100 for office space.

During 2001-2005, the sales value of industrial and commercial were quite similar (about $100,000) (Figure 23). During 2006 to the present time, however, commercial properties sold at more than twice the price per acre than industrial properties, at $190,000 and $93,000, respectively. This is likely due to the declining nature of industrial employment activity in the area as well as the increasing level of office-based employment.

Figure 23



5. Conclusion

The Niagara Falls submarket typically lags behind the Buffalo market as a whole, indicating there is likely stronger demand for industrial and office space elsewhere in the region. The notable exceptions include the submarket's vacancy and net absorption rates for industrial space, which are generally healthier than the market as a whole. This is likely driven by the relatively low rents in the submarket. In this case, the regional industrial market appears to be value-oriented, while the office market appears to be in pursuit of better quality space. The predominantly low lease rates for both commercial and industrial properties indicate that even though vacancy and net absorption may be stable, there may be minimal demand for additional space from a market-wide perspective. In addition, the value of commercial property seems to be outpacing industrial property as local employment trends turn towards office-based jobs.

E. Summary

In analyzing current real estate market conditions, RKG found that the Town of Niagara is experiencing a declining population, number of households, household size, and household income while also undergoing an increase in median age. These trends are typical for the northeastern United States. Also typical is the evolution of the employment market from an industrial economy to a service and knowledge-based economy, as illustrated by the loss of manufacturing jobs and the gains in office-based jobs.

The Town of Niagara's real estate supply was built almost entirely before the year 2000. Since then, only a few residential buildings have been constructed. Much of the building value in the Town is found in its residential stock, with relatively little value in its industrial supply. In addition, while vacancy and absorption rates of office and industrial space are stable, lease rates are also somewhat low. These findings would typically indicate that even though the local market is supporting the existing supply, there is relatively little demand for new development in the market. However, given the site's location adjacent to the Niagara Falls International Airport, there may very well be a small competitive advantage afforded the site that would not otherwise be in effect if the site were located elsewhere.

VI. CONCLUSIONS

The RKG team formulated the following conclusions from the findings of their research:

- With a few exceptions, the buildings, utilities, and features of the Reserve Center are relatively old, with many buildings built 40-50 years ago. Buildings of this age are typically considered to be functionally obsolete, particularly as they relate to compliance with the Americans with Disabilities Act (ADA).
- The site is fully served by adequate utilities (water, sewer, electric, telecom, natural gas) which enter the site in one location and primarily distributed underground to the various buildings and facilities. Future multi-tenancy of the facilities will require sub-metering of these utilities or replacement with individual services.
- The site is directly adjacent and accessible to the taxiways and runways of Niagara Falls International Airport (KIAG). Future users seeking access to the airport will require an agreement with the owner/operator of the airport, Niagara Falls Transportation Authority (NFTRA),.
- The condition of the Reserve Center's buildings is similar to the Town's stock of industrial and commercial real estate, which is also older in nature and relatively large. The similarity of the Army's facilities to typical industrial and commercial space may make it difficult to compete against a large supply of comparable space. In addition, given the relatively low rent levels in the area, renovations to the site's buildings may be cost-prohibitive.
- Local demographics indicate a declining population and household income levels, which has put downward pressure on real estate demand.
- The area is also experiencing a shift from industrial employment to service and knowledge-based employment, further depressing demand for older industrial and commercial space.
- The local industrial and commercial real estate market is in a state of general equilibrium, with relatively low and stable rents, vacancy rates, and generally minimal net absorption. This means that while local demand is supporting *existing* space, it would likely have a difficult time supporting *new* space over a generally acceptable amount of time. New development would most likely come in the form of build-to-suit space that is designed with a predetermined tenant in mind.
- KIAG is a relatively competitive airport within the region, in terms of its physical characteristics and services. However, the demand for additional hangar and fixed base operations space is expected to be limited in the short to mid-term.

DRAFT

Redevelopment Plan
for
US Army Reserve Center/
Area Maintenance Facility #76
9400 Porter Road
Niagara Falls, New York

Submitted by

Town of Niagara
Local Redevelopment Authority

February 2008

MEMBERS

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LOCAL REDEVELOPMENT AUTHORITY (LRA)

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Mr. Daniel Brown

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Mr. Robert Clark

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EXECUTIVE SUMMARY

Draft Redevelopment Plan
For
US Army Reserve Center/
Area Maintenance Facility #76

Preface

The US Army is required to close the Army Reserve Center/Area Maintenance Center #76 (USARC), located at 9400 Porter Road, Niagara Falls, New York, no later than September of 2011. The facility has been declared surplus Federal property by the Department of Defense (DOD) under the Base Realignment and Closure (BRAC) process. Reserve operations at this facility and others are being consolidated at a new Reserve Center to be constructed at the Niagara Air Reserve Station.

The Town of Niagara, as the governmental entity that will have jurisdiction over the property after base closure, has been designated by the DOD as the Local Redevelopment Authority (LRA). As the LRA, the Town is responsible for preparation of a reuse plan for the USARC and other documents that will guide DOD decisions on property disposition. The Town has appointed a group of local residents, officials, and businesspeople to serve on the LRA throughout the planning process and to advise the Town Board with recommendations regarding the future of the USARC and the Town's interests.

The Town of Niagara has been financially assisted by DOD's Office of Economic Adjustment to conduct necessary studies and analyses of the USARC and the surrounding community. An Executive Director has been engaged by the Town of Niagara to facilitate a planning study, to oversee the work of consultants, and to serve as a liaison with DOD. MRB Group, P.C. was selected as consultants for the reuse planning project.

APPENDIX D - EDC Application

The LRA's overall goal has been to prepare an implementable plan that will ensure that the USARC will be an asset to the community in the future. The LRA's efforts have also been directed to realizing objectives that involve compliance with BRAC and Federal real property laws, determining the highest and best use for the property, and ensuring that community needs are addressed.

Reuse planning for the USARC has required the LRA to undertake reviews and evaluations of the physical condition of the 22-acre site and the various structures that occupy the site. The history of the facility is covered and a review is provided of environmental assessments that have been prepared for the property. Land use controls that will be placed on reuse of the USARC by the Town of Niagara have been cited in the report. The usages of the USARC and adjoining properties, particularly the Niagara Falls International Airport, have been examined in regard to their implications for reuse of the USARC. The proximity of the airport and its activities will be major determinants in how the USARC property is redeveloped.

The planning study presents an analysis of the various needs of the community, particularly those relating to economic development and the needs of the homeless. The study compiles a listing of the area's strengths and opportunities as they relate to economic development. Weaknesses and threats to the community's economic situation are also listed. An assessment is made of the needs of the homeless in the vicinity of the USARC. Further, a review is made of community interest in redevelopment of the property.

Alternative redevelopment concepts that were considered by the Town of Niagara LRA are discussed in the report. A Preferred Reuse Plan is presented that recommends a mix of light industrial uses for the property with an emphasis on aviation and aerospace activities that are being driven by growth and improvements at Niagara Falls International Airport. Feasibility and fiscal analyses are provided along with financial projections for implementation of the Preferred Reuse Plan.

APPENDIX D - EDC Application

Section I: Introduction

The pending closure of the USARC under BRAC has resulted in the designation of the Town of Niagara as the LRA for reuse planning. A number of planning and procedure requirements must be satisfied as part of the planning and property disposition process including consideration of the needs of the homeless. The overall goal of the LRA is to see that the reuse of USARC will be an asset for the community.

Section II: Facilities Analysis

The reports provides reviews of USARC site location, adjacent land uses, site history and information on the past, present and future of the Niagara Falls International Airport which is directly adjacent to the USARC. The Town's zoning code is reviewed as the USARC property will be subject to LI-Light Industry zoning when it is no longer under Army ownership. Reports prepared by the Army on the environmental condition of the property are summarized.

Extensive information on the USARC and the various buildings on the site is provided along with assessments of building and system conditions. Utilities are reviewed and general observations are provided on improvements needed at the facility. It is noted that mechanical, electrical, and plumbing systems at the site have been well maintained but they are aging and may be inadequate for major changes in use. Significant upgrades may be required.

Section III: Community Needs Analysis

Community and economic needs are addressed, as are the needs of the homeless as required by BRAC legislation. The LRA has focused upon economic needs including job creation, attraction of investment, expansion of the tax base, and how best to contribute to the development and growth of Niagara Falls International Airport.

APPENDIX D - EDC Application

Demographic and economic data indicate that the area has been stressed by long-term economic problems. Aggressive efforts by Niagara County's economic development agencies are addressing many of these problems. Listings of various economic development projects in Niagara County are provided.

The needs of the homeless in the vicinity of the USARC are reviewed and data is presented on numbers of homeless in the City of Niagara Falls where this population is concentrated. A review is made of a homeless needs assessment conducted by the City of Niagara Falls including a housing gap analysis. Information is provided on homeless service providers in the area and the types of services and facilities available. The study reports that additional housing units for the community's homeless are neither a priority nor a long-term issue. The needs of the homeless in the area were determined to be primarily service related which involves issues relating to medical needs, substance abuse, mental health, job training skills, and other support services.

Section IV: Notices of Intent

Under BRAC legislation, The Town of Niagara LRA was required to solicit and consider notices of interest from representatives of the homeless and from other interested parties during the process of plan preparation. BRAC also required the LRA to balance various development needs including the needs of the homeless. Two expressions of interest in the property were considered by the LRA including one from Niagara County Community College (NCCC) and the other from Niagara Falls Redevelopment, LLC (NFR). NCCC subsequently withdrew its interest and NFR did not provide sufficient project information for the LRA to determine eligibility, feasibility, benefit to the community, or repairs and improvements that would be needed to transition the property to a proposed use.

APPENDIX D - EDC Application

Section V: Alternative Redevelopment Concepts

The LRA determined that the highest and best use for the USARC property would be a redevelopment scenario that provides community benefit in the form of job creation and economic stimulus. It was recognized the USARC presents a unique reuse opportunity for the Town of Niagara. The facility's location with direct access to Niagara Falls International Airport and its runways opens a number of possibilities for conversion of the property to civilian use.

Three alternative reuse concepts for the USARC were considered by the LRA. These included:

Alternative A. Conversion to air cargo center

Alternative B. Conversion for aircraft modification, renovation, testing, overhaul, maintenance, and storage

Alternative C. Conversion to mixed commercial and industrial uses

Analyses of the opportunities and constraints of the USARC property are provided for each of the alternative reuse concepts considered.

Section VI: Preferred Reuse Plan

The LRA determined that the preferred reuse plan for the USARC should be a hybrid composed of elements from Alternatives B and C. A large hanger on the site will be marketed to aviation and aerospace firms as a location for aircraft modifications, renovations, research and testing, overhaul and storage. Two classroom/office buildings that are attached to the hangar can support reuse activities in the hangar by providing space for offices, classroom training, engineering, computer operations, locker rooms, and storage. The remainder of the site can be utilized, on a building-by-building basis, for a mix of light industrial and commercial uses permitted by Town of Niagara zoning.

An adaptive reuse analysis and a financial analysis are provided for the preferred reuse plan. Various conveyance methods that can be used by the Army to dispose of the USARC are reviewed and it is recommended that the Town of Niagara seek a no-cost economic development conveyance of the property. It is further recommended that the Army make the conveyance to the Town of Niagara Industrial Development Agency (IDA) and that the IDA assume responsibility for redevelopment.

Financial projections are presented which are based on anticipated revenues, including rental income and grant assistance, and anticipated expenses that include operating costs, capital improvements, and repair/replacement costs. The preferred reuse plan limits financial exposure for the community while producing jobs and related economic activity.

The Draft Redevelopment Plan and Homeless Assistance Submission for US Army Reserve Center/Area Maintenance Center #76 were approved by a resolution of the Niagara Town Board on February 12, 2008. A copy of the resolution is provided in Appendix E.

I. INTRODUCTION

In 2005, the United States Department of Defense (DOD) declared the United States Army Reserve Center/Area Maintenance Facility #76 (USARC) as surplus Federal property under the Defense Base Realignment and Closure (BRAC) process. The facility must close as a military installation on or before September 2011. Location maps are provided in Appendix A.

A. NIAGARA LOCAL REDEVELOPMENT AUTHORITY

The DOD designated the Town of Niagara as the Local Redevelopment Authority (LRA) and recognized the LRA as the sole entity responsible for the development of a base reuse plan and other documents to address community needs and serve as a guide for property disposition by the DOD.

B. NOTICES OF INTENT

As part of the planning process, the LRA is required to conduct outreach and solicit Notices of Intent (NOI) for the federal property declared surplus from State and local governments, representatives of the homeless, and other interested parties. Any and all NOI's are to be considered in the development of a redevelopment plan for the USARC.

The redevelopment plan, including homeless considerations, is subject to approval by DOD, the United States Department of Housing and Urban development (HUD), and any other federal agencies that may sponsor public benefit conveyances. The LRA, as the single point of contact for coordination of Federal and State assistance for reuse is expected to provide leadership and build consensus within the community for base redevelopment.

C. LRA RESPONSIBILITIES

When the DOD is ready to convey the property from military to civilian ownership and new uses, the original LRA, established as a planning organization, may evolve to an organization responsible for implementing all or portion of the base reuse plan. The planning LRA may also decide to designate another organization to implant the plan and may relinquish its responsibilities to this other entity.

D. LRA BASE REUSE PLANNING GOALS

In undertaking the planning process for reuse of the Niagara USARC, the LRA was charged with the responsibility for guiding long-term redevelopment of the installation. To advance its responsibilities, the LRA accepted the following goals and objectives for redevelopment of the USARC.

1. Goal:
   - Prepare an implementable redevelopment plan that will ensure that the USARC will be an asset to the community in the future.

2. Objectives:
   - Satisfy requirements of BRAC and Federal Real Property Laws
   - Determine highest and best use for the property
   - Reflect the community's goals and needs
   - Recommend a preferred base redevelopment plan that represents a vision of the USARC that will be financially feasible and acceptable to the community

3. Concerning BRAC-specific actions, the base redevelopment plan is also intended to serve the following purposes:
   - Reflect community consensus about civilian reuse of the facility;
   - Guide DOD's property redevelopment environmental analysis;
   - Be a factor in DOD's consideration of property conveyance options.

E. FUNDING FOR BASE REUSE PLANNING

DOD's Office of Economic Adjustment (OEA) provided funding for preparation of the Reuse Planning Analysis for the USARC. Community meetings were held to review NOI's, homeless needs, and the draft redevelopment plan. This draft redevelopment plan includes information on existing conditions at the USARC, an analysis of community and economic needs as well as homeless assistance needs, a review and assessment of NOI submissions, and recommendations for future reuse.

F. APPROVAL OF DRAFT REDEVELOPMENT PLAN AND HOMELESS ASSISTANCE SUBMISSION

The Draft Redevelopment Plan and Homeless Assistance Submission for US Army Reserve Center/Area Maintenance Center #76 were approved by a resolution of the Niagara Town Board on February 12, 2008. A copy of the resolution follows this section.

TOWN OF NIAGARA

COUNTY OF NIAGARA, STATE OF NEW YORK

NIAGARA FALLS, N.Y.

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OFFICE OF THE TOWN CLERK
Sylvia Virtuoso

STATE OF New York)
COUNTY OF Niagara) SS:
TOWN OF Niagara)

I, ***Sylvia Virtuoso***, Clerk of the Town of Niagara, New York, do hereby certify that I have compared the foregoing copy of this Resolution with the original on file in my office, and that the same is a true and correct transcript of said original Resolution and of the whole thereof, as duly adopted by the Town of Niagara Town Board at a meeting duly called and held at the Town of Niagara Town Hall on February 12, 2008 by the required and necessary vote of the members of the Town Board to approve the following Resolution:

Resolution to approve the **Draft** Redevelopment Plan and Homeless Assistance Submission for US Army Reserve Center/Area Maintenance Facility #76.

Witness My Hand and the Official Seal of the Town of Niagara, New York this 13th day of February 2008.

Sylvia Virtuoso

Sylvia Virtuoso, Town Clerk

II. FACILITIES ANALYSIS

A. SITE LOCATION

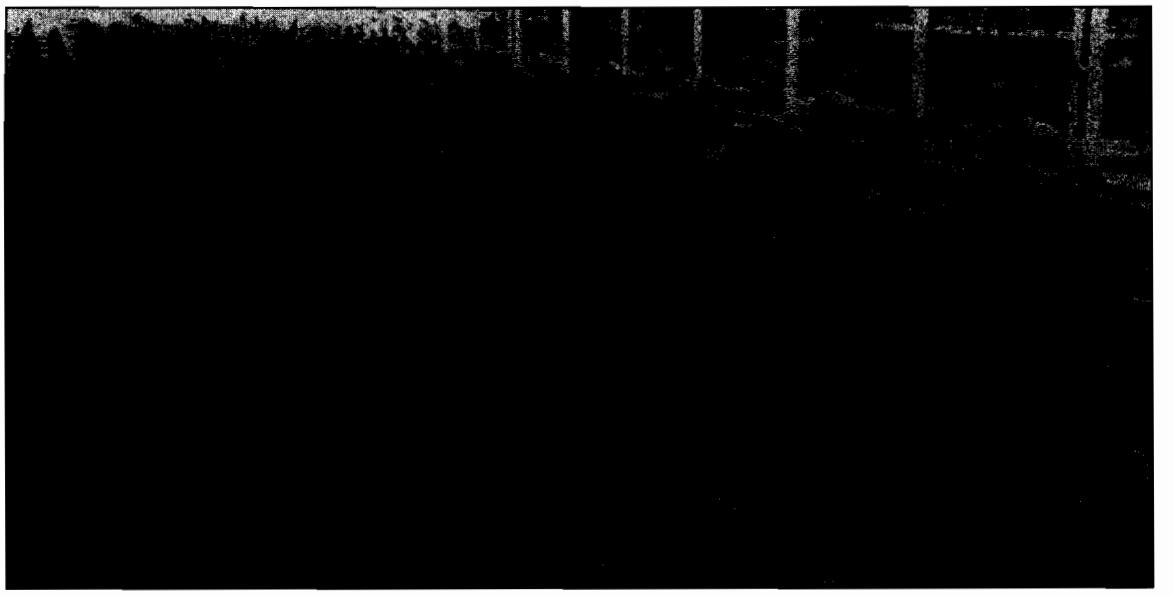
The Niagara Falls Army Reserve Center/Area Maintenance Facility #76 (USARC) is located on approximately 21.88 acres of land on the north side of Porter Road in the Town of Niagara with a street address of 9400 Porter Road, Niagara Falls, New York, 14304. The USARC is located on a level plot of property immediately west of the Niagara Falls International Airport and adjacent to Porter Road, also referred to as State Route 182. The installation is bordered on the east, west, and north sides by wooded land and commercial development associated with Niagara Falls International Airport. Directly across Porter Road on the south side of the base is a stretch of forested property. Photographs of the site are provided in Appendix B.

B. ADJACENT LAND USES

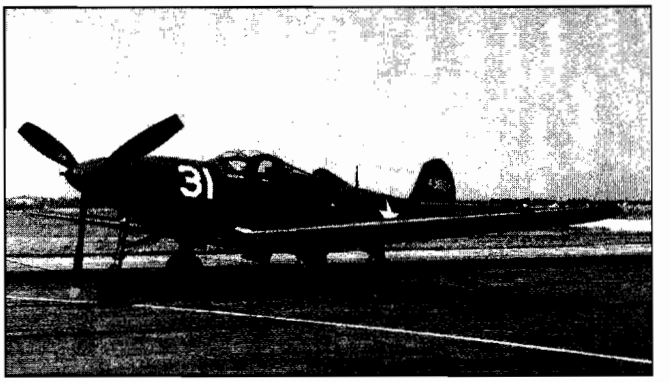
The general area contains a mix of wooded land, commercial development, and military uses. The USARC is located directly adjacent to the Niagara Falls International Airport. A United States Air Force Reserve Base is located on the opposite side of the main runway.

C. SITE HISTORY

Recorded uses of the USARC site date to 1928 when the City of Niagara Falls developed a city-owned airport on the property, which includes the subject site. Later, in 1943, the Bell Aircraft Corporation used the airport and other properties in the area for manufacturing warplanes during the Second World War (1939-1945). Bell was responsible for producing fighter aircraft in various facilities across the Niagara Frontier including the P-39 Aircobra and the P-63 King Cobra.



Bell Aircraft

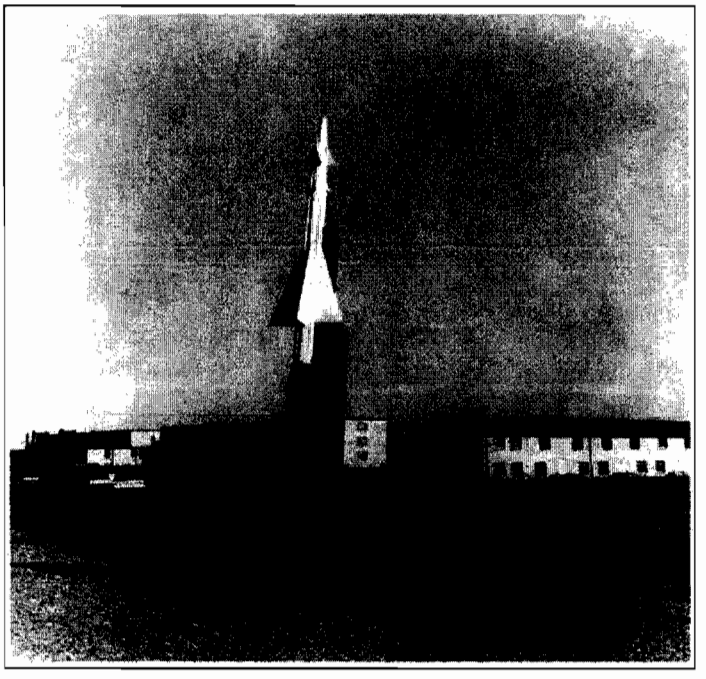


Bell P-39 Aircobra

Beginning in 1946, the airport property was used by the United States Navy as a Naval Air Station. Subsequently, the U.S. Army Reserve acquired 21.88 acres of the Naval Air Station for use as a U.S. Army Reserve Center in 1959. At the time, the site contained several buildings and a large aircraft hangar. Additional buildings were later constructed on the site including a number built during the early to mid-1960's. The newest structure on the base was constructed in 1994.

There are currently seventeen (17) structures on the site including a 37,500 sq. ft. aircraft hangar, several office buildings, storage buildings, a vehicle maintenance facility, and ancillary structures such as a guardhouse, hazmat sheds, and an electrical building. Detailed information on each structure is provided in this Facilities Analysis.

Previous studies, referenced in Section VII, have cited various military activities that have been conducted on the site since it was first acquired by the Federal government in 1946. The Navy used the property for servicing and maintaining helicopters and airplanes. Two wooden hangars on the property have been long since been removed along with other buildings and a water reservoir. In the early 1970's, the site was also used for servicing Nike Ajax missile warheads from batteries defending the New York Air Defense Sector The Nike Ajax air defense system used slender ground-controlled guided missiles armed with conventional high explosive, fragmentation-type warheads.



Nike Missile & Launcher

Starting in the late 1970's, the New York Army National Guard used and serviced about 30 helicopters in the hangar located on the site. The base was also used for a variety of other maintenance, storage, and logistical purposes as well as for administrative, educational, and training functions.

D. NIAGARA FALLS INTERNATIONAL AIRPORT

1. Airport History

Niagara International Airport was originally opened in 1928 as a city-owned municipal airport with crushed stone runways. In the early 1940's, Bell Aerospace located a plant adjacent to the airport and changed the nature of the facility. The airport later became the birthplace of the world's first helicopter certified for commercial use (Bell 47) and the world's first supersonic plane (Bell X-1).

Bell X-1

A military presence at the airport was established during World War II. The U.S. Air Force established a base and managed the facility during the

war. Runways were constructed and extended during the 1940's and 1950's along with landside facilities including a control tower. The base was designated as a U.S. Naval Air Station in 1946. At the same time, a fighter unit of the New York National Guard was located at the airport

2. Current Status of Airport

Currently, the Air Reserve Station is home to the 914th Tactical Airlift Wing of the U.S. Air Force Reserve and the 107th Air Refueling Wing of the New York State Air National Guard. The C-130 Hercules and KC-135 Stratotanker are flown out of Niagara Falls. The base is Niagara County's second largest employer with almost 3,000 military and civilian employees.

On the south side of the airport is the Niagara Falls International Airport. This facility has been approved for international flights and has been owned since 1970 by the Niagara Frontier Transportation Authority, which purchased it from the City of Niagara Falls.

Niagara Falls International Airport

The airfield system at Niagara Falls International consists of three runways. The main runway (10L/28R) is 10,825 feet in length and 150 ft wide. It is the fourth largest runway in New York State. Runway 06/24 is 5,188 feet in length and 150 feet wide and is considered the crosswind, visual approach runway.

Runway 10R/28 L is 3,975 feet by 75 feet, is considered a utility runway used by general aviation aircraft, and permits simultaneous operation between commercial and general aviation aircraft.

The three runways are supported by a system of 13 active taxiways. The Air Force provides airport rescue and firefighting services for the entire facility on a 24/7 basis. The capabilities of the Air Force for rescue and fire suppression are sufficient by FAA certification standards to permit the use of the airport by any size aircraft including the Boeing 747.

Currently, the Niagara Falls International Airport has an average of 121 aircraft operations per day (take-offs and landings). Of these operations, 32% are military, 37% are transient general aviation, 31% are local general aviation, and 1% is commercial. General aviation operations include those that are not military or commercially operated flights.

3. Airport Usage

Considerable investments are being made to increase the usage of the Niagara Falls International Airport. The Niagara Frontier Transportation Authority (NFTA), the airport's owner, has authorized the building of a new $26.7 million terminal with construction to begin in the spring of 2008 and completion slated for July of 2009.

The new 69,430 square foot terminal is intended to attract additional passengers and cargo operations to the airport. This investment is being complimented by other facility improvements at the airport and enhanced marketing efforts that target both domestic and international markets.

The airport has attracted Myrtle Beach Direct, a charter service operator that provides non-stop service to Myrtle Beach, South Carolina on a twice-weekly schedule. The airline has announced that it will initiate nonstop service to St. Petersburg-Clearwater, Florida. More recently, it was announced that Skybus Airlines, located in Columbus, Ohio, would provide the first daily passenger service from the airport in almost a decade. The airline will utilize Airbus A319 jets to provide nonstop service to Columbus and access to flights serving 19 other cities in the nation. Plans are also being made to utilize the airport for transatlantic flights to and from Shannon, Ireland beginning in mid-2008. Discussions are underway with additional airlines serving domestic and international markets.

Equally important to the future of the airport is the expansion of cargo services. The NFTA has an agreement with Niagara Cargo Park, a consortium of Toronto-based Vista Cargo International, Speed Transportation Inc. of Buffalo, and Atlas International Freight Forwarding, Inc. Niagara Cargo Park is planning to build two 35,000 square foot facilities at the airport to accommodate expanded air cargo operations. Further, Resource Airways Enterprises and Kittyhawk also handle air cargo. Once the new terminal is built, the existing terminal could be utilized for air cargo or possibly a facility for general aviation users.

Niagara County's Department of Economic Development is supportive of expanded air cargo activity and has identified logistics /distribution/warehousing as a growth cluster. The agency is working with NFTA and other interested parties in developing the air cargo capacity of the airport. New York State's U.S. Senators Charles Schumer and Hillary Clinton have secured a federal appropriation of $2.5 million for the airport to build a new terminal apron and for road improvements that provide additional support for air cargo development at Niagara Falls International. The new apron will be large enough for two Boeing 747 aircraft.

The Niagara Falls International Airport should have an increasingly important role in the area's economy. For example, the decision by Calspan to build a multi-million dollar flight research center and hangar adjacent to the airport was influenced by the lack of congestion at the airport and by the low cost of using the airport. It is anticipated that additional users in the aviation and aerospace industry will also find the airport to be an attractive and profitable place to do business.

E. AREA ZONING REQUIREMENTS

The immediate area of the USARC is zoned by the Town of Niagara as LI-Light Industrial. As a military installation, the USARC facility is not subject to local codes. However, once the USARC is closed and conveyed to civilian ownership, all activities on the property will be subject to local codes including the *Town of Niagara Zoning Ordinance*.

The LI-Light Industrial District permits the following land uses that are cited in the *Town of Niagara Zoning Ordinance*:

- Manufacture, sales and service of small machinery such as optical goods, carburetor and small machine parts, cash registers, sewing machines and typewriters, calculators and other office machines, small motors and generators.

- Fabrication of metal products, bicycles; metal foil, aluminum, gold, etc.; metal furniture, musical instruments and sheet metal products.

- Fabrication of paper products such as bags; bookbinding's, boxes and packaging material and office supplies.

- Fabrication of wood products such as boats; boxes; cabinets and woodworking; furniture and toys, etc.

- Food and associated industries, including bakeries; bottling of food, condiments, drugs, and beverages.

- The warehousing or storage of utilities equipment, goods and products such as building materials, farm supplies and the like, which may be sold from the premises to the general public.

- Office buildings for executive, engineering, and administrative purposes; union headquarters and similar offices.

- Scientific or research laboratories devoted to research, design and/or experimentation and processing and fabricating incidental thereto.

- The manufacturing and processing of pharmaceutical and cosmetic products.

- Motor vehicle service stations and public garages.

- Buildings used exclusively by the federal, state, county, or local municipal government for public purposes, including workshops, warehouses, maintenance garages, or storage yards.

- Radio or television broadcasting stations, including studios, auditoriums and other rooms for performances and including office and other space incidental to and necessary for the principal use, including radio or television transmission or receiving towers and facilities, provided that no portion of the tower is within 1 ½ times the height of the structure of any property line and a tower permit is obtained.

- Hospitals for small animals (dogs, cats and the like), including kennels, provided that yards are enclosed.

- Local and long-distance trucking terminals and distribution facilities.

- Manufacture and service of electronic equipment and supplies including scientific and machine control equipment and instruments, photographic equipment, watches and clocks.

- Sales and service of farm machinery, mobile homes.

- Miscellaneous wholesaling of such items as, but not limited to, tobacco, candy, amusement and sporting goods, books and magazines and food products.

- Air conditioning, refrigeration, and heating sales, service, and fabrication.

The zoning code for LI – Light Industrial Districts also permits accessory uses including:

- Off-street parking, fencing, and signs in accordance with the code.

- The warehousing and storage of goods and products provided that no goods be sold from the accessory premises.
- Garage space necessary to store vehicles used in the conduct of business on the premises.
- Structures customarily associated with industrial office uses.
- Accommodations for a caretaker or watchman and his or her immediate family.
- Cafeteria, first aid, and/or medical facilities located within a building and operated by or for the employer for the exclusive use of employees or guests.
- Recreational areas and parks.
- Gate houses, bus stop shelters or security offices not more than one story in height, which are permitted within a required front yard but situated not closer than 25 feet to any property line.

In addition, a special permit can be issued for public utility uses, including telecommunications facilities.

F. CURRENT USES FOR USARC

Military Units currently occupying the USARC include the 277th Quartermaster Company (Petroleum), the 865th Combat Support Hospital, the 1982nd Forward Surgical Unit, and Area Maintenance Support Activity #76. Additionally, the Fort Drum Department of Public Works has a small number of personnel assigned to the base.

The facility is presently being used by the Army for vehicle maintenance, storage of equipment such as boots, clothing, tents, medical supplies, oil and lubricants and other materials used to support troops in the field. The property is also periodically used for classroom training of reservists.

G. ENVIRONMENTAL CONDITION

1. Environmental Condition Report

An Environmental Condition of Property (ECP) report has been prepared for the USARC. The 2007 ECP report was conducted in conformance with BRAC requirements and professional standards. The ECP report details the history of the property including prior tenant use. However, the focus of the report is on the Army Reserve Center's use of the property and the resulting environmental condition.

The ECP references an earlier Preliminary Assessment of the USARC that was prepared in 1994 in response to the listing of the facility on the Federal Agency Hazardous Waste Compliance Docket in February of 1994. Facilities that are placed on this docket are sites that the Federal government has owned or operated at which hazardous waste is or was stored, treated or disposed of. Federal environmental law requires assessments of such sites and provided the basis for the 1994 assessment at the USARC. The purpose of that investigation was to review all available information regarding past practices for hazardous waste storage, handling, and disposals at the site, and to assimilate that information into a report.

2. Environmental Condition Findings

Several potential areas of concern relating to the environmental condition of the property were cited in the ECP report. The consultants for the study researched reports that there had been a former landfill on the property. Other investigative studies of the property did not conclude that a landfill existed on the property. The ECP noted that a Preliminary Assessment of the property performed in 1994 found that no documents could be found that could confirm or deny the potential presence of a landfill. Further, it was recommended that additional records reviews be made and that subsurface sampling be undertaken with the objective of determining whether a landfill was previously located at the property.

The ECP reported that Building 4, the large hangar, was used to service Nike missiles having conventional warheads in support of Nike missile batteries in New York. The ECP notes that reports on the Nike missile program cite the potential for environmental effects related to Nike operations and maintenance.

The prior existence of two aircraft hangars on the property, in addition to the existing hangar (Building 4), was cited in the 1994 Preliminary Assessment. The hangars were reportedly in use as early as the 1930's and no detailed information is available on storage and disposal of hazardous substances that were likely to have been used at the time. Additionally, it was noted Building 4 was used for aircraft maintenance and repair and that drainage from the building reportedly flowed into storm drains for several decades before an oil waste separator was installed. The 1994 Preliminary Assessment recommended sediment sampling in Cayuga Creek to evaluate discharges from building floor drains into the storm

sewer. The 2007 ECP found no information available to indicate that such sampling had been performed.

3. Environmental Classification of Property

Under BRAC legislation and federal environmental legislation, federal agencies are required to expeditiously identify real property that can be immediately reused and redeveloped. Satisfying this objective requires the identification of real property where no hazardous substances or petroleum products, regulated by federal environmental law, were stored for 1 year or more, or known to have been released or disposed.

Department of Defense (DOD) guidance provides seven categories to define the environmental condition of a property. The classifications are assigned on both the basis of the type of chemical releases (hazardous substances or petroleum) found at the property and the status of the property's cleanup activities.

The seven ECP categories used by the Army to classify properties are as follows:

ECP 1 – Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).

ECP 2 – Areas where only release or disposal of petroleum products has occurred.

ECP 3 – Areas where release, disposal, or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.

ECP 4 – Areas where release, disposal, or migration of hazardous substances has occurred and all remedial actions necessary to protect human health and the environment have been taken.

ECP 5 – Areas where release, disposal, or migration of hazardous substances has occurred and removal or remedial actions are underway, but all required remedial actions have not yet been taken.

ECP 6 – Areas where release, disposal, or migration of hazardous substances has occurred, but requires actions that have not yet been implemented.

ECP 7 – Areas that are unevaluated or that require additional evaluation.

The preliminary ECP classification given to the USARC in the 2007 Environmental Condition of Property Report was ECP 7. Because of the environmental concerns cited earlier, the area's classification reflects the need to undertake additional investigation and evaluation.

Areas in ECP classifications 5, 6 and 7 are not considered currently suitable for transfer by the Department of Defense. Therefore, either additional environmental work needs to be done to change the classification or a determination must be made by the Army to change the classification to an ECP category of 1, 2, 3, or 4 without further investigation.

H. SITE AND UTILITY ANALYSIS

1. SITE

a. General

The site is located on north side of Porter Road in the Town of Niagara Falls. The site is bound by Porter Road to the south, Cayuga Creek to the west and the airport property to the north and east. The size of the parcel is approximately 20 acres. There are eleven buildings at the site, which includes the hanger building (Building 4). See the Buildings section of the report for descriptions of existing structures at the site. An existing site plan is shown in Appendix A along with pictures of buildings on the site. A proposed site plan after two buildings are demolished is also provided.

b. Impervious Surfaces

The majority of the parcel is impervious with minimal green area. The main traffic area around the buildings appears to have been recently paved. The pavement is in good condition. New markings are proposed for pavement to clarify parking areas and travel lanes. New pavement should be added upon removal of Building 19 and 23 (proposed removal). Other impervious surfaces include concrete pavement on the west side of Building 4 which is in fair condition, the concrete area behind Building T-18 which is in poor condition, and the east side of Building 4 which is a concrete surface with asphalt overlay (asphalt overlay is in poor condition).

c. Building 4-East Pad

The pad on the east side of the parcel was of interest for possible use for air cargo. This pad was originally used as a helicopter landing area and helicopters were serviced in the hanger. In order to evaluate the pad for air cargo preliminary testing was required.

Geotechnical testing was completed to determine the cross section of the pavements. Three (3) core tests were taken on the pad, which included a test near the southeast corner, the center of the pad, and near the northwest corner (hanger is in close proximity). The cores demonstrated a cross section of approximately 2" of asphalt, and a depth of concrete that ranged from 5" to 14", with a clay subgrade. Refer to the Geotechnical Report in Appendix C for additional information entitled "*Subsurface Exploration and Geotechnical Investigation Niagara Falls International Airport, Town of Niagara, New York*" dated December 13, 2007.

Based on this data a preliminary evaluation of the USARC was developed. The 14" of concrete can accommodate a plane weighing up to approximately 400,000 pounds. However, the other areas of the pad that contain 5" and 7" of concrete cannot accommodate such weight. The actual weight of the plane that this portion of pad can accommodate requires additional information on the pad (i.e. concrete strength, rebar, original design parameters, etc.) It is suggested that small freight planes or small aircraft could utilize the pad. In addition, the hanger could be used to service smaller planes.

d. Access

Access to the site is provided from a driveway off Porter Road. The drive is gated with a guard booth. The entire parcel is fenced.

2. UTILITIES

The USARC is served by a number of public utilities. In general, the services have one (1) point of connection to the public and/or municipal supply. From the municipal supply, the service extends into the facility, which is owned by the Military/Department of Defense. These utilities are maintained by Reserve Center personnel.

a. Water Supply

Water supply is provided by the City of Niagara Falls at a connection from 98th Street. The supply enters Building 21, which is the central point for water distribution for the entire base. From this central point, the remaining buildings are served. Not all buildings have a water service or the service has been disconnected which include buildings 19, 23, 24, and 26.

The domestic water service and fire protection are separate systems. The water line is relatively new, approximately 12 years old. The consultant team was informed by the Director of Maintenance that the line is in satisfactory condition. The line entering the facility is 12”-16”. Service for the domestic line is 2”. The pressure in the system is approximately 75 psi. New service

connections were installed to the appropriate buildings at the time the main was installed.

b. Sanitary Sewer

The sanitary sewer service to the Army Base is from Porter Road. The sewer system is vitrified clay. The line was installed in 1956. To evaluate the condition of the line it is recommended that the sewer be televised. Based on such a test the overall condition of the line can be evaluated. Damaged or deteriorated areas can be recorded. At this time, the condition of the line is unknown. It was noted by the Director of Maintenance that no sewer problems currently exist.

c. Drainage

It appears that drainage is a combination of sheet flow across the pavement to inlet structures (catch basins) and then piped to Cayuga Creek. No evident drainage issues exist at the facility.

d. Natural Gas

The gas supplier is National Fuel. National Fuel owns the service from the connection point to the meter; after the meter, the line is privately owned inside the facility. The underground gas lines in the facility are steel and are cathodically protected. Cathodic protection protects the pipes against corrosion. The lines are approximately 20 years old.

e. Electric Service

The electric service is supplied by National Grid. National Grid extends electric from the trunk line to a sub-station on the property. A transformer vault is in the Hanger Building.

3. BUILDING DESCRIPTIONS - Descriptions provided below are based on site inspections and information from Historic Inventories of the USARC prepared by the New York State Office of Parks, Recreation, and Historic Preservation.

Building 4: Building 4, an airplane hangar, measures 225 feet by 150 feet. Constructed of metal framing, the building is clad in corrugated metal siding. It has a barrel-vaulted roof covered in single ply membrane. The east and west elevations of the building are lined with massive sliding metal doors with vertical 10-light metal windows. Square footage: 37,500.

The barrel-vaulted roof structure is a series of 9 formed-in-place concrete arches. The arches span 150 feet and the center height is 52 feet. The floor is 11-inch thick concrete slab on grade.

Building 4S: Building 4S is attached to the south elevation of the hangar. It is two stories high with a compressed second story. The building is constructed of stretcher-bond brick and has a flat roof with metal coping. The first story is fenestrated by large vertical window openings each with three metal panels and a single two-light slider window. The second story is pierced by window openings with a metal panel in

the upper sash and a two-light window in the lower sash. All windows have concrete sills. Two metal roll-up vehicular doors are located on its south elevation. Square footage: 50,000.

The structural framing is primarily constructed with cast-in-place concrete beams and columns. The floor and roof framing system appeared to be concrete T-beam configurations. Some areas are framed with structural steel and masonry infill walls.

Building 4N: Building 4N, attached to the north elevation of the hangar, is smaller in size than Building 4S. The two-story building is constructed of stretcher-bond brick and has a flat roof with metal coping. The building is fenestrated by window openings with metal panels in the upper sash and two-light sliding windows in the lower sash. The windows have concrete sills. The north elevation has four single-leaf flush metal doors.

The hangar is currently used for storage and training purposes. Buildings 4N and 4S contain classrooms and offices. Square footage: 30,000.

The structural framing is identical to Building 4S.

Building 18: Built in 1960, Building T18 faces south and is divided into three sections. The one-story southern two sections of the building consist of an Operational Maintenance Shop (OMS) and classroom/office area. These two sections

create a T-shape plan and are constructed of concrete block clad in six-course American-bond brick. The OMS has a front-gabled roof of asphalt shingles and its gable ends are clad in aluminum siding. A grooved concrete frieze lines the south elevation. The OMS is fenestrated by two metal roll-up garage doors on its south elevation. The OMS is further fenestrated by large three-light metal-sash windows with enameled panels in the upper sashes. The windows have concrete sills. The classroom/office section is attached to the west elevation of the OMS. This section has a side-gabled roof of asphalt shingles and its gable ends are clad in aluminum siding. It is fenestrated by two-light metal-sash windows with enameled metal panels in the upper sashes. The windows share a continuous concrete sill.

The OMS at the south end of the building contains a high bay garage area, with approximately 16 feet ceiling height, constructed of masonry block and brick facing. The wood truss gabled roof structure was added over the original flat roof in the 1980's. The ceiling framing for the original flat roof is constructed with 16-inch wide precast roof decking, resting upon steel beams that are spaced approximately 8 feet on center and span north/south direction. One steel girder line spans east/west. All steel framing bears upon the masonry block walls. The classroom area on the west side of the OMS is a single story building with approximately 8 feet ceiling height. The wall section and ceiling/roof framing is the same as the OMS area.

A one-story Area Maintenance Support Activity (AMSA) shop is attached to the north elevation of the OMS. Set on a concrete foundation, the AMSA is clad in corrugated metal siding and has a front-gabled roof of corrugated metal. The east elevation is fenestrated by five metal roll-up vehicular doors and one-light fixed metal windows. The north elevation has one roll-up metal vehicular door and a single-leaf flush metal door. The west elevation is pierced by seven single-leaf flush metal doors with metal awnings and a roll-up metal vehicular door. Square footage: 13,670.

The AMSA shop is a pre-engineered metal building structure, which clear spans the interior space and has no ceiling. The roof is sloped to match the gabled appearance of the OMS area. Roof deck and siding panels appear to be galvanized corrugated metal that are attached with exposed screws. The underside of the roof deck has foiled backed insulation batts.

Building 19: Constructed in 1970, Building T19, a Quonset hut storage building, faces north. Rectangular in plan, it is one story high, 20 feet wide and 80 feet deep. The building is set on a concrete block foundation and is clad in corrugated metal siding. The north and south elevations have been re-clad in vinyl siding and each have a single-leaf flush metal door. The west elevation is fenestrated by five 1/1 single-hung horizontal wood windows and a single-leaf flush metal door, all with corrugated metal awnings.

Building 19 is a storage facility that has reached the limit of its service life.

Building 20: Built in 1968, Building 20 faces east and is located along the southern border of the Army Reserve Center and is currently used as storage space for the 865th Combat Support Hospital. Rectangular in plan, it is one-story high, twenty-five feet wide and 102 feet deep. The building is set on a poured concrete slab foundation and is constructed of concrete block clad in 6-course American-bond brick. It has an overhanging side-gabled roof with a boxed cornice. The roof is covered in asphalt shingles and the gable ends are clad in aluminum siding. The east elevation is fenestrated by four single-leaf doors with square lights and four 1/1 single-hung metal-sash replacement windows with concrete sills. Enameled metal panels enclose the upper sashes. The south and north elevations each contain a small 1/1 single-hung horizontal window and the west elevation has four small 1/1 single-hung horizontal windows. All of the windows have concrete sills and an enameled metal panel in the upper sash. Square footage: 1,680.

Building 20 also has a wood truss gabled roof added over the original flat roof in the 1980's. The ceiling framing for the original flat roof is constructed with 16- inch wide precast roof decking, resting upon 12-inch metal bar joists spaced at 24-inch on center and span east/west direction. A suspended ceiling system provides 9 feet clear height. The ceiling plenum is approximately 32-inch deep.

Building 21: Constructed in 1960, Building 21 serves as offices and an Operational Maintenance Shop (OMS). The building sits on a poured concrete foundation and is clad in six-course American-bond brick. The building is one story high and has a side-gabled roof of asphalt shingles. The roof features overhanging eaves with a metal fascia. The western section of the building is fenestrated by single-leaf flush metal doors and 1/1 single-hung metal-sash windows with a single fixed enameled metal panel in the upper sash. This section of the building contains offices. The easternmost bay of the building is taller than the western section and contains the OMS. It has a side-gabled roof of asphalt shingles. A roll-up metal vehicular door is located on the north and east elevations. The bay is further fenestrated by three-light metal windows that have an awning window in the lower sash and two fixed enameled metal panels in the upper sashes. A one-story section with a front-gabled roof of asphalt shingles extends from the eastern bay of the rear (south) elevation. It is fenestrated by single-leaf flush metal doors and 1/1 single-hung metal-sash windows with fixed enameled metal panels in the upper sashes. A three-bay wide shed projection is located on the rear of the building and contains two metal roll-up vehicular doors. Square footage: 13,540.

Building 21 also has a similar structural roof configuration as described for Building 20. The high bay area for the OMS shop has exposed ceiling deck and bar joist framing.

The lower office area on western side has a suspended ceiling.

Building 22: Rectangular in plan, Building 22 faces south. It sits on a poured concrete foundation and is constructed of concrete block clad in six-course American-bond brick. The building is divided into three sections: a one-story mess hall, a one-story storage wing, and a two-story office and storage wing. The south elevation of the building consists of the mess hall that has a shed roof of asphalt shingles. It is fenestrated by a single-leaf metal door with a narrow rectangular light and twelve three-light metal replacement windows with concrete sills. The upper two sashes of the windows are enclosed with metal panels. The west elevation is comprised of the mess hall and the one-story storage wing. The mess hall is fenestrated by four three-light metal replacement windows with concrete sills. The upper two sashes are enclosed with metal panels. The center bay consists of a slab door with a square one-light window and two transoms enclosed with metal panels. The one-story storage wing has a flat roof with metal coping and is fenestrated by a slab door and twelve two-light metal replacement windows with concrete sills. The upper sashes of the windows contain metal panels. The north elevation consists of the one-story storage wing and the two-story office and storage wing. The one-story storage wing is fenestrated by six twelve two-light metal replacement windows. The two-story wing has a front-gabled roof of asphalt shingles with aluminum siding-clad gables. It is fenestrated by a slab door with a one-light fixed window

and five 2-light metal replacement windows on the first story, and four two-light metal replacement windows on the second story. All of the windows on the north elevation have concrete sills and the upper sash of the windows contain metal panels. The east elevation is comprised of the two-story office and storage wing and the mess hall. The office and storage wing is fenestrated by twelve window openings on the first story and fifteen window openings on the second story, all with concrete sills. The openings hold 1/1 metal slide replacement windows with a metal panel above. The outer bays contain one large one-light window with a metal panel above and a recessed entrance with a slab door containing one-light fixed window. The mess hall is fenestrated by double-leaf flush doors with square one-light fixed windows. Square footage: 20,000.

The two-story portion of Building 22 is framed with structural steel. Open web bar joists appeared to be 20-inch deep spaced at 19-inches on center and span east/west direction. There are two intermediate steel girder support lines supported by three structural steel columns on each line. The west side of the two-story portion is a single story building with a flat roof. This roof structure is supported by heavy-duty series bar joists spaced approximately 8 feet on center and span east/west direction. The roof on the south side mess hall and the two-story portion has a similar wood truss gabled roof added over the original flat roof. Ceilings prevented observation of upper level framing.

Building 23: Facing north, Building 23T is located in between Building 24 (west) and Building 22 (east) on the southern end of the property. The building is rectangular in plan and is 100 by 20 feet in size. Currently used for equipment storage, the building is set on a poured concrete foundation and it is constructed of wood framing clad in corrugated metal siding. The building has a front-gabled roof of corrugated metal. The north elevation is fenestrated by a replacement metal roll-up door with three oval lights. The east elevation has eleven one-light fixed wood windows and a single-leaf flush door. The south elevation is pierced by two one-light fixed wood windows. Fenestration on the west elevation is comprised of ten one-light wood fixed windows. The center bays of the west elevation have a single-leaf flush metal door and a replacement metal roll-up door.

Building 23 is a storage facility that has reached the limit of its service life.

Building 24: Constructed in 1994, Building T24 faces east and is located north of the main gate. It is rectangular in plan and currently serves as a storage shed for the 865th Combat Support Hospital. The building is one story high and is set on a concrete foundation. It is clad in corrugated metal siding and has a side-gabled roof of corrugated metal. The north elevation is fenestrated by two metal roll-up vehicular doors. A single-leaf metal door with a square

light is located on each of the east and west elevations. Square footage: 2,400.

Building 24 is a pre-engineered metal building structure in new condition.

Building 25: Originally constructed in 1960 as a heating building, Building 25 is rectangular in plan, 50 feet wide and 35 feet deep. It is currently used for storage. Facing north, the building sits on a poured concrete foundation and is constructed of concrete block clad in 6-course American-bond brick. It has a flat roof with metal coping. The north elevation is fenestrated by a 6/3 single-hung wood-sash window with a concrete sill, a single-leaf paneled door with a two-light window, a replacement metal roll-up vehicular door, and two square-shaped vents with concrete sills. The rear (south) elevation contains three 12/3 single-hung wood-sash windows with concrete sills and a single-leaf paneled door with a two-light window. The west elevation is clad in corrugated metal siding. Square footage: 1,460.

Building 26: Building T26 is sited along the southeastern border of the site. Facing south, the building is currently used for storage. It is one story high, twenty feet wide, and one hundred feet deep. The building sits on a poured concrete foundation and is constructed of wood framing clad in corrugated metal siding. It has a side-gabled roof of corrugated metal. Fenestration on the east elevation consists of a one-light fixed wood window while the south elevation is fenestrated by three metal roll-up replacement

vehicular doors, a single-leaf metal door, and seven one-light fixed wood windows. The north elevation is pierced by twelve one-light fixed wood windows and the west elevation contains a one-light fixed wood window. This building has reached the end of its useful life.

Electrical Building: The one-story electrical building is one bay wide and one bay deep. It is constructed of wood framing clad in aluminum siding and has a flat roof. The north and south elevations each have a six-light wood-sash window and the west elevation is fenestrated by a single-leaf door. It is surrounded by a metal chain link fence and a steel electrical structure.

Guard Shed: The guard shed is one story high, five feet wide, and ten feet deep. It is constructed of wood framing clad in vinyl siding and has a flat overhanging roof with canted corners. Fenestration is comprised of a 1/1 metal-sash window on both the south and north elevations. The east and west elevations each have a single-leaf door with a one-light window.

BUILDING CODE: Based upon being fully sprinklered and provided with fire lanes located on all four sides, all the existing buildings, with regards to construction classification and current occupancy, are within the square footage allowable and number of stories limits of the current Building Code of New York State.

The only major code violations identified are in regard to accessibility. All buildings lack proper accessible toilet rooms and door hardware.

Three buildings: 4S, 4N and 22 are multi-story and do not provide handicap access to upper levels. These building are not in compliance with ADA requirements.

MAINTENANCE: The buildings are in good shape and have been well maintained. No major deficiencies were identified. Continued maintenance, repairs and replacement of building elements should be anticipated. Buildings 19, 23 and 26 are in poor condition and may be razed if storage is not required.

The shingled roofs of Buildings 18, 20, 21 & 22 have some shingle tabs that appear to have blown off. These roofs are around 12 years old and will require an additional layer or replacement in the near future. A single ply membrane roof of buildings 4, 4S, and 4N is in good condition and should be expected to last another 10-15 years. In general, brick pointing and repairs are needed in spot areas. Caulking around windows and sills needs to be addressed to prevent water penetration.

The large doors of Building 4 are rusted and appear to be suspect in regard to proper operation. Verification of the continued use or repair to these doors is recommended.

Interior floors, walls, and ceilings are all in good condition. The interior spaces of the vehicle repair shop on the north side of Building 18 will require upgrading in the near future due to high use. The exterior metal panels may also need replacement due to wear and corrosion.

4. MECHANICAL SYSTEMS

a. Domestic Water System

The site is served by a municipal water service provided by the City of Niagara Falls. One point of connection to the municipal system is located in Bldg. 21. Domestic water as well as fire protection services are connected to the main service point and an underground distribution system serves the buildings on site. Separate mains for domestic and fire protection are in use.

Three reduced pressure zone backflow preventers (RPZ's) are installed in the garage bay of Bldg. 21, which includes a 4", a 6", and an 8" diameter RPZ, all of which are piped in parallel. Servicing of one of the three RPZ's will not compromise the operation of the domestic or fire protection water systems. Additional ¾" RPZ's were observed to be in use at boiler feed connections in all steam boiler rooms as additional protection for the domestic water system.

Individual, separate domestic water and fire protection water service entrance points are located at each building on the site.

Building domestic hot water is provided by storage tanks with steam bundles and "sidearm" 50-kilowatt electric heating units in the case of Bldg. 4, or by smaller electric domestic water heaters in the case of other buildings. The electric heaters are used when the steam boilers are shut down for summer maintenance.

The storage tanks and electric sidearm heaters appear to be original or old replacements and are in poor condition. The tank and electric heaters in Bldg. 4 show external evidence of piping and fitting leakage based on lime scale and the condition of the piping systems. The smaller tank type electric "summer" heaters in other buildings are newer replacements and in fair condition.

b. Fire Protection Systems

Fire protection (sprinkler) systems are located in all the structures except Buildings 19, 23, and T-26. Two fire protection water loops exist on site, one serving the south and west areas and another heading north and serving the north side of the Bldg. 4 hanger and office areas.

With the exception of Building 4, all buildings have one sprinkler main connection point. Building 4 has two separate fire connections, one at the northeast corner of the north office area and the second on the south wall adjacent to the Boiler Room. The hanger area in Building 4 has a total of four separate "deluge" zones with sprinkler coverage along the under side of the roof deck. A fifth sprinkler zone exists for the south office area, and a sixth for the north office area.

Most systems are wet-type pendant sprinkler systems with the exception of Building 18, which has a combination wet and dry system. Sprinklers serving the north area are wet, while the south commissary room and kitchen are on a dry system due to the fact this was originally a vehicle service bay. The sprinklers in this area are also located above the new suspended ceiling. A similar

situation exists in classrooms and offices in Building. 4, with existing sprinklers covered by a new suspended ceiling assembly.

The sprinkler systems and components appear to be in serviceable condition, but the main monitoring/check valves and manual valve components are old. The sprinklers heads located above the suspended ceilings must be dropped below the ceiling to be exposed to the occupied space. The current placement of the sprinkler head prevents the head from reacting to a fire below. Code reference is NFPA 13 and/or New York State Fire Protection Code.

c. Sanitary Sewers

One main sewer lateral connects the site to the municipal sewer system provided by the City of Niagara Falls. The main is constructed from vitrified clay pipe and is estimated to be approximately 50 years old.

Individual buildings have a mixture of cast iron bell and spigot sanitary drainage pipes or galvanized pipe and cast iron fittings. For example, sanitary vents observed on the roof of Bldg. 4 are galvanized pipe, while drainage pipes observed in the first floor ceiling of Bldg. 22 are cast iron.

Most plumbing fixtures are original to the buildings and in fair but serviceable condition. Upgrades to meet ADA compliance will require replacement of fixtures and trim, as well as relocation of water closets, toilet partitions and lavatories.

d. Natural Gas Service

A single point main gas meter and regulator set are located on the south wall of Buidling.21, adjacent to the southwest corner of the building. The fuel is provided by National Fuel Gas. The 2 inch high pressure gas service is regulated and metered to feed a 3 inch diameter medium pressure gas main and is then distributed through an underground steel piping system to the site buildings. Only one gas meter exists at this service entrance point.

Each building has a medium to low pressure regulator mounted outside the building to drop the service pressure to nominal 10" w.c. building service pressure. Piping then runs from the building regulators to the internal gas loads.

Building gas loads include heating boilers and some forced air space heating equipment. No gas-fired kitchen equipment (ranges, griddles, etc.) was observed.

e. HVAC Equipment

1. Controls and monitoring:

No centralized direct digital control system is installed either in a building or for the site. In Building 4 and other buildings, individual heating and ventilating systems are using "stand- alone" controls. No signal controls handle all functions in the buildings or on the site. If the individual systems were integrated, it would keep all systems operating in one (1) mode (heating or cooling) at one time.

It also shuts down systems at the time of day sequence or shuts off heating operation if not required. By using a centralized system, energy costs may be reduced.

All systems use separate point-of-use control only, such as wall or unit mounted thermostats to control space temperatures. Certain zones such as the upper level classrooms in Building 22 have multiple convector thermostatic controls in one area.

The main ventilation units in Building 4 have pneumatic controls, which turn fans on and off based on a master time signal. However, each fan system has a separate stand-alone control system for temperature control and damper control with no other integration except the master time-of-day signal. These systems appear to be original to the building and due to the age of the equipment are considered to be in poor condition.

The heating controls for the hot water loops in Building 4 have a similar design. Each loop has a stand-alone controller that determines discharge temperature of the heating loop. These systems appear to be original to the building and due to the age of the equipment are considered to be in poor condition.

All domestic water heating system temperature controls are self-contained. Manual switchover from winter (steam) heating to summer (electric) heating mode is necessary.

2. Heating Systems Boilers

The site was originally provided with heat from a central high-pressure steam boiler located in Building 25. Steam was distributed underground to all buildings and condensate returned in the same manner. The main heating plant was de-commissioned and the heating equipment removed. Presently, all buildings have either a low pressure steam central heating system or gas-fired unit heaters. The boilers and associated feed pumps and boiler trim were installed approximately 10 years ago while the storage building gas-fired unit heaters are newer.

Buildings 18, 20, 21 and 22 have a single low pressure steam boiler and feed system connected to the existing steam piping systems in each building. Building 4 is the only system to use two boilers. Generally, a single duplex cast-iron receiver combination condensate return and boiler feed pump is installed in each building. Building 4 has a larger steel tank receiver with duplex pumps installed. Bldg. 18 has a second condensate set, while Building 4 has multiple sets of return pumps.

The following is a data table indicating building and boiler conditions.

Table 1, Boiler Conditions

Building	Firing rate	Boiler condition	Notes
4	6,300 MBH input each boiler	Fair. Both boiler casings corroded due to section seals leaking. Section seals have been replaced.	2 boilers installed, large steel duplex pump return/feed tank. Separate condensate sets in Hanger heating room and North wing office Mech. Room.
18	1,357 MBH input	Fair. Gauge glass gaskets leaked on front cover, casing has some corrosion damage.	Cast iron duplex pump set in fair condition.
19*	No heat	N/A	*Gas service cut and capped.
20	339 MBH input	Fair to good. No casing corrosion or leaks.	Cast iron duplex pump set in fair condition.
21	613 MBH input	Good. No corrosion or leaks.	Cast iron duplex pump set in fair condition.
22	613 MBH input	Fair. Gauge glass gaskets and piping leaked on front cover, casing has some corrosion damage from seal leaks. Section seals have been replaced.	Cast iron duplex pump set at boiler in fair condition. Second new condensate pump on NW corner of building.
24*	150 MBH	N/A	*Gas fired forced air unit heaters
25*	150 MBH	N/A	*Gas fired forced air unit heaters

The boilers generally appear to be in fair condition. Some boilers, such as the boilers in Building 4 and the boiler in Building.18 have a corroded jacket, which indicates a previous steam leak inside the boiler. This fact was verified by the on-site maintenance manager who stated that a number of boilers have needed to be re-sealed due to boiler section gasket failures. These corroded casings and thermal insulation should be replaced.

The boilers were provided with dual-fuel burners, which can fire with either natural gas or #2 fuel oil. The systems have not been fired on #2 fuel oil with the exception of the

initial start-up. No on-site storage facilities exist for #2 fuel oil, either in individual buildings or at a central location. All boilers have an "IRI" rated gas train.

System Piping and Associated Devices

In general, the return piping and associated devices appear to be in fair condition, as few obvious leaks were observed. The steam trap function could not be tested or observed as the outdoor temperature was too high and no heat was needed or circulating through the system. A visual inspection demonstrated that on-going maintenance procedures are good and traps appear to be in satisfactory condition. One item of concern is the fact that the boiler systems allow a large amount of air to enter the systems as the boilers cycle on and off. The air leads to accelerated internal pipe corrosion, which will shorten the life of the existing piping system.

The condensate tank/boiler feed pumps generally appear to be in fair condition. Numerous condensate pump ends (motor, seal and backing plates) have been replaced due to either motor or seal failure. The existing pump ends and tanks appear to be serviceable and in correct operating condition. The on-off cycling of the boilers noted in the previous paragraph will accelerate pump seal failure, which will become a service issue. One pump end/seal located in the Bldg. 4 hanger north office mechanical area was observed to be leaking during operation. All others appear to operate without leakage.

Space Heating Equipment

Heat is generally provided to the spaces in the buildings on site by wall-mounted steam or hot water convectors, hot water radiation or steam unit heaters. Offices and hallways use hot water or steam radiation and/or convectors while maintenance areas, storage areas and warehouses use steam unit heaters with propeller fans.

Convectors, wall mounted radiation and unit heaters all appear to be in serviceable condition. No excessive damage or installation issues were observed. Individual unit-mounted control thermostat/valve assemblies could not be tested as no steam was circulating in the system due to the high outdoor temperature.

Buildings 24 and 25 have gas-fired forced air unit heaters to provide heat only.

Bldg. 19 has no heating equipment installed.

Building 4 Heating Systems

The main hanger in Building 4 is heated by an in-slab water loop system. Low-pressure steam is used to heat water, which is then circulated through pipes cast in the hanger floor slab. The piping in the slab, the main loop circulation pump, the slab heating heat exchanger and associated trim were replaced approximately 7 to 8 years ago. The heat for

the south office areas in Bldg. 4 is provided by another steam/water heat exchanger and hot water pump system located adjacent to the slab heating system. This system appears to be original to the building construction. The north office area has a similar steam/water heat exchanger and hot water pump serving wall radiation and convectors.

Comfort cooling systems

No central cooling plant or a central cooling system serving an entire building is installed. Spot cooling or office cooling is mainly provided by window mounted packaged air conditioners in most buildings. These buildings include Buildings 4, 18, 20, 21 and 22.

A nominal 3-ton packaged water-cooled cooling unit is installed in the office area of Building 21 and another is in a first floor training classroom in Building 4.

A small split system is used to cool the phone server room in Bldg. 4 as well.

A 3 ton split air-cooled air conditioning system is installed in the Maintenance Shop offices on the west wall of Building 18. The air handler is located above the offices while the condensing unit is located at ground level outside the building adjacent to the indoor unit.

Ventilation systems

All buildings have operable windows to provide ventilation as required by ASHRAE 90.1-2004. No central ventilation systems are installed in any building except Building 4, which has multiple systems based on the design and layout of the building. Interior offices and classrooms in the south side of Bldg. 4 (designated as 4S) are ventilated by two central fan systems located on the northeast end of each floor. The office area in Bldg. 4 north of the hanger (designated as 4N) is ventilated by a similar dedicated ventilation system located in the ground floor mechanical room adjacent to the main hanger.

The individual ventilation systems in Building 4 take outside air and heat it to a discharge set point using both preheat as well as reheat low pressure steam coils located adjacent to or in the fan unit casings. The air is then distributed through duct systems to interior rooms. No further control of air temperature is available at a room or zone level. Room air is exhausted by dedicated exhaust fans or through roof mounted gravity vents to complete the ventilation cycle. No perimeter rooms have a ventilation grille or terminal. Operable windows are used as the ventilation means for these spaces.

No ventilation systems were observed in Buildings 24 and 25. These buildings are used for dry storage, and only have occasional occupancy.

3. Electrical Systems General Observations

Power is fed to the site via an overhead medium voltage line to an open tube bus substation where it terminates in an enclosed switch. From that point the service continues underground to Building 4 (the hanger building) where the voltage is stepped down to 480/277V and 208/120V via two transformers. A 750KVA unit feeds Building 4 at 208/120V and a 500KVA unit feeds the remaining buildings at 480V. This equipment, although functional, is aging and has been modified and reworked to a point that reconfiguration is recommended. However, the 480V distribution to the buildings was installed 5-6 years ago.

Telephone service enters the site at Building 25, the former powerhouse and now an unused service building, and is distributed underground to the other buildings on site. This is a basic copper service used for telephone only and is currently adequate for the needs of the military occupancy; however, based on future requirements this type of system may not be satisfactory depending on proposed usage. The system will need to be evaluated at that time. This installation is also 5-6 years old and is in good condition

Site lighting is minimal and aging. Wood poles are at the end of their life and in need of replacement.

In general, the buildings have minimal electric service, which suits the current usage as storage, maintenance, and instructional space. Lighting is predominately fluorescent

throughout with older T12 technology except in recently renovated office and classroom areas in buildings 22 -2nd floor, and B4 north and south office/classroom wings.

Receptacles are adequate for the current use of the buildings but are sparsely located in most areas due to the nature of the operations in the buildings, which are storage and maintenance as well as general classrooms and offices. For instance, basic 30' X 30' classrooms have only one receptacle per wall.

The overall power density available in each building is as follows:

Table 2, Power Densities

Building	Service Capacity	Power Density VA/sq.ft*	Comments
B 21 – Maintenance Building	75KVA	5.5	Service panel may have a code violation where the 480V power is routed through a 120/208V panel
B20 – Radio Repair and Storage	100A at 120/208V	2.14	B20 is fed from B 22
B 22 – Storage, mess hall and classrooms	187.5 KVA (112.5 KVA trans + 75KVA trans)	9.4	B22 contains a 400A distribution panel that feeds buildings 21,22,25,18
B18 – Vehicle Maintenance Shop	186KVA	13.7	
B19 – Unheated Storage	0	0	No electric service
B 4 – Hanger and Administration / Classroom	500KVA	4.2	Electric room has inadequate service space and exiting – code violations
B 24 Storage Building	100A at 120/208 V	15	Branch panel fed from adjacent building
B 25 former power plant	100A at 120/208 V	24	Branch panel fed from adjacent building

APPENDIX D - EDC Application

*The volt amp or watt per square foot density for these buildings, although adequate for the current usage of these buildings is low for any commercial use such as air-conditioned office space or other higher density usage. Any major change in use of the buildings or site would most likely require that the electric services be modified. It is also important to note that there currently is one meter for the site, which would have to be considered if the site were subdivided.

Life safety systems – in general buildings that are considered places of assembly (classrooms, mess hall) have fire alarm systems and exit and emergency lights. However deficiencies were noted in these systems and upgrade would be required if the buildings were renovated or a new certificate of occupancy were required.

Summary

Mechanical electrical and plumbing systems at this site are reasonably well maintained but aging or inadequate for any major change in use of these structures and significant upgrades may be necessary if major changes were contemplated for this site.

III. COMMUNITY NEEDS ANALYSIS

An effective military facility redevelopment planning process must address community and economic needs as well as homeless assistance needs as required by BRAC legislation. To ensure that the redevelopment plan for the USARC meets the needs of the community, a needs analysis of the Town of Niagara and the larger region was undertaken. Information was gathered about community opinions, needs, challenges, and assets, including any deficiencies in services or infrastructure. A primary objective of the community needs analysis was to advise the Local Redevelopment Authority (LRA) about the consistency of proposals with State and local plans and what services and/or infrastructure can be addressed through transfer of the USARC property. This effort also included an assessment of homeless needs in the community.

A. GOALS AND OBJECTIVES FOR REUSE PLANNING

Members of the LRA were consulted at the outset of the planning process as to the goals and objectives for the reuse planning effort and the areas of interest they wanted investigated. The LRA's goals and objectives for the reuse planning effort include:

1. Goal: Prepare an implement able redevelopment plan that will ensure that the Army Reserve Center will be an asset to the community in the future.

2. Objectives:
   - Satisfy requirements of BRAC and Federal Real Property Laws
   - Determine the highest and best use for the property
   - Reflect the community's goals and needs
   - Recommend a preferred base redevelopment plan that represents a vision for the Army Reserve Center that will be financially feasible and acceptable to the community

B. PRIMARY AREAS OF INTEREST

The two areas of paramount interest to the LRA were economic development and the needs of the homeless. In the area of economic development, the LRA expressed intense interest in generating jobs, attracting new investment and tax base, and ensuring that redevelopment of the USARC property complements and contributes to the growth of both the Niagara Falls International Airport and the Air Reserve Station. This concern about promoting both civilian and military sides of the airport reflects the LRA's interest in growing the airport as one integrated facility with support for passenger service, air cargo usage, and military operations.

The interest in the needs of the homeless is a function of BRAC requirements that require the LRA to develop a reuse plan that appropriately balances the needs of the various communities for economic redevelopment, other development, and homeless assistance.

C. TOWN OF NIAGARA DESCRIPTION

Located in the Western New York County of Niagara, the Town of Niagara was incorporated in 1812 and was originally known as Schlossers. Its current name is taken from the magnificent world famous waterfall that it borders. The Towns of Pendleton and Wheatfield, and the City of Niagara Falls have been taken from its territory leaving it with a land area of 9.393 square miles or about 6,011acres.

The Town of Niagara was originally a farming community and its agriculture took the form of vegetable and fruit growing for the supply of the nearby City of Niagara Falls. Over time, the community attracted a sizeable manufacturing base including major facilities for manufacturing of aircraft and aeronautical parts.

D. POPULATION

Like much of Western New York, the Town of Niagara's population is undergoing a period of contraction. In 1990, the population of the Buffalo/Niagara Metropolitan Statistical Area (MSA) was 1,189,340. However, as a result of out-migration and a failure to attract new residents, the MSA experienced a decline of 1.6% between 1990 and 2,000 with its population dropping to 1,170,111. The population of the MSA further declined 1.3% between 1990 and 2004.

According to the U.S. Bureau of the Census, Niagara County saw a loss of 910 people in the years from 1990 to 2,000 or about .41%. This population loss has since accelerated, according to the Census Bureau, from 2000 to 2006 with a loss of 3,714 people or 1.7%

In the Town of Niagara, the population dropped from 9,880 in 1990 to 8,978 in 2000, a loss of 902 people or over 9%. From 2,000 to 2,006, the Town's population dipped 408 to 8,570, a loss of 4.5%.

The following chart shows population data for New York State, Erie County, Niagara County, and the Town of Niagara.

Table 3, Population, 1940-2006

Place	1940	1950	1960	1970	1980	1990	2000	2006 (est.)
NY State (000s)	13,469	14,830	16,782	18,237	17,558	17,990	18,976	19,306
Erie County	798,377	899,238	1,064,688	1,113,365	1,015,416	968,584	950,265	921,390
Niagara County	160,110	189,992	242,269	235,720	227,354	220,756	219,846	216,130
Town of Niagara	2,618	4,729	7,503	8,368	9,648	9,880	8,978	8,570

Source: U.S. Census Bureau

Much of the decline in Niagara' County's population can be attributed to the loss of job opportunities caused by closures, relocations out, and downsizing of large employers in manufacturing, particularly in steel production, aircraft and aerospace, chemicals, specialty ceramic and paper manufacturing. Since the early 1970's, the area's economy has suffered from a number of adverse conditions including the globalization of the world's economy, consolidation of company facilities, and the transition to a service economy where declines in agriculture and manufacturing sectors have been offset by increases in the services and high-tech sectors, although employment in different sectors often lead to different levels of income.

Employment data for the year 2000 by sector and number for the Town of Niagara is provided below:

Table 4, Employment by Industry, Town of Niagara, 2000

Industrial Sector	Number Employed
Farm	58
Durables Manufacturing	451
Non-Durables Manufacturing	445
Mining	0
Construction	273
Transportation & Public Utilities	229
Financial, Insurance and Real Estate	197
Retail Trade	1,062
Wholesale Trade	146
Services	968
Agricultural, Forestry and Fishing Services	12
Government	836
Total	4,677

Source: *The Past, Present, and Future Effects of the Niagara Power Project*, New York Power Authority, 2005

Employment trends in Niagara County tracked closely to trends in New York State as a whole from the years 1969 to 2000. However, one important difference is that Niagara County has actually seen a decline of 2% in total employment over the period, compared to a 24% increase in total employment in New York State. The biggest loss was in manufacturing where 57% of the jobs in that sector were lost. Comparable data for sub-county areas such as the Town of Niagara was not available. Current unemployment rates compiled by the New York State Department of Labor (November 2007) show New York State with a rate of 4.7% and Niagara County at 5.1%.

Current major employers in Niagara County and estimates of employment are provided below:

Table 5, Major Employers in Niagara County and Number of Employees

Employer	Employees
Delphi Harrison Thermal Systems	2,600
Niagara Falls Air Reserve Base	2,936
Seneca Niagara Casino & Hotel	2,725
County of Niagara	1,790
Niagara Falls School District	1,184
Fashion Outlets of Niagara	1,000
North Tonawanda School District	765
Niagara County Community College	713
Lockport City School District	711
Mount St. Mary's Hospital	700
St. Gobain Ceramics and Plastics	695

Sources: *Market Facts*, Niagara County Center for Economic Development.

E. STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS TO THE AREA'S ECONOMY

In the 2007 Comprehensive Economic Development Strategy for Niagara County, the Niagara County Department of Economic Development has identified a number of issues relating to the strengths, weaknesses, opportunities, and threats in the county's economy that have direct relevance to the Town of Niagara. These are highlighted below:

1. Strengths

- Abundant and competitive labor force of trained and skilled workers
- Proximity to Canada, its population and Canadian businesses
- Numerous high-quality educational institutions
- Low-cost hydroelectricity
- Abundance and availability of fresh water
- Proximity to interstate transportation system
- New Terminal at Niagara Falls International Airport
- Brownfield redevelopment opportunities
- Domestic marketing campaign to water starved states
- Utilities including three of the State's largest utilities
- Low cost of living
- Lower housing costs
- Available land for both commercial and residential

2. Weaknesses

- Declines in population
- Declines in the manufacturing sector
- Cost of electrical power (outside of low-cost hydropower allocations available for manufacturing and commercial enterprises)
- High taxes (generally attributable to New York State)

- High workers compensation costs
- Unionization Rates
- Slow and fragmented permitting processes

3. Opportunities

- Development potential at Niagara Falls International Airport including opportunities for International flights and air cargo businesses
- Brownfield redevelopment incentives
- Growth of tourism, which is being fueled by developments in Canada and a devaluing of the U.S. dollar
- Growth of Seneca Niagara Casino and Hotel
- Transformation of Holiday Inn to Crown Plaza Hotel
- Growth potential for the Niagara Wine Trail
- Relocation and expansion of Niagara Aerospace Museum
- Goals of USA Niagara Development Corporation's strategy for reclaiming downtown Niagara Falls as a premier tourist destination
- Demographic marketing to water starved states

4. Threats

- Continuing burden of taxation at State and local levels
- Growing uncertainty about future price of power
- Growth of Canadian tourism (also an opportunity)
- Relocation of Niagara Aerospace Museum

F. ECONOMIC DEVELOPMENT INITIATIVES

Niagara County has a very aggressive economic development program that is supported by both the Niagara County Department of Economic Development and the Niagara County Industrial Development Agency (IDA). The business and

community development activities of both agencies are highly integrated and are administered by one individual with the support of a number of professional and technical staff.

The Department of Economic Development provides professional planning services to the municipalities, citizens, and organizations throughout Niagara County. It works to promote orderly growth and development through the dissemination of information, preparation of plans, projects, and programs, and the provision of technical services functions under the direction of the Niagara County Manager and policies of the Niagara County Legislature.

The Niagara County IDA is a not-for-profit public benefit corporation established by the Niagara County Legislature under authorizing legislation approved by the New York State Legislature. The IDA is empowered to attract and develop commerce to foster job opportunities, general prosperity, and economic welfare of all Niagara County residents. The IDA uses a number of financing tools, tax incentives, and job training programs to induce growth in the community.

The Niagara County Department of Economic Development and the Niagara County IDA actively collaborate with a number of other economic development agencies and programs that individually and collectively promote the region, Niagara County, and municipalities including the Town of Niagara. These include Buffalo/Niagara Enterprise, the Western New York Private Industry Council, and Empire State Development's Western New York Regional Office. Other important players in the promotion of business development and economic activity include the Western New York Trade Council, the Western New York Private Industry Council and the World Trade Center, Buffalo/Niagara. The Niagara County Center for Economic Development also actively collaborates with the Niagara Frontier Transportation Authority (NFTA) and the Niagara Tourism & Convention Corporation (NTCC).

In the *2007 Comprehensive Economic Development Strategy*, Niagara County set forth a formal vision statement for economic development that reads:

The vision of Niagara County is a proactive model of economic development and sustainable growth. By thinking as a responsible, resourceful community, we hope to build on our assets by promoting a viable economic future for our children that emphasizes brownfields revitalization, qualitative development vs. quantitative growth, living wage jobs, and the creation of sound and practical planning through regional cooperation.

The County has also established goals that provide the framework for public and private decision-making and serve as the basis for formulation of an action plan. In the *2007 Comprehensive Economic Development Strategy (CEDS)*, the following goals were established:

Goal 1: Improve the quality of Life for the people of Niagara County by implementing sustainable development practices.

Goal 2: Increase employment opportunities by encouraging the expansion of key economic sectors of the County's economy.

Goal 3: Strengthen the competitive position of County businesses.

Goal 4: Diversify the County's economic base.

Goal 5: Development of a comprehensive education and training program.

The above goals form the basis for an action strategy that includes specific projects and priorities. The main categories cited in the CEDS document are listed below along with the project that is of the highest priority in each category.

- AGRICULTURE - Farm market improvement incentives.
- BROWNFIELD REDEVELOPMENT - Redevelopment of former Roblin Steel site – City of North Tonawanda.
- COMMERCIAL - USA Niagara Development Corporation – Downtown redevelopment, including United Office Building/Third Street entertainment district, City of Niagara Falls.
- INDUSTRIAL MANUFACTURING - Delphi Thermal & Interior, Inc. – Capital Investment and training, City of Lockport.
- INFRASTRUCTURE - Reconstruction of Tuscarora Bridge, Town of Niagara.
- PUBLIC FACILITIES - Parking Ramp replacement repairs, (and possible construction of new parking ramp adjoining the new Conference Center), City of Niagara Falls; renovation of downtown parking ramp, City of Lockport.
- RECREATION - Bicycle-Pedestrian Trail – River Road connecting Erie Canal Trail to City of Niagara Falls trail system, City of North Tonawanda and Town of Wheatfield.
- TOURISM - Cross-River Ferry Service – Development of cross-river ferry service between Niagara-On-The-Lake, Ontario and Youngstown, New York; Niagara Experience Center-City of Niagara Falls; OZ Central – Development of new theme park, Town of Wheatfield.
- TRANSPORTATION - Niagara Falls International Airport – Construction of new terminal building for passenger and air cargo related services – Towns of Niagara and Wheatfield, and Niagara County

- WATERFRONT - Olcott Harbor break wall project, Town of Newfane; Cayuga Creek Restoration – City of Niagara Falls; Erie Canal Development, City of Lockport, and City of North Tonawanda.
- MISCELLANEOUS - A number of projects are included in Niagara County's Comprehensive Economic Development strategy can help improve the Town of Niagara's economic condition. For example, the County is working with the Town on development of a 220-acre "shovel-ready" site that is targeting microchip manufacturers or other large facility users. However, one project that has immediate relevancy to the development of a reuse strategy for the USARC is the County's interest in improving facilities at Niagara Falls International Airport. Expansion and improvement of the airport could have significant implications for reuse of USARC given its proximity to the airport.

G. HOMELESS NEEDS

1. McKinney Act

The United States Congress enacted the Stewart B. McKinney Homeless Assistance Act in 1987. Title V of the Act made serving the homeless the top priority for reuse of all surplus Federal properties, including military facilities being closed. The Act was later amended by enactment of the Base Closure Community Redevelopment and Homeless Assistance Act of 1994. This act remains in effect and governs the need to address homeless concerns in base reuse planning and property disposition.

The Redevelopment Act requires a community-based process where representatives of the homeless and other community groups participate in local reuse planning. The responsibility for base reuse planning is assigned

to the Local Redevelopment Authority (LRA). The reuse plan must balance the needs of the community for economic development, other development, and homeless assistance. The Department of Housing and Urban Development (HUD) then reviews the plan to determine compliance with federal legislation.

