Remedial Investigation Work Plan

Location:

Building #40
717 and 723 Division Avenue
Niagara Falls, New York 14305

Prepared for:

Mr. Robert Richardson
NFN 40 717 Division Ave, LLC
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Buffalo, New York 14204

LaBella Project No. 2201378.01

August 20, 2020

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CERTIFICATIONS

I Adam Zebrowski certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Remedial Investigation Work Plan was conducted in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Signed: Date: 8/20/20

1.0 INTRODUCTION

LaBella Associates, D.P.C. (LaBella) is pleased to submit this Remedial Investigation Work Plan (RIWP) to conduct additional investigation at Building #40, 717 and 723 Division Avenue, City of Niagara Falls, Niagara County, New York, herein after referred to as the "Site." The Site is applying to enter into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP). A Site Location Map is included as Figure 1. LaBella is submitting this RIWP on behalf of NFN 40 717 Division Ave, LLC to further define the nature and extent of contamination at the Site.

Information gathered from previous investigations has identified the presence of metals impacted soil at the Site including lead and mercury. Implementation of this RIWP will support existing information and fill in data gaps to rule out the presence of other contaminants [i.e. polychlorinated biphenyls (PCBs), herbicides, polyfluoroalkyl substances (PFAS), 1.4-dioxane, etc.] and to identify the extent to which remediation is warranted. The activities in this RIWP will be carried out in accordance with the NYSDEC's Department of Environmental Remediation (DER)-10 (*Technical Guidance for Site Investigation and Remediation)* issued May 3, 2010.

2.0 SITE DESCRIPTION AND HISTORY

2.1 Site Description and Surrounding Properties

The Site consists of two tax parcel (SBL #144.54-1-50 and 144.54-1-49) totaling 0.35± acres. The Site is located in an urban area in the City of Niagara Falls located south of Division Avenue and west of Eighth Street. Figure 2 illustrates the location and boundaries of the current tax parcels configuration associated with the Site. Current Site features include one, two-story 2,972 square foot vacant residential building (Site Building) on the east portion of the Site. Exterior areas include green space on the west portion of the Site and immediately around the Site Building. Surrounding properties consists of residential and vacant residential properties and undeveloped land.

2.2 Site History

The west portion of the Site (717 Division Avenue) was developed with a residential dwelling from at least 1860 until the early 1950s. The residential building was no longer present and an asphalt area remained and appears to have been utilized as a parking lot until at least the mid-1980s. The west portion of the Site has consisted of green space since at least 2008. The existing Site Building on the east portion of the Site appears to have been developed circa 1900 according to information provided by the City of Niagara Falls. The Site Building appears to have been utilized as a residential dwelling and subsequently as an office building beginning in at least the late 1950s until the late 1990s. Commercial occupants of the Site Building included various private individuals, a building contractor, insurance agents, and attorneys. The Site Building is currently vacant and it is not known how long the Site Building has been vacant.

2.3 Site Geology and Hydrogeology

According to the United State Department of Agriculture (USDA) National Resource Conservation Service (NRCS) Soil Survey the Site is located in an unsurveyed area. Based on the results of LaBella's limited subsurface investigation completed May 8, 2020, topsoil is present from the ground surface to approximately four inches below ground surface (bgs) across much of the Site. Asphalt was encountered within the footprint of the a historical asphalt parking lot from the ground surface to approximately eight inches bgs followed by four to eight inches of gravel subbase. Native soil consisting of silt was encountered at the Site from between approximately four inches bgs and two feet (ft) bgs, and silty clay was encountered from between approximately two and eight ft bgs. Fill material encountered at the Site consisted of brick debris, cement, and glass was encountered within select subsurface investigation locations from between eight inches bgs and eight ft bgs. Although groundwater was not encountered or evaluated as part of the May 8, 2020 limited subsurface investigation, groundwater is assumed to flow to the north-northwest towards the Niagara River which is located approximately 700 feet west of the Site. The field logs from the limited subsurface investigation are included in Appendix 1.

3.0 PREVIOUS INVESTIGATIONS

The RIWP scope of work was developed utilizing the results of LaBella's May 8, 2020 limited subsurface investigation as summarized below. The limited subsurface investigation included the advancement of eight test pits across the Site. Figure 3 depicts the locations of the test pits. Table 1 summarizes the laboratory analytical results of the soil samples analyzed during the limited subsurface investigation.

- Fill material consisting of brick debris, cement, and glass was observed in test pits advanced on the west portion of the Site and encountered from approximately eight inches bgs to eight ft bgs.
- No volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, pesticides, or PCBs were detected in the soil samples collected and submitted for laboratory analysis at concentrations exceeding NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs) with the exception of one soil sample collected from test pit TP-8. One VOC, acetone, and one pesticide, 4,4'-DDD, were detected in the soil sample from TP-8 at concentration exceeding NYSDEC Unrestricted Use SCOs