2. Homeless Assistance Submission

The plan, which HUD reviews, will be part of an application that also includes a homeless assistance submission. The review will determine whether:

- The application is complete under BRAC requirements.
- The LRA has followed the process required by the Redevelopment Act and the regulations in the preparation of the plan and the homeless assistance application.
- The plan takes into consideration the size and nature of the homeless population in the vicinity of the military facility being closed.
- The plan considers the availability of existing services to meet the needs of the homeless.
- The plan considers the suitability of the buildings and property on the installation for the use and needs of the homeless.
- The plan takes into consideration the economic impact of proposed homeless assistance on communities near the base, including whether the selected Notices of Intent are consistent with Consolidated Plans and strategies, prepared for Community Development funding, or other housing, social service, community, or development plans.
- Any legally binding agreements regarding property disposition specify the manner in which property will be made available, include all documents necessary to complete the transaction, include all

appropriate terms and conditions, address environmental contingencies, stipulate timely transfer, and are accompanied by legal opinion.

- The plan appropriately balances the needs for economic and other redevelopment with the needs of the homeless for communities within the vicinity of the base.
- The plan was developed in consultation with homeless service providers.

3. Definitions of Homelessness

For purposes of this study, homeless definitions, cited in HUD's *Guidebook on Military Base Reuse and Homeless Assistance,* are provided below:

General Definition of Homeless Person

- an individual who lacks a fixed, regular, and adequate nighttime residence; and an individual who has a primary nighttime residence that is:
  a. a supervised publicly or privately operated shelter designed to provide temporary living accommodations (including welfare hotels, congregate shelters, and transitional housing for the mentally ill);
  b. an institution that provides a temporary residence for individuals intended to be institutionalized; or
  c. a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings.

A "homeless person" does not include any individual imprisoned or otherwise detained pursuant to an Act of the Congress or a State law.

Definition of Chronic Homelessness (HUD)

- An unaccompanied homeless individual with a disabling condition who has been continuously homeless, for either a year or more, or has had at least four episodes of homelessness in the last three (3) years. To be considered chronically homeless, persons must have been sleeping in a place not meant for homeless habitation (e.g., living on the streets) and/or in emergency shelter during that time.
- A homeless episode is a separate, distinct, and sustained stay on the streets and/or in an emergency shelter.
- A disabling condition is a diagnosable substance use disorder, serious mental illness, developmental disability, or chronic physical illness or disability, including the co-occurrence of two or more of these conditions.
- Chronic homelessness does not include families.

4. Homelessness in Vicinity of Niagara Falls Army Reserve Center

In an effort to address the requirements of the Redevelopment Act, the needs of the homeless in the vicinity of the Niagara Falls Army Reserve Center, existing studies, reports, and analyses were reviewed. The geographical area reviewed included Niagara County and the City of Niagara Falls. Data on the needs of the homeless for the subject area was only available for the City of Niagara Falls and was generated by the City of Niagara Falls for its 5-Year Consolidated Plan and Strategy (2005-2009) prepared as part of the City's Community Development Program. In that document, the City collected data on the homeless to assess the nature of homelessness, identify available resources and services, and ascertain unmet needs of the homeless in Niagara Falls.

As the predominant city in Niagara County and the closest to the USARC, the City of Niagara Falls could be expected to contain the areas largest population of homeless.

a. Homeless Needs Assessment in Niagara Falls

An assessment of community needs for emergency, transitional, and permanent housing for homeless in the City of Niagara Falls was provided in the City's 5-Year Consolidated Plan and Strategy 2005-2009. This assessment included:

- An assessment of the service and housing needs of homeless persons and a determination of what factors led to homelessness.
- An inventory of existing resources and coordination of an information referral network.
- The collection of unduplicated counts of homeless individuals, homeless families, and services.
- An assessment of unmet needs of the homeless and design o address the problems of homelessness.

The homeless subpopulations whose needs were assessed included the following with numbers of homeless individuals identified for each:

- chronically homeless (20)
- severally mentally ill (57)
- chronic substance abuse (63)
- veterans (17)
- persons diagnosed with AIDS and related diseases (11)
- victims of domestic violence (13)
- homeless youth/missing persons (12)

The total of homeless in Niagara Falls was 193 persons, all of which were sheltered in emergency housing or transitional housing.

The City in concert with the Niagara County Continuum of Care Coalition also undertook a housing gap analysis with the following results as measured by the number of beds needed for individuals and persons in families with children:

Table 6, Beds for Homeless Individuals

Beds for Individuals	Current Inventory in 2003	Under Development in 2003	Unmet Need / Gap
Emergency Shelter	49	0	18
Transitional Housing	168	0	33
Permanent Supportive Housing	126	0	31
Total	343	0	82

Source: *5-Year Consolidated Plan and Strategy 2005-2009*, City of Niagara Falls Department of Community Development

Table 7, Beds for Families with Children

Beds for Persons With Children	in 2003	Under Development in 2003	Unmet Need / Gap
Emergency Shelter	37	0	12
Transitional Housing	38	0	46
Permanent Supportive Housing	20	0	72
Total	95	0	130

Source: *5-Year Consolidated Plan and Strategy 2005-2009*, City of Niagara Falls Department of Community Development

b. Inventory of Facilities and Services

The following inventory of facilities and services for the homeless and persons threatened with homelessness was generated by the City of Niagara Falls as part of assessment of homeless needs. In its assessment, the City acknowledged that there are no specific, reliable sources of data that can be utilized to provide an accurate assessment of this category.

Niagara Falls Family YMCA: The YMCA operates 58 single room occupancy units for male residency only. The facility normally operates at 90% capacity and vacant units are used for emergency shelter for homeless men.

Family and Children's Service: This organization primarily serves as a referral agency providing emergency shelter to victims of domestic violence on a 24/7 basis. The shelter can accommodate 9 women and normally operates at 60 to 70% of capacity. The Service provides support services including individual counseling. Casey House, an emergency shelter for runaway youth, is also operated by the agency and has a 12-bed capacity.

Salvation Army: The Salvation Army acts as a referral agency for people seeking emergency shelter assistance, assists the homeless in the form of food, clothing, furniture, etc. Temporary emergency shelter is available on the premises in the event of disasters.

Community Missions of the Niagara Frontier, Inc.: Community Missions provides residential and support services to persons and

families in need. The organization operates two facilities that serve the homeless.

Hiawatha Manor/Ivanhoe accepts individuals and families seeking emergency shelter assistance, provides shelter to abused women with children, and provides transitional housing with an 80 person overnight capacity.

Onesimus House is a short-term residence for 16 to 21 year olds seeking help with living arrangements, employment, and education.

Community Missions also provides emergency shelter for homeless families in two shelters. There is a 15 person overnight sleeping capacity in each.

Catholic Worker of Niagara Falls: The Catholic Worker organization operates a number of facilities serving the homeless. These include a drop-in-center/soup kitchen, a crisis shelter for homeless men, housing for victims of domestic violence, temporary and permanent housing for young men, a community dining room, an emergency pantry, and a health care clinic.

In the 10th Street shelter, Catholic Worker provides 4 beds for homeless, abused women and women recovering from alcoholism.

On Ontario Avenue, Catholic Worker operates two emergency shelters for homeless young men - one with a 6-bed capacity, and one with a 5-bed capacity.

Fellowship House, Inc.: This organization provides a residential program to prepare recovering alcoholics for productive lives. It maintains 17 beds for chemically dependent homeless individuals.

C.O.P.I.N Foundation: This foundation operates a 12-person capacity facility for Vietnam Veterans who suffer from posttraumatic stress disorder and related readjustment problems.

Odallam Inc.: Odallam, Inc. operates a homeless shelter for people with chronic and persistent mental illness. A 3-bedroom house and a 4-bedroom house are utilized.

c. City of Niagara Falls Position on Needs of Homeless in the City

The City of Niagara Falls, in its *5-Year Consolidated Plan and Strategy (2005-2009)* developed a strategy and investment Plan for its Community Development Program. The City determined that, based on the data collected in regard to the homeless, limited numbers of homeless people require emergency shelter, transitional housing or permanent housing. In the last category, permanent housing, such facilities are specifically intended for individuals with physical or emotional disabilities.

The City of Niagara Falls also concluded that the number of standard units available for homeless shelter is currently sufficient to meet existing needs. The City has an Emergency City Grants Program, which, in addition to providing assistance to homeless shelter providers, also routinely queries social service agencies regarding the most pressing needs in the community. Grants are

then approved on the City's review of the needs assessment provided by those agencies and the availability of funds. The City's position is that the need for shelters and supportive housing can be adequately addressed with resources available to the City through the Emergency Grant Program, or with direct funding from HUD to service agencies with transitional or permanent and supporting housing grants.

The City has taken a position asserting that the provision of support services should be the primary activity for the City in addressing the needs of the homeless population. Such services may include assessments of service needs, short-term case management services, housing placement assistance, job skills training and employment assistance, and access to substance abuse services.

d. Countywide Assessment of Needs of the Homeless

In an effort to secure additional input on the needs of the homeless in the study area, the Executive Director of Community Missions of the Niagara Frontier was consulted. Working with Niagara County, this organization also participates in a Housing Coalition seeking to address housing needs in the County. Further, the agency owns and operates several facilities that provide housing to individuals and families that are homeless.

Community Missions of the Niagara Frontier is working with the Niagara County Department of Social Services on various initiatives to serve the needs of the homeless including services and possibly new housing units for the homeless. The agency is

also expanding its capability to count those who are homeless throughout Niagara County including the smaller cities of Lockport and North Tonawanda as well as the rural sectors in the County. Plans are also in progress to count the homeless in various populations who may have been overlooked in the past such as Native American Indians and migrants.

While Community Missions of the Niagara Frontier is interested in securing additional housing units for the community's homeless, the agency acknowledges that housing units are neither a priority nor a long-term issue for the County. They concur with the City of Niagara Falls analysis that the needs of the homeless are primarily service related.

IV. NOTICES OF INTENT

Under the BRAC legislation, local redevelopment authorities are required to consider notices of interest received from representatives of the homeless and from other interested parties during the process of plan preparation. BRAC also requires the LRA to balance the community's redevelopment needs and other economic development needs with the needs of the homeless.

On May 9, 2006, the U.S. Army 77th Readiness Command, based at Fort Totten in Flushing, New York, published a Base Realignment and Closure Notification of Surplus Property in the Niagara Falls Gazette. This notice was followed by a Legal Notice published by the Town of Niagara Local Redevelopment Authority in the Niagara Falls Reporter on May 23 through May 30, 2006. Both notices solicited interest in the Niagara Falls USARC/AMSA #76 from representatives of state and local governments, homeless providers, and other parties interested in the redevelopment of the installation. Copies of these notices are included in Appendix D. Other agencies which had undertaken outreach activities soliciting interest in the facility included the United States Department of Education and National Park Service in the United States Department of the Interior.

A. NOTICES OF INTENT RECEIVED

Only two expressions of interest were received by the LRA. These were submitted by Niagara County Community College and Niagara Falls Redevelopment Corporation, LLC.

1. Niagara County Community College

The County of Niagara, its sponsor, created Niagara County Community College (NCCC) in 1962. NCCC is authorized by the Board of Regents of the State of New York to award the Associate in Arts Degree and the Associate in Science Degree, the Associate in Applied Science Degree,

and the Associate in Occupational Science to regularly matriculated students upon successful completion of curriculum requirements. NCCC is located in the Town of Sanborn on a 287-acre rural campus, approximately 9 miles from the USARC.

Interest in the USARC was conveyed by NCCC to the U.S. Department of Education in August or September of 2006. Subsequently, the U.S. Department of Education sent the college correspondence on September 11, 2006 describing the materials that would be required to prepare an application to acquire the Army Reserve property at a Public Benefit Allowance discount for educational purposes through the U.S. Department of Education. The College also received information on contractual obligations associated with conveyance of the property including the commitment to conduct certain educational programs throughout the entire facility. The college was also advised that it would have to demonstrate an immediate need for and ability to use all of the property requested.

The Community College, as part of the September 11, 2006 correspondence, was notified that the U.S. Department of Education intended to give strongest consideration to proposals that are supported by the Local Redevelopment Authority. However, final decisions on applications to acquire property for educational purposes under Public Benefit Conveyance authorities and the amount of Public benefit discount that applications qualify for are reserved under federal law to the Department of Education.

Although discussions took place between the LRA and the Community College, the College considered the size and nature of the facility, ultimately deciding that the installation was not suited for the College's educational programs. A Public Benefit Conveyance was subsequently not

pursued by the College. The College was contacted in September of 2007 as part of this study and confirmed that they no longer have interest in the facility. Additionally, the U.S. Department of Education was also contacted in September 2007 by the consultant team for this planning effort. Ms. Mary Hughes of the Federal Real Property Assistance Program advised that they do not currently consider the Reserve Center as a property available for reuse.

2. Niagara Falls Redevelopment, LLC

The second Notice of Interest was received directly by the Town of Niagara LRA from Niagara Falls Redevelopment, LLC on July 25, 2006. Niagara Falls Redevelopment, LLC (NFR). NFR is a private development corporation. In addition to its development activities in Niagara Falls, NFR is the Fixed Base Operator (FBO) for the Niagara Falls International Airport.

The Notice of Interest submitted by NFR was in the form of a letter to Town of Niagara Supervisor Steven Richards. The letter noted the possibility of working with the Supervisor on the Army Reserve Center and asked that NFR be kept informed of informational meetings or materials as they become available. Subsequent contact with NFR, confirmed NFR's continuing interest. The firm's representative cited a number of possibilities for use of the Reserve Center including air cargo, basing of general aviation aircraft, training, and logistics, catering services and a commissary. NFR also indicated that while the organization has specific uses and users in mind for the Reserve Center, they consider such information proprietary at this time and do not wish to share such information with other competitors for the facility.

3. Analysis

Neither of the two expressions of interest requires an analysis or determination of eligibility. The interest expressed by Niagara Community College has been withdrawn and no further action is required on the part of the LRA. The interest that has been conveyed to the LRA by Niagara Falls Redevelopment LLC does not provide sufficient project information to determine eligibility, feasibility, benefit to the community, or repairs and improvement to the subject property that would be needed to transition the property.

V. ALTERNATIVE REDEVELOPMENT CONCEPTS

The primary purpose of a base reuse plan is to provide guidance to the Local Redevelopment Authority (LRA), local elected officials, and the community at large relative to the eventual reuse of a closed military facility or one that is about to be closed. Working in concert with the Town of Niagara LRA and its Executive Director, this draft reuse plan for the Army Reserve Center has been prepared to bring about the highest and best use for the property. This highest and best use will be redevelopment of the property to provide community benefit in the form of job creation and economic stimulus. Under BRAC, the highest and best use must be based on the property's economic potential, qualitative social and environmental values inherent in the property, or other utilization factors controlling or directly affecting land use.

A. PLANNING REQUIREMENTS

The draft reuse plan for the USARC has been prepared in strict compliance with the Department of Defense issued *Base Redevelopment and Realignment Manual* and the *Military Base Reuse, and Homeless Assistance Guidebook* prepared by the U.S. Department of Housing and Urban Development. Accordingly, the plan addresses a number of factors including the following:

- Sustainable development, supported by a coordinated management plan.
- Overall development of the installation in a coordinated and comprehensive manner.
- Proposed land uses, including development controls.
- Possible future property recipients or tenants.
- Public involvement and comments received throughout the planning process.
- Current and projected market demand for different potential land uses.
- Balance between homeless-assistance needs and community and economic development needs of the community.

- Sources and uses of available funding or revenue that will be needed for successful redevelopment.
- How the redevelopment plan takes into account past land uses and current property conditions including environmental conditions.

B. DETERMINING POTENTIAL USES OF NIAGARA ARMY RESERVE CENTER

1. Process, Goals, and Objectives:

The process for determining the best use for the USARC focuses on the achievement of the following goal for the planning project as determined by the Town of Niagara LRA:

Prepare an implementable plan that will ensure that the Army Reserve Center will be an asset to the community in the future.

In support of this goal, the planning process also addresses the following objectives that have been endorsed by the Town of Niagara LRA:

- Satisfy requirements of BRAC and Federal Real Property Laws
- Determine the highest and best use for the property
- Property use must reflect the community's goals and needs
- Recommend a preferred base redevelopment plan that represents a vision for the Army Reserve Center that will be financially feasible and acceptable to the community.

2. Priorities

The Town of Niagara LRA identified priorities for the base reuse planning process. Economic development activity was selected as the top priority for reuse of the Army Reserve Center. In pursuing economic development, the plan is intended to:

- Generate jobs for community residents;
- Attract new investment to the area;
- Expand the tax base.
- Develop property to complement and contribute to the development and growth of Niagara Falls International Airport and Airbase facilities.

3. Needs of Homeless

In addition to the priority assigned to the economic development function, the planning process also examined other needs of the community including those of the homeless. In examining homeless needs in the study area, the following summarizes the process utilized and the findings of this process:

- Existing studies and analyses of the needs of the homeless were reviewed;
- An inventory of facilities and services for the homeless in the area was compiled;
- Community Missions of Niagara Frontier, Inc. was consulted;
- There has been no interest in the reuse of the Army Reserve Center to serve the needs of the homeless;
- The needs of the homeless in the area are primarily service related and additional housing units are not a priority.

C. ALTERNATIVE REUSE CONCEPTS

The Niagara Army Reserve Center presents a unique reuse opportunity for the Town of Niagara. Its location with direct access to the Niagara Falls International Airport and its runways opens a number of possibilities for conversion of the property to civilian reuse. The facility is well positioned relative to existing regional development patterns and transportation corridors, is served by public utilities, and could benefit from anticipated growth at Niagara Falls International Airport. The site's environmental conditions are still being evaluated by the Army but they do not appear to be of significant concern. The facilities, while dated, are well constructed and in usable condition as a result of an efficient and quality maintenance program. One of the most valuable assets of the property, in terms of reuse, is the large aircraft hangar found on the site that is one of the lynchpins of the various redevelopment scenarios considered.

Although the property itself represents a prime redevelopment opportunity, the health of the local economy and real estate markets present significant challenges to the reuse planning effort. The economy of the area, indeed all of upstate New York, is under great stress and will influence the progress and timing of any reuse scenario. The consultant team therefore projects that, with the exception of the large aircraft hangar on the property, there will be limited demand for office and other commercial space at the facility.

The consultant team developed and presented three alternative reuse concepts for consideration by the Town of Niagara LRA. These included the following:

- Alternative A - Conversion to Air Cargo Transportation Center
- Alternative B - Conversion for Aircraft Modification, Renovation, Testing, Overhaul, Maintenance and Storage Facilities

- Alternative C - Conversion of Site to Mixed Commercial and Industrial Uses.

Summaries for each of these alternatives are presented below. For each concept or scenario, an analysis is provided of the opportunities and constraints of the site for the intended reuse.

1. Alternative A - Conversion of Site to Air Cargo Transportation Center

a. Opportunities:

The Niagara Frontier is a hub for logistics, distribution, and trade. The area is served by six international bridges (4 roadway and two rail) which facilitate over $80 billion in trade annually between the United States and Canada. It is estimated that some 30% of the commerce between the world's largest trading partners occurs in the Niagara Frontier.

The Niagara Frontier also is strategically located with outstanding market access. Over 55% of the U.S. population is located within one day's travel as is 65% of the Canadian population. Equally important, the area's proximity to New York City and its gateways for commerce and trade provide even more opportunities for the Niagara Frontier.

The Niagara Frontier also has an excellent infrastructure to support logistics, distribution, and trade. The area is well served by the interstate system and the Queen Elizabeth Way. The rail system has available capacity with service provided by CSX, Norfolk Southern, and Canadian National Railway. This system provides connections with the nation's largest ports. The area also has the deep-water port of Buffalo and can connect to the world's oceans via the Welland Canal and the St. Lawrence Seaway.

There are also three commercial airports in the region including Hamilton International Airport in Ontario, Canada, Buffalo Niagara International Airport, and the Niagara Falls International Airport. Each of these airports has air cargo handling capacity and each is actively seeking to promote expanded usage of their facilities for this purpose.

At Niagara Falls International Airport, Niagara Cargo Park is proposing to build two 35,000 square foot facilities to expand international air cargo activity. Other firms that support air cargo operations at the airport include Resource Airways Enterprises (a cargo ground handler), Speed Transportation (airfreight and ground freight handler), and Kittyhawk (all cargo airline).

Niagara Falls International Airport has been promoting itself as a low-cost alternative to shippers from around the world. The airport's promotional website materials cite the following advantages over larger air cargo facilities located at JFK Airport in New York or Toronto's Pearson International Airport:

- Low landing fees
- 10,825 ft. runway designed to accommodate aircraft up to and including a Boeing 747
- 5,850 ft. crosswind runway
- Free parking
- Runways are always open (maintained by Air Force)
- Congestion free
- Low cost warehouse facilities
- Over 30 freight forwarders with 20 minutes

- Located in a Foreign Trade Zone.

The attractiveness of the Niagara Falls Airport for air cargo is strengthened by the support that has been shown for the facility by elected officials such as Senator Charles Schumer who has been calling for sharp increases in customs inspectors and necessary equipment and infrastructure needed to avoid any cargo backups or delays.

The large hangar at the USARC is of interest to several entities considering reuse proposals. The structure has good access to the airport ramp and could serve as a staging area for intercontinental cargo aircraft. However, significant modifications to the hangar and an adjacent apron would have to be made first.

b. Constraints:

There may be considerable opportunity to grow air cargo operations at the Niagara Falls International Airport and there is significant support from all levels of government and the private sector for such growth. However, potential use of the USARC for air cargo is tempered by the realties of air cargo activity in the area, the planned construction of new cargo facilities at the Niagara Falls International Airport, and the existing configuration of the hangar.

Air cargo activity in Western New York is modest in comparison to many other areas. For example, in 2006, out of 115 airports that qualified, Buffalo Niagara International Airport was ranked by the FAA in its *All Cargo Data Report* as 76 in the United States in terms of weight landed at 316,911,900 lbs. In comparison, the

Rochester airport was ranked 61 with 454,611,200 lbs. and the Syracuse airport was 73 with 339,882,750 lbs. Niagara Falls International Airport did not qualify for inclusion in the 2006 FAA report but was listed in the 2005 report with a ranking of 118 out of 122 airports based on 56,518,000 lbs. of weight landed.

Various studies confirm that Western New York can expand its air cargo activity including a recent study completed by graduate students at the University of Buffalo who focused on the potential at the Niagara Falls International Airport. However, there will have to be considerable work done to entice airfreight forwarders to consider a Niagara Falls location as investments in other airports have already been made and contracts negotiated. The industry, as was pointed out by one source close to the shipping industry, is very reticent to change. Additionally, air cargo volume is expected to remain fairly level over the near term future because of a sluggish U.S. economy, competition from other modes of traffic and record-high oil prices.

In addition to the realities of air cargo activity in the area, the facility being examined for air cargo use has serious limitations. The existing hangar at the USARC was constructed in the mid-1950's as an aircraft maintenance facility. Two story brick buildings attached to the north (Building 4N) and south (Building 4S) sides flank the hangar. Without demolition of these attached buildings and substantial reconstruction of the hangar to add truck bays and aircraft loading and unloading bays, the property would have only limited value as a cargo terminal. Modern air cargo facilities are highly specialized buildings that utilize state-of-the art technology and mechanical systems with an emphasis on the

elimination of dwell times. Accordingly, less cargo space will be required to handle greater volumes of cargo. Such facilities are typically large with 35,000 to 100,000 sq. ft. or bigger, have clear span bays for material handling, and mezzanines at two entrances. They also have multiple truck bays, aircraft loading and unloading docks, and a wide range of safety, environmental and security systems.

A recent agreement between the Niagara Frontier Transportation and Niagara Cargo Port will see Niagara Cargo build and market new cargo facilities at the Niagara airport, aimed specifically at the China and India markets and using Boeing 747 cargo planes. The cargo firm is also building a 35,000 square-foot facility and plans to build an additional 35,000 square-foot building if it meets its anticipated business targets. The value of the Reserve Center hangar as an air cargo facility would certainly be greatly diminished or cancelled altogether with the addition of modern facilities at the airport.

Modern Air Cargo Facility

Air Cargo Facility

Air cargo operations are also not labor intensive. With the use of air cargo containers and modern equipment, even a large 747-400 cargo aircraft can be fully unloaded within an hour. It is estimated that no more than seven or eight jobs would be created for air cargo operations at the USARC in the best of situations.

Remaining buildings at the Reserve Center could be used for office space, maintenance activities and, with modification, storage space for air cargo operations. However, the size and configurations of these buildings do not lend themselves well to air cargo activities.

2. Alternative B – Conversion of Site for Aircraft Modification, Renovation, Testing, Overhaul, and Storage

a. Opportunities:

Redevelopment Alternative B is structured around the unique location of the Army Reserve Center and the specialized facilities found on the property, particularly the large aircraft hangar. The Reserve Center's location adjacent to the Niagara Falls International Airport and its direct access to the airport's runways present unique opportunities to potential re-users of the facility. This is particularly true for private sector firms engaged in aeronautic research, aircraft modification, aircraft and aviation system testing, aircraft renovation, and aircraft maintenance and storage. The airport's facilities including long runways, high weight bearing capacities, excellent firefighting and rescue capabilities, fueling facilities and other amenities associated with a modern airport will be attractive to firms engaging in such business activities.

The location is also attractive from the perspective that there will be no anticipated conflicts with neighboring land uses. Additionally, the facility is accessible from all parts of the Town and metropolitan area, and business services are readily available.

The Army Reserve Center offers aeronautical firms structures that can be put to use for new commercial and industrial uses at relatively low cost. While the facilities are far from modern, the hangar, warehouses, and maintenance areas have been well maintained and can offer strategically located space at an economical lease rate. The structures are fundamentally sound and, with some improvements, will meet minimum life-safety codes.

Building 4, the focal point for this reuse scenario, is a 37,500 square-foot building constructed in 1956 to service airplanes and helicopters. Encompassing an area of 255 feet by 150 feet, the structure is the largest located on the airport. While currently utilized for storage and training purposes, the hangar is appropriate for a wide variety of aeronautical and aviation-related uses:

- Aircraft renovation
- Aircraft maintenance
- Aircraft modification
- Aeronautical research and testing
- Aircraft storage
- Combinations of the above uses

The aircraft-parking apron located to the east of the building enhances the attractiveness of Building 4. This pad measures 200 feet by 400 feet and is constructed of concrete with an asphalt overfly. Geotechnical analysis of the pad indicates that the asphalt covering will need replacement before any use of the pad can be considered for aviation-related activity.

Other buildings on the site, including Building 4N and Building 4S, both of which are attached to Building 4, have potential as office space, classroom space, conference rooms, computer operations space, locker rooms, and storage.

The potential of converting the hangar to aviation and aeronautical uses is certainly feasible in light of increased activity in the aviation and aerospace industry. While there is significant competition in the aircraft maintenance and repair industry, the Niagara facility could find a niche in the marketplace, particularly with the emergence of very light jet aircraft and their need for maintenance and repair operations. More importantly, the military is expected to significantly increase its budgets for the renovation and modernization of its aircraft fleets. The service lives of many types of aircraft have been significantly reduced by the harsh conditions of operations in places like Iraq and Afghanistan. Consequently, considerable demand is expected for facilities that can respond to the military's needs. There may also be significant opportunities for mid-sized and small firms to participate in renovation and modernization of military aircraft.

The available worker skill base in the Niagara Frontier enhances the feasibility of this reuse scenario. The Niagara Air Base can be

an excellent source of aviation/aerospace workers. Trained people are retiring from the Air Force or from employment with civilian contractors on a regular basis. There may also be the opportunity to retrain workers from the automobile industry as their mechanical aptitudes and familiarity with modern manufacturing and testing techniques can be of great value to employers in the aviation field.

Finally, the potential for the creation of high quality jobs with corresponding wages is greater for this reuse scenario than the other alternatives that have been considered. Aviation and aeronautical related businesses require highly skilled engineers and technicians along with support staff. Given the size of the aircraft hangar on site and the potential for making some use of the other buildings on site, a range of between 50 and 100 jobs or more could be created on the USARC property.

b. Constraints:

Given that this reuse scenario revolves around the recruitment of aviation and aeronautical businesses, a major challenge will be finding such firms and facilitating relocations and/or expansions of their business operations to the USARC. Marketing of the facility to potential tenants involved in aviation and aerospace will need to be a priority in the implementation of this reuse alternative. Although there are literally thousands of firms involved in specialized aviation and aerospace activities throughout the United States and Canada, finding a match for a firm's business needs with the location and facilities at the Niagara Reserve Center will not be an easy process.

Aircraft maintenance and modification businesses are prime targets for the marketing of the Niagara facility. Other aviation-related businesses include companies specializing in communications, avionics, electronics, and simulations. However, it should be realized that such companies are in high demand in literally every part of the country because of the quality of jobs and the wage levels for these positions. Given the competition, efforts to entice a relocation or expansion to the Niagara facility will require highly focused targeting of marketing resources and an innovative packaging of incentives.

Economic development incentives available at the Town, County, and State level will be necessary to facilitate relocations and expansions to the USARC property. Incentives that can be readily offered to a project sponsor by local government include sales and property tax abatement. The State of New York may be able to provide project assistance utilizing various grants or special appropriations. Low lease costs may also attract re-users to the facility. A special diversion of local government allocation of power from the Niagara Power Project would be a major enticement to companies considering relocation or expansion opportunities.

Investment in the facility will also be required to attract aviation-related tenants. Of immediate concern is the repair of the asphalt apron to the east of Building 4, the large hanger on the property. This area was used for the landing and parking of helicopters but it is aged. At the least, the apron will have to be resurfaced. Other potential repairs and improvements are presented in Tables 1 and 2.

Another challenge to reuse of the USARC for aircraft and aviation-related uses involves the limited utility of many of the buildings on the property. Specifically constructed for military purposes, they have been mainly used for storage, vehicle and equipment maintenance, classroom training and administration. Their use for activities complementary and ancillary to the aviation-related businesses such as research and design, engineering, and testing may be difficult because of their design and separation from one another. Additionally, there are issues involving non-compliance with local and state building codes that may make use of some buildings or parts of them prohibitively expensive if these structures were to be brought into compliance with code.

A prime example of the costs that could be incurred to bring the USARC into compliance with code requirements involves the absence of elevators in those buildings with two stories. Without elevators or some other means of reaching the second floor other than stairs, the buildings will not be compliant with the facility access mandates of the Americans with Disabilities Act (ADA). These guidelines require all facilities where a disabled person could work or visit to comply with ADA requirements. The basic concept of the law is to provide a barrier free environment to individuals with physical disabilities. The estimated cost of installing elevators in the three buildings on the base with two stories could exceed $375,000. and is not recommended.

3. Alternative C – Conversion of Site to Mixed Commercial and Industrial Uses

a. Opportunities:

While the USARC was constructed for single-tenant occupancy, there may be opportunities for converting the facility for a mix of commercial and industrial uses with the objective of generating employment for the area. Potential re-users of existing facilities could include light industry, service industries, or professional administrative offices. Building 4 and its attached 4N and 4S buildings could be utilized for a variety of purposes including air cargo, aircraft renovation or maintenance, storage, and other aviation related uses cited previously. In the absence of aviation related uses, it could be utilized for general storage or even manufacturing and assembly operations.

Remaining buildings on the Reserve Center property can accommodate a mix of uses including those permitted in the zoning code for the surrounding area. The LI–Light Industrial District permits a wide range of uses that includes light manufacturing and material fabrication, warehousing and storage, offices, laboratories, animal hospitals, machine sales and service, and motor vehicle service and maintenance businesses. Other permitted uses involve executive, engineering, and administrative offices, municipal buildings, radio, or television broadcasting stations, manufacture and service of electronic equipment, local and long-distance trucking terminals and distribution facilities and HVAC sales and service.

While dated, the USARC property has been well maintained and could serve as a home for a variety of diverse private businesses

that require basic space. USARC facilities may be especially appealing to smaller private entities that are in a start-up or expansion mode. Some of the classroom training rooms and associated offices could be of interest to private or not-for-profit groups that have an educational component in their business or programs. Governmental entities that provide classroom training should also be targeted as potential re-users of the property.

The mixed-use scenario offers opportunities for the creation of employment and the generation of business activity in the community. It may also provide an opportunity to involve a real estate management firm or development company in the marketing and management of the property. Further, users of the site could generate property taxes or payments-in-lieu-of taxes (PILOT). Depending upon the nature of the business, some sales tax revenues could accrue from sales of product or services.

b. Constraints:

The demand for older buildings, particularly what would be considered as Class C office space, is very soft in the local marketplace. The slow pace of economic development activity in the Town of Niagara and the surrounding region, coupled with what has been described in the real estate community, as the "rush to quality" with tenants seeking higher quality space, will make reuse of the USARC a challenge.

There could be significant expense involved in remodeling and renovating various structures to potential tenant standards, particularly if code issues, such as meeting ADA standards, have to be addressed. The cost of such improvements may exceed the

revenues to be generated through leases of property. Additionally, the eventual need to replace older building systems and utilities will be expensive but unavoidable. Another expense will be the costs of separating utilities, particularly gas and electric.

Property management will also be an issue if the Army Reserve Center is to serve as a location for multiple re-users. Property management requires a number of tasks including:

- accounting
- leasing
- maintenance and repair
- tax payments or PILOT's, if applicable
- provision of utilities and insurance
- remodeling
- rent rate setting and collection
- eviction and termination of tenancy
- property inspections
- development and rehabilitation feasibility
- financing.

Depending upon the ownership of the facility, property management may be handled internally or contracted to a professional property management firm. Typically, property management firms charge between 5% and 10% of the gross rents collected on a property. Many property management firms also charge fees for setting-up the property account, advertising of vacant units, and for trips to the property.

VI. PREFERRED REUSE PLAN

This section describes the preferred reuse plan for the USARC on Porter Road and provides an Adaptive Reuse Analysis. The preferred plan is based on an extensive evaluation of site factors, including the location of the property adjacent to Niagara Falls International Airport, existing market conditions, and the financial implications of the various development options considered. The development of the Preferred Reuse Plan was also shaped by the direction provided by the Town of Niagara Local Redevelopment Authority (LRA). A major consideration in the preparation of the preferred plan was the desire of local officials to limit the financial exposure and risk for the Town of Niagara during the redevelopment of the USARC.

The preferred reuse plan recognizes the need to maintain flexibility throughout the redevelopment process. This flexibility will enable the LRA and other local officials to respond to changes in the local economy, the real estate market, growth at Niagara Falls International Airport, and the needs of potential tenants at the USARC as this redevelopment process unfolds.

A. REUSE PLAN

The preferred reuse plan is a hybrid composed of elements from Alternative B and Alternative C, presented as alternative development concepts in the previous section. Under the preferred plan, Building 4, the large hangar, will be marketed to aviation and aerospace firms as a potential location for aircraft modifications, renovations, research and testing, overhaul and storage of air cargo. Buildings 4N and 4S, both of which are attached to the hangar, will be included in solicitations of interest and will provide space for offices, classroom training space, engineering, computer operations, locker rooms, and storage. Given that the Niagara Falls International Airport is adjacent to the USARC and the reason that

the facility was built on that site, continued expansion and improvement of the airport should be a major driver for reuse of the USARC.

The remainder of the site will be utilized, on a building-by-building basis, for a mix of commercial and industrial uses that are permitted under the Town's zoning ordinance. As cited earlier, potential users of the buildings may include light industrial and commercial users such as metal fabricators, maintenance businesses, professional service firms, training providers, storage operations, motor vehicle service stations and a variety of others. Activity at the adjacent airport may also spur aviation support-type businesses such as food caterers, a commissary, avionics shop or other maintenance operations.

It is estimated that the number of employment opportunities to be created by reuse of the Army Reserve Center could be between 75 and 150 jobs.

B. ADAPTIVE REUSE ANALYSIS

Economic feasibility is a major factor in decisions about reuse of older buildings such as those found on the Army Reserve Center property. A recent report by Harvard University's Graduate School of Design found that 40 percent of the design and construction market in the United States involves renovation, reuse, and preservation of existing buildings. However, rehabilitation of property to accommodate various uses can be expensive undertakings and they are often not feasible in the absence of incentives, such as historic preservation tax cuts, or in the face of a soft real estate market.

The preferred land use alternative stresses the functional value of the Army Reserve Center for activities that can make productive use of the facility withou major changes the existing property. In this sense, reuse depends much more on finding tenants that can adapt their business to the facility rather than tailoring

buildings on the site to new uses. This redevelopment approach is intended to reduce financial risk to the entity sponsoring redevelopment of the base, alleviate any substantial need to subsidize reuse of the facility, and transfer any significant upgrade or rehabilitation expenses to re-users in exchange for lower rents. Significant investment above normal maintenance, repair expenses, necessary capital improvements, and replacement costs is not recommended for the entity that will become responsible for reuse of the facility. Even if the facility can be conveyed to the community in the form of a no-cost conveyance, it comes with a price which involves maintenance, security, utility costs, insurance and administrative expense. Additionally, preparing the property for tenants can be costly as utilities may need to be separated, maintenance and repairs must be continued, and systems need to be established for dealing with tenants and collecting rents.

The financial feasibility of the preferred land use plan for the Reserve Center will be examined later in this study. However, given the relative uncertainty of the marketplace, competition for tenants from other properties in the area, and the potential cost of upgrading the facility, the consultant team does not recommend major renovation and upgrades to accommodate uses other than those cited in the reuse plan.

C. FINANCIAL FEASIBILITY ANALYSIS

This chapter provides an initial financial feasibility analysis that compares development and operating costs to expected revenues from leasing activities. It is based upon a number of key assumptions regarding property acquisition, administrative organization, operations and maintenance costs, other costs, and projected revenues from leasing activities. Each of these assumptions is detailed below and is followed by a projected financial operating statement that will gauge the financial feasibility of the preferred reuse plan.

1. Property Acquisition:

The BRAC legislation provides for a variety of property conveyance methods that can be used individually or in combination by the Army to dispose of properties declared surplus. These methods include:

- Federal-to-Federal Transfers
- Department of Defense reassignments
- Public Benefit Conveyances (PBC)
- Negotiated Sale
- Economic Development Conveyances (EDC)
- Exchanges
- Public Sale

Of the above, only four conveyance methods are currently relevant to disposal and conveyance of the Army Reserve Center / Area Maintenance Facility #76 in the Town of Niagara. These include Public Benefit Conveyance, Negotiated Sale, Economic Development Conveyance, and Public Sale. Each of these is briefly described below:

a. Public Benefit Conveyance:
Conveyances to state and local governments are for public purposes. Typical uses include schools, parks, airports, ports, public health facilities, or wildlife conservation.

b. Negotiated Sale:
Negotiated sales are used in limited circumstances and must be made to a public body. It must be for a public benefit that would not be realized from a competitive sale or a Public Benefit

Conveyance. The public entity purchasing the property would pay at least fair market value for the property.

c. Economic Development Conveyance:

The purpose of this conveyance is solely economic development. The only permitted recipient is the Local Redevelopment Authority. The LRA must demonstrate that proposed uses will generate sufficient jobs and that proposed land uses are feasible in light of current and projected market conditions. The Army will seek fair market value. However, on a case-by-case basis, the Army may grant an Economic Development Conveyance without financial consideration subject to statutory requirements.

d. Public Sale:

The Army, in consultation with the LRA, would determine when a public sale is the best method to dispose of a property. Sales are administered by the General Services Administration (GSA). The amount of advertising and method of sale (e.g. sealed bid, internet auction, auction on site) will depend upon the value of the property and the potential market. The conveyance would be made to the party that submits the highest bid provided that it is not less than fair market value.

e. Recommendation for Property Acquisition:

The preferred reuse plan for the Army Reserve Center in Niagara Falls is based on evaluations of property factors, existing market conditions and the financial implications of various development options. Direction provided by the Local Redevelopment Authority, its Executive Director and Town of Niagara officials provided the basis for the development of the plan. Major

considerations included a desire by the LRA and local officials to create quality employment opportunities while limiting the financial exposure and risk for Town government.

In light of the community's goal of job creation on the subject property and the need to minimize financial risk, it is the consultant team's recommendation that the Town of Niagara, acting as the LRA for the Army Reserve Center, seek to have the property conveyed to the Town under an Economic Development Conveyance. Further, it is crucial that such property be conveyed at no cost to the Town because, as will be shown by financial projections, the project will not be financially feasible if the Town were to purchase the facility and be saddled with debt service costs. The market for older buildings is not strong in the area and there is an anticipated need to upgrade building systems at a substantial cost. There will also be the need to offer space for tenants at incentive rates. These factors work against a fair market value purchase of the facility.

Although it is recognized that no jobs are being lost in the area because of the closure of the Niagara Army Reserve Center, the long-term economic distress of the area, indeed all of upstate New York, should be weighed heavily in the Army's consideration of a no-cost conveyance of the property. As was pointed out in the Community Needs Analysis portion of this study, the study area has been losing population and its manufacturing base. While unemployment levels are not critical, the quality of jobs and equivalent wages has been diminished leaving the area seriously depressed economically. Productive reuse of the Army Reserve Center, particularly for aviation and aerospace related jobs, will be

a welcome development in the area's efforts to reverse the economic challenges of the past thirty years. However, the community will need cooperation from the Department of the Army to realize this opportunity.

D. ADMINISTRATIVE ORGANIZATION

Once the Army vacates the premises and the property is either conveyed or leased in furtherance of conveyance, the operation and maintenance of the USARC facilities will require an administrative structure to take responsibility for the project. While the official closing date for the installation is 2011, the base may be available for reuse well before that year. If leasing and job creation opportunities present themselves before that time, the community should be prepared to seize these opportunities through implementation of the base reuse plan.

If the Town of Niagara is to acquire the USARC property, the consultant team's recommendation is for the Town to assign responsibility for redevelopment of the property to the Town of Niagara Industrial Development Agency (IDA). Based upon precedent at other Army installations in New York, the Army can make an Economic Development Conveyance directly to the IDA if the IDA assumes the responsibilities of an implementation LRA.

Industrial Development Agencies (IDA's) are formed as public benefit corporations under Article 18-A of the New York State General Municipal Law. IDA's were created to actively promote, encourage, attract and develop job and recreational opportunities and economically-sound commerce and industry in cities, towns, villages and counties throughout New York State. While independently managed, members of IDA's are appointed by their sponsoring local governments and agencies are accountable to these governments.

New York State has vested broad powers in IDA's, including the ability to purchase, sell, and lease and/or mortgage real property. They can also borrow and lend money with respect to properly induced projects. Equally important, IDA's can extend sales tax abatement, property tax abatement and other forms of tax incentives to qualified projects. Finally, an IDA is empowered to enter into agreements with local realtors or property management firms for promotional and leasing activities.

The Town of Niagara IDA would be well suited to serve as the redevelopment agency for the USARC. The IDA has the authority to own and lease the property, it can borrow funds if needed, it can accept grant assistance from other levels of government, and it can extend economic development incentives to help realize the job creation goals established for the reuse planning process. As a tax-exempt owner of property, the IDA will not pay property taxes but can negotiate Payments-in-Lieu-of Taxes (PILOT's) with tenants that can be made available to taxing jurisdictions. Furthermore, the IDA is accountable to Town government and local citizens for its decisions and actions. Finally, the IDA is well positioned to work with New York State, the Niagara County Department of Planning, and Economic Development, the Niagara County IDA and a host of other local and regional development groups in the marketing and reuse of the facility for job creation.

The consultant team believes that a no-cost Economic Development Conveyance is essential if the Town of Niagara and/or any of its agencies are to acquire the property. If the acquisition cannot be accomplished through a no cost conveyance, it is recommended that the Town forego the acquisition. In such an event, the Department of the Army should be permitted to dispose of the property through a public sale.

E. OPERATING EXPENSES

Under the reuse and transfer scenario envisioned for the Army Reserve Center, the Town of Niagara and its IDA would pursue acquisition of the entire facility. If the Town of Niagara or its IDA acquires the USARC, it will assume responsibility for the operation and maintenance of that property.

The USARC property contains 11 permanent structures, three parking/storage areas and a concrete guardhouse. The majority of the permanent structures were built in the mid-1960's and their size ranges from 1,400 to 50,000 sq. ft. The total square footage for the facility is approximately 170,250 sq. ft. Maintenance of this facility will involve both fixed and variable costs. An understanding of these costs is necessary to generate the financial feasibility analysis.

Fixed costs in real estate management are those recurring expenses that have to be paid regardless of occupancy. Typical fixed costs include hazard insurance, liability insurance, and debt service.

Variable expenses are recurring expenses that are essential to the continuous operation and maintenance of a property. Variable expenses can include utilities, payroll, administration, property management fees, and reserves for replacement. Mortgage fees, capital improvements, and depreciation are not considered fixed or variable expenses and are excluded from operating expenses.

In regard to fixed costs for the USARC, fixed costs will include maintenance and repair, insurance costs and regular, routine inspection of the buildings. Internal staff or a contractor could perform this function. The facilities should be monitored regularly to prevent excessive damage from problems occurring such as roof leaks or rodent infestation.

Variable costs are those costs, which the redevelopment agency can elect to incur or eliminate depending on the level of maintenance desired for the facilities being managed. For example, buildings do not need to be heated if they are properly mothballed and ventilated. Heating in colder months does reduce the impact of changes in the temperature of the facility and can reduce potential damage from condensation and leaks. However, heating a vacant structure is expensive and it may not be financially prudent to do so. Therefore, in the financial projections, only a marginal amount of money is allocated to heating costs.

Other variable expenses for the USARC will involve utilities, maintenance personnel costs, administration, property management fees, and reserves for replacement. Each of these expense categories and projected costs for redevelopment will be examined below.

Electricity costs for the USARC in Fiscal Year 2006 totaled $77,548. As only one power meter serves the entire installation, this amount included the cost of electricity for each of the buildings and outside security lighting. This equates to about 46 cents a sq. ft. However, once the buildings become vacant, the costs of electricity will drop dramatically as electrical usage will be primarily limited to security lighting. As space is leased to tenants, the costs of electricity can be directly charged to tenants on a prorated basis or by the installation of meters for each building or demised space.

Using data on outdoor lighting costs from the Lighting Research Center at Rensselaer Polytechnic Institute, it is estimated that the energy cost of security lighting for the facility, at industrial standards, will be $.03 per sq. ft. annually. This equates to about $5,200 per year.

Water and sewer charges for the USARC are expected to be minimal until tenants are placed in buildings on the property. During Fiscal Year 2006, the Army paid

water bills totaling $4,182 and sewer bills of $3,466. Future tenants can be assessed a pro rated share of anticipated water and sewer charges or can be billed directly if water meters are installed for any high volume users. However, for budget purposes, an initial annual allowance of $2,500 for both water and sewer has been included in financial projections with increases shown for subsequent years as tenancy rates increase.

Natural gas is used to heat the USARC. In Fiscal Year 2007, natural gas costs were $131,603. However, the heating of vacant buildings is a variable cost and one that can be reduced by either lowering heat levels to minimum levels or by shutting off heating systems altogether in some or all of the buildings. Some physical deterioration in buildings may occur in the short term by not providing heat and a much greater level of damage could be expected over the long term. However, with proper ventilation, damage could be minimized. There will be a trade-off between the cost of heating buildings and their marketability due to physical appearance if heat is not provided.

Given that some areas of the facility, including common spaces in areas under lease and certain utility rooms, will require heat, allowances for gas have been added to those for sewer and water. This assumes that most buildings, if not all, will be mothballed until tenants are found and that minimal gas charges will be incurred.

General maintenance and repair expenses for the USARC, as estimated by the facility's Maintenance Supervisor, are approximately $.42 per sq. ft. This includes all supplies, materials, grass cutting, filter change-outs, and 1.5 maintenance personnel at 60 hours/week. The only items not included are costs related to refrigeration system work or extensive work the staff is not qualified to complete. The $.42 sq. ft. maintenance cost is used in the financial projections.

F. CAPITAL IMPROVEMENTS

The Army has no capital improvement costs planned for the facility through the period that it will retain ownership. There is one on-going improvement involving upgrades to the fire suppression system to bring the system up to code. The last large capital improvement was replacement of the asphalt and concrete on the north side of Building 18. This project was completed approximately three years ago at a cost of $750,000.

Improvements will be necessary for the USARC to be reused in an effective manner. These include the installation of electric and gas meters for each building on the site, the replacement of the asphalt on the apron east of the Building 4 Hangar, concrete repairs near Building 18, renovation of bathrooms and installation of new door hardware to meet ADA requirements for 1st floor space, and the demolition and removal of two older structures (Building 19– Quonset hut storage building and Building 23- storage shed). Both buildings are obsolete and their removal would improve traffic circulation and parking on the site. Additionally, extensive roof work is anticipated for several buildings.

The installation of utility meters will have an estimated expense of $ 25,000. The replacement of asphalt for the apron adjacent to the hangar will cost approximately $250,000. Replacement of concrete adjacent to Building 18 will cost $60,000. The cost of demolition and removal of two buildings that total about 3,600 sq. ft. is estimated at $8,500. This amount also includes site restoration after building demolition. Roof repairs are estimated at $584,000 and ADA compliance improvements for first floor space will total $150,000. These improvements are included in the financial projections.

G. LEASABLE AREAS AND PROJECTED RENTS

In the process of preparing the financial projections, it was determined that approximately 40,000 sq. ft of space on the facility is located on second stories. This space, in the absence of elevators, escalators or other devices, is not handicapped accessible and therefore will not meet ADA standards. Without substantial investment to install elevators or other improvements to meet ADA standards, the space in essentially unusable or only suitable for very low rent storage. Therefore, the space has not been factored into the analysis. Additionally, as approximately 20% of the remaining space is absorbed in common areas such as hallways, stairwells, entrances, bathrooms, or utility rooms, some 26,050 sq. ft. have been excluded from the net leasable area available. The square footage of the buildings to be demolished has also been subtracted. Accordingly, those areas that can be considered as net leasable space include about 100,000 sq. ft.

The total net leasable space in the buildings at the USARC will include the following categories and estimated square feet:

- Hangar space 37,500 sq. ft.
- Classroom and offices 20,000 sq. ft.
- Maintenance facilities 25,000 sq. ft.
- Storage space 17,500 sq. ft.

In order to assess potential lease rates, the consultant team reviewed available real estate data provided by *LoopNet* including listings for various facilities in the Erie and Niagara Counties region. The consultant team also reviewed some 85 industrial properties listed for Niagara County on *NY SiteFinder*. *SiteFinder* is an extensive and current inventory of industrial sites that has been developed as a web site by Empire State Development. Its purpose is to facilitate the site selection process in New York State.

Of the 85 industrial properties listed for Niagara County on SiteFinder, 12 properties with building sizes and characteristics similar to the Army Reserve Center were selected for further analysis. These buildings ranged in size from 4,800 sq. ft. to 133,000 q. ft. Lease rates ranged from $2.60 per sq. ft. to $4.00 annually with an average annual rent of $3.25 per sq. ft. Using the *SiteFinder* data and additional information on hangar lease rates, obtained from various airports, the following annual rents are considered as realistic and obtainable for the types and conditions of space available at the USARC.

Hangar Space – $2.80 sq. ft.
Office & Classroom Space – $4.50 sq. ft.
Storage Space -$2.75
Vehicle & Other Maintenance Space - $3.25

An average lease rate of $3.24 was established for the property. This rate was calculated by multiplying the above-cited rates by the square footage of space in each leasing category and then dividing this number by 100,000, which is the total amount of leasable space (sq. ft.) available.

Occupancy rates for the facility are anticipated to range between 25% and 65%, which translates into 25,000 sq. ft. to 65,000 sq. ft. of space expected to be rented annually. This is a very conservative estimate and is far below the overall occupancy rate of about 90% for industrial property in the Buffalo market as reported in *Northeast Real Estate Business, July 2007*. However, given the age, quality, condition, and configuration of the space to be leased as well as competition in the local real estate market, demand for the property is expected to be modest. Further, the motivation for reuse of the Army Reserve Center will be the creation of jobs and economic activity rather than profit. This objective will

narrow the field of potential tenants to those that can generate employment opportunities for local residents and will likely reduce the occupancy rate.

H. SUMMARY OF COSTS AND REVENUES

Table 8 provides a spreadsheet of projected revenues, expenses, and replacement reserve refunds for the Army Reserve Center through the year 2020. These items are detailed below.

1. Income

Income for the reuse project is anticipated to come from several sources. First, rental income from the lease of the property is expected to be a long-term generator of resources for the reuse project. The property is located adjacent to the Niagara Falls International Airport and is ideally zoned for a variety of reuse activities. While the project will likely have to rely upon below market rental rates as incentives for tenants to locate on the property, there is potential to attract multiple users to the site. No revenues have been included for building or property sales, as it is not anticipated that the property will be subdivided with buildings or land lots sold individually.

The remaining sources of funds are expected to come from Federal and State grants. These may be in the form of categorical grants such as those offered by the U.S. Department of Commerce Economic Development Administration (EDA) or Empire State Development. The community should also look to its federal and state representatives for appropriations for the base reuse effort that can be earmarked in federal and/or State budgets. Member item funding is also a possibility that should be explored with State legislators representing the Town of Niagara in Albany. It is anticipated that, with the exception of start-up costs for the reuse project,

most federal and/or state funding will be directed to capital improvements and/or major repairs.

2. Expenses

Outside of capital improvements and repair/replacement costs, the majority of expenses for the facility are expected to include basic costs such as insurance, security lighting, management, and leasing fees and basic maintenance and repair costs. These expenses are included in the financial projections.

Improvements are shown for Hanger 4 apron renovation, concrete payment repair, utility separation and metering, ADA compliance, roof repairs and demolition. The ADA compliance work will include renovation of bathrooms and installation of ADA compliant door hardware. In the financial projections, federal and New York State grants are expected to finance all or some of the cost of these improvements.

It should be noted that the cost of installing elevators in the three buildings with second story space has not been included in the above-cited improvements. The estimated cost of $375,000 is substantial and may not be justified in light of market demand. If there is indeed demand for second floor space on the property, the cost of installing elevators can be covered by grant assistance, leasehold improvements, or a loan that will be amortized with increased rental payments.

I. FINANCIAL IMPLICATIONS

The financial projections shown on Table 8 show the implications of changes in revenues for the reuse project with rental income being the most important variable. The availability of federal and state funding are also major variables and

will determine if capital improvements can be made in their entirety or substantially delayed, reduced or eliminated.

The project is expected to produce sufficient revenues to ensure that the facility is adequately maintained and that it is financially self-sufficient. Any revenues generated in excess of operating and maintenance costs should be directed to a reserve fund for repair and replacement costs.

As shown in Table 8, repair and replacement costs will be substantial in the last few years of the planning period. The major portion of these expenses will consist of replacements for heating units including the systems for Building 4, which alone will cost over $390,000. Even with the substantial costs for replacement of building systems, the project is projected to be marginally viable with a small positive cash flow at the end of the planning period.

J. CONCLUDING COMMENTS

The redevelopment of the Army Reserve Center/Area Maintenance Facility #76 will involve some risk and uncertainties. For example, even though the projections of rental income are conservative, a major downward adjustment in the economy could significantly reduce demand for space. Further, depending upon the availability of funding, federal and/or state grant assistance may fail to materialize. However, the strategy outlined to fund the reuse of the USARC represents a relatively low cost and low risk approach for the community. It has been designed to limit exposure for the community while producing jobs and related economic activity. The financial projections show that the community can own and lease the facility at least for the next ten years with no or very little investment of local funds.

While the project can be a viable undertaking for the Town of Niagara and its Industrial Development Agency, it is critical that the Army Reserve Center be transferred to the Town as a no-cost Economic Development Conveyance. The financial projections strongly indicate that no level of debt service can be supported. If the Department of the Army is unwilling to convey the property at no cost, the community should complete planning requirements and forgo acquisition of the facility. The Army could then proceed with disposal of the property through a public sale.

Table 8, Niagara Cash Flow

Niagara Army Reserve Center

Projected Revenues and Expenses*

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Sources of Revenue											
Square feet leased	25,000	30,000	35,000	40,000	45,000	50,000	50,000	55,000	60,000	65,000	
Average rent per sq. ft.	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	
Rent income	81,000	97,200	113,400	129,600	145,800	162,000	162,000	178,200	194,400	210,600	1,474,200
Federal / State grants	350,000	744,000									1,094,000
Total	431,000	841,200	113,400	129,600	145,800	162,000	162,000	178,200	194,400	210,600	2,568,200
Operating Expenses											
Electric	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	52,000
Maintenance/snow/insurance	42,000	45,000	49,000	52,000	55,000	61,000	61,000	64,000	67,000	67,000	563,000
Water, sewer, gas for common Areas	5,000	6,250	7,500	8,800	10,032	11,300	11,300	13,200	15,000	16,300	104,682
). mgt./Leasing fees	8,100	9,720	11,340	12,960	14,580	16,200	16,200	17,820	19,440	21,060	147,420
Sub-Total	60,300	66,170	73,040	78,960	84,812	93,700	93,700	100,220	106,640	109,560	867,102
Capital Improvements & Repair/Replacement Costs											
Building 4 apron/Bldg.18 pavement	250,000	60,000									310,000
Utility separation/Meters	25,000										25,000
Building demolition	8,500										8,500
Roof repairs/Bldgs.18,20,21,22		584,000									584,000
Improvements for ADA compliance	75,000	75,000									150,000
Other repair & replacement costs	7,500	10,000	15,000	15,000	20,000	20,000	27,000	48,000	59,425	392,200	614,125
Sub-Total	366,000	729,000	15,000	15,000	20,000	20,000	27,000	48,000	59,425	392,200	1,691,625
Total Expenses	426,300	795,170	88,040	93,960	104,812	113,700	120,700	148,220	166,065	501,760	2,558,727
Reserve Fund/Repair & Replacements	4,700	46,030	25,360	35,640	40,988	48,300	41,300	29,980	28,335	(291,160)	9,473

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- Samuel Ferraro, Commissioner, Niagara County Department of Economic Development / Executive Director, Niagara County Industrial Development Agency
- Charles Haseley, Building Inspector, Town of Niagara
- John Heimbeck, HUD Buffalo
- Lawrence Witul, Assistant Director, Niagara County Industrial Development Agency
- Louis Knotts, President, Calspan
- Mary Hughes, Federal Real Property Assistance Program, U.S. Department of Education
- Merrill Lane, Chairman, Niagara Military Affairs Council
- Michael Casale, Deputy Commissioner of Business Development, Niagara County Center for Economic Development
- N. E. Nolf, Base Public Affairs Officer, 914th Airlift Wing, Niagara Falls ARS
- Patrick Paterson, Fort Drum Department of Public Works, Maintenance Mechanic, Niagara Army Reserve Center
- Patrick Whalen, Trade Consultant, World Trade Center, Buffalo/Niagara
- Paul Oskvarek, Project Manager, Department of Defense, Office of Economic Adjustment
- Ravi Ajodah, Base Transition Coordinator, 77th Regional Readiness Command, Fort Totten
- Robyn Krueger, Executive Director, Community Missions of Niagara Frontier, Inc.
- Roger Trevino, Niagara Falls Redevelopment, LLC
- Thomas Pleban, Executive Vice President, Calspan
- William Schickling, Vice President of Finance, Niagara County Community College
- William Vanecek, Director of Aviation, Niagara Frontier Transportation Authority

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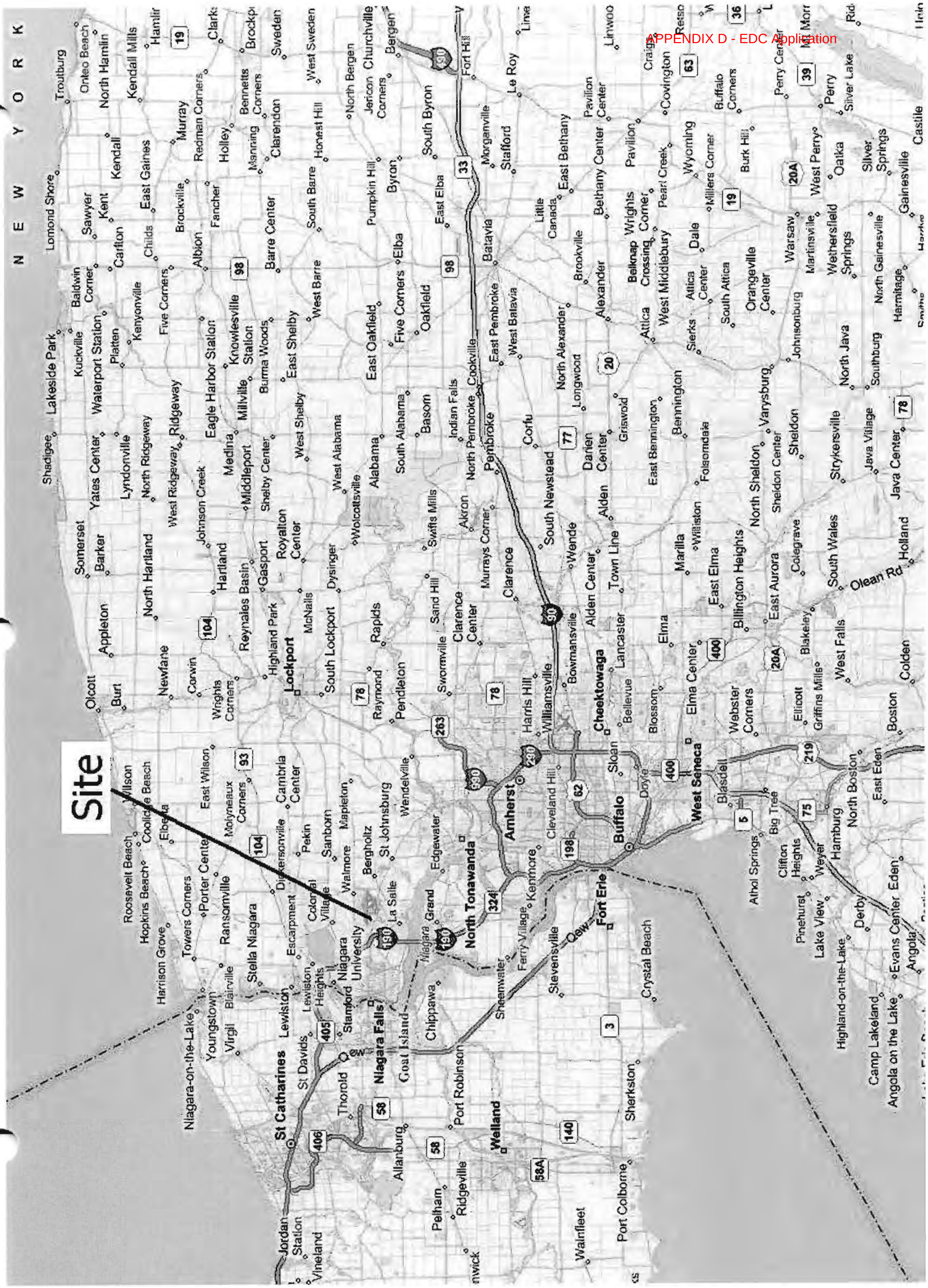
Appendix A

FIGURES


Site
NEW YORK
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Niagara Falls
North Tonawanda
Lockport
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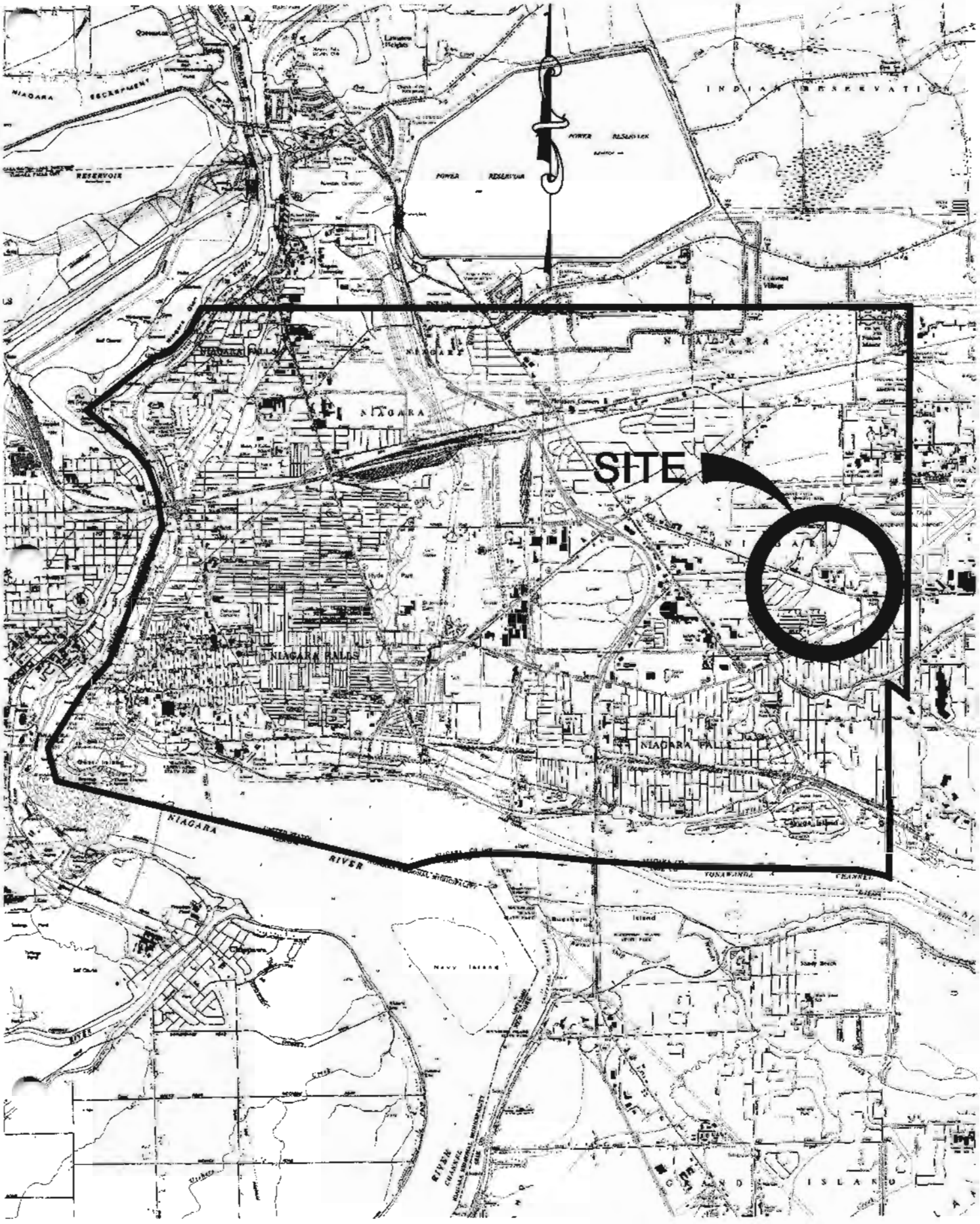
SITE
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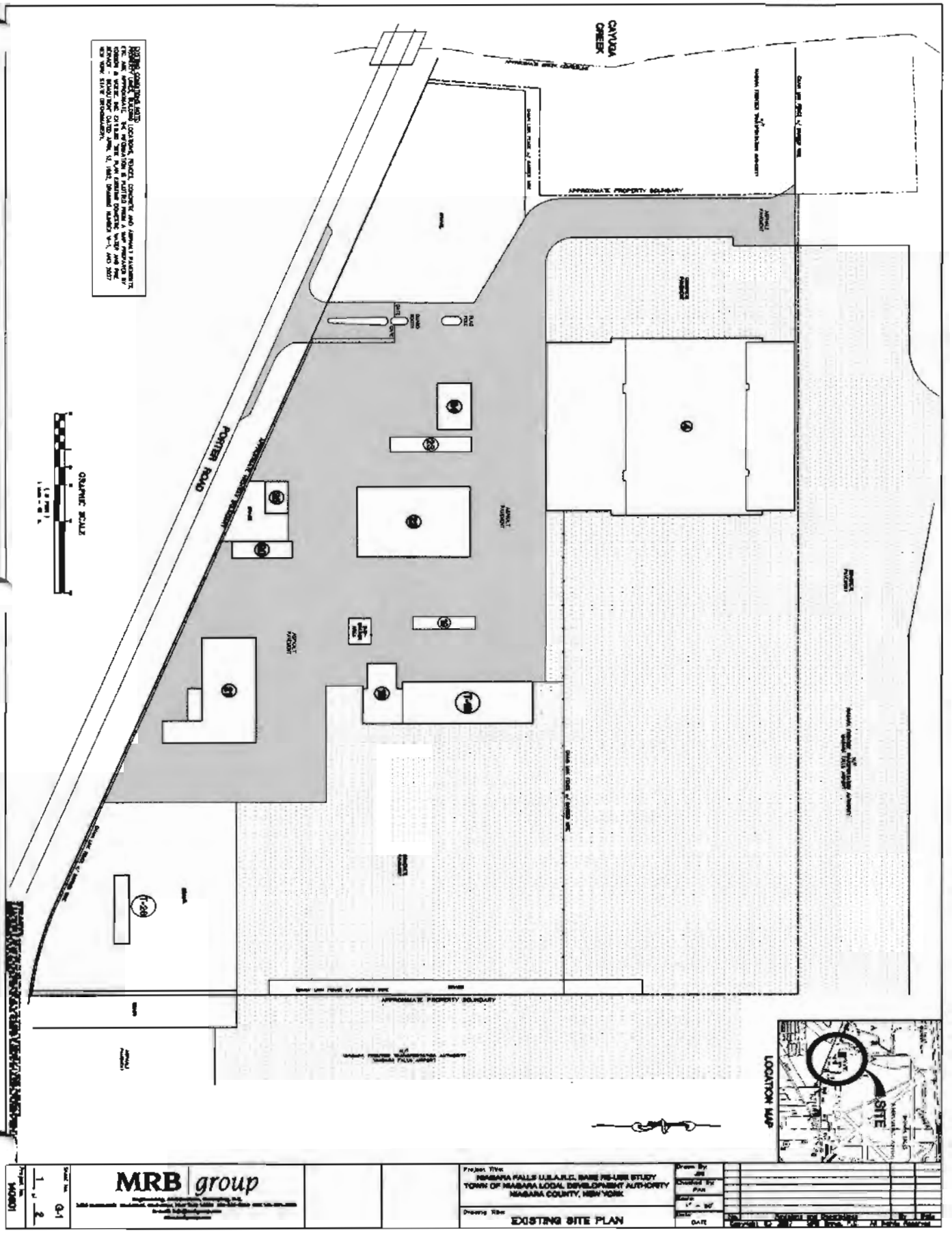
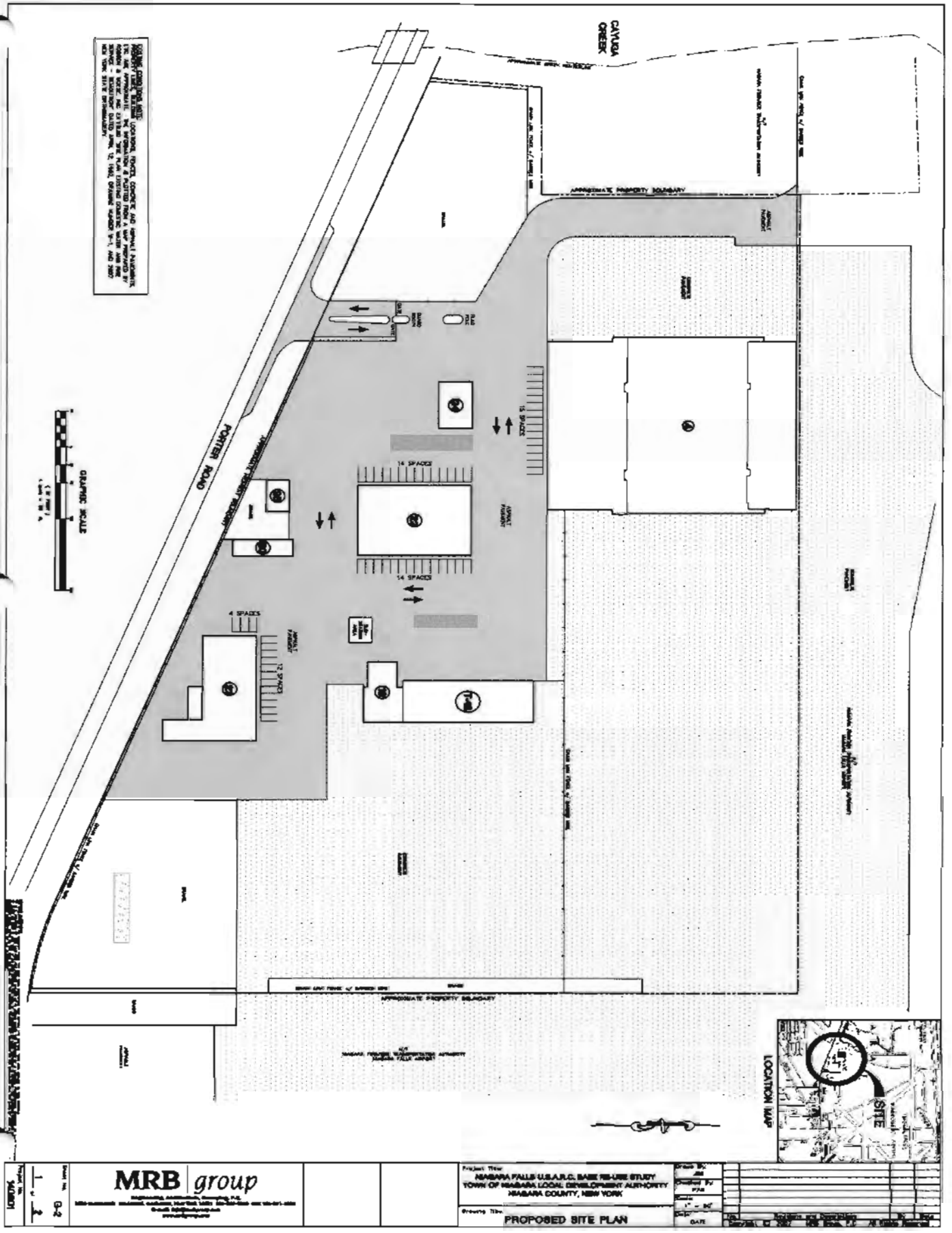
RESERVOIR
NAVY ISLAND
GRAND ISLAND


CAYUGA CREEK
PORTER ROAD
APPROXIMATE PROPERTY BOUNDARY
GRAPHIC SCALE
LOCATION MAP
SITE
MRB group
NIAGARA FALLS U.S.A.R.C. BASE RE-USE STUDY
TOWN OF NIAGARA LOCAL DEVELOPMENT AUTHORITY
NIAGARA COUNTY, NEW YORK
EXISTING SITE PLAN


CAYUGA CREEK
PORTER ROAD
APPROXIMATE PROPERTY BOUNDARY
ASPHALT PARKING
15 SPACES
14 SPACES
14 SPACES
4 SPACES
12 SPACES
GRAPHIC SCALE
LOCATION MAP
SITE
MRB group
NIAGARA FALLS U.S.A.R.C. BASE RE-USE STUDY
TOWN OF NIAGARA LOCAL DEVELOPMENT AUTHORITY
NIAGARA COUNTY, NEW YORK
PROPOSED SITE PLAN

Appendix B

SITE PHOTOGRAPHS

Ingress / Egress with Guard Booth, Building 4 in Background

Building 4, East Elevation and Apron

Building 18, South and West Elevation

Building T-18, East Elevation and Apron

Building T-18, West Elevation

Building 19, West and South Elevation

Building 20, East Elevation

Building 21, West and North Elevations

Building 22, South and East Elevation

Building 23, West and South Elevation

Building 24, North and East Elevation

Building 25, North and East Elevation

TGE
TIERNEY GEOTECHNICAL ENGINEERING

SUBSURFACE EXPLORATION AND GEOTECHNICAL INVESTIGATION NIAGARA FALLS INTERNATIONAL AIRPORT TOWN OF NIAGARA, NEW YORK

Prepared for:

MRB GROUP
2480 BROWNCROFT BOULEVARD
ROCHESTER, NEW YORK 14625

TGE.07.150
December 13, 2007

3445 Winton Place, Suite 117, Rochester, New York 14623 (585) 424 6360 **PHONE** (585) 424 2318 **FAX**

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Appendix C ..... Summary Tables of Pavement Cores

Appendix D ..... Photos of Pavement Cores

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TIERNEY GEOTECHNICAL ENGINEERING

SUBSURFACE EXPLORATION AND GEOTECHNICAL INVESTIGATION NIAGARA FALLS INTERNATIONAL AIRPORT TOWN OF NIAGARA, NEW YORK

I. INTRODUCTION AND BACKGROUND INFORMATION

Tierney Geotechnical Engineering (**TGE**) is pleased to present our report for the subsurface exploration and geotechnical investigation for the proposed evaluation of the existing pavement structure at the Niagara Falls International Airport. This investigation was performed per the request of Mr. Patrick Nicoletta, P.E., of MRB Group, (**MRB**).

Our scope of services, which is outlined in our (revised) proposal dated November 16, 2007, includes subsurface exploration consisting of pavement cores and test borings; preparation of subsurface exploration logs; geotechnical evaluation of the subsurface conditions; and preparation of this report. Our report presents the results of our subsurface investigations and geotechnical evaluation, and includes a description of the existing site conditions and proposed construction; a description of the subsurface conditions; geotechnical engineering recommendations for allowable bearing pressures, floor slab and pavement design parameters. The appendices include a site vicinity map, subsurface exploration location plan, and subsurface exploration logs, tabulated pavement core summary and core photographs.

Information pertaining to the project was provided by **MRB**. Additional information was obtained during site visits by our personnel. The site is located on the southwest side of the airport, at an existing military reserve facility. This facility includes a large hanger/office structure. This report addresses the evaluation of the asphalt/concrete paved area directly west of the hanger. We understand that the evaluation is being performed to evaluate the existing paved area with regards to supporting large aircraft for future use.

II. SUBSURFACE EXPLORATION AND CONDITIONS

The subsurface exploration performed at the project site for this investigation consisted of a total of 3 pavement cores, with split-spoon sampling to a depth of 4 feet below the bottom of the pavement structure. The cores/borings were performed on November 21, 2007. The cores/borings were located in the field by **TGE**. The approximate test boring locations are shown on the drawing in Appendix **A**, and the test boring logs are presented in Appendix **B**. Summaries of the core cross-sections, and photographs of the recovered

3445 Winton Place, Suite 117, Rochester, New York 14623 (585) 424 6360 **PHONE** (585) 424 2318 **FAX**

pavement cores are presented in Appendices **C** and **D**, respectively. The test borings were advanced using a 3-inch diameter split-spoon sampler for the first 2 feet, follow by a 2-inch diameter split-spoon sampler. The N-values for the 3-inch diameter split-spoon sampler were adjusted to equivalent Standard Penetration Test (SPT) N-values (based upon the 2-inch diameter split-spoon sampler). Adjusted values are presented on the boring logs. Representative portions of the soil samples recovered from the test borings were transported to our office for visual classification by a geotechnical engineer.

The subsurface conditions discussed in this report were inferred from the 3 pavement cores/test borings performed for this geotechnical evaluation. Subsurface conditions between exploration locations will vary. **The contractor should not rely solely upon the subsurface conditions discussed in this report for bidding purposes, and is encouraged to perform site observations as needed to obtain representative information.** The stratification lines indicated on the subsurface exploration logs are approximate and may indicate gradational changes.

The reader is referred to the boring logs, pavement core summaries and photographs presented in the Appendices for detailed descriptions. In general, the cores encountered approximately 1-3/4 to 2-1/4 inches of asphalt, overlying approximately 5 to 14 inches of concrete. The concrete is underlain by approximately 4 to 7 inches of stone subbase. At core location C-3, the stone subbase is underlain by approximately 6 inches of sand.

Below the stone/sand, the borings encountered gray-brown clay and silt, which is generally moist, and soft to stiff. The clay and silt was encountered to the terminus of the borings, at depths ranging from approximately 4.6 to 5.3 feet below the top of the pavement.

Free standing water was not encountered during drilling and/or upon boring completion at any of the test boring locations. However, based upon the color of the recovered samples, it appears that trapped water may be encountered within the subbase fill below the pavement, perched upon the clay/silt subgrade. It should be noted that post drilling and excavations free water observations may not accurately represent groundwater levels as a result of the short time allowed for stabilization of the water level. Groundwater levels will be influenced by seasonal and construction related fluctuations.

III. CONCLUSIONS AND RECOMMENDATIONS

The test borings indicate that the subsurface conditions encountered below the pavement structure generally consist of 10 to 7 inches of stone/sand subbase, overlying clay and silt subgrade soils. Pocket Penetrometer tests performed on the recovered samples from the clay-silt stratum indicate cohesion values in the range of 1,000 to 3,800 psf. These values correlate well with the SPT N-value results. Based upon the results of the subsurface investigation, we present the following for your consideration:

Foundation Design Recommendations

It is our opinion that the anticipated subsurface conditions encountered at the site are suitable for support of typical structures on a foundation system consisting of shallow isolated spread and continuous strip footings. We anticipate that the foundations would bear at depths of 2 to 4 feet below the existing grades, and that structural loading would not be excessive (i.e. less than 100 kips for isolated columns, and 2 klf for load bearing walls). We anticipate that;

a. a net allowable bearing pressure of **2,500** pounds per square foot (psf) may then be used for the design of isolated spread and continuous strip foundations for foundations which bear up to 3 feet below the existing grade.

b. a net allowable bearing pressure of **3,500** pounds per square foot (psf) may then be used for the design of isolated spread and continuous strip foundations for foundations which bear at a depth of 3 to 5 feet below the existing grade.

Net allowable bearing pressure is defined as the soil pressure at the recommended bearing elevation in excess of the overburden pressure at the adjacent finished grade. We recommend that exterior foundations bear at a minimum depth of 4 feet below the lowest exterior finished grade as protection against frost action. For stability, we recommend that interior foundations bear a minimum of 2 feet below the finished floor. We recommend a minimum lateral dimension for continuous footings of 2.0 feet, and 3.0 feet for isolated spread footings.

It is difficult to catagorize anticipated settlement without information regarding the proposed structure and structural loading. However, based upon the estimated structural loads and the net allowable bearing pressures discussed above, we anticipate total settlements and differential settlements should fall within tolerable ranges (i.e. less than 1 inch total, and less than 1/2 inch differential).

Floor Slab Design Parameters

Based upon the anticipated subsurface conditions, it is our opinion that a modulus of subgrade reaction of **120 pci** may be used for the native clay and silt subgrade soil.

Pavement Design Recommendations

Based upon the anticipated subsurface conditions, it is our opinion that an equivalent CBR value of 3 may be used for the clay and silt subgrade, for design of flexible and rigid pavement sections.

It should be noted that the conclusions and recommendations presented are contingent upon undisturbed and acceptable bearing grades/subgrades, and that good construction practices are performed.

IV. CLOSING

We prepared this report for the exclusive use of MRB Group, and their designated agents for the evaluation of the existing pavement structure at the Niagara Falls International Airport, in the Town of Niagara, New York. Our conclusions and recommendations in this report are based upon the information obtained from the subsurface investigation, and our understanding of the proposed construction. Changes to our

recommendations may be warranted if the actual subsurface conditions vary from those anticipated, or if the proposed construction varies from our understanding, as discussed in this report. Generally accepted soil mechanics and foundation engineering practices were used to develop our recommendations. We conducted our services in a manner consistent with that level of skill ordinarily exercised by members of the profession currently practicing under similar conditions.

We recommend that the geotechnical engineer be provided the opportunity to generally review the foundation and site work drawings and contract specifications to evaluate their consistency with our recommendations. The recommendations presented in this report are contingent upon continuous geotechnical monitoring by the geotechnical engineer during the earthwork, foundation construction, and floor slab/pavement subgrade preparation. We recommend that the monitoring include observation of site preparation, proofrolling, floor slab and pavement subgrades, foundation bearing grades, and monitoring of fill placement and compaction.

We recommend that this report be made available to prospective bidders of the construction by incorporating it into the contract documents. Bidders should be informed that this report was prepared for design purposes only and may not contain sufficient information to prepare an accurate bid. Isolated information is not to be reproduced, copied or transferred from this report.

We appreciate the opportunity to be of service to you on this project. If you have any questions regarding this report, or if we may provide additional services, please contact us.

Respectfully submitted,
TIERNEY GEOTECHNICAL ENGINEERING

Prepared By:

STATE OF NEW YORK
KEVIN FRANCIS TIERNEY
070601
LICENSED PROFESSIONAL ENGINEER

12/13/07

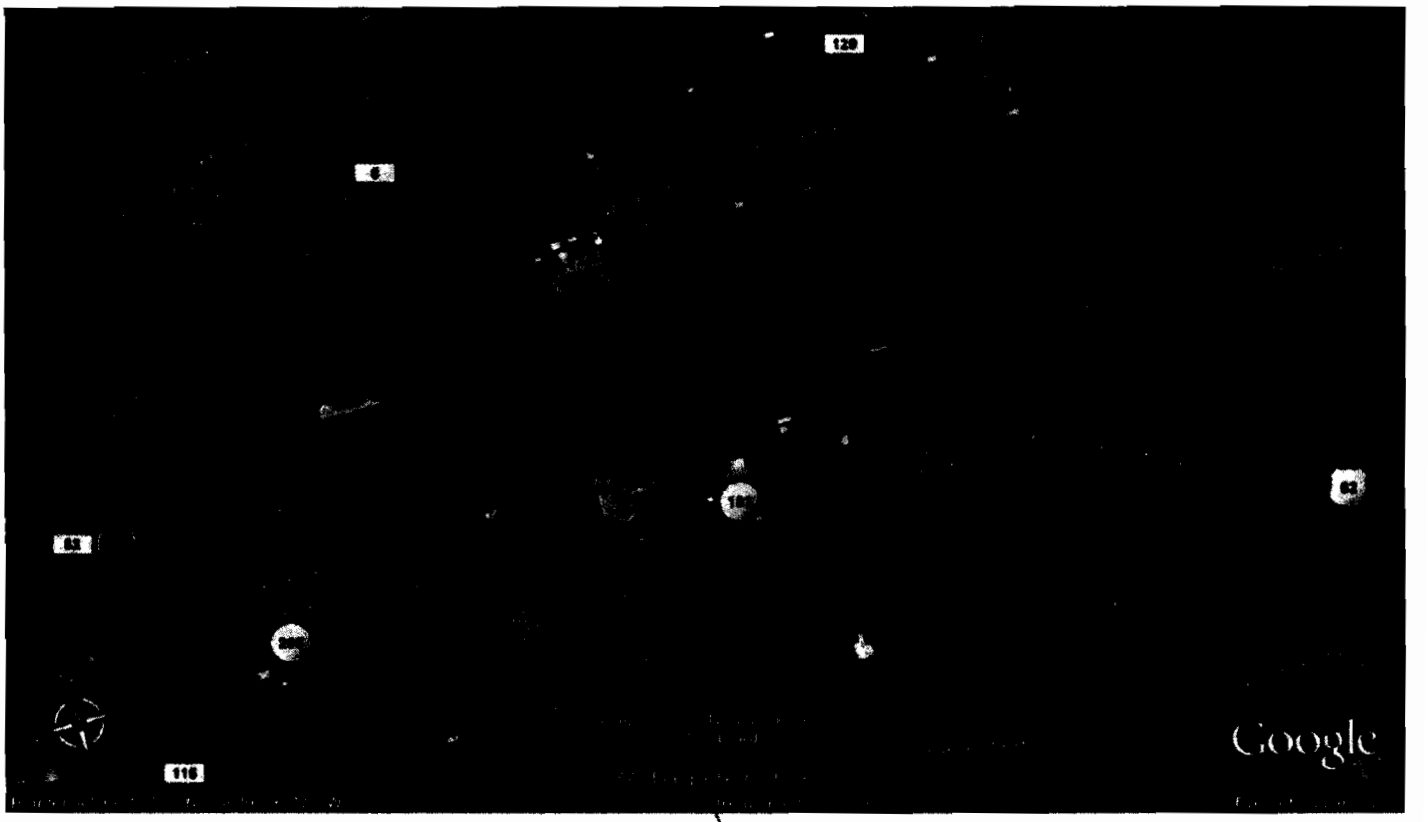
Kevin F. Tierney, P.E.
Geotechnical Engineer

Reviewed By:

Michele A. Fiorillo

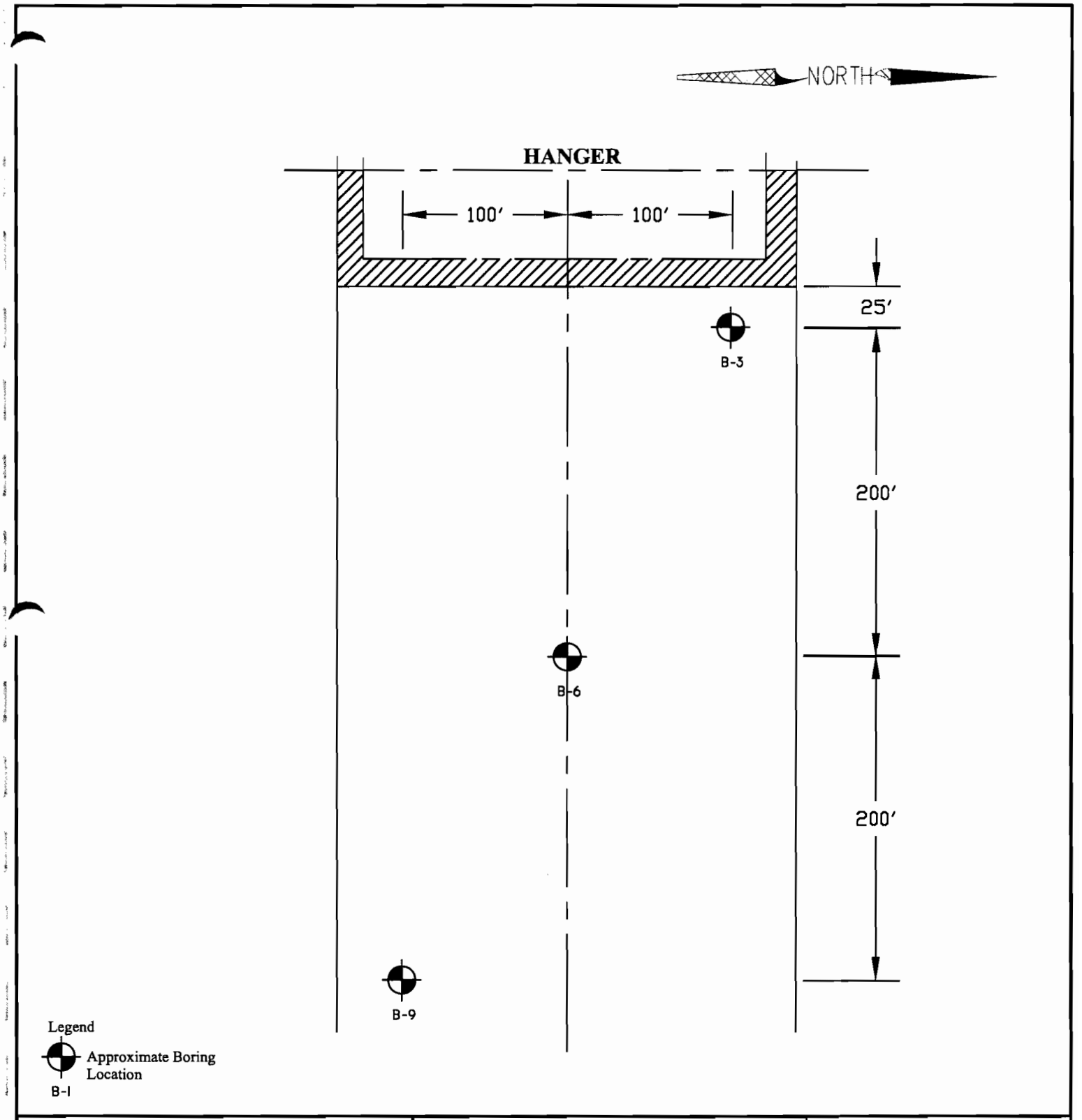
Michele A. Fiorillo, E.I.T.
Geotechnical Engineer

Appendix A: Drawings



Project Site

TIERNEY GEOTECHNICAL ENGINEERING 3445 Winton Place, Suite 117 Rochester, New York 14623 (585) 424-6360 **PHONE** (585) 424-2318 **FAX**	**PROJECT:** Pavement Evaluation Niagara Falls Airport Town of Niagara, New York	Site Vicinity Map PROJECT No.: TGE.07.150
	CLIENT: MRB GROUP 2480 Browncroft Boulevard Rochester, New York 14625	PREPARED BY: KFT DATE: December 12, 2007 SCALE: See Drawing Drawing No. 1



TIERNEY GEOTECHNICAL ENGINEERING 3445 Winton Place, Suite 117 Rochester, New York 14623 (585) 424-6360 (585) 424-2318 **FAX**	**PROJECT** Pavement Evaluation Niagara Falls International Airport Town of Niagara, New York	Boring Plan
		PROJECT No: TGE.07.150
	CLIENT MRB GROUP 2480 Browncroft Boulevard Rochester, New York 14625	PREPARED BY: KFT
		DATE: December 13, 2007
		SCALE: Not to Scale
		DRAWING: 2

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Appendix B: Test Boring Logs

TIERNEY GEOTECHNICAL ENGINEERING

HOLE NO. B-1 SURF. ELEV. _____ PROJECT NO. _____

PROJECT TGE. XX. XXX LOCATION _____

CLIENT _____

DATE STARTED _____ COMPLETED _____

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0		1	2	2	3	5	5		SAND and GRAVEL, trace silt (moist, loose)	Water was encontered at 2.0 feet
2.5		2							Gray SHALE, soft to medium hard, some fractures	Run no. 1 2.5 ft to 5.0 ft Recovery 95% RQD 50%
5										

SAMPLE SYMBOLS

- Spilt-Spoon Sampe
- Shelby Tube Sample
- Auger Sample or Test Pit Sample Bulk Sample
- Rock Core or Pavement Core

PARTICLE SIZE

Identification of soil type is made on the basis of an estimate of particle sizes, and in the case of fine grained soils, also on the basis of plasticity.

SOIL TYPE	SOIL PARTICLE SIZE	DESCRIPTION
Boulder	> 12"	
Cobble	12" to 3"	
Gravel -course	3" to 3/4"	Course Grained (Granular)
Gravel -fine	3/4" to No 4	
Sand -course	No 4 to No 10	
Sand -medium	No 10 to No 40	
Sand -fine	No 40 to No 200	
Silt -Non Plasic (Granular)	< No 200	Fine Grained
Clay-Plastic (Cohesive)	< No 200	

QUANTIFYING SOIL MIXTURES

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimates are based on weight of total sample.

TERM	PERCENT OF TOTAL SAMPLE
"and"	35% to 50%
"some"	20% to 35%
"little"	10% to 20%
"trace"	less than 10%

When sampling gravelly soils with a standard split-spoon sampler, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.

RELATIVE COMPACTNESS AND CONSISTENCY

The relative compactness or consistancy is described in accord with the following terms.

GRANULAR SOILS		COHESIVE SOILS	
Term	Blows per Foot (SPT N-value)	Term	Blows per Foot (SPT N-value)
Loose	< 11	Very Soft	< 3
Firm	11 to 30	Soft	3 to 5
Compact	31 to 50	Medium	5 to 15
Very Compact	> 50	Stiff	15 to 25
		Hard	> 25

Large particles encountered in the soils during sampling, such as large gravel, cobbles and boulders, will often significantly influence the blows per foot (SPT N-values) recorded during the penetration test.

SOIL DEPOSITION STRUCTURE

The following terms are used to describe the deposition structure of the soils, particularly fine grained soils.

TERM	DEFINED BY
Varved	horizontal uniform layers or seams of soils(s).
Layer	soil deposit more than 6" thick.
Seam	soil deposit less than 6" thick
Parting	soil deposit less than 1/4" thick
Laminated	irregular, horizontal and angled seams and partings of soil(s).

ROCK CLASSIFICATION TERMINOLOGY

CLASSIFICATION	TERM	DEFINED BY
Hardness	Soft Medium Hard Hard Very Hard	Scratched by fingernail Scratched easily by pocketknife Scratched with difficulty by pocketknife Cannot be scratched by a pocketknife
Weathering	Very Weathered Weathered Sound	Estimated from the relative amounts of disintegration (of the rock), iron staining, rock core recovery, soil seams, etc.
Bedding	Laminated Thin Bedded Bedded Thick Bedded Massive	Natural breaks in the rock layers < 1" thick 1" to 4" thick 4" to 12" thick 12" to 36" thick > 36" thick
Fracturing	Quantitative descriptions such as "highly", "moderately" or "slightly" fractured, depths over which fractures are noted, and relative angles of the fractures (if applicable).	Fracturing refers to natural breaks in the rock core. Breaks may be oriented parellel to the horizontal rock layers, or at some angle to the (horizontal) rock layers.

KEY TO SYMBOLS

Symbol Description

Strata symbols

ASPHALT

CONCRETE

FILL

SAND

CLAY and SILT

Soil Samplers

PAVEMENT OR SLAB CORE

Standard penetration test

Notes:

1. These subsurface logs form a part of the geotechnical report and should not be seperated from the report.

2. The information presented on these subsurface logs are subject to the limitations, discussions and conclusions presented in the report.

3. The subsurface conditions between the subsurface exploration locations, including topsoil and fill thicknesses, will vary.

4. The subsurface logs should not be used as the sole means of estimating material quantities, including fill, topsoil and/or organic subsoils, for bidding purposes. Discussions presented in this report of subsurface conditions may aid in estimating quantities. The contractor is ultimately responsible for performing any additional site observations/explorations to aid in bidding.

Tierney Geotechnical Engineering

HOLE NO. B-3 SURF. ELEV. _____ PROJECT NO.: TGE.07.150

PROJECT Army Reserve Center LOCATION Niagara, NY

CLIENT MRB Group

DATE STARTED 11/21/07 COMPLETED 11/21/07

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									1-3/4" ASPHALT (0.15)	Sample No.1 was obtained using a 3" split-spoon sampler.
		1	4	4	8	14	5		5" CONCRETE (0.56)	
									4" STONE (0.89)	
1									6" SAND (1.39)	
									Gray GLAY and SILT, trace sand (moist, soft)	qu=2.5 tons/ft sq in clay layer, Sample No.1
2										
		2	5	5	8	13	13		color changes to reddish brown (medium)	qu=3.75 tons/ft sq in Sample No.2
3										
4									(4.56)	
									Boring complete at 4.56 feet.	No free standing water was encountered at boring completion.
5										
6										
7										
8										

N=NUMBER OF BLOWS TO DRIVE 3 & 2 " SPOON 12 " WITH 140 lb

WT. FALLING 30 " PER BLOW

LOGGED BY MJB SHEET 1 OF 1

Tierney Geotechnical Engineering

HOLE NO. B-6 SURF. ELEV. _____ PROJECT NO.: TGE.07.150

PROJECT Army Reserve Center LOCATION Niagara, NY

CLIENT MRB Group

DATE STARTED 11/21/07 COMPLETED 11/21/07

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									2-1/4 " ASPHALT (0.19)	Sample No.1 was obtained using a 3" split-spoon sampler.
									7-1/2 CONCRETE (0.81)	
		1	6	4	5	9	4		7" STONE (1.39)	qu=1.0 tons/ft sq in Sample No.1
1									Grayish brown CLAY and SILT, trace sand (moist, soft)	
2										
		2	6	10	14	20	24		color changes to reddish brown (stiff)	qu=3.75 tons/ft sq in Sample No.2
3										
4									(4.81)	
5									Boring complete at 4.81 feet.	No free standing water was encountered at boring completion.
6										
7										
8										

N=NUMBER OF BLOWS TO DRIVE 3 & 2 " SPOON 12 " WITH 140 lb

WT. FALLING 30 " PER BLOW

LOGGED BY MJB SHEET 1 OF 1

Tierney Geotechnical Engineering

HOLE NO. B-9 SURF. ELEV. _____ PROJECT NO.: TGE.07.150

PROJECT Army Reserve Center LOCATION Niagara, NY

CLIENT MRB Group

DATE STARTED 11/21/07 COMPLETED 11/21/07

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									1-3/4" ASPHALT (0.15)	
									14" CONCRETE	
1										
		1	8	4	6	13	10		(1.31) 6" STONE	
									(1.81)	
2									Grayish brown CLAY and SILT, trace sand (moist, medium)	qu=2.25 tons/ft sq in Sample No.1
3										
		2	5	6	10	18	16		color changes to reddish brown, with gray mottling (stiff)	qu=1.75 tons/ft sq in Sample No.2
4										
5									(5.31)	
									Boring complete at 5.31 feet.	No free standing water was encountered at boring completion.
6										
7										
8										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 140 lb

WT. FALLING 30 " PER BLOW

LOGGED BY MJB SHEET 1 OF 1

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TIERNEY GEOTECHNICAL ENGINEERING

Appendix C: Summary Tables of Pavement Cores

TGF

TABLE C-1: PAVEMENT CORE SUMMARY

LOCATION	PAVEMENT CORE SECTION					CORE CONDITION (Poor, Fair, Good)	BASE COURSE
C-3			1/2	inches	Asphalt Top Course	Good	4" Stone, 6" Sand
		1	1/4	inches	Asphalt Binder Course	Good	
		5		inches	Concrete	Fair	
	Total	6	3/4	inches			
C-6			1/2	inches	Asphalt Top Course	Good	7" Stone
		1	3/4	inches	Asphalt Binder Course	Good	
		7	1/2	inches	Concrete	Good	
	Total	9	3/4	inches			
C-9			3/4	inches	Asphalt Top Course	Good	6" Stone
		1		inches	Asphalt Binder Course	Good	
		14		inches	Concrete	Good	
	Total	15	3/4	inches			

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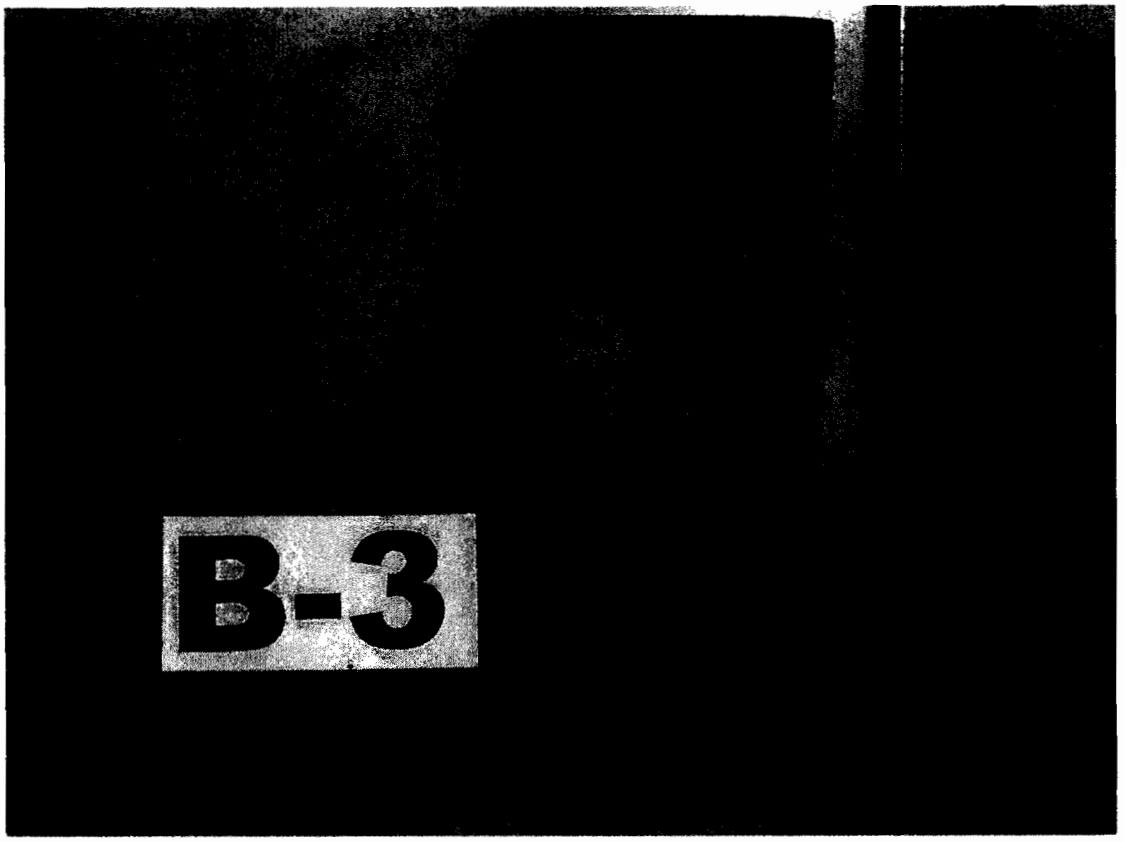
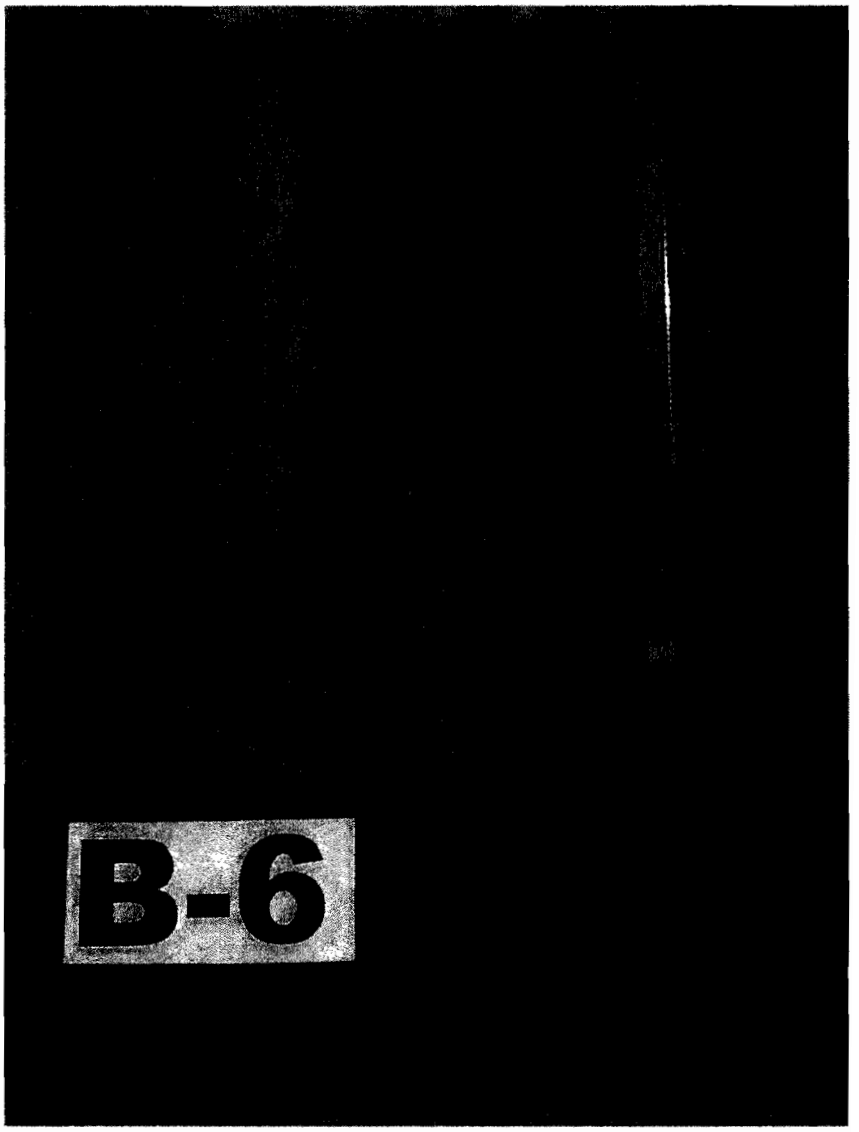
Appendix D: Photos of Pavement Cores



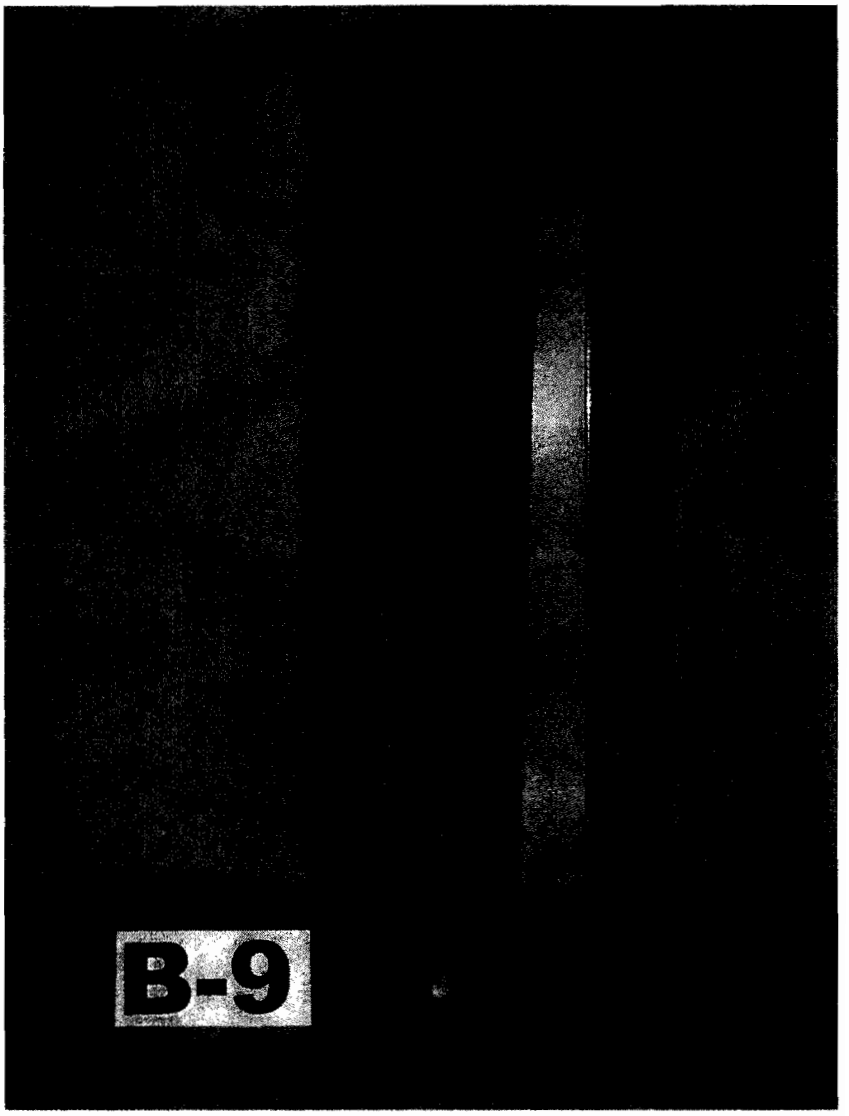
Core B-3

Composition: 1/2 – inch Asphalt Top Course
1-1/4 - inch Asphalt Binder Course
5 – inch Concrete
Total : 6-3/4 - inches



Core B-6

Composition:	1/2 – inch Asphalt Top Course
	1-3/4 - inch Asphalt Binder Course
	7-1/2 – inch Concrete
Total :	9-3/4 - inches



Core B-9

Composition:	3/4 – inch Asphalt Top Course
	1 - inch Asphalt Binder Course
	14 – inch Concrete
Total :	15-3/4 - inches

...r ranch, .575, 1126 ...no pets, 523-0050

FALLS: 78th & ...lbergh, Rent to ...1. No closing costs. ...ner financing. 3-4 2 full baths, finish-...bsmt, great family ...hborhood. Garage. ...il. today! Must have ...rox. $4-$5000 down. ...ase call 743-5166

...LLE Area, former ...l rms perm. $335 mo ...able TV 297-7628

...FALLS 1 bay $45, ...y $75, 6 to 1 yr lease ...aper, 998-0683

Of Niag. Sm ware-...e/bay, OH door, wa-...estrm, newer bldg. ...be used for sm busi-...$550 mo. 297-4644.

Of Niag. Warehouse ...age / bays, 1125 S.F. ...ver bldg. Can be ...d for small business. ...0 month. 297-4644.

...an ... the Gov... ...plaint within 20 days after ...eir verified statement of interest.

...TED: Buffalo, NY, April 26, 2006

TERRANCE P. FLYNN
United States Attorney

BY: Richard D. Kaufman
Assistant United States Attorney, WDNY
138 Delaware Avenue
Buffalo, NY 14202

#N07505586 May 9, 16, 23, 2006

...ct ...ime ...ted to the Cle... (25) qualified vo... who voted in the pr... and must state the na... School Board will not e... ers any proposition the pu... the voters to determine or a... specific appropriation where the ... by the proposition.

...within the powers ... ...nich fails to include a ...e of monies is required

Joseph L. Tette, District Clerk
Wilson Central School District
Towns of Wilson, Cambria, Newfane, and Porter, County of Niagara, New York

Dated: 3/21/06

#NL07505287 April 5,18, May 9, 2006

BASE REALIGNMENT AND CLOSURE NOTIFICATION OF SURPLUS PROPERTY

The following listed property is surplus to the needs of the United States based upon the approved recommendations of the Base Closure and Realignment Commission and completion of screening with Federal and Department of Defense components. Surplus property may be available for conveyance to State and local governments and other eligible entities for public benefit purposes. . Notices of interest from representatives of the homeless shall include the information required by 32 CFR Part 176.20(c)(2)(ii). Notices of interest must be submitted to the Army point of contact listed below within 90 days from the date of this notice. Notices of interest received by the Army will be forwarded to the Local Redevelopment Authority listed below. The point of contact for the Army is:

Commander 77th Regional Readiness Command
ATTN: Base Transition Coordinator
Building 200, Fort Totten
Flushing, NY 11359-1016
Telephone: 718-352-8717

FACILITY TITLE	ADDRESS	CITY	ACRES	SQ FT.	# BLDGS	YR BUILT
NIAGARA FALLS USARC/AMSA 76	9400 PORTER ROAD	NIAGARA FALLS	21.87	179565	14	1964

The entity responsible for preparing the redevelopment plans for the property made surplus by the realignment and closure is:

Town of Niagara Local Redevelopment Authority
7105 Lockport Road
Town of Niagara, NY 14304
Telephone: 716-297-2150 ext. 136

#N07505576 Publish Date: May 9, 2006

...reques...

PHILLIP... Attorneys ... Ronald S. ... Office and ... 3400 HSBC ... Buffalo, N... Telephone ...

PARCEL ... ALL THA... situate in ... Niagara ... of Lot Nu... (13), Ran... Company ... tial Unit ... carora Ro... um II, a r... dominium ... created pu... York Real ... ed May 19, ... Deeds at p... Clerk's Offic... may have b... mented from ... the "Condom... with the und... elements (as ... Condominium ... the Unit of 1... nances to the ... ty"). The Unit ... tled "Plans of ... Robert J. Run... and filed in s... 1998 under Spe... red to in the Co...

#N07505527

BASE REALIGNMENT AND CLOSURE
NOTIFICATION OF SURPLUS PROPERTY

The following listed property is surplus to the needs of the United States based upon the approved recommendations of the Base Closure and Realignment Commission and completion of screening with Federal and Department of Defense components. Surplus property may be available for conveyance to State and local governments and other eligible entities for public benefit purposes. . Notices of interest from representatives of the homeless shall include the information required by 32 CFR Part 176.20(c)(2)(ii). Notices of interest must be submitted to the Army point of contact listed below within 90 days from the date of this notice. Notices of interest received by the Army will be forwarded to the Local Redevelopment Authority listed below. The point of contact for the Army is:

Commander 77th Regional Readiness Command
ATTN: Base Transition Coordinator
Building 200, Fort Totten
Flushing, NY 11359-1016
Telephone: 718-352-6717

FACILITY TITLE	ADDRESS	CITY	ACRES	SQ FT.	# BLDGS	YR BUILT
NIAGARA FALLS USARC/AMSA 76	9400 PORTER ROAD	NIAGARA FALLS	21.87	179565	14	1964

The entity responsible for preparing the redevelopment plans for the property made surplus by the realignment and closure is:

Town of Niagara Local Redevelopment Authority
7105 Lockport Road
Town of Niagara, NY 14304
Telephone: 716-297-2150 ext. 136

#N07505576

Publish Date: May 9, 2006

NF Gazette

UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF MANAGEMENT

NOTICE OF POTENTIAL AVAILABILITY OF SURPLUS FEDERAL PROPERTY FOR EDUCATIONAL UTILIZATION

NIAGARA FALLS U.S. ARMY RESERVE CENTER / AREA MAINTENANCE SUPPORT ACTIVITY #76
NIAGARA FALLS, NEW YORK
August 8, 2006

Please be advised that the Niagara Falls U.S. Army Reserve Center / Area Maintenance Support Activity #76 located in Niagara Falls, New York has been determined surplus to the needs of the federal government under authority of the Defense Base Realignment and Closure Act of 1990 (BRAC) and may be available for acquisition by eligible education organizations at substantial Public Benefit Allowance discount.

The Niagara Falls U.S. Army Reserve Center / Area Maintenance Support Activity #76 is located at 9400 Porter Road in Niagara Falls, New York. Other specific property information may be obtained by contacting Mr. Steven Richards with the Town of Niagara at (716) 297-2150, extension 136, or by mail to 7105 Lockport Road, Town of Niagara, NY 14304.

The U.S. Department of Education has authority under the Federal Property and Administrative Services Act of 1949, as amended, to award surplus federal real estate to education institutions as grants-in-aid at Public Benefit Allowance discounts ranging from 40 to 100 percent off the current fair market value of property in return for an organization's contractual commitment to utilize the land and buildings for approved education programs. Potential educational uses include construction of schools, college and university facilities; school administrative and support facilities such as bus garages and school board headquarters; vocational and adult education facilities; public libraries; and similar educational uses. A brochure describing the Federal Real Property Assistance Program in more detail is enclosed with this notice.

If your organization has an interest in acquiring the Niagara Falls U.S. Army Reserve Center / Area Maintenance Support Activity #76, please advise Ms. Mary Hughes in writing no later than **September 1, 2006**. You may also provide your expression of interest via fax at (202) 401-0828 or e-mail at Mary.Hughes@ed.gov. She would be pleased to furnish you appropriate application materials and further guidance upon receipt of your expression of interest.

Since the Niagara Falls U.S. Army Reserve Center / Area Maintenance Support Activity #76 is being disposed of under BRAC regulations, the U.S. Department of Education intends to give strongest consideration to proposals that are supported by Local Redevelopment Authorities (LRAs). Appropriate arrangements should be made to also coordinate your plans with the LRA but please recognize the final decisions on applications to acquire property for educational purposes under Public Benefit Conveyance authorities and the amount of Public Benefit discount that applications qualify for, are reserved under federal law to the U.S. Department of Education.

If you have any questions, please feel free to call Ms. Hughes at (202) 401-3587 or contact her via e-mail.

Barbara Shawyer
Barbara L. Shawyer
Federal Real Property Assistance Program

Enclosure
cc: Town of Niagara Local Redevelopment Authority w/o enclosure

400 MARYLAND AVE., S.W., W
www.

Our mission is to ensure equal access to education and t

Post-it® Fax Note 7671	Date 9/11/06	# of pages ▶ 1
To Steve Richards	From Mary Hughes	
Co./Dept. Town Supervisor	Co. U.S. Dept. of Education	

TOTAL P.01

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, DC 20410-7000

OFFICE OF COMMUNITY PLANNING
AND DEVELOPMENT

APR -1 2009

Mr. Daniel S. Bristol
Executive Director
Town of Niagara Local Redevelopment Authority
7150 Lockport Road
Niagara Falls, NY 14305

Dear Mr. Bristol:

I am pleased to inform you of the Department of Housing and Urban Development's final determination that the *Redevelopment Plan and Homeless Assistance Submission for the U.S. Army Reserve Center/Area Maintenance Facility # 76* (the Plan) dated March 3, 2008, with supplemental information dated November 14, 2008 and February 13, 2009, complies with the requirements of the Base Closure Community Redevelopment and Homeless Assistance Act of 1994, 10 USC § 2687 note, as amended, and its implementing regulations found at 24 CFR Part 586. The Town of Niagara may move forward with implementing the reuse plan by pursuing a mix of light industrial use for the property with an emphasis on aviation and aerospace activities. The basis for HUD's determination is discussed below.

HUD has determined that the Plan appropriately balances the needs of the Town of Niagara for economic redevelopment and other development with the needs of the homeless in the community. The basis for this determination is the fact that despite the LRA having carried out the required outreach to the representatives of the homeless, no notices of interest to obtain base property for use to assist the homeless were submitted. HUD's review of base closure plans is subject to the expressed interest and requests of representatives of the homeless. Where representatives of the homeless do not express interest in obtaining base property, even for free, and where HUD is satisfied that the local redevelopment authority's outreach to the representatives of the homeless was conducted in the manner dictated by the Act and regulations, HUD will conclude that a base reuse plan balances in the appropriate manner the needs of the community for economic and other redevelopment with the needs of the homeless in the community.

Congratulations on your success in effectively carrying out the military base reuse planning process. I wish you continued success in implementing the Niagara Falls U.S. Army Reserve Center/Area Maintenance Center # 76 Redevelopment Plan. HUD stands ready to assist you in your efforts. If the Department can provide any further service please contact Ms. Nancy Peacock, Community Planning and Development Director, in HUD's Buffalo Field Office, located at 465 Main Street, 5th Floor, Buffalo, New York 14203. Ms. Peacock may be reached at (716) 551-5755, ext. 5800.

Sincerely,

Mark Johnston
Deputy Assistant Secretary
for Special Needs

cc:
Mr. Joseph R. Calcara, DASA (I&H)
Mr. Patrick O'Brien, OEA

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY
MISSION STATEMENT

As of March 9, 2011

I. BACKGROUND:

Pursuant to Chapter 506 of the Laws of 2009, known as the Public Authorities Reform Act of 2009 ("PARA"), which added a new Section 2824-a in Public Authorities Law ("PAL") of the State of New York (the "State"), state and local public authorities are required to develop and adopt a mission statement and related performance measures to assist the authority to determine how well it is carrying out its mission. For local authorities, as defined within PAL Section 2, this Mission Statement and the related Performance Measures are to be filed with the New York State Authority Budget Office ("ABO") by March 31, 2011.

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY (hereinafter called the "Agency") is established as a public benefit corporation of the State for the benefit of the Town of Niagara (the "Town") pursuant to Title 1 of Article 18-A of the General Municipal Law ("GML") of the State, as amended, and Chapter 632 of the Laws of 1972 of the State as codified under GML Section 926-o, (hereinafter collectively called the "Act") and constitutes a "Local Authority" as defined by PAL Section 2 and therefore is subject to the transparency, compliance and reporting requirements established pursuant to PARA and the Public Authorities Accountability Act of 2005 ("PAAA").

Pursuant to the Act, the purposes of the Agency shall be to promote, develop, encourage and assist in the acquiring, constructing, reconstructing, improving, maintaining, equipping and furnishing, industrial, manufacturing, warehousing, commercial, research and recreation facilities including certain defined facilities, and thereby advance the job opportunities, health, general prosperity and economic welfare of the people of the State and to improve their recreation opportunities, prosperity and standard of living. In furtherance of these purposes, the Agency is vested with powers as contained within the Act.

The Members of the Agency are appointed by the Governing Body of the Town. Pursuant to and in accordance with the Act, the Agency has adopted By-laws governing the actions and activities of the Members of the Agency, along with agency officers and employees. In accordance with the Act, PAAA and PARA, the Agency has further adopted and complies with the following corporate policies (collectively, the "Agency Policies"):

(a) Agency Compensation, Reimbursement and Attendance Policy;
(b) Agency Code of Ethics;
(c) Agency Whistleblower Policy;
(d) Agency Investment Policy;
(e) Agency Travel Policy;
(f) Agency Procurement Policy; and
(g) Agency Defense and Indemnification Policy.
(h) Property Disposition Guidelines;
(i) Audit/Finance Committee Charter;
(j) Governance Committee Charter; and
(k) Uniform Tax Exemption Policy.

In addition, as a public benefit corporation of the State, the Agency is subject to and complies with applicable provisions of the Public Officers Law, including the Open Meetings Law ("OML") and Freedom of Information Law ("FOIL"), along with the State Environmental Quality Review Act ("SEQRA").

II. CORPORATION MISSION STATEMENT

The Agency was established pursuant to the Act with purposes and powers and the Agency's Mission includes undertaking projects and programmatic initiatives in furtherance of and to advance the job opportunities, health, general prosperity and economic welfare of the people of the Town and to improve their recreation opportunities, prosperity and standard of living. In furtherance of the purposes and powers vested in the Agency pursuant to the Act, the Agency shall undertake projects, programs and initiatives to achieve the purposes as set forth within the Act. In addition, and in doing so, the Agency shall adhere to its adopted policies and applicable statutory requirements, including PAAA, PARA, OML, FOIL, and SEQRA. Further, and in accordance with GML Section 926-o, the Agency shall take into consideration the local zoning and planning regulations as well as the regional and local comprehensive land use plans.

The Agency's goals include continued compliance with current obligations and responsibilities associated with ongoing projects and programs, in addition to identifying new projects and programs that will achieve the Agency's purposes and Mission. In furtherance of these stated goals, the Agency will endeavor to comply with all applicable provisions of the Act, PAAA and PARA. With these stated goals established, the Agency's values are to maintain the highest ethical standards applicable to public officials and public benefit corporations.

III. ANNUAL PERFORMANCE REVIEW MEASURES

The Agency shall annually review this Mission Statement and identify whether the Agency (i) continues to meet its stated mission, goals and values; (ii) can quantify measures of improvement to better meet its stated mission, goals and values; (iii) can become more effective and efficient; and (iv) is meeting the interests of the Agency and the Town.

In furtherance of the foregoing Performance Measures, the Agency shall further undertake the following annual measures:

1) Assure that all current Agency Members have acknowledged that they have read and understood the mission of the Agency;
2) An annual review and affirmation of the Agency's membership, board, committee and management structure;
3) An annual review and affirmation of its policies, along with Agency appointment of Management of the Agency, along with articulation of the respective roles, goals and expectations of each.

CERTIFICATE OF ESTABLISHMENT

Pursuant to the authority vested in it by Article 18-A, §926-o of the General Municipal Law of the State of New York, the Town of Niagara Industrial Development Agency (the "Agency"), is hereby established for the accomplishment of any or all of the purposes specified in title one of article eighteen-A of this chapter. It shall constitute a body corporate and politic, and be perpetual in duration. It shall have the powers and duties now or hereafter conferred by title one of article eighteen-A of this chapter upon industrial development agencies; provided that the exercise of the powers by such agency with respect to the acquisition of real property whether by purchase, condemnation or otherwise, shall be limited to the corporate limits of the Town of Niagara and such agency shall take into consideration the local zoning and planning regulations as well as the regional and local comprehensive land use plans. It shall be organized in a manner prescribed by and be subject to the provisions of title one of article eighteen-A of this chapter. Its members shall be appointed by the governing body of the Town of Niagara. The agency, its members, officers and employees and its operations and activities shall in all respects be governed by the provisions of title one of article eighteen-A of this chapter.

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY, ANNUAL REPORT

The Town of Niagara Industrial Development Agency (the "Agency") is a not-for-profit, public benefit corporation authorized under the laws of New York State and the New York State Industrial Development Agency Act and is a component unit of the Town of Niagara, New York. The Agency was established to promote, develop, encourage and assist in the acquisition, construction, reconstruction, importing, maintaining, equipping and furnishing of industrial, manufacturing, warehousing, commercial and research facilities; thereby advancing job opportunities, general prosperity and economic welfare of the people of New York State generally, and the Town of Niagara and surrounding area specifically. The Agency generally realizes administrative fees of one percent of the total project cost to fund its operation.

Overall Financial Position and Results of Operations

The overall financial position of the Agency remains strong with net assets increasing by $17,578 during the year ended December 31, 2010 (as compared to a $10,703 decrease in 2009 due to no program income), a result of three project closings and related program/project fee income of $29,500, interest earnings of $372 and normal operating expenses of $12,294 (as compared to $12,320 in expenses for 2009).

Three projects closed during 2010 as compared to none during 2009. As of December 31, 2010, there is one approved and pending project with no scheduled closing date and is not reflected in the financial statements. The Agency is virtually debt-free with only $100 of unpaid principal, having paid off $16,860 of accrued interest on the note payable to the Town of Niagara. Total net assets as of December 31, 2010 were $193,018.

Operations During the Year

As mentioned previously the Agency closed on three projects during the year with total estimated costs of $4,285,782 and the projected creation of 292 non construction jobs. All of the projects are self financed with no bonds issued by the Agency and are on lease/sale back agreements with scheduled PILOT payments. One project application is pending and may be closed on during 2011 with estimated project costs of $122,500,000 to be self financed and the retention of 1,700 full time and 1,500 part time retail jobs and possible creation of twenty five additional full time jobs (all non construction). Total number of jobs retained by IDA projects was 1,886 with creation of 318 jobs for 2010.

The Agency is in compliance with significantly all aspects of the Public Authority Accountability Act of 2005. The Agency works closely with Town Officials in attracting and assisting potential development projects.

Revenues vary from year to year based on project requests and size; expenditures for the Agency are minimal as a voluntary Board and Officers serve it, consisting primarily of Directors/Officers liability insurance, legal and professional, meeting expenses and supplies. The Board closely monitors financial condition and operations of the Agency, receiving regular financial reports from the Treasurer.

Significant Future Conditions and Outlook

The Agency continues to be an asset to the Town of Niagara, promoting economic development, creating and retaining jobs in the Town. With the exception of on, all projects seeking Agency assistance have been successfully closed on and are in operation. Annual operating budgets are adopted by the Agency, with 2011's operating budget resulting in a decrease in net assets of $17,500 as a result of budgeting no program/project revenue and very healthy cash reserves. The Agency's cash reserves and net asset position will provide adequate funding for future operating budgets without any new projects and program revenue.

BY-LAWS
OF THE
TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY

ADOPTED APRIL 17, 1984
(Amended July 19, 2007)
(Amended September 25, 2008)
(Amended March 9, 2011)

ARTICLE I

THE AGENCY

Section 1. Name. The name of the Agency shall be the "Town of Niagara Industrial Development Agency."

Section 2. Seal of Agency. The seal of the Agency shall be in the form of a circle and shall bear the name of the Agency and the year of its organization.

Section 3. Office of Agency. The office of the Agency shall be located at Town Hall in the Town of Niagara, New York, but the Agency may have other offices at such other places as the Agency may from time to time designate by resolution.

ARTICLE II

BOARD MEMBERS OF THE AGENCY

Section 1. Board Members of the Agency. The Agency shall consist of not less than three nor more than seven members.

Section 2. Chair. The Chair shall preside at all meetings of the Agency. Except as otherwise authorized by resolution of the Agency, the Chair shall execute all agreements, contracts, deeds, and any other instruments of the Agency. At each meeting the Chair shall submit such recommendations and information as he may consider proper concerning the business, affairs and policies of the Agency.

Section 3. Vice Chair. The Vice Chair shall perform the duties of the Chair in the absence or incapacity of the Chair, and in case of the resignation or death of the Chair, the Vice Chair shall perform such duties as are imposed on the Chair until such time as the Agency shall appoint a new Chair.

ARTICLE III

COMMITTEES

Section 1. Committees of the Corporation. The Board, by resolution adopted by a majority of the entire Board, may create Committees of the Corporation, which shall have only the powers specifically delegated to them and shall in no case have powers which are not authorized for Standing Committees. The members of Committees of the Corporation shall be appointed by the Chair, subject to the approval of the Board. Each Committee of the Corporation shall include at least one director.

Section 2. Meetings. Meetings of committees shall be held at such times and places as shall be fixed by the respective committee chairpersons, or by vote of a majority of all of the members of the committee. Written notice shall be mailed or delivered, via facsimile or e-mail, to all members of the Board of Directors and to members of the Committees not less than ten days before each meeting. Written minutes of the proceedings shall be kept at all committee meetings and shall be submitted at the next meeting of the Board and to all members of the Board of Directors. The Chair or Vice Chair or their designee(s), may attend all committee meetings.

Section 3. Special Meetings. Special meetings of committees may be called for any purpose on two (2) business days notice by any two members of the committee if requested in writing to all members of the Board of Directors and to members of the committees. Written notice of a special meeting shall be mailed or delivered, via facsimile or e-mail, not less than two business days before a special meeting. Written minutes of the proceedings shall be kept at all special committee meetings and shall be submitted at the next meeting of the Board and to all members of the Board of Directors. The Chair, Vice Chair, or their designee(s), may attend all special committee meetings.

Section 4. Quorum. Unless otherwise provided by resolution of the Board of Directors, a majority of all of the members of a committee shall constitute a quorum for the transaction of business.

ARTICLE IV

OFFICERS

Section 1. Officers. The officers of the Agency shall be the Chairman, who shall act as the Chief Executive Officer ("CEO"), a Secretary, a Treasurer, and a Chief Financial Officer. Any two or more offices, except the offices of the Chairman and Secretary, may be held by the same person.

Section 2. Chief Executive Officer. The CEO may be a member of the Board. The CEO shall have general supervision over the administration of the business and affairs of the Agency, subject to the direction of the Board. The CEO shall be charged with the management of all projects of the Agency.

Section 3. Secretary. The Secretary may be a member of the Board. The Secretary shall keep the records of the Agency, shall act as a secretary of the Agency and record all votes, and shall keep a record of the proceedings of the Agency in a journal of proceedings to be kept for such purpose, and shall perform all duties incident to this office. The Secretary shall keep in safe custody the seal of the Agency and shall have power to affix such seal to all contracts and other instruments authorized to be executed by the Agency.

Section 3. Treasurer. The Treasurer shall not be a member of the Board. The Treasurer shall have the care and custody of all funds of the Agency and shall deposit the same in the name of the Agency in such bank or banks as the Agency may select. The Treasurer shall sign all instruments of indebtedness, all orders, and all checks for the payment of money; and shall pay out and disburse such monies under the direction of the Agency. Except as otherwise authorized by resolution of the Agency, all such instruments of indebtedness, orders and checks shall be countersigned by the Chair. The Treasurer shall keep regular books of accounts showing receipts and expenditures, and shall render to the Agency at each regular meeting an account of his transactions and also of the financial condition of the Agency. The Treasurer shall give such bond for the faithful performance of his duties as the agency may determine.

Section 4. Additional Duties. The officers of the Agency shall perform such other duties and functions as may from time to time be required by the Agency, by the by-laws of the Agency or by the rules and regulations of the Agency.

Section 5. Appointment of Officers. All officers of the Agency shall be appointed at the annual meeting of the Agency, and shall hold office for one year or until the successors are appointed.

Section 6. Vacancies. Should any office become vacant, the Agency shall appoint a successor at the next regular meeting, and such appointment shall be for the unexpired term of said office.

ARTICLE V

ADDITIONAL PERSONNEL

Section 1. Additional Personnel. The Agency may from time to time employ such personnel as it deems necessary to exercise its powers, duties and functions as prescribed by the New York State Industrial Development Agency Act, as amended, and all other laws of the State of New York applicable thereto. The selection and compensation of all personnel shall be determined by the Agency subject to the laws of the State of New York.

ARTICLE VI

MEETINGS

Section 1. Annual Meeting. The annual meeting of the Agency shall be held in the month of March or when practicable.

Section 2. Regular Meetings. Regular meetings of the Agency may be held at such times and places as from time to time may be determined by Resolution of the Agency.

Section 3. Special Meetings. The Chair of the Agency may, when deemed desirable, and shall, upon the written request of two members of the Agency, call a special meeting of the Agency for the purpose of transacting any business designated in the call. The call for a special meeting may be delivered to each member of the Agency or may be mailed to the business or home address of each member of the Agency at least two days prior to the date of such special meeting. Waivers of notice may be signed by any members failing to receive a proper notice. At such special meeting no business shall be considered other than as designated in the call, but if all the members of the agency are present at a special meeting, with or without notice thereof, any and all business may be transacted at such special meeting.

Section 4. Quorum. At all meetings of the Agency, a majority of the members of the Agency shall constitute a quorum for the purpose of transacting business; provided that a small number may meet and adjourn to some other time or until the quorum is obtained.

Section 5. Order of Business. At the regular meeting of the Agency, the following shall be the order of business:

1. Roll Call
2. Reading and approval of the minutes of the previous meeting
3. Bills and communications
4. Report of Treasurer
5. Report of Committees
6. Unfinished Business
7. New Business
8. Adjournment

All resolutions shall be in writing and shall be copied in or attached to a journal of the proceedings of the Agency.

Section 6. Manner of Voting. The voting of all questions coming before the Agency shall be by roll call, and the yeas and nays shall be entered on the minutes of such meeting, except in the case of appointments when the vote may be by ballot.

ARTICLE VII

AMENDMENTS

Section 1. Amendments to By-laws. The by-laws of the Agency shall be amended only with the approval of at least a majority of all of the members of the Agency at a regular or a special meeting, but no such amendment shall be adopted unless at least seven days written notice thereof has been previously given to all members of the Agency.

TOWN OF NIAGARA
INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT UNIT OF THE
TOWN OF NIAGARA

Financial Statements
For the Years Ended
December 31, 2010 and 2009
with
Independent Auditors' Report

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT UNIT OF THE TOWN OF NIAGARA

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TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY, A COMPONENT UNIT OF THE TOWN OF NIAGARA

Management's Discussion and Analysis

The Town of Niagara Industrial Development Agency (the "Agency") is a not-for-profit, public benefit corporation authorized under the laws of New York State and the New York State Industrial Development Agency Act and is a component unit of the Town of Niagara, New York. The Agency was established to promote, develop, encourage and assist in the acquisition, construction, reconstruction, importing, maintaining, equipping and furnishing of industrial, manufacturing, warehousing, commercial and research facilities; thereby advancing job opportunities, general prosperity and economic welfare of the people of New York State generally, and the Town of Niagara and surrounding area specifically. The Agency generally realizes administrative fees of one percent of the total project cost to fund its operation.

Basic Financial Statements Descriptions

The following financial statements present the entire financial position of the Agency as of and for the years ending December 31, 2010 and 2009:

Balance Sheets - Reports all the assets, liabilities (claims against those assets) and equity (net assets) of the Agency. Changes in net assets may serve as a useful indicator of the Agency's financial position.

Statements of Revenues, Expenses and Changes in Net Assets - Reports all of the Agency's revenue, expenses and the net effect of operations on equity. Revenue and expenses are recorded on an accrual basis; that is, they are recorded regardless of whether cash is received or disbursed during the year.

Statements of Cash Flows - Reports beginning cash balances, sources and uses of cash and ending cash balances. For purposes of this statement, cash includes checking and money market accounts and certificates of deposits with maturity of nine (9) months or less.

Auditors' Reports and Notes to the Financial Statements - Independent auditors' opinions of our financial statements, internal control over financial operations and supporting schedules and notes to the above financial statements.

Condensed Financial Statements

	2010	2009
Current and other assets	$ 193,118	$ 192,400
Note payable and accrued interest	$ 100	$ 16,960
Beginning net assets – unrestricted	$ 175,440	$ 186,143
Add: Revenues	29,872	1,617
Less: General government expenses	(12,294)	(12,320)
Ending net assets – unrestricted	$ 193,018	$ 175,440

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY, A COMPONENT UNIT OF THE TOWN OF NIAGARA

Overall Financial Position and Results of Operations

The overall financial position of the Agency remains strong with net assets increasing by $17,578 during the year ended December 31, 2010 (as compared to a $10,703 decrease in 2009 due to no program income), a result of three project closings and related program/project fee income of $29,500, interest earnings of $372 and normal operating expenses of $12,294 (as compared to $12,320 in expenses for 2009).

Three projects closed during 2010 as compared to none during 2009. As of December 31, 2010, there is one approved and pending project with no scheduled closing date which is not reflected in the financial statements. The Agency is virtually debt-free with only $100 of unpaid principal, having paid off $16,860 of accrued interest on the note payable to the Town of Niagara. Total net assets as of December 31, 2010 were $193,018.

Operations During the Year

As mentioned previously, the Agency closed on three projects during the year with total estimated costs of $4,285,782 and the projected creation of 159 non-construction jobs. All of the projects are self financed with no bonds issued by the Agency and are on lease/sale back agreements with scheduled PILOT payments. One project application is pending and may be closed on during 2011 with estimated project costs of $122,500,000 to be self financed and the retention of 1,700 full time and 1,500 part time retail jobs and possible creation of twenty five additional full time jobs (all non-construction).

The Agency is in compliance with significantly all aspects of the Public Authority Accountability Act of 2005. The Agency works closely with Town Officials in attracting and assisting potential development projects.

Revenues vary from year to year based on project requests and size; expenditures for the Agency are minimal as a voluntary Board and Officers serve it, consisting primarily of Directors/Officers liability insurance, legal and professional, meeting expenses and supplies. The Board closely monitors financial condition and operations of the Agency, receiving regular financial reports from the Treasurer.

Significant Future Conditions and Outlook

The Agency continues to be an asset to the Town of Niagara, promoting economic development, creating and retaining jobs in the Town. With the exception of one, all projects seeking Agency assistance have been successfully closed on and are in operation. Annual operating budgets are adopted by the Agency, with 2011's operating budget resulting in a decrease in net assets of $17,500 as a result of budgeting no program/project revenue and very healthy cash reserves. The Agency's cash reserves and net asset position will provide adequate funding for future operating budgets without any new projects and program revenue.

Chiampou Travis
Besaw & Kershner LLP
CERTIFIED PUBLIC ACCOUNTANTS & CONSULTANTS

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45 Bryant Woods North | Amherst | New York 14228 | Phone 716 630 2400 Fax 716 630 2401 | chiampou.com

INDEPENDENT AUDITORS' REPORT

To the Board of Directors of
Town of Niagara Industrial Development Agency,
a Component Unit of the Town of Niagara
Town of Niagara, New York

We have audited the accompanying financial statements of the business-type activities of the Town of Niagara Industrial Development Agency, a Component Unit of the Town of Niagara (the Agency), as of December 31, 2010 and 2009, and for the years then ended, which collectively comprise the Agency's basic financial statements as listed in the table of contents. These financial statements are the responsibility of the Agency's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards,* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of The Town of Niagara Industrial Development Agency, a Component Unit of the Town of Niagara, as of December 31, 2010 and 2009, and the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

In accordance with *Government Auditing Standards*, we have also issued our report dated March 18, 2011 on our consideration of the Town of Niagara Industrial Development Agency's, a Component Unit of the Town of Niagara, internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and on compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* and should be considered in assessing the results of our audit.

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis information on pages 1 and 2 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Our audit was conducted for the purpose of forming opinions on the basic 2010 financial statements that collectively comprise the Agency's financial statements as a whole. The accompanying supplemental schedules on pages 12 to 20 are presented for purposes of additional analysis and are not a required part of the basic 2010 financial statements. The financial statements are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic 2010 financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic 2010 financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic 2010 financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the basic 2010 financial statements as a whole.

Chafan Travis Besau & Kaufman LLP

March 18, 2011

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT UNIT OF THE TOWN OF NIAGARA

BALANCE SHEETS
DECEMBER 31, 2010 AND 2009

	2010	2009
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 189,618	$ 192,400
Accounts receivable	3,500	-
	$ 193,118	$ 192,400
LIABILITIES AND NET ASSETS		
LONG-TERM DEBT	$ 100	$ 16,960
UNRESTRICTED NET ASSETS	193,018	175,440
	$ 193,118	$ 192,400

See notes to financial statements.

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT UNIT OF THE TOWN OF NIAGARA

STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS
FOR THE YEARS ENDED DECEMBER 31, 2010 AND 2009

	2010	2009
OPERATING REVENUES:		
Fees	$ 29,500	$ -
OPERATING EXPENSES:		
Contractual expenses	12,294	12,320
OPERATING INCOME (LOSS)	17,206	(12,320)
NON-OPERATING REVENUES	372	1,617
NET INCOME (LOSS)	17,578	(10,703)
UNRESTRICTED NET ASSETS, BEGINNING OF YEAR	175,440	186,143
UNRESTRICTED NET ASSETS, END OF YEAR	$ 193,018	$ 175,440

See notes to financial statements.

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT UNIT OF THE TOWN OF NIAGARA

STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2010 AND 2009

	2010	2009
CASH FLOWS FROM OPERATING ACTIVITIES:		
Cash collected from loan fees	$ 26,000	$ 12,035
Cash payments for contractual expenses	(12,294)	(13,812)
Net cash provided by (used in) operating activities	13,706	(1,777)
CASH FLOWS PROVIDED BY INVESTING ACTIVITIES:		
Interest income	372	1,617
CASH FLOWS USED BY FINANCING ACTIVITIES:		
Payment of long-term debt	(16,860)	(24,900)
NET CHANGE IN CASH AND CASH EQUIVALENTS	(2,782)	(25,060)
CASH AND CASH EQUIVALENTS:		
Beginning of year	192,400	217,460
End of year	$ 189,618	$ 192,400
Reconciliation of net income (loss) to net cash provided by (used in) operating activities:		
Net income (loss)	$ 17,578	$ (10,703)
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:		
Non-operating income	(372)	(1,617)
Changes in assets and liabilities affecting operating cash flows:		
Accounts receivable	(3,500)	12,035
Accounts payable	-	(1,492)
Net cash provided by (used in) operating activities	$ 13,706	$ (1,777)

See notes to financial statements.

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT UNIT OF THE TOWN OF NIAGARA

NOTES TO FINANCIAL STATEMENTS
FOR THE YEARS ENDED DECEMBER 31, 2010 AND 2009

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Organization – The Town of Niagara Industrial Development Agency (the "Agency") is a nonprofit, public benefit corporation authorized under the laws of the State of New York, and, in particular, the New York State Industrial Development Agency Act, constituting Title I of Article 18-A of the General Municipal Law, Chapter 24 of the Consolidated Laws of New York, as amended, and Chapter 569 of the 1962 Laws of New York (collectively, the "Act"), to promote, develop, encourage and assist in the acquiring, constructing, reconstruction, importing, maintaining, equipping and furnishing of industrial, manufacturing, warehousing, commercial and research facilities and thereby advance the job opportunities, general prosperity and economic welfare of the people of the State of New York and to improve their prosperity and standard of living.

The Agency is empowered to issue Industrial Revenue Bonds for the purpose of constructing, acquiring, equipping and furnishing industrial manufacturing, warehousing and certain commercial and research facilities. To accomplish the purposes of the Act, the Agency may acquire property and enter into lease agreements, mortgage agreements and pledge agreements.

Financial Reporting Entity – The Agency is a component unit of the Town of Niagara and is governed by a Board of Directors appointed by the Town Board. The financial statements of the Agency have been prepared in conformity with accounting principles generally accepted in the United States of America and consist of one overall fund, an enterprise fund.

The Agency applies all *Government Accounting Standards Board* (GASB) pronouncements, as well as the Financial Accounting Standards Board pronouncements issued on or before November 30, 1989, unless these pronouncements conflict with or contradict GASB pronouncements.

Basis of Accounting – The accounts of the Agency are maintained on the accrual basis of accounting.

Cash and Cash Equivalents – For purposes of the statement of cash flows, the Agency considers all temporary cash investments with a maturity of nine (9) months or less to be cash equivalents. Cash equivalents consist of money market accounts.

Collateral is required for demand deposits and certificates of deposit at 100% of the amount of all deposits not covered by federal deposit insurance. Obligations that may be pledged as collateral are obligations of the United States and its agencies and obligations of New York State and its municipalities. At December 31, 2010 and 2009, the Agency did not maintain any uninsured balances.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Use of Estimates – The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect certain amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

2. LOAN PAYABLE, TOWN OF NIAGARA

On January 18, 2000, the Town of Niagara loaned the Agency $50,000 with interest at 4% per annum for an initial term of one year. Under terms of the loan agreement, the loan may be repaid in whole or in part at any time. This loan agreement is renewed annually under the same terms and conditions. Activity for the year ended December 31 is as follows:

Balance 1/1/09	Payments	Balance 12/31/09	Payments	Balance 12/31/10
$ 41,860	$ (24,900)	$ 16,960	$ (16,860)	$ 100

3. INDUSTRIAL REVENUE BOND NOTE AND LEASE TRANSACTIONS

Certain industrial development revenue bond notes and lease transactions entered into by the Agency are secured by property that is leased to companies and is retired by lease payments. The resulting debt is not an obligation of the Agency or the State of New York. The Agency does not record the assets or liabilities resulting from completed transactions in its accounts since its primary function is to arrange financing between the borrowing companies and the bond and note holders. Funds arising therefrom are controlled by trustees or banks acting as fiscal agents. For providing this service, the Agency receives administration fees from the borrowing companies. Administrative fee income is recognized immediately upon issuance of related bonds and amounted to $29,500 for the year ended December 31, 2010. There was no such administrative fee income recognized during the year ended December 31, 2009.

4. COMMITMENTS AND CONTINGENCIES

Risk of Loss – The Agency is exposed to various risks of loss related to torts, theft of, damage to, and destruction of assets, injuries to employees, errors and omissions, natural disasters, etc. The Agency maintains commercial liability insurance to help mitigate the risk of any potential loss, and management has determined that the insurance coverage is sufficient to cover any potential future losses.

* * * * *

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REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS

To the Board of Directors of
Town of Niagara Industrial Development Agency,
a Component Unit of the Town of Niagara
Town of Niagara, New York

We have audited the financial statements of the Town of Niagara Industrial Development Agency, a Component Unit of the Town of Niagara (the Agency), as of and for the year ended December 31, 2010, and have issued our report thereon dated March 18, 2011. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States.

Internal Control Over Financial Reporting

In planning and performing our audit, we considered the Agency's internal control over financial reporting as a basis for designing our auditing procedures for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Agency's internal control over financial reporting. Accordingly, we do not express an opinion on the effectiveness of the Agency's internal control over financial reporting.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis.

Our consideration of internal control over financial reporting was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over financial reporting that might be deficiencies, significant deficiencies or material weaknesses. We did not identify any deficiencies in internal control over financial reporting that we consider to be material weaknesses, as defined above.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Agency's financial statements are free of material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

This report is intended solely for the information and use of management and the Board of Directors of the Agency, and the Town of Niagara and is not intended to be and should not be used by anyone other than these specified parties.

Chearson Travis Besaw + Kerr LLP

March 18, 2011

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

SCHEDULE OF SUPPLEMENTAL INFORMATION
STATEMENT OF INDEBTEDNESS
DECEMBER 31, 2010

List Separately by Date of Issue	EDP Code	Month and Year	Interest Rate at Issuance	Interest Rate if Variable, applicable range	Outstanding Beginning of Fiscal Year	Issued During Fiscal Year*	Paid During Fiscal Year*	Outstanding End of Fiscal Year
Capital Notes:	2P1865							
Other Debt (specify):								
Bond Anticipation Notes:								
Total Bond Anticipation Notes:	2P1866	-	-	-	-	-	-	-
BANS Redeemed from Bond Proceeds	2P1888	-	-	-	-	-	-	-
Bonds (listed by purpose)	-							
Total Bonds	2P1867	-	-	-	-	-	-	-
Authority Loans Town of Niagara	2P1869	1/2000	4%	-	16,960	-	16,860	100
Total Indebtedness		-	-	-	16,960	-	16,860	100

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

SCHEDULE OF SUPPLEMENTAL INFORMATION
BONDS/NOTES
DECEMBER 31, 2010

	Project Purpose Codes						**Federal Tax Status**	
	1. Services 2. Construction 3. Agriculture, Forestry and Fishing		4. Wholesale Trade 5. Retail Trade 6. Finance, Insurance and Real Estate		7. Transportation, Communication, Electric, Gas, and Sanitary Services 8. Other (specify) 9. Manufacturing		1. Taxable 2. Tax Exempt	
No.	**Project Code**	**Name of Project, Project Owner and Address**	**Project Purpose Code**	**Total Project Amount**	**Benefited Project Amount**	**Bond/Note Amount**	**Federal Tax Status**	**Not for Profit**
1.								
2.				N/A				
3.								
4.								
5.								
6.								
7.								

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

SCHEDULE OF SUPPLEMENTAL INFORMATION
BONDS/NOTES
DECEMBER 31, 2010

	TAX EXEMPTIONS							
	Sales Tax Exemptions		Real Property Tax Exemptions			Mortgage Recording Tax Exemptions	Total Exemptions	Total Exemptions Net of 485-b Exemptions
No.	State	Local	County	Local	School			
1.								
2.								
3.					N/A			
4.								
5.								
6.								
7.								

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

SCHEDULE OF SUPPLEMENTAL INFORMATION
BONDS/NOTES
DECEMBER 31, 2010

PAYMENTS IN LIEU OF TAXES (PILOTS)

* For appropriate Code, indicate 1 or 2:
1 = PILOTS made to all eligible local government participants.
2 = PILOTS made to selected local government participants.

No.	Project Code	County	Local	School	Total PILOTS
1.					
2.			N/A		
3.					
4.					
5.					
6.					
7.					

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

FULL TIME EQUIVALENT (FTE) JOBS CREATED AND RETAINED
BONDS/NOTES
DECEMBER 31, 2010

No.	# of FTE Employees at Project Location Before IDA Status	Original Estimate of Jobs to be Created	Original Estimate of Jobs to be Retained	# of Current FTE Employees	# of FTE Jobs Created During Fiscal Year	# of FTE Jobs Retained During Fiscal Year
1.						
2.						
3.			N/A			
4.						
5.						
6.						
7.						

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

SCHEDULE OF SUPPLEMENTAL INFORMATION
STRAIGHT LEASE
DECEMBER 31, 2010

	Project Purpose Codes							Total Exemptions less total PI
	1. Services 2. Construction 3. Agriculture, Forestry and Fishing		4. Wholesale Trade 5. Retail Trade 6. Finance, Insurance and Real Estate		7. Transportation, Communication, Electric, Gas, and Sanitary Services 8. Other (specify) 9. Manufacturing			
No.	**Project Code**	**Name of Project, Project Owner and Address**	**Project Purpose Code**	**Total Amount of Lease**	**Not for Profit**	**New Tax Revenues If No Exemptions Granted**	**Method of Financial Assistance by Project, Other than Tax Claimed by Project (Identify amount**	
1.	29040301	Yorkville Sound, Inc. 4625 Witmer Ind. Estates Drive Town of Niagara, NY	4	$1		$ 25,365	Private financing IDA PILOT	
2.	29040401	Piatkowski Riteway Meats 3555 Witmer Road Town of Niagara, NY	1/8*	$1		$ 45,093	Private financing IDA PILOT	
3.	29040601	Randazzo 7637 Porter Road Town of Niagara, NY	4	$1		$ 6,765	Private financing IDA PILOT	
4.	29040602	K4A Holdings LLC 4520 Military Road Town of Niagara, NY	1	$1		$ 33,819	Private financing IDA PILOT	
5.	29040603	Greater Niagara Federal Credit Union 2931 Military Road Town of Niagara, NY	6	$1		$ 42,273	Private financing IDA PILOT	
6.	29040701	Fashion Outlets of Niagara 1900 Military Road Town of Niagara, NY	5	$1		$ 1,617,639	Private financing IDA PILOT	
7.	29040801	MRE Holdings, Inc.(Mircom) 4575 Witmer Road Niagara Falls, NY	8 ***	$1		$ 19,728	Private financing IDA PILOT	
8.	29041001	Compass East, LLC 515 Third Street Niagara Falls, NY	1	$1		$ 27,654	Private financing IDA PILOT	
9.	29041002	Ben-Mil Associates, Inc. 2429 Military Road Niagara Falls, NY	7	$1		$ 34,206	Private financing IDA PILOT	
10.	29041003	Niagara Dupont Credit Union 2525 Military Road Niagara Falls, NY	6	$1		$ -	Private financing IDA PILOT	

* Service-Federal Meat Inspectors
*** Warehousing

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

SCHEDULE OF SUPPLEMENTAL INFORMATION
STRAIGHT LEASE
DECEMBER 31, 2010

	TAX EXEMPTIONS							
	Sales Tax Exemptions		Real Property Tax Exemptions					
No.	State	Local	County	Local	School	Mortgage Recording Tax Exemptions	Total Exemptions	Total Exemptions Net of RPTL Exemptions
1.	$ -	$ -	$ 6,077	$ 3,767	$ 15,521	$ -	$ 25,365	$ 2,703
2.	-	-	10,804	6,697	27,592	-	45,093	23,732
3.	-	-	1,621	1,005	4,139	-	6,765	3,201
4.	-	-	8,103	5,022	20,694	-	33,819	17,093
5.	-	-	10,128	6,278	25,867	-	42,273	20,603
6.	16,084	16,084	278,042	172,338	710,091	425,000	1,617,639	732,273
7.	-	-	4,726	2,930	12,072	-	19,728	10,849
8.	11,713	11,713	1,013	628	2,587	-	27,654	23,427
9.	194	194	8,102	5,022	20,694	-	34,206	30,067
10.	-	-	-	-	-	-	-	-

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

SCHEDULE OF SUPPLEMENTAL INFORMATION
STRAIGHT LEASE
DECEMBER 31, 2010

PAYMENTS IN LIEU OF TAXES (PILOTS)

* For appropriate Code, indicate 1 or 2:
1 = PILOTS made to all eligible local government participants.
2 = PILOTS made to selected local government participants.

No.	Project Code	County	Local	School	Total PILOTS	
1.	29040301	$ 4,770	$ 4,700	$ 13,192	$ 22,662	2
2.	29040401	3,991	6,334	11,036	21,361	2
3.	29040601	647	1,128	1,789	3,564	2
4.	29040602	2,943	5,643	8,140	16,726	2
5.	29040603	3,882	7,053	10,735	21,670	2
6.	29040701	187,067	180,946	517,353	885,366	2
7.	29040801	1,334	3,332	4,213	8,879	2
8.	29041001	-	1,640	2,587	4,227	2
9.	29041002	-	-	4,139	4,139	2
10.	29041003	-	-	-	-	2

TOWN OF NIAGARA INDUSTRIAL DEVELOPMENT AGENCY,
A COMPONENT OF THE TOWN OF NIAGARA

FULL TIME EQUIVALENT (FTE) JOBS CREATED AND RETAINED
STRAIGHT LEASE
DECEMBER 31, 2010

No.	# of FTE Employees at Project Location Before IDA Status	Original Estimate of Jobs to be Created	Original Estimate of Jobs to be Retained	# of Current FTE Employees	# of FTE Jobs Created during Fiscal Year	# of FTE Jobs Retained during Fiscal Year
1.	8	5	-	20	-	20
2.	-	3	-	7	1	6
3.	3	1	3	5	1	4
4.	-	12	-	12	-	12
5.	7	-	-	6	1	5
6.	1,589	3,204	1,589	1,860	23	1,837
7.	3	6	3	2	-	2
8.	-	6	-	9	9	-
9.	-	150	-	280	280	-
10.	-	3	-	3	3	-

ECONOMIC DEVELOPMENT CONVEYANCE
Niagara Falls Army Reserve Center

Real Estate Revenues

Lease Rate	Buildings	SF	1	2	3	4	5	6	7	8	9	10
$ 2.00	4H	33,750	$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500
$ 2.00	4N	27,000	$ -	$ -	$ -	$ 54,000	$ 54,000	$ 54,000	$ 54,000	$ 54,000	$ 54,000	$ 54,000
$ 2.00	4S	36,000	$ -	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000
$ 1.50	18	13,670	$ -	$ -	$ 20,505	$ 20,505	$ 20,505	$ 20,505	$ 20,505	$ 20,505	$ 20,505	$ 20,505
$ -	19	1,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	20	2,550	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 2.00	21	13,540	$ -	$ -	$ -	$ 27,080	$ 27,080	$ 27,080	$ 27,080	$ 27,080	$ 27,080	$ 27,080
$ 2.00	22	20,000	$ -	$ -	$ -	$ -	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000
$ -	23	2,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 1.50	24	2,400	$ -	$ -	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600
$ -	25	1,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	26	2,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Building Revenues		$ 67,500	$ 139,500	$ 163,605	$ 244,685	$ 284,685	$ 284,685	$ 284,685	$ 284,685	$ 284,685	$ 284,685

Absorption

	Total SF	156,260								
	Demo	9,900								
	Leasable	146,360								
	Occupied	33,750	69,750	85,820	126,360	146,360	146,360	146,360	146,360	146,360
	Vacant	112,610	76,610	60,540	20,000	-	-			
29,272	Absorbed	33,750	36,000	16,070	40,540	20,000	-			

page 2

Real Estate Revenues

11	12	13	14	15	15 Year Total	Years 1-5	Year 6-10	Years 11-15
$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 1,012,500	$ 337,500	$ 337,500	$ 337,500
$ 54,000	$ 54,000	$ 54,000	$ 54,000	$ 54,000	$ 648,000	$ 108,000	$ 270,000	$ 270,000
$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 1,008,000	$ 288,000	$ 360,000	$ 360,000
$ 20,505	$ 20,505	$ 20,505	$ 20,505	$ 20,505	$ 266,565	$ 61,515	$ 102,525	$ 102,525
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 27,080	$ 27,080	$ 27,080	$ 27,080	$ 27,080	$ 324,960	$ 54,160	$ 135,400	$ 135,400
$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 440,000	$ 40,000	$ 200,000	$ 200,000
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 46,800	$ 10,800	$ 18,000	$ 18,000
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 899,975	$ 1,423,425	$ 1,423,425
$ 284,685	$ 284,685	$ 284,685	$ 284,685	$ 284,685	**$ 3,746,825**	**$ 899,975**	**$ 1,423,425**	**$ 1,423,425**

146,360	146,360	146,360	146,360	146,360	146,360

ECONOMIC DEVELOPMENT CONVEYANCE

Niagara Falls Army Reserve Center

Operating Costs		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
LRA Staff		$ 81,000	$ 54,000	$ 54,000	$ 27,000	$ 27,000	$ 27,000	$ 27,000	$ 27,000	$ 27,000	$ 27,000
Conferences and Travel		$ 2,500	$ 2,000	$ 1,500	$ 1,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500
Supplies and Equipment		$ 1,500	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250
Marketing Materials		$ 10,000	$ 5,000	$ 5,000	$ 2,500	$ 1,250	$ 750	$ 750	$ 750	$ 750	$ 750
Legal Support		$ 20,000	$ 10,000	$ 7,500	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
Insurance		$ 15,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
PILOT	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Vacant Buildings Carry Costs		$ 112,610	$ 76,610	$ 60,540	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -
Grounds Maintenance		$ 15,000	$ 15,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000
Contingency	10%	$ 25,761	$ 17,386	$ 14,979	$ 7,675	$ 5,500	$ 4,950	$ 4,950	$ 4,950	$ 4,950	$ 4,950
Total Operating Costs		**$ 283,371**	**$ 191,246**	**$ 164,769**	**$ 84,425**	**$ 60,500**	**$ 54,450**	**$ 54,450**	**$ 54,450**	**$ 54,450**	**$ 54,450**

Capital Costs		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
LRA Funded	unit										
Demo #19	1,600	$ -	$ 11,200	$ -	$ -	$ -					
Demo #20	2,550	$ -	$ -	$ 17,850	$ -	$ -					
Demo #23	2,000	$ -	$ 14,000	$ -	$ -	$ -					
Demo #25	1,750	$ -	$ -	$ -	$ 12,250	$ -					
Demo #26	2,000	$ -	$ -	$ -	$ 14,000	$ -					
Pavement Striping	20,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ -					
Signage		$ 10,000	$ 5,000	$ -	$ -	$ -					
Tenant Funded											
Bldg Refurbishment		tenant cost						*Note: possible grant funding is available to tenants*			
ADA compliance		tenant cost									
Grant Funded											
Utility Meters		$ -	$ 25,000	$ 25,000	$ -	$ -					
Bldg 4 Roof	60,750	$ -	$ 486,000								
East Hangar Door replacemer	1	$ -	$ -	$ -	$ 250,000	$ -					
West Hangar Door replaceme	1	$ -	$ -	$ 250,000	$ -	$ -					
Fencing - west apron	250	$ -	$ -	$ 25,000	$ -	$ -					
Fencing - east hangar	250	$ -	$ -	$ -	$ 50,000	$ -					
Repaving - East Apron	100,000	$ -	$ -	$ -	$ 350,000	$ -					
Repaving - parking areas	50,000	$ -	$ 25,000	$ 25,000	$ 25,000	$ 25,000					
Total Capital Costs		**$ 15,000**	**$ 571,200**	**$ 347,850**	**$ 706,250**	**$ 25,000**					
less: grant funding											
Source1 (NYS ED)		$ -	$ (536,000)	$ (325,000)	$ (675,000)	$ (25,000)					
Net Capital Costs (LRA)		$ 15,000	$ 35,200	$ 22,850	$ 31,250	$ -					
Total All Costs		**$ 298,371**	**$ 226,446**	**$ 187,619**	**$ 115,675**	**$ 60,500**	**$ 54,450**	**$ 54,450**	**$ 54,450**	**$ 54,450**	**$ 54,450**

Operating and Capital Costs **page 2**

11	12	13	14	15	15 Year Total	Years 1-5	Year 6-10	Years 11-15
$ 27,000	$ 27,000	$ 27,000	$ 27,000	$ 27,000	$ 513,000	$ 243,000	$ 135,000	$ 135,000
$ 500	$ 500	$ 500	$ 500	$ 500	$ 12,500	$ 7,500	$ 2,500	$ 2,500
$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 19,000	$ 6,500	$ 6,250	$ 6,250
$ 750	$ 750	$ 750	$ 750	$ 750	$ 31,250	$ 23,750	$ 3,750	$ 3,750
$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 97,500	$ 47,500	$ 25,000	$ 25,000
$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 105,000	$ 55,000	$ 25,000	$ 25,000
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 269,760	$ 269,760	$ -	$ -
$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000				
$ 4,950	$ 4,950	$ 4,950	$ 4,950	$ 4,950	$ 120,801	$ 71,301	$ 24,750	$ 24,750
$ 54,450	**$ 54,450**	**$ 54,450**	**$ 54,450**	**$ 54,450**	**$ 1,328,811**	**$ 784,311**	**$ 272,250**	**$ 272,250**

11	12	13	14	15				
					Total			
					$ 11,200	$ 11,200	$ -	$ -
					$ 17,850	$ 17,850	$ -	$ -
					$ 14,000	$ 14,000	$ -	$ -
					$ 12,250	$ 12,250	$ -	$ -
					$ 14,000	$ 14,000	$ -	$ -
					$ 14,000	$ 14,000	$ -	$ -
					$ 14,000	$ 14,000	$ -	$ -
					$ 14,000	$ 14,000	$ -	$ -
					$ 14,000	$ 14,000	$ -	$ -
					$ 50,000	$ 50,000	$ -	$ -
					$ 486,000	$ 486,000	$ -	$ -
					$ 250,000	$ 250,000	$ -	$ -
					$ 250,000	$ 250,000	$ -	$ -
					$ 25,000	$ 25,000	$ -	$ -
					$ 50,000	$ 50,000	$ -	$ -
					$ 350,000	$ 350,000	$ -	$ -
					$ 100,000	$ 100,000	$ -	$ -
					$ 1,665,300	**$ 1,665,300**	**$ -**	**$ -**
					$ (1,561,000)			
					$ -			
					$ 104,300			
$ 54,450	**$ 54,450**	**$ 54,450**	**$ 54,450**	**$ 54,450**	**$ 2,994,111**	**$ 2,449,611**	**$ 272,250**	**$ 272,250**

ECONOMIC DEVELOPMENT CONVEYANCE
Niagara Falls Army Reserve Center
Summary of Cash Flows from Redevelopment

	1	2	3	4	5	6	7	8	9	10
Real Estate Revenues	$ 67,500	$ 139,500	$ 163,605	$ 244,685	$ 284,685	$ 284,685	$ 284,685	$ 284,685	$ 284,685	$ 284,685
Operating Costs	$ (283,371)	$ (191,246)	$ (164,769)	$ (84,425)	$ (60,500)	$ (54,450)	$ (54,450)	$ (54,450)	$ (54,450)	$ (54,450)
Operating Profit	$ (215,871)	$ (51,746)	$ (1,164)	$ 160,260	$ 224,185	$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 230,235
Payment to Army	$ -	$ -	$ -	$ -	$ -	$ (66,000)	$ (66,000)	$ (66,000)	$ (66,000)	$ (66,000)
Capital Costs - LRA	$ (15,000)	$ (35,200)	$ (22,850)	$ (31,250)	$ -	$ -	$ -	$ -	$ -	$ -
Net Cash Flow	$ (230,871)	$ (86,946)	$ (24,014)	$ 129,010	$ 224,185	$ 164,235	$ 164,235	$ 164,235	$ 164,235	$ 164,235
Cumulative	$ (230,871)	$ (317,817)	$ (341,831)	$ (212,821)	$ 11,364	$ 175,599	$ 339,834	$ 504,069	$ 668,304	$ 832,539
Other Capital Costs	$ -	$ (536,000)	$ (325,000)	$ (675,000)	$ (25,000)	$ -	$ -	$ -	$ -	$ -
Cash Flow - All Costs	$ (230,871)	$ (622,946)	$ (349,014)	$ (545,990)	$ 199,185	$ 164,235	$ 164,235	$ 164,235	$ 164,235	$ 164,235
Cumulative	$ (230,871)	$ (853,817)	$ (1,202,831)	$ (1,748,821)	$ (1,549,636)	$ (1,385,401)	$ (1,221,166)	$ (1,056,931)	$ (892,696)	$ (728,461)
Funding Sources										
OEA Implementation Grant	$ 100,000	$ 75,000	$ 50,000	$ 25,000	$ -					
LRA/IDA Investment	$ 150,000									
Repayment to IDA	$ -	$ -	$ (30,000)	$ (150,000)						
Other Sources	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Final Cash Flow (LRA)	$ 19,129	$ (11,946)	$ (4,014)	$ 4,010	$ 224,185	$ 164,235	$ 164,235	$ 164,235	$ 164,235	$ 164,235
Cumulative	$ 19,129	$ 7,183	$ 3,169	$ 7,179	$ 231,364	$ 395,599	$ 559,834	$ 724,069	$ 888,304	$ 1,052,539

Summary of Cash Flows from Redevelopment
page 2

11	12	13	14	15	Total	Years 1-5	Year 6-10	Years 11-15
$ 284,685	$ 284,685	$ 284,685	$ 284,685	$ 284,685	$ 3,746,825	$ 899,975	$ 1,423,425	$ 1,423,425
$ (54,450)	$ (54,450)	$ (54,450)	$ (54,450)	$ (54,450)	$ (1,328,811)	$ (784,311)	$ (272,250)	$ (272,250)
$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 2,418,014	$ 115,664	$ 1,151,175	$ 1,151,175
$ -	$ -	$ -	$ -	$ -	$ (330,000)	$ -	$ (330,000)	$ -
$ -	$ -	$ -	$ -	$ -	$ (104,300)	$ (104,300)	$ -	$ -
$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 1,983,714	$ 11,364	$ 821,175	$ 1,151,175
$ 1,062,774	$ 1,293,009	$ 1,523,244	$ 1,753,479	$ 1,983,714				
$ -	$ -	$ -	$ -	$ -	$ (1,561,000)	$ (1,561,000)	$ -	$ -
$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 422,714	$ (1,549,636)	$ 821,175	$ 1,151,175
$ (498,226)	$ (267,991)	$ (37,756)	$ 192,479	$ 422,714				
					$ 250,000	$ 250,000	$ -	$ -
					$ 150,000	$ 150,000	$ -	$ -
					$ (180,000)	$ (180,000)	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 230,235	$ 2,203,714	$ 231,364	$ 821,175	$ 1,151,175
$ 1,282,774	$ 1,513,009	$ 1,743,244	$ 1,973,479	$ 2,203,714				

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APPENDIX B

RESULTS OF RADIOLOGICAL SURVEY MEMORANDUM

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY JOINT MUNITIONS COMMAND
1 ROCK ISLAND ARSENAL
ROCK ISLAND, IL 61299-6000

REPLY TO
ATTENTION OF:

AMSJM-SF

MEMORANDUM FOR HQDA, ACSIM, BRAC Division (Ms. Lynne Anderson),
600 Army Pentagon, Washington, DC 20310-0600

SUBJECT: Results from the Radiological Survey at the Niagara Falls U.S. Army Reserve Center, Niagara Falls, NY

1. On 12 December 2011, we completed the final status survey work for the radiological release at the Niagara Falls, NY U.S. Army Reserve Center in compliance with the accepted federal government protocol (MARSSIM Class 3). The enclosed Radiological Survey Report provides an evaluation of radiological materials used and the summary of findings and results. The report concludes that no further action is required with respect to the radioactive devices or materials identified. We conclude the site is free of radiological concerns.

2. Our point of contact for questions or comments is Mr. Michael Kurth, AMSJM-SF, (309) 782-8423, electronic mail michael.f.kurth.civ@mail.mil.

Encl

STEPHANIE A. CHRISTIE
Director, Safety/Rad Waste Directorate

Printed On Recycled Paper

APPENDIX C

FINAL – REMEDIAL INVESTIGATION/INTERIM REMEDIAL ACTION REPORT AND HUMAN HEALTH RISK ASSESSMENT

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PARS
Environmental
Inc.

FINAL - REMEDIAL INVESTIGATION/ INTERIM REMEDIAL ACTION REPORT AND HUMAN HEALTH RISK ASSESSMENT

Niagara Falls Armed Forces Reserve Center
9400 Porter Road
Niagara Falls, NY

VOLUME I OF II

Contract No. W912QR-11-D-0022
Delivery Order No. 001 (Item No. 0004)

PREPARED FOR
U.S Army Corps of Engineers-Louisville District
600 Dr. Martin Luther King, Jr. Place
Louisville, KY 40202

PREPARED BY
PARS Environmental, Inc.
500 Horizon Center, Suite 540
Robbinsville, NJ 08691
609-890-7277
609-890-9116 (Fax)

PARS PROJECT NO. 773-04

APRIL 2012

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VOLUME II OF II
LABORATORY ANALYTICAL REPORTS

STATEMENT OF TECHNICAL REVIEW

PARS Environmental, Inc. has completed the Final Remedial Investigation/Interim Remedial Action Report and Human Health Risk Assessment for the Niagara Falls Armed Forces Reserve Center (AFRC).

Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy, principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures and materials used in analyses; the appropriateness of data used and level of data obtained; and reasonableness of the results including whether the product meets the customer's needs consistent with the law and existing US Army Corp policy.

Significant concerns and explanation of the resolutions are documented within the project file. As noted above, all concerns resulting from the independent technical review of the project have been considered.

Senior Project Manager
Michael D. Moore, P.G.

4/11/12
Date

Independent Technical Review Team Leader
Thomas P. Dobinson

4/11/12
Date

1.0 INTRODUCTION

The United States Corps of Engineers (USACE), Louisville District has retained the services of PARS Environmental, Inc. (PARS), under Contract No. W912QR-11-D-0022, Delivery Order No. 001, to conduct a remedial investigation (RI), human health risk assessment (HHRA), feasibility study and interim remedial action (IRA) at the Niagara Falls Armed Forces Reserve Center (AFRC). The AFRC is located at 9400 Porter Road in Niagara Falls, New York, hereinafter the "Site." A Site Location Map and Site Plan are included as Figure 1 and Figure 2, respectively.

On August 21, 2011, a notice of 30 day period for comment was advertised in the Buffalo News for the remedial investigation at the Site. The public notice completed in accordance with Section 120 (h) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCA). A document repository for public review of files related to the investigation was established at the Niagara Falls Public Library located in Niagara Falls, New York. No public comments were received pertaining to the Site. The public notice ad proof is included in Appendix I.

An investigation was conducted of soil and groundwater in the vicinity of six former underground storage tanks (USTs), former vehicle fueling area and the cast iron fire protection main that discharged to a 24-inch corrugated metal storm sewer line on the eastern boundary of the Site. The scope of work completed for this project was based on the approved Quality Assurance Project Plan (QAPP)/Sampling Plan (PARS, September 2011). The investigation was performed to investigate a potential source of the discharge that occurred at Outfall No. 5 into the drainage swale at the southeast corner of the Site in 2008 (see Section 2.7).

The New York State Department of Environmental Conservation (NYSDEC) was notified on June 24, 2008 and Spill # 0803478 was assigned for the discharge

An IRA in the area of the fire protection main was also performed based on the findings of the site inspection conducted in November and December 2010. Residual product was observed within the fill material in an exploratory excavation (TP-12) installed adjacent to the 24-inch corrugated metal storm sewer line. A sample of impacted groundwater was collected and several compounds, including polychlorinated biphenyls (PCBs), were detected at concentrations exceeding the New York State Department of Environmental Conservation (NYSDEC) Class GA Objectives. The IRA included the removal of approximately 50 tons of soil, as well as residual product and groundwater with a visible sheen.

Based on the findings of the remedial investigation, a HHRA was performed. The objective of the HHRA was to evaluate potential risks to human health under current and reasonably foreseeable future conditions. The risk assessment was completed in accordance with the regulations and guidelines set forth by the United States Environmental Protection Agency (USEPA) and the USACE. Additionally, a feasibility study/remedial action alternatives evaluation was performed to evaluate remediation at the Site.

On March 23, 2012, NYSDEC and the NY Department of Health (NYDOH) issued comments on the draft RI/IRA/HHRA Report. Comments have been incorporated into the final report. A copy of the letter from NYSDEC and responses are included in Appendix J.

2.0 BACKGROUND

2.1 SITE SETTING

The Niagara Falls AFRC is an approximate 19.5 acre parcel located on the southern portion of Niagara Township, in Niagara Falls, Niagara County, New York. The Site is bound to the south by Porter Road and the property located immediately south of Porter Road is undeveloped forested land. Niagara Falls International Airport is located immediately north and east of the Site. Other properties in the vicinity of the Site are used primarily for commercial purposes.

2.2 TOPOGRAPHY AND DRAINAGE

The Site is located on the USGS 7.5-minute Tonawanda West topographic map. Topography at the Site is relatively flat with a slight gradient to the west/southwest. The elevation at the Site is approximately 575 feet above mean sea level.

The Site is located within the Niagara Watershed. Surface and storm water drainage is to Cayuga Creek located immediately west of the Site. Cayuga Creek is an intermittent tributary of the Niagara River. Storm sewer lines, drainage swales and outfalls are depicted in Figure 2.

2.3 CLIMATE

According to the National Oceanic and Atmospheric Administration (NOAA), the average monthly temperature ranges from 24.8º Fahrenheit in February to 71.6º Fahrenheit in July. The annual mean temperature is 47.8º Fahrenheit. The lowest temperature recorded in Niagara Falls was -15º Fahrenheit and the highest temperature was 97º Fahrenheit.

The average annual precipitation is 33.93 inches and the average monthly precipitation ranges from 2.32 inches in February to 3.52 inches in September.

2.4 GEOLOGY

The Site is located in the Erie-Ontario Lowlands Physiographic Province. The region is characterized by relatively flat topography and dissected by east-west trending escarpments. The Site is located about 5 miles south of the Niagara Escarpment (*Environmental Condition of Property Report*, CH2MHill, June 2007).

The Niagara Falls area is underlain by glacial sediment consisting mainly of till and lacustrine silt and clay, which is approximately 5 to 80 feet thick. The glacial deposits overlay weathered dolomite and limestone of the Lockport Group (Niagaran Series of Middle Silurian age). The Lockport Group is underlain by approximately 100 feet of shale and limestone (Clinton Group), which is underlain by 110 feet of sandstone and shale (Medina Group).

Soils encountered during the site inspection consisted of non-cohesive fill from 0 to 4 feet below ground surface (bgs). Fill material at some probe locations extended from 8 to 13 feet bgs. The fill material encountered was comprised of a coarse-grained mixture of sand and gravel with varying amounts of fine-grained silt and clay. Varying amounts of brick, slag, concrete, rebar, asphalt and wood were observed within this matrix. Native surficial soils are comprised of silty clay with trace fine sand. Borings were not advanced beyond 13 feet bgs as part of the inspection activities.

2.5 HYDROGEOLOGY

The Site is underlain by the Lakemont silty clay loam and the Fonda mucky silt loam. Both soil types are fine-to moderately fine-textured and have a low permeability. These soils are subject to ponding and the water table in the vicinity of the Site is at a depth of less than 4 feet bgs (*Environmental Condition of Property Report*, CH2MHill, June 2007).

The glacial deposits at the Site act as a confining unit for the weathered bedrock below. The hydraulic properties in the Lockport dolomite and limestone are related to secondary porosity and permeability owing to the presence of factures and solutioning. The main water-bearing zones in the Lockport Group are the weathered bedrock surface and horizontal fracture zones near stratigraphic contacts. The rock matrix transmits negligible amounts of groundwater because primary porosity is very low. The horizontal hydraulic conductivity of the weathered bedrock is estimated at 40 feet per day.

Groundwater was encountered at depths ranging from 2 to 6 feet bgs in soil probes and exploratory excavations during the site inspection. It is likely that the coarse-grained fill material overlying the less-permeable native fine-grained clay is creating the perched groundwater conditions at the Site.

2.6 HISTORY OF OPERATIONS

The United States Government acquired the Site in 1955 and the United States Navy used the Site to service helicopters and airplanes. Most of the buildings at the Site were constructed by 1956. The Army obtained the Site from the Navy in 1962. From 1970 to 1975, the Site was used to service Nike Missiles from missile batteries around the state of New York.

The Site was most recently occupied by the 277th Quartermaster Company, the 865th Combat Support Hospital, the 1982nd Forward Surgical Unit and Area Maintenance Support Activity 76. A small presence was also maintained by personnel of the Department of Public Works (DPW), Fort Drum, New York (*Environmental Condition of Property Report*, CH2MHill, June 2007). No personnel or units have occupied the Site as of September 15, 2011 per Base Realignment and Closure (BRAC) law.

2.7 PREVIOUS INVESTIGATIONS

A yellow substance was observed discharging from the 24-inch diameter corrugated storm sewer at outfall (Outfall No. 5) into the drainage swale at the southeast corner of the Site. An investigation was performed by United States Army Reserve (USAR) in 2008.

The New York State Department of Environmental Conservation (NYSDEC) was notified on June 24, 2008 and Spill # 0803478 was assigned for the discharge. Product was observed discharging from the 6-inch diameter cast iron fire protection main into the 24-inch diameter corrugated storm sewer and the 6-inch line was capped. The drain valve for the 6-inch line was uncovered and dislodged in June 2008. After dislodging the valve, product was observed in the excavated hole. A sample was collected and the product was identified as diesel fuel. PCBs were detected in the sample at a concentration of 2.1 mg/kg (Aroclor 1254).

As part of the investigation, a sediment sample was collected from the 24-inch diameter storm sewer adjacent to the cast iron pipe. A sample of the yellow substance was also collected from the drainage swale. The sample results revealed that the sediment in the pipe and the yellow substance present in the swale contained detectable levels of PCBs. PCB concentrations in the sediment and yellow substance were 220 mg/kg (Aroclor 1254) and 2.81 mg/kg (Aroclor 1254), respectively.

Storm Sewer and Drainage Swale Investigation/Remediation

The USACE and the USAR 99th Regional Support Command (99th RSC) retained the services of PARS to investigate and remediate the drainage swale at Outfall No. 5. The 24-inch diameter storm sewer was also cleaned as part of the remedial action. Approximately 134 tons of PCB impacted soil was excavated from the drainage swale.

PCB concentrations in the post-excavation soil samples at Outfall No. 5 and from the drainage swale were below the maximum contaminant level of 1 milligram per kilogram (mg/kg) that was established by the NYSDEC. Investigation and remediation activities are outlined in the *Remedial Action Report* (PARS, March 2010).

Site Inspection

Six USTs were reportedly present along the eastern and western sides of former Building 2. Additionally, a vehicle fueling area was located immediately west of the building. No documentation was available regarding the closure of these USTs and fueling area.

In November and December 2010, PARS conducted a site inspection to evaluate potential impacts associated with the former USTs at Building 2 and the fire protection main. Inspection activities consisted of a geophysical survey, exploratory excavations and soil and water sampling. The findings were outlined in the *Site Inspection Report* (PARS, June 2011).

The geophysical survey noted three anomalies identified as debris from former Building 2. An approximate 150-foot long linear anomaly was identified in the general vicinity of the fire protection main that terminates at the 24-inch diameter corrugated storm sewer line. No anomalies consistent with USTs were identified as part of the geophysical survey.

Twelve exploratory excavations (TP-1 through TP-12) were completed based on the findings of the geophysical survey, previous investigations and field observations. A soil sample for laboratory analysis was collected from TP-1. Several SVOCs were detected in the sample at concentrations exceeding the NYSDEC Unrestricted and Restricted Use Soil Cleanup Objectives.

The 6-inch diameter cast iron fire protection water main was encountered in six exploratory excavations (TP-2, TP-3, TP-4, TP-11 and TP-12). At TP-11, the 6-inch diameter pipe terminated at a concrete catch basin presumed to be the 500,000-gallon reservoir drain. A sample was collected from the water flowing from the 6-inch diameter line into the concrete catch basin. Several compounds including toluene, naphthalene, PCBs and chromium were detected in the water sample at concentrations exceeding the NYSDEC Class GA Objectives. Petroleum product and a heavy sheen was observed within the fill material and on the groundwater surface in one of the exploratory excavations (TP-12). Several compounds, including PCBs, were detected in a water sample collected from TP-12 at concentrations exceeding the NYSDEC Class GA Objectives. A drum vacuum was used to remove petroleum impacted water from the excavation.

Twenty-one soil probes were completed as part of the site inspection. One soil sample was collected from each probe for laboratory analysis. Acetone, metals and PCBs were detected in several samples at concentrations exceeding the Unrestricted Use Soil Cleanup Objective. Several metals were detected at concentrations exceeding the Restricted Use Soil Cleanup Objectives. Soil probe and test pit locations from the Site Inspection are shown on Figure 3.

PARS recommended conducting an investigation to further evaluate soil and groundwater impacts at the locations of the former USTs at Building 2 and in the vicinity of the fire protection main. Additionally, PARS recommended that the residual petroleum product observed within the fill material at TP-12 be removed part of an IRA because of the close proximately of the residual product to the 24-inch corrugated metal storm sewer line.

In September 2011, PARS submitted a QAPP/Sampling Plan for the RI/IRA to NYSDEC. Comments received from the NYSDEC Case Manager, Chek Ng, stated that fill material brought on-site may be the cause of the elevated concentrations for certain metals in the soil, which should nullify any concerns for high metal content in the soils. The origin of the fill material is unknown, but the fill material does contain some slag. Iron blast slag and open hearth slag from production of carbon steel is commonly found throughout western New York. Slag from steel production facilities in the area was commonly used as fill material in the region. Comments received from NYSDEC are included in Appendix J.

3.0 SOIL INVESTIGATION

Prior to initiating the field activities, Dig Safe New York was contacted to locate the underground utilities in the public right-of-way. The soil investigation was performed as outlined in the approved QAPP/Sampling Plan. As instructed by USAR and based on NYSDEC workplan comments, metals were eliminated as a potential contaminant of concern at the Site because of regional fill material. Therefore, soil samples were not analyzed for metals.

3.1 SOIL INVESTIGATION METHODS

3.1.1 Soil Probes

Thirty soil probes (16 primary and 14 secondary) were completed on September 26, 27 and 28, 2011 using a Geoprobe 54 OUD track-mounted rig equipped with a pneumatic hammer. Soil boring locations are depicted in Figure 4. Soil probe logs are included in Appendix A.

The soil probes were advanced using direct-push methods via a 2-inch diameter, 48-inch long macro-core sampler that was driven continuously at 48-inch intervals. A dedicated acetate sampler liner was used between sampling intervals.

Material recovered in each acetate sample liner was field screened for total organic vapors using an OVM (MiniRAE 2000) equipped with a photo-ionization detector (PID) and a 10.6 eV ultraviolet lamp. The OVM used was calibrated daily in accordance with manufacturer's specifications using a gas standard of isobutylene at an equivalent concentration of 100 parts per million (ppm). Ambient air at the Site was used to establish background organic vapor concentrations.

Following field screening, when sufficient sample recovery was obtained, representative portions of the recovered soils were placed in zip-lock bags for further classification and headspace analysis. The headspace in the bag above each collected soil sample was screened for total organic vapors. With the exception of the headspace sample result of 38.6 parts per million (ppm) measured at SP-49 from 0-4 feet bgs, total organic vapor concentrations were non-detect in the headspace screening of the soil samples collected during the investigation.

Two soil samples were selected for submittal to the laboratory from each of the 30 probes completed. One sample was collected from the upper 4 feet and a second sample was collected from an interval between 4 feet and the bottom of the probe. Soil samples collected from the primary soil probe locations were submitted for TCL VOCs, TCL SVOCs and PCBs analysis. Soil samples from the secondary soil probe locations were submitted to the laboratory and placed on hold. Secondary soil probe samples were analyzed at select locations based on the results from the primary soil sample locations. Samples were each given a unique sample designation [(e.g., SP-22-2-4 = SP (soil probe); 22 (sample location); 2-4 (sample depth in feet)].

Upon probe completion, the soil probe holes were backfilled with the soil cuttings.

3.1.2 Outfall Soil Sampling

At the request of NYSDEC, a surface soil sample was collected at the discharge location of Outfall 4 on September 27, 2011. The soil sample was collected immediately below the vegetative cover at the discharge location within the drainage swale along Porter Road. No standing water was present in the swale at the time of sampling and there was no flow from Outfall 4. The sample was analyzed for TCL VOCs, TCL SVOCs and PCBs. The location of the soil sample collected at the outfall is depicted in Figure 4.

3.2 SOIL SAMPLE RESULTS

Findings of the laboratory testing of the soil samples analyzed are presented in the following subsections. An analytical results summary table is included in Table 1. The analytical results for the soil samples are summarized on Table 2. The analytical laboratory reports are provided in Volume II.

The analytical test results for the soil samples were compared to:

- NYSDEC, 6 NYCRR, Subpart 375-6, Unrestricted Soil Cleanup Objectives (USCOs) and Commercial Soil Cleanup Objectives (CSCOs), effective December 14, 2006; and
- NYSDEC Final Commissioners Policy, CP-51, Supplemental Soil Cleanup Objectives (SSCOs) dated October 21, 2010 (CP-51 SCGs).

3.2.1 Soil Probes

Volatile Organic Compounds

Acetone was detected in soil sample SP-23-2-4 at a concentration of 60 micrograms per kilogram (µg/kg) which slightly exceeds the USCO for the compound of 50 µg/kg. Acetone did not exceed the CSCO for the compound of 500,000 µg/kg. Acetone is a common laboratory contaminant and is not considered a contaminant of concern at the Site. All other detected VOCs were at concentrations below their respective USCOs and CSCO.

Based on primary soil sample results, secondary soil probe samples were not submitted for VOC analysis.

Semi-volatile Organic Compounds

Several SVOCs were detected at concentrations exceeding their respective USCO in soil samples SP-25-2-4 and SP-25-6-8. Dibenzo(a,h)anthracene and benzo(a)pyrene were also detected at concentrations exceeding their respective CSCO in these two samples.

Six SVOCs were detected at concentrations exceeding their respective USCO in soil sample SP-29-1-3. Benzo(a)pyrene was also detected at a concentration exceeding the CSCO in this sample. Benzo(b)fluoranthene was detected at a concentration exceeding the USCO in SP-37-1-3.

Based on primary soil sample results, 6 secondary soil probe samples (SP-41-1-3, SP-41-6-8, SP-50-1-3, SP-50-6-8, SP-51-1-3, and SP-51-6-8) were taken of hold and tested for SVOCs. No SVOCs were detected in these secondary soil probe samples at concentrations exceeding the respective USCO.

Polychlorinated Biphenyls
Total PCB concentrations exceeding the USCO of 100 µg/kg were identified in the following 5 samples; SP-28-1-3 (1,100 µg/kg), SP-29-1-3 (320 µg/kg), SP-30-1-3 (150 µg/kg), SP-32-2-4 (410 µg/kg) and SP-33-0-2 (940 µg/kg). The concentration of PCBs detected at SP-28-1-3 (1,100 µg/kg) also exceeds the CSCO of 1,000 µg/kg.

Based on primary soil sample results, 8 secondary soil probe samples (SP-41-1-3, SP-41-6-8, SP-47-1-3, SP-47-6-8, SP-50-1-3, SP-50-6-8, SP-51-1-3, and SP-51-6-8) were taken of hold and tested for PCBs. PCBs were not detected above MDLs in the 8 secondary soil probe samples.

3.2.2 Outfall Sampling

Volatile Organic Compounds
VOCs were not detected above MDLs in the soil sample from Outfall 4.

Semi-Volatile Organic Compounds
Nine SVOCs were detected at concentrations exceeding the respective USCO and 5 SVOCs were detected at concentrations exceeding the respective CSCO.

Polychlorinated Biphenyls
Total PCBs were detected in the outfall sample at a concentration of 210 µg/kg, which exceeds the USCO for the compound of 100 µg/kg. PCBs were not detected in the sample above the CSCO of 1,000 µg/kg, which was the cleanup objective established by NYSDEC for the previous remediation of the drainage swale.

4.0 GROUND WATER INVESTIGATION

The groundwater investigation was performed as outlined in the approved QAPP/Sampling Plan. As instructed by USAR and based on correspondence with NYSDEC workplan comments, metals were eliminated as a potential contaminant of concern at the Site because of regional fill material. Therefore, groundwater samples were not analyzed for metals.

4.1 SAMPLE METHODS

On September 26 and 27, 2011, nine temporary microwells were installed in the open probe-holes at SP-22, 25, 30, 32, 34, 36, 42, 46 and 49. The locations of the temporary microwells are depicted in Figure 4.

The microwells were constructed using one-inch diameter Schedule 40 PVC casing and screen. Groundwater was encountered in temporary microwells at a depth of 3-4 feet bgs. A peristaltic pump was used to purge the microwells prior to sampling to remove suspended particulates and to ensure that a representative groundwater sample was collected. Microwells located at SP-36, SP-42 and SP-49 were not purged due to limited recharge.

Eight groundwater samples were collected from the 9 temporary microwells using disposable Teflon© bailers. The temporary microwell installed at soil probe location SP-46 was dry following several attempts to collect a sample. Groundwater samples from SP-22, SP-25, SP-30, SP-32, SP-36 were analyzed for VOCs, SVOCs, and PCBs. Samples collected at SP-42 and SP-49 were not analyzed for SVOCs and PCBs due to insufficient groundwater recharge.

4.2 SAMPLE RESULTS

Findings of the laboratory testing of the soil samples analyzed are presented in the following subsections. An analytical results summary table is included in Table 1. The analytical results for the groundwater samples are summarized on Table 3. The analytical laboratory reports are provided in Volume II.

The analytical test results for the groundwater samples were compared to:

- NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations dated October 1993; Revised June 1998; ERRATA Sheet dated January 1999; and Addendum dated April 2000 (Class GA criteria).

Volatile Organic Compounds

Benzene was detected at SP-49 and trichlorofluoromethane was detected at SP-22 at concentrations slightly exceeding the respective Class GA criteria. No other VOCs were detected in the groundwater samples at concentrations exceeding the respective Class GA criteria.

Semi-Volatile Organic Compounds
Four SVOCs were detected at concentrations exceeding the respective Class GA criteria at 3 locations (SP-22, SP-25 and SP-34). These compounds are benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene.

Polychlorinated Biphenyls
Total PCBs were detected in groundwater samples from locations SP-30, SP-32 and SP-36 at concentrations exceeding the Class GA Criteria for the compound of 0.09 µg/kg. PCB concentrations in these three samples were 0.77 µg/kg (SP-30), 3 µg/kg (SP-32), and 13 µg/kg (SP-36). PCBs were not detected in the other groundwater samples at concentrations above the laboratory MDL.

5.0 INTERIM REMEDIAL ACTION

5.1 INTERIM REMEDIAL ACTION METHODOLOGY

On September 29, 2011, PARS performed IRA activities at the Site. Photographs taken during the IRA are included in Appendix B of this report.

As part of the IRA, an approximately 10-foot (north-south) by 12-foot (east-west) area was excavated to a depth of approximately 5 feet bgs in the vicinity of the former exploratory excavation, TP-12. Excavation boundaries are depicted in Figure 5.

Excavation activities were performed using a small track excavator. Approximately 6 to 12 inches of surficial stone material was removed and stockpiled for reuse as cover, following backfill of the excavation. Approximately 40 tons of soil was removed from the excavation and stockpiled within an impoundment made of polyethylene sheeting and hay bales. The soil pile was covered and secured using polyethylene sheeting upon completion of excavation activities. A waste composite sample was collected from the soil pile following excavation activities and analyzed for TCLP VOCs, SVOCs, metals, and PCBs, pH, and ignitability. Analytical results for the waste composite sample are included in Volume II.

During soil excavation activities, perched groundwater was observed at approximately 2 feet bgs. Perched groundwater exhibiting a surface sheen was pumped from the excavation using a vacuum truck operated by Environmental Service Group, Inc. (ESG) of Tonawanda, New York. Approximately 2,000-gallons of groundwater was removed from the excavation and properly disposed of at Covanta Energy in Niagara Falls, New York. Waste disposal documentation is included in Appendix C.

At the completion of soil removal activities, an approximate 8-foot long section of the 6-inch diameter cast iron fire protection main was removed from within the limits of the excavation. The open endsof the pipe were fitted with a Fernco and PVC cap prior to backfilling. The section of pipe that was removed appeared to be in good condition with no holes observed.

On December 8, 2011, the stockpiled soil from the excavation was loaded onto trucks and transported to the Allied Waste Niagara Falls Landfill, Division of Republic Services in Niagara Falls, New York. Disposal documentation is included in Appendix C.

The excavation was backfilled with approximately 40 tons of clay from Seven Springs Gravel Products, LLC in Batavia, New York. The clay backfill material was placed into the excavation in approximately 1-foot thick lifts and compacted using the bucket of the excavator. Once at grade, the gravel material initially removed was placed over the top of the backfilled excavation. Clean Fill documentation is provided in Appendix D.

5.2 CONFIRMATORY SOIL SAMPLING

Five confirmatory soil samples, four (4) sidewall samples and one (1) bottom of excavation sample, were collected from the excavation. The confirmatory soil samples were analyzed for TCL VOCs, TCL SVOCs and PCBs. The samples were analyzed for TCL VOCs, TCL SVOCs and PCBs. Sample locations are depicted in Figure 5.

VOCs, SVOCs and PCBs were not detected in the confirmatory samples at concentrations exceeding the applicable USCOs and CSCOs. The analytical results for the soil samples are summarized in Table 2. The analytical laboratory report is provided in Volume II.

6.0 TECHNICAL OVERVIEW

6.1 RELIABILITY OF ANALYTICAL DATA

A total of 47 soil samples, including one duplicate sample, were collected as part of the investigation and remediation. Forty-two (42) were collected as part of the investigation and five (5) confirmatory soil samples were collected as part of the interim remedial action. Nine groundwater samples, including one (1) duplicate sample were also collected during the investigation phase of the project.

The reliability of data generated for this report was evaluated and is presented in two sections. The first section addresses conformance with the field-sampling event and the second section addresses laboratory conformance during analysis of the samples.

The analytical test results for the soil samples were compared to NYSDEC, 6 NYCRR, Subpart 375-6, Unrestricted Soil Cleanup Objectives (USCOs) and Commercial Soil Cleanup Objectives (CSCOs), effective December 14, 2006; and NYSDEC Final Commissioners Policy, CP-51, Supplemental Soil Cleanup Objectives (October 21, 2010).

The analytical test results for the water samples were compared to NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations dated October 1993; Revised June 1998; ERRATA Sheet dated January 1999 and Addendum dated April 2000 (Class GA Objective).

6.1.1 Field Event Conformance

Field quality control and quality assurance procedures outlined in the *Quality Assurance Project Plan/Sampling Plan* (PARS, September 2011) were implemented as part of the project. These procedures included field calibration of equipment, field sampling procedures, field decontamination of equipment and sample management.

An OVM was used to field screen soils for total organic vapors. The OVM was calibrated daily in accordance with manufacturer specifications using a gas standard of isobutylene at an equivalent concentration of 100 ppm. Ambient air was used to establish background organic vapor concentrations.

Samples were collected in laboratory provided sample containers. The samples were immediately transferred to insulated coolers, provided by the laboratory, containing ice. A chain-of-custody form was used to trace the path of sample containers from the Site to the laboratory.

One field duplicate soil sample was collected to assess the variability of a matrix at a specific sampling point and to assess the reproducibility of the sampling method. The field duplicate sample was a separate aliquot of the same sample. Prior to dividing the sample into "sample" and "duplicate" aliquots, the samples were homogenized (except for the VOC aliquots). A duplicate sample of SP-34-6-8 was collected. The duplicate soil sample results are summarized in Table 2. Overall, detected compounds and concentrations were consistent for the sample and field duplicate sample.

One field duplicate groundwater sample was collected as part of the remedial investigation by alternately filling the laboratory sample containers during sample collection. A duplicate sample of SP-34-110926 was collected. The duplicate groundwater sample results are summarized in Table 3. Overall, detected compounds and concentrations were consistent for the sample and field duplicate sample.

A soil rinsate sample (rinsate-soil) and a groundwater rinsate sample (rinsate-groundwater) were collected as part of the remedial investigation by passing analyte-free water through the sampling equipment into sample containers. The rinsate samples were analyzed for TCL VOCs, TCL SVOCS and PCBs. No compounds were detected in the rinsate samples at concentrations above the laboratory method detection limits. Rinsate sample results are summarized in Table 2 and 3. The laboratory analytical results are included in Volume II.

Trip blanks were prepared by the laboratory and accompanied the groundwater samples. Two trip blanks were analyzed for TCL VOCs. Methylene chloride was detected in both of the trip blanks. Methylene chloride was detected at concentrations below the Class GA Objective and was not detected in any of the groundwater samples, which indicates laboratory contamination of the samples. Analytical results for the trip blanks are summarized in Table 3. The laboratory analytical results are included in Volume II.

6.1.2 Laboratory Conformance

Soil and groundwater samples were collected for laboratory analysis as part of the project. Laboratory analysis was performed by TestAmerica Laboratories in Amherst, New York (NY Certification # NY455). Samples were analyzed for TCL VOCs, TCL SVOCs and PCBs in accordance with United States Environmental Protection Agency (USEPA) methods as summarized in Table 1.

Laboratory instruments and equipment were calibrated following SW-846 analytical method protocols. Initial calibrations and calibration checks were performed at a frequency specified in each analytical method.

Method blanks and instrument blanks were used by the laboratory to evaluate data quality. The purpose of the method blank is to assess contamination introduced during sample preparation. Method blanks are prepared and analyzed in the same manner as the field samples. Instrument blanks are analyzed with field samples to assess the presence or absence of instrument contamination. The frequency of instrument blanks is defined by the analytical method. The laboratory reports provided by Test America Laboratories are included in Volume II. The laboratory reports were prepared in accordance with the New York Analytical Services Protocol (Category B deliverable).

Analytical results with analytes identified in both the method or instrument blanks and the field sample are qualified with a “B” qualifier. Compounds identified with a “B” qualifier in soil samples were chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, phenanthrene and benzo(g,h,i)perylene. Compounds identified in groundwater samples with a “B” qualifier were di-n-butyl phthalate and phenanthrene.

Analytical results qualified with a “J” qualifer indicate that the results are estimated. The concentration detected falls between the method detection limit (MDL) and the reporting limit (RL). The MDL is the lowest concentration that the instrument can detect an analyte and the RL is the lowest concentration at which an analyte can be detected in a sample and its concentration can be reported with a reasonable degree of accuracy and precision.

7.0 HUMAN HEALTH RISK ASSESSMENT

7.1 HHRA OBJECTIVES

The objective of the HHRA is to evaluate potential risks to human health under current and reasonably foreseeable future conditions. The risk assessment is consistent with the regulations and guidelines set forth by the USEPA and the USACE.

The evaluation of human health risks was divided into four major sections: hazard identification, exposure assessment, toxicity assessment and risk characterization. Risks were examined with respect to exposure to chemicals detected in subsurface soil and groundwater at the Site or under the influence of the Site.

7.2 IDENTIFICATION/SELECTION OF CHEMICALS OF POTENTIAL CONCERN

The first step in the risk assessment process was to identify Site-related chemicals. Site-related chemicals selected for quantitative evaluation were defined as Chemicals of Potential Concern (CPCs). CPCs were identified based on analytical results collected as part of remedial investigation activities (see Sections 2.7, 3.0 and 4.0).

One surface soil sample was collected from Outfall 004 during the Remedial Investigation. This sample was not used in the risk assessment because SVOCs from the swale are not suspected to be from a point source release. The SVOCs detected in the sample from the drainage swale are commonly found in ditches that receive storm water runoff from asphalt paved surfaces. PCBs were detected in this sample at a concentration that exceeds the USCO for the compound of 100 µg/kg, but less than the cleanup objective established by the NYSDEC for the remediation of the swale of 1,000 µg/kg.

In addition to the samples collected during the Remedial Investigation, groundwater and subsurface soil samples collected during the Site Inspection in November 2010 (*Site Inspection Report*, PARS, June 2011) and post-excavation subsurface soil sample results collected in 2009 from the drainage swale excavation *(Remedial Action Report*, PARS, March 2010) were also used to evaluate subsurface CPCs. The drainage swale is dry most of the time; therefore, all post-excavation sample results from the ditch remediation were analyzed in the risk assessment as subsurface soil. Analytical result summary tables for samples used for the CPC selection are included in Appendix F.

7.3 INITIAL SCREENING

The analytical results from the sampling events were evaluated and compared to applicable regulatory standards. Compounds detected at concentrations above the applicable standards were selected as part of the initial screening process.

The following subsections outline the findings of the sampling events.

7.3.1 Soil

Soil sample results were compared to the applicable NYSDEC USCO and the NYSDEC CSCO, which are more stringent than the EPA RSL. A compound was selected for secondary screening if the concentration exceeded the USCO which are the more conservative cleanup objective. All soil samples collected were evaluated as subsurface soil, which is defined as any soil sample collected at a depth greater than 1.0 feet bgs.

The compounds that were detected at concentrations above the applicable USCO in subsurface soils were acetone, benzo(a)anthracene, dibenz(a,h)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene and PCBs (Aroclor 1254 and Aroclor 1260). These compounds were selected for further evaluation as CPCs using the secondary screening process (see Section 7.4).

7.3.2 Groundwater

Groundwater sample results were compared to the NYSDEC Class GA criteria. The compounds that were detected at concentrations above the criteria were benzene, naphthalene, toluene, trichlorofloromethane, 2,4-dimethylphenol, 4-methylphenol, 2-methylnaphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, carbazole, chrysene, indeno(1,2,3-cd)pyrene, phenol and PCBs (Aroclor 1254 and 1260). These compounds were selected for further evaluation as CPCs using the secondary screening process (Section 7.4).

7.4 SECONDARY SCREENING

All compounds selected as part of the initial screening process, which were detected at concentrations above the applicable USCO, were carried into the secondary screening process. Evaluation of compounds for the secondary screening process is based on the guidelines set forth in the USEPA *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (RAGS).*

The frequency of detection, mean, range, and maximum detection concentration were calculated for each compound and media type. The frequency of detection was calculated by dividing the total number of samples collected during the sampling events by the total number of detections for each compound. The range is the minimum and maximum detected concentration for the compound for all sampling events.

The mean was calculated for each compound by adding the detected concentrations and dividing by the total number of samples. If the compound was not detected in the sample, one half the method detection limit was used. For field duplicate samples, the average compound concentration or one half the method detection limit was used for the sample location to calculate the mean. Samples denoted with the lab qualifier J and B were also used in the risk assessment. A description of these qualifiers is listed in Section 6.1.2.

The 95% upper concentration limit (UCL) was calculated using PRO UCL 4.1 Software developed by Lockheed Martin and the USEPA (*Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites)* using the appropriate statistical method based on the distribution of data. All detected and non-detected concentrations were included. In some cases, there was an insufficient number of detections and the 95% UCL could not be calculated for the compound.

Based on the distribution of statistical data for some of the groundwater and subsurface soil samples, the Pro UCL Software recommended using the 97.5% UCL, which yields a more conservative assessment. The results of the 95% and 97.5% UCL calculations are included in Appendix G.

The 95% UCL was used as the exposure point concentration (EPC) for each compound. The EPC is an estimate of the mean concentration of a compound found in a specific medium at an exposure point. If the compound was selected for additional analysis in the HHRA, the 95% UCL was used as the EPC for the rest of assessment. If the 95% UCL could not be determined, the maximum detected concentration for the compound was used as the EPC.

The maximum detected concentration for each compound identified as part of the initial screening process was compared to the respective Regional Screening Level (RSL) presented in the USEPA Regional Screening Tables. Groundwater samples were compared to the RSL Tapwater Supporting Table and subsurface soil samples were compared to the RSL Industrial Soil Table. The RSL is a chemical-specific, conservative, risk-based concentration for individual contaminants in air, drinking water and soil that may warrant further investigation or site cleanup. The RSL was used for the secondary screening selection to ensure a conservative assessment. RSL values and results of the secondary screening calculations are presented in Tables 4 and Table 5. CPCs identified as part of the secondary screening process are shown in Table 6.

7.4.1 Evaluation of Subsurface Soil Compounds

Based on the initial screening of subsurface soil samples, compounds evaluated using the secondary screening process were acetone, benzo(a)anthracene, dibenz(a,h)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, Aroclor 1254 and Aroclor 1260. The maximum detected concentration was compared to the RSL presented in the USEPA Regional Screening Tables for Industrial Soil. The RSL values are shown in Table 4.

Acetone was detected in 37 of the 52 subsurface soil samples at concentrations ranging from 0.0019 to 0.34 milligrams per kilogram (mg/kg). The 95% UCL was calculated to be 0.037 mg/kg using the 95% KM (Percentile Bootstrap) Method. The maximum detected concentration of 0.34 mg/kg was less than the industrial soil RSL for acetone of 630,000 mg/kg. Acetone is not considered a CPC at the Site.

Benzo(a)anthracene was detected in 43 of the 65 subsurface soil samples at concentrations ranging from 0.0034to 10.0 mg/kg. The 97.5% UCL was calculated using the KM Chebyshev Method and was determined to be 1.575 mg/kg. The maximum detected concentration of 10.0 mg/kg was greater than the industrial soil RSL for benzo(a)anthracene of 2.1 mg/kg. Therefore, benzo(a)anthracene is considered a CPC at the Site.

Dibenz(a,h)anthracene was detected in 15 of the 65 subsurface soil samples at concentrations ranging from 0.01 to 2.3 mg/kg. The 95% UCL was calculated using the KM Chebyshev Method and was determined to be 0.257 mg/kg. The maximum detected concentration of 2.3 mg/kg was greater than the industrial soil RSL for dibenz(a,h)anthracene of 0.21 mg/kg. Therefore, dibenz(a,h)anthracene is considered a CPC at the Site.

Chrysene was detected in 40 of the 65 subsurface soil samples at concentrations ranging from 0.0079 to 9.7 mg/kg. The 97.5% UCL was determined to be 1.54 mg/kg using the KM Chebyshev Method. The maximum detected concentration of 9.7 mg/kg was less than the industrial soil RSL for chrysene of 210 mg/kg. Chrysene is not considered a CPC at the Site.

Benzo(b)fluoranthene was detected in 49 of the 65 subsurface soil samples at concentrations ranging from 0.0045 to 14.0 mg/kg. The 97.5% UCL was determined to be 2.052 mg/kg using the KM Chebyshev Method. The maximum detected concentration of 14.0 mg/kg was greater than the industrial soil RSL for benzo(b)fluoranthene of 2.1 mg/kg. Benzo(b)fluoranthene is considered a CPC at the Site.

Benzo(k)fluoranthene was detected in 44 of the 65 subsurface soil samples at concentrations ranging from 0.0024-6.5 mg/kg. The 97.5% UCL was determined to be 0.966 mg/kg using the KM Chebyshev Method. The maximum detected concentration of 6.5 mg/kg was less than the industrial soil RSL for benzo(k)fluoranthene of 21.0 mg/kg. Benzo(k)fluoranthene is not considered a CPC at the Site.

Benzo(a)pyrene was detected in 40 of the 65 subsurface soil samples at concentrations ranging from 0.007 to 14.0 mg/kg. The 97.5% UCL was determined to be 1.992 mg/kg using the KM Chebyshev Method. The maximum detected concentration of 14.0 mg/kg was greater than the industrial soil RSL for benzo(a)pyrene of 0.210 mg/kg. Benzo(a)pyrene is considered a CPC at the Site.

Indeno(1,2,3-cd)pyrene was detected in 36 of the 65 subsurface soil samples at concentrations ranging from 0.0062 to 8.8 mg/kg. The 97.5% UCL was determined to be 1.131 mg/kg using the KM Chebyshev Method. The maximum detected concentration of 8.8 mg/kg was greater than the industrial soil RSL for indeno(1,2,3-cd)pyrene of 2.1 mg/kg. Indeno(1,2,3-cd)pyrene is considered a CPC at the Site.

Aroclor 1254 was detected in 27 of the 82 subsurface soil samples at concentrations ranging from 0.007 to 15.0 mg/kg. The 95% UCL was determined to be 1.241 mg/kg using the KM Percentile Bootstrap Method. The maximum detected concentration of 15.0 mg/kg was greater than the industrial soil RSL for Aroclor 1254 of 0.74 mg/kg. Aroclor 1254 is considered a CPC at the Site.

Aroclor 1260 was detected in 16 of the 82 subsurface soil samples at concentrations ranging from 0.025 to 1.6 mg/kg. The 95% UCL was determined to be 0.158 mg/kg using the KM Percentile Bootstrap Method. The maximum detected concentration of 1.6 mg/kg was greater than the industrial soil RSL for Aroclor 1260 of 0.74 mg/kg. Aroclor 1260 is considered a CPC at the Site.

7.4.2 Evaluation of Groundwater Compounds

Compounds evaluated as part of the secondary screening process for groundwater were benzene, naphthalene, toluene, trichlorofloromethane, 2,4-dimethylphenol, 4-methylphenol, 2-methylnaphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, carbazole, chrysene, indeno(1,2,3-cd)pyrene, phenol and PCBs (Aroclor 1254 and 1260). The maximum detected concentration was compared to the RSL presented in the USEPA Regional Screening Tables for tap water. The RSL values are shown in Table 5.

Benzene was detected in 1 of the 10 groundwater samples at a concentration of 1.6 µg/L. The 95% UCL was not calculated because only one distinct data value was in the data set. The maximum detected concentration of 1.6 µg/L was greater than the tap water RSL for benzene of 0.41 µg/L. Therefore, benzene is considered a CPC at the Site.

Naphthalene was detected in 2 of the 8 groundwater samples at concentrations of 3.8 to 13.0 µg/L. The 95% UCL was not calculated because only two distinct values were in the data set. The maximum detected concentration of 13.0 µg/L was greater than the tap water RSL for naphthalene of 0.14 µg/L. Therefore, naphthalene is considered a CPC at the Site.

Toluene was detected in 2 of the 10 groundwater samples at concentrations of 2.7 and 89.0 µg/L. The 95% UCL was not calculated because only two distinct values were in the data set. The maximum detected concentration of 89.0 µg/L was less than the tap water RSL for toluene of 2,300 µg/L. Therefore, toluene is not considered a CPC at the Site.

Trichlorofloromethane was detected in 2 of the 10 groundwater samples at concentrations of 1.75 and 6.3 µg/L. The 95% UCL was not calculated because only two distinct values were in the data set. The maximum detected concentration of 6.3 µg/L was less than the tap water RSL for trichlorofloromethane of 1,300 µg/L. Therefore, trichlorofloromethane is not considered a CPC at the Site.

2,4-Dimethylphenol was detected in 1 of the 8 groundwater samples at a concentrations of 3.7 µg/L. The 95% UCL was not calculated because only one distinct value was in the data set. The maximum detected concentration of 3.7 µg/L was less than the tap water RSL for 2,4-dimethylphenol of 730 µg/L. Therefore, 2,4-dimethylphenol is not considered a CPC at the Site.

4-Methylphenol was detected in 1 of the 8 groundwater samples at a concentration of 44.0 µg/L. The 95% UCL was not calculated because only one distinct value was in the data set. There is no tap water RSL for 4-methylphenol. In addition, no quantitative data exists from the USEPA for a toxicity assessment. Therefore, 4-methylphenol will not be included as a CPC at the Site.

2-Methylnaphthalene was detected in 1 of the 8 groundwater samples at a concentration of 16.0 µg/L. The 95% UCL was not calculated because only one distinct value was in the data set. The maximum detected concentration of 16.0 µg/L was less than the tap water RSL for 2-methylnaphthalene of 150 µg/L. Therefore, 2-methylnaphthalene is not considered a CPC at the Site.

Benzo(a)anthracene was detected in 2 of the 8 groundwater samples at concentrations of 0.44 and 8.3 µg/L. The 95% UCL was determined to be 3.653 µg/L using the Kaplan-Meier BCA Method. The maximum detected concentration of 8.3 µg/L was greater than the tap water RSL for benzo(a)anthracene of 0.029 µg/L. Therefore, benzo(a)anthracene is considered a CPC at the Site.

Benzo(b)fluoranthene was detected in 2 of the 8 groundwater samples at concentrations of 1.1 and 7.3 µg/L. The 95% UCL was determined to be 7.3 µg/L using the Kaplan-Meier BCA Method. The maximum detected concentration of 7.3µg/L is greater the RSL for benzo(b)fluoranthene of 0.029 µg/L. Therefore, benzo(b)fluoranthene is considered a CPC at the Site.

Carbazole was detected in 4 of the 8 groundwater samples at concentrations ranging from 0.41 to 92.0 µg/L. The 95% UCL was calculated using the 95% KM (t) Method and was determined to be 35.42 µg/L. There is no tap water RSL for carbazole. In addition, no quantitative data exists from the USEPA for a toxicity assessment. Therefore, carbazole will not be included as a CPC at the Site.

Benzo(a)pyrene was detected in 2 of the 8 groundwater samples at concentrations of 0.95 and 4.9 µg/L. The 95% UCL was not calculated because only two distinct values were in the data set. The maximum detected concentration of 4.9 µg/L was greater than the tap water RSL for benzo(a)pyrene of 0.0029 µg/L. Therefore, benzo(a)pyrene is considered a CPC at the Site.

Chrysene was detected in 5 of the 8 groundwater samples at concentrations ranging from 0.41 to 2.229 µg/L. The 95% UCL was calculated using the 99% KM Chebyshev Method and was determined to be 13.29 µg/L. When limited data are available or when the data are extremely variable, the 95% UCL can be greater than the highest detected concentration. Since the calculated UCL is unrealistic, the maximum detected concentration of 2.229 µg/L will be used as the EPC. The maximum detected concentration of 2.229 µg/L was less than the tap water RSL for chrysene of 2.9 µg/L. Therefore, chrysene is not considered a CPC at the Site.

Indeno(1,2,3-cd)pyrene was detected in 1 of the 8 groundwater samples at a concentration of 0.91 µg/L. The 95% UCL was not calculated because only one distinct value was in the data set. The maximum detected concentration of 0.91 µg/L is greater the RSL for indeno(1,2,3-cd)pyrene of 0.029 µg/L. Therefore, indeno(1,2,3-cd)pyrene is considered a CPC at the Site.

Phenol was detected in 1 of the 8 groundwater samples at a concentration of 330 µg/L. The 95% UCL was not calculated because only one distinct value was in the data set. The maximum detected concentration of 330 µg/L is less than the RSL for phenol of 11,000 µg/L. Therefore, phenol is not considered at CPC at the Site.

Aroclor 1254 was detected in 3 of the 8 groundwater samples at concentrations ranging from 1.7 to 6.1 µg/L. The 95% UCL determined to be 3.472 µg/L using KM(t) Method. The maximum detected concentration of 6.1 µg/L is greater the RSL for Aroclor 1254 of 0.034 µg/L. Therefore, Aroclor 1254 is considered a CPC at the Site.

Aroclor 1260 was detected in 5 of the 8 groundwater samples at concentrations ranging from 0.52 to 13.0 µg/L. The 95% UCL was calculated using the 97.5% KM (Chebyshev) method and was determined to be 12.29 µg/L. The maximum detected concentration of 13.0 µg/L is greater than the RSL for Aroclor 1260 of 0.034 µg/L. Therefore, Aroclor 1260 is considered a CPC at the Site.

7.5 SUMMARY OF CPC SELECTION

All compounds identified through the secondary screening process as CPCs will be considered in the risk assessment. A summary table showing the final selected compounds for each medium is shown in Table 6.

The CPCs identified in subsurface soil are benzo(a)anthracene, dibenz(a,h)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, Aroclor 1254 and Aroclor 1260.

The CPCs identified in groundwater are benzene, naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, Aroclor 1254 and Aroclor 1260.

7.6 EXPOSURE ASSESSMENT

7.6.1 Characterization of Exposure Setting

An exposure assessment was conducted to identify the potential for human contact to compounds detected in soil and ground water at the Site. Current land use and future planned land use conditions were examined to evaluate actual and potential exposures. The physical and geologic conditions at the Site are described in Section 2.0.

7.6.2 Potentially Exposed Population

The Site is currently vacant and adjacent to an airport. Changes in the season do not affect the activities at the Site and there are no residential or recreational activities. The proposed future reuse within the impacted area includes a paved parking lot and commercial building. There is no anticipated future use of the Site for residential purposes. Therefore, residential populations will not be considered as part of the assessment. While a trespasser might gain access to the Site, they would not come into contact with subsurface soil or groundwater and will not be considered as part of the risk assessment. The Site is secured by a chain link fence and locked gate. Therefore, it is unlikely that a trespasser would gain access to the Site.

Based on types of current and future human activity and land use patterns in the vicinity of the Site, the following populations will be evaluated in the risk assessment: commercial/industrial workers and construction workers.

7.6.3 Identification of Exposure Pathway – Subsurface Soils

Release of potential compounds of concern in subsurface soil may result in exposure to individuals through three major pathways (direct contact, inhalation and ingestion).

7.6.3.1 Dermal Exposure through Direct Contact

Direct contact with contaminated soil through construction may result in dermal exposure. Both organic and inorganic compounds may be absorbed through the skin from exposure to soil. Future use of the Site is commercial/industrial; therefore, the potential exists for direct exposure by construction crews and other workers performing intrusive activities at the Site. Dermal exposure to subsurface soil by the construction worker and commercial/industrial worker will be considered as a pathway of concern.

7.6.3.2 Inhalation from Particulates

If the correct conditions exist, contaminated soils can become airborne resulting in exposure through inhalation.

While the Site does contain some vegetation and grass, there is a potential for land disturbance during construction activities that may allow soil particulates to become airborne. Based on this information, inhalation from soil particulates is considered a pathway of concern for future construction and commercial/industrial workers at the Site.

7.6.3.3 Incidental Ingestion

Incidental ingestion of soil can occur in adults by consuming or placing in one's mouth objects, food, cosmetics, cigarettes and hands that may have either come in direct contact with soil or been contaminated with soil particulates carried by the wind. Therefore, incidental ingestion is considered a pathway of concern and will be analyzed for the construction and commercial/industrial worker.

7.6.3.4 Vapor Intrusion to Indoor Air Pathway from Soil

Subsurface soil sample results were compared to the screening levels in the USEPA OSWER *Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance* (USEPA, 2002a). Compounds detected in subsurface soil samples do not have screening levels; therefore, vapor intrusion to indoor air from subsurface soils will not be considered in this risk assessment.

7.6.4 Identification of Exposure Pathway – Groundwater

Release of CPCs to groundwater may result in exposure to individuals through three major pathways, including ingestion of groundwater as a drinking source, inhalation of vapor phase chemicals through showering or bathing and dermal exposure through direct contact of groundwater.

7.6.4.1 Drinking Source

Contaminated water used for drinking or cooking can cause exposure to individuals and population. Drinking water at the Niagara Falls AFRC is derived from public water. In addition, incidental ingestion of exposed groundwater during construction activities or trenching would be extremely rare, sporadic and difficult to quantify. Therefore, the pathway of ingestion of groundwater is not a potential risk.

7.6.4.2 Inhalation of Volatiles through Bathing and Other Tasks or Exposed Groundwater

The relatively high temperature of water used for showering tends to produce rapid volatilization of chemicals from domestic water into the confined volume of a bathroom. The current and future use of the Site is for commercial/industrial use; therefore, the pathway of inhalation exposure through bathing and other domestic tasks is not a concern to the worker.

Since future use of the Site is industrial/commercial and depth to water varies from 2.0 to 6.0 feet bgs, it is possible for groundwater to be exposed during excavation and trenching work. Therefore, the pathway of inhalation will be considered for exposed groundwater to the construction worker.

Contaminants with molecular weights less than 200 g/mol and a Henry's Law constant greater than $1.0E^{-5}$ atm-m^3/mol have the highest potential for volatilization (EPA, 1996).

Only two of the eight CPCs identified in groundwater have molecular weights less than 200 g/mol and Henry's Law Constant greater than $1.0E^{-5}$ atm-m^3/mol. Volatilization of contaminants from groundwater will be considered as a pathway of concern for benzene and naphthalene.

7.6.4.3 Dermal Exposure

Direct dermal exposure to groundwater can cause both inorganic and organic contaminants in water to be absorbed through the skin. Potential dermal exposure to groundwater could occur during drilling, excavation and other construction activities at the Site. Therefore, dermal exposure to groundwater to the construction worker will be considered as a pathway of concern.

7.6.4.4 Vapor Intrusion to Indoor Air from Groundwater

In accordance with USEPA OSWER *Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance* (USEPA, 2002a), benzene and naphthalene in groundwater were selected in the primary screening level as contaminants with potential toxic and volatile properties for vapor intrusion.

The maximum detected concentrations in groundwater samples for benzene and naphthalene were 1.6 and 8.4 ug/L, respectively. These concentrations were compared to the Tier II Screening Tables for target groundwater concentration. The target groundwater concentration is defined as the concentration corresponding to target indoor air concentration where the soil gas to indoor air attenuation factor is equal to 0.001 and partitioning across the water table obeys Henry's Law.

The Tier II groundwater screening levels for benzene and naphthalene are 5.0 and 150 ug/L, respectively. Since the maximum detected concentrations of benzene and naphthalene in groundwater do not exceed these levels, vapor intrusion to indoor air from groundwater will not be considered in this risk assessment.

7.6.5 Summary of Exposure Pathways

A summary of potential exposure pathways at the Site is outlined in Table 7. After examining current and reasonably foreseeable future uses of the Site, as well as contaminated media and the nature of the contaminants, five pathways of exposure have been identified. These exposures are dermal exposure to subsurface soil and groundwater, inhalation of subsurface soil particulates, incidental ingestion of subsurface soil and inhalation of groundwater. The construction worker will be examined for all pathways. The industrial/commercial worker will be examined for exposure to subsurface soil via dermal exposure, inhalation of particulates and incidental ingestion.

7.6.6 Estimation of Exposure

Once potential exposure pathways and potentially-exposed populations have been identified, the degree of exposure must be estimated as part of the assessment. The degree of exposure is evaluated by determining the contaminant concentrations that the population may be exposed, as well as the duration of the exposure and exposure pathways. These steps are necessary to estimate the dose of the contaminant to the exposed individual. This analysis is presented in the following subsections.

7.6.6.1 Estimation of Exposure Point Concentrations

To quantitatively estimate the risk of exposure to an individual, the concentration of the CPC must be known or estimated. This concentration is referred to as the EPC.

The EPC calculations follow the guidance of USEPA regulations, which recommends using the 95 % UCL of the mean concentration. The 95% UCL was calculated using the recommended PRO UCL 4.0 software. EPC values are shown in Section 7.4.1 and 7.4.2. All calculations are included in Appendix G. For data sets that could not be tested for normality due to the small sample size, the maximum detected concentration was used as the EPC. The EPCs for all CPCs are included in Table 4 and Table 5.

Quantitative exposure estimates are derived by combining EPCs with information describing the extent, frequency and duration of exposure for each receptor of concern. An overview of the approach used to quantify exposures is presented in the following subsection. The approach is consistent with guidance provided by the USEPA.

7.6.6.2 Reasonable Maximum Exposure

Based on USEPA risk assessment guidance, exposures are quantified by estimating the Reasonable Maximum Exposure (RME) associated with each pathway of concern. The RME is the maximum exposure that is reasonably expected to occur at a site under both current and future land-use conditions. The RME or intake estimate for a given pathway is derived by combining the EPC for each compound with reasonable maximum values describing the extent, frequency and duration of exposure (USEPA, 1989b). The RME is intended to place a conservative upper-bound limit on the potential risk.

The general equation used for calculating chemical intake in this risk assessment is:

$$\text{Intake} = \frac{C \times CR \times RAF \times EF \times ED}{BW \times AT \times CF}$$

Where:

Intake	daily intake averaged over the exposure period
C	concentration of the chemical in the exposure medium (EPC)
CR	contact rate for the medium of concern
RAF	relative absorption factor
EF	exposure frequency

ED duration of exposure
BW body weight of the exposed individual (estimated)
AT average timing (for carcinogens, 70 years, for non-carcinogens, the equivalent of the exposure duration)
CF units conversion factor (365 days/year)

Intake calculations were performed for the construction worker and commercial/industrial worker at the Site. In accordance with the RAGS guidelines and to ensure a conservative estimation for the commercial/industrial worker, the exposure frequency was 250 days. The exposure duration was 25 years. For the construction worker, the exposure frequency was 180 days and the exposure duration was 0.5 years. The average time period for lifetime exposure was 70 years (25,550 days) for carcinogenic risk. The body weight used for an adult is 70 kilograms, which is the standard default value for body weight. Additional values specific to each pathway are detailed in the next subsection.

7.6.7 Calculation of Intake

Below are the equations used to calculate total intakes for the identified potential pathways.

Dermal exposure from subsurface soil (worker)

$$DA_{event} = C_{soil} \times CF \times AF \times ABS_d$$

$$\text{Dermal absorbed dose (mg/kg-day)} = \frac{DA \times EF \times ED \times EV \times SA}{BW \times AT}$$

DA Absorbed dose per event (mg/cm^2-event)
C_{soil} Chemical concentration (EPC in mg/kg)
CF Conversion factor
AF Soil to Skin Adherence Factor
ABS Absorption Factor
EF Exposure frequency (days/year)
ED Exposure duration (years)
EV Event frequency (events/day)
SA Skin surface area available for contact
BW Body weight
AT Averaging Time

The EPC was expressed in mg/kg and varied for each specific compound. The skin surface available for contact by a worker assumed exposure of the head, hands and arms of an adult male (3,300 cm^2) as recommended by RAGS. The soil to skin adherence factor was assumed to be 0.2 mg/cm^2 for the industrial worker and 0.3 mg/cm^2 for the construction worker. (RAGS, Part E-Exhibit 3-5 and the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*, USEPA 2002). The absorption factor (ABS) value varies for each compound and was obtained from the Regional Screening Level Soil Table. Calculations for dermal exposure from subsurface soil are presented in Tables 8 and 9.

Inhalation exposure from subsurface soil (worker)

$$\text{Exposure concentration (ug/m}^3\text{)} = \frac{CA \times ET \times EF \times ED}{AT}$$

Where:

CA Chemical concentration in air (ug/m^3)
ET Exposure time (hours/day)
EF Exposure frequency (days/year)
ED Exposure duration
AT Averaging Time

The inhalation exposure equation was taken from *RAGS Part F: Supplemental Guidance for Inhalation Risk Assessments*. The EPC was converted to ug/m^3 and varied for each specific compound. The average time was calculated by converting the exposure duration to total amount of hours exposed. Exposure concentration calculations for inhalation from subsurface soil are presented in Tables 10 and 11.

In order to convert the concentration of compounds in soil to air, the soil concentration was divided by a calculated particle emission factor (PEF). To model outdoor air particulate concentrations of CPCs, a generic particulate emission factor was developed based on the method described in the *Soil Screening Guide* (USEPA 1996b) and the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA, 2002). The particulate emission factor describes the fraction of each COPC in surface or exposed subsurface soil that becomes airborne in particulate form. The PEF was calculated at 6.83E8 using values obtained from Table 4-5: Derivation of the PEF- Commercial/Industrial Scenario from the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA, 2002).

$$PEF = Q/C \times \frac{3{,}600 \text{ sec/hour}}{0.036 \times (1-V) \times (U_m/U_t)^3 \times F(x)}$$

Q/C Ratio of the geometric mean air concentration to the emission flux at the center of a square source, calculated using Site specific information to be 47.07 (g/m^2-s)(kg/m^3)
V Fraction of vegetative cover (50%)
U_m Mean annual wind speed (4.69 m/s)
U_t Equivalent threshold wind speed at 7 m (11.32 m/s)
F(x) Function of wind speed over threshold wind speed (0.194)

Incidental ingestion from subsurface soil (worker)

$$\text{Intake (mg/kg-day)} = \frac{CS \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$$

CS Chemical concentration (EPC)
IR Ingestion rate (mg of soil per day)
CF Conversion factor
FI Fraction Ingested from Contaminated Source
EF Exposure frequency
ED Exposure duration
BW Body weight
AT Averaging Time

The EPC was expressed in mg/kg and varied for each specific compound. The ingestion rate was assumed to be 100 mg/day for the commercial/industrial worker and 330 mg/day for the construction worker based on *RAGS Part A* (USEPA, 1992) and the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA 2002). The conversion factor was 10^{-6} mg/kg. The fraction ingested from a contaminated source was assumed to be 100%. Absorbed dose calculations for incidental ingestion from sub surface soil are presented in Tables 12 and 13.

Inhalation of volatiles from exposed groundwater (worker)

$$\text{Exposure concentration (ug/m}^3\text{)} = \frac{CA \times ET \times EF \times ED}{AT}$$

Where:
CA Chemical concentration in air (ug/m^3)
ET Exposure time (hours/day)
EF Exposure frequency (days/year)
ED Exposure duration
AT Averaging Time

The inhalation exposure equation was taken from *RAGS Part F: Supplemental Guidance for Inhalation Risk Assessments*. The EPC was converted to ug/m^3 and varied for each specific compound. The average time was calculated by converting the exposure duration to total amount of hours exposed. Exposure concentration calculations for inhalation from groundwater are presented in Table 14.

In order to convert the concentration of compounds in groundwater to air, guidance provided by the Virginia Department of Environmental Quality (VDEQ), *Exposures of Workers to Volatiles in a Construction/Utility Trench*, was used. Using Equation 3-1 from the VDEQ guidance, the airborne concentration of a contaminant in a trench is calculated below.

$$C_{trench} = C_{groundwater} \times VF$$

Where:

C_{trench}	Concentration of the contaminant in the trench (ug/m^3)
$C_{groundwater}$	Concentration of the contaminant in groundwater (ug/L)
VF	Volatilization factor (L/m^3)

The volatilization factor was calculated for each compound using the Equation 3-4: VF for Groundwater Less Than or Equal to 15 Feet and default values provided in Table 3.8 in the VDEQ guidance

$$VF = \frac{K_i \times A \times F \times 10^{-3} \times 10^{4} \times 3{,}600}{ACH \times V}$$

Where:

K_i	Overall mass transfer coefficient of contaminant (cm/s)
A	Area of the trench floor (m^2)
F	Fraction of floor through which contaminant can enter (unitless)
ACH	Air changes per hour (h^{-1})
V	Volume of trench (m^3)
10^{-3}	Conversion factor (L/cm^3)
10^4	Conversion factor (cm^2/m^2)
3,600	Conversion factor (s/hr)

The K_i values are compound specific and values were obtained from Table 3.8 of the VDEQ guidance. The trench was assumed to be 3 feet wide by 8 feet long by 8 feet deep. It was assumed that there are two air changes per hour.

Dermal exposure from groundwater (worker)

$$\text{Dermal Absorbed dose (mg/kg-day)} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

DA_{event}	Absorbed dose per event (mg/cm^2-event)
EV	Event frequency
ED	Exposure duration
EF	Exposure frequency
SA	Skin averaging surface
BW	Body weight
AT	Averaging Time

The EPC was expressed in milligrams per cubic centimeter (mg/cm^3) and varied for each specific compound. The skin surface available for contact by an adult worker was $3{,}300cm^2$, as recommended by RAGS Part E, Exhibit 2. Body weight was assumed to be 70 kg. Absorbed dose calculations for dermal exposure from groundwater are presented in Table 15. When the event duration is less than the time it takes for a compound to reach a steady state, the following equation is used:

$$DA_{event} = 2 \times FA \times Kp \times CW \times \sqrt{[(6 \times J_{event} \times T_{event}) / \pi]}$$

FA Fraction absorbed from water
Kp Dermal permeability coefficient
CW Chemical concentration in water
J_{event} Lag time per event
T_{event} Event duration

The fraction absorbed from water is chemical specific and was obtained from RAGS Part E, Exhibit B-3. The dermal permeability constant (Kp) varied for each compound. Kp values were obtained from RAGS Part E: Exhibit B5. The J_{event} is the chemical specific lag time between exposure events located in RAGS Part E, Appendix B. The T_{event} is the hours per event and was assumed to be 0.58 in accordance with RAGS Part E, Exhibit 3-2.

7.7 TOXICITY ASSESSMENT

7.7.1 Hazard Identification

The purpose of the toxicity assessment is to define the relationship between the dose of a compound and the probability that a carcinogenic or non-carcinogenic effect will occur. The toxicity assessment is divided into two parts: hazard identification and dose-response evaluation. As stated in RAGS, hazard identification is the process of determining whether exposure to a compound will cause an increase in the incidence of a particular adverse health effect and whether the health effect is likely to occur in humans. The dose-response evaluation quantifies the toxicological information and characterizes the relationship between the dose of a compound and the incidence of adverse health effects in a population. Toxicity values are expressed as reference doses (RfD) for oral non-carcinogenic effects and slope factors for carcinogenic effects.

Each compound was classified by its degree of carcinogenetic properties. This information was obtained from the USEPA Integrated Risk Information System (IRIS). The USEPA uses a weight of evidence narrative to define the level of a carcinogen (Guidelines for Carcinogenic Risk Assessment, 2005). However, the compounds used in this risk assessment are still listed with IRIS under the old alphanumerical classification system (USEPA, 1986). Ratings for the compounds evaluated as part of the risk assessment are included in Tables 16 through 23.

Alphanumerical USEPA Cancer Classification:

A- Human Carcinogen: There is enough evidence to conclude that it can cause cancer in humans.

B1- Probable Human Carcinogen: There is limited evidence that it can cause cancer in humans, but at present it is not conclusive.

B2- Probable Human Carcinogen: There is inadequate evidence that it can cause cancer in humans, but at present it is far from conclusive.

C- Possible Human Carcinogen: There is limited evidence that it can cause cancer in animals in the absence of human data, but at present it is not conclusive.

D- Not classifiable as to Human Carcinogenicity: There is no evidence at present that it causes cancer in humans.

E- Evidence of Non-Carcinogenicity for Humans: There is strong evidence that it does not cause cancer in humans.

All subsurface soil compounds identified in this risk assessment were rated as B2 by the USEPA classification system. Therefore all toxicity values were evaluated as carcinogens.

In the groundwater compounds, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, Aroclor 1254 and Aroclor 1260 were rated as B2 by the USEPA classification system. Benzene was rated an A. All toxicity values were evaluated as carcinogens.

Although Aroclor 1254 is rated as a B2 carcinogen, risk characterization data exists for non-cancer risk to dermal exposure. Therefore, Aroclor 1254 will examined for carcinogenic and non-carcinogenic risk to dermal exposure.

Naphthalene was rated a C by the USEPA classification system. Risk characterization data for naphthalene is only available as non-cancer risk for dermal exposure, but carcinogenic risk characterization data does exist for inhalation exposure. Therefore, naphthalene in groundwater is evaluated as a non-carcinogen for dermal exposure and as a carcinogen for inhalation exposure.

Summaries of the Agency for Toxic Substances & Diseases Registry (ATSDR) toxicological profiles (ToxFAQs™) were reviewed to determine possible health effects from chronic exposure. The ToxFAQs™ are included in Appendix H.

7.7.2 Dose Response Evaluation

The hierarchy of sources for identifying dose-response values was followed using the guidelines set forth in Memorandum: *Human Health Toxicity Values in Superfund Risk Assessments* which replaces the guidelines of RAGS Part A. The USEPA IRIS database was first consulted for all compounds. For compounds not available through IRIS, the USEPA Provisional Peer Reviewed Toxicity Values (PPRTVs) and California EPA values (CALEPA) were consulted.

Using the recommended equations for each pathway, the absorbed dose for each CPC was calculated for all carcinogens and non-carcinogens. The slope factor for each compound was obtained from the Regional Screening Level Tables. The slope factor was adjusted for all dermal routes of exposure to subsurface soil to represent the absorbed amount and not the administered. In accordance with RAGS Part E, Exhibit 4-1, toxicity factors for PCBs and PAHs were not adjusted for exposure to groundwater. Therefore only benzene required adjustment. The slope factor for benzene was divided by the oral absorbed efficiency value, which was obtained from the RSL tables. The calculated absorbed dose for the compounds is presented in Tables 16, 17 and 23.

7.8 RISK CHARACTERIZATION

The exposure analysis and toxicity assessment are integrated to develop both the quantitative and qualitative risk evaluations. The average daily intakes calculated as part of the exposure assessment were combined with the dose-response values from the toxicity assessment. The methodology used to quantitatively assess carcinogenic risk is described in detail in the following subsection.

All compounds with potential carcinogenic effects were evaluated based on guidance from the USEPA RAGs. An individual upper-bound excess lifetime cancer risk was calculated by multiplying the calculated estimated daily intake by the appropriate carcinogenic slope factor (CSF) for each compound. The total lifetime cancer risk for simultaneous exposure to all chemicals within a pathway was calculated by using the summation of each individual chemical.

Non-carcinogens were evaluated based on guidance from the USEPA RAGS. A non-cancer hazard quotient was calculated by dividing the calculated exposure intake by the appropriate reference dose for each compound.

The USEPA has developed an estimate of the potential risk for carcinogenic compounds. Potential carcinogenic effects are expressed as a probability or risk of cancer resulting from exposure to a compound. The USEPA considers a cancer risk value greater than 1.0E-4 to 1.0E-6 to represent a potentially unacceptable level of risk (*EPA Memo: Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*).

The non-cancer hazard quotient assumes that there is a level of exposure below which it is unlikely for even sensitive populations to experience adverse health effects. At this point, the hazard quotient would equal one. If the exposure level exceeds this threshold, there may be a concern for potential non-cancer effects.
Receptors may have contact with more than one contaminated medium. The risks of these

exposures are summed and evaluated to provide a complete characterization of health risks associated with contamination at the Site. The risk characterization summary tables are included as Tables 26 and 27.

7.8.1 Summary of Risk – Subsurface Soil – Commercial/Industrial Worker

The total carcinogenic risk for the future commercial/industrial worker exposure to dermal contact from subsurface soil is 5.23E-05. Cancer risks for dermal contact from subsurface soil for each carcinogenic compound are summarized in Table 16. Benzo(a)pyrene had the highest lifetime cancer risk of dermal contact from subsurface soil (3.4E-05).

The total carcinogenic risk for the commercial/industrial worker exposure to inhalation of particles from subsurface soil is 2.58E-08. Cancer risks for inhalation of particles from subsurface soil for each carcinogenic compound are summarized in Table 18. Indeno(1,2,3-cd)pyrene had the highest lifetime cancer risk of inhalation from sub surface soil particulates (1.21E-08).

The total carcinogenic risk for the commercial/industrial worker exposure to ingestion from subsurface soil is 7.90E-06. Cancer risks for ingestion from subsurface soil for each carcinogenic compound are summarized in Table 20. Benzo(a)pyrene had the highest lifetime cancer risk from ingestion of subsurface soil (5.08E-06).

The total cancer risk for workers from exposure to subsurface soil is 6.0E-05. This value is within the acceptable range set by USEPA from 1E-04 to 1E-06. Total cancer risk for workers from exposure to subsurface soil is summarized in Table 26.

7.8.2 Summary of Risk – Subsurface Soil – Construction Worker

The total carcinogenic risk for the construction worker exposure to dermal contact from subsurface soil is 1.13E-06. Cancer risks for dermal contact from subsurface soil for each carcinogenic compound are summarized in Table 17. Benzo(a)pyrene had the highest lifetime cancer risk of dermal contact from subsurface soil (7.2E-07).

The total carcinogenic risk for the construction worker exposure to inhalation of particles from subsurface soil is 1.02E-08. Cancer risks for inhalation of particles from subsurface soil for each carcinogenic compound are summarized in Table 19. Benzo(a)pyrene had the highest lifetime cancer risk of inhalation from sub surface soil particulates (5.45E-09).

The total carcinogenic risk for the construction worker exposure to ingestion from subsurface soil is 3.77E-07. Cancer risks for ingestion from subsurface soil for each carcinogenic compound are summarized in Table 21. Benzo(a)pyrene had the highest lifetime cancer risk from ingestion of subsurface soil (2.42E-07).

The total cancer risk for workers from exposure to subsurface soil is 1.5E-06. This value is within the acceptable range set by USEPA from 1E-04 to 1E-06. Total cancer risk for workers from exposure to subsurface soil is summarized in Table 26.

7.8.3 Summary of Risk – Groundwater – Carcinogenic – Construction Worker

The total carcinogenic risk for the construction worker exposure to inhalation of volatiles from groundwater is 3.29E-04. Cancer risks for the future worker exposure to inhalation of volatiles from groundwater for each carcinogenic compound are summarized in Table 22. Naphthalene had the highest lifetime cancer risk of inhalation of volatiles from groundwater (3.10E-04).

The total carcinogenic risk for the construction worker exposure to dermal contact from groundwater is 1.75E-05. Cancer risks for worker exposure to dermal contact from groundwater for each carcinogenic compound are summarized in Table 23. Benzo(a)pyrene had the highest lifetime cancer risk of dermal contact from groundwater (1.67E-05).

The total cancer risk for workers from exposure to groundwater is 3.5E-04. This value is slightly outside the acceptable range set by USEPA of 1E-04 to 1E-06. Total cancer risk for workers from exposure to groundwater is summarized in Table 26.

7.8.4 Summary of Risk – Groundwater – Non Carcinogenic - Worker

The total non-carcinogenic risk for the future worker exposure to dermal contact from groundwater is 7.25E-06. Non cancer risks are summarized in Table 27.

The total non-carcinogenic risk for the future worker exposure to groundwater is 7.3E-05, which is less than the hazard quotient of 1 set by the USEPA. Total non-cancer risks for workers exposed to groundwater is summarized in Table 27.

7.8.5 Summary of Risk – Subsurface Soil – Non Carcinogenic - Worker

The total non-carcinogenic risk for the commercial/industrial worker exposure to dermal contact from subsurface soil is 2.01E-02. Non cancer risks are summarized in Table 24.

The total non-carcinogenic risk for the construction worker exposure to subsurface soil is 4.33E-04, which is less than the hazard quotient of 1 set by the USEPA. Total non-cancer risks for workers exposed to subsurface soil is summarized in Table 27.

7.9 UNCERTAINTY IN RISK ESTIMATES

The interpretation of risk estimates is subject to a number of uncertainties as a result of conservative assumptions inherent in risk assessments. Quantitative human health risk estimates are based on numerous conservative assumptions. These conservative estimates lead to uncertainty in exposure and toxicity. Major sources of uncertainty and their potential effects are detailed in Table 28.

Exposure point concentrations for each compound were calculated utilizing the 95% UCL. In some instances, due to statistical distribution, the 97.5% UCL was calculated, yielding even more conservative numerical estimates of concentrations at the Site.

Dermal cancer slope factors (CSFd) and reference doses (RfDd) were not listed in the USEPA Regional Screening Tables or the IRIS database. To obtain the correct dermal doses, the ingestion dose values were converted following guidelines presented in RAGS Part A.

The tap water RSLs are calculated using residential land use assumptions. As such, these RSLs are not reflective of industrial exposures and may overestimate exposures via the water pathways.

8.0 REMEDIAL ALTERNATIVES EVALUATION/FEASIBILITY STUDY

8.1 REMEDIAL ACTION OBJECTIVES

Remedial measures for the Site must satisfy Remedial Action Objectives (RAOs) in accordance with the NYSDEC Technical Guidance for Site Investigation and Remediation. The RAOs are statements that convey the goals for minimizing or eliminating substantial risks to public health and the environment. The RAOs for the Site are as follows:

Subsurface Soil

- Prevent ingestion/direct contact with contaminated soil;
- Prevent inhalation of, or exposure from contaminants volatilizing from contamination in soil; and
- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Groundwater

- Prevent ingestion of groundwater with contaminants levels exceeding drinking water standards;
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater;
- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practical; and
- Prevent the discharge of contaminants to surface water.

The results of the HHRA (see Section 7.0) concluded that there is an unacceptable risk associated with the potential exposure of construction workers to groundwater via inhalation.

8.2 REMEDIAL ALTERNATIVE EVALUATION CRITERIA

In addition to achieving the RAOs, the Site remedy must be evaluated in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010. Specifically, the guidance states “When proposing an appropriate remedy, the person responsible for conducting the investigation and/or remediation should identify and develop a remedial action that is based on the following criteria”.

1. Short-Term Impacts and Effectiveness: This criterion addresses the impacts of the alternative during the construction and implementation phase until the remedial action objectives are met. Factors to be evaluated include protection of the community during the remedial actions; protection of workers during the remedial actions; and the time required achieving the remedial action objectives.

2. Long-Term Effectiveness and Permanence: This criterion addresses the long-term protection of human health and the environment after completion of the remedial action. An assessment is made of the effectiveness of the remedial action in managing the risk posed by untreated wastes and the long-term reliability of the remedial action.

3. Reduction of Toxicity, Mobility, and Volume: This criterion addresses NYSDEC's preference for selecting "remedial technologies that permanently and significantly reduce the toxicity, mobility and volume" of the contaminants of concern at a site. This evaluation consists of assessing the extent that the treatment technology destroys toxic contaminants, reduces mobility of the contaminants using irreversible treatment processes, and/or reduces the total volume of contaminated media.

4. Implementability: This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of services and materials. Technical feasibility refers to the ability to construct and operate a remedial action for the specific conditions at a site and the availability of necessary equipment and technical specialists. Technical feasibility also includes the future operation and maintenance, replacement and monitoring that may be required for a remedial action. Administrative feasibility refers to compliance with applicable rules, regulations, statutes and the ability to obtain permits or approvals from other government agencies or offices; and the availability of adequate capacity at permitted treatment, storage and disposal facilities and related services.

5. Compliance with Applicable or Relevant and Appropriate Standard Criteria and Guidance (SCGs) and Remediation Goals: This criterion is used to evaluate the extent to which each alternative may achieve the RAOs which were outlined in Section 8.1.

6. Overall Protection of Human Health and the Environment: This criterion provides an overall assessment of protection with respect to long-term and short-term effectiveness and compliance with cleanup goals.

7. Cost: The estimated capital costs, long-term operation and maintenance costs, and environmental monitoring costs are evaluated. The comparative cost estimates are intended to reflect actual costs with an accuracy of +50 percent to -30 percent.

8.3 LAND USE EVALUATION

In developing and screening remedial alternatives, NYSDEC Part 375 regulations require that the reasonableness of the anticipated future land be factored into the evaluation. The future land use for the Site is restricted commercial usage.

Although the Site is to be used for commercial purposes, evaluating a more restricted-use scenario is required. DER-10 guidance also requires the evaluation of a "no-action" alterative to provide a baseline for comparison against other alternatives. Since an IRA has been completed for the Site, the following alternatives were evaluated.

- No Action (Alternative No. 1);

- Implementation of a Site Management Plan (Alternative No. 2); and
- Unrestricted Use Cleanup (Alternative No. 3).

The following section discusses the evaluation of these alternatives.

8.3 ALTERNATIVE EVALUATION

8.3.1 No Further Action

Under this alternative, the Site would remain in its current state, with no additional controls in-place.

Short-Term Impacts and Effectiveness: There are potential short-term impacts associated with this alternative. Future subsurface construction activities at the Site could result in potential exposure to groundwater contamination at levels deemed unacceptable according to the HHRA.

Long-Term Effectiveness and Permanence: The no further action alternative involves no additional equipment, institutional/engineering controls or facilities subject to maintenance.

Reduction of Toxicity, Mobility, and Volume: The IRA completed at the Site has reduced the toxicity, mobility and volume of contaminants at the Site.

Implementability: No technical or administrative implementability issues are associated with the no further action alternative.

Compliance with Applicable or Relevant and Appropriate SCGs and Remediation Goals:
Under the current and reasonably anticipated future use scenario, this alternative is not expected to meet the chemical-specific SCGs for the identified soil (i.e., CSCOs) and groundwater (i.e., Class GA criteria) at all locations and it does not meet the RAOs for the construction worker exposure scenario, as there is potential exposure to groundwater at levels deemed unacceptable by unknowing workers according to the HHRA.

Overall Protection of Human Health and the Environment: As the Site exists, there is a potential for worker exposure to groundwater levels via inhalation at levels deemed unacceptable according to the HHRA.

Cost: There would be no capital or long-term operation, maintenance or monitoring costs associated with the no further action alternative.

8.3.2 Implementation of a Site Management Plan

The second alternative is a Site Management Plan (SMP), which would be developed to address contaminated soil and groundwater remaining at the Site in the event subsurface activities were performed (i.e., site upgrades, utility repair, new construction, etc.).

Short-Term Impacts and Effectiveness: This alternative is considered an adequate remedy related to short-term impacts and effectiveness. The risks associated with direct contact with soil and

groundwater contaminants from future construction activities would be prevented as the SMP would address the methods and practices for dealing with contamination encountered, decontamination of equipment, particulate vapor release, dust monitoring, etc. The implementation of this alternative will be effective in preventing exposure to workers and construction personnel and meet the RAOs for soil.

Long-Term Effectiveness and Permanence: This alternative would have long-term effectiveness in managing the risks associated with exposure to soil and groundwater contaminants through implementation of the SMP.

Reduction of Toxicity, Mobility, and Volume: This alternative does not involve the removal and/or treatment of soil contamination although the SMP would identify how to properly handle and manage contaminated soil and groundwater when and if encountered.

If construction or excavation activities are conducted; any soil, groundwater or material generated will be managed and disposed in accordance with the SMP.

Implementability: This alternative is readily implementable on a technical basis.

Compliance with Applicable or Relevant and Appropriate SCGs and Remediation Goals: This alternative is not expected to meet the chemical-specific SCGs for the identified soil (i.e., CSCOs) and groundwater (i.e., Class GA criteria) contamination at all locations contamination, unless these materials are removed for disposal due to planned maintenance or construction activities. These would be managed in accordance with the SMP and would meet the RAOs.

Overall Protection of Human Health and the Environment: This alternative is considered an adequate remedy to reduce the risk or exposure for human health. Implementation of this alternative would result in eliminating potential exposure to contaminants during construction or excavation activities. Although the alternative will not meet the chemical SCGs, it will manage soil, groundwater or materials generated during maintenance or construction activities.

Cost: Total capital costs for this alternative are estimated to total approximately $13,200 for the preparation and implementation of a SMP as shown in Appendix H. Annual costs associated with the SMP, which include inspection and verification of institutional and engineering controls and submittal of an annual Periodic Review Report is approximately $3,360, which has a net present value (assuming 30 years) of approximately $83,200.

8.3.3 Unrestricted Use Soil Cleanup & Groundwater Removal

The Unrestricted Use alternative would necessitate remediation of soil and fill material where concentrations exceed the USCOs. For unrestricted use scenarios, excavation and off-Site disposal of impacted soil and fill is generally regarded as the most applicable remedial measure. This alternative assumes that those non-building areas which exceed USCOs would be excavated and disposed at an approved off-Site landfill. During the excavations, groundwater encountered would also be captured, stored and disposed of off-Site (assumed disposal into the City of Niagara Falls sanitary sewer system).

Based on the Site analytical data from this and previous investigations, it is estimated that an approximately 20,500 square foot area or 3,034 cubic yards of soil would be excavated and 92,000 gallons of perched groundwater would be pumped from the excavations. The soil and groundwater would be disposed of off-site.

Short-Term Impacts and Effectiveness: There are several potential short-term impacts associated with this alternative.

There is potential for impacts to human health (workers and construction personnel) due to direct contact, potential vapor and particulate releases during excavation. Thus, field personnel would wear appropriate personal protective equipment during excavation in order to limit health risks due to exposure to contaminants and physical hazards and monitoring would be required in order to mitigate potential conditions.

Contamination of equipment used for excavation purposes could carry contamination off-site. Therefore, equipment would require decontamination prior to removal, as necessary, in order to avoid the transport of contaminants.

Human health and the environment would be protected under this alternative for soils and it would remove potential source areas of groundwater contamination. This alternative is expected to meet the RAOs for the soils at completion of the excavation because the soil contamination will be removed from the Site. Confirmatory soil sampling would be performed to verify the effectiveness of the alternative.

Long-Term Effectiveness and Permanence: This alternative is considered an adequate, reliable and permanent remedy for soil and groundwater and, as such, the risks involved with the migration of contaminants and direct contact with soil and groundwater contaminants would be reduced. Remediation of contaminated soils could be completed within about 1 month.

Reduction of Toxicity, Mobility, and Volume: This alternative involves the removal and off-site disposal of the impacted soil and groundwater. The toxicity, mobility and volume of this contamination will be reduced by excavation of contaminated soils. Additionally, impacted groundwater would be containerized and treated via the City of Niagara Falls sanitary sewer treatment plant.

Implementability: This alternative is implementable on a technical basis with standard construction

methods and equipment. Materials and services necessary for construction are readily available

Compliance with Applicable or Relevant and Appropriate SCGs and Remediation Goals: This alternative is expected to meet the RAOs and chemical-specific SCGs for the soils.

Overall Protection of Human Health and the Environment: This alternative is considered to be protective of human health and the environment.

Cost: Total capital costs for this alternative are estimated to total approximately $ 335,800 for remediation to Unrestricted SCOs as shown in Appendix H. The quantities and cost associated assumptions, estimated for comparative purposes, are presented in Appendix H.

8.4 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

The remedial alternatives discussed in Section 8.3 are compared below on the basis of the six (6) environmental and one (1) cost criteria, based on the detailed analysis provided above.

Short Term Impacts and Effectiveness

Alternative No. 3 involves excavation work, which could possibly cause exposure to contamination during remediation. Alternatives No. 1 and No. 2 would not cause disruption to the facility. Alternatives No. 2 and 3 would reduce potential exposures to existing soil contamination and Alternative No. 2 would properly manage materials generated from scheduled maintenance or construction activities.

Alternative Nos. 2 and 3 are expected to achieve the RAOs, however Alternative No. 1 will not.

Long Term Effectiveness and Permanence

Alternative Nos. 2 and 3 are considered to be adequate, reliable remedies for the management and/or remediation of soil contamination. The risks involved with the exposure to contaminants or direct contact with soil contaminants, although considered low, would still exist with Alterative No. 1.

Reduction of Toxicity, Mobility and Volume

Alternative No. 3 provides for the greatest reduction of toxicity, mobility and volume of soil and groundwater contamination, as the majority of the contamination would be removed and disposed of off-site.

Alternatives Nos. 1 and 2 will not reduce the toxicity, mobility and volume of the contamination; however, Alternative No. 2 will reduce the risk of exposure to contaminants should they be encountered during scheduled or planned maintenance or construction activities performed at the Site. Should contaminants be encountered, the SMP would identify management, handling and disposal procedures.

Implementability
Alternatives No. 1, 2 and 3 are technically and administratively implementable and can be implemented with readily available methods, equipment, materials and/or services.

Compliance with Applicable or Relevant and Appropriate SCGs and Remedial Goals
Alternative No. 3 is expected to achieve compliance with the chemical-specific SCGs for soil. Alternatives No. 2 and 3 will achieve compliance with RAOs and Alternative No. 1 will not achieve compliance with the RAOs related to the construction worker exposure scenario.

Overall Protection of Human Health and the Environment
Alternative No. 1 involves taking no further action. As the Site exists, there is a potential for construction worker exposure to groundwater levels via inhalation act at levels deemed unacceptable according to the HHRA.

Alternative No. 2 involves the implementation of a SMP. It is considered an adequate remedy to reduce the risk of exposure for human health. Implementation of this alternative would result in eliminating potential exposure to contaminants during construction or excavation activities. Although the alternative will not meet the chemical SCGs, it will manage soil, groundwater or materials generated during maintenance or construction activities.

Alternative No. 3 involves the removal of the contaminated soil and groundwater, and would be the most protective of human health and the environment.

Cost
Alternative No. 1, which involves taking no further action, has the lowest capital and O&M cost as there will be no additional remedial activities completed.

Alternative No. 2, which is the implementation of a SMP, has the second highest capital cost of approximately $13,200. O&M costs would associated with Alternative No. 2 include annual inspection and report preparation which are approximately $3,360.

Alternative No. 3, which includes removal of contaminated soil and groundwater, has the highest capital cost estimated at approximately $335,800 for remediation to Unrestricted SCOs. There is no long term O&M cost associated with Alternative No. 3.

8.5 RECOMMENDED REMEDIAL MEASURE

Based on the alternative evaluation, the IRA completed at the Site and that the only exposure scenario identified by the HHRA as concern was exposure to impacted groundwater by construction workers, the implementation of a Site Management Plan would satisfy the RAOs for the Site. Accordingly, the implementation of a Site Management Plan is the recommended as the remedial alternative for the Site. The future owner will be responsible for developing and implementing the Site Management Plan, which will be based on the planned redevelopment and use of the Site.

9.0 CONCLUSIONS/RECOMMENDATIONS

9.1 CONCLUSIONS

The USACE, Louisville District retained the services of PARS to conduct a RI, IRA, HHRA and feasibility study at the Niagara Falls Armed Forces Reserve Center located at 9400 Porter Road in Niagara Falls, New York. The RI and IRA were conducted in accordance with the approved *QAPP/Sampling Plan* (PARS, September 2011).

9.1.1 Soil Samples

On September 26 through September 28, 2011, thirty soil probes (16 primary locations and 14 secondary locations) were advanced at the Site using direct push methods via a 2-inch diameter macro-core sampler. Soil boring locations are shown in Figure 4 and soil probe logs are included in Appendix A.

Two samples were collected for laboratory analysis from each of the probes. Soil samples collected from the primary locations were submitted for TCL VOCs, TCL SVOCs and PCBs analysis. Secondary soil samples were analyzed at select locations based on the results of the primary samples.

Acetone was detected in soil sample SP-23-2-4 at a concentration slightly exceeding the USCO for the compound of 50 µg/kg. Acetone is a common laboratory contaminant and is not considered a contaminant of concern at the Site. All other detected VOCs were at concentrations below their respective USCO and CSCO.

Six SVOCs were detected at concentrations exceeding their respective USCO in soil sample SP-29-1-3. Benzo(a)pyrene was also detected at a concentration exceeding the CSCO in this sample. Benzo(b)fluoranthene was detected at a concentration exceeding the USCO in soil sample SP-37-1-3. SVOCs were not detected in any other samples at concentrations exceeding the respective USCO and CSCO.

Total PCB concentrations exceeding the USCO were identified in 5 samples (SP-28-1-3, SP-29-1-3, SP-30-1-3, SP-32-2-4 and SP-33-0-2. The concentration of PCBs detected at SP-28-1-3 also exceeds the CSCO of 1,000 µg/kg. PCBs were not detected in the remaining samples at concentrations exceeding the USCO and CSCO.

At the request of NYSDEC, a surface soil sample was collected at Outfall 4. The soil sample was collected immediately below the vegetative cover within the drainage swale along Porter Road. The sample was analyzed for TCL VOCs, TCL SVOCs and PCBs. Nine SVOCs were detected at concentrations exceeding the respective USCO and 5 SVOCs were detected at concentrations exceeding the respective CSCO. The SVOCs detected in the sample from the drainage swale are commonly found in ditches that receive storm water runoff from asphalt paved surfaces. Based on maps of the storm water drainage system for the Site, discharge to Outfall No. 4 is only from runoff from parking areas.

Total PCBs were detected in the outfall sample at a concentration of 210 µg/kg. This concentration exceeded the USCO for the compound of 100 µg/kg, but not the CSCO of 1,000 µg/kg, which was the cleanup objective established by NYSDEC for the previous remediation of the drainage swale.

9.1.2 Groundwater Samples

On September 26 and 27, 2011, 9 temporary microwells were installed in the open probe-holes at SP-22, 25, 30, 32, 34, 36, 42, 46 and 49. Groundwater was encountered in temporary microwells at a depth of 3-4 feet bgs. The locations of the microwells are depicted in Figure 4.

Eight groundwater samples were collected from the 9 temporary microwells using disposable Teflon© bailers. The temporary microwell installed at soil probe location SP-46 was dry following several attempts to collect a sample. Groundwater samples were analyzed for VOCs, SVOCs, and PCBs. Samples collected at SP-42 and SP-49 were not analyzed for SVOCs and PCBs due to insufficient groundwater recharge.

Benzene was detected at SP-49 and trichlorofluoromethane was detected at SP-22 at concentrations slightly exceeding the respective Class GA criteria. No other VOCs were detected in the groundwater samples at concentrations exceeding the respective Class GA criteria.

Four SVOCs were detected at concentrations exceeding the respective Class GA criteria at 3 locations (SP-22, SP-25 and SP-34). These compounds are benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene.

Total PCBs were detected in groundwater samples from locations SP-30, SP-32 and SP-36 at concentrations exceeding the Class GA Criteria for the compound of 0.09 µg/L. PCB concentrations in these three samples were 0.77 µg/L (SP-30), 3 µg/L (SP-32), and 13 µg/L (SP-36). PCBs were not detected in the other groundwater samples at concentrations above the laboratory MDL.

9.1.3 Interim Remedial Action

An IRA was performed on September 29, 2011. As part of the IRA, an approximately 10-foot (north-south) by 12-foot (east-west) area was excavated to a depth of approximately 5 feet bgs in the vicinity of the former exploratory excavation, TP-12. Approximately 40 tons of soil was removed from the excavation and stockpiled.

During soil excavation activities, perched groundwater was observed at approximately 2 feet bgs. Perched groundwater exhibiting a surface sheen was pumped from the excavation using a vacuum truck. Approximately 2,000-gallons of groundwater was removed from the excavation and properly disposed.

At the completion of soil removal activities, an approximate 8-foot long section of the 6-inch diameter cast iron fire protection main was removed from within the limits of the excavation. The open ends of the pipe were fitted with a Fernco and PVC cap prior to backfilling. On December 8, 2011, the stockpiled soil from the excavation was loaded onto trucks and transported off-Site for proper disposal.

Five confirmatory soil samples, four (4) sidewall samples and one (1) bottom of excavation sample, were collected from the excavation. The confirmatory soil samples were analyzed for TCL VOCs, TCL SVOCs and PCBs. VOCs, SVOCs and PCBs were not detected in the confirmatory samples at concentrations exceeding the applicable USCOs and CSCOs.

9.1.4 Human Health Risk Assessment

A HHRA was conducted at the Site to evaluate potential risks to human health under current and reasonably foreseeable future conditions from exposure to VOCs, SVOCs and PCBs in subsurface soils and groundwater. CPCs identified are presented in Table 6.

Potential exposure pathways were examined in the exposure assessment. Exposure point concentrations (EPCs) were calculated for each CPC with a potential pathway for exposure (see Tables 4 and 5). The EPC was used to calculate an absorbed dose or intake for each compound and potential pathway (see Tables 8 through 15). Each calculated absorbed dose or intake was compared to slope factors for carcinogenic compounds as part of the toxicity assessment (see Tables 16 through 23) or the reference dose for non-cancer (see Tables 24 and 25). The final quantitative cancer risk was calculated in the risk characterization summary (see Table 26) and the quantitative non-cancer risk was calculated in the risk characterization summary (see Table 27).

The USEPA has developed an estimate of the potential risk for carcinogenic compounds. Potential carcinogenic effects are expressed as a probability or risk of cancer resulting from exposure to a compound. The USEPA considers a cancer risk value greater than 1.0E-4 to 1.0E-6 to represent a potentially unacceptable level of risk (*EPA Memo: Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*).

Under current or future conditions, the commercial/industrial and construction worker exposures to the individual subsurface soil pathways at the Site do not pose an unacceptable risk for carcinogens. The construction workers total potential exposure to groundwater is slightly above the USEPA acceptable carcinogenic risk range of greater than 1.0E-4 to 1.0E-6.

9.1.5 Remedial Alternatives Assessment/Feasibility Study

Potential remedial alternatives were evaluated based on the RAOs for the Site and criteria set forth in the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010. The criteria include Short-Term Impacts and Effectiveness, Long-Term Effectiveness and Permanence, Reduction of Toxicity, Mobility and Volume, Implementability, Compliance with Applicable or Relevant and Appropriate SCGs and Remediation Goals, Overall Protection of Human Health and the Environment, and Cost.

Based on the evaluation, the IRA completed at the Site and that the only exposure scenario identified by the HHRA as concern was exposure to impacted groundwater by construction workers, the implementation of a Site Management Plan would satisfy the RAOs for the Site.

9.2 RECOMMENDATIONS

Based on the above conclusions, it has been determined that a Site Management Plan should be prepared and implemented at the Site to limit exposure to construction workers. Development and implementation of the Site Management Plan will be the responsibility of the future landowner and the plan will be based on the planned redevelopment and use of the Site.

10.0 REFERENCES

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FIGURES

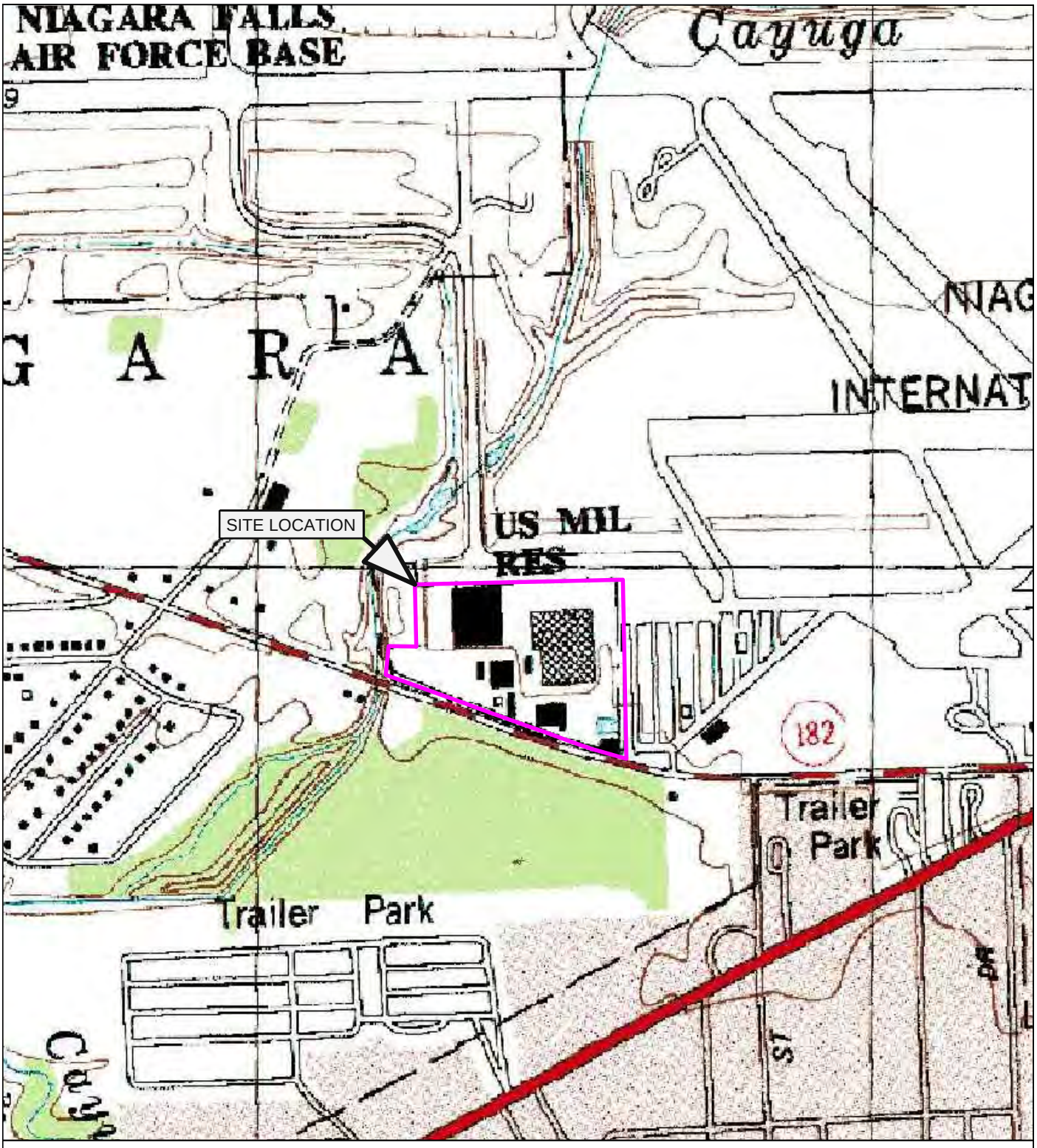
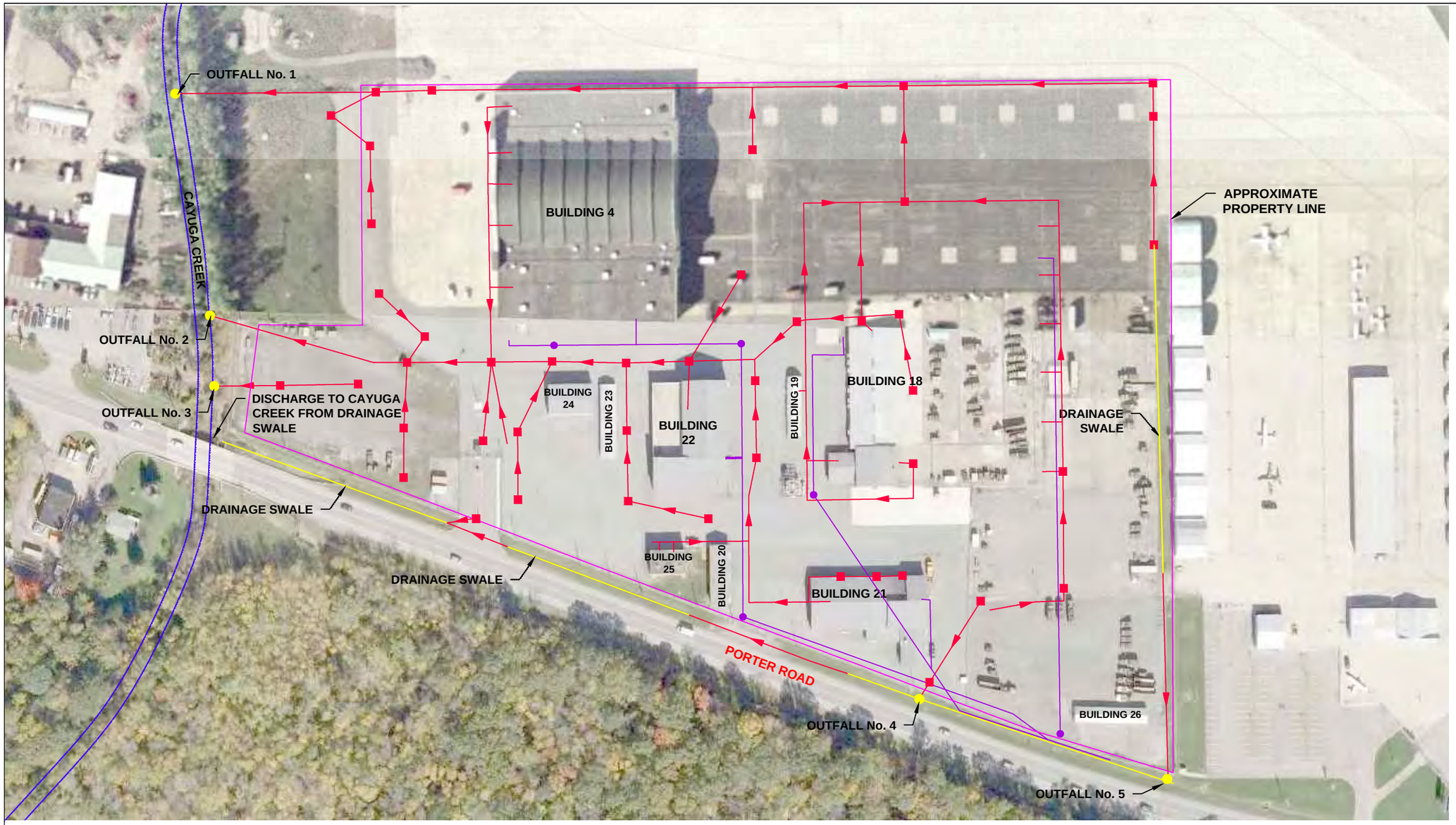


FIGURE 1
SITE LOCATION MAP
NIAGARA FALLS AFRC COMPLEX
NIAGARA FALLS, NEW YORK

PARS ENVIRONMENTAL, INC.
ROBBINSVILLE, NEW JERSEY

DR. BY: JA	SCALE: 1"=750'	JOB No.: 828-01
CK'D. BY: TD	DATE: 11/29/11	FILE NO.: 828-01
REV. NO. --	REV. DATE: --	FIGURE NO.:1



LEGEND:

- SANITARY SEWER LOCATION
- STORM SEWER LOCATION WITH FLOW DIRECTION

NOTES:

1. BASE MAP ADAPTED FROM AN AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.bing.com/maps/, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

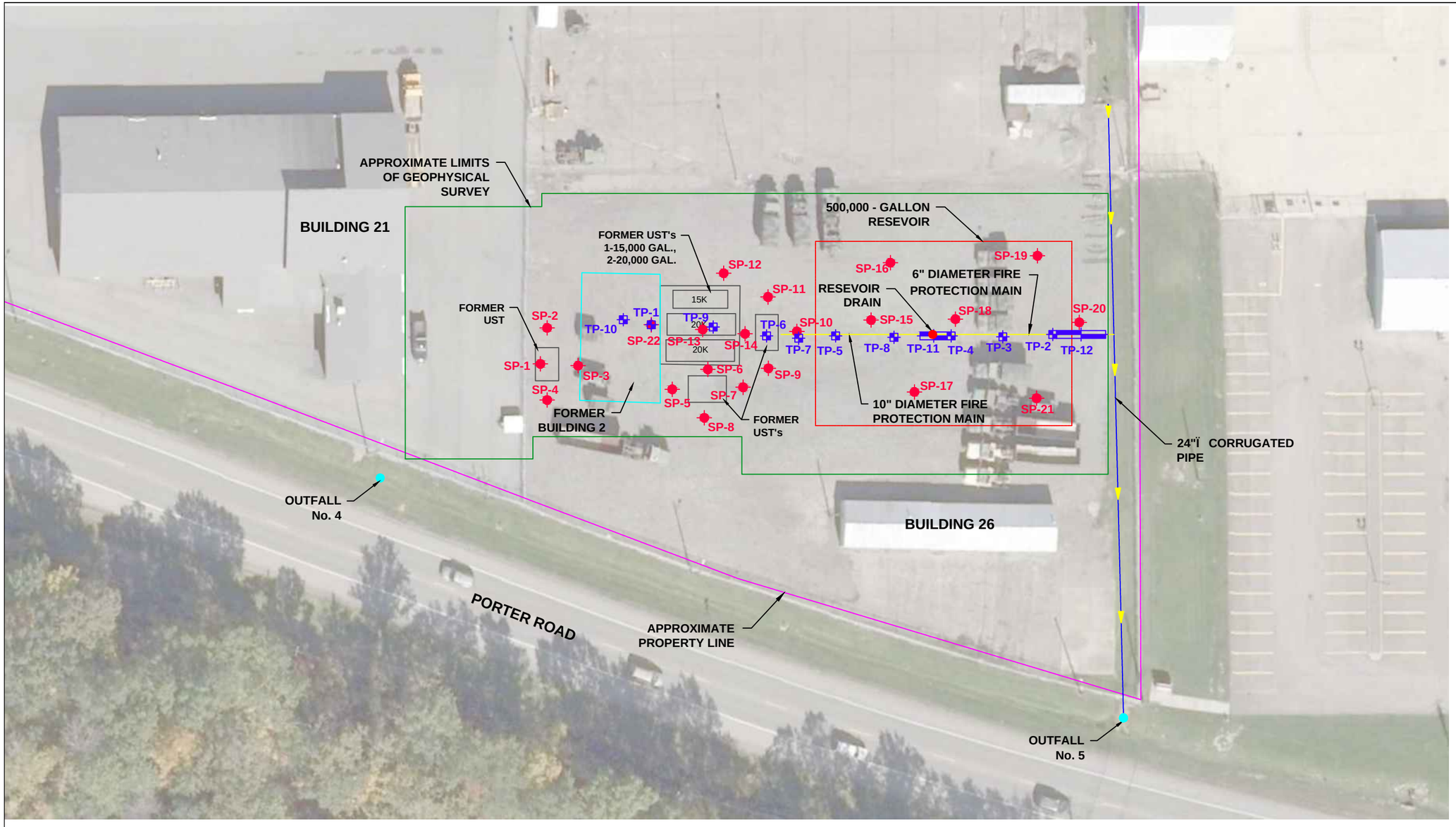
SCALE IN FEET

0 50 100 150

FIGURE 2
SITE PLAN
USAFRC
NIAGARA FALLS, NEW YORK

PARS ENVIRONMENTAL, INC.
ROBBINSVILLE, NEW JERSEY

DR. BY: JA	SCALE: 1"=150'	JOB No.: 727-04
CK'D. BY: TD	DATE: 11/29/11	FILE NO.: 727-04
REV. NO. --	REV. DATE: --	FIGURE NO.:2



LEGEND:

SP-19 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE COMPLETED ON DECEMBER 6 & 7, 2010 (21 LOCATIONS)

TP-3 — APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT COMPLETED ON DECEMBER 7 & 8, 2010 (12 LOCATIONS)

TP-1 / SP-22 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE SP-22 CONVERTED TO TEST PIT, TP-1 DUE TO SUBSURFACE REFUSAL FOLLOWING SEVERAL ATTEMPTS COMPLETED ON DECEMBER 7, 2010.

NOTES:

1. BASE MAP ADAPTED FROM AN AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.bing.com/maps/, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

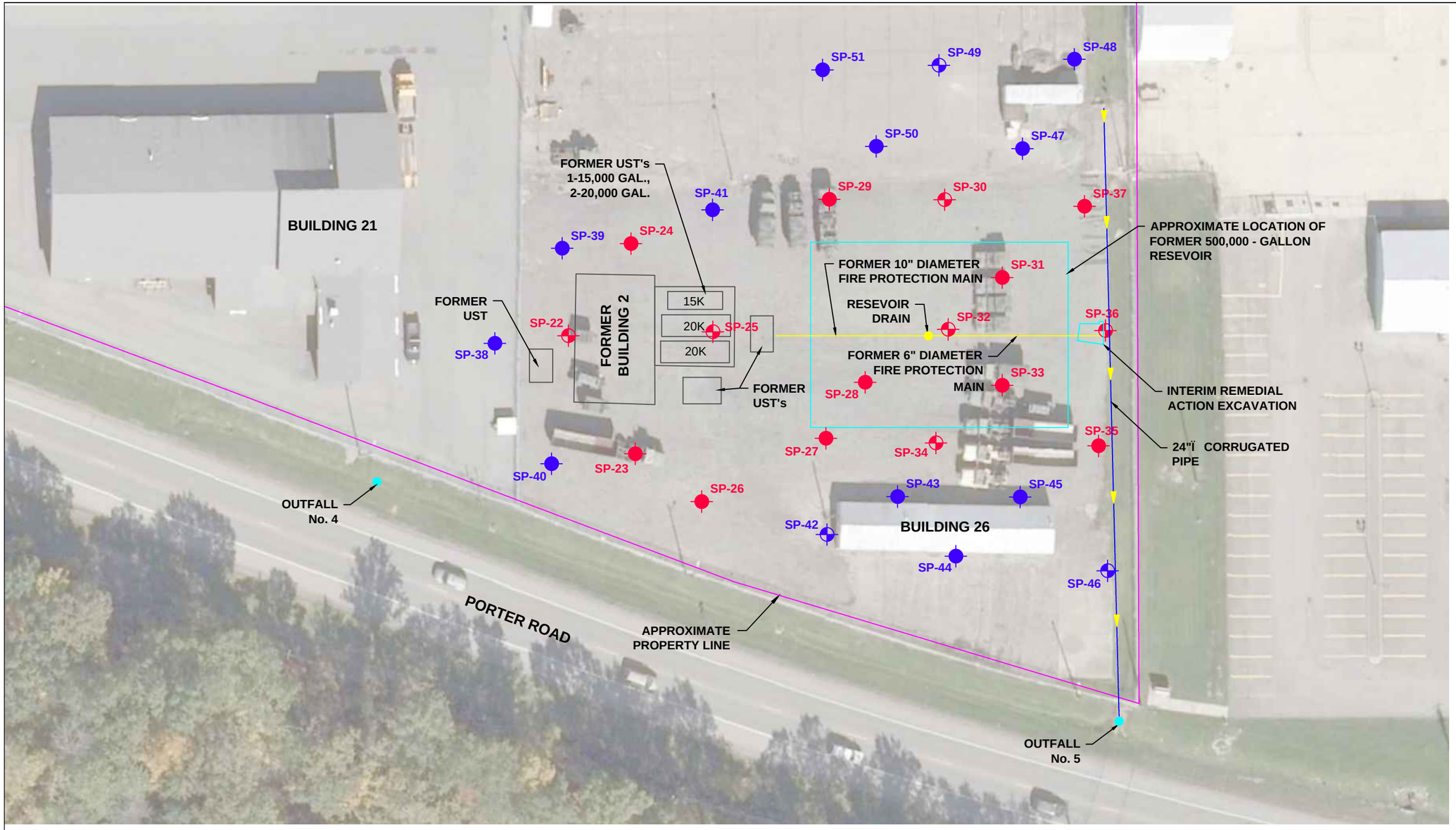
SCALE IN FEET

0 10 20 30 40 50

FIGURE 3
SOIL SAMPLE LOCATION MAP – DECEMBER 2010
NIAGARA FALLS AFRC COMPLEX
NIAGARA FALLS, NEW YORK

PARS ENVIRONMENTAL, INC.
ROBBINSVILLE, NEW JERSEY

DR. BY: JA	SCALE: 1"=50'	JOB No.: 727-04
CK'D. BY: TD	DATE: 11/29/11	FILE NO.: 727-04
REV. NO. --	REV. DATE: --	FIGURE NO.:3



LEGEND:

SP-26 — APPROXIMATE LOCATION AND DESIGNATION OF PRIMARY SOIL PROBE

SP-34 — APPROXIMATE LOCATION AND DESIGNATION OF PRIMARY SOIL PROBE WITH TEMPORARY PIEZOMETER INSTALLED

SP-40 — APPROXIMATE LOCATION AND DESIGNATION OF SECONDARY SOIL PROBE

SP-42 — APPROXIMATE LOCATION AND DESIGNATION OF SECONDARY SOIL PROBE WITH TEMPORARY PIEZOMETER INSTALLED

NOTES:

1. BASE MAP ADAPTED FROM AN AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.bing.com/maps/, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

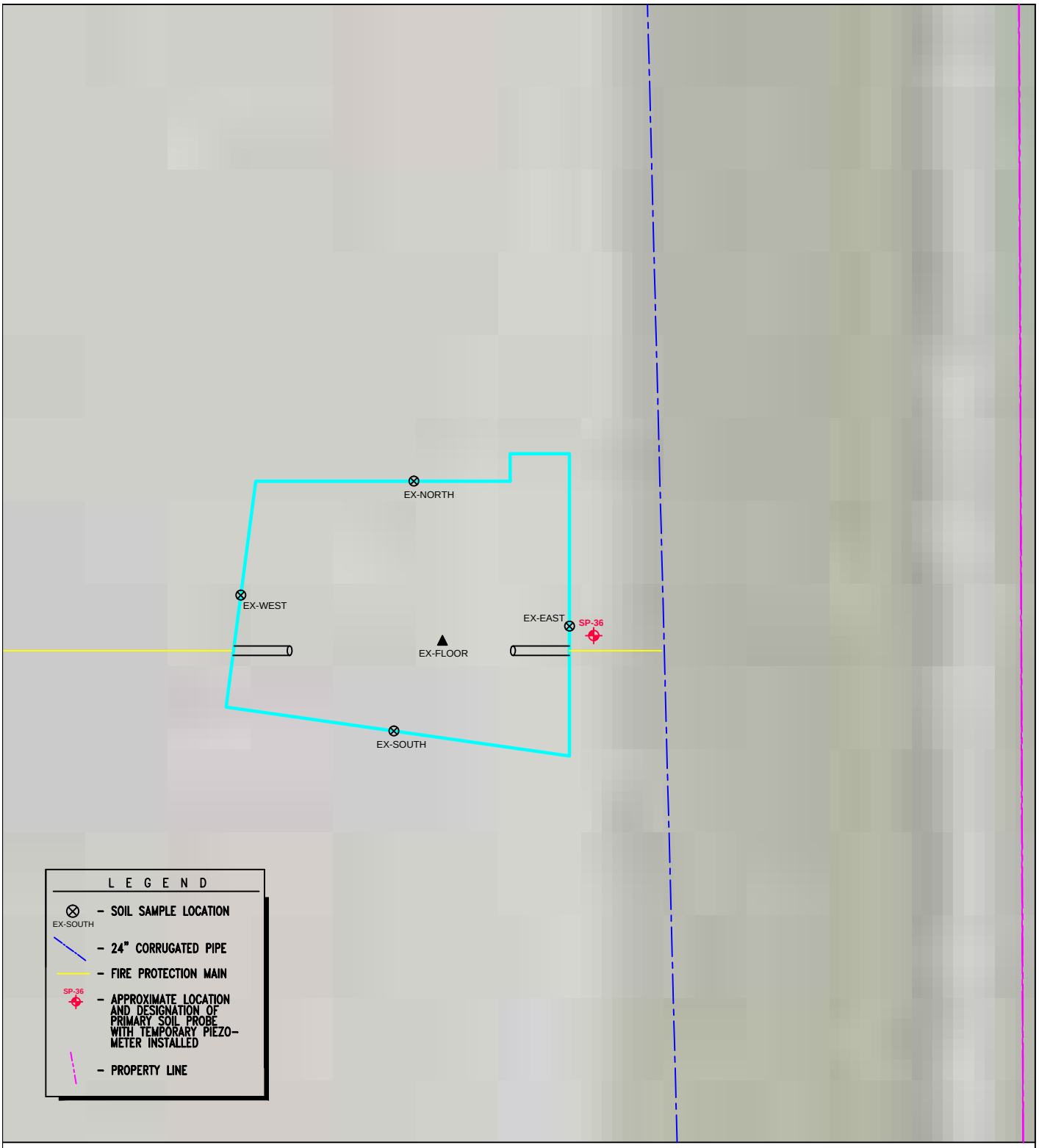
SCALE IN FEET

0 10 20 30 40 50

FIGURE 4
SOIL SAMPLE LOCATION MAP – SEPTEMBER 2011
NIAGARA FALLS AFRC COMPLEX
NIAGARA FALLS, NEW YORK

PARS ENVIRONMENTAL, INC.
ROBBINSVILLE, NEW JERSEY

DR. BY: JA	SCALE: 1"=50'	JOB No.: 727-04
CK'D. BY: TD	DATE: 11/29/11	FILE NO.: 727-04
REV. NO. --	REV. DATE: --	FIGURE NO.:4



SCALE IN FEET

0 1 2 3 4 5

FIGURE 5
EXCAVATION LOCATION MAP
NIAGARA FALLS AFRC COMPLEX
NIAGARA FALLS, NEW YORK

PARS ENVIRONMENTAL, INC.
ROBBINSVILLE, NEW JERSEY

DR. BY: JA	SCALE: 1"=5'	JOB No.: 727-04
CK'D. BY: TD	DATE: 11/29/11	FILE NO.: 727-04
REV. NO. --	REV. DATE: --	FIGURE NO.:5

TABLES

Table 1
Analytical Results Summary Table
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Sample Identification	Date Collected	VOCs EPA Method 8260-TCL	SVOCs EPA Method 8270 - TCL	PCBs EPA Method 8082	Waste Characterization
Soil Probe Samples					
SP-22-2-4	9/26/2011	X	X	X	
SP-22-10-12	9/26/2011	X	X	X	
SP-23-2-4	9/26/2011	X	X	X	
SP-23-6-8	9/26/2011	X	X	X	
SP-24-2-4	9/26/2011	X	X	X	
SP-24-8-10	9/26/2011	X	X	X	
SP-25-2-4	9/26/2011	X	X	X	
SP-25-6-8	9/26/2011	X	X	X	
SP-26-1-3	9/26/2011	X	X	X	
SP-26-6-8	9/26/2011	X	X	X	
SP-27-2-4	9/26/2011	X	X	X	
SP-27-6-8	9/26/2011	X	X	X	
SP-28-1-3	9/26/2011	X	X	X	
SP-28-6-8	9/26/2011	X	X	X	
SP-29-1-3	9/26/2011	X	X	X	
SP-29-6-8	9/26/2011	X	X	X	
SP-30-1-3	9/27/2011	X	X	X	
SP-30-10-12	9/27/2011	X	X	X	
SP-31-1-3	9/27/2011	X	X	X	
SP-31-8-10	9/27/2011	X	X	X	
SP-32-2-4	9/26/2011	X	X	X	
SP-32-8-10	9/26/2011	X	X	X	
SP-33-0-2	9/27/2011	X	X	X	
SP-33-8-10	9/27/2011	X	X	X	
SP-34-2-4	9/26/2011	X	X	X	
SP-34-6-8	9/26/2011	X	X	X	
SP-35-1-3	9/27/2011	X	X	X	
SP-35-6-8	9/27/2011	X	X	X	
SP-36-1-3	9/27/2011	X	X	X	
SP-36-8-10	9/27/2011	X	X	X	
SP-37-1-3	9/27/2011	X	X	X	
SP-37-4-6	9/27/2011	X	X	X	
SP-41-1-3	9/28/2011		X	X	
SP-41-6-8	9/28/2011		X	X	
SP-47-1-3	9/27/2011			X	
SP-47-6-8	9/27/2011			X	
SP-50-1-3	9/28/2011		X	X	
SP-50-6-8	9/28/2011		X	X	
SP-51-1-3	9/28/2011		X	X	
SP-51-6-8	9/28/2011		X	X	
OUTFALL 004	9/27/2011	X	X	X	
Soil Excavation Samples					
EX-NORTH	9/29/2011	X	X	X	
EX-SOUTH	9/29/2011	X	X	X	
EX-EAST	9/29/2011	X	X	X	
EX-WEST	9/29/2011	X	X	X	
EX-FLOOR	9/29/2011	X	X	X	
WC-1-SOIL	9/29/2011				X'
Groundwater Samples					
SP-22-110926	9/26/2011	X	X	X	
SP-25-110926	9/26/2011	X	X	X	
SP-30-110927	9/27/2011	X	X	X	
SP-32-110926	9/26/2011	X	X	X	
SP-34-110926	9/26/2011	X	X	X	
SP-36-110927	9/27/2011	X	X	X	
SP-42-110927	9/27/2011	X	X	X	
SP-49-110927	9/27/2011	X	X	X	

Notes:
1. SP-22-2-4 = (SP-22), type of sample and number from which sample was obtained, (2-4) depth of sample below ground surface. SP = soil probe.
2. VOCs = Volatile Organic Compounds
3. SVOCs = Semi-Volatile Organic Compounds
4. TCL = Target Compound List
5. TAL = Target Analyte List
6. PCBs = Polychlorinated Biphenyls
7. Waste characterization sample (WC-1-SOIL) was analyzed for the following parameters: TCLP VOCs, SVOCs, RCRA Metals, PCBs, pH, and Ignitability.

Table 2
Draft Soil Analytical Results
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

	Unrestricted	Restricted Commmercial	SP-22-2-4	SP-22-10-12	SP-23-2-4	SP-23-6-8	SP-24-2-4	SP-24-8-10	SP-25-2-4	SP-25-6-8	SP-26-1-3	SP-26-6-8	SP-27-2-4	SP-27-6-8
Parameter	Soil Cleanup	Soil Cleanup												
	Objectives	Objectives	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)														
Acetone	50	*500,000*	ND	7.1 J	60	22 J	28 J	ND	ND	ND	27 J	6.7 J	ND	ND
Methylcyclohexane	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1,300	*150,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	50	*500,000*	4.9 J	5.6 J	4.8 J	5.1 J	5.1 J	3.9 J	5.1 J	5.6 J	4.6 J	4.8 J	4.9 J	5.0 J
2-Butanone (MEK)	100,000	*NV*	ND	ND	7.5 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds - EPA Method 8270 TCL (ug/kg)														
Naphthalene	12,000	*500,000*	ND	51 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	410 [7]	*NV*	ND	12 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100,000	*500,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20,000	*500,000*	ND	68 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	30,000	*500,000*	ND	96 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100,000	*500,000*	500 J	210 J	ND	ND	ND	ND	5100 J	3300 J	ND	ND	83 J	ND
Anthracene	100,000	*500,000*	ND	97 J	ND	ND	ND	ND	1300 J	ND	ND	ND	ND	ND
Fluoranthene	100,000	*500,000*	830 J	250	ND	ND	ND	ND	7100 J	7000 J	16 J	ND	80 J	ND
Pyrene	100,000	*500,000*	590 J	160 J	ND	ND	ND	ND	4900 J	6100 J	11 J	ND	40 J	ND
Benzo(a)anthracene	1,000	*5,600*	650 J	110 J	12 J	ND	21 J	ND	3600 J	5600 J	14 J	ND	37 J	ND
Dibenzo(a,h)anthracene	330	*560*	ND	14 J	ND	ND	30 J	ND	**630 J**	**1200 J**	ND	ND	10 J	ND
Dibenzofuran	7,000	*NV*	ND	31 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	50,000 [7]	*NV*	ND	ND	ND	88 J	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NV	*NV*	ND	17 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	1,000	*56,000*	670 JB	100 JB	11 JB	ND	29 JB	ND	3500 JB	5400 JB	14 JB	ND	45 JB	ND
Benzo(b)fluoranthene	1,000	*5,600*	590 J	91 J	16 J	11 J	ND	11 J	4100 J	5600 J	19 J	12 J	59 J	15 J
Benzo(k)fluoranthene	800	*56,000*	420 J	64 J	13 J	11 J	ND	13 J	1700 J	3100 J	16 J	12 J	27 J	9.1 J
Biphenyl	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	1,000	*1,000*	550 J	90 J	13 J	9.5 J	ND	ND	**3200 J**	**5800 J**	15 J	9.9 J	39 J	ND
Indeno(1,2,3-cd)pyrene	500	*5,600*	280 J	32 J	ND	ND	30 J	ND	1200 J	2100 J	9.3 J	8.8 J	23 J	ND
Benzo(g,h,i)perylene	100,000	*500,000*	310 J	33 J	ND	ND	35 J	ND	1400 J	2500 J	ND	9.8 J	26 J	ND
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)														
Aroclor 1254	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs	100*	*1,000**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 2
Draft Soil Analytical Results
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

	Unrestricted	Restricted Commmercial	SP-28-1-3	SP-28-6-8	SP-29-1-3	SP-29-6-8	SP-30-1-3	SP-30-10-12	SP-31-1-3	SP-31-8-10	SP-32-2-4	SP-32-8-10	SP-33-0-2	SP-33-8-10
Parameter	Soil Cleanup	Soil Cleanup												
	Objectives	Objectives	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)														
Acetone	50	*500,000*	ND	9.7 J	7.3 J	ND	12 J	ND	ND	ND	ND	30	ND	ND
Methylcyclohexane	NV	*NV*	ND	ND	ND	ND	3.0 J	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1,300	*150,000*	ND	ND	ND	ND	ND	<	ND	ND	ND	ND	ND	ND
Methylene Chloride	50	*500,000*	4.7 J	5.8 J	7.8	5.6 J	3.8 JB	2.9 JB	4.3 JB	3.2 JB	5.6 J	5.2 J	ND	ND
2-Butanone (MEK)	100,000	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds - EPA Method 8270 TCL (ug/kg)														
Naphthalene	12,000	*500,000*	ND	ND	ND	ND	17 J	ND	7.7 J	ND	ND	ND	ND	ND
2-Methylnaphthalene	410 [7]	*NV*	ND	ND	ND	ND	9.3 J	ND	ND	ND	ND	ND	52 J	ND
4-Methylphenol	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100,000	*500,000*	ND	ND	ND	32 J	22 J	ND	15 J	ND	ND	ND	68 J	ND
Acenaphthene	20,000	*500,000*	ND	ND	ND	ND	25 J	ND	3.0 J	ND	ND	ND	ND	ND
Fluorene	30,000	*500,000*	ND	ND	ND	33 J	26 J	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100,000	*500,000*	15 J	18 J	1800 J	360	320 B	8.8 JB	96 JB	6.6 JB	88 J	ND	190 JB	ND
Anthracene	100,000	*500,000*	ND	ND	ND	97 J	52 J	ND	28 J	ND	22 J	ND	88 J	ND
Fluoranthene	100,000	*500,000*	36 J	77 J	3100 J	570	630 B	17 JB	250 B	13 JB	180 J	ND	560 JB	5.5 JB
Pyrene	100,000	*500,000*	25 J	57 J	2000 J	350	430 B	12 JB	170 JB	11 JB	120 J	ND	440 JB	4.9 JB
Benzo(a)anthracene	1,000	*5,600*	27 J	46 J	1700 J	210 J	260 B	14 JB	150 JB	15 JB	97 J	11 J	330 JB	9.1 JB
Dibenzo(a,h)anthracene	330	*560*	ND	12 J	ND	29 J	ND	ND	ND	ND	20 J	ND	ND	ND
Dibenzofuran	7,000	*NV*	ND	ND	ND	19 J	16 J	ND	6.4 J	ND	ND	ND	28 J	ND
Diethyl phthalate	NV	*NV*	ND	ND	ND	ND	14 JB	12 JB	16 JB	11 JB	ND	ND	ND	9.8 JB
Di-n-octyl phthalate	NV	*NV*	ND	ND	ND	ND	32 J	32 J	38 J	30 J	ND	ND	310 J	31 J
Di-n-butyl phthalate	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	50,000 [7]	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NV	*NV*	ND	ND	ND	15 J	53 J	4.1 J	14 J	3.7 J	ND	ND	74 J	3.6 J
Chrysene	1,000	*56,000*	25 JB	47 JB	2300 JB	200 J	290 B	17 JB	140 JB	14 JB	110 JB	10 JB	380 JB	7.9 JB
Benzo(b)fluoranthene	1,000	*5,600*	40 J	72 J	3500 J	210 J	440 B	18 JB	190 JB	20 JB	140 J	14 J	740 JB	12 JB
Benzo(k)fluoranthene	800	*56,000*	19 J	35 J	1700 J	110 J	180 JB	16 JB	82 JB	15 JB	64 J	13 J	360 JB	10 JB
Biphenyl	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	1,000	*1,000*	26 J	54 J	**2900 J**	160 J	290 B	15 JB	130 JB	15 JB	98 J	14 J	490 JB	7.0 JB
Indeno(1,2,3-cd)pyrene	500	*5,600*	16 J	27 J	1400 J	86 J	120 JB	10 JB	56 JB	10 JB	45 J	ND	210 JB	7.6 JB
Benzo(g,h,i)perylene	100,000	*500,000*	15 J	28 J	1800 J	91 J	120 JB	7.8 JB	57 JB	11 JB	52 J	ND	400 JB	8.8 JB
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)														
Aroclor 1254	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	NV	*NV*	1,100	ND	320	ND	150 J	ND	ND	ND	410	ND	940	ND
Total PCBs	100*	*1,000**	1,100	ND	320	ND	150	ND	ND	ND	410	ND	940	ND

Table 2
Draft Soil Analytical Results
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

	Unrestricted	Restricted Commmercial	SP-34-2-4	SP-34-6-8	SP-34-6-8 (DUP)	SP-35-1-3	SP-35-6-8	SP-36-1-3	SP-36-8-10	SP-37-1-3	SP-37-4-6	SP-41-1-3	SP-41-6-8	SP-47-1-3
Parameter	Soil Cleanup	Soil Cleanup												
	Objectives	Objectives	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)														
Acetone	50	*500,000*	ND	6.7 J	ND	ND	ND	27 J	17 J	19 J	29 J	NT	NT	NT
Methylcyclohexane	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Tetrachloroethene	1,300	*150,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Methylene Chloride	50	*500,000*	6.9	5.9 J	3.9 J	ND	ND	2.9 JB	ND	2.9 J	ND	NT	NT	NT
2-Butanone (MEK)	100,000	*NV*	ND	ND	ND	ND	ND	5.2 J	ND	ND	ND	NT	NT	NT
Semi-Volatile Organic Compounds - EPA Method 8270 TCL (ug/kg)														
Naphthalene	12,000	*500,000*	33 J	ND	ND	ND	ND	5.7 J	ND	45 J	ND	ND	ND	NT
2-Methylnaphthalene	410 [9]	*NV*	38 J	ND	ND	ND	ND	4.1 J	ND	28 J	ND	ND	ND	NT
4-Methylphenol	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	17 J	ND	NT
Acenaphthylene	100,000	*500,000*	ND	ND	ND	ND	ND	9.0 J	ND	9.8 J	ND	ND	ND	NT
Acenaphthene	20,000	*500,000*	ND	ND	ND	ND	ND	4.3 J	ND	160 J	ND	ND	ND	NT
Fluorene	30,000	*500,000*	ND	ND	ND	ND	ND	12 J	ND	320	ND	ND	ND	NT
Phenanthrene	100,000	*500,000*	120 J	ND	ND	7.7 JB	ND	89 JB	4.5 JB	2,400 B	10 JB	ND	ND	NT
Anthracene	100,000	*500,000*	ND	ND	ND	ND	ND	22 J	ND	690	ND	ND	ND	NT
Fluoranthene	100,000	*500,000*	140 J	ND	ND	27 JB	7.9 JB	130 JB	5.8 JB	2,700 B	17 JB	ND	ND	NT
Pyrene	100,000	*500,000*	89 J	ND	ND	20 JB	6.0 JB	98 JB	5.1 JB	1,700 B	9.8 JB	ND	ND	NT
Benzo(a)anthracene	1,000	*5,600*	66 J	15 J	15 J	23 JB	8.9 JB	55 JB	9.4 JB	950 B	13 JB	ND	21 J	NT
Dibenzo(a,h)anthracene	330	*560*	13 J	ND	ND	ND	ND	ND	ND	64 J	ND	ND	19 JB	NT
Dibenzofuran	7,000	*NV*	24 J	ND	ND	ND	ND	6.1 J	ND	190 J	ND	ND	ND	NT
Diethyl phthalate	NV	*NV*	ND	ND	ND	11 JB	7.4 JB	13 JB	12 JB	7.9 JB	10 JB	ND	ND	NT
Di-n-octyl phthalate	NV	*NV*	ND	ND	ND	30 J	28 J	ND	31 J	31 J	ND	ND	ND	NT
Di-n-butyl phthalate	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	380	ND	ND	ND	NT
Bis(2-ethylhexyl)phthalate	50,000 [9]	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
Carbazole	NV	*NV*	ND	ND	ND	3.6 J	ND	14 J	4.4 J	230	ND	ND	ND	NT
Chrysene	1,000	*56,000*	78 J	14 JB	13 JB	24 JB	10 JB	62 JB	9.6 JB	940 B	9.7 JB	ND	24 J	NT
Benzo(b)fluoranthene	1,000	*5,600*	81 J	16 J	19 J	46 JB	20 JB	97 JB	8.8 JB	1,200 B	18 JB	ND	24 J	NT
Benzo(k)fluoranthene	800	*56,000*	40 J	14 J	12 J	24 JB	11 JB	43 JB	8.1 JB	620 B	16 JB	ND	29 J	NT
Biphenyl	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	17 J	ND	ND	ND	NT
Benzo(a)pyrene	1,000	*1,000*	59 J	14 J	14 J	30 JB	11 JB	63 JB	7.3 JB	920 B	11 JB	ND	17 J	NT
Indeno(1,2,3-cd)pyrene	500	*5,600*	38 J	ND	ND	17 JB	7.4 JB	30 JB	6.2 JB	270 B	9.0 JB	ND	19 JB	NT
Benzo(g,h,i)perylene	100,000	*500,000*	52 J	ND	ND	19 JB	6.9 JB	32 JB	6.0 JB	290 B	7.9 JB	ND	15 JB	NT
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)														
Aroclor 1254	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs	100*	*1,000**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 2
Draft Soil Analytical Results
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

	Unrestricted	Restricted Commmercial	SP-47-6-8	SP-50-1-3	SP-50-6-8	SP-51-1-3	SP-51-6-8	EX-NORTH	EX-SOUTH	EX-EAST	EX-WEST	EX-FLOOR	OUTFALL 004	RINSATE-SOIL
Parameter	Soil Cleanup	Soil Cleanup												
	Objectives	Objectives	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)														
Acetone	50	*500,000*	NT	NT	NT	NT	NT	44	17 J	17 J	29	ND	ND	ND
Methylcyclohexane	NV	*NV*	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1,300	*150,000*	NT	NT	NT	NT	NT	2.4 JB	2.4 JB	2 JB	1.8 JB	2 JB	ND	ND
Methylene Chloride	50	*500,000*	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	100,000	*NV*	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds - EPA Method 8270 TCL (ug/kg)														
Naphthalene	12,000	*500,000*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	390 J	ND
2-Methylnaphthalene	410 [7]	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	460 J	ND
4-Methylphenol	NV	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100,000	*500,000*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	180 J	ND
Acenaphthene	20,000	*500,000*	NT	21 J	ND	ND	ND	ND	ND	ND	ND	ND	4,500	ND
Fluorene	30,000	*500,000*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,400	ND
Phenanthrene	100,000	*500,000*	NT	750 J	160 J	ND	ND	ND	ND	ND	ND	85 J	56,000 B	ND
Anthracene	100,000	*500,000*	NT	160 J	ND	ND	ND	ND	ND	ND	ND	41 J	19,000	ND
Fluoranthene	100,000	*500,000*	NT	1,000 J	260 J	ND	19 J	ND	18 J	ND	ND	580	190,000	ND
Pyrene	100,000	*500,000*	NT	740 J	200 J	ND	ND	ND	18 J	ND	ND	550	160,000	ND
Benzo(a)anthracene	1,000	*5,600*	NT	410 J	140 J	ND	ND	ND	26 J	ND	ND	320	**120,000**	ND
Dibenzo(a,h)anthracene	330	*560*	NT	ND	ND	ND	ND	ND	20 J	ND	ND	47 J	ND	ND
Dibenzofuran	7,000	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,400 J	ND
Diethyl phthalate	NV	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	NV	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	NV	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	50,000 [7]	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NV	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	8,600	ND
Chrysene	1,000	*56,000*	NT	390 J	120 J	ND	ND	ND	15 J	ND	ND	290	**120,000**	ND
Benzo(b)fluoranthene	1,000	*5,600*	NT	420 J	150 J	ND	ND	4.8 J	32 J	ND	ND	290	**120,000**	ND
Benzo(k)fluoranthene	800	*56,000*	NT	280 J	89 J	ND	ND	4.2 J	22 J	ND	ND	170 J	49,000 B	ND
Biphenyl	NV	*NV*	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	1,000	*1,000*	NT	380 J	130 J	ND	ND	ND	28 J	ND	ND	270	**82,000 B**	ND
Indeno(1,2,3-cd)pyrene	500	*5,600*	NT	230 JB	93 JB	ND	ND	ND	26 J	ND	ND	130 J	**28,000 B**	ND
Benzo(g,h,i)perylene	100,000	*500,000*	NT	230 JB	97 JB	ND	17 JB	ND	27 J	ND	ND	140 J	29,000 B	ND
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)														
Aroclor 1254	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	70 J	ND	ND
Aroclor 1260	NV	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	210	ND
Total PCBs	100*	*1,000**	ND	ND	ND	ND	ND	ND	ND	ND	ND	70	210	ND

Table 2
Draft Soil Analytical Results
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Notes:
1. Compounds detected in one or more samples are presented on this table. Refer to Attachment C for list of all compounds included in analysis.
2. Analytical testing completed by Test America Laboratories.
3. ug/kg = part per billion; mg/kg = parts per million
4. < indicates compound was not detected above method detection limits.
5. B = Compound was found in the blank and sample.
6. J = Result is less than the reporting limit but greater or equal to the method detection limit and the concentration is an approximate value.
7. NV = no value.
8. NT = not tested.
9. Shading indicates value exceeds Unrestricted Use Soil Cleanup Objectives.
10. **Bold** indicates value exceeds Restricted Commercial Use Soil Cleanup Objectives.
11. A duplicate sample (DUP-1) was collected at soil probe location SP-34, 6 to 8 feet.
12. *Soil cleanup objective is for the sum of the Aroclor compound concentrations detected (Total PCBs).
13. Soil cleanup objectives (SCOs) are from NYSDEC Part 375, Subpart 375-6: Unrestricted Use Soil Cleanup Objectives and the Supplemetal Soil Cleanup Objectives (SSCOs) are from NYSDEC Final Commissioners Policy, CP-51, Dated October 21, 2010.

Table 3
Groundwater Analytical Results
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Parameter	Class GA Criteria	SP-22-110926	SP-25-110926	SP-30-110927	SP-32-110926	SP-34-110926	SP-34-110926 (DUP)	SP-36-110927	SP-42-110927
Volatile Organic Compounds - EPA Method 8260 TCL (ug/L)									
2-Butanone (MEK)	50	ND	ND	ND	ND	ND	ND	ND	3.8 J
Acetone	50	ND	5.8 J	ND	3.0 J	3.4 J	3.8 J	6.6 J	23
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	NV	0.32 J	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	NV	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	NV	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ND	ND	ND	0.58 J	ND	ND	ND	ND
Trichlorofluoromethane	5	6.3	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	5	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	NV	6.6	5.8	ND	3.6	3.4	3.8	0.0	26.8
Semi-Volatile Organic Compounds - EPA Method 8270 (ug/L)									
2,4-Dimethylphenol	1	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	NV	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	1	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20	3.3 J	ND	ND	ND	ND	ND	ND	ND
Anthracene	50	0.91 J	0.43 J	ND	ND	ND	ND	ND	ND
Benzo [a] anthracene	0.002*	0.49 J	0.85 J	ND	ND	0.44 J	0.35 J	ND	ND
Benzo [a] pyrene	ND	ND	0.95 J	ND	ND	ND	ND	ND	ND
Benzo [b] fluoranthene	0.002*	ND	1.1 J	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	NV	ND	0.79 J	ND	ND	ND	ND	ND	ND
Carbazole	5	1.9 J	0.41 J	ND	ND	ND	ND	ND	ND
Chrysene	0.002*	0.39 J	0.77 J	ND	ND	0.43 J	0.47 J	ND	ND
Dibenzofuran	NV	1.2 J	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	50	4.0 J	ND	ND	ND	ND	ND	ND	ND
Di-n-butyl-phthalate	NV	0.5 JB	0.46 JB	ND	0.47 JB	0.33 JB	0.44 JB	0.74 J	ND
Dibenz(a,h)anthracene	NV	ND	0.67 J	ND	ND	ND	ND	ND	ND
Fluoranthene	50	1.7 J	1.2 J	0.45 J	ND	0.90 J	0.77 J	ND	ND
Fluorene	50	2.8 J	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.002	ND	0.91 J	ND	ND	ND	ND	ND	ND
Naphthalene	10 *	3.8 J	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	50 *	3.7 J	0.59 J	ND	ND	0.44 J	0.44 JB	ND	ND
Pyrene	50	1.5 J	1.2 J	ND	ND	0.99 J	0.83 J	ND	ND
Total SVOCs	NV	26.2	10.3	0.5	0.5	3.5	3.3	0.7	0.0
PCBs - EPA Method 8082 (ug/L)									
Aroclor 1254	NV	ND	ND	ND	2	ND	ND	ND	ND
Aroclor 1260	NV	ND	ND	0.77	1	D	ND	13	ND
Total PCBs	0.09 [11]	0.0	0.0	0.77	3.0	0.0	0.0	13.0	0.0

Table 3
Groundwater Analytical Results
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Parameter	Class GA Criteria	SP-49-110927	RINSATE	TRIP BLANK 1	TRIP BLANK 2
Volatile Organic Compounds - EPA Method 8260 TCL (ug/L)					
2-Butanone (MEK)	50	ND	ND	ND	ND
Acetone	50	ND	ND	ND	ND
Benzene	1	1.6	ND	ND	ND
Carbon disulfide	NV	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND	ND
Cyclohexane	NV	0.95 J	ND	ND	ND
Ethylbenzene	5	1.3	ND	ND	ND
Methylcyclohexane	NV	1.1	ND	ND	ND
Methylene chloride	5	ND	ND	0.62 J	0.66 J
Toluene	5	2.7	ND	ND	ND
Trichloroethene	5	ND	ND	ND	ND
Trichlorofluoromethane	5	ND	ND	ND	ND
Total Xylenes	5	1.8 J	ND	ND	ND
Total VOCs	NV	6.7	ND	0.62	0.66
Semi-Volatile Organic Compounds - EPA Method 8270 (ug/L)					
2,4-Dimethylphenol	1	ND	ND	NT	NT
2-Methylnaphthalene	NV	ND	ND	NT	NT
4-Methylphenol	1	ND	ND	NT	NT
Acenaphthene	20	ND	ND	NT	NT
Anthracene	50	ND	ND	NT	NT
Benzo [a] anthracene	0.002*	ND	ND	NT	NT
Benzo [a] pyrene	ND	ND	ND	NT	NT
Benzo [b] fluoranthene	0.002*	ND	ND	NT	NT
Benzo(g,h,i)perylene	NV	ND	ND	NT	NT
Carbazole	5	ND	ND	NT	NT
Chrysene	0.002*	ND	ND	NT	NT
Dibenzofuran	NV	ND	ND	NT	NT
Diethyl phthalate	50	ND	ND	NT	NT
Di-n-butyl-phthalate	NV	ND	ND	NT	NT
Dibenz(a,h)anthracene	NV	ND	ND	NT	NT
Fluoranthene	50	ND	ND	NT	NT
Fluorene	50	ND	ND	NT	NT
Indeno(1,2,3-cd)pyrene	0.002	ND	ND	NT	NT
Naphthalene	10 *	ND	ND	NT	NT
Phenanthrene	50 *	ND	ND	NT	NT
Pyrene	50	ND	ND	NT	NT
Total SVOCs	NV	0.0	0.0	0.0	0.0
PCBs - EPA Method 8082 (ug/L)					
Aroclor 1254	NV	ND	ND	NT	NT
Aroclor 1260	NV	ND	ND	NT	NT
Total PCBs	0.09 [11]	0.0	0.0	0.0	0.0

Table 3
Groundwater Analytical Results
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Notes:
1. Compounds detected in one or more samples are presented on this table.
2. Analytical testing completed by Test America Laboratories.
3. NYSDEC Class GA criteria obtained from Division of Water Technical and Operational Guidance Series (TOGS 1.1.1)
4. ug/L = part per billion (ppb); mg/L = part per million (ppm)
5. Shading indicates values exceeding NYSDEC Class GA groundwater criteria.
6. Class GA criteria shown is for total xylene concentration.
7. < = compound was not detected.
8. * indicates a Guidance Value instead of a Standard Value.
9. NV = no value.
10. ND = non-detectable concentration by approved analytical methods.
11. Groundwater criteria is for the sum of the Aroclor compound concentrations detected (Total PCBs).

Table 4
Secondary Screening Process - Subsurface Soil CPC Selection
USACE Niagara - Niagara Falls, NY

Analyte	CAS Number	Frequency of Detection	Mean of Detected (mg/kg)	Range of Detected(mg/kg)	95% UCL (mg/kg)	Max. Detect (mg/kg)	EPC (mg/kg)	RSL (mg/kg)	CPC
Acetone	67-64-1	37/52	0.039	0.0019-0.34	0.037[a]	0.34	0.037	630,000	N
Benzo(a)anthracene	56-55-3	43/65	0.645	0.0034-10.0	1.575[b]	10.0	1.575	2.1	Y
Dibenzo(a,h)anthracene	53-70-3	15/65	0.296	0.01-2.3	0.257[c]	2.3	0.257	0.21	Y
Chrysene	218-01-9	40/65	0.678	0.0079-9.7	1.54[b]	9.7	1.540	210	N
Benzo(b)fluoranthene	205-99-2	49/65	0.716	0.0045-14.0	2.052[b]	14.0	2.052	2.1	Y
Benzo(k)fluoranthene	207-08-9	44/65	0.365	0.0024-6.5	0.966[b]	6.5	0.966	21	N
Benzo(a)pyrene	50-32-8	40/65	0.806	0.007-14.0	1.992[b]	14.0	1.992	0.210	Y
Indeno(1,2,3-cd)pyrene	193-39-5	36/65	0.445	0.0062-8.8	1.131[b]	8.80	1.131	2.1	Y
Aroclor 1254	11097-69-1	27/82	2.201	0.007-15.0	1.241[a]	15.0	1.241	0.74	Y
Aroclor 1260	11096-82-5	16/82	0.450	0.025-1.6	0.158[a]	1.60	0.158	0.74	Y

Notes:

mg/kg - Milligrams per Kilogram
UCL- Upper Concentration Limit
EPC - Exposure Point Concentration
RSL - Risk Based Concentration (USEPA Regional Screening Level (RSL) Tables for Industrial Soil, June 2011)
CPC - Contaminant of Potential Concern
Y - Yes
N- No
a- Calculated using the 95% KM (Percentile Bootstrap) Method
b- Calculated using the 97.5% KM (Chebyshev) Method
c- Calculated using the 95% KM (Chebyshev) Method

Table 5
Secondary Screening Process - Ground Water CPC Selection
USACE Niagara - Niagara Falls, New York

Analyte	CAS Number	Frequency of Detection	Mean of Detected (ug/L)	Range of Detected(ug/L)	95% UCL (ug/L)	Max. Detect (ug/L)	EPC (ug/L)	RSL (ug/L)	CPC
Benzene	71-43-2	1/10	NA	NA	NC	1.6	1.6	0.41	Y
Naphthalene	91-20-3	2/8	8.40	3.8-13.0	NC	8.4	8.4	0.14	Y
Toluene	108-88-3	2/10	45.85	2.7-89.0	NC	89.0	89.0	2,300	N
Trichlorofloromethane	75-69-4	2/10	4.025	1.75-6.3	NC	6.3	6.3	1,300	N
2,4-Dimethylphenol	105-67-9	1/8	NA	NA	NC	3.7	3.7	730	N
4-Methylphenol	106-44-5	1/8	NA	NA	NC	44.0	44.0	NS	N
2-Methylnaphthalene	91-57-6	1/8	NA	NA	NC	16.0	16.0	150	N
Benzo(a)anthracene	56-55-3	5/8	2.416	0.44-8.3	3.653[a]	8.30	3.653	0.029	Y
Benzo(b)fluoranthene	205-99-2	2/8	4.2	1.1-7.3	7.3[a]	7.3	7.30	0.029	Y
Carbazole	86-74-8	4/8	23.690	0.41-92	35.42[b]	92.0	35.42	NS	N
Benzo(a)pyrene	50-32-8	2/8	2.925	0.95-4.9	NC	4.9	4.90	0.0029	Y
Chrysene	218-01-9	5/8	2.229	0.155-2.229	13.29[c]	2.23	2.230	2.9	N
Indeno(1,2,3-cd)pyrene	193-39-5	1/8	NA	NA	NC	0.91	0.91	0.029	Y
Phenol	108-95-2	1/8	NA	NA	NC	330	330	11,000	N
PCBs									
Aroclor 1254	11097-69-1	3/8	3.267	1.7-6.1	3.472[b]	6.1	3.47	0.034	Y
Aroclor 1260	11096-82-5	5/8	3.246	0.52-13.0	12.29[d]	13.0	12.29	0.034	Y

Notes:

ug/L - Micrograms per liter
UCL- Upper Concentration Limit
EPC - Exposure Point Concentration
RSL - Regional Screening Level (USEPA Regional Screening Level (RSL) Tables for Tap Water, June 2011)
CPC - Contaminant of Potential Concern
Y- Yes
N- No
NA- Not enough detected data available
NC- Not calculated because only one detected value.
NS- No RSL is available for the compound.
a- Calculated using the 95% KM (BCA) method
b- Calculated using the 95% KM (t) method
c- Calculated using the 99%KM (Chebyshev) method
d- Calculated using the 97.5% KM (Chebyshev) method

Table 6
Final CPC Selection
USACE Niagara - Niagara Falls, New York

Chemicals of Potential Concern	
Sub Surface Soil	Groundwater
Benzo(a)anthracene	Benzene
Dibenz(a,h)anthracene	Naphthalene
Benzo(b)fluoranthene	Benzo(a)anthracene
Benzo(a)pyrene	Benzo(b)fluoranthene
Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene
Aroclor 1254	Indeno(1,2,3-cd)pyrene
Aroclor 1260	Aroclor 1254
	Aroclor 1260

Table 7
Summary of Potential Exposure Pathways
USACE Niagara - Niagara Falls, New York

Potentially Exposed Population	Exposure Route, Medium, Exposure Point	Pathway Selected for Evaluation	Reason for Selection
Worker	Dermal exposure to sub surface soil	Yes	Future use of the Site is industrial/commerical, therefore the potential exists for future workers to come in contact with soil during excavation or construction activities.
Worker	Inhalation of sub surface soil particulates from wind	Yes	Future use of the Site is industrial/commerical, therefore the potential for land disturbance could cause future workers to come in contact with soil particulates.
Worker	Incidental ingestion of sub surface soil	Yes	Future use of the Site is industrial/commerical, therefore the potential exists for future workers to come in contact with soil during excavation or construction activities.
Worker	Accidental Ingestion of groundwater	No	Future use of the Site is industrial/commerical, and groundwater at the Site is derived from public water. In addition, incidental ingestion of exposed groundwater during construction activities would be extremely rare and sporadic.
Worker	Inhalation of volatiles through bathing and other domestic tasks; inhalation of exposed groundwater	Yes	Future use of the Site is industrial/commericial, therefore no residential water use will occur at the Site. However, exposed groundwater could occur during construction activites.
Worker	Dermal exposure to groundwater	Yes	Future use of the Site is industrial/commercial, therefore the potential exists for future workers to come in contact with the groundwater during construction activities at the Site.

Table 8
Exposure Assessment - Subsurface Soil - Dermal
USACE Niagara - Niagara Falls, New York

Dermal Contact with Chemicals in Sub Surface Soil (Adult Commercial/Industrial Worker Scenario)					
Compound	EPC (mg/kg)	DA (mg/cm^2)	Absorbed Dose (mg/kg-day)	Absorption factor	Carcinogen
Benzo(a)anthracene	1.575	4.10E-08	4.72E-07	0.13	Y
Dibenz(a,h)anthracene	0.257	6.68E-09	7.71E-08	0.13	Y
Benzo(b)fluoranthene	2.052	5.34E-08	6.15E-07	0.13	Y
Benzo(a)pyrene	1.992	5.18E-08	5.97E-07	0.13	Y
Indeno(1,2,3-cd)pyrene	1.131	2.94E-08	3.39E-07	0.13	Y
Aroclor 1254	1.241	3.47E-08	4.01E-07	0.14	Y
Aroclor 1260	0.158	4.42E-09	5.10E-08	0.14	Y

Notes:

Calculated dosage is absorbed dose, not the intake dose

DA= C x CF x AF x ABS

Absorbed dose(mg/kg-day) = DA x EF x ED X EV X SA / BW X AT

Equation from RAGS Part A- Chapter 6

C = chemical concentration (EPC) mg/kg (varies per compound)

CF= Conversion factor (10E-6 kg/mg)

AF= Soil to Skin Adherence Factor (mg/cm^2), Assume 0.2 for adult worker(RAGS, Part E, Exhibit 3-5; Updated Dermal Exposure Assessment

SA = Skin surface area available for contact (cm^2/event) Assume 3,300 cm^2 for average adult (Updated Dermal Exposure Assessment Guidance)

ABS= Absorption Factor, varies per compound, use values presented in Regional Screening Level Industrial Soil Table, June 2011

EF= Exposure frequency (days per/year), assume 250 (RAGS Part E Exhibit 3-5)

ED= Exposure duration, 25 years (RAGS Part E, Exhibit 3-5)

EV= Event frequency, assume 1 (RAGS Part E, Exhibit 3-5)

BW= Body weight, assume 70kg (RAGS)

AT= Averaging Time (period over which exposure is average, days) For non-carcinogenic ED x 365 days/year; for carcinogens 70 years x 365 days/year)

EPC- Exposure Point Concentration

Table 9
Exposure Assessment - Subsurface Soil - Dermal
USACE Niagara - Niagara Falls, New York

Dermal Contact with Chemicals in Sub Surface Soil (Adult Construction Worker Scenario)					
Compound	EPC (mg/kg)	DA (mg/cm^2)	Absorbed Dose (mg/kg-day)	Absorption factor	Carcinogen
Benzo(a)anthracene	1.575	6.14E-08	1.02E-08	0.13	Y
Dibenz(a,h)anthracene	0.257	1.00E-08	1.66E-09	0.13	Y
Benzo(b)fluoranthene	2.052	8.00E-08	1.33E-08	0.13	Y
Benzo(a)pyrene	1.992	7.77E-08	1.29E-08	0.13	Y
Indeno(1,2,3-cd)pyrene	1.131	4.41E-08	7.32E-09	0.13	Y
Aroclor 1254	1.241	5.21E-08	8.66E-09	0.14	Y
Aroclor 1260	0.158	6.64E-09	1.10E-09	0.14	Y

Notes:

Calculated dosage is absorbed dose, not the intake dose

DA= C x CF x AF x ABS

Absorbed dose(mg/kg-day) = DA x EF x ED X EV X SA / BW X AT

Equation from RAGS Part A- Chapter 6

C = chemical concentration (EPC) mg/kg (varies per compound)

CF= Conversion factor (10E-6 kg/mg)

AF= Soil to Skin Adherence Factor (mg/cm^2), Assume 0.3 for construction worker(RAGS, Part E, Exhibit 3-3; Activity Specific Surface Area Weighted)

SA = Skin surface area available for contact (cm^2/event) Assume 3,300 cm^2 for average adult (Updated Dermal Exposure Assessment Guidance)

ABS= Absorption Factor, varies per compound, use values presented in Regional Screening Level Industrial Soil Table, November 2011

EF= Exposure frequency (days per/year), assume 180 (Exhibit 1-2: Summary of Default Exposure Factors for Site Specific Soil Screening Evaluations, Soil Guidance USEPA 2002)

ED= Exposure duration, 0.5 years (Exhibit 1-2: Summary of Default Exposure Factors for Site Specific Soil Screening Evaluations, Soil Guidance USEPA 2002)

EV= Event frequency, assume 1 (RAGS Part E, Exhibit 3-5)

BW= Body weight, assume 70kg (RAGS)

AT= Averaging Time (period over which exposure is average, days) For non-carcinogenic ED x 365 days/year; for carcinogens 70 years x 365 days/year)

EPC- Exposure Point Concentration

Table 10
Exposure Assessment - Subsurface Soil - Inhalation
USACE Niagara - Niagara Falls, New York

Inhalation of Soil Particulates from Sub Surface Soil (Commercial/Industrial Worker)					
Compound	CS (mg/m^3)	CA(ug/m^3)	Exposure concentration(ug/m^3)	Carcinogen	Molecular Weight
Benzo(a)anthracene	1.47E+01	2.15E-05	4.92E-06	Y	228.29
Dibenz(a,h)anthracene	2.93E+00	4.28E-06	9.78E-07	Y	278.35
Benzo(b)fluoranthene	2.12E+01	3.10E-05	7.08E-06	Y	252.3
Benzo(a)pyrene	2.06E+01	3.01E-05	6.87E-06	Y	252.32
Indeno(1,2,3-cd)pyrene	1.28E+01	1.87E-05	4.27E-06	Y	276.3
Aroclor 1254	1.66E+01	2.44E-05	5.57E-06	Y	328.0
Aroclor 1260	2.31E+00	3.38E-06	7.73E-07	Y	357.7

Notes:

Calculated dosage is absorbed dose, not the intake dose

EC (ug/m3) = CA x ET x EF x ED / AT

Equation from RAGS Part F- Equation 6

EC = Exposure concentration ($ug/m^{3)}$

CS= Soil concentration converted to ug/m3; varies per compound; Calculated EPC converted to ug/m^3 (EPC X molecular weight X 0.0409)

CA= Concentration of particulates in air; CS/PEF; PEF calculated fromTable 4-5: Derivation of the PEF- Commericial/Industrial Scenario

ET = Exposure time (hours/day), Assume 8

EF= Exposure frequency (days per/year), Assume 250

ED= Exposure duration (years) , Assume 25

AT= Averaging Time (ED in years X 365 days/year X 24 hours/day)

EPC- Exposure Point Concentration

Table 11
Exposure Assessment - Subsurface Soil - Inhalation
USACE Niagara - Niagara Falls, New York

Inhalation of Soil Particulates from Sub Surface Soil (Construction Worker Scenerio)					
Compound	CS (mg/m^3)	CA(ug/m^3)	Exposure concentration(ug/m^3)	Carcinogen	Molecular Weight
Benzo(a)anthracene	1.47E+01	2.15E-05	3.54E-06	Y	228.29
Dibenz(a,h)anthracene	2.93E+00	4.28E-06	7.04E-07	Y	278.35
Benzo(b)fluoranthene	2.12E+01	3.10E-05	5.10E-06	Y	252.3
Benzo(a)pyrene	2.06E+01	3.01E-05	4.95E-06	Y	252.32
Indeno(1,2,3-cd)pyrene	1.28E+01	1.87E-05	3.08E-06	Y	276.3
Aroclor 1254	1.66E+01	2.44E-05	4.01E-06	Y	328.0
Aroclor 1260	2.31E+00	3.38E-06	5.56E-07	Y	357.7

Notes:

Calculated dosage is absorbed dose, not the intake dose

EC (ug/m3) = CA x ET x EF x ED / AT

Equation from RAGS Part F- Equation 6

EC = Exposure concentration ($ug/m^{3)}$

CS= Soil concentration converted to ug/m3; varies per compound; Calculated EPC converted to ug/m^3 (EPC X molecular weight X 0.0409)

CA= Concentration of particulates in air; CS/PEF; PEF calculated fromTable 4-5: Derivation of the PEF- Commericial/Industrial Scenario

ET = Exposure time (hours/day), Assume 8

EF= Exposure frequency (days per/year), Assume 180

ED= Exposure duration (years) , Assume 0.5

AT= Averaging Time (ED in years X 365 days/year X 24 hours/day)

EPC- Exposure Point Concentration

Table 12
Exposure Assessment - Subsurface Soil - Ingestion
USACE Niagara - Niagara Falls, New York

Incidental Ingestion of Sub Surface Soil (Commercial/Industrial Worker Scenario)			
Compound	EPC (mg/kg)	Absorbed Dose (mg/kg-day)	Carcinogen
Benzo(a)anthracene	1.575	5.50E-07	Y
Dibenz(a,h)anthracene	0.257	8.98E-08	Y
Benzo(b)fluoranthene	2.052	7.17E-07	Y
Benzo(a)pyrene	1.992	6.96E-07	Y
Indeno(1,2,3-cd)pyrene	1.131	3.95E-07	Y
Aroclor 1254	1.241	4.34E-07	Y
Aroclor 1260	0.158	5.52E-08	Y

Notes:

Intake(mg/kg-day) = CS x IR x CF x FI x EF x ED / BW X AT

Equation from RAGS Part A- Chapter 6 (Exhibit 6-14)

CS = chemical concentration in soil (EPC) mg/kg (varies per compound)

IR= Ingestion rate (mg soil per day); For adults, assume 100 mg per day

CF = Conversion factor, 10^{-6} kg/mg

FI= Fraction Ingested from Contaminated Source, Pathway-specific value, Assume 100%

EF= Exposure frequency, 250 (days per/year)

ED= Exposure duration, 25 years

BW= Body weight, assume 70 kg (RAGS)

AT= Averaging Time (period over which exposure is average, days) For non-carcinogenic ED x 365 days/year; for carcinogens 70 years x 365 days/year)

EPC- Exposure Point Concentration

Table 13
Exposure Assessment - Subsurface Soil - Ingestion
USACE Niagara - Niagara Falls, New York

Incidental Ingestion of Sub Surface Soil (Construction Worker Scenario)			
Compound	EPC (mg/kg)	Absorbed Dose (mg/kg-day)	Carcinogen
Benzo(a)anthracene	1.575	2.62E-08	Y
Dibenz(a,h)anthracene	0.257	4.27E-09	Y
Benzo(b)fluoranthene	2.052	3.41E-08	Y
Benzo(a)pyrene	1.992	3.31E-08	Y
Indeno(1,2,3-cd)pyrene	1.131	1.88E-08	Y
Aroclor 1254	1.241	2.06E-08	Y
Aroclor 1260	0.158	2.62E-09	Y

Notes:

Intake(mg/kg-day) = CS x IR x CF x FI x EF x ED / BW X AT

Equation from RAGS Part A- Chapter 6 (Exhibit 6-14)

CS = chemical concentration in soil (EPC) mg/kg (varies per compound)

IR= Ingestion rate (mg soil per day); For construction, assume 330 mg per day

CF = Conversion factor, 10^{-6} kg/mg

FI= Fraction Ingested from Contaminated Source, Pathway-specific value, Assume 100%

EF= Exposure frequency, 180 (days per/year)

ED= Exposure duration, 0.5 years

BW= Body weight, assume 70 kg (RAGS)

AT= Averaging Time (period over which exposure is average, days) For non-carcinogenic ED x 365 days/year; for carcinogens 70 years x 365 days/year)

EPC- Exposure Point Concentration

Table 14
Exposure Assessment - Inhalation - Groundwater
USACE Niagara - Niagara Falls, New York

Inhalation of Volatiles from Exposed Groundwater (Construction Worker)					
Compound	CW (ug/L)	CT(ug/m^3)	Exposure concentration(ug/m^3)	Volatilization Factor	Carcinogen
Benzene	1.6	1.50E+01	2.46E+00	9.35E+00	Y
Naphthalene	8.4	5.54E+01	9.11E+00	6.60E+00	N

Notes:

Calculated dosage is absorbed dose, not the intake dose

EC (ug/m3) = CT x ET x EF x ED / AT

Equation from RAGS Part F- Equation 6

EC = Exposure concentration (ug/m^3)

CW= Water concentration (EPC)

CT= Concentration of contaminant in trench; calculated from Equation 3.1: Airborne Concentration of a Contaminant in a Trench (VF x CW)

ET = Exposure time (hours/day), Assume 8

EF= Exposure frequency (days per/year), Assume 180

ED= Exposure duration (years) , Assume 0.5

AT= Averaging Time (ED in years X 365 days/year X 24 hours/day)

EPC- Exposure Point Concentration

Table 15
Exposure Assessment - Dermal - Ground Water
USACE Niagara - Niagara Falls, New York

Dermal Contact with Chemicals in Ground Water (Construction Worker Scenario)								
Compound	EPC (ug/L)	CW (mg/cm^3)	FA	Kp	J_{event}	DA_{event}	Absorbed Dose	Carcinogen
Benzene	1.6	1.60E-06	1.00E+00	1.50E-02	2.90E-01	2.72E-08	4.52E-09	Y
Naphthalene	8.4	8.40E-06	1.00E+00	4.70E-02	5.60E-01	6.22E-07	1.45E-05	N
Benzo(a)anthracene	3.653	3.65E-06	1.00E+00	4.70E-01	2.03E+00	5.14E-06	8.54E-07	Y
Benzo(b)fluoranthene	7.30	7.30E-06	1.00E+00	7.00E-01	2.77E+00	1.79E-05	2.98E-06	Y
Benzo(a)pyrene	4.9	4.90E-06	1.00E+00	7.00E-01	2.69E+00	1.18E-05	1.97E-06	Y
Indeno(1,2,3-cd)pyrene	0.91	9.00E-07	6.00E-01	1.00E+00	3.78E+00	6.98E-07	1.16E-07	Y
Aroclor 1254	3.47	3.47E-06	7.00E-01	4.50E-01	7.21E+00	3.67E-07	6.09E-08	Y
Aroclor 1260	12.29	1.22E-05	5.00E-01	3.84E-01	1.33E+01	2.23E-07	3.71E-08	Y

Notes:

Calculated dosage is absorbed dose, not the intake dose

Dermally Absorbed dose(mg/kg-day) = DA_{event} x EV x ED x EF x SA / BW x AT

Equation from RAGS Part E- Chapter 3

DA_{event}= 2 x FA x Kp x CW √ [(6 x j_{event} x t_{event}) / pi]

FA= Fraction absorbed water (chemical specific, obtained from RAGS Part E, Appendix B)

Kp= Dermal permeability coefficient of compound in water (chemical specific, obtained from RAGS Part E, Appendix B)

Cw= Chemical concentration in water (EPC converted to mg/cm^3)

J_{event}= Lag time per event (hr/event) Chemical specific, obtained from Appendix B

T_{event}= Event duration (hr/event) assume 0.58 (RAGS Part E Exhibit 3-2)

EV= Event frequency (events/day) assume 1 (RAGS Part E Exhibit 3-2)

EF= Exposure frequency (days per/year), assume 180 (Exhibit 1-2: Summary of Default Exposure Factors for Site Specific Soil Screening Evaluations, Soil Guidance USEPA 2002)

ED= Exposure duration, 0.5 years (Exhibit 1-2: Summary of Default Exposure Factors for Site Specific Soil Screening Evaluations, Soil Guidance USEPA 2002)

SA= Skin surface area (cm^2), assume 3,300 (RAGS Part E Exhibit 3-2)

BW= Body weight, assume 70kg (RAGS)

AT= Averaging Time (period over which exposure is average, days). For carcinogens 70 years x 365 days / year; for non-carcinogens ED X 365 days/year

EPC- Exposure Point Concentration

Table 16
Carcinogenic Risk Calculations
Subsurface Soil - Dermal
USACE Niagara - Niagara Falls, New York

Cancer Risk Calculations for Sub Surface Soil - Dermal (Commercial/Industrial Worker Scenario)

Compound	Absorbed Dose (mg/kg-day)	Slope Factor (mg/kg-day)	Source	Oral Absorbed Efficiency (ABSderm)	Adjusted Slope Factor (mg/kg-day)	Carcinogen	Cancer Risk
Benzo(a)anthracene	4.72E-07	7.30E-01	ECAO	1.3E-01	5.62E+00	B2	2.7E-06
Dibenz(a,h)anthracene	7.71E-08	7.30E+00	ECAO	1.3E-01	5.62E+01	B2	4.3E-06
Benzo(b)fluoranthene	6.15E-07	7.30E-01	ECAO	1.3E-01	5.62E+00	B2	3.5E-06
Benzo(a)pyrene	5.97E-07	7.30E+00	IRIS	1.3E-01	5.62E+01	B2	3.4E-05
Indeno(1,2,3-cd)pyrene	3.39E-07	7.30E-01	ECAO	1.3E-01	5.62E+00	B2	1.9E-06
Aroclor 1254	4.01E-07	2.00E+00	S	1.4E-01	1.43E+01	B2	5.7E-06
Aroclor 1260	5.10E-08	2.00E+00	S	1.4E-01	1.43E+01	B2	7.3E-07
Total Cancer Risk							**5.23E-05**

Notes:

Absorbed dose calculated in Table 8

Equations and information obtained from RAGS Part E

Cancer Risk (Absorbed dose x adjusted slope factor)

Oral Absorbed Efficiency values obtained from Exhibit 3-4, RAGS Part E

Adjusted slope factor represents the absorbed amount and not the administered; (Slope factor / ABSderm)

Standard USEPA Cancer Classification

B2- Probable Human Carcinogen: There is inadequate evidence that it can cause cancer in humans but at present it is far from conclusive.

IRIS= Integrated Risk Information System

ECAO= Environmental Criteria and Assessment Office

S= The User's Guide for the RSL Screening Level Table states that the upper bound slope factor of 2.0 mg/kg per day should be used.

Table 17
Carcinogenic Risk Calculations
Subsurface Soil - Dermal
USACE Niagara - Niagara Falls, New York

Cancer Risk Calculations for Sub Surface Soil - Dermal (Construction Worker Scenario)

Compound	Absorbed Dose (mg/kg-day)	Slope Factor (mg/kg-day)	Source	Oral Absorbed Efficiency (ABSderm)	Adjusted Slope Factor (mg/kg-day)	Carcinogen	Cancer Risk
Benzo(a)anthracene	1.02E-08	7.30E-01	ECAO	1.3E-01	5.62E+00	B2	5.7E-08
Dibenz(a,h)anthracene	1.66E-09	7.30E+00	ECAO	1.3E-01	5.62E+01	B2	9.3E-08
Benzo(b)fluoranthene	1.33E-08	7.30E-01	ECAO	1.3E-01	5.62E+00	B2	7.5E-08
Benzo(a)pyrene	1.29E-08	7.30E+00	IRIS	1.3E-01	5.62E+01	B2	7.2E-07
Indeno(1,2,3-cd)pyrene	7.32E-09	7.30E-01	ECAO	1.3E-01	5.62E+00	B2	4.1E-08
Aroclor 1254	8.66E-09	2.00E+00	S	1.4E-01	1.43E+01	B2	1.2E-07
Aroclor 1260	1.10E-09	2.00E+00	S	1.4E-01	1.43E+01	B2	1.6E-08
Total Cancer Risk							**1.13E-06**

Notes:

Absorbed dose calculated in Table 9

Equations and information obtained from RAGS Part E

Cancer Risk (Absorbed dose x adjusted slope factor)

Oral Absorbed Efficiency values obtained from Exhibit 3-4, RAGS Part E

Adjusted slope factor represents the absorbed amount and not the administered; (Slope factor / ABSderm)

Standard USEPA Cancer Classification

B2- Probable Human Carcinogen: There is inadequate evidence that it can cause cancer in humans but at present it is far from conclusive.

IRIS= Integrated Risk Information System

ECAO= Environmental Criteria and Assessment Office

S= The User's Guide for the RSL Screening Level Table states that the upper bound slope factor of 2.0 mg/kg per day should be used.

Table 18
Carcinogenic Risk Calculations
Subsurface Soil - Inhalation
USACE Niagara - Niagara Falls, New York

Cancer Risk Calculations for Sub Surface Soil - Inhalation (Commercial/Industrial Worker Scenario)

Compound	Exposure concentration(ug/m^3)	IUR(ug/m^3)$^{-1}$	Source	Carcinogen	Cancer Risk
Benzo(a)anthracene	4.92E-06	1.10E-04	CALEPA	B2	5.41E-10
Dibenz(a,h)anthracene	9.78E-07	1.20E-03	CALEPA	B2	1.17E-09
Benzo(b)fluoranthene	7.08E-06	1.10E-04	CALEPA	B2	7.79E-10
Benzo(a)pyrene	6.87E-06	1.10E-03	CALEPA	B2	7.56E-09
Indeno(1,2,3-cd)pyrene	1.10E-04	1.10E-04	CALEPA	B2	1.21E-08
Aroclor 1254	5.57E-06	5.70E-04	S	B2	3.17E-09
Aroclor 1260	7.73E-07	5.70E-04	S	B2	4.41E-10
Total Cancer Risk					**2.58E-08**

Notes:

Exposure concentration calculated in Table 10

Cancer Risk (Exposure concentration X IUR)

IUR= Slope factor for inhalation risk obtained from RSL Tables, source listed in "Source" column

Standard USEPA Cancer Classification

B2- Probable Human Carcinogen: There is inadequate evidence that it can cause cancer in humans but at present it is far from conclusive.

Cal EPA- California EPA

S- User's Guide to RSL Tables

Table 19
Carcinogenic Risk Calculations
Subsurface Soil - Inhalation
USACE Niagara - Niagara Falls, New York

Cancer Risk Calculations for Sub Surface Soil - Inhalation (Construction Worker Scenario)

Compound	Exposure concentration(ug/m^3)	IUR(ug/m^3)$^{-1}$	Source	Carcinogen	Cancer Risk
Benzo(a)anthracene	3.54E-06	1.10E-04	CALEPA	B2	3.89E-10
Dibenz(a,h)anthracene	7.04E-07	1.20E-03	CALEPA	B2	8.45E-10
Benzo(b)fluoranthene	5.10E-06	1.10E-04	CALEPA	B2	5.61E-10
Benzo(a)pyrene	4.95E-06	1.10E-03	CALEPA	B2	5.45E-09
Indeno(1,2,3-cd)pyrene	3.08E-06	1.10E-04	CALEPA	B2	3.39E-10
Aroclor 1254	4.01E-06	5.70E-04	S	B2	2.29E-09
Aroclor 1260	5.56E-07	5.70E-04	S	B2	3.17E-10
Total Cancer Risk					**1.02E-08**

Notes:

Exposure concentration calculated in Table 11

Cancer Risk (Exposure concentration X IUR)

IUR= Slope factor for inhalation risk obtained from RSL Tables, source listed in "Source" column

Standard USEPA Cancer Classification

B2- Probable Human Carcinogen: There is inadequate evidence that it can cause cancer in humans but at present it is far from conclusive.

Cal EPA- California EPA

S- User's Guide to RSL Tables

Table 20
Carcinogenic Risk Calculations
Subsurface Soil - Ingestion
USACE Niagara - Niagara Falls, New York

Cancer Risk Calculations for Sub Surface Soil - Ingestion (Commercial/Industrial Scenario)

Compound	Absorbed Dose (mg/kg-day)	Slope Factor (mg/kg-day)	Source	GI Absorption Value (ABSgi)	Absorbed Slope Factor (mg/kg-day)	Carcinogen	Cancer Risk
Benzo(a)anthracene	5.50E-07	7.30E-01	ECAO	1.0E+00	7.30E-01	B2	4.02E-07
Dibenz(a,h)anthracene	8.98E-08	7.30E+00	ECAO	1.0E+00	7.30E+00	B2	6.56E-07
Benzo(b)fluoranthene	7.17E-07	7.30E-01	ECAO	1.0E+00	7.30E-01	B2	5.23E-07
Benzo(a)pyrene	6.96E-07	7.30E+00	IRIS	1.0E+00	7.30E+00	B2	5.08E-06
Indeno(1,2,3-cd)pyrene	3.95E-07	7.30E-01	ECAO	1.0E+00	7.30E-01	B2	2.88E-07
Aroclor 1254	4.34E-07	2.00E+00	S	1.0E+00	2.00E+00	B2	8.68E-07
Aroclor 1260	5.52E-08	2.00E+00	S	1.0E+00	2.00E+00	B2	1.10E-07
Total Cancer Risk							**7.9E-06**

Notes:

Absorbed dose calculated in Table 12

Cancer Risk (Absorbed dose x adjusted slope factor)

ABSgi= GI absorption values , fraction of contaminant absorbed in GI tract obtained from RSL Tables

Absorbed slope factor represents the absorbed amount and not the administered; (Oral Slope factor / ABSgi)

Standard USEPA Cancer Classification

B2- Probable Human Carcinogen: There is inadequate evidence that it can cause cancer in humans but at present it is far from conclusive.

IRIS= Integrated Risk Information System

ECAO= Environmental Criteria and Assessment Office

S= The User's Guide for the RSL Screening Level Table states that the upper bound slope factor of 2.0 mg/kg per day should be used.

Table 21
Carcinogenic Risk Calculations
Subsurface Soil - Ingestion
USACE Niagara - Niagara Falls, New York

Cancer Risk Calculations for Sub Surface Soil - Ingestion (Construction Scenario)

Compound	Absorbed Dose (mg/kg-day)	Slope Factor (mg/kg-day)	Source	GI Absorption Value (ABSgi)	Absorbed Slope Factor (mg/kg-day)	Carcinogen	Cancer Risk
Benzo(a)anthracene	2.62E-08	7.30E-01	ECAO	1.0E+00	7.30E-01	B2	1.91E-08
Dibenz(a,h)anthracene	4.29E-09	7.30E+00	ECAO	1.0E+00	7.30E+00	B2	3.13E-08
Benzo(b)fluoranthene	3.41E-08	7.30E-01	ECAO	1.0E+00	7.30E-01	B2	2.49E-08
Benzo(a)pyrene	3.31E-08	7.30E+00	IRIS	1.0E+00	7.30E+00	B2	2.42E-07
Indeno(1,2,3-cd)pyrene	1.88E-08	7.30E-01	ECAO	1.0E+00	7.30E-01	B2	1.37E-08
Aroclor 1254	2.06E-08	2.00E+00	S	1.0E+00	2.00E+00	B2	4.12E-08
Aroclor 1260	2.62E-09	2.00E+00	S	1.0E+00	2.00E+00	B2	5.24E-09
Total Cancer Risk							**3.77E-07**

Notes:

Absorbed dose calculated in Table 13

Cancer Risk (Absorbed dose x adjusted slope factor)

ABSgi= GI absorption values , fraction of contaminant absorbed in GI tract obtained from RSL Tables

Absorbed slope factor represents the absorbed amount and not the administered; (Oral Slope factor / ABSgi)

Standard USEPA Cancer Classification

B2- Probable Human Carcinogen: There is inadequate evidence that it can cause cancer in humans but at present it is far from conclusive.

IRIS= Integrated Risk Information System

ECAO= Environmental Criteria and Assessment Office

S= The User's Guide for the RSL Screening Level Table states that the upper bound slope factor of 2.0 mg/kg per day should be used.

Table 22
Carcinogenic Risk Calculations
Groundwater - Inhalation - Worker
USACE Niagara - Niagara Falls, New York

Cancer Risk Calculations for Groundwater- Inhalation- Worker Scenario

Compound	Exposure concentration(ug/m^3)	IUR(ug/m^3)$^{-1}$	Source	Carcinogen	Cancer Risk
Benzene	2.44E+00	7.80E-06	IRIS	A	1.90E-05
Naphthalene	9.11E+00	3.40E-05	Cal EPA	C	3.10E-04
Total Cancer Risk					**3.29E-04**

Notes:

Exposure concentration calculated in Table 14

Cancer Risk (Exposure concentration x IUR)

IUR= Slope factor for inhalation risk obtained from RSL Tables, sources are listed in the "Source" column.

Standard USEPA Cancer Classification

A-Human Carcinogen: There is enough evidence to conclude that it can cause cancer in humans.

C- Possible Human Carcinogen: There is limited evidence that it can cause cancer in animals in the absence of human data, but at present it is not conclusive.

Cal EPA- California EPA

IRIS- USEPA Integrated Risk Information System

Table 23
Risk Characterization
Ground Water - Dermal
USACE Niagara - Niagara Falls, New York

Cancer Risk Calculations for Ground Water- Dermal- (Construction Worker)

Compound	Absorbed Dose (mg/kg)	Slope Factor	Source	Oral Absorbed Efficiency (ABS_{GI})	Adjusted Slope Factor (mg/kg)	Carcinogen	Cancer Risk
Benzene	4.52E-09	5.5E-02	IRIS	100%	5.50E-02	A	2.49E-10
Benzo(a)anthracene	8.54E-07	7.3E-01	ECAO	86%	NA	B2	6.23E-07
Benzo(b)fluoranthene	2.98E-06	7.3E-01	ECAO	86%	NA	B2	2.18E-06
Benzo(a)pyrene	1.97E-06	7.3E+00	IRIS	86%	NA	B2	1.44E-05
Indeno(1,2,3-cd)pyrene	1.16E-07	7.3E-01	ECAO	86%	NA	B2	8.47E-08
Aroclor 1254	6.09E-08	2.0E+00	S	74%	NA	B2	1.22E-07
Aroclor 1260	3.71E-08	2.0E+00	S	74%	NA	B2	7.42E-08
Total Cancer Risk							**1.75E-05**

Notes:

Absorbed dose calculated in Table 15

Adjusted slope factor represents the absorbed amount and not administered; (Slope factor / ABS_{GI})

Cancer Risk (Absorbed dose x adjusted slope factor)

IRIS- Integrated Risk Information System

ECAO- Environmental Criteria and Assessment Office

USEPA Carcinogen Classification

A- Human Carcinogen: There is enough evidence to conclude that it can cause cancer in humans.

B2- Probable Human Carcinogen: There is inadequate evidence that it can cause cancer in humans but at present it is far from conclusive.

Total Cancer Risk is the sum of risk for individual compounds

NA= In accordance with RAGS Part E, Exhibit 4-1, PAHs and PCBs should not be adjusted.

Table 24
Risk Characterization - Non Cancer
Ground Water - Dermal
USACE Niagara - Niagara Falls, New York

Non-Cancer Risk Calculations for Ground Water- Dermal (Construction Worker)

Compound	Absorbed Dose (mg/kg)	RfD	Source	Oral Absorbed Efficiency (ABS_{GI})	AbsorbedRfD(mg/kg)	Carcinogen	Non Cancer Risk
Naphthalene	1.45E-07	2.0E-02	IRIS	100%	2.00E-02	C	7.25E-06
Total Non-Cancer Risk							**7.25E-06**

Notes:

Absorbed dose calculated in Table 15

Adjusted slope factor represents the absorbed amount and not administered; (Reference dose oral x ABS_{GI})

Non Cancer Risk (Absorbed dose / Absorbed reference dose)

IRIS- Integrated Risk Information Systme

ECAO- Environmental Criteria and Assessment Office

USEPA Carcinogen Classification

C- Possible Human Carcinogen: There is limited evidence that it can cause cancer in animals in the absence of human data, but at present it is not conclusive.

Total Non- Cancer Risk is the sum of risk for individual compounds

Table 25
Risk Characterization - Non Cancer
Soil - Dermal
USACE Niagara - Niagara Falls, New York

Non-Cancer Risk Calculations for Ground Water- Dermal (Construction Worker)

Compound	Exposed Population	Absorbed Dose (mg/kg)	RfD	Source	Oral Absorbed Efficiency (ABS_{GI})	AbsorbedRfD(mg/kg)	Non Cancer Risk
Aroclor 1254	Commerical/Industrial Worker	4.01E-07	2.0E-05	IRIS	100%	2.00E-05	2.01E-02
Aroclor 1254	Construction Worker	8.66E-09	2.0E-05	IRIS	100%	2.00E-05	4.33E-04
Total Non-Cancer Risk							**2.01E-02**

Notes:

Absorbed dose calculated in Tables 8 and 9

Adjusted slope factor represents the absorbed amount and not administered; (Reference dose oral x ABS_{GI})

Non Cancer Risk (Absorbed dose / Absorbed reference dose)

IRIS- Integrated Risk Information Systme

Total Non- Cancer Risk is the sum of risk for individual compounds

Table 26
Risk Characterization Summary Table
USACE Niagara - Niagara Falls, New York

Media	Population	Cancer Risk	Principal Contributing Pathway
Sub Surface Soil	Commercial/Industrial Worker	5.2E-05	Dermal contact
Sub Surface Soil	Commercial/Industrial Worker	2.6E-08	Inhalation
Sub Surface Soil	Commercial/Industrial Worker	7.9E-06	Ingestion
Total Sub Surface Soil Risk- Commercial/Industrial Worker		**6.0E-05**	
Sub Surface Soil	Construction Worker	1.1E-06	Dermal contact
Sub Surface Soil	Construction Worker	1.0E-08	Inhalation
Sub Surface Soil	Construction Worker	3.8E-07	Ingestion
Total Sub Surface Soil Risk- Construction Worker		**1.5E-06**	
Groundwater	Construction Worker	1.8E-05	Dermal contact
Groundwater	Construction Worker	3.3E-04	Inhalation
Total Groundwater Risk- Worker		**3.5E-04**	

Table 27
Risk Characterization Summary Table
USACE Niagara - Niagara Falls, New York

Media	Population	Non Cancer Risk	Principal Contributing Pathway
Sub Surface Soil	Commercial/Industrial Worker	2.0E-02	Dermal contact
Total Sub Surface Soil Risk- Commercial/Industrial Worker		**2.0E-02**	
Sub Surface Soil	Construction Worker	4.3E-04	Dermal contact
Total Sub Surface Soil Risk- Construction Worker		**4.3E-04**	
Groundwater	Construction Worker	7.3E-06	Dermal contact
Total Groundwater Risk- Construction Worker		**7.3E-06**	

Table 28
Potential Sources of Uncertainty
USACE Niagara - Niagara Falls, New York

Uncertainty	Effect	Justification
Exposure point concentration	Overestimate	The 95% UCL was calculated for each compound at the Site and used as the EPC in the risk assesment calculations. In addition, for sub surface soil, the 97.5% UCL was selected for a better statistical average, which yielded even more conservative estimates.
Probability of exposure pathways	Overestimate	As a conservative estimate, the future resident was evaluated in the HHRA. The current property has non-residential use.
Exposure assumptions (frequency, duration, time)	Overestimate	Parameters selected are conservative estimates of exposure
Degradation of chemicals	Overestimate	All intake calculations and risk estimates are based on recent chemical concentrations. Concentrations will tend to decrease over time as a result of degradation.
Extrapolation of animal toxicity data to humans	Unknown	Animal studies typically involve high dose exposures, while humans are exposed to low doses in the environment
Industrial RSL are not available for groundwater	Overestimate	Residential groundwater screening levels are used in the risk assessment, since industrial groundwater levels are not available. This makes the exposure estimates much more conservative.

APPENDIX A

Soil Probe Logs

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	60	(FILL) Brown, fine to medium GRAVEL, some fine to coarse Sand,	Headspace result =	0
1				trace Silt, trace Brick fragments, moist.	0 ppm (0-4' bgs)	
2						
						0
3						
4						
	S-2	4-8	60	(FILL) Brown, fine to medium SAND, some Gravel, little Clay, wet.	Headspace result =	0
5					0 ppm (4-8' bgs)	
				(FILL) Brown, Silty CLAY, little fine to medium Sand, wet.		
6						
				(FILL) Brown, Silty SAND, wet.		0
7						
8						
	S-3	8-12	60		Headspace result =	0
9					0 ppm (8-12' bgs)	
10				(FILL) Brown fine SAND, trace Silt, wet.		
						0
11						
				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
12						
				End of SP-22 at 12.0 feet bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER		CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	60	(FILL) Brown, fine to medium GRAVEL, some fine to coarse	Headspace result =	0
1				Sand, trace Silt, moist.	0 ppm (0-4' bgs)	
				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
4						
	S-2	4-8	100		Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-12	100		Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-23 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
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2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	75	(FILL) Brown, fine to medium GRAVEL, some fine to coarse	Headspace result =	0
1				Sand, trace Silt, moist.	0 ppm (0-4' bgs)	
				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
4						
	S-2	4-8	100		Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-12	100		Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-24 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	75	(FILL) Brown, fine to medium GRAVEL, some fine to coarse Sand, little Silt, trace Clay, trace Brick fragments, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
2						0
3						
4						
	S-2	4-8	50	(FILL) Grayish brown, fine SAND, some Gravel, little Silt, moist.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6						0
7				Grades to:..wet.		
8						
	S-3	8-11.5	<5		Headspace result = 0 ppm (8-11.5' bgs)	0
9						
10						0
11						
12				Refusal at 11.5 feet bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes: 1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	60	(FILL) Brown, fine to medium SAND and GRAVEL, some Silt, trace Clay, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
4						
	S-2	4-8	100		Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
						0
7						
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-26 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes: 1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION: Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	40	(FILL) Brown, fine to medium SAND and GRAVEL, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1				(FILL) Light gray, some Silt. (Crushed Concrete)		
2						0
3				(FILL) Brown, fine to medium SAND, some Gravel, trace Silt, moist.		
4						
	S-2	4-8	100	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6						0
7				Grades to:..wet.		
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						0
11						
12						
				End of SP-27 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GZA GEOENVIRONMENTAL OF NEW YORK
535 WASHINGTON ST. 11TH FL.
BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

Soil Probe SP- 28
SHEET 1 OF 1
FILE No. 21.0056522.20
CHECKED BY : CZB

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	40	(FILL) Brown, fine to medium SAND and GRAVEL, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
2						
3						0
4				(FILL) Grades to:..gray, some Silt, wet. (Crushed Concrete)		
	S-2	4-8	100	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
7						0
8						
	S-3	8-12	50		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
11						0
12						
				End of SP-28 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	50	(FILL) Brown, fine to medium GRAVEL, some fine to coarse Sand, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
2						
3						0
4						
	S-2	4-8	100	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
				Reddish brown, Clayey SILT, trace fine to medium Sand, wet.		0
7						
				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-29 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	25	(FILL) Gray, fine to medium SAND and GRAVEL, some Silt, trace Clay, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
2						0
3						
4						
	S-2	4-8	100	(FILL) Grayish brown, fine to coarse SAND, trace Gravel, trace Silt, moist.	Headspace result = 0 ppm (4-8' bgs)	0
5				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
6						0
7						
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						0
11						
12				End of SP-30 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	45	(FILL) Gray, GRAVEL, some fine to medium Sand, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
				(FILL) Brownish gray, fine to medium SAND, some Gravel, wet.		
2						
						0
3						
4				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
	S-2	4-8	90		Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
						0
7						
8						
	S-3	8-12	90		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-31 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
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2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	40	(FILL) Dark brown, fine to medium GRAVEL, some fine to coarse Sand, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
2				(FILL) Grades to:..brown.		0
3						
4						
	S-2	4-8	100	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6				Reddish brown, Clayey SILT, trace fine to medium Sand, wet.		0
7						
8						
	S-3	8-12	100	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result = 0 ppm (8-12' bgs)	0
9						
10						0
11						
12				End of SP-32 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	30	(FILL) Brown, fine to medium SAND and GRAVEL, some Silt,	Headspace result =	0
1				trace Clay, moist.	0 ppm (0-4' bgs)	
2						
				Grades to:..wet.		0
3						
4						
	S-2	4-8	90	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-12	90		Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-33 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

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C - Rock Core Sample

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/26/11	END DATE: 9/26/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	50	(FILL) Dark brown, fine to medium GRAVEL, some fine to coarse Sand, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
2				(FILL) Grades to:..gray, some Silt. (Crushed Concrete)		0
3						
4				(FILL) Grades to:..wet.		
	S-2	4-8	100	Grayish brown to reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6				Grades to:..reddish brown.		
7						0
8				Reddish brown, Clayey SILT, trace fine to medium Sand, wet.		
	S-3	8-12	100	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result = 0 ppm (8-12' bgs)	0
9						
10						0
11						
12						
13				End of SP-34 at 12.0' bgs.		
14						
15						
16						
17						
18						
19						
20						

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C - Rock Core Sample

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GZA GEOENVIRONMENTAL OF NEW YORK
535 WASHINGTON ST. 11TH FL.
BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

Soil Probe SP- 35
SHEET 1 OF 1
FILE No. 21.0056522.20
CHECKED BY : CZB

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	50	(FILL) Brown, fine to medium SAND and GRAVEL, some Silt,	Headspace result =	0
1				trace Clay, moist.	0 ppm (0-4' bgs)	
				(FILL) Reddish brown, Silty CLAY, trace fine Sand, moist.		
2						
						0
3						
				(FILL) Gray, fine to medium SAND, some Gravel, wet.		
4						
	S-2	4-8	90	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-12	90		Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-35 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION: Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	50	(FILL) Brown, fine to medium SAND and GRAVEL, some Silt,	Headspace result =	0
1				trace Clay, moist.	0 ppm (0-4' bgs)	
				(FILL) Brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
				(FILL) Grades to:..dark brown to black.	Slight weathered	
4				(FILL) Brown, fine to medium SAND, trace Silt, wet.	petroleum odor.	
	S-2	4-8	90	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-10	100		Headspace result =	0
9					0 ppm (8-10' bgs)	
10						
				Refusal at 10.0' bgs.		0
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	75	(FILL) Gray, GRAVEL, some fine to medium Sand, moist.	Headspace result =	0
1				(FILL) Reddish brown, Silty CLAY, some fine to medium Sand,	0 ppm (0-4' bgs)	
				trace Gravel, moist.		
2				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
						0
3						
4						
	S-2	4-6	100		Headspace result =	0
5					0 ppm (4-6' bgs)	
6					Concrete in end	
				Refusal at 6.0' bgs.	of sample.	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	50	Asphalt to 0.5' bgs.	Headspace result =	0
1				(FILL) Gray, GRAVEL, some fine to medium Sand, moist.	0 ppm (0-4' bgs)	
				(FILL) Brown, fine to medium SAND and GRAVEL, some Silt,		
2				trace Clay, moist.		
						0
3						
				(FILL) Tan, fine to medium SAND, trace Silt, moist.		
4				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
	S-2	4-8	100		Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-12	100		Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-38 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER		CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	40	(FILL) Brown, fine to medium SAND and GRAVEL, some Silt, trace Clay, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
4						
	S-2	4-8	100		Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
						0
7						
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-39 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	75	(FILL) Brown, fine to medium SAND and GRAVEL, trace Silt, trace Clay, wet.	Headspace result = 0 ppm (0-4' bgs)	0
1				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
3						0
4						
	S-2	4-8	90		Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
7						0
8						
	S-3	8-12	90		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
11						0
12						
				End of SP-40 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION: Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	40	(FILL) Dark brown, fine to medium GRAVEL, some fine to coarse Sand, trace Silt, wet.	Headspace result = 0 ppm (0-4' bgs)	0
1						
2						
3						0
4				Dark yellowish brown, Silty CLAY, trace fine to medium Sand, moist.		
	S-2	4-8	100		Headspace result = 0 ppm (4-8' bgs)	0
5				Grades to:..reddish brown.		
6						
7						0
8						
	S-3	8-12	100	Grades to:..little fine to medium Sand, trace Gravel, wet.	Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
				Grades to:..trace fine to medium Sand, moist.		0
11						
12						
				End of SP-41 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

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C - Rock Core Sample

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION: Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	60	(FILL) Gray, GRAVEL, some fine to medium Sand, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1				Dark brown and gray, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
				Grades to:..light yellowish brown.		
4						
	S-2	4-8	100		Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
						0
7						
				Grades to:..reddish brown, moist to wet.		
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-42 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

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Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	75	(FILL) Gray, GRAVEL, some fine to medium Sand, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
				Dark yellowish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
4						
	S-2	4-8	100	Grades to:..reddish brown.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
						0
7						
8						
	S-3	8-12	75		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-43 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes: 1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	60	(FILL) Gray, GRAVEL, some fine to medium Sand, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
				Dark yellowish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
4						
	S-2	4-8	90	Grades to:..reddish brown.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
						0
7						
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-44 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes: 1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION: Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	50	(FILL) Gray, GRAVEL, some fine to medium Sand, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
				Dark yellowish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
4						
	S-2	4-8	100	Grades to:..reddish brown.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
						0
7						
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-45 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION: Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	50	Asphalt to 0.5' bgs.	Headspace result =	0
1				(FILL) Gray, GRAVEL, some fine to coarse Sand, moist.	0 ppm (0-4' bgs)	
2				(FILL) Brown, fine to coarse SAND, some Gravel, trace Silt,		
				moist.		0
3						
4						
	S-2	4-8	100	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-12	100		Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-46 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	60	(FILL) Gray, GRAVEL, some fine to medium Sand, moist.	Headspace result =	0
1				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	0 ppm (0-4' bgs)	
2						
						0
3						
4						
	S-2	4-8	100		Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-12	100		Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-47 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	80	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
2						
3						0
4				Reddish brown, Clayey SILT, trace fine fo medium Sand, wet.		
	S-2	4-8	100		Headspace result = 0 ppm (4-8' bgs)	0
5						
6				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
7						0
8						
	S-3	8-12	90	Reddish brown, Clayey SILT, trace fine fo medium Sand, wet.	Headspace result = 0 ppm (8-12' bgs)	0
9						
10				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		
11						0
12						
13				End of SP-48 at 12.0' bgs.		
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/27/11	END DATE: 9/27/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	60	(FILL) Gray, GRAVEL, some fine to medium Sand, moist.	Headspace result =	25.5
1				(FILL) Light brown, fine SAND, trace Silt, wet.	38.6 ppm (0-4' bgs)	
				(FILL) Dark brown, Sandy SILT, trace Gravel, moist.		
2						
				Reddish brown, Silty CLAY, trace fine to medium Sand, moist.		0
3						
4						
	S-2	4-8	90		Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
8						
	S-3	8-12	90		Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-49 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	80	(FILL) Gray, GRAVEL, some fine to medium Sand, trace Silt, moist.	Headspace result = 0 ppm (0-4' bgs)	0
1						
				Dark yellowish brown, Silty CLAY, trace fine to medium Sand, moist.		
2						
						0
3						
4						
	S-2	4-8	100	Grades to:..reddish brown.	Headspace result = 0 ppm (4-8' bgs)	0
5						
6						
						0
7						
8						
	S-3	8-12	100		Headspace result = 0 ppm (8-12' bgs)	0
9						
10						
						0
11						
12						
				End of SP-50 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Niagara Falls Armed Forces Reserve Center
Niagara Falls, NY

CONTRACTOR:	Matrix Environmental Technologies	BORING LOCATION:	See Location Plan
DRILLER:	Mark Janus	GROUND SURFACE ELEVATION:	NA DATUM NA
START DATE: 9/28/11	END DATE: 9/28/11	GZA GEOENVIRONMENTAL REPRESENTATIVE:	J. Beninati

WATER LEVEL DATA

DATE	TIME	WATER	CASING

TYPE OF DRILL RIG:	Geoprobe 54 DT track mounted rig
CASING SIZE AND DIAMETER:	2" diameter by 48" long
OVERBURDEN SAMPLING METHOD:	Direct push
ROCK DRILLING METHOD:	NA

DEPTH	SAMPLE INFORMATION Sample Number	DEPTH (FT)	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES	FIELD SCREENING RESULTS (ppm)
	S-1	0-4	40	Topsoil to 0.5' bgs.	Headspace result =	0
1				Dark gray, Silty CLAY, trace fine to medium Sand, moist.	0 ppm (0-4' bgs)	
2				Grades to:..reddish brown.		
						0
3						
4						
	S-2	4-8	100		Headspace result =	0
5					0 ppm (4-8' bgs)	
6						
						0
7						
				Reddish brown, Clayey SILT, trace fine fo medium Sand, wet.		
8						
	S-3	8-12	100	Reddish brown, Silty CLAY, trace fine to medium Sand, moist.	Headspace result =	0
9					0 ppm (8-12' bgs)	
10						
						0
11						
12						
				End of SP-51 at 12.0' bgs.		
13						
14						
15						
16						
17						
18						
19						
20						

S - Split Spoon Sample
C - Rock Core Sample

NOTES: 1) MiniRae 2000 organic vapor meter used to field screen and headspace soil samples.
2) bgs = below ground surface.

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

APPENDIX B
Photographs

Photograph 1 – Area of IRA prior to excavation as viewed from the west.

Photograph 2 – Excavation and 6" Fire Protection Main as viewed from the southeast.

Photograph 3 – Pumping of Fire Protection Main prior to removal.

Photograph 4 – Capped end of the Fire Protection Main.

Photograph 5 – Backfilled excavation as viewed from the west.

Photograph 6 – Stockpiled and covered soil as viewed from the east.

APPENDIX C

Waste Disposal Documentation

12885419

NIAGARA FALLS LANDFILL
56th Street & Niagara Falls Blvd
Niagara Falls, NY 14304 (716)282-6381

203061
ENSOL ENGINEERING
661 MAIN STREET
NIAGARA FALLS, NY 14301
Contract: 42151118910

SITE	TICKET	GRID
5B	459261	

WEIGHMASTER: AS00067 ALBERT S

DATE IN	TIME IN
8 December 2011	10:27 am

DATE OUT	TIME OUT
8 December 2011	10:55 am

VEHICLE	ROLL OFF
FAR12	

REFERENCE	ORIGIN
0568945	Inbound -NY-NIAGARA

00 Gross Weight 54,940.00 lb
Tare Weight 26,140.00 lb
Net Weight 28,800.00 lb

NIAGARA FALLS ARMY RESERVE

BASE 14.40 TN

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
14.40	TN	SW-CONST DEBRIS				
1.00	LD	ENVIRONMENTAL FEE				
1.00	LD	FUEL RECOVERY FEE				

NET AMOUNT

TENDERED

CHANGE

CHECK NO.

HAVE A NICE DAY

REPUBLIC SERVICES

REV 11/09

SIGNATURE Jeff Kiyanski

RS-FI

REPUBLIC SERVICES, INC.

NON-HAZARDOUS WASTE MANIFEST

0568945

Please print or type.

1. Generator's US EPA ID Number | Manifest Document Number | 2. Page 1 of

3. Generator's Name and Mailing Address
99th Regional Support Command, Niagara Falls AFRC
5231 South Scott Plaza
Fort Dix, NJ 08640
4. Phone ( )

5. Generating Location (if different)
Same
9400 Porter Road
Niagara Falls, NY 14304
6. Phone ( )

7. Transporter #1 Company Name: Pariso Trucking PL1 #12
8. US EPA ID Number
9. Transporter #1's Phone: 716-875-6168

10. Transporter #2 Company Name
11. US EPA ID Number
12. Transporter #2's Phone

13. Designated T/S/D Facility Name and Site Address
Allied Waste Niagara Falls NY
5600 Niagara Falls Boulevard
Niagara Falls, NY 14304
14. US EPA ID Number
15. Facility's Phone: 716-285-3344

16. Waste Shipping Name and Description	17. Allied Waste Approval # and Exp. Date	18. Containers No.	Type	19. Total Quantity	20. Unit Wt/Vol
Non Hazardous Asphalt & Gravel	421511 18910 Exp 6 30 2012				
a.					
b.					
c.					
d.					

21. Additional Descriptions for Materials Listed Above

22. Special Handling Instructions and Additional Information

23. **GENERATOR'S CERTIFICATION:** I certify the materials described on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: [illegible] | Signature: [illegible] | Month 12 | Day 8 | Year 11

24. **Transporter #1:** Acknowledgement of Receipt of Materials

Printed/Typed Name: CLIFF KACZMAREK | Signature: [illegible] | Month 12 | Day 8 | Year 11

25. **Transporter #2:** Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

26. Discrepancy Indication Space

27. **Facility Owner or Operator:** Certification of receipt of waste materials covered by this manifest (except as noted in Item 19)

Printed/Typed Name | Signature: [illegible] | Month 12 | Day 8 | Year 11

GENERATOR

TRANSPORTER

T/S/D FACILITY

TRANSPORTER #2

COM000033

12885458

NIAGARA FALLS LANDFILL
56th Street & Niagara Falls Blvd
Niagara Falls, NY 14304 (716)282-6381

203061
ENSOL ENGINEERING
661 MAIN STREET
NIAGARA FALLS, NY 14301
Contract: 42151118910

SITE	TICKET	GRID
5B	459300	

WEIGHMASTER: AS00067 ALBERT S

DATE IN	TIME IN
8 December 2011	11:58 am

DATE OUT	TIME OUT
8 December 2011	12:20 pm

VEHICLE	ROLL OFF
FAR12	

REFERENCE	ORIGIN
0568946	Inbound -NY-NIAGARA

00 Gross Weight 37,980.00 lb
Tare Weight 26,100.00 lb
Net Weight 11,880.00 lb

NIAGARA FALLS ARMY RESERVE

BASE 5.94 TN

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
5.94	TN	SW-CONST DEBRIS				
1.00	LD	ENVIRONMENTAL FEE				
1.00	LD	FUEL RECOVERY FEE				

NET AMOUNT

TENDERED

CHANGE

CHECK NO.

HAVE A NICE DAY

REPUBLIC SERVICES

REV 11/09

SIGNATURE Cliff Kenyon

RS-F

REPUBLIC SERVICES, INC.

NON-HAZARDOUS WASTE MANIFEST

Please print or type.

0568946

1. Generator's US EPA ID Number	Manifest Document Number	2. Page 1 of

GENERATOR

3. Generator's Name and Mailing Address
99th Regional Support Command, Niagara Falls AFRC
5231 South Scott Plaza
Fort Dix, NJ 08640
4. Phone ( )

5. Generating Location (if different)
Same
9400 Porter Road
Niagara Falls, NY 14304
6. Phone ( )

7. Transporter #1 Company Name	8. US EPA ID Number	9. Transporter #1's Phone
Pariso Trucking PL1 #12		716-875-6168
10. Transporter #2 Company Name	11. US EPA ID Number	12. Transporter #2's Phone
13. Designated T/S/D Facility Name and Site Address Allied Waste Niagara Falls NY 5600 Niagara Falls Boulevard Niagara Falls, NY 14304	14. US EPA ID Number	15. Facility's Phone 716-285-3344

16. Waste Shipping Name and Description	17. Allied Waste Approval # and Exp. Date	18. Containers No.	18. Containers Type	19. Total Quantity	20. Unit Wt/Vol
a. Non Hazardous Asphalt & Gravel	421511 18910 Exp 6 30 2012				
b.					
c.					
d.					

21. Additional Descriptions for Materials Listed Above

22. Special Handling Instructions and Additional Information

23. **GENERATOR'S CERTIFICATION:** I certify the materials described on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
[illegible]	[signature]	12	8	11

TRANSPORTER

24. **Transporter #1:** Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
CLIFF KRZYMOREK	[signature]	12	8	11

25. **Transporter #2:** Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

T/S/D FACILITY

26. Discrepancy Indication Space

27. **Facility Owner or Operator:** Certification of receipt of waste materials covered by this manifest (except as noted in Item 19)

Printed/Typed Name	Signature	Month	Day	Year
	[signature]	12	15	11

TRANSPORTER #2

©OM000033

APPENDIX D

Clean Fill Documentation

SEVEN SPRINGS GRAVEL PRODUCTS, LLC
8479 Seven Springs Road
Batavia, New York 14020

Telephone (585) 343-4336

No. 76874

CUSTOMER: Pariso Logistic

BILLING ADDRESS:

CITY: STATE: ZIP:

DESTINATION ADDRESS:

PRODUCT DESCRIPTION: Sc. Clay fill CU. YARDS:

DATE: GROSS 72140 lb
TARE 28500 lb
GROSS: NET 43640 lb
TARE:
NET: 03:42PM 09/29/2011

C.O.D.'S ONLY

PRODUCT: COST $ _____ × 21.82 TONS = $ _____

FREIGHT: CHG. $ _____ × _____ TONS = $ _____

OTHER: _____

SUBTOTAL _____

TAX _____

TOTAL $

CUSTOMER SIGNATURE: Rio

DRIVER SIGNATURE: TRUCK NO. 1

WEIGHMASTER SIGNATURE: Karen LICENSE # 180112

Seven Springs Gravel Products, LLC shall not be held liable for any loss after acceptance of a load.

SEVEN SPRINGS GRAVEL PRODUCTS, LLC
8479 Seven Springs Road
Batavia, New York 14020

Telephone (585) 343-4336

No. 76880

CUSTOMER: Pariso Logistic

BILLING ADDRESS:

CITY: STATE: ZIP:

DESTINATION ADDRESS:

PRODUCT DESCRIPTION: Sc. Clay fill CU. YARDS:

DATE: GROSS 64600 lb
GROSS: TARE 25200 lb
TARE: NET 39400 lb
NET: 12:37PM 09/29/2011

C.O.D.'S ONLY

PRODUCT: COST $ _____ × 19.20 TONS = $ _____

FREIGHT: CHG. $ _____ × _____ TONS = $ _____

OTHER: _____

SUBTOTAL _____

TAX _____

TOTAL $

CUSTOMER SIGNATURE: Rio

DRIVER SIGNATURE: TRUCK NO. 2

WEIGHMASTER SIGNATURE: Karen LICENSE # 180112

Seven Springs Gravel Products, LLC shall not be held liable for any loss after acceptance of a load.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 8-1844-00020

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
SEVEN SPRINGS GRAVEL PRODUCTS
8479 SEVEN SPRINGS RD
BATAVIA, NY 14020
(716) 343-4336

Facility:
SEVEN SPRINGS GRAVEL PRODUCTS
8472 SEVEN SPRINGS RD
BATAVIA, NY 14020

Facility Location: in STAFFORD in GENESEE COUNTY
Facility Principal Reference Point: NYTM-E: 244.8 NYTM-N: 4765.6
Latitude: 43°00'00.8" Longitude: 78°07'51.1"
Project Location: East of Seven Springs Road, 3,300 ft. south of Rt 33
Authorized Activity:
Permit to mine unconsolidated material from a 30-acre permit term area, within a 30-acre Life of Mine. Approved operations include screening and crushing.

Permit Authorizations

Mined Land Reclamation - Under Article 23, Title 27
Permit ID 8-1844-00020/00001 (Mined Land ID 80276)
Renewal Effective Date: 10/13/2006 Expiration Date: 10/12/2011

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: JOHN L COLE, Deputy Regional Permit Administrator
Address: NYSDEC REGION 8 HEADQUARTERS
6274 EAST AVON-LIMA RD
AVON, NY 14414

Authorized Signature: John L Cole Date 10 / 12 / 2006

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 8-1844-00020

Distribution List

Minerals
TOWN OF BATAVIA
Thomas Giles

Permit Components

MINED LAND RECLAMATION PERMIT CONDITIONS

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Permit Sign

MINED LAND RECLAMATION PERMIT CONDITIONS

1. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such plans were approved by Joseph G. Bucci Jr., Mined Land Reclamation Specialist 1, on August 31, 2006 and consist of the following items: see Conformance with Plans - Addenda

2. **Conformance with Plans - Addenda**

* Mining Permit Application dated January 24, 2006.
* Organizational Report Form dated February 7, 2005.
* Environmental Assessment Forms received September 9, 1987, February 19, 1998, September 14, 1999 and January 24, 2006.
* Mined Land Use Plan Renewal and Modification dated December 2005.
* Mining Plan Map dated December 2005.
* Reclamation Plan Map dated December 2005.
* Cross Sections dated December 2005.

* Mining and Reclamation Plan narratives dated September 8, 1998 with revisions received December 14, 1998 and September 14, 1999, including Appendix B (Pollution Prevention Plan), "Standard and Specifications for Dust Control" and Grassed Waterway Construction Details.

* December 18, 2000 Amendment - Mining permit term area and mining phases.

* September 14, 1999 letter from P. Bauter to M. Migliore.

* December 31, 1998 letter from P. Bauter to S. Army.

* December 14, 1998 letter from P. Bauter to S. Army.

3. **Post Sign and Permit** The enclosed permit and permit sign must be conspicuously posted in a publicly accessible location at the project site. They must be visible, legible and protected from the elements at all times.

4. **Strip and Stockpile Soils for Reclamation** Prior to the excavation of previously undisturbed areas, topsoil and overburden shall be stripped, stockpiled separately, and used for reclamation of mined areas. These stockpiles shall be seeded to establish a vegetative cover within 30 days, or as soon as practicable following their construction. The permittee shall locate all overburden stockpiles within the permitted area of the approved Life of Mine. Sufficient quantities of topsoil must be retained on the site for use in reclamation, unless prior approval is granted by the department.

5. **No Unpermitted Discharge Outside Limits of Mine** There shall be no natural swales or channels or constructed features such as ditches, pipes, etc., that are capable of discharging waters to any offsite areas or to any areas outside the limits of the Life of Mine except those explicitly described and shown in the narrative and graphic portions of the approved Mined Land Use Plan. All silt laden water and storm water generated on, or running across, the site shall be retained within the approved project area. The permittee must comply with all applicable State Pollutant Discharge Elimination System (SPDES) permit requirements and provide necessary notifications for off-site point source discharges.

6. **Fueling of Equipment and Reporting of Spills** Fueling of equipment shall be controlled to prevent spillage. Any spillage of fuels, waste oils, other petroleum products or hazardous materials shall be reported to the department's Spill Hotline number (1-800-457-7362) within 2 hours. The permittee shall retain the department's Spill Response number for immediate access in the permittee's office and at the mine site.

7. **File Termination Notice** If the permittee decides to discontinue operation, a termination notice must be filed 60 days prior to the scheduled temporary or permanent cessation of mining.

8. **No Deviation From Approved Plan** The permittee shall not deviate or depart from the approved mined land use plan without approval by the department of an alteration or modification thereto.

9. **Archaeological or Structural Remains** If any archaeological or structural remains are encountered during excavation, the permittee must immediately cease, or cause to cease, all work in the area of the remains and notify

Regional Permit Administrator
NYSDEC REGION 8 HEADQUARTERS
6274 EAST AVON-LIMA RD
AVON, NY14414

Work shall not resume until written permission to do so has been received from the department.

10. **Bond, Surety to Remain in Force** Any required reclamation bond or other surety, in an amount determined by the department, shall be maintained in full force and effect. Such a bond or other surety shall not be terminated until the reclamation of the mined area is approved by the department in writing.

11. **Maintain Area Markers for Permit Term** The permittee shall provide permanent markers such as stakes, posts or other devices acceptable to the Department to identify and delineate the permit area, as outlined on the approved Mining Plan Map. These markers are to be installed prior to the start of mining and shall be maintained for the duration of the permit term.

12. **Minimum 25 ft. Separation from Property Line** No mining activity of any kind, including clearing and grubbing, shall occur within 25 feet of any adjacent property line or right-of-way. When mining is conducted lower than the adjacent property, the distance from the floor of the mine to the nearest property line shall be no closer than 25 feet plus1½ times the depth of the excavation, except where otherwise noted in the approved Mined Land Use Plan.

13. **Mining Operation Periods** All mining, reclamation and associated activities (including but not limited to: excavating, grading, processing operations, stockpiling operations, haulage operations, and maintenance operations) shall be limited to the following times: Monday through Friday 7 a.m. to 7 p.m., Saturdays 7 a.m. to 5 p.m. Operation of the mine is prohibited on Sundays and legal holidays.

14. **Dust Control** Water or other approved dust palliatives must be applied to haulageways and other parts of the mine, as often as necessary, to prevent visible dust from leaving the mine property.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC REGION 8 HEADQUARTERS
6274 EAST AVON-LIMA RD
AVON, NY14414

4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Mined Land Reclamation.

5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in

compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

P 327888

CARMEN M. PARISO, INC.

3649 River Road
Tonawanda, NY 14150

OFFICE 875-6168 FAX 875-4121

JOB# 25639

CUSTOMER: MATRIX

DATE: 10/19/09

LOAD LOCATION: SEVEN SPRINGS

DUMP LOCATION: PORTER AVE

HIRED TRUCK COMPANY:

TRUCK #/DRIVER: 1191 MARY

- [x] DUMP TRUCK SERVICE
- [ ] DUMP TRAILER SERVICE
- [ ] OTHER

MATERIAL HAULED: Clay Fill

JOB START
JOB FINISH
TRAVEL TIME
[ ] LUNCH [ ] NO LUNCH
TOTAL

LD #	TICKET #	WEIGHT	WAIT TIME ON JOB IN - OUT	REMARKS SPECIFY: ON "HOLD" @ PLANT, TOLLS, DUMP LOCATIONS, ETC.
1		19.32	-	
2		22.70	-	
3				
4			-	
5			-	
6			-	
7			-	
8			-	
9			-	
10			-	
11			-	
12			-	2 GT TOLLS
13			-	
14			-	
15			-	

OUR RESPONSIBILITY ENDS AT THE CURB

CUSTOMER'S SIGNATURE: _____

RETURN THIS ORIGINAL TO PARISO

P 304718

CARMEN M. PARISO, INC.

3649 River Road
Tonawanda, NY 14150

OFFICE 875-6168 FAX 875-4121

JOB# 25438

CUSTOMER: MATRIX

DATE: 10/14/09

LOAD LOCATION: Seven Springs

DUMP LOCATION: Porter [redacted]/N. Falls

HIRED TRUCK COMPANY:

TRUCK #/DRIVER: 238 LORI H.

JOB START: 7:30

JOB FINISH: —

TRAVEL TIME: —

☒ DUMP TRUCK SERVICE
☐ DUMP TRAILER SERVICE
☐ OTHER

☐ LUNCH ☐ NO LUNCH

MATERIAL HAULED: Clay fill

TOTAL: —

LD #	TICKET #	WEIGHT	WAIT TIME ON JOB IN - OUT	REMARKS SPECIFY: ON "HOLD" @ PLANT, TOLLS, DUMP LOCATIONS, ETC.
1	209327	23.06	8:15-8:20	
2	209352	19.90	-	
3	209370	20.66		
4			-	
5			-	
6			-	
7			-	
8			-	
9			-	
10			-	
11			-	
12			-	
13			-	
14			-	
15			-	

OUR RESPONSIBILITY ENDS AT THE CURB

CUSTOMER'S SIGNATURE:

RETURN THIS ORIGINAL TO PARISO

APPENDIX E

Analytical Result Summary Tables

Table 2
DRAFT - Soil Analytical Testing Results Summary
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Parameter	Unrestricted Soil Cleanup Objectives	Restricted Commmercial Soil Cleanup Objectives	SP-22-2-4 Result	SP-22-10-12 Result	SP-23-2-4 Result	SP-23-6-8 Result	SP-24-2-4 Result	SP-24-8-10 Result	SP-25-2-4 Result	SP-25-6-8 Result	SP-26-1-3 Result	SP-26-6-8 Result	SP-27-2-4 Result	SP-27-6-8 Result	SP-28-1-3 Result	SP-28-6-8 Result	SP-29-1-3 Result	SP-29-6-8 Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)																		
Acetone	50	*500,000*	<	7.1 J	60	22 J	28 J	<	<	<	27 J	6.7 J	<	<	<	9.7 J	7.3 J	<
Methylcyclohexane	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethene	1,300	*150,000*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride	50	*500,000*	4.9 J	5.6 J	4.8 J	5.1 J	5.1 J	3.9 J	5.1 J	5.6 J	4.6 J	4.8 J	4.9 J	5.0 J	4.7 J	5.8 J	7.8	5.6 J
2-Butanone (MEK)	100,000	*NV*	<	<	7.5 J	<	<	<	<	<	<	<	<	<	<	<	<	<
Semi-Volatile Organic Compounds - EPA Method 8270 TCL (ug/kg)																		
Naphthalene	12,000	*500,000*	<	51 J	<	<	<	<	<	<	<	<	<	<	<	<	<	<
2-Methylnaphthalene	410 [9]	*NV*	<	12 J	<	<	<	<	<	<	<	<	<	<	<	<	<	<
4-Methylphenol	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthylene	100,000	*500,000*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	32 J
Acenaphthene	20,000	*500,000*	<	68 J	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Fluorene	30,000	*500,000*	<	96 J	<	<	<	<	<	<	<	<	<	<	<	<	<	33 J
Phenanthrene	100,000	*500,000*	500 J	210 J	<	<	<	<	5100 J	3300 J	<	<	83 J	<	15 J	18 J	1800 J	360
Anthracene	100,000	*500,000*	<	97 J	<	<	<	<	1300 J	<	<	<	<	<	<	<	<	97 J
Fluoranthene	100,000	*500,000*	830 J	250	<	<	<	<	7100 J	7000 J	16 J	<	80 J	<	36 J	77 J	3100 J	570
Pyrene	100,000	*500,000*	590 J	160 J	<	<	<	<	4900 J	6100 J	11 J	<	40 J	<	25 J	57 J	2000 J	350
Benzo(a)anthracene	1,000	*5,600*	650 J	110 J	12 J	<	21 J	<	3600 J	5600 J	14 J	<	37 J	<	27 J	46 J	1700 J	210 J
Dibenzo(a,h)anthracene	330	*560*	<	14 J	<	<	30 J	<	**630 J**	**1200 J**	<	<	10 J	<	<	12 J	<	29 J
Dibenzofuran	7,000	*NV*	<	31 J	<	<	<	<	<	<	<	<	<	<	<	<	<	19 J
Diethyl phthalate	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Di-n-octyl phthalate	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Di-n-butyl phthalate	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bis(2-ethylhexyl)phthalate	50,000 [9]	*NV*	<	<	<	88 J	<	<	<	<	<	<	<	<	<	<	<	<
Carbazole	NV	*NV*	<	17 J	<	<	<	<	<	<	<	<	<	<	<	<	<	15 J
Chrysene	1,000	*56,000*	670 JB	100 JB	11 JB	<	29 JB	<	3500 JB	5400 JB	14 JB	<	45 JB	<	25 JB	47 JB	2300 JB	200 J
Benzo(b)fluoranthene	1,000	*5,600*	590 J	91 J	16 J	11 J	<	11 J	4100 J	5600 J	19 J	12 J	59 J	15 J	40 J	72 J	3500 J	210 J
Benzo(k)fluoranthene	800	*56,000*	420 J	64 J	13 J	11 J	<	13 J	1700 J	3100 J	16 J	12 J	27 J	9.1 J	19 J	35 J	1700 J	110 J
Biphenyl	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)pyrene	1,000	*1,000*	550 J	90 J	13 J	9.5 J	<	<	**3200 J**	**5800 J**	15 J	9.9 J	39 J	<	26 J	54 J	**2900 J**	160 J
Indeno(1,2,3-cd)pyrene	500	*5,600*	280 J	32 J	<	<	30 J	<	1200 J	2100 J	9.3 J	8.8 J	23 J	<	16 J	27 J	1400 J	86 J
Benzo(g,h,i)perylene	100,000	*500,000*	310 J	33 J	<	<	35 J	<	1400 J	2500 J	<	9.8 J	26 J	<	15 J	28 J	1800 J	91 J
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)																		
Aroclor 1254	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Aroclor 1260	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	1,100	<	320	<
Total PCBs	100*	*1,000**	<	<	<	<	<	<	<	<	<	<	<	<	1,100	<	320	<

Notes:
1. Compounds detected in one or more samples are presented on this table. Refer to Attachment C for list of all compounds included in analysis.
2. Analytical testing completed by Test America Laboratories.
3. ug/kg = part per billion; mg/kg = parts per million
4. < indicates compound was not detected above method detection limits.
5. B = Compound was found in the blank and sample.
6. J = Result is less than the reporting limit but greater or equal to the method detection limit and the concentration is an approximate value.
7. NV = no value.
8. NT = not tested.
9. Shading indicates value exceeds Unrestricted Use Soil Cleanup Objectives.
10. **Bold** indicates value exceeds Restricted Commercial Use Soil Cleanup Objectives.
11. A duplicate sample (DUP-1) was collected at soil probe location SP-34, 6 to 8 feet. Values shown are the higher of the two analytical results.
12. *Soil cleanup objective is for the sum of the Aroclor compound concentrations detected (Total PCBs).
13. Soil cleanup objectives (SCOs) are from NYSDEC Part 375, Subpart 375-6: Unrestricted Use Soil Cleanup Objectives and the Supplemetal Soil Cleanup Objectives (SSCOs) are from NYSDEC Final Commissioners Policy, CP-51, Dated October 21, 2010.

Parameter	Unrestricted Soil Cleanup Objectives	Restricted Commmercial Soil Cleanup Objectives	SP-30-1-3 Result	SP-30-10-12 Result	SP-31-1-3 Result	SP-31-8-10 Result	SP-32-2-4 Result	SP-32-8-10 Result	SP-33-0-2 Result	SP-33-8-10 Result	SP-34-2-4 Result	SP-34-6-8 Result	SP-35-1-3 Result	SP-35-6-8 Result	SP-36-1-3 Result	SP-36-8-10 Result	SP-37-1-3 Result	SP-37-4-6 Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)																		
Acetone	50	*500,000*	12 J	<	<	<	<	30	<	<	<	6.7 J	<	<	27 J	17 J	19 J	29 J
Methylcyclohexane	NV	*NV*	3.0 J	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethene	1,300	*150,000*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride	50	*500,000*	3.8 JB	2.9 JB	4.3 JB	3.2 JB	5.6 J	5.2 J	<	<	6.9	5.9 J	<	<	2.9 JB	<	2.9 J	<
2-Butanone (MEK)	100,000	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	5.2 J	<	<	<
Semi-Volatile Organic Compounds - EPA Method 8270 TCL (ug/kg)																		
Naphthalene	12,000	*500,000*	17 J	<	7.7 J	<	<	<	<	<	33 J	<	<	<	5.7 J	<	45 J	<
2-Methylnaphthalene	410 [9]	*NV*	9.3 J	<	<	<	<	<	52 J	<	38 J	<	<	<	4.1 J	<	28 J	<
4-Methylphenol	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthylene	100,000	*500,000*	22 J	<	15 J	<	<	<	68 J	<	<	<	<	<	9.0 J	<	9.8 J	<
Acenaphthene	20,000	*500,000*	25 J	<	3.0 J	<	<	<	<	<	<	<	<	<	4.3 J	<	160 J	<
Fluorene	30,000	*500,000*	26 J	<	<	<	<	<	<	<	<	<	<	<	12 J	<	320	<
Phenanthrene	100,000	*500,000*	320 B	8.8 JB	96 JB	6.6 JB	88 J	<	190 JB	<	120 J	<	7.7 JB	<	89 JB	4.5 JB	2,400 B	10 JB
Anthracene	100,000	*500,000*	52 J	<	28 J	<	22 J	<	88 J	<	<	<	<	<	22 J	<	690	<
Fluoranthene	100,000	*500,000*	630 B	17 JB	250 B	13 JB	180 J	<	560 JB	5.5 JB	140 J	<	27 JB	7.9 JB	130 JB	5.8 JB	2,700 B	17 JB
Pyrene	100,000	*500,000*	430 B	12 JB	170 JB	11 JB	120 J	<	440 JB	4.9 JB	89 J	<	20 JB	6.0 JB	98 JB	5.1 JB	1,700 B	9.8 JB
Benzo(a)anthracene	1,000	*5,600*	260 B	14 JB	150 JB	15 JB	97 J	11 J	330 JB	9.1 JB	66 J	15 J	23 JB	8.9 JB	55 JB	9.4 JB	950 B	13 JB
Dibenzo(a,h)anthracene	330	*560*	<	<	<	<	20 J	<	<	<	13 J	<	<	<	<	<	64 J	<
Dibenzofuran	7,000	*NV*	16 J	<	6.4 J	<	<	<	28 J	<	24 J	<	<	<	6.1 J	<	190 J	<
Diethyl phthalate	NV	*NV*	14 JB	12 JB	16 JB	11 JB	<	<	<	9.8 JB	<	<	11 JB	7.4 JB	13 JB	12 JB	7.9 JB	10 JB
Di-n-octyl phthalate	NV	*NV*	32 J	32 J	38 J	30 J	<	<	310 J	31 J	<	<	30 J	28 J	<	31 J	31 J	<
Di-n-butyl phthalate	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	380	<
Bis(2-ethylhexyl)phthalate	50,000 [9]	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Carbazole	NV	*NV*	53 J	4.1 J	14 J	3.7 J	<	<	74 J	3.6 J	<	<	3.6 J	<	14 J	4.4 J	230	<
Chrysene	1,000	*56,000*	290 B	17 JB	140 JB	14 JB	110 JB	10 JB	380 JB	7.9 JB	78 J	14 JB	24 JB	10 JB	62 JB	9.6 JB	940 B	9.7 JB
Benzo(b)fluoranthene	1,000	*5,600*	440 B	18 JB	190 JB	20 JB	140 J	14 J	740 JB	12 JB	81 J	16 J	46 JB	20 JB	97 JB	8.8 JB	1,200 B	18 JB
Benzo(k)fluoranthene	800	*56,000*	180 JB	16 JB	82 JB	15 JB	64 J	13 J	360 JB	10 JB	40 J	14 J	24 JB	11 JB	43 JB	8.1 JB	620 B	16 JB
Biphenyl	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	17 J	<
Benzo(a)pyrene	1,000	*1,000*	290 B	15 JB	130 JB	15 JB	98 J	14 J	490 JB	7.0 JB	59 J	14 J	30 JB	11 JB	63 JB	7.3 JB	920 B	11 JB
Indeno(1,2,3-cd)pyrene	500	*5,600*	120 JB	10 JB	56 JB	10 JB	45 J	<	210 JB	7.6 JB	38 J	<	17 JB	7.4 JB	30 JB	6.2 JB	270 B	9.0 JB
Benzo(g,h,i)perylene	100,000	*500,000*	120 JB	7.8 JB	57 JB	11 JB	52 J	<	400 JB	8.8 JB	52 J	<	19 JB	6.9 JB	32 JB	6.0 JB	290 B	7.9 JB
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)																		
Aroclor 1254	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Aroclor 1260	NV	*NV*	150 J	<	<	<	410	<	940	<	<	<	<	<	<	<	<	<
Total PCBs	100*	*1,000**	150	<	<	<	410	<	940	<	<	<	<	<	<	<	<	<

Notes:
1. Compounds detected in one or more samples are presented on this table. Refe
2. Analytical testing completed by Test America Laboratories.
3. ug/kg = part per billion; mg/kg = parts per million
4. < indicates compound was not detected above method detection limits.
5. B = Compound was found in the blank and sample.
6. J = Result is less than the reporting limit but greater or equal to the method de
7. NV = no value.
8. NT = not tested.
9. Shading indicates value exceeds Unrestricted Use Soil Cleanup Objectives.
10. **Bold** indicates value exceeds Restricted Commercial Use Soil Cleanup Obje
11. A duplicate sample (DUP-1) was collected at soil probe location SP-34, 6 to
12. *Soil cleanup objective is for the sum of the Aroclor compound concentratio
13. Soil cleanup objectives (SCOs) are from NYSDEC Part 375, Subpart 375-6
CP-51, Dated October 21, 2010.

Parameter	Unrestricted Soil Cleanup Objectives	Restricted Commmercial Soil Cleanup Objectives	SP-41-1-3 Result	SP-41-6-8 Result	SP-47-1-3 Result	SP-47-6-8 Result	SP-50-1-3 Result	SP-50-6-8 Result	SP-51-1-3 Result	SP-51-6-8 Result	EX-NORTH Result	EX-SOUTH Result	EX-EAST Result	EX-WEST Result	EX-FLOOR Result	OUTFALL 004 Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)																
Acetone	50	*500,000*	NT	NT	NT	NT	NT	NT	NT	NT	44	17 J	17 J	29	<	<
Methylcyclohexane	NV	*NV*	NT	NT	NT	NT	NT	NT	NT	NT	<	<	<	<	<	<
Tetrachloroethene	1,300	*150,000*	NT	NT	NT	NT	NT	NT	NT	NT	2.4 JB	2.4 JB	2 JB	1.8 JB	2 JB	<
Methylene Chloride	50	*500,000*	NT	NT	NT	NT	NT	NT	NT	NT	<	<	<	<	<	<
2-Butanone (MEK)	100,000	*NV*	NT	NT	NT	NT	NT	NT	NT	NT	<	<	<	<	<	<
Semi-Volatile Organic Compounds - EPA Method 8270 TCL (ug/kg)																
Naphthalene	12,000	*500,000*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	390 J
2-Methylnaphthalene	410 [9]	*NV*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	460 J
4-Methylphenol	NV	*NV*	17 J	<	NT	NT	<	<	<	<	<	<	<	<	<	<
Acenaphthylene	100,000	*500,000*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	180 J
Acenaphthene	20,000	*500,000*	<	<	NT	NT	21 J	<	<	<	<	<	<	<	<	4,500
Fluorene	30,000	*500,000*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	5,400
Phenanthrene	100,000	*500,000*	<	<	NT	NT	750 J	160 J	<	<	<	<	<	<	85 J	56,000 B
Anthracene	100,000	*500,000*	<	<	NT	NT	160 J	<	<	<	<	<	<	<	41 J	19,000
Fluoranthene	100,000	*500,000*	<	<	NT	NT	1,000 J	260 J	<	19 J	<	18 J	<	<	580	190,000
Pyrene	100,000	*500,000*	<	<	NT	NT	740 J	200 J	<	<	<	18 J	<	<	550	160,000
Benzo(a)anthracene	1,000	*5,600*	<	21 J	NT	NT	410 J	140 J	<	<	<	26 J	<	<	320	**120,000**
Dibenzo(a,h)anthracene	330	*560*	<	19 JB	NT	NT	<	<	<	<	<	20 J	<	<	47 J	<
Dibenzofuran	7,000	*NV*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	2,400 J
Diethyl phthalate	NV	*NV*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	<
Di-n-octyl phthalate	NV	*NV*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	<
Di-n-butyl phthalate	NV	*NV*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	<
Bis(2-ethylhexyl)phthalate	50,000 [9]	*NV*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	<
Carbazole	NV	*NV*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	8,600
Chrysene	1,000	*56,000*	<	24 J	NT	NT	390 J	120 J	<	<	<	15 J	<	<	290	**120,000**
Benzo(b)fluoranthene	1,000	*5,600*	<	24 J	NT	NT	420 J	150 J	<	<	4.8 J	32 J	<	<	290	**120,000**
Benzo(k)fluoranthene	800	*56,000*	<	29 J	NT	NT	280 J	89 J	<	<	4.2 J	22 J	<	<	170 J	49,000 B
Biphenyl	NV	*NV*	<	<	NT	NT	<	<	<	<	<	<	<	<	<	<
Benzo(a)pyrene	1,000	*1,000*	<	17 J	NT	NT	380 J	130 J	<	<	<	28 J	<	<	270	**82,000 B**
Indeno(1,2,3-cd)pyrene	500	*5,600*	<	19 JB	NT	NT	230 JB	93 JB	<	<	<	26 J	<	<	130 J	**28,000 B**
Benzo(g,h,i)perylene	100,000	*500,000*	<	15 JB	NT	NT	230 JB	97 JB	<	17 JB	<	27 J	<	<	140 J	29,000 B
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)																
Aroclor 1254	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	70 J	<
Aroclor 1260	NV	*NV*	<	<	<	<	<	<	<	<	<	<	<	<	<	210
Total PCBs	100*	*1,000**	<	<	<	<	<	<	<	<	<	<	<	<	70	210

Notes:
1. Compounds detected in one or more samples are presented on this table. Refe
2. Analytical testing completed by Test America Laboratories.
3. ug/kg = part per billion; mg/kg = parts per million
4. < indicates compound was not detected above method detection limits.
5. B = Compound was found in the blank and sample.
6. J = Result is less than the reporting limit but greater or equal to the method de
7. NV = no value.
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9. Shading indicates value exceeds Unrestricted Use Soil Cleanup Objectives.
10. **Bold** indicates value exceeds Restricted Commercial Use Soil Cleanup Obje
11. A duplicate sample (DUP-1) was collected at soil probe location SP-34, 6 to
12. *Soil cleanup objective is for the sum of the Aroclor compound concentratio
13. Soil cleanup objectives (SCOs) are from NYSDEC Part 375, Subpart 375-6
CP-51, Dated October 21, 2010.

Table 3
DRAFT - Water Analytical Testing Results Summary
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Parameter	Class GA Criteria	SP-22-110926	SP-25-110926	SP-30-110927	SP-32-110926	SP-34-110926	SP-36-110927	SP-42-110927	SP-49-110927
Volatile Organic Compounds - EPA Method 8260 TCL (ug/L)									
2-Butanone (MEK)	50	<	<	<	<	<	<	3.8 J	<
Acetone	50	<	5.8 J	<	3.0 J	3.8 J	6.6 J	23	<
Benzene	1	<	<	<	<	<	<	<	1.6
Carbon disulfide	NV	0.32 J	<	<	<	<	<	<	<
Cyclohexane	NV	<	<	<	<	<	<	<	0.95 J
Ethylbenzene	5	<	<	<	<	<	<	<	1.3
Methylcyclohexane	NV	<	<	<	<	<	<	<	1.1
Methylene chloride	5	<	<	<	<	<	<	<	<
Toluene	5	<	<	<	<	<	<	<	2.7
Trichloroethene	5	<	<	<	0.58 J	<	<	<	<
Trichlorofluoromethane	5	6.3	<	<	<	<	<	<	<
Total Xylenes	5	<	<	<	<	<	<	<	1.8 J
Semi-Volatile Organic Compounds - EPA Method 8270 (ug/L)									
2,4-Dimethylphenol	1	<	<	<	<	<	<	NS	NS
2-Methylnaphthalene	NV	<	<	<	<	<	<	NS	NS
4-Methylphenol	1	<	<	<	<	<	<	NS	NS
Acenaphthene	20	3.3 J	<	<	<	<	<	NS	NS
Anthracene	50	0.91 J	0.43 J	<	<	<	<	NS	NS
Benzo [a] anthracene	0.002*	0.49 J	0.85 J	<	<	0.44 J	<	NS	NS
Benzo [a] pyrene	ND	<	0.95 J	<	<	<	<	NS	NS
Benzo [b] fluoranthene	0.002*	<	1.1 J	<	<	<	<	NS	NS
Benzo(g,h,i)perylene	NV	<	0.79 J	<	<	<	<	NS	NS
Carbazole	5	1.9 J	0.41 J	<	<	<	<	NS	NS
Chrysene	0.002*	0.39 J	0.77 J	<	<	0.43 J	<	NS	NS
Dibenzofuran	NV	1.2 J	<	<	<	<	<	NS	NS
Diethyl phthalate	50	4.0 J	<	<	<	<	<	NS	NS
Di-n-butyl-phthalate	NV	0.5 JB	0.46 JB	<	0.47 JB	0.44 JB	0.74 J	NS	NS
Dibenz(a,h)anthracene	NV	<	0.67 J	<	<	<	<	NS	NS
Fluoranthene	50	1.7 J	1.2 J	0.45 J	<	0.90 J	<	NS	NS
Fluorene	50	2.8 J	<	<	<	<	<	NS	NS
Indeno(1,2,3-cd)pyrene	0.002	<	0.91 J	<	<	<	<	NS	NS
Naphthalene	10 *	3.8 J	<	<	<	<	<	NS	NS
Phenanthrene	50 *	3.7 J	0.59 J	<	<	0.44 J	<	NS	NS
Pyrene	50	1.5 J	1.2 J	<	<	0.99 J	<	NS	NS
PCBs - EPA Method 8082 (ug/L)									
Aroclor 1254	NV	<	<	<	2	<	<	NS	NS
Aroclor 1260	NV	<	<	0.77	1	<	13	NS	NS
Total PCBs	0.09 [11]	0.0	0.0	0.77	3.0	0.0	13.0	NS	NS

Notes:
1. Compounds detected in one or more samples are presented on this table.
2. Analytical testing completed by Test America Laboratories.
3. NYSDEC Class GA criteria obtained from Division of Water Technical and Operational Guidance Series (TOGS 1.1.1), June 1998, dated October 1993, revised June 1998, January 1999 errata sheet and April 2000 addendum.
4. ug/L = part per billion (ppb); mg/L = part per million (ppm)
5. Shading indicates values exceeding NYSDEC Class GA groundwater criteria.
6. Class GA criteria shown is for total xylene concentration.
7. < = compound was not detected.
8. * indicates a Guidance Value instead of a Standard Value.
9. NV = no value.
10. ND = non-detectable concentration by approved analytical methods.
11. Groundwater criteria is for the sum of the Aroclor compound concentrations detected (Total PCBs).

Table 2
Soil Analytical Testing Results Summary
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Parameter	Unrestricted Use Soil Cleanup Objectives	Restricted Residential Soil Cleanup Objectives	Restricted Commercial Soil Cleanup Objectives	SP-1-5-7 12/06/2010 Result	SP-2-6-8 12/06/2010 Result	SP-3-4-6 12/06/2010 Result	SP-4-2-4 12/06/2010 Result	SP-5-2-4 12/06/2010 Result	SP-6-2-4 12/06/2010 Result	SP-7-4-6 12/06/2010 Result	SP-8-4-6 12/06/2010 Result	SP-8 (DUP-1) 12/06/2010 Result	SP-9-2-4 12/06/2010 Result	SP-10-2-4 12/06/2010 Result	SP-11-2-4 12/06/2010 Result	SP-12-6-10 12/06/2010 Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)																
Acetone	50	**100,000**	*500,000*	7.1	ND	31	38	70	120	38	38	49	100	45	48	44
Methylene Chloride	50	**100,000**	*500,000*	25	12	32	29	35	31	31	30	20	27	24	38	25
Toluene	700	**100,000**	*500,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1,000	**41,000**	*390,000*	ND	31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.3
Xylenes, total	260	**100,000**	*500,000*	ND	23	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	15
Isopropylbenzene	2,300	**NV**	*NV*	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5
Methylcyclohexane	NV	**NV**	*NV*	ND	66	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	3,900	**100,000**	*500,000*	ND	42	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	8,400	**52,000**	*190,000*	ND	29	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.9
4-Isopropyltoluene	10,000 [11]	**NV**	*NV*	ND	7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	3,600	**52,000**	*190,000*	1.4	130	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11
sec-Butylbenzene	11,000	**100,000**	*500,000*	ND	5.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	100,000	**NV**	*NV*	ND	ND	ND	ND	16	28	ND	ND	ND	27	8.9	ND	ND
n-Butylbenzene	12,000	**NV**	*NV*	ND	13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12,000	**100,000**	*500,000*	ND	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	230
Total VOCs	NV	**NV**	*NV*	33.5	392.8	66.2	67.0	121.0	179.0	69.0	68.0	69.0	154.0	77.9	86.0	335
Total VOC TICs	NV	**NV**	*NV*	41.1	2140	14	11	17	14	12	12	8.1	12	10	14	51
Semi-Volatile Organic Compounds - EPA Method 8270 (ug/kg)																
Naphthalene	12,000	**100,000**	*500,000*	ND	410	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	690
2-Methylnaphthalene	410 [11]	**NV**	*NV*	ND	410	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100,000	**100,000**	*500,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20,000	**100,000**	*500,000*	ND	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	30,000	**100,000**	*500,000*	17	39	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100,000	**100,000**	*500,000*	48	170	ND	ND	ND	66	ND	ND	ND	ND	ND	25	33
Anthracene	100,000	**100,000**	*500,000*	ND	50	ND	ND	ND	22	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100,000	**100,000**	*500,000*	51	210	ND	ND	ND	190	ND	ND	ND	ND	22	33	33
Pyrene	100,000	**100,000**	*500,000*	46	180	ND	ND	ND	130	ND	ND	ND	ND	14	24	23
Benzo(a)anthracene	1,000	**1,000**	*5,600*	20	91	ND	ND	ND	89	ND	ND	ND	ND	ND	16	18
Dibenzo(a,h)anthracene	330	**330**	*560*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	50000 [11]	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	ND	ND	ND
Carbazole	NV	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	1,000	**3,900**	*56,000*	27	94	ND	ND	ND	78	ND	ND	ND	ND	ND	ND	17
Benzo(b)fluoranthene	1,000	**1,000**	*5,600*	34	110	ND	ND	ND	120	ND	ND	ND	ND	13	14	ND
Benzo(k)fluoranthene	800	**3,900**	*56,000*	12	39	ND	ND	ND	37	ND	ND	ND	ND	ND	ND	ND
Biphenyl	NV	**NV**	*NV*	ND	32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	1,000	**1,000**	*1,000*	23	85	ND	ND	ND	85	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	500	**500**	*5,600*	19	38	ND	ND	ND	40	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	100,000	**100,000**	*500,000*	26	51	ND	ND	ND	50	ND	ND	ND	ND	ND	ND	ND
Total SVOCs	NV	**NV**	*NV*	323	2,034	ND	ND	ND	907	ND	ND	ND	100	49	112	814
Total SVOC TICs	NV	**NV**	*NV*	1,550	19,150	ND	ND	3,000	7,350	ND	ND	ND	ND	220	1600	690
TAL Metals - EPA Method SW 846 (mg/kg)																
Aluminum	NV	**NV**	*NV*	2,290	2,460	17,600	21,200	27,600	21,000	20,500	17,400	15,300	23,500	9,870	13,600	ND
Antimony	NV	**NV**	*NV*	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND
Arsenic	13	**16**	*16*	2.0	4.8	6.4	2.8	7.1	5.7	7.6	5.7	3.7	3.4	1.9	2.1	4.8
Barium	350	**400**	*400*	11.6	14	105	151	171	130	179	41.2	89.4	106	71.9	84.2	152
Beryllium	7.2	**590**	*590*	0.115	0.105	0.950	1.39	1.95	1.14	1.12	0.903	0.771	1.15	0.456	0.583	1.27
Cadmium	2.5	**9.3**	*9.3*	0.186	0.169	0.221	0.109	0.156	0.251	0.185	0.182	0.151	0.153	0.157	0.169	0.146
Calcium	NV	**NV**	*NV*	95,000	78,300	16,800	2,020	2,090	5,850	10,700	49,300	44,100	1,570	3,040	4,300	18,900
Chromium	30	**180**	*1,500*	3.45	7.12	23.5	27.6	38	29.8	29.5	24.1	22.0	30.8	11.2	15	29.8
Cobalt	30 [11]	**NV**	*NV*	2.03	1.96	13.8	11.5	26.8	14.6	18.2	14.3	14.3	23.1	2.4	3.28	19.3
Copper	50	**270**	*270*	8.7	6.1	23.1	21.6	34.3	22.4	33	24.7	21.1	30.7	7.1	7.3	30.4
Iron	2000 [11]	**NV**	*NV*	5,690	5,360	26,800	31,900	44,600	37,900	35,300	29,300	25,100	31,600	8,600	16,100	34,500
Lead	63	**400**	*1,000*	8	6.3	13.4	15	14.9	17.8	14.4	9.7	8.0	7.5	11.7	8.5	16.6
Magnesium	NV	**NV**	*NV*	50,500	31,200	10,500	8,210	9,580	8,000	14,800	14,000	12,200	8,100	2,130	2,850	10,800
Manganese	1,600	**2,000**	*10,000*	298	222	291	186	476	266	**2,470**	475	587	432	84	162	782
Mercury	0.18	**0.81**	*2.8*	ND	ND	0.0132	0.0423	0.0451	0.0492	0.0341	ND	0.0100	0.0218	0.0685	0.0703	0.0394
Nickel	30	**310**	*310*	5.24	5.04	33.7	33.2	48.8	34.3	42.4	34.6	33.3	37.7	9.53	11.5	42.8
Potassium	NV	**NV**	*NV*	485	659	1,600	1,770	2,450	2,040	1,980	2,260	2,240	1,700	1,240	1,460	2,180
Selenium	3.9	**180**	*1,500.0*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	NV	**NV**	*NV*	151	134	136	298	347	141	294	322	278	150	111	112	341
Vanadium	100 [11]	**NV**	*NV*	6.11	5.96	29.7	33.9	47.4	39.6	38.7	32.1	26.8	32.3	9.58	12.5	38.1
Zinc	109	**10,000**	*10,000*	44.6	30.6	62.3	72	100	84.5	69.5	61.7	56.6	74	30.1	35.9	72.1
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)																
Aroclor 1248	NV	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	51	ND
Aroclor 1254	NV	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	NV	**NV**	*NV*	ND	ND	ND	ND	ND	ND	29	ND	ND	ND	ND	25	ND
Total PCBs	100*	**1000***	*1,000**	ND	ND	ND	ND	ND	ND	29	ND	ND	ND	ND	76	ND

Table 2
Soil Analytical Testing Results Summary
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Parameter	Unrestricted Use Soil Cleanup Objectives	Restricted Residential Soil Cleanup Objectives	Restricted Commercial Soil Cleanup Objectives	SP-13-0-2 12/07/2010 Result	SP-14-2-4 12/07/2010 Result	SP-15-0-4 12/07/2010 Result	SP-16-0-2 12/07/2010 Result	SP-17-4-8 12/07/2010 Result	SP-17 (DUP-2) 12/07/2010 Result	SP-18-0-4 12/07/2010 Result	SP-19-0-4 12/07/2010 Result	SP-20-0-4 12/07/2010 Result	SP-21-0-4 12/07/2010 Result	TP-1-0-4* 12/07/2010 Result
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)														
Acetone	50	**100,000**	*500,000*	10	19	19	ND	52	69	11	340	29	13	7.6
Methylene Chloride	50	**100,000**	*500,000*	5.9	5.2	6.6	4.6	5.9	4.1	7.8	5.4	4.1	4.7	4.6
Toluene	700	**100,000**	*500,000*	ND	ND	ND	ND	ND	ND	ND	ND	1.6	ND	ND
Ethylbenzene	1,000	**41,000**	*390,000*	ND	ND	ND	ND	ND	ND	ND	1.9	2.6	ND	ND
Xylenes, total	260	**100,000**	*500,000*	ND	ND	ND	ND	ND	ND	ND	5.2	8.3	ND	ND
Isopropylbenzene	2,300	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	NV	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	3,900	**100,000**	*500,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	8,400	**52,000**	*190,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Isopropyltoluene	10,000 [11]	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	3,600	**52,000**	*190,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	11,000	**100,000**	*500,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	100,000	**NV**	*NV*	ND	ND	ND	ND	ND	7.1	ND	ND	ND	ND	ND
n-Butylbenzene	12,000	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12,000	**100,000**	*500,000*	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	NV	**NV**	*NV*	15.9	25.5	25.6	4.6	57.9	80.2	18.8	352.5	45.6	17.7	12.2
Total VOC TICs	NV	**NV**	*NV*	10	8.9	9.8	8.6	12	8.4	9.5	8.1	7.1	7.3	6.5
Semi-Volatile Organic Compounds - EPA Method 8270 (ug/kg)														
Naphthalene	12,000	**100,000**	*500,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	410 [11]	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100,000	**100,000**	*500,000*	ND	32	ND	ND	ND	ND	ND	ND	ND	ND	3,000
Acenaphthene	20,000	**100,000**	*500,000*	ND	22	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	30,000	**100,000**	*500,000*	ND	47	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100,000	**100,000**	*500,000*	ND	330	ND	ND	ND	ND	660	1,100	ND	ND	5,400
Anthracene	100,000	**100,000**	*500,000*	ND	92	ND	ND	ND	ND	160	200	ND	ND	1,900
Fluoranthene	100,000	**100,000**	*500,000*	1,300	510	ND	ND	27	25	800	1,600	ND	ND	16,000
Pyrene	100,000	**100,000**	*500,000*	1,200	480	14	ND	25	23	800	1,400	ND	ND	15,000
Benzo(a)anthracene	1,000	**1,000**	*5,600*	960	290	ND	ND	16	19	420	790	ND	ND	***10,000***
Dibenzo(a,h)anthracene	330	**330**	*560*	ND	38	ND	ND	ND	ND	ND	ND	ND	ND	***2,300***
Bis(2-ethylhexyl)phthalate	50000 [11]	**NV**	*NV*	6,600	170	150	ND	160	160	1,500	1,800	1,300	7,500	ND
Carbazole	NV	**NV**	*NV*	ND	24	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	1,000	**3,900**	*56,000*	690	230	ND	ND	ND	ND	420	690	ND	ND	**9,700**
Benzo(b)fluoranthene	1,000	**1,000**	*5,600*	**1,000**	260	ND	ND	16	ND	450	740	ND	ND	***14,000***
Benzo(k)fluoranthene	800	**3,900**	*56,000*	ND	110	ND	ND	ND	ND	ND	ND	ND	ND	**6,500**
Biphenyl	NV	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	1,000	**1,000**	*1,000*	960	250	ND	ND	ND	15	390	680	ND	ND	***14,000***
Indeno(1,2,3-cd)pyrene	500	**500**	*5,600*	ND	110	ND	ND	ND	ND	210	320	ND	ND	***8,800***
Benzo(g,h,i)perylene	100,000	**100,000**	*500,000*	730	120	ND	ND	ND	ND	280	380	ND	ND	12,000
Total SVOCs	NV	**NV**	*NV*	13,440	3,115	164	ND	244	242	6,090	9,700	1,300	7,500	118,600
Total SVOC TICs	NV	**NV**	*NV*	ND	ND	580	9,400	ND	ND	ND	ND	ND	ND	7,600
TAL Metals - EPA Method SW 846 (mg/kg)														
Aluminum	NV	**NV**	*NV*	10,700	24,000	32,100	15,500	17,400	15,800	11,400	13,200	15,100	9,810	9,970
Antimony	NV	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	13	**16**	*16*	6.0	6.5	2.4	6.1	6.3	2.7	8.1	6.8	5.0	6.1	4.1
Barium	350	**400**	*400*	98.6	194	249	107	***418***	168	104	133	90.3	81.3	153
Beryllium	7.2	**590**	*590*	1.38	4.71	8.21	1.96	0.926	0.800	1.38	0.81	1.27	0.637	1.23
Cadmium	2.5	**9.3**	*9.3*	0.48	0.353	0.061	0.216	0.152	0.114	0.554	0.25	0.168	0.791	0.800
Calcium	NV	**NV**	*NV*	168,000	203,000	268,000	225,000	50,700	49,500	173,000	157,000	44,000	138,000	116,000
Chromium	30	**180**	*1,500*	**682**	**379**	31.4	**1,040**	24.2	22.3	**797**	**969**	119	**720**	165
Cobalt	30 [11]	**NV**	*NV*	3.73	6.41	2.44	3.47	16.2	13.6	5.63	5.83	10.4	11.8	4.68
Copper	50	**270**	*270*	9.5	25.4	4.8	11	24.9	18.5	108	45.3	16	19.5	13
Iron	2000 [11]	**NV**	*NV*	6,750	24,700	4,360	4,140	31,000	23,800	22,200	10,900	16,200	20,900	11,200
Lead	63	**400**	*1,000*	27.3	18.3	3.6	11.2	9.5	8.5	42.4	17	7.8	31.5	39.4
Magnesium	NV	**NV**	*NV*	62,800	20,900	8,020	46,400	11,500	11,500	52,600	45,200	9,010	44,900	39,600
Manganese	1,600	**2,000**	*10,000*	1,090	**2,670**	**3,450**	1,130	722	576	**4,150**	1,230	845	679	771
Mercury	0.18	**0.81**	*2.8*	0.0205	0.0452	ND	ND	0.0109	ND	ND	0.0163	0.0146	0.0259	0.124
Nickel	30	**310**	*310*	13.8	20.7	1.66	19.8	35.8	32.0	41.7	29.9	25.1	32.6	12.8
Potassium	NV	**NV**	*NV*	874	1,650	2,440	635	2,420	2,790	722	885	1,710	716	1,210
Selenium	3.9	**180**	*1,500.0*	ND	1.4	2.1	ND	ND	ND	ND	ND	ND	ND	0.7
Sodium	NV	**NV**	*NV*	328	690	930	616.0	271	290	329	443	154	289	254
Vanadium	100 [11]	**NV**	*NV*	17.1	22.3	5.64	25.7	32.3	26.9	23.4	29.8	22.1	26.7	15.3
Zinc	109	**10,000**	*10,000*	79.2	36.8	0.6	30.5	55	52	124	40.5	43.9	170	124
Polychlorinated Biphenyls - EPA Method 8082 (ug/kg)														
Aroclor 1248	NV	**NV**	*NV*	ND	ND	ND	ND	ND	ND	ND	620	ND	ND	ND
Aroclor 1254	NV	**NV**	*NV*	1,700	230	9.8	1,400	21	15	1800	540	65	650	700
Aroclor 1260	NV	**NV**	*NV*	840	67	ND	1,600	ND	ND	760	190	40	410	210
Total PCBs	100*	**1000***	*1,000**	***2,540***	297	9.8	***3,000***	21	15	***2,560***	***1,350***	105	***1,060***	910

Table 2
Soil Analytical Testing Results Summary
Niagara Falls Armed Foreces Reserve Center
Niagara Falls, New York

Notes:

1. Compounds detected in one or more samples are presented on this table.
2. Analytical testing completed by Test America Laboratories.
3. ug/kg = micrograms per kilogram; mg/kg = milligrams per kilogram
4. ND indicates compound was not detected above method detection limits.
5. NV = no value.
6. Shading indicates value exceeds Unrestricted Use Soil Cleanup Objectives.
7. **Bold** indicates value exceeds the Restricted Residential Soil Cleanup Objectives.
8. *Italics* indicates value exceeds the Restricted Commercial Soil Cleanup Objectives.
9. A duplicate sample (DUP-1) was collected at soil probe location SP-8. Values shown are the higher of the two analytical results.
10. *Soil cleanup objective is for the sum of the Aroclor compound concentrations detected (Total PCBs).
11. Soil cleanup objective used is from NYSDEC Final Commissioners Policy, CP-51, dated October 21, 2010.

Table 3
Water Analytical Testing Results Summary
Niagara Falls Armed Forces Reserve Center
Niagara Falls, New York

Parameter	Class GA Criteria	West Pipe End Water	TP-12-Water
Volatile Organic Compounds - EPA Method 8260 TCL (ug/L)			
2-Butanone (MEK)	50	2.7	ND
Acetone	50	18	ND
cis-1,2-Dichloroethene	5	0.99	ND
Trichloroethene	5	4.1	ND
Vinyl Chloride	2	1.9	ND
Toluene	5	13	ND
Xylenes (total)	5 [6]	2.5	ND
Naphthalene	10	89	ND
Total VOCs	NV	132.19	ND
Total VOC TICs	NV	37.9	415
Semi-Volatile Organic Compounds - EPA Method 8270 (ug/L)			
2,4-Dimethylphenol	1	3.7	ND
2-Methylnaphthalene	NV	16	ND
4-Methylphenol	1	44	ND
Acenaphthene	20	9.8	ND
Anthracene	50	6.8	ND
Benzo [a] anthracene	0.002*	2	8.3
Benzo [a] pyrene	ND	ND	4.9
Benzo [b] fluoranthene	0.002*	ND	7.3
Carbazole	5	92	ND
Chrysene	0.002*	ND	9.4
Dibenzofuran	NV	17	ND
Fluoranthene	50	10	20
Fluorene	50	27	ND
Naphthalene	10 *	87	ND
Phenanthrene	50 *	49	ND
Phenol	1	330	ND
Total SVOCs	NV	694.3	49.9
Total SVOC TICs	NV	985	18,790
PCBs - EPA Method 8082 (ug/L)			
Aroclor 1254	NV	6.1	1.7
Aroclor 1260	NV	0.94	0.72
Total PCBs	0.09 [11]	7.04	2.42
Dissolved Metals - EPA Method SW 846 (mg/L)			
Aluminum	NV	0.529	0.621
Barium	1	0.0278	0.0173
Calcium	NV	62.8	74.7
Chromium	0.05	0.0706	0.215
Copper	0.2	ND	0.0025
Iron	0.3	0.031	ND
Magnesium	35*	0.154	ND
Manganese	0.3	0.0018	0.0004
Nickel	0.1	0.0067	0.0015
Potassium	NV	21	3.03
Sodium	20	12.3	2.7
Vanadium	NV	0.0044	0.0104
Zinc	2*	0.0137	0.0042

Notes:
1. Compounds detected in one or more samples are presented on this table.
2. Analytical testing completed by Test America Laboratories.
3. NYSDEC Class GA criteria obtained from Division of Water Technical and Operational Guidance Series (TOGS 1.1.1), June 1998, dated October 1993, revised June 1998, January 1999 errata sheet and April 2000 addendum.
4. ug/L = micrograms per liter; mg/L = miligrams per liter
5. Shading indicates values exceeding NYSDEC Class GA groundwater criteria.
6. Class GA criteria shown is for total xylene concentration.
7. ND = compound was not detected.
8. * indicates a Guidance Value instead of a Standard Value.
9. NV = no value.
10. ND = non-detectable concentration by approved analytical methods.
11. Groundwater criteria is for the sum of the Aroclor compound concentrations detected (Total PCBs).

Table 2
Post Excavation Soil Results - September 2009
9400 Porter Road
Niagara Falls, New York

Sample Location		CS-1	CS-2	CS-3	CS-4	CS-5	CS-6	CS-6 (DUP)	CS-7
Laboratory Sample ID	Maximum	RSI0550-01	RSI0550-02	RSI0550-03	RSI0550-04	RSI0550-05	RSI0550-06	RSI0550-11	RSI0550-07
Sample Date	Contaminant	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009
Sample Depth (ft bgs)	Level	1.0-1.25	1.0-1.25	1.0-1.25	1.0-1.25	1.0-1.25	1.0-1.25	1.0-1.25	1.0-1.25
PCBs (mg/kg)									
EPA Method 8082	1.0	0.33	0.27	0.17	0.39	**14**	**18**	**12**	**14**

Sample Location		CS-8	CS-9	CS-10
Laboratory Sample ID	Maximum	RSI0550-08	RSI0550-09	RSI0550-10
Sample Date	Contaminant	9/16/2009	9/16/2009	9/16/2009
Sample Depth (ft)	Level	1.0-1.25	1.0-1.25	1.0-1.25
PCBs (mg/kg)				
EPA Method 8082	1.0	**4.8**	**1.9**	0.33

Notes:

Samples detected at levels exceeding the Maximum Contaminant Level are shown in bold and underlined [**thus**].

mg/kg Milligrams per kilogram
ND Non-detect

Sampling Information:
Samples were collected in 8 oz glass containers.
Samples were placed in iced coolers at approximately 4°C.

Table 3
Post-Excavation Soil Results - October 2009
9400 Porter Road
Niagara Falls, New York

Sample Location		CS-11	CS-12	CS-13	CS-14	CS-14(DUP)	CS-15
Laboratory Sample ID	Maximum	RSJ0561-01	RSJ0561-02	RSJ0561-03	RSJ0561-04	RSJ0561-06	RSJ0561-05
Sample Date	Contaminant	10/8/2009	10/8/2009	10/8/2009	10/8/2009	10/8/2009	10/8/2009
Sample Depth (ft bgs)	Level	2.0-2.25	2.0-2.25	2.0-2.25	2.0-2.25	2.0-2.25	2.0-2.25
PCBs (mg/kg)							
EPA Method 8082	1.0	0.170	0.022	0.800	0.006 J	0.016 J	0.007 J

Notes:

mg/kg Milligrams per kilogram
ND Non-detect
J Analyte detected at a level less than the Reporting Limit and greater than the Method Detection Limit.

Sampling Information:
Samples were collected in 8 oz glass containers.
Samples were placed in iced coolers at approximately 4°C.

APPENDIX F

Pro UCL 4.0 Software Outputs

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Benzene	D_Benzene	Naphthaler	D_Naphtha	Toluene	D_Toluene	Trichloroflu	D_Trichlorc	2,4-Dimeth	D_2,4-Dim	4-Methylph	D_4-Methy	2-Methlyna	D_2-Methly	Benzo(a)ar	D_Benzo(a	Benzo(b)flu
2	0.205	0	3.8	1	0.255	0	6.3	1	0.255	0	0.18	0	0.305	0	0.49	1	0.17
3	0.205	0	0.385	0	0.255	0	0.44	0	0.255	0	0.18	0	0.305	0	0.85	1	1.1
4	0.205	0	0.375	0	0.255	0	0.44	0	0.25	0	0.18	0	0.295	0	0.18	0	0.17
5	0.205	0	0.375	0	0.255	0	0.44	0	0.25	0	0.18	0	0.295	0	0.18	0	0.17
6	0.205	0	0.36	0	0.255	0	0.44	0	0.24	0	0.17	0	0.285	0	0.44	1	0.16
7	0.205	0	0.36	0	0.255	0	0.44	0	0.235	0	0.17	0	0.285	0	0.17	0	0.16
8	0.205	0	13	1	0.255	0	0.44	0	3.7	1	44	1	16	1	2	1	0.8
9	1.6	1	0.85	0	2.7	1	0.44	0	2.4	0	1.75	0	2.9	0	8.3	1	7.3
10	0.205	0			89	1	0.44	0									
11	0.8	0			1	0	1.75	1									

	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
1	D_Benzo(b	Benzo(a)py	D_Benzo(a	Carbazole	D_Carbazo	Chrysene	D_Chrysen	Indeno(1,2,	D_Indeno(1	Phenol	D_Phenol	Aroclor 125	D_Aroclor 1	Aroclor 126	D_Aroclor 1260	
2	0	0.235	0	1.9	1	0.39	1	0.235	0	0.195	0	0.12	0	0.12	0	
3	1	0.95	1	0.41	1	0.77	1	0.91	1	0.195	0	0.12	0	0.12	0	
4	0	0.235	0	0.15	0	0.165	0	0.235	0	0.195	0	0.125	0	0.77	1	
5	0	0.235	0	0.15	0	0.165	0	0.235	0	0.195	0	2	1	1	1	
6	0	0.225	0	0.43	1	0.43	1	0.225	0	0.185	0	0.12	0	0.12	0	
7	0	0.22	0	0.14	0	0.155	1	0.22	0	0.185	0	0.12	0	13	1	
8	0	1.1	0	92	1	0.8	0	1.1	0	330	1	6.1	1	0.94	1	
9	1	4.9	1	1.45	0	9.4	1	2.25	0	1.9	0	1.7	1	0.52	1	
10																
11																

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Acetone	D_Acetone	Benzo(a)ar	D_Benzo(a	Dibenzo(a,	D_Dibenzo	Chrysene	D_Chrysen	Benzo(b)flu	D_Benzo(b	Benzo(k)flu	D_Benzo(k	Benzo(a)py	D_Benzo(a	Indeno(1,2	D_Indeno(1	Aroclor 125	D_Aroclor	Aroclor 126	D_Aroclor	PE Aroclor
2	0.0055	0	0.65	1	0.052	0	0.67	1	0.59	1	0.42	1	0.55	1	0.28	1	0.051	0	0.11	0	0.33
3	0.0071	1	0.11	1	0.014	1	0.1	1	0.091	1	0.064	1	0.09	1	0.032	1	0.056	0	0.12	0	0.27
4	0.06	1	0.012	1	0.00269	0	0.011	1	0.016	1	0.013	1	0.013	1	0.0061	0	0.056	0	0.12	0	0.17
5	0.022	1	0.00175	0	0.0012	0	0.001	0	0.011	1	0.011	1	0.0095	1	0.0028	0	0.052	0	0.12	0	0.39
6	0.028	1	0.021	1	0.03	1	0.029	1	0.002	0	0.0011	0	0.00245	0	0.03	1	0.048	0	0.11	0	14
7	0.0025	0	0.00175	0	0.0012	0	0.001	0	0.011	1	0.013	1	0.0024	0	0.00275	0	0.048	0	0.11	0	15
8	0.0023	0	3.6	1	0.63	1	3.5	1	4.1	1	1.7	1	3.2	1	1.2	1	0.022	0	0.048	0	14
9	0.00245	0	5.6	1	1.2	1	5.4	1	5.6	1	3.1	1	5.8	1	2.1	1	0.023	0	0.05	0	4.8
10	0.027	1	0.014	1	0.0012	0	0.014	1	0.019	1	0.016	1	0.015	1	0.0093	1	0.0225	0	0.05	0	1.9
11	0.0067	1	0.0017	0	0.00175	0	0.001	0	0.012	1	0.012	1	0.0098	1	0.0088	1	0.026	0	0.06	0	0.33
12	0.0027	0	0.037	1	0.01	1	0.045	1	0.059	1	0.027	1	0.039	1	0.023	1	0.0285	0	0.065	0	0.17
13	0.00255	0	0.00185	0	0.00125	0	0.00105	0	0.015	1	0.0091	1	0.00255	0	0.00295	0	0.0235	0	0.055	0	0.022
14	0.0025	0	0.027	1	0.0012	0	0.025	1	0.04	1	0.019	1	0.026	1	0.016	1	0.0235	0	1.1	1	0.8
15	0.0097	1	0.046	1	0.012	1	0.047	1	0.072	1	0.035	1	0.054	1	0.027	1	0.0255	0	0.055	0	0.011
16	0.0073	1	1.7	1	0.13	0	2.3	1	3.5	1	1.7	1	2.9	1	1.4	1	0.027	0	0.32	1	0.007
17	0.00245	0	0.21	1	0.029	1	0.2	1	0.21	1	0.11	1	0.16	1	0.086	1	0.0275	0	0.06	0	
18	0.012	1	0.26	1	0.0015	0	0.29	1	0.44	1	0.18	1	0.29	1	0.12	1	0.024	0	0.15	1	
19	0.00245	0	0.014	1	0.00115	0	0.017	1	0.018	1	0.016	1	0.015	1	0.01	1	0.0245	0	0.055	0	
20	0.00225	0	0.15	1	0.0013	0	0.14	1	0.19	1	0.082	1	0.13	1	0.056	1	0.0285	0	0.065	0	
21	0.00235	0	0.015	1	0.0011	0	0.014	1	0.02	1	0.015	1	0.015	1	0.01	1	0.022	0	0.049	0	
22	0.0028	0	0.097	1	0.02	1	0.11	1	0.14	1	0.064	1	0.098	1	0.045	1	0.0275	0	0.41	1	
23	0.03	1	0.011	1	0.00115	0	0.01	1	0.014	1	0.013	1	0.014	1	0.0027	0	0.023	0	0.05	0	
24	0.00235	0	0.33	1	0.0011	0	0.38	1	0.74	1	0.36	1	0.49	1	0.21	1	0.027	0	0.94	1	
25	0.00245	0	0.0091	1	0.00115	0	0.0079	1	0.012	1	0.01	1	0.007	1	0.0076	1	0.022	0	0.049	0	
26	0.0029	0	0.066	1	0.013	1	0.078	1	0.081	1	0.04	1	0.059	1	0.038	1	0.029	0	0.065	0	
27	0.0067	1	0.015	1	0.0012	0	0.014	1	0.016	1	0.014	1	0.014	1	0.0029	0	0.0225	0	0.05	0	
28	0.0245	0	0.023	1	0.00115	0	0.024	1	0.046	1	0.024	1	0.03	1	0.017	1	0.0285	0	0.065	0	
29	0.0023	0	0.0089	1	0.0011	0	0.01	1	0.02	1	0.011	1	0.011	1	0.0074	1	0.024	0	0.055	0	
30	0.027	1	0.055	1	0.00115	0	0.062	1	0.097	1	0.043	1	0.063	1	0.03	1	0.0285	0	0.065	0	
31	0.017	1	0.0094	1	0.00105	0	0.0096	1	0.0088	1	0.0081	1	0.0073	1	0.0062	1	0.0224	0	0.0495	0	
32	0.019	1	0.95	1	0.064	1	0.94	1	1.2	1	0.62	1	0.92	1	0.27	1	0.0265	0	0.06	0	
33	0.029	1	0.013	1	0.0013	0	0.0097	1	0.018	1	0.016	1	0.011	1	0.009	1	0.0265	0	0.06	0	
34	0.044	1	0.0018	0	0.00125	0	0.00105	0	0.00205	0	0.00115	0	0.00255	0	0.0029	0	0.0305	0	0.065	0	
35	0.017	1	0.021	1	0.019	1	0.024	1	0.024	1	0.029	1	0.017	1	0.019	1	0.0285	0	0.065	0	
36	0.029	1	0.41	1	0.0065	0	0.39	1	0.42	1	0.28	1	0.38	1	0.23	1	0.0275	0	0.06	0	
37	0.00245	0	0.14	1	0.006	0	0.12	1	0.15	1	0.089	1	0.13	1	0.093	1	0.028	0	0.06	0	
38	0.0024	0	0.00175	0	0.0012	0	0.001	0	0.002	0	0.0011	0	0.00245	0	0.00285	0	0.028	0	0.06	0	
39	0.0071	1	0.0018	0	0.00125	0	0.00105	0	0.00205	0	0.00115	0	0.00255	0	0.0029	0	0.0295	0	0.065	0	
40	0.00255	0	0.0018	0	0.0012	0	0.00105	0	0.0048	1	0.0042	1	0.0025	0	0.00285	0	0.029	0	0.065	0	
41	0.0155	0	0.026	1	0.02	1	0.015	1	0.032	1	0.022	1	0.028	1	0.026	1	0.03	0	0.065	0	
42	0.038	1	0.00175	0	0.0012	0	0.001	0	0.00195	0	0.0011	0	0.00245	0	0.0028	0	0.059	0	0.065	0	
43	0.07	1	0.00175	0	0.0012	0	0.001	0	0.00195	0	0.0011	0	0.00245	0	0.0028	0	0.0305	0	0.065	0	
44	0.12	1	0.32	1	0.047	1	0.29	1	0.29	1	0.17	1	0.27	1	0.13	1	0.0245	0	0.055	0	
45	0.038	1	0.01	0	0.0011	0	0.0135	0	0.034	1	0.012	1	0.0115	0	0.0098	0	0.026	0	0.055	0	
46	0.0435	1	0.0455	0	0.0012	0	0.047	0	0.11	1	0.039	1	0.0425	0	0.019	0	0.07	1	0.11	1	
47	0.1	1	0.0019	0	0.0013	0	0.0011	0	0.00215	0	0.0012	0	0.00265	0	0.00305	0	0.00195	0	0.0043	0	
48	0.045	1	0.0185	0	0.0125	0	0.0105	0	0.0205	0	0.0115	0	0.0255	0	0.0295	0	0.00215	0	0.0047	0	
49	0.048	1	0.024	0	0.0165	0	0.014	0	0.027	0	0.0155	0	0.0335	0	0.0385	0	0.00235	0	0.005	0	
50	0.044	1	0.089	1	0.00135	0	0.078	1	0.12	1	0.037	1	0.085	1	0.04	1	0.0022	0	0.00475	0	
51	0.01	1	0.0018	0	0.00125	0	0.00105	0	0.002	0	0.00115	0	0.0025	0	0.0029	0	0.0029	0	0.0065	0	
52	0.019	1	0.001675	0	0.00115	0	0.005025	0	0.0019	0	0.001075	0	0.002375	0	0.0027	0	0.00235	0	0.0065	0	
53	0.0019	1	0.00185	0	0.00125	0	0.00105	0	0.00205	0	0.00115	0	0.00255	0	0.00295	0	0.00225	0	0.029	1	
54	0.0029	0	0.0018	0	0.0022	0	0.00105	0	0.013	1	0.00115	0	0.0025	0	0.00285	0	0.002025	0	0.00445	0	
55	0.0605	1	0.16	1	0.0013	0	0.0011	0	0.014	1	0.0024	1	0.0026	0	0.003	0	0.0022	0	0.0049	0	
56	0.011	1	0.018	1	0.00135	0	0.017	1	0.0045	1	0.0025	1	0.00275	0	0.00315	0	0.00215	0	0.0048	0	
57	0.34	1	0.96	1	0.055	0	0.69	1	1	1	0.055	0	0.96	1	0.135	0	0.051	1	0.025	1	
58	0.029	1	0.29	1	0.038	1	0.23	1	0.26	1	0.11	1	0.25	1	0.11	1	0.0024	0	0.0065	0	
59	0.013	1	0.0034	1	0.00115	0	0.001	0	0.0019	0	0.0011	0	0.00235	0	0.0027	0	1.7	1	0.84	1	
60	0.0076	1	0.1	0	0.07	0	0.06	0	0.14	0	0.075	0	0.14	0	0.16	0	0.23	1	0.067	1	
61			0.0175	1	0.001225	0	0.001025	0	0.0155	1	0.001125	0	0.0025	0	0.00285	0	0.0098	1	0.00455	0	
62			0.42	1	0.012	0	0.42	1	0.45	1	0.0115	0	0.39	1	0.21	1	1.4	1	1.6	1	
63			0.79	1	0.0145	0	0.69	1	0.74	1	0.0135	0	0.68	1	0.32	1	0.018	1	0.004825	0	
64			0.0155	0	0.0105	0	0.009	0	0.0175	0	0.01	0	0.022	0	0.025	0	1.8	1	0.76	1	
65			0.095	0	0.065	0	0.055	0	0.105	0	0.06	0	0.135	0	0.155	0	0.54	1	0.19	1	
66			10	1	2.3	1	9.7	1	14	1	6.5	1	14	1	8.8	1	0.065	1	0.04	1	
67																	0.65	1	0.41	1	
68																	0.7	1	0.21	1	
69																					
70																					
71																					
72																					
73																					
74																					
75																					
76																					
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78																					
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81																					
82																					
83																					

	V	W	X	Y	Z	AA	AB	AC	AD
1	D_PE Aroc	PE Aroclor	D_PE Aroc	Combined	D_Combin	Combined	D_ Combined Aroclor 1260		
2	1	0.0022	0	0.051	0	0.11	0		
3	1	0.00215	0	0.056	0	0.12	0		
4	1	0.0022	0	0.056	0	0.12	0		
5	1	0.002	0	0.052	0	0.12	0		
6	1	0.115	0	0.048	0	0.11	0		
7	1	0.125	0	0.048	0	0.11	0		
8	1	0.11	0	0.022	0	0.048	0		
9	1	0.1	0	0.023	0	0.05	0		
10	1	0.0105	0	0.0225	0	0.05	0		
11	1	0.00215	0	0.026	0	0.06	0		
12	1	0.00225	0	0.0285	0	0.065	0		
13	1	0.0022	0	0.0235	0	0.055	0		
14	1	0.011	0	0.0235	0	1.1	1		
15	1	0.002225	0	0.0255	0	0.055	0		
16	1	0.00225	0	0.027	0	0.32	1		
17				0.0275	0	0.06	0		
18				0.024	0	0.15	1		
19				0.0245	0	0.055	0		
20				0.0285	0	0.065	0		
21				0.022	0	0.049	0		
22				0.0275	0	0.41	1		
23				0.023	0	0.05	0		
24				0.027	0	0.94	1		
25				0.022	0	0.049	0		
26				0.029	0	0.065	0		
27				0.0225	0	0.05	0		
28				0.0285	0	0.065	0		
29				0.024	0	0.055	0		
30				0.0285	0	0.065	0		
31				0.0224	0	0.0495	0		
32				0.0265	0	0.06	0		
33				0.0265	0	0.06	0		
34				0.0305	0	0.065	0		
35				0.0285	0	0.065	0		
36				0.0275	0	0.06	0		
37				0.028	0	0.06	0		
38				0.028	0	0.06	0		
39				0.0295	0	0.065	0		
40				0.029	0	0.065	0		
41				0.03	0	0.065	0		
42				0.059	0	0.065	0		
43				0.0305	0	0.065	0		
44				0.0245	0	0.055	0		
45				0.026	0	0.055	0		
46				0.07	1	0.11	1		
47				0.00195	0	0.0043	0		
48				0.00215	0	0.0047	0		
49				0.00235	0	0.005	0		
50				0.0022	0	0.00475	0		
51				0.0029	0	0.0065	0		
52				0.00235	0	0.0065	0		
53				0.00225	0	0.029	1		
54				0.002025	0	0.00445	0		
55				0.0022	0	0.0049	0		
56				0.00215	0	0.0048	0		
57				0.051	1	0.025	1		
58				0.0024	0	0.0065	0		
59				1.7	1	0.84	1		
60				0.23	1	0.067	1		
61				0.0098	1	0.00455	0		
62				1.4	1	1.6	1		
63				0.018	1	0.004825	0		
64				1.8	1	0.76	1		
65				0.54	1	0.19	1		
66				0.065	1	0.04	1		
67				0.65	1	0.41	1		
68				0.7	1	0.21	1		
69				0.33	1	0.0022	0		
70				0.27	1	0.00215	0		
71				0.17	1	0.0022	0		
72				0.39	1	0.002	0		
73				14	1	0.115	0		
74				15	1	0.125	0		
75				14	1	0.11	0		
76				4.8	1	0.1	0		
77				1.9	1	0.0105	0		
78				0.33	1	0.00215	0		
79				0.17	1	0.00225	0		
80				0.022	1	0.0022	0		
81				0.8	1	0.011	0		
82				0.011	1	0.002225	0		
83				0.007	1	0.00225	0		

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	P:\projects\USACE-Louisville, KY.773\773-04\HHRA\Pro UCL Software Outputs\Groundwater Input.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	Benzene											
10												
11				General Statistics								
12			Number of Valid Observations			8			Number of Distinct Observations			2
13												
14			Raw Statistics						Log-transformed Statistics			
15			Minimum			0.205			Minimum of Log Data			-1.585
16			Maximum			1.6			Maximum of Log Data			0.47
17			Mean			0.379			Mean of log Data			-1.328
18			Median			0.205			SD of log Data			0.726
19			SD			0.493						
20			Coefficient of Variation			1.3						
21			Skewness			2.828						
22												
23												
24				Warning: There are only 2 Distinct Values in this data								
25				There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.								
26				Those methods will return a 'N/A' value on your output display!								
27												
28				It is necessary to have 4 or more Distinct Values to compute bootstrap methods.								
29				However, results obtained using 4 to 9 distinct values may not be reliable.								
30				It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.								
31												
32				Relevant UCL Statistics								
33			Normal Distribution Test						Lognormal Distribution Test			
34			Shapiro Wilk Test Statistic			0.419			Shapiro Wilk Test Statistic			0.419
35			Shapiro Wilk Critical Value			0.818			Shapiro Wilk Critical Value			0.818
36			Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level			
37												
38			Assuming Normal Distribution						Assuming Lognormal Distribution			
39			95% Student's-t UCL			0.71			95% H-UCL			0.743
40			95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL			0.71
41			95% Adjusted-CLT UCL (Chen-1995)			0.853			97.5% Chebyshev (MVUE) UCL			0.874
42			95% Modified-t UCL (Johnson-1978)			0.739			99% Chebyshev (MVUE) UCL			1.195
43												
44			Gamma Distribution Test						Data Distribution			
45			k star (bias corrected)			1.046			Data do not follow a Discernable Distribution (0.05)			
46			Theta Star			0.363						
47			MLE of Mean			0.379						
48			MLE of Standard Deviation			0.371						
49			nu star			16.73						
50			Approximate Chi Square Value (.05)			8.479			Nonparametric Statistics			

	A	B	C	D	E	F	G	H	I	J	K	L
51					Adjusted Level of Significance	0.0195					95% CLT UCL	0.666
52					Adjusted Chi Square Value	7.045					95% Jackknife UCL	N/A
53											95% Standard Bootstrap UCL	N/A
54					Anderson-Darling Test Statistic	2.546					95% Bootstrap-t UCL	N/A
55					Anderson-Darling 5% Critical Value	0.728					95% Hall's Bootstrap UCL	N/A
56					Kolmogorov-Smirnov Test Statistic	0.534					95% Percentile Bootstrap UCL	N/A
57					Kolmogorov-Smirnov 5% Critical Value	0.299					95% BCA Bootstrap UCL	N/A
58			**Data not Gamma Distributed at 5% Significance Level**								95% Chebyshev(Mean, Sd) UCL	1.139
59											97.5% Chebyshev(Mean, Sd) UCL	1.468
60			**Assuming Gamma Distribution**								99% Chebyshev(Mean, Sd) UCL	2.114
61					95% Approximate Gamma UCL	0.749						
62					95% Adjusted Gamma UCL	0.901						
63												
64			**Potential UCL to Use**								Use 95% Chebyshev (Mean, Sd) UCL	1.139
65												
66	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
67	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
68	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
69												

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	Benzene											
10												
11						General Statistics						
12						Number of Valid Data	8		Number of Detected Data			1
13						Number of Distinct Detected Data	1		Number of Non-Detect Data			7
14									Percent Non-Detects			87.50%
15												
16						Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!						
17						It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).						
18												
19						The data set for variable Benzene was not processed!						
20												
21												

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	Benzene											
10												
11						General Statistics						
12						Number of Valid Data	8		Number of Detected Data			1
13						Number of Distinct Detected Data	1		Number of Non-Detect Data			7
14									Percent Non-Detects			87.50%
15												
16						Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!						
17						It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).						
18												
19						The data set for variable Benzene was not processed!						
20												
21												

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	P:\projects\USACE-Louisville, KY.773\773-04\HHRA\Pro UCL Software Outputs\Subsurface Input.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	Combined Aroclor 1254											
10												
11						General Statistics						
12						Number of Valid Data	82			Number of Detected Data		27
13						Number of Distinct Detected Data	24			Number of Non-Detect Data		55
14										Percent Non-Detects		67.07%
15												
16						Raw Statistics				Log-transformed Statistics		
17						Minimum Detected	0.007			Minimum Detected		-4.962
18						Maximum Detected	15			Maximum Detected		2.708
19						Mean of Detected	2.201			Mean of Detected		-1.102
20						SD of Detected	4.486			SD of Detected		2.208
21						Minimum Non-Detect	0.00195			Minimum Non-Detect		-6.24
22						Maximum Non-Detect	0.059			Maximum Non-Detect		-2.83
23												
24						Note: Data have multiple DLs - Use of KM Method is recommended				Number treated as Non-Detect		61
25						For all methods (except KM, DL/2, and ROS Methods),				Number treated as Detected		21
26						Observations < Largest ND are treated as NDs				Single DL Non-Detect Percentage		74.39%
27												
28						UCL Statistics						
29						Normal Distribution Test with Detected Values Only				Lognormal Distribution Test with Detected Values Only		
30						Shapiro Wilk Test Statistic	0.517			Shapiro Wilk Test Statistic		0.962
31						5% Shapiro Wilk Critical Value	0.923			5% Shapiro Wilk Critical Value		0.923
32						Data not Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level		
33												
34						Assuming Normal Distribution				Assuming Lognormal Distribution		
35						DL/2 Substitution Method				DL/2 Substitution Method		
36						Mean	0.733			Mean		-3.543
37						SD	2.744			SD		2.298
38						95% DL/2 (t) UCL	1.237			95% H-Stat (DL/2) UCL		1.054
39												
40						Maximum Likelihood Estimate(MLE) Method	N/A			Log ROS Method		
41						MLE yields a negative mean				Mean in Log Scale		-5.086
42										SD in Log Scale		3.279
43										Mean in Original Scale		0.726
44										SD in Original Scale		2.746
45										95% t UCL		1.231
46										95% Percentile Bootstrap UCL		1.262
47										95% BCA Bootstrap UCL		1.445
48												
49						Gamma Distribution Test with Detected Values Only				Data Distribution Test with Detected Values Only		
50						k star (bias corrected)	0.34			Data Follow Appr. Gamma Distribution at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
51					Theta Star	6.473						
52					nu star	18.36						
53												
54					A-D Test Statistic	1.138	**Nonparametric Statistics**					
55					5% A-D Critical Value	0.841					Kaplan-Meier (KM) Method	
56					K-S Test Statistic	0.841					Mean	0.731
57					5% K-S Critical Value	0.181					SD	2.728
58	**Data follow Appr. Gamma Distribution at 5% Significance Level**										SE of Mean	0.307
59											95% KM (t) UCL	1.241
60			**Assuming Gamma Distribution**								95% KM (z) UCL	1.236
61			Gamma ROS Statistics using Extrapolated Data								95% KM (jackknife) UCL	1.234
62					Minimum	0.007					95% KM (bootstrap t) UCL	1.488
63					Maximum	15					95% KM (BCA) UCL	1.307
64					Mean	2.257					95% KM (Percentile Bootstrap) UCL	1.259
65					Median	2.3					95% KM (Chebyshev) UCL	2.069
66					SD	2.548					97.5% KM (Chebyshev) UCL	2.648
67					k star	0.905					99% KM (Chebyshev) UCL	3.785
68					Theta star	2.496						
69					Nu star	148.3	**Potential UCLs to Use**					
70					AppChi2	121.2					95% KM (t) UCL	1.241
71					95% Gamma Approximate UCL	2.763						
72					95% Adjusted Gamma UCL	2.773						
73	**Note: DL/2 is not a recommended method.**											
74												
75	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
76	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
77	**For additional insight, the user may want to consult a statistician.**											
78												
79												
80	**Combined Aroclor 1260**											
81												
82					**General Statistics**							
83					Number of Valid Data	82					Number of Detected Data	16
84					Number of Distinct Detected Data	15					Number of Non-Detect Data	66
85											Percent Non-Detects	80.49%
86												
87					**Raw Statistics**		**Log-transformed Statistics**					
88					Minimum Detected	0.025					Minimum Detected	-3.689
89					Maximum Detected	1.6					Maximum Detected	0.47
90					Mean of Detected	0.45					Mean of Detected	-1.459
91					SD of Detected	0.466					SD of Detected	1.333
92					Minimum Non-Detect	0.002					Minimum Non-Detect	-6.215
93					Maximum Non-Detect	0.125					Maximum Non-Detect	-2.079
94												
95	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	71
96	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	11
97	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	86.59%
98												
99					**UCL Statistics**							
100					**Normal Distribution Test with Detected Values Only**		**Lognormal Distribution Test with Detected Values Only**					

	A	B	C	D	E	F	G	H	I	J	K	L
101					Shapiro Wilk Test Statistic	0.847					Shapiro Wilk Test Statistic	0.946
102					5% Shapiro Wilk Critical Value	0.887					5% Shapiro Wilk Critical Value	0.887
103					**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**	
104												
105					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
106					DL/2 Substitution Method						DL/2 Substitution Method	
107					Mean	0.107					Mean	-3.809
108					SD	0.263					SD	1.822
109					95% DL/2 (t) UCL	0.156					95% H-Stat (DL/2) UCL	0.22
110												
111					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
112					**MLE yields a negative mean**						Mean in Log Scale	-5.312
113											SD in Log Scale	2.353
114											Mean in Original Scale	0.0915
115											SD in Original Scale	0.268
116											95% t UCL	0.141
117											95% Percentile Bootstrap UCL	0.144
118											95% BCA Bootstrap UCL	0.153
119												
120					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
121					k star (bias corrected)	0.762					**Data appear Gamma Distributed at 5% Significance Level**	
122					Theta Star	0.591						
123					nu star	24.38						
124												
125					A-D Test Statistic	0.261					**Nonparametric Statistics**	
126					5% A-D Critical Value	0.768					Kaplan-Meier (KM) Method	
127					K-S Test Statistic	0.768					Mean	0.108
128					5% K-S Critical Value	0.222					SD	0.261
129					**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean	0.0298
130											95% KM (t) UCL	0.158
131					**Assuming Gamma Distribution**						95% KM (z) UCL	0.157
132					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.154
133					Minimum	0.025					95% KM (bootstrap t) UCL	0.169
134					Maximum	1.6					95% KM (BCA) UCL	0.181
135					Mean	0.453					95% KM (Percentile Bootstrap) UCL	0.167
136					Median	0.45					95% KM (Chebyshev) UCL	0.238
137					SD	0.201					97.5% KM (Chebyshev) UCL	0.294
138					k star	3.884					99% KM (Chebyshev) UCL	0.404
139					Theta star	0.117						
140					Nu star	636.9					**Potential UCLs to Use**	
141					AppChi2	579.4					95% KM (t) UCL	0.158
142					95% Gamma Approximate UCL	0.498						
143					95% Adjusted Gamma UCL	0.499						
144	**Note: DL/2 is not a recommended method.**											
145												
146	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
147	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
148	**For additional insight, the user may want to consult a statistician.**											
149												

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	P:\projects\USACE-Louisville, KY.773\773-04\HHRA\Pro UCL Software Outputs\Subsurface Input.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	Acetone											
10												
11				General Statistics								
12			Number of Valid Data			59			Number of Detected Data			37
13			Number of Distinct Detected Data			28			Number of Non-Detect Data			22
14									Percent Non-Detects			37.29%
15												
16			Raw Statistics						Log-transformed Statistics			
17			Minimum Detected			0.0019			Minimum Detected			-6.266
18			Maximum Detected			0.34			Maximum Detected			-1.079
19			Mean of Detected			0.039			Mean of Detected			-3.761
20			SD of Detected			0.057			SD of Detected			0.998
21			Minimum Non-Detect			0.00225			Minimum Non-Detect			-6.097
22			Maximum Non-Detect			0.0245			Maximum Non-Detect			-3.709
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended								Number treated as Non-Detect			39
25	For all methods (except KM, DL/2, and ROS Methods),								Number treated as Detected			20
26	Observations < Largest ND are treated as NDs								Single DL Non-Detect Percentage			66.10%
27												
28				UCL Statistics								
29			Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only			
30			Shapiro Wilk Test Statistic			0.53			Shapiro Wilk Test Statistic			0.981
31			5% Shapiro Wilk Critical Value			0.936			5% Shapiro Wilk Critical Value			0.936
32			Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level			
33												
34			Assuming Normal Distribution						Assuming Lognormal Distribution			
35			DL/2 Substitution Method						DL/2 Substitution Method			
36			Mean			0.0253			Mean			-4.768
37			SD			0.0484			SD			1.58
38			95% DL/2 (t) UCL			0.0358			95% H-Stat (DL/2) UCL			0.0582
39												
40			Maximum Likelihood Estimate(MLE) Method			N/A			Log ROS Method			
41			MLE yields a negative mean						Mean in Log Scale			-4.553
42									SD in Log Scale			1.323
43									Mean in Original Scale			0.0256
44									SD in Original Scale			0.0483
45									95% t UCL			0.0361
46									95% Percentile Bootstrap UCL			0.0368
47									95% BCA Bootstrap UCL			0.0433
48												
49			Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only			
50			k star (bias corrected)			1.032			Data Follow Appr. Gamma Distribution at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
51					Theta Star	0.0378						
52					nu star	76.36						
53												
54					A-D Test Statistic	0.888	**Nonparametric Statistics**					
55					5% A-D Critical Value	0.775					Kaplan-Meier (KM) Method	
56					K-S Test Statistic	0.775					Mean	0.0253
57					5% K-S Critical Value	0.149					SD	0.048
58	**Data follow Appr. Gamma Distribution at 5% Significance Level**										SE of Mean	0.00634
59											95% KM (t) UCL	0.0359
60			**Assuming Gamma Distribution**								95% KM (z) UCL	0.0357
61			Gamma ROS Statistics using Extrapolated Data								95% KM (jackknife) UCL	0.0347
62					Minimum	1E-12					95% KM (bootstrap t) UCL	0.0459
63					Maximum	0.34					95% KM (BCA) UCL	0.0397
64					Mean	0.0301					95% KM (Percentile Bootstrap) UCL	0.037
65					Median	0.022					95% KM (Chebyshev) UCL	0.0529
66					SD	0.0471					97.5% KM (Chebyshev) UCL	0.0649
67					k star	0.23					99% KM (Chebyshev) UCL	0.0883
68					Theta star	0.131						
69					Nu star	27.11	**Potential UCLs to Use**					
70					AppChi2	16.24					95% KM (Percentile Bootstrap) UCL	0.037
71					95% Gamma Approximate UCL	0.0503						
72					95% Adjusted Gamma UCL	0.0509						
73	**Note: DL/2 is not a recommended method.**											
74												
75	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
76	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
77	**For additional insight, the user may want to consult a statistician.**											
78												
79												
80	**Benzo(a)anthracene**											
81												
82					**General Statistics**							
83					Number of Valid Data	65					Number of Detected Data	43
84					Number of Distinct Detected Data	40					Number of Non-Detect Data	22
85											Percent Non-Detects	33.85%
86												
87					**Raw Statistics**		**Log-transformed Statistics**					
88					Minimum Detected	0.0034					Minimum Detected	-5.684
89					Maximum Detected	10					Maximum Detected	2.303
90					Mean of Detected	0.645					Mean of Detected	-2.431
91					SD of Detected	1.78					SD of Detected	1.959
92					Minimum Non-Detect	0.00168					Minimum Non-Detect	-6.392
93					Maximum Non-Detect	0.1					Maximum Non-Detect	-2.303
94												
95	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	46
96	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	19
97	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	70.77%
98												
99					**UCL Statistics**							
100					**Normal Distribution Test with Detected Values Only**		**Lognormal Distribution Test with Detected Values Only**					

	A	B	C	D	E	F	G	H	I	J	K	L
101					Shapiro Wilk Test Statistic	0.407					Shapiro Wilk Test Statistic	0.941
102					5% Shapiro Wilk Critical Value	0.943					5% Shapiro Wilk Critical Value	0.943
103					**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**	
104												
105					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
106					DL/2 Substitution Method						DL/2 Substitution Method	
107					Mean	0.429					Mean	-3.677
108					SD	1.474					SD	2.508
109					95% DL/2 (t) UCL	0.734					95% H-Stat (DL/2) UCL	1.614
110												
111					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
112					**MLE yields a negative mean**						Mean in Log Scale	-3.831
113											SD in Log Scale	2.601
114											Mean in Original Scale	0.427
115											SD in Original Scale	1.474
116											95% t UCL	0.732
117											95% Percentile Bootstrap UCL	0.743
118											95% BCA Bootstrap UCL	0.919
119												
120					**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**	
121					k star (bias corrected)	0.331					**Data do not follow a Discernable Distribution (0.05)**	
122					Theta Star	1.947						
123					nu star	28.48						
124												
125					A-D Test Statistic	3.03					**Nonparametric Statistics**	
126					5% A-D Critical Value	0.851					Kaplan-Meier (KM) Method	
127					K-S Test Statistic	0.851					Mean	0.428
128					5% K-S Critical Value	0.146					SD	1.462
129					**Data not Gamma Distributed at 5% Significance Level**						SE of Mean	0.184
130											95% KM (t) UCL	0.735
131					**Assuming Gamma Distribution**						95% KM (z) UCL	0.73
132					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.732
133					Minimum	1E-12					95% KM (bootstrap t) UCL	1.162
134					Maximum	10					95% KM (BCA) UCL	0.779
135					Mean	0.431					95% KM (Percentile Bootstrap) UCL	0.746
136					Median	0.018					95% KM (Chebyshev) UCL	1.228
137					SD	1.473					97.5% KM (Chebyshev) UCL	1.575
138					k star	0.0974					99% KM (Chebyshev) UCL	2.255
139					Theta star	4.428						
140					Nu star	12.66					**Potential UCLs to Use**	
141					AppChi2	5.668					97.5% KM (Chebyshev) UCL	1.575
142					95% Gamma Approximate UCL	0.964						
143					95% Adjusted Gamma UCL	0.982						
144	**Note: DL/2 is not a recommended method.**											
145												
146	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
147	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
148	**For additional insight, the user may want to consult a statistician.**											
149												
150												

	A	B	C	D	E	F	G	H	I	J	K	L
151	Dibenzo(a,h)anthracene											
152												
153						General Statistics						
154					Number of Valid Data	65				Number of Detected Data		15
155					Number of Distinct Detected Data	14				Number of Non-Detect Data		50
156										Percent Non-Detects		76.92%
157												
158				Raw Statistics						Log-transformed Statistics		
159					Minimum Detected	0.01				Minimum Detected		-4.605
160					Maximum Detected	2.3				Maximum Detected		0.833
161					Mean of Detected	0.296				Mean of Detected		-3
162					SD of Detected	0.645				SD of Detected		1.743
163					Minimum Non-Detect	0.00105				Minimum Non-Detect		-6.859
164					Maximum Non-Detect	0.13				Maximum Non-Detect		-2.04
165												
166	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		62
167	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		3
168	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		95.38%
169												
170						UCL Statistics						
171				Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only		
172					Shapiro Wilk Test Statistic	0.521				Shapiro Wilk Test Statistic		0.783
173					5% Shapiro Wilk Critical Value	0.881				5% Shapiro Wilk Critical Value		0.881
174				Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level		
175												
176				Assuming Normal Distribution						Assuming Lognormal Distribution		
177					DL/2 Substitution Method					DL/2 Substitution Method		
178					Mean	0.0722				Mean		-5.821
179					SD	0.326				SD		2.122
180					95% DL/2 (t) UCL	0.14				95% H-Stat (DL/2) UCL		0.0645
181												
182					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
183					MLE yields a negative mean					Mean in Log Scale		-7.403
184										SD in Log Scale		2.912
185										Mean in Original Scale		0.0687
186										SD in Original Scale		0.327
187										95% t UCL		0.136
188										95% Percentile Bootstrap UCL		0.146
189										95% BCA Bootstrap UCL		0.185
190												
191				Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only		
192					k star (bias corrected)	0.343				Data do not follow a Discernable Distribution (0.05)		
193					Theta Star	0.864						
194					nu star	10.29						
195												
196					A-D Test Statistic	2.264				Nonparametric Statistics		
197					5% A-D Critical Value	0.82				Kaplan-Meier (KM) Method		
198					K-S Test Statistic	0.82				Mean		0.0763
199					5% K-S Critical Value	0.238				SD		0.323
200				Data not Gamma Distributed at 5% Significance Level						SE of Mean		0.0414

	A	B	C	D	E	F	G	H	I	J	K	L
201											95% KM (t) UCL	0.145
202				**Assuming Gamma Distribution**							95% KM (z) UCL	0.144
203				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	0.142
204					Minimum	1E-12					95% KM (bootstrap t) UCL	1.606
205					Maximum	2.3					95% KM (BCA) UCL	0.157
206					Mean	0.284					95% KM (Percentile Bootstrap) UCL	0.156
207					Median	0.294					95% KM (Chebyshev) UCL	0.257
208					SD	0.326					97.5% KM (Chebyshev) UCL	0.335
209					k star	0.251					99% KM (Chebyshev) UCL	0.488
210					Theta star	1.13						
211					Nu star	32.64				**Potential UCLs to Use**		
212					AppChi2	20.58					95% KM (Chebyshev) UCL	0.257
213					95% Gamma Approximate UCL	0.45						
214					95% Adjusted Gamma UCL	0.455						
215	**Note: DL/2 is not a recommended method.**											
216												
217				**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**								
218				**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**								
219				**For additional insight, the user may want to consult a statistician.**								
220												
221												
222	**Chrysene**											
223												
224					**General Statistics**							
225					Number of Valid Data	65					Number of Detected Data	40
226					Number of Distinct Detected Data	32					Number of Non-Detect Data	25
227											Percent Non-Detects	38.46%
228												
229				**Raw Statistics**						**Log-transformed Statistics**		
230					Minimum Detected	0.0079					Minimum Detected	-4.841
231					Maximum Detected	9.7					Maximum Detected	2.272
232					Mean of Detected	0.678					Mean of Detected	-2.345
233					SD of Detected	1.794					SD of Detected	1.948
234					Minimum Non-Detect	0.001					Minimum Non-Detect	-6.908
235					Maximum Non-Detect	0.06					Maximum Non-Detect	-2.813
236												
237	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	43
238	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	22
239	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	66.15%
240												
241					**UCL Statistics**							
242				**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**		
243					Shapiro Wilk Test Statistic	0.426					Shapiro Wilk Test Statistic	0.922
244					5% Shapiro Wilk Critical Value	0.94					5% Shapiro Wilk Critical Value	0.94
245				**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**		
246												
247				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
248					DL/2 Substitution Method						DL/2 Substitution Method	
249					Mean	0.419					Mean	-3.999
250					SD	1.439					SD	2.75

	A–E	F	G–K	L
251	95% DL/2 (t) UCL	0.717	95% H-Stat (DL/2) UCL	2.669
252				
253	Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
254	**MLE yields a negative mean**		Mean in Log Scale	-4.07
255			SD in Log Scale	2.755
256			Mean in Original Scale	0.418
257			SD in Original Scale	1.439
258			95% t UCL	0.716
259			95% Percentile Bootstrap UCL	0.732
260			95% BCA Bootstrap UCL	0.873
261				
262	**Gamma Distribution Test with Detected Values Only**		**Data Distribution Test with Detected Values Only**	
263	k star (bias corrected)	0.335	**Data do not follow a Discernable Distribution (0.05)**	
264	Theta Star	2.022		
265	nu star	26.83		
266				
267	A-D Test Statistic	2.812	**Nonparametric Statistics**	
268	5% A-D Critical Value	0.848	Kaplan-Meier (KM) Method	
269	K-S Test Statistic	0.848	Mean	0.421
270	5% K-S Critical Value	0.151	SD	1.427
271	**Data not Gamma Distributed at 5% Significance Level**		SE of Mean	0.179
272			95% KM (t) UCL	0.72
273	**Assuming Gamma Distribution**		95% KM (z) UCL	0.715
274	Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.718
275	Minimum	0.0079	95% KM (bootstrap t) UCL	1.287
276	Maximum	9.7	95% KM (BCA) UCL	0.724
277	Mean	0.498	95% KM (Percentile Bootstrap) UCL	0.729
278	Median	0.147	95% KM (Chebyshev) UCL	1.202
279	SD	1.421	97.5% KM (Chebyshev) UCL	1.54
280	k star	0.451	99% KM (Chebyshev) UCL	2.204
281	Theta star	1.104		
282	Nu star	58.63	**Potential UCLs to Use**	
283	AppChi2	42.03	97.5% KM (Chebyshev) UCL	1.54
284	95% Gamma Approximate UCL	0.695		
285	95% Adjusted Gamma UCL	0.7		
286	**Note: DL/2 is not a recommended method.**			
287				
288	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**			
289	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**			
290	**For additional insight, the user may want to consult a statistician.**			
291				
292				
293	**Benzo(b)fluoranthene**			
294				
295	**General Statistics**			
296	Number of Valid Data	65	Number of Detected Data	49
297	Number of Distinct Detected Data	42	Number of Non-Detect Data	16
298			Percent Non-Detects	24.62%
299				
300	**Raw Statistics**		**Log-transformed Statistics**	

	A–E	F	G–K	L
301	Minimum Detected	0.0045	Minimum Detected	-5.404
302	Maximum Detected	14	Maximum Detected	2.639
303	Mean of Detected	0.716	Mean of Detected	-2.503
304	SD of Detected	2.218	SD of Detected	1.973
305	Minimum Non-Detect	0.0019	Minimum Non-Detect	-6.266
306	Maximum Non-Detect	0.14	Maximum Non-Detect	-1.966
307				
308	Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	47
309	For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	18
310	Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	72.31%
311				
312	**UCL Statistics**			
313	**Normal Distribution Test with Detected Values Only**		**Lognormal Distribution Test with Detected Values Only**	
314	Shapiro Wilk Test Statistic	0.365	Shapiro Wilk Test Statistic	0.923
315	5% Shapiro Wilk Critical Value	0.947	5% Shapiro Wilk Critical Value	0.947
316	**Data not Normal at 5% Significance Level**		**Data not Lognormal at 5% Significance Level**	
317				
318	**Assuming Normal Distribution**		**Assuming Lognormal Distribution**	
319	DL/2 Substitution Method		DL/2 Substitution Method	
320	Mean	0.542	Mean	-3.352
321	SD	1.945	SD	2.393
322	95% DL/2 (t) UCL	0.945	95% H-Stat (DL/2) UCL	1.608
323				
324	Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
325	**MLE yields a negative mean**		Mean in Log Scale	-3.441
326			SD in Log Scale	2.438
327			Mean in Original Scale	0.541
328			SD in Original Scale	1.945
329			95% t UCL	0.943
330			95% Percentile Bootstrap UCL	0.963
331			95% BCA Bootstrap UCL	1.194
332				
333	**Gamma Distribution Test with Detected Values Only**		**Data Distribution Test with Detected Values Only**	
334	k star (bias corrected)	0.31	**Data do not follow a Discernable Distribution (0.05)**	
335	Theta Star	2.313		
336	nu star	30.35		
337				
338	A-D Test Statistic	4.198	**Nonparametric Statistics**	
339	5% A-D Critical Value	0.859	Kaplan-Meier (KM) Method	
340	K-S Test Statistic	0.859	Mean	0.542
341	5% K-S Critical Value	0.137	SD	1.93
342	**Data not Gamma Distributed at 5% Significance Level**		SE of Mean	0.242
343			95% KM (t) UCL	0.945
344	**Assuming Gamma Distribution**		95% KM (z) UCL	0.94
345	Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.944
346	Minimum	1E-12	95% KM (bootstrap t) UCL	1.573
347	Maximum	14	95% KM (BCA) UCL	1.001
348	Mean	0.541	95% KM (Percentile Bootstrap) UCL	0.996
349	Median	0.02	95% KM (Chebyshev) UCL	1.596
350	SD	1.945	97.5% KM (Chebyshev) UCL	2.052

	A	B	C	D	E	F	G	H	I	J	K	L
351					k star	0.115					99% KM (Chebyshev) UCL	2.948
352					Theta star	4.717						
353					Nu star	14.91	**Potential UCLs to Use**					
354					AppChi2	7.201					97.5% KM (Chebyshev) UCL	2.052
355				95% Gamma Approximate UCL		1.121						
356				95% Adjusted Gamma UCL		1.14						
357	**Note: DL/2 is not a recommended method.**											
358												
359	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
360	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
361	**For additional insight, the user may want to consult a statistician.**											
362												
363												
364	**Benzo(k)fluoranthene**											
365												
366	**General Statistics**											
367					Number of Valid Data	65					Number of Detected Data	44
368					Number of Distinct Detected Data	35					Number of Non-Detect Data	21
369											Percent Non-Detects	32.31%
370												
371	**Raw Statistics**						**Log-transformed Statistics**					
372					Minimum Detected	0.0024					Minimum Detected	-6.032
373					Maximum Detected	6.5					Maximum Detected	1.872
374					Mean of Detected	0.365					Mean of Detected	-3.095
375					SD of Detected	1.107					SD of Detected	1.839
376					Minimum Non-Detect	0.00108					Minimum Non-Detect	-6.835
377					Maximum Non-Detect	0.075					Maximum Non-Detect	-2.59
378												
379	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	51
380	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	14
381	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	78.46%
382												
383	**UCL Statistics**											
384	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
385					Shapiro Wilk Test Statistic	0.375					Shapiro Wilk Test Statistic	0.916
386					5% Shapiro Wilk Critical Value	0.944					5% Shapiro Wilk Critical Value	0.944
387	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
388												
389	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
390					DL/2 Substitution Method						DL/2 Substitution Method	
391					Mean	0.249					Mean	-4.143
392					SD	0.923					SD	2.321
393					95% DL/2 (t) UCL	0.44					95% H-Stat (DL/2) UCL	0.596
394												
395					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
396	**MLE yields a negative mean**										Mean in Log Scale	-4.287
397											SD in Log Scale	2.373
398											Mean in Original Scale	0.248
399											SD in Original Scale	0.923
400											95% t UCL	0.439

	A–E	F	G–K	L
401			95% Percentile Bootstrap UCL	0.455
402			95% BCA Bootstrap UCL	0.587
403				
404	**Gamma Distribution Test with Detected Values Only**		**Data Distribution Test with Detected Values Only**	
405	k star (bias corrected)	0.319	**Data do not follow a Discernable Distribution (0.05)**	
406	Theta Star	1.145		
407	nu star	28.05		
408				
409	A-D Test Statistic	4.782	**Nonparametric Statistics**	
410	5% A-D Critical Value	0.855	Kaplan-Meier (KM) Method	
411	K-S Test Statistic	0.855	Mean	0.249
412	5% K-S Critical Value	0.144	SD	0.916
413	**Data not Gamma Distributed at 5% Significance Level**		SE of Mean	0.115
414			95% KM (t) UCL	0.44
415	**Assuming Gamma Distribution**		95% KM (z) UCL	0.438
416	Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.44
417	Minimum	1E-12	95% KM (bootstrap t) UCL	0.871
418	Maximum	6.5	95% KM (BCA) UCL	0.475
419	Mean	0.252	95% KM (Percentile Bootstrap) UCL	0.443
420	Median	0.015	95% KM (Chebyshev) UCL	0.749
421	SD	0.922	97.5% KM (Chebyshev) UCL	0.966
422	k star	0.102	99% KM (Chebyshev) UCL	1.392
423	Theta star	2.464		
424	Nu star	13.27	**Potential UCLs to Use**	
425	AppChi2	6.075	97.5% KM (Chebyshev) UCL	0.966
426	95% Gamma Approximate UCL	0.55		
427	95% Adjusted Gamma UCL	0.56		
428	**Note: DL/2 is not a recommended method.**			
429				
430	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**			
431	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**			
432	**For additional insight, the user may want to consult a statistician.**			
433				
434				
435	**Benzo(a)pyrene**			
436				
437	**General Statistics**			
438	Number of Valid Data	65	Number of Detected Data	40
439	Number of Distinct Detected Data	35	Number of Non-Detect Data	25
440			Percent Non-Detects	38.46%
441				
442	**Raw Statistics**		**Log-transformed Statistics**	
443	Minimum Detected	0.007	Minimum Detected	-4.962
444	Maximum Detected	14	Maximum Detected	2.639
445	Mean of Detected	0.806	Mean of Detected	-2.359
446	SD of Detected	2.406	SD of Detected	2.009
447	Minimum Non-Detect	0.00235	Minimum Non-Detect	-6.053
448	Maximum Non-Detect	0.14	Maximum Non-Detect	-1.966
449				
450	Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	50

	A	B	C	D	E	F	G	H	I	J	K	L
451	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	15
452	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	76.92%
453												
454						UCL Statistics						
455						Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only	
456						Shapiro Wilk Test Statistic	0.376				Shapiro Wilk Test Statistic	0.926
457						5% Shapiro Wilk Critical Value	0.94				5% Shapiro Wilk Critical Value	0.94
458						Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level	
459												
460						Assuming Normal Distribution					Assuming Lognormal Distribution	
461						DL/2 Substitution Method					DL/2 Substitution Method	
462						Mean	0.499				Mean	-3.723
463						SD	1.918				SD	2.484
464						95% DL/2 (t) UCL	0.896				95% H-Stat (DL/2) UCL	1.436
465												
466						Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method	
467						MLE yields a negative mean					Mean in Log Scale	-4.035
468											SD in Log Scale	2.724
469											Mean in Original Scale	0.497
470											SD in Original Scale	1.919
471											95% t UCL	0.894
472											95% Percentile Bootstrap UCL	0.907
473											95% BCA Bootstrap UCL	1.169
474												
475						Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only	
476						k star (bias corrected)	0.311				Data do not follow a Discernable Distribution (0.05)	
477						Theta Star	2.588					
478						nu star	24.91					
479												
480						A-D Test Statistic	3.091				Nonparametric Statistics	
481						5% A-D Critical Value	0.854				Kaplan-Meier (KM) Method	
482						K-S Test Statistic	0.854				Mean	0.499
483						5% K-S Critical Value	0.151				SD	1.903
484						Data not Gamma Distributed at 5% Significance Level					SE of Mean	0.239
485											95% KM (t) UCL	0.898
486						Assuming Gamma Distribution					95% KM (z) UCL	0.893
487						Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL	0.896
488						Minimum	0.007				95% KM (bootstrap t) UCL	1.774
489						Maximum	14				95% KM (BCA) UCL	0.948
490						Mean	0.68				95% KM (Percentile Bootstrap) UCL	0.919
491						Median	0.394				95% KM (Chebyshev) UCL	1.541
492						SD	1.886				97.5% KM (Chebyshev) UCL	1.992
493						k star	0.461				99% KM (Chebyshev) UCL	2.878
494						Theta star	1.475					
495						Nu star	59.9				Potential UCLs to Use	
496						AppChi2	43.1				97.5% KM (Chebyshev) UCL	1.992
497						95% Gamma Approximate UCL	0.944					
498						95% Adjusted Gamma UCL	0.952					
499	Note: DL/2 is not a recommended method.											
500												

	A	B	C	D	E	F	G	H	I	J	K	L
501	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
502	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
503	For additional insight, the user may want to consult a statistician.											
504												
505												
506	Indeno(1,2,3-cd)pyrene											
507												
508	General Statistics											
509					Number of Valid Data	65			Number of Detected Data			36
510					Number of Distinct Detected Data	33			Number of Non-Detect Data			29
511									Percent Non-Detects			44.62%
512												
513	Raw Statistics						Log-transformed Statistics					
514					Minimum Detected	0.0062			Minimum Detected			-5.083
515					Maximum Detected	8.8			Maximum Detected			2.175
516					Mean of Detected	0.445			Mean of Detected			-2.789
517					SD of Detected	1.498			SD of Detected			1.775
518					Minimum Non-Detect	0.0027			Minimum Non-Detect			-5.915
519					Maximum Non-Detect	0.16			Maximum Non-Detect			-1.833
520												
521	Note: Data have multiple DLs - Use of KM Method is recommended								Number treated as Non-Detect			55
522	For all methods (except KM, DL/2, and ROS Methods),								Number treated as Detected			10
523	Observations < Largest ND are treated as NDs								Single DL Non-Detect Percentage			84.62%
524												
525	UCL Statistics											
526	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
527					Shapiro Wilk Test Statistic	0.318			Shapiro Wilk Test Statistic			0.923
528					5% Shapiro Wilk Critical Value	0.935			5% Shapiro Wilk Critical Value			0.935
529	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
530												
531	Assuming Normal Distribution						Assuming Lognormal Distribution					
532					DL/2 Substitution Method				DL/2 Substitution Method			
533					Mean	0.251			Mean			-4.115
534					SD	1.129			SD			2.178
535					95% DL/2 (t) UCL	0.485			95% H-Stat (DL/2) UCL			0.414
536												
537					Maximum Likelihood Estimate(MLE) Method	N/A			Log ROS Method			
538	MLE yields a negative mean								Mean in Log Scale			-4.541
539									SD in Log Scale			2.448
540									Mean in Original Scale			0.247
541									SD in Original Scale			1.13
542									95% t UCL			0.481
543									95% Percentile Bootstrap UCL			0.517
544									95% BCA Bootstrap UCL			0.695
545												
546	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
547					k star (bias corrected)	0.331	Data do not follow a Discernable Distribution (0.05)					
548					Theta Star	1.344						
549					nu star	23.84						
550												

	A	B	C	D	E	F	G	H	I	J	K	L
551					A-D Test Statistic	3.5			**Nonparametric Statistics**			
552					5% A-D Critical Value	0.848					Kaplan-Meier (KM) Method	
553					K-S Test Statistic	0.848					Mean	0.25
554					5% K-S Critical Value	0.158					SD	1.121
555		**Data not Gamma Distributed at 5% Significance Level**									SE of Mean	0.141
556											95% KM (t) UCL	0.486
557			**Assuming Gamma Distribution**								95% KM (z) UCL	0.482
558				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	0.484
559					Minimum	0.0062					95% KM (bootstrap t) UCL	1.318
560					Maximum	8.8					95% KM (BCA) UCL	0.555
561					Mean	0.403					95% KM (Percentile Bootstrap) UCL	0.509
562					Median	0.293					95% KM (Chebyshev) UCL	0.865
563					SD	1.11					97.5% KM (Chebyshev) UCL	1.131
564					k star	0.546					99% KM (Chebyshev) UCL	1.653
565					Theta star	0.738						
566					Nu star	71.04			**Potential UCLs to Use**			
567					AppChi2	52.64					97.5% KM (Chebyshev) UCL	1.131
568					95% Gamma Approximate UCL	0.544						
569					95% Adjusted Gamma UCL	0.548						
570	**Note: DL/2 is not a recommended method.**											
571												
572	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
573	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
574	**For additional insight, the user may want to consult a statistician.**											
575												

APPENDIX G

ATSDR ToxFAQs™

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

BENZENE

CAS # 71-43-2

Division of Toxicology and Environmental Medicine ToxFAQs™ August 2007

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 1,000 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is benzene?

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and other synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include emissions from volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

❏ Industrial processes are the main source of benzene in the environment.
❏ Benzene can pass into the air from water and soil.
❏ It reacts with other chemicals in the air and breaks down within a few days.
❏ Benzene in the air can attach to rain or snow and be carried back down to the ground.
❏ It breaks down more slowly in water and soil, and can pass through the soil into underground water.
❏ Benzene does not build up in plants or animals.

How might I be exposed to benzene?

❏ Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
❏ Vapors (or gases) from products that contain benzene, such as glues, paints, furniture wax, and detergents, can also be a source of exposure.
❏ Air around hazardous waste sites or gas stations will contain higher levels of benzene.
❏ Working in industries that make or use benzene.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

The major effect of benzene from long-term exposure is on the blood. Benzene causes harmful effects on the bone

marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries, but we do not know for certain that benzene caused the effects. It is not known whether benzene will affect fertility in men.

How likely is benzene to cause cancer?

Long-term exposure to high levels of benzene in the air can cause leukemia, particularly acute myelogenous leukemia, often referred to as AML. This is a cancer of the blood-forming organs. The Department of Health and Human Services (DHHS) has determined that benzene is a known carcinogen. The International Agency for Research on Cancer (IARC) and the EPA have determined that benzene is carcinogenic to humans.

How can benzene affect children?

Children can be affected by benzene exposure in the same ways as adults. It is not known if children are more susceptible to benzene poisoning than adults.

Benzene can pass from the mother's blood to a fetus. Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How can families reduce the risks of exposure to benzene?

Benzene exposure can be reduced by limiting contact with gasoline and cigarette smoke. Families are encouraged not to smoke in their house, in enclosed environments, or near their children.

Is there a medical test to determine whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is a test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood; however, since benzene disappears rapidly from the blood, this test is only useful for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. The metabolite S-phenylmercapturic acid in urine is a sensitive indicator of benzene exposure. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 5 parts benzene per billion parts of water (5 ppb).

The Occupational Safety and Health Administration (OSHA) has set limits of 1 part benzene per million parts of workplace air (1 ppm) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Benzene (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

NAPHTHALENE
CAS # 91-20-3

1-METHYLNAPHTHALENE
CAS # 90-12-0

2-METHYLNAPHTHALENE
CAS # 91-57-6

Division of Toxicology ToxFAQs™ August 2005

This fact sheet answers the most frequently asked health questions (FAQs) about naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because these substances may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene happens mostly from breathing air contaminated from the burning of wood, tobacco, or fossil fuels, industrial discharges, or moth repellents. Exposure to large amounts of naphthalene may damage or destroy some of your red blood cells. Naphthalene has caused cancer in animals. Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene have been found in at least 687, 36, and 412, respectively, of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What are naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

Naphthalene is a white solid that evaporates easily . Fuels such as petroleum and coal contain naphthalene. It is also called white tar, and tar camphor, and has been used in mothballs and moth flakes. Burning tobacco or wood produces naphthalene. It has a strong, but not unpleasant smell. The major commercial use of naphthalene is in the manufacture of polyvinyl chloride (PVC) plastics. Its major consumer use is in moth repellents and toilet deodorant blocks.

1-Methylnaphthalene and 2-methylnaphthalene are naphthalene-related compounds. 1-Methylnaphthalene is a clear liquid and 2 -methylnaphthalene is a solid; both can be smelled in air and in water at very low concentrations.

1-Methylnaphthalene and 2-methylnaphthalene are used to make other chemicals such as dyes and resins. 2-Methylnaphthalene is also used to make vitamin K.

What happens to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene when they enter the environment?

- ❑ Naphthalene enters the environment from industrial and domestic sources, and from accidental spills.
- ❑ Naphthalene can dissolve in water to a limited degree and may be present in drinking water from wells close to hazardous waste sites and landfills.
- ❑ Naphthalene can become weakly attached to soil or pass through soil into underground water.
- ❑ In air, moisture and sunlight break it down within 1 day . In water, bacteria break it down or it evaporates into the air .
- ❑ Naphthalene does not accumulate in the flesh of animals or fish that you might eat.
- ❑ 1-Methylnaphthalene and 2-methylnaphthalene are expected to act like naphthalene in air, water, or soil because they have similar chemical and physical properties.

How might I be exposed to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

- ❑ Breathing low levels in outdoor air.
- ❑ Breathing air contaminated from industrial discharges or smoke from burning wood, tobacco, or fossil fuels.
- ❑ Using or making moth repellents, coal tar products, dyes or inks could expose you to these chemicals in the air .
- ❑ Drinking water from contaminated wells.
- ❑ Touching fabrics that are treated with moth repellents containing naphthalene.
- ❑ Exposure to naphthalene, 1-methylnaphthalene and 2-methylnaphthalene from eating foods or drinking beverages is unlikely.

How can naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene affect my health?

Exposure to large amounts of naphthalene may damage or destroy some of your red blood cells. This could cause you to have too few red blood cells until your body replaces the destroyed cells. This condition is called hemolytic anemia. Some symptoms of hemolytic anemia are fatigue, lack of appetite, restlessness, and pale skin. Exposure to large amounts of naphthalene may also cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin. Animals sometimes develop cloudiness in their eyes after swallowing high amounts of naphthalene. It is not clear whether this also develops in people. Rats and mice that breathed naphthalene vapors daily for a lifetime developed irritation and inflammation of their nose and lungs. It is unclear if naphthalene

causes reproductive effects in animals; most evidence says it does not.

There are no studies of humans exposed to 1-methylnaphthalene or 2-methylnaphthalene.

Mice fed food containing 1-methylnaphthalene and 2-methylnaphthalene for most of their lives had part of their lungs filled with an abnormal material.

How likely are naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene to cause cancer?

There is no direct evidence in humans that naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene cause cancer. However, cancer from naphthalene exposure has been seen in animal studies. Some female mice that breathed naphthalene vapors daily for a lifetime developed lung tumors. Some male and female rats exposed to naphthalene in a similar manner also developed nose tumors.

Based on the results from animal studies, the Department of Health and Humans Services (DHHS) concluded that naphthalene is reasonably anticipated to be a human carcinogen. The International Agency for Research on Cancer (IARC) concluded that naphthalene is possibly carcinogenic to humans. The EPA determined that naphthalene is a possible human carcinogen (Group C) and that the data are inadequate to assess the human carcinogenic potential of 2-methylnaphthalene.

How can naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene affect children?

Hospitals have reported many cases of hemolytic anemia in children, including newborns and infants, who either ate naphthalene mothballs or deodorants cakes or who were in close contact with clothing or blankets stored in naphthalene mothballs. Naphthalene can move from a pregnant woman's blood to the unborn baby's blood. Naphthalene has been detected in some samples of breast milk from the general U.S. population, but not at levels that are expected to be of concern.

There is no information on whether naphthalene has affected development in humans. No developmental abnormalities were observed in the offspring from rats, mice, and rabbits fed naphthalene during pregnancy.

We do not have any information on possible health ef fects of 1-methylnaphthalene or 2-methylnaphthalene on children.

How can families reduce the risks of exposure to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

❑ Families can reduce the risks of exposure to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene by avoiding smoking tobacco, generating smoke during cooking, or using fireplaces or heating appliances in the their homes.

❑ If families use naphthalene-containing moth repellents, the material should be enclosed in containers that prevent vapors from escaping, and kept out of the reach from children.

❑ Blankets and clothing stored with naphthalene moth repellents should be aired outdoors to remove naphthalene odors and washed before they are used.

❑ Families should inform themselves of the contents of air deodorizers that are used in their homes and refrain from using deodorizers with naphthalene.

Is there a medical test to determine whether I've been exposed to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

Tests are available that measure levels of these chemicals and their breakdown products in samples of urine, feces, blood, maternal milk, or body fat. These tests are not routinely available in a doctor's office because they require special equipment, but samples can be sent to special testing laboratories. These tests cannot determine exactly how much naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene you were exposed to or predict whether harmful effects will occur. If the samples are collected within a day or two of exposure, then the tests can show if you were exposed to a large or small amount of naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene.

Has the federal government made recommendations to protect human health?

The EPA recommends that children not drink water with over 0.5 parts per million (0.5 ppm) naphthalene for more than 10 days or over 0.4 ppm for any longer than 7 years. Adults should not drink water with more than 1 ppm for more than 7 years. For water consumed over a lifetime (70 years), the EP A suggests that it contain no more than 0.1 ppm naphthalene.

The Occupational Safety and Health Administration (OSHA) set a limit of 10 ppm for the level of naphthalene in workplace air during an 8-hour workday, 40-hour workweek. The National Institute for Occupational Safety and Health (NIOSH) considers more than 500 ppm of naphthalene in air to be immediately dangerous to life or health. This is the exposure level of a chemical that is likely to impair a worker's ability to leave a contaminate area and therefore, results in permanent health problems or death.

References

Agency for Toxic Substances and Disease Registry (A TSDR). 2005. Toxicological Profile for Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

Agency for Toxic Substances and Disease Registry ToxFAQs September 1996

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ĭ-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.

- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

POLYCHLORINATED BIPHENYLS

Division of Toxicology ToxFAQs™ February 2001

This fact sheet answers the most frequently asked health questions (FAQs) about polychlorinated biphenyls. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Polychlorinated biphenyls (PCBs) are a mixture of individual chemicals which are no longer produced in the United States, but are still found in the environment. Health effects that have been associated with exposure to PCBs include acne-like skin conditions in adults and neurobehavioral and immunological changes in children. PCBs are known to cause cancer in animals. PCBs have been found in at least 500 of the 1,598 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are polychlorinated biphenyls?

Polychlorinated biphenyls are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

PCBs have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils.

What happens to PCBs when they enter the environment?

❏ PCBs entered the air, water, and soil during their manufacture, use, and disposal; from accidental spills and leaks during their transport; and from leaks or fires in products containing PCBs.

❏ PCBs can still be released to the environment from hazardous waste sites; illegal or improper disposal of industrial wastes and consumer products; leaks from old electrical transformers containing PCBs; and burning of some wastes in incinerators.

❏ PCBs do not readily break down in the environment and thus may remain there for very long periods of time. PCBs can travel long distances in the air and be deposited in areas far away from where they were released. In water, a small amount of PCBs may remain dissolved, but most stick to organic particles and bottom sediments. PCBs also bind strongly to soil.

❏ PCBs are taken up by small organisms and fish in water. They are also taken up by other animals that eat these aquatic animals as food. PCBs accumulate in fish and marine mammals, reaching levels that may be many thousands of times higher than in water.

How might I be exposed to PCBs?

❏ Using old fluorescent lighting fixtures and electrical devices and appliances, such as television sets and refrigerators, that were made 30 or more years ago. These items may leak small amounts of PCBs into the air when they get hot during operation, and could be a source of skin exposure.

❏ Eating contaminated food. The main dietary sources of PCBs are fish (especially sportfish caught in contaminated lakes or rivers), meat, and dairy products.

❏ Breathing air near hazardous waste sites and drinking contaminated well water.

❏ In the workplace during repair and maintenance of PCB transformers; accidents, fires or spills involving transformers, fluorescent lights, and other old electrical devices; and disposal of PCB materials.

How can PCBs affect my health?

The most commonly observed health effects in people exposed to large amounts of PCBs are skin conditions such as acne and rashes. Studies in exposed workers have shown changes in blood and urine that may indicate liver damage. PCB exposures in the general population are not likely to result in skin and liver effects. Most of the studies of health effects of PCBs in the general population examined children of mothers who were exposed to PCBs.

Animals that ate food containing large amounts of PCBs for short periods of time had mild liver damage and some died. Animals that ate smaller amounts of PCBs in food over several weeks or months developed various kinds of health effects, including anemia; acne-like skin conditions; and liver, stomach, and thyroid gland injuries. Other effects

of PCBs in animals include changes in the immune system, behavioral alterations, and impaired reproduction. PCBs are not known to cause birth defects.

How likely are PCBs to cause cancer?

Few studies of workers indicate that PCBs were associated with certain kinds of cancer in humans, such as cancer of the liver and biliary tract. Rats that ate food containing high levels of PCBs for two years developed liver cancer. The Department of Health and Human Services (DHHS) has concluded that PCBs may reasonably be anticipated to be carcinogens. The EPA and the International Agency for Research on Cancer (IARC) have determined that PCBs are probably carcinogenic to humans.

How can PCBs affect children?

Women who were exposed to relatively high levels of PCBs in the workplace or ate large amounts of fish contaminated with PCBs had babies that weighed slightly less than babies from women who did not have these exposures. Babies born to women who ate PCB-contaminated fish also showed abnormal responses in tests of infant behavior. Some of these behaviors, such as problems with motor skills and a decrease in short-term memory, lasted for several years. Other studies suggest that the immune system was affected in children born to and nursed by mothers exposed to increased levels of PCBs. There are no reports of structural birth defects caused by exposure to PCBs or of health effects of PCBs in older children. The most likely way infants will be exposed to PCBs is from breast milk. Transplacental transfers of PCBs were also reported In most cases, the benefits of breast-feeding outweigh any risks from exposure to PCBs in mother's milk.

How can families reduce the risk of exposure to PCBs?

❏ You and your children may be exposed to PCBs by eating fish or wildlife caught from contaminated locations. Certain states, Native American tribes, and U.S. territories have issued advisories to warn people about PCB-contaminated fish and fish-eating wildlife. You can reduce your family's exposure to PCBs by obeying these advisories.

❏ Children should be told not play with old appliances, electrical equipment, or transformers, since they may contain PCBs.

❏ Children should be discouraged from playing in the dirt near hazardous waste sites and in areas where there was a transformer fire. Children should also be discouraged from eating dirt and putting dirty hands, toys or other objects in their mouths, and should wash hands frequently.

❏ If you are exposed to PCBs in the workplace it is possible to carry them home on your clothes, body, or tools. If this is the case, you should shower and change clothing before leaving work, and your work clothes should be kept separate from other clothes and laundered separately.

Is there a medical test to show whether I've been exposed to PCBs?

Tests exist to measure levels of PCBs in your blood, body fat, and breast milk, but these are not routinely conducted. Most people normally have low levels of PCBs in their body because nearly everyone has been environmentally exposed to PCBs. The tests can show if your PCB levels are elevated, which would indicate past exposure to above-normal levels of PCBs, but cannot determine when or how long you were exposed or whether you will develop health effects.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 0.0005 milligrams of PCBs per liter of drinking water (0.0005 mg/L). Discharges, spills or accidental releases of 1 pound or more of PCBs into the environment must be reported to the EPA. The Food and Drug Administration (FDA) requires that infant foods, eggs, milk and other dairy products, fish and shellfish, poultry and red meat contain no more than 0.2-3 parts of PCBs per million parts (0.2-3 ppm) of food. Many states have established fish and wildlife consumption advisories for PCBs.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological profile for polychlorinated biphenyls (PCBs). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

APPENDIX H
Capital Costs

Table I-1
Cost Estimate Summary
Alternative 1: No Further Action

Item No.	Description	Capital Costs	Present Worth of O&M Costs
1	No Further Action		
TOTAL		$ -	$ -

Net Present Worth

Capital Costs	$ -
Net Present Value of O&M Costs	$ -
TOTAL NET PRESENT WORTH =	$ -

Notes:
1.) Refer to the attached pages for descriptions of the cost estimate assumptions.
2.) Present Worth of O&M costs were calculated for a 5-year duration, using a 3% return on investment.
3.) Total costs are rounded to the nearest $1,000.

ASSUMPTIONS:
1) No further action would be required at the Site.

Table I-2
Cost Estimate Summary
Alternative 2: Implementation of Site Mangement Plan

Item No.	Description	Capital Costs	Present Worth of O&M Costs
1	Develop Site Management Plan	$ 11,000	
2	Annual Inspection to verify institutional & engineering controls	$ -	$ 800
3	Annual Certification Report	$ -	$ 2,000
		$ -	
TOTAL		$ 11,000	$ 2,800

Subtotal	$ 11,000
Contingency/Administration Cost (20%)	$ 2,200
Net Present Worth	
Capital Costs	$ 13,200
Net Present Value of Annual O&M Costs	$ 70,000
TOTAL NET PRESENT WORTH =	$ 83,200

Notes:
1.) Refer to the attached pages for cost estimate assumptions.
2) Total costs are rounded to the nearest $1,000.

ASSUMPTIONS:
1) Site Manangement Plan (SMP) to be developed based on NYSDEC template.
2) SMP and its requirements will need to be implemented for 30 yrs.
3) Institutional and engineering controls to be covered by SMP include soil and groundwater.
4) Inspection and certification requirements are to be conducted by third engineering firm.
5) One annual inspection to be completed to fulfill requirement of SMP that the institutional and engineering controls implemented remain in place and effective.
6) One annual Periodic Review Report will be submitted annually.
7) Costs associated with annual inspection and Periodic Review Report are considered to the O&M costs assiciated with the implementation of the SMP.
8) Contingency/Administration cost to cover costs inccured by the facility as part of implementation of the SMP.

ESTIMATED INSTALLATION COSTS - Implementation of a Site Management Plan

NO.	ITEM	ESTIMATED QUANTITY	UNIT (EA, LF, LS)	UNIT PRICE	ESTIMATED COST
1	SMP Development (average labor cost per hour)	90	HR	$100.	$9,000
2	Preproduction, shipping and communication costs	1	LS	$1,000.	$1,000
3	Project Management Time	8	HR	$125.	$1,000
				SUBTOTAL INSTALLATION COSTS:	$11,000
				TOTAL INSTALLATION COST	**$11,000**

ESTIMATED ANNUAL O & M COSTS

NO.	ITEM	ESTIMATED QUANTITY	UNIT (EA, LF, LS)	UNIT PRICE	ESTIMATED COST
1	Annual inspection to verify institutional and engineering controls are in place				
	and effective.	8	hours	$100.	$800
2	Annual Periodic Review Report preparation.	1	lump sum	$2,000.	$2,000
				SUBTOTAL O & M COSTS:	$2,800
				CONTINGENCY COSTS 20.0%	$560
				TOTAL O & M COSTS:	**$3,360**

ADDITIONAL COMMENTS

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GZA	Computed By
*	Checked By
*	Approved By

ESTIMATED NET PRESENT VALUE

ITEM	COST
CAPITAL COST	$11,000
5-YEAR NPV	$25,991
10-YEAR NPV	$38,359
30-YEAR NPV	$69,659

NPV RATES:

6.00% DISCOUNT RATE

2.00% INFLATION RATE

Table I-3
Cost Estimate Summary
Alternative 3: Soil & Groundwater Removal and Off-Site Disposal

Item No.	Description	Capital Costs	Present Worth of O&M Costs
1	Waste Characteristic Coordination, Sampling and Analysis	$6,000	$ -
2	Soil Excavation, Off-Site Disposal and Backfilling Activities	$ 248,000	$ -
3	Groundwater Containerization, Sampling and Disposal	$ 15,000	$ -
4	Excavation Field Oversight and Management	$ 18,000	$ -
5	Final Reporting	$ 5,000	$ -
TOTAL		$ -	$ -

Net Present Worth

Capital Costs	$292,000
15% Contingency Cost	$43,800
Net Present Worth of Annual O&M Costs	$ -
TOTAL NET PRESENT WORTH =	$335,800

Notes:
1) Refer to the attached pages for descriptions and details of the cost estimate.
2) Total costs are rounded to the nearest $1,000.
3) Estimated unit rates based on RS Means 2011 - Site Work & Landscape Cost Data unless otherwise noted.
4) City location factor of 0.982 applied to RS Means 2011 unit rates for Niagara Falls, New York.

ASSUMPTIONS:
1) Assumed area of excavation totals about 20,500 square feet (sf).
2) Excavation will include soil from approximately 0 to 4 feet bgs with total estimated volume of 3,034 cubic yards (cy).
3) Excavator with 2 cy bucket will directly load non-hazardous soil into dump trucks for delivery to disposal facility.
4) Disposal facility for non-hazardous soil within 15 mile of site for 25 cy capacity trucks for 2.5 hr round trip travel.
5) Clean structural fill source located within 5 miles of site. Backfill will be placed directly into excavation.
6) 105 hp dozer and vibratory roller to spread and compact structural fill in 12-inch lifts.
7) Approximately 4 days to excavate soil and 3 days to backfill and compact.
8) Field oversight done at 8-hrs per day and project management at about 15% of field oversight time.
9) Groundwater volume of about 92,000 gallons containerized in 5 approximate 20,000 gallon frac-tanks.
10) Containerized groundwater to be discharged into City of Niagara Falls sanitary sewer after authorization.
11) Frac-tank daily rental rate includes costs for delivery, pick up and clean out.
12) Waste charicteristic unit rates include coordination, soil sample collection, field oversight and laboratory analysis
13) Up to 20 soil samples collected for confirmatory analysis including VOCs, SVOCs, PCBs and metals.

ESTIMATED INSTALLATION COSTS - Soil & Groundwater Removal and Off-Site Disposal

NO.	ITEM	ESTIMATED QUANTITY	UNIT (EA, LF, LS)	UNIT PRICE	ESTIMATED COST
1	Mobilization / Demobilization of heavy machinery (RSM 01 54 36 0020)	6	Ea	$228.81	$1,373
2	Excavation and direct load with 2 cy bucket (RSM 31 23 16.42 0260 plus 15%)	3034	CY	$2.02	$6,129
3	Transportation to disposal facility (average of RSM 02 81 20 1260 & 1270)	1830	Mile	$5.35	$9,791
4	Non-hazardous soil disposal (Engineering Judgment and Knowledge of local costs)	3034	CY	$42.	$127,428
5	Imported clean structural fill (RSM 31 05 16.10 0600 and 0900)	3034	CY	$32.75	$99,364
6	Bulldozer to spread structural fill (RSM 31 23 23.14 3000)	3034	CY	$0.95	$2,882
7	Compaction with vibratory roller and 3 passes (RSM 31 23 23.23 5080)	3034	CY	$0.37	$1,123
8	Waste characteristic analysis (4 total samples based on engineering judgment)	4	Ea	$1,500.	$6,000
9	Confirmatory soil sampling for VOCs, SVOCs, PCBs, metals	20	Ea	$400.	$8,000
10	Field oversight labor (based on 8-hr day)	64	Hr	$80.	$5,120
11	Project Management (assume 15% of field staff)	9.5	Hr	$125.	$1,188
12	Equipment, shipping, communication, misc.	8	Day	$400.	$3,200
13	20,000 gallon Frac-tank rental assume 5 total for 14 days	70	Day	$100.	$7,000
14	Groundwater analysis of Frac-tank	5	Ea	$500.	$2,500
15	Permit, coordination, equipment, labor to discharge groundwater to sanitary sewer	5	Ea	$1,000.	$5,000
16	Final Report for Soil and groundwater off-site disposal	1	Ea	$5,000.	$5,000

SUBTOTAL INSTALLATION COSTS: $291,098

TOTAL INSTALLATION COST **$291,098**

ESTIMATED ANNUAL O & M COSTS

NO.	ITEM	ESTIMATED QUANTITY	UNIT (EA, LF, LS)	UNIT PRICE	ESTIMATED COST

SUBTOTAL O & M COSTS: $0

CONTINGENCY COSTS 20.0% $0

TOTAL O & M COSTS: **$0**

ADDITIONAL COMMENTS

*

*

GZA	Computed By
*	Checked By
*	Approved By

ESTIMATED NET PRESENT VALUE

ITEM	COST
CAPITAL COST	$291,098
5-YEAR NPV	$291,098
10-YEAR NPV	$291,098
30-YEAR NPV	$291,098

NPV RATES:

6.00% DISCOUNT RATE

2.00% INFLATION RATE

GZA GeoEnvironmental of New York
Engineers and Scientists

Page No. 1

Project Niagara Falls Armed Forces Reserve Center		File No. 21.0056522.20	
Location Niagara Falls, NY	Date 12/7/11	By D. Troy	
Subject Soil and Groundwater Removal & Off-Site Disposal	Checked 12/7/11	By CZB	
Based on Previous soil/water analytical results	Revised	By	

Assume Excavation to include soils from 0-4 ft BGS in Area shown on Fig —
Assume Soils are not Hazardous and can be directly loaded into Dump trucks for delivery to disposal facility (Assume 10-15 miles). No stockpiling will be required

Assume backfill material delivered and directly placed into excavation — No stockpiling
Soils placed in 12-inch lifts spread with Dozer and compacted with 10-ton Roller

Assume No Asphalt pavement after Excavation/Backfilling. No utilities to be encountered/repaired

Assume waste characteristic sampling at frequency of ONE per 2500 ton of soil

Area 1 = 145' x 65' = 9425 ft²
Area 2 = 195' x 50' = 9750 ft²
Area 3 = ½ x 35' x 75' = 1312.5 ft²

Assume 0-4 ft soil removed from EXCAVATION

$V_1 = (9425\ ft^2 \times 4\ ft)/(27\ ft^3/cy) = 1396\ cy$

$V_2 = (9750\ ft^2 \times 4\ ft)/27 = 1444\ cy$

$V_3 = (1312.5\ ft^2 \times 4\ ft)/27 = 194\ cy$

Total Volume = 3034 cy

Convert to tonnage $3034\ cy \left(\frac{1.6\ ton}{cy}\right) \cong 4850\ ton$

Following Costs are BASED ON RS MEANS 2011 - SITE WORK AND LANDSCAPE COST DATA.
NIAGARA FALLS LOCATION FACTOR = 98.2 %

EXCAVATOR: Assume 2cy bucket, track mounted excavator. Excavated soil placed directly into Dump trucks for transport to disposal facility

MOB/DEMOB 01 54 36 0020 $233/mob $233 x 2 x 0.982 = $457.61

SAY $ 460

Excavation: 31 23 16.42 0260 $1.76/cy x 3034cy x 0.982 x 1.15

31 23 16.42 0820 (Add 15% for direct load into trucks) = $ 6030

MEANS estimate 165 cy/hr = Assume 100 cy/hr to directly load. (Engineering judgement)

Capacity = $3034\ cy \frac{hr}{100\ cy} = \frac{30.4\ hr}{8\ hr}\ day = 3.8\ day$ — SAY 4 day to Excavate.

WASTE SOIL TRANSPORTATION / DISPOSAL

Assume soil is NON Hazardous and can be disposed @ municipal or C/D Landfill

Transportation: Assume truckload = 25 cy or 18 tons

Value ranges between 02 81 20 1260 and 1270 = $3.85/mile to $7.05/mile

Assume average ∴ (3.85 + 7.05)/2 = $5.45/mile

Assume disposal facility within 15 miles.

Total yards: 3034/25 = 122 trucks × $5.45/mile × 15 mile/truck × 1.982 = $9793.9

(Assumes 30 trucks per day with ONE Excavator) = SAY $9800

Disposal RSMEANS 02 65 10 2050/2055 range between $140 & $440/cy

Assume soil is NON Hazardous and can be used as daily cover @ landfill

BASED on Engineering Judgement and Knowledge of Area assume $55/cy : $55/cy × 3034 cy = $166870

SAY 167,000

CLEAN IMPORTED BACKFILL

Assume clean imported Select structural fill to be placed/compacted - EXCAVATION
Assume Quarry Source within 5-10 miles of site.

RSMEANS 31 05 16.10 0600 $28.50/cy

$28.50/cy × 0.982 × 3034 cy = $84912.56

Add $4.87/5 mile haul: Assume 3034 × $4.87 × 0.982 ≈ $14509.6

SAY: Add total $

SAY 99,422 TOTAL

Project		File No.
Location	Date	By
Subject	Checked	By
Based on	Revised	By

Compaction of Backfill soils.

Assume imported clean fill dumped directly into excavation. Fill spread with Dozer to 12-inch lifts, compacted with 10-Ton vibratory roller.

DOZER - Assume 105 HP. Place in 14" loose lifts - cu
Structural Backfill = 31 23 23.14 3000 - 50 ft sand and gravel

$0.97 L.C.Y ∴ $0.97/cy × 0.982 × 3034 cy = $2890

Say $3000

Daily output = 1350 lcy/day ∴ 3034 cy / 1350 lcy = 2.24 day

Assume 3 days to spread

Compaction: Assume smooth drum roller - 3 passes minimum 12" lifts

31 23 23.23 5080 = $0.38/ECY × 0.982 × 3034 = $1132

3500 ECY/day

Assume 3 days due to dozer requirements

WASTE CHARACTERISTICS SAMPLING

Assume full suite of analysis including TCLP VOCs/SVOCs/metals
Total PCB's ≈ $1500/sample

Assume 1 sample @ 500 cy, 1@ 1000 cy × 1/25

SAY 4 samples total = 1500×4 = $6000

Mobilization Fee DOZER / Compactor ~ $ 233 × 4 × 0.982 = $915

SAY $1000

GZA GeoEnvironmental of New York
Engineers and Scientists

Page No. 4

Project		File No.
Location	Date	By
Subject	Checked	By
Based on	Revised	By

OVERSIGHT FOR EXCAVATION OF SOIL.

Assume Excavation ≈ 100 cy/hr ∴ $\frac{3034 cy}{100 cy/hr} \times \frac{1 day}{8 hr} = 3.8$ days SAY 4 Days

Assume R/T Soil disposal time = 2.5 hrs

$\frac{3034 cy}{4 days} = 758 \frac{cy}{day} \quad \frac{Truck}{25 cy} = 30 \frac{trucks}{day}$ ∴ $30 \frac{truck}{2.5 hr} = 12$ trucks needed/Day

Dozer capacity = 1350 LCY/day ∴ 3034/1350 = 2.25 days SAY 3 days.

Compactor — SAY 3 days due to capacity of Dozer.

Labor Oversight - Assume 4 + 3 = 7 days total @ 8 hr/day = 56 hrs ✓

PM oversight = 15% Field Staff ≈ 8 hrs ✓

Equipment includes OVM, Dust monitor, PPE, shipping etc = $200/day ✓

Confirmatory Sampling

GROUNDWATER COLLECTION / SAMPLING AND DISPOSAL.

Based on previous field investigations:
Assume Eastern half of excavation will encounter ground water from 2-4 ft BGS
western portion of excavation will have minimal g.w infiltrate to 4 ft BGS.

To account for infiltration of G.W from areas outside of excavation areas assume total volume of G.W as follows:

Excavation Area x 2 ft x 0.3 (porosity) =

$20{,}500\ ft^2 \times 2ft \times 0.3 = 12300\ ft^3 \times \frac{7.48 gal}{cf} \approx 92{,}000$ gallons

Assume Containerize in Frac tank, sample and dispose to N.F sanitary sewer.
Assume G.W will be able to be discharged to sanitary for a fee.

Baker tank approx 20,000 gallons ∴ Assume 5 tanks required

Sampling each tank about $500 ∴ $2500 cost for analysis

Assume $100 / day Frac tank rental – Assume 2 weeks for 5 tanks

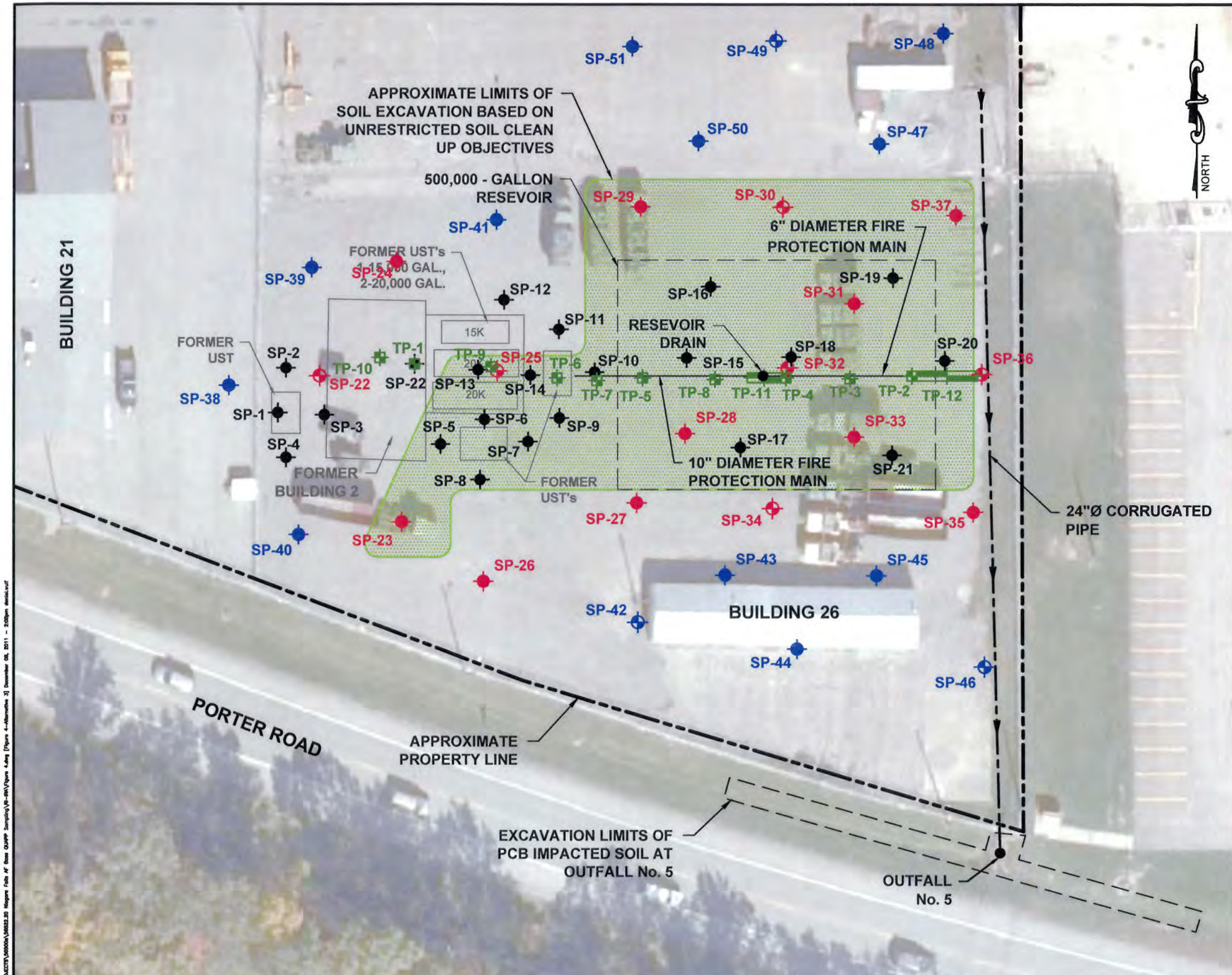
14 days x 5 x $100/day = $7,000

Assume $2000 for coordination, permit, equipment for discharge of containerized g.w into Niagara Falls sanitary sewer.

TOTAL G.W costs:

$7,000
+ 2500
+ 2000
11500

Assume $12,000



LEGEND:

SP-19	APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE COMPLETED ON DECEMBER 6 & 7, 2010 (21 LOCATIONS)
TP-3	APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT COMPLETED ON DECEMBER 7 & 8, 2010 (12 LOCATIONS)
TP-1 SP-22	APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE SP-22 CONVERTED TO TEST PIT, TP-1 DUE TO SUBSURFACE REFUSAL FOLLOWING SEVERAL ATTEMPTS COMPLETED ON DECEMBER 7, 2010.
SP-26	APPROXIMATE LOCATION AND DESIGNATION OF PRIMARY SOIL PROBE COMPLETED IN SEPTEMBER 2011 (10 LOCATIONS)
SP-34	APPROXIMATE LOCATION AND DESIGNATION OF PRIMARY SOIL PROBE COMPLETED IN SEPTEMBER 2011 WITH TEMPORARY PIEZOMETER INSTALLED (6 LOCATIONS)
SP-40	APPROXIMATE LOCATION AND DESIGNATION OF SECONDARY SOIL PROBE COMPLETED IN SEPTEMBER 2011 (11 LOCATIONS)
SP-42	APPROXIMATE LOCATION AND DESIGNATION OF SECONDARY SOIL PROBE COMPLETED IN SEPTEMBER 2011 WITH TEMPORARY PIEZOMETER INSTALLED (3 LOCATIONS)
	APPROXIMATE LIMITS OF SOIL EXCAVATION BASED ON UNRESTRICTED SOIL CLEAN UP OBJECTIVES

NOTES:

1. BASE MAP ADAPTED FROM AN AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.bing.com/maps/, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

0 20 40 80
SCALE IN FEET

NO.	ISSUE/DESCRIPTION	BY	DATE

NIAGARA FALLS AFRC
9400 PORTER ROAD
NIAGARA FALLS, NEW YORK

REMEDIAL INVESTIGATION AND INTERIM REMEDIAL ACTION

ALTERNATIVE 3
SOIL AND GROUNDWATER REMOVAL AND OFF-SITE DISPOSAL

PREPARED BY:
GZA GeoEnvironmental of N.Y.
Engineers and Scientists
535 WASHINGTON STREET 11th FLOOR
BUFFALO, NEW YORK 14203
(716) 685-2300

PREPARED FOR:
PARS ENVIRONMENTAL, INC

PROJ MGR: CZB	REVIEWED BY:	CHECKED BY:	FIGURE
DESIGNED BY:	DRAWN BY: DEW	SCALE: AS SHOWN	4
DATE NOVEMBER 2011	PROJECT NO. 21.0056522.20	REVISION NO.	

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

APPENDIX I
PUBLIC NOTICE AD PROOF

THE BUFFALO NEWS

-Ad Proof-

This is the proof of your ad scheduled to run on the dates indicated below.

Please confirm placement prior to deadline, by contacting your account rep at (716) 849-5535.

Date:	**08/17/11**
Account #:	**525230**
Company Name:	**PARS Environmental Incc**
Contact:	
Address:	**500 Horizon Dr. Suite 540** **Robbinsville, NJ 08691**
Telephone:	**(609) 890-7277**
Fax:	

Ad ID:	747761
Start:	08/21/11
Stop:	08/21/11
Total Cost:	$380.92
# of Lines:	39
# of Inserts:	1.07
Ad Class:	750
Account Rep:	Marcy Lombardo
Phone #	(716) 849-5535
Email:	mlombardo@buffnews.com

Run Dates:
Buffalo News (P1) 08/21/11
Web-BuffNews/Buffalo.com (P6) 08/21/11

Ad proof

NOTICE OF 30-DAY PERIOD FOR PUBLIC COMMENT

The Department of the Army has initiated a Remedial Investigation at the Niagara Falls Armed Forces Reserve Center, 9400 Porter Road, Niagara Falls, NY. In compliance with Section 120(h) of the Comprehensive Environmental Response, Compensation and Liability Act, the Army has prepared a document repository for public review and comment at the Niagara Falls Public Library 1425 Main Street, Niagara Falls, NY 14305, 716-286-4894.

Written comments shall be received and considered until September 23, 2011, and should be directed to: Ms. Laura Dell'Olio via e-mail, laura.dellolio@usar.army.mil or at the following address: 99th RSC-DPW-ENV, 5231 South Scott Plaza, Joint Base McGuire-Dix-Lakehurst, NJ, 08640.

THE BUFFALO NEWS

-Affidavit-

Lisa Stephan-Kozlowski of the City of Buffalo, New York, being duly sworn, deposes and says that he/she is Principal Clerk of THE BUFFALO NEWS INC., Publisher of THE BUFFALO NEWS, a newspaper published in said city, that the notice of which the annexed printed slip taken from said newspaper is a copy, was inserted and published therein **1** times, the first insertion being on **08/21/2011** and the last insertion being on **08/21/2011**

Lisa Stephan-Kozlowski

Dates Ad Ran:

Buffalo News (P1) 08/21/11

Sworn to before me this 25th day of, August 2011

Shukriyyah Hawkins

Notary Public, Erie County, New York

SHUKRIYYAH HAWKINS
Notary Public, State of New York
Qualified in Erie County
My Commission Expires 9/30/13

...ust
...),

...M-7PM*
...AM-6PM*
...FF
...12PM-5PM*
...OFF
...3 @ 10AM
...CTION!
...ds of Rugs in
...s, Styles, and
...Traditional, Con-
...rary, Transitional,
...al, Hand Knotted,
...ers, Braided, TONS
...Samples, Artwork,
...illows, Pads, Acces-
...ries & **So Much More!**
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Displays (20 Arms Each),
Nourison & Masland Dis-
plays, Racks, Pallet Rack-
ing, Rolling Ladders, etc.
to be sold at auction.

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Restaurant Equipment AUCTION! Former Santora's Location 600 Delaware St, Tonawanda, NY Wed. Aug. 24 @ 10AM **Restaurant Equipment:** Walk In Cooler, Mini Walk In Freezer, (2) Pizza Ovens, Range Guard System, (2) Hoods, Refrigerator, Sub Units, Two Burner Flat Grill Oven, Chargrill, Pitco Fryers, 2 Dr. Keg Cooler, Warming Box, Warmers, Grease Trap, Microwave, 3 Bay Sink, Slicer, Stainless Prep Stands & Work Tables, Scale, Shelves, Tray Racks, (6) Bar Stools, (7) Sect. of Booth, **Office Equipment:** LG & Dynex Flat Screen TVs, Camera System, Credit Card Machine, Slip Printers, Phones & a KSU, Hanging Lights, Signs, Décor **& SO MUCH MORE! See web for more info!**

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731 Lost

LOST Cat, Lg., med. grey, E. River Rd. bet. Ransom & Whitehaven. 560-9603

LOST: Cat, orange male tabby, Fri., Aug. 12, North Buffalo area, may answer to "Kiwi." 837-4839.

REWARD

LOST: Dog, Erie County Fair Camping area, red Merle Border Collie female, 1 blue eye, people-shy. Call 330-605-9696

741 Voice Personals

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Erie County Medical Center Corporation
Purchasing G-140
462 Grider Street
Buffalo, New York 14215

REQUEST FOR PROPOSAL

will be received at the above address.

RFP # 21121

FLEXIBLE SPENDING ACCOUNT SERVICES & COBRA PLAN ADMINISTRATION

APPLICATION TO OPEN AUGUST 31, 2011 @ 10:00 AM

In accordance with the specifications on file at the above address. ECMCC reserves the right to reject any or all "RFP'S" and waive any Informalities. Any inquiries contact ECMCC Purchasing (716) 898-3250

Notices

NOTICE OF 30-DAY PERIOD FOR PUBLIC COMMENT

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Written comments shall be received and considered until September 23, 2011, and should be directed to: Ms. Laura Dell'Olio via e-mail, laura.dellolio@usar.army.mil or at the following address: 99th RSC-DPW-ENV, 5231 South Scott Plaza, Joint Base McGuire-Dix-Lakehurst, NJ, 08640.

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Now arrange the circled letters to form the surprise answer, as suggested by the above cartoon.

PRINT YOUR ANSWER IN THE CIRCLES BELOW

THE

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Crossword Solution

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EAGAN FAVOR PRIZE OMAHA
ERODE ANIMA PADRE FOXES
STREAMLINES AHEADOFTIME
TRILLS PALMS BOSE
GEMS TEA XLS FEN SUBS
RTE PEN LACE RODAN CEP
ENAMOR COMA STIRS OGLER
GALAS EATIN CUTE ROMANY
CHAGRIN REBA ESA
KOBE NAH ONENESS DENNED
GNU DODO ICI EMTS WOE
BAZAAR PEACOCK QUA MTNS
UMA GWEN LOUNGER
DVORAK WELL NISEI KETCH
LAVAS MESSY INTL MEDIUM
ILE KRAIT FLEE WAD EEO
VEND OIL DAB AIL ODDS
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PATCHY INFUSE ENGAGE

741786

APPENDIX J
NYSDEC COMMENTS

Tom Dobinson

From: Dellolio, Laura A CTR CTR USAR 99TH RRC -NA- <laura.dellolio@usar.army.mil>
Sent: Tuesday, September 06, 2011 9:36 AM
To: Michael Moore; Tom Dobinson
Subject: FW: sampling and analysis plan for Niagara Falls AFRC (UNCLASSIFIED)
Signed By: laura.dellolio@usar.army.mil

Follow Up Flag: Follow up
Flag Status: Flagged

Classification: UNCLASSIFIED
Caveats: NONE

Here's the official comments from the State. I don't see anything eye raising.

Thank you,
Laura Dell'Olio
609-562-7661

-----Original Message-----
From: Chek Ng [mailto:cbng@gw.dec.state.ny.us]
Sent: Friday, September 02, 2011 4:34 PM
To: Dellolio, Laura A CTR CTR USAR 99TH RRC -NA-
Subject: Re: sampling and analysis plan for Niagara Falls AFRC (UNCLASSIFIED)

Laura,

It was nice meeting you as well. I am including the following comments for the sake of completeness. In the case where this plan will not be revised, please make a note of the comment and add it in the investigation report. Please feel free to forward this to GZA (Consultant). A copy of this email has been made into the permanent electronic record in the State.

a) Page 7, Section 3.2: It is mentioned that the depth of soil borings will be based on field observations. From the meeting, it was my understanding that the soil boring will be done until the water table, which could vary from location to location due to a perched groundwater table.

b) Page 16, Section 6.2.2: Please add that the MS/MSD duplicates wil be collected at a frequency of 5% (1 in 20 samples).

c) Page 17, Section 7.2: The State's Part 375 Soil Cleanup Guidance separates out commercial and industrial use. As such, the COPCs need to be compared to either commercial OR industrial standards. From my discussion, it seems that the end use will most likely be industrial, so the

contamination numbers should be compared to industrial use.

d) As mentioned in your email below, Outfall 4 sediment will be sampled for VOCs, SVOCs, metals, and PCB. Please also mention in the final report that the Outfalls 1, 2 and 3 will not be sampled due to accessibility issues caused by the Cayuga Creek and the outfall's position beneath the river water line.

e) Analysis of soil in the report should also mentioned that there are fill material that was brought from the nearby quarry into the site which may caused high readings for certain metals in the soil. This should nullify any concerns for the high metal content in the soil.

Regards,

Chek Beng Ng, P.E.
Environmental Engineer 2
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 11th Floor
Albany NY 12233-7015
Phone: (518) 402-9620
Fax: (518) 402-9627>>> "Dellolio, Laura A CTR CTR USAR 99TH RRC -NA-" <laura.dellolio@usar.army.mil> 9/1/2011 10:44 AM >>>
Classification: UNCLASSIFIED
Caveats: NONE

Hello Chek,

Good to make your acquaintance last week.

I was wondering if you were going to be providing formal comments to the work plan. We have added a sediment sample for outfall 4 to the workplan for analysis of VOCs, SVOCs, metals, and PCBS. Were there any other comments?

Thank you,

Laura Dell'Olio
Installation Restoration Program Coordinator

99th RSC, DPW Environmental Division
Contractor, PB&A Inc.
609-562-7661 (office)
919-270-7376 (cell)

Please take a moment and tell us how we are doing...

http://ice.disa.mil/index.cfm?fa=card&service_provider_id=118861&site_id=961

&service_category_id=32

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A, 11th Floor
625 Broadway, Albany, New York 12233-7015
Phone: (518) 402-9625 • **Fax:** (518) 402-9627
Website: www.dec.ny.gov

Joe Martens
Commissioner

March 23, 2012

Mr. Michael Moore, CPG
Senior Project Manager
PARS Environmental, Inc.
500 Horizon Drive, Suite 540
Robbinsville, NJ 08691

Re: Remedial Investigation/Interim Remedial Action Report and Human Health Risk Assessment Report for Niagara Falls Armed Forces Reserve Center (Site ID: 932152)

Dear Mr. Moore:

The New York State Department of Environmental Conservation and the New York State Department of Health (State) is in receipt of the above report dated January 24, 2012.

Technical and editorial comments are provided in the attachment to this letter, and should be addressed prior to the final issuance of this document.

Please contact me at (518) 402-9620 or cbng@gw.dec.state.ny.us. should you have any questions.

Sincerely yours,

Mr. Chek Beng Ng, P.E.
Environmental Engineer 2
Remedial Bureau A, Section C

Attachment

cc: J. Swartwout, DEC
L. Dellolio, USAR
N. Freeman, DOH

COMMENTS FOR THE REMEDIAL INVESTIGATION/INTERIM REMEDIAL ACTION REPORT AND HUMAN HEALTH RISK ASSESSMENT NIAGARA FALLS ARMED FORCES RESERVE CENTER (SITE ID: 932152)

1. Page 5, Section 2.7: Were any surface and/or subsurface soil samples taken from Outfall No. 5? If so, please state what was detected, and the concentrations of chemicals observed that was above the Part 375 Unrestricted and Commercial Cleanup Levels.

2. Page 5, Section 2.7: At the end of the second and third paragraphs, please state what were the 'low' and 'detectable' levels of PCB. A range of values and the detected concentrations would suffice.

3. Page 6, Last Paragraph: From previous conversation, it was thought that the fill material was brought in from a nearby quarry? It would be helpful to state the origin of the fill in this paragraph. Also, if the site was NOT used for any activities that would cause any kind of metal contamination (i.e. metal fabrication or machining), it would helpful to state the fact here.

4. Figure 5: It is suggested that a 'spider map' be created to show the detected soil and groundwater concentrations on the Figure themselves, pointing to the location where they were detected. Bolded numbers could be used to indicate exceedance above Commercial Cleanup Levels for ease of viewing and interpretation.

5. In the Tables section (or in the corresponding text), please elaborate what the sample designations. For instance, SP-22-10-12 means soil boring at location SP-22 from 10 inches to 12 inches below ground surface?

6. Page 24, Section 7.6.2: It should be mentioned that since the facility is fenced in, trespassing into the property is limited to only building personnel and not the general public.

7. Page 45, Section 9.1.1: The document indicates that SVOC's detected in the drainage swale near Outfall 4 are commonly found in ditches that receive storm water runoff from asphalt paved surfaces. It should be confirmed that Outfall 4 only receives surface water from the AFRC parking lot and that no other discharges (i.e. floor drains in existing building) are contributing to the outflow of Outfall 4.

4/9/2012
Response to NYSDEC and DOH comments from letter dated March 23, 2012.

1. Add statement that post-excavation samples from Outfall No. 2 and the drainage swale were below the Maximum Contaminant Level of 1 mg/kg, which was established by NYSDEC.

2. Added detected PCB concentrations to report.

3. Add statement to report about the suspected origin of the fill material.

4. Adding tables to the figures showing detected soil and groundwater contaminants will result in figures that are cluttered because of the close proximately of the boring locations.

5. A description of the sample designations is included in Table 1. Also, added a sentence to Section 3.1.1 regarding sample designations.

6. Added a sentence to Section 7.6.2 about the property being secured by a fence and locked gates.

7. Added a sentence to Section 9.1.1 about storm water runoff to Outfall No. 4.

APPENDIX D

RECORD OF NON-APPLICABILITY

GENERAL CONFORMITY – RECORD OF NON-APPLICABILITY

Project/Action
Name: Implementation of BRAC 05 Realignment at Niagara Falls U.S. Army Reserve Center, WA

Project/Action
Point of Contact: Jeffrey M. Hrzic
Environmental Division Chief
99th Regional Support Command
Fort Dix, New Jersey
609.562.7677

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The General Conformity Rule applies to federal actions occurring in regions designated as being in non-attainment for the National Ambient Air Quality Standards (NAAQS) or attainment areas subject to maintenance plans (maintenance areas). Threshold (*de minimis*) rates of emissions have been established for federal actions with the potential to have significant air quality impacts. If a project/action located in an area designated as non-attainment exceeds these *de mimimis* levels, a general conformity analysis is required. Niagara County is designated as a basic ozone (8-hour) non-attainment area in an ozone transport region, thus the NO_x and VOC thresholds apply.

A General Conformity Analysis of this project/action is not required because:

Total direct and indirect emissions from this project/action have been estimated at:

NO_X: 1.667 tons; VOC: 2.596 tons

and are below the *de minimis* levels established in 40 CFR 93.153 (b) of:

NO_x: 100 tons; VOC: 50 tons;

Furthermore, the project/action is not considered regionally significant under 40 CFR 93.153 (i).
Niagara County is in attainment for criteria pollutants PM_{10}, $PM_{2.5}$, CO, SO_2 and Pb and therefore these pollutants are not subject to conformity review.

Supporting documentation and emissions estimates can be found in Section 4.1.3 of the Environmental Assessment document.

Supporting documentation and emissions estimates:

( ) Are Attached
(X) Appear in the NEPA Documentation
( ) Other (Not Necessary)

_____ _____
Jeffrey Hrzic Date
Environmental Division Chief
99th Regional Support Comman

APPENDIX E

ECONOMIC IMPACT FORECAST SYSTEM (EIFS) MODEL

ECONOMIC IMPACT FORECAST SYSTEM (EIFS) MODEL

SOCIOECONOMIC IMPACT ASSESSMENT

Socioeconomic impacts are linked through cause-and-effect relationships. Military payrolls and local procurement contribute to the economic base for the region of influence (ROI). In this regard, the BRAC closure action proposed in Niagara, New York would have a multiplier effect on the local and regional economy. With the Proposed Action, direct jobs would be created, generating new income and increasing personal spending. This spending generally creates secondary jobs, increases business volume, and increases revenues for schools and other social services.

THE ECONOMIC IMPACT FORECAST SYSTEM

The U.S. Army, with the assistance of many academic and professional economists and regional scientists, developed the Economic Impact Forecast System (EIFS) to address the economic impacts of NEPA-requiring actions and to measure their significance. As a result of its designed applicability, and in the interest of uniformity, EIFS should be used in NEPA assessments for BRAC. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in the EIFS model are simple and easy to understand, but still have firm, defensible bases in regional economic theory.

EIFS is developed under a joint project of the U.S Army Corps of Engineers (USACE), the Army Environmental Policy Institute (AEPI), and the Computer and Information Science Department of Clark Atlanta University, Georgia. EIFS is an on-line system, and the EIFS Web application is hosted by the USACE, Mobile District. The system is available to anyone with an approved user-id and password. University staff and the staff of USACE, Mobile District are available to assist with the use of EIFS.

The databases in EIFS are national in scope and cover the approximately 3,700 counties, parishes, and independent cities that are recognized as reporting units by federal agencies. EIFS allows the user to define an economic ROI by identifying the counties, parishes, or cities to be analyzed. Once the ROI is defined, the system aggregates the data, calculates multipliers and other variables used in the various models in EIFS, and prompts the user for forecast input data.

THE EIFS MODEL

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from Army-related changes in local expenditures or employment. In calculating the multipliers, EIFS uses the economic base model approach, which relies on the ratio of total economic activity to basic economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the ROI or by federal activities (such as military installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier) and sufficiently stable so that future changes in economic activity can be forecast. This technique is especially appropriate for estimating aggregate impacts and makes the economic base model ideal for the EA and EIS process.

The multiplier is interpreted as the total impact on the economy of the region resulting from a unit change in its base sector; for example, a dollar increase in local expenditures due to an expansion of its military installation. EIFS estimates its multipliers using a location quotient approach based on the concentration of industries within the region relative to the industrial concentrations for the nation.

The user inputs into the model the data elements which describe the Army action: the change in expenditures, or dollar volume of the construction project(s); change in civilian or military employment; average annual income of affected civilian or military employees; the percent of civilians expected to relocate due to the Army's action; and the percent of military living on-post. Once these are entered into the EIFS model, a projection of changes in the local economy is provided. These are projected changes in sales volume, income, employment, and population. These four indicator variables are used to measure and evaluate socioeconomic impacts. Sales volume is the direct and indirect change in local business activity and sales (total retail and wholesale trade sales, total selected service receipts, and value-added by manufacturing). Employment is the total change in local employment due to the Proposed Action, including not only the direct and secondary changes in local employment, but also those personnel who are initially affected by the military action. Income is the total change in local wages and salaries due to the Proposed Action, which includes the sum of the direct and indirect wages and salaries, plus the income of the civilian and military personnel affected by the Proposed Action. Population is the increase or decrease in the local population as a result of the Proposed Action.

THE SIGNIFICANCE OF SOCIOECONOMIC IMPACTS

Once model projections are obtained, the Rational Threshold Value (RTV) profile allows the user to evaluate the significance of the impacts. This analytical tool reviews the historical trends for the defined region and develops measures of local historical fluctuations in sales volume, income, employment, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact. The greatest historical changes define the boundaries that provide a basis for comparing an action's impact on the historical fluctuation in a particular area. Specifically, EIFS sets the boundaries by multiplying the maximum historical deviation of the following variables

Table C-1: Historical Deviation Variables

		Increase	Decrease
Sales Volume	X	100%	75%
Income	X	100%	67%
Employment	X	100%	67%
Population	X	100%	50%

These boundaries determine the amount of change that will affect an area. The percentage allowances are arbitrary, but sensible. The maximum positive historical fluctuation is allowed with expansion because economic growth is beneficial. While cases of damaging economic growth have been cited, and although the zero-growth concept is being accepted by many local planning groups, military base reductions and closures generally are more injurious to local economics than are expansion.

The major strengths of the RTV are its specificity to the region under analysis and its basis on actual historical data for the region. The EIFS impact model, in combination with the RTV, has proven successful in addressing perceived socioeconomic impacts. The EIFS model and the RTV technique for measuring the intensity of impacts have been reviewed by economic experts and have been deemed theoretically sound.

The following are the EIFS inputs and output data and the RTVs for the ROI. These data form the basis for the socioeconomic impact analysis presented in Section 4.6.

Summary of Assumptions

For purposes of running the EIFS model, the high and low estimates of incoming personnel and all five years of planned construction spending were selected to determine the maximum impact that Proposed Actions could have on the regional economy. For this action, a range of 149 – 251 new jobs could be created from the reuse. The project costs are assumed to be $1,665,300. These costs were obtained from the Reuse Plan for the property as the necessary capital improvements needed in the first five years of reuse. The impacts from project spending are shown in Tables C-2 through C-4. Table C-2 shows input to the model, C-3 shows resultant sales, income, and employment generated for the economy and the percent annual fluctuation it represents, and Table C-4 shows the annual fluctuations in RTV for the ROI above or below which the action would be considered significant.

Table C-2: Forecast Input for the EIFS Model

EIFS Report Niagara County, NY – Forecast Input		
Change In Local Expenditures	$1,665,300	$1,665,300
Change In Civilian Employment	149	251
Average Income of Affected Civilian	$42,580	$42,000
Percent Expected to Relocate	0	0
Change In Military Employment	0	0
Average Income of Affected Military	0	0
Percent of Military Living On-base	0	0
Employment Multiplier	2.73	2.73
Income Multiplier	2.73	2.73

Table C-3: EIFS Report for Niagara, NY – Forecast Output

	Forecast Output			
	149 Jobs		251 Jobs	
Employment Multiplier	2.73		2.73	
Income Multiplier	2.73		2.73	
Sales Volume – Direct	$6,156,214		$9,648,115	
Sales Volume – Induced	$10,650,250		$16,691,240	
Sales Volume – Total	$16,806,460	0.37%	$26,339,360	0.57%
Income – Direct	$6,562,201		$10,905,360	
Income - Induced	$2,197,879		$3,444,550	
Income – Total (place of work)	$8,760,080	0.18%	$14,349,910	0.29%
Employment – Direct	186		309	
Employment – Induced	64		101	
Employment – Total	250	0.26%	410	0.42%
Local Population	0		0	
Local Off-base Population	0	0%	0	0%

Table C-4: EIFS Report for Niagara County, NY – RTV Summary

RTV Summary				
	Sales Volume	Income	Employment	Population
Positive RTV	8.26%	8.33%	4.06%	1.01%
Negative RTV	-6.61%	-4.9%	-4.68%	-0.65%

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APPENDIX F

CONSULTATION LETTERS

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DEPARTMENT OF THE ARMY
HEADQUARTERS, 99TH REGIONAL SUPPORT COMMAND
5231 SOUTH SCOTT PLAZA
FORT DIX, NJ 08640-5000

JUN 23 2011

Mr. Mark Peckham
Director
New York State Historic Preservation Office
Peebles Island Resource Center
P.O. Box 189
Waterford, NY 12188-0189

Subject: Niagara Falls Army Reserve Center/AMSA #76, 9400 Porter Road, Niagara Falls, NY

Mr. Peckham,

The Defense Base Realignment and Closure (BRAC) Commission has recommended closure of the Niagara Falls United States Army Reserve Center/Area Maintenance and Support Activity #76 (Niagara Falls USARC). To implement this recommendation, the U.S. Army Reserve 99th Regional Support Command (RSC) is proposing to dispose of the USARCs to a non-Federal entity. The Army's proposed transfer of property out of Federal ownership is an undertaking that could have an effect on historic resources. The purpose of this letter is to provide you with our recently completed Historic Resource Inventory Form for review, seek your concurrence on the Army's determination of no effect, and complete consultation pursuant to Section 106 of the National Historic Preservation Act of 1996, as amended.

The Niagara Falls USARC is located on a 21.88-acre parcel on the north side of Porter Road, bordered by the Niagara Falls International Airport on the north and east, and residential and commercial areas to the south and west (see Enclosure 1, Figure 1). The site contains a total of 14 buildings, built either by the Naval Air Reserve or the Army Reserve, which are enclosed by chain-link metal fencing and surrounded by paved parking areas. The main gate leading into the center is located along the western side of the southern boundary fence along Porter Road (see Enclosure 1, Figure 2). The area of potential effect (APE), as defined in 36 CFR 800.16(d), consists of the current boundaries of the Niagara Falls USARC property, including the 14 buildings and parking, areas on the parcel.

The enclosed Historic Resource Inventory Form details the architectural survey, as well as our rationale for concluding that the Niagara Falls USARC is not eligible for the National Register of Historic Places (NRHP). A Phase IA Archeology Survey was conducted in the APE in 2007. The site was found to be disturbed, thought to have no research potential, and no additional archaeological work was recommended.

The Army has determined that the proposed undertaking will have no effect on any cultural resources eligible for the NRHP, and requests your written concurrence with our determination within 30 days from the date on this letter.

Please send your comments to: Amanda Murphy, 99th RSC DPW, 5231 South Scott Plaza, Fort Dix, NJ 08640, or by email to: amanda.w.murphy@usar.army.mil. If you have any questions please contact Ms. Murphy at 609-521-8047. Thank you in advance for your cooperation.

Sincerely,

Jeffrey M. Hrzic
Chief, Environmental Division

Enclosure: Historic Resource Inventory Form - Niagara Falls USARC/AMSA #76

DEPARTMENT OF THE ARMY
HEADQUARTERS, 99TH REGIONAL SUPPORT COMMAND
5231 SOUTH SCOTT PLAZA
FORT DIX, NJ 08640-5000

JUN 23 2011

Chief Leo R. Henry
Tuscarora Indian Nation
2006 Mt. Hope Road
Lewistown, NY 14092

Chief Henry,

The Defense Base Realignment and Closure (BRAC) Commission has recommended the closure of the Niagara Falls United States Army Reserve Center/Area Maintenance Support Activity #76 (Niagara Falls USARC) in Niagara Falls, New York. To implement this recommendation, the Army proposes the transfer of this property out of federal government ownership for reuse. If this action is of interest to you, we would like to initiate consultation pursuant to Section 106 of the National Historic Preservation Act of 1966.

The Niagara Falls USARC is a 21.88-acre property located at 9400 Porter Road (enclosure). The site contains a total of 14 buildings, built by the Naval Air Reserve and the Army Reserve between 1955 and 1994. The site was a Naval Air Reserve Station from the late 1940s through 1959, when the property was transferred to the Army Reserve. It has been occupied by the Army Reserve since that time. The Army is currently evaluating the buildings to see if they are eligible for the National Register of Historic Places. A Phase IA Archeology Survey was conducted at the site in 2007. Documentary research and a surface evaluation of the site indicated that the area possesses low potential to contain prehistoric archaeological or historic archaeological resources because of previous intense ground disturbance. No further studies or investigations were recommended.

This letter is meant to determine your interest in participating in the Section 106 consultation for this project. At this time, we respectfully request any information you can share concerning Traditional Cultural Properties or sacred sites located within the project area to assist us in our decision-making process. We welcome your input on this project.

The Army would appreciate a response within thirty (30) days from the date on this letter. Correspondence and other communication regarding this matter should be directed to Amanda Murphy, Cultural Resources Specialist, 99th RSC DPW, 5231 South Scott Plaza, Fort Dix, New Jersey 08640, amanda.w.murphy@usar.army.mil. If you have any questions please contact Ms. Murphy at 609-521-8047.

Sincerely,

Jeffrey M. Hrzic
Chief, Environmental Division

Enclosure: Location Map

DEPARTMENT OF THE ARMY
HEADQUARTERS, 99TH REGIONAL SUPPORT COMMAND
5231 SOUTH SCOTT PLAZA
FORT DIX, NJ 08640-5000

JUN 23 2011

Ms. Lana Watt
Tribal Historic Preservation Officer
Seneca Nation of Indians
90 O:hi'yoh Way
Salamanca, NY 14779

Ms. Watt,

The Defense Base Realignment and Closure (BRAC) Commission has recommended the closure of the Niagara Falls United States Army Reserve Center/Area Maintenance Support Activity #76 (Niagara Falls USARC) in Niagara Falls, New York. To implement this recommendation, the Army proposes the transfer of this property out of federal government ownership for reuse. If this action is of interest to you, we would like to initiate consultation pursuant to Section 106 of the National Historic Preservation Act of 1966.

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This letter is meant to determine your interest in participating in the Section 106 consultation for this project. At this time, we respectfully request any information you can share concerning Traditional Cultural Properties or sacred sites located within the project area to assist us in our decision-making process. We welcome your input on this project.

The Army would appreciate a response within thirty (30) days from the date on this letter. Correspondence and other communication regarding this matter should be directed to Amanda Murphy, Cultural Resources Specialist, 99th RSC DPW ENV, 5231 South Scott Plaza, Fort Dix, New Jersey 08640, amanda.w.murphy@usar.army.mil. If you have any questions please contact Ms. Murphy at 609-521-8047.

Sincerely,

Jeffrey M. Hrzic
Chief, Environmental Division

Enclosures: Location Map

DEPARTMENT OF THE ARMY
HEADQUARTERS, 99TH REGIONAL SUPPORT COMMAND
5231 SOUTH SCOTT PLAZA
FORT DIX, NJ 08640-5000

JUN 2 5 2017

Chief Roger Hill
Tonawanda Band of Seneca Indians
7027 Meadville Road
Basom, NY 14013

Chief Hill,

The Defense Base Realignment and Closure (BRAC) Commission has recommended the closure of the Niagara Falls United States Army Reserve Center/Area Maintenance Support Activity #76 (Niagara Falls USARC) in Niagara Falls, New York. To implement this recommendation, the Army proposes the transfer of this property out of federal government ownership for reuse. If this action is of interest to you, we would like to initiate consultation pursuant to Section 106 of the National Historic Preservation Act of 1966.

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This letter is meant to determine your interest in participating in the Section 106 consultation for this project. At this time, we respectfully request any information you can share concerning Traditional Cultural Properties or sacred sites located within the project area to assist us in our decision-making process. We welcome your input on this project.

The Army would appreciate a response within thirty (30) days from the date on this letter. Correspondence and other communication regarding this matter should be directed to Amanda Murphy, Cultural Resources Specialist, 99th RSC DPW ENV, 5231 South Scott Plaza, Fort Dix, New Jersey 08640, amanda.w.murphy@usar.army.mil. If you have any questions please contact Ms. Murphy at 609-521-8047.

Sincerely,

Jeffrey M. Hrzic
Chief, Environmental Division

Enclosures: Location Map

SENECA NATION OF INDIANS
TRIBAL HISTORIC PRESERVATION OFFICE
90 OHI:YO' WAY
SALAMANCA, NY 14779
PHONE: (716) 945-1790 FAX: (716) 945-8133

June 22, 2011

Amanda Murphy, Cultural Resources Specialist
99th RSC DPW ENV
5231 South Scott Plaza
Fort Dix, NJ 08640

Re: Closure of Niagara Falls USARC/Area Maintenance Support Activity #76
9400 Porter Road
Niagara Falls, Niagara County, NY

Dear Ms. Murphy,

Thank you for providing the information for the above referenced project. Pursuant to Section 106 of the National Historic Preservation Act (36 CFR § 800), the Seneca Nation of Indians Tribal Historic Preservation Office would like to be a consulting party for the Closure of Niagara Falls USARC Project.

There are several sites located near the Niagara Falls USARC. We would recommend conducting a Phase IB Cultural Resource Investigation since the location lies within a highly sensitive archaeological area. Please submit a copy of the completed report to our office and we will make a final ruling regarding our findings. Thank you.

Sincerely,

Lauren Waldinger
Tribal Archaeologist
Lauren.Waldinger@sni.org

THPO Reference #11-3737

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

New York State Office of Parks, Recreation and Historic Preservation

Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

October 27, 2011

Jeffrey M. Hrzic
Department of the Army
Headquarters, 99th Regional Support Command
5231 South Scott Plaza
Fort Dix, New Jersey 98640-5000

Re: ARMY
Niagara Falls Army Reserve Center Sale
9400 Porter Rd/AMSA #76
Niagara Falls, Niagara County
11PR05614

Dear Mr. Hrzic:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the Phase IA Cultural Resources Investigation Report in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, the SHPO has no building concerns and understands that the Area of Potential Effects is largely disturbed. No further cultural resource investigations are recommended for the Niagara Falls Army Reserve Center. Therefore, the SHPO concurs with the Army's determination that the proposed undertaking will have **No Effect** upon cultural resources in or eligible for inclusion in the National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Deputy Commissioner for Historic Preservation

cc. Amanda Murphy, U.S. Army Reserve, NEPA Specialist *(via email only)*

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New York Field Office
3817 Luker Road, Cortland, NY 13045
Phone: (607) 753-9334
Fax: (607) 753-9699

Long Island Field Office
3 Old Barto Rd., Brookhaven, NY 11719
Phone: (631) 776-1401
Fax: (631) 776-1405

Endangered Species Act List Request Response Cover Sheet

This cover sheet is provided in response to a search of our website* for information regarding the potential presence of species under jurisdiction of the U.S. Fish and Wildlife Service (Service) within a proposed project area.

Attached is a copy of the New York State County List of Threatened, Endangered, and Candidate Species for the appropriate county(ies). The database that we use to respond to list requests was developed primarily to assist Federal agencies that are consulting with us under Section 7(a)(2) of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). Our lists include all Federally-listed, proposed, and candidate species known to occur, as well as those likely to occur, in specific counties.

The attached information is designed to assist project sponsors or applicants through the process of determining whether a Federally-listed, proposed, or candidate species and/or "critical habitat" may occur within their proposed project area and when it is appropriate to contact our offices for additional coordination or consultation. You may be aware that our offices have provided much of this information in the past in project-specific letters. However, due to increasing project review workloads and decreasing staff, we are now providing as much information as possible through our website. We encourage anyone requesting species list information to print out all materials used in any analyses of effects on listed, proposed, or candidate species.

The Service routinely updates this database as species are proposed, listed, and delisted, or as we obtain new biological information or specific presence/absence information for listed species. If project proponents coordinate with the Service to address proposed and candidate species in early stages of planning, this should not be a problem if these species are eventually listed. However, we recommend that both project proponents and reviewing agencies retrieve from our online database an *updated* list every 90 days to append to this document to ensure that listed species presence/absence information for the proposed project is *current.*

Reminder: Section 9 of the ESA prohibits unauthorized taking** of listed species and applies to Federal and non-Federal activities. For projects not authorized, funded, or carried out by a Federal agency, consultation with the Service pursuant to Section 7(a)(2) of the ESA is not required. However, no person is authorized to "take**" any listed species without appropriate authorizations from the Service. Therefore, we provide technical assistance to individuals and agencies to assist with project planning to avoid the potential for "take**," or when appropriate, to provide assistance with their application for an incidental take permit pursuant to Section 10(a)(1)(B) of the ESA.

Additionally, endangered species and their habitats are protected by Section 7(a)(2) of the ESA, which requires Federal agencies, in consultation with the Service, to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. An assessment of the potential direct, indirect, and cumulative impacts is required for all Federal actions that may affect listed species.

For instance, work in certain waters of the United States, including wetlands and streams, may require a permit from the U.S. Army Corps of Engineers (Corps). If a permit is required, in reviewing the application pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401, as amended;16 U.S.C. 661 *et seq.*), the Service may concur, with or without recommending additional permit conditions, or recommend denial of the permit depending upon potential adverse impacts on fish and wildlife resources associated with project construction or implementation. The need for a Corps permit may be determined by contacting the appropriate Corps office(s).*

For additional information on fish and wildlife resources or State-listed species, we suggest contacting the appropriate New York State Department of Environmental Conservation regional office(s) and the New York Natural Heritage Program Information Services.*

Since wetlands, ponds, streams, or open or sheltered coastal waters may be present in the project area, it may be helpful to utilize the National Wetlands Inventory (NWI) maps as an initial screening tool. However, they may or may not be available for the project area. Please note that while the NWI maps are reasonably accurate, they should not be used in lieu of field surveys for determining the presence of wetlands or delineating wetland boundaries for Federal regulatory purposes. Online information on the NWI program and digital data can be downloaded from Wetlands Mapper, http://wetlands.fws.gov/mapper_tool.htm.

Project construction or implementation should not commence until all requirements of the ESA have been fulfilled. After reviewing our website and following the steps outlined, we encourage both project proponents and reviewing agencies to contact our office to determine whether an accurate determination of species impacts has been made. If there are any questions about our county lists or agency or project proponent responsibilities under the ESA, please contact the New York or Long Island Field Office Endangered Species Program at the numbers listed above.

Attachment (county list of species)

*Additional information referred to above may be found on our website at:
http://www.fws.gov/northeast/nyfo/es/section7.htm

** Under the Act and regulations, it is illegal for any person subject to the jurisdiction of the United States to ***take*** (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import or export, ship in interstate or foreign commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any endangered fish or wildlife species and most threatened fish and wildlife species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. “Harm” includes any act which actually kills or injures fish or wildlife, and case law has clarified that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife.

Niagara County

Federally Listed Endangered and Threatened Species and Candidate Species

This list represents the best available information regarding known or likely County occurrences of Federally-listed and candidate species and is subject to change as new information becomes available.

Common Name	Scientific Name	Status
Bald eagle [1]	*Haliaeetus leucocephalus*	D
Eastern prairie fringed orchid *(Historic)*	*Platanthera leucophaea*	T

Status Codes: E=Endangered, T=Threatened, P=Proposed, C=Candidate, D=Delisted.

[1] The bald eagle was delisted on August 8, 2007. While there are no ESA requirements for bald eagles after this date, the eagles continue to receive protection under the Bald and Golden Eagle Protection Act (BGEPA). Please follow the Service's May 2007 Bald Eagle Management Guidelines to determine whether you can avoid impacts under the BGEPA for your projects. If you have any questions, please contact the endangered species branch in our office.

Information current as of: 11/17/2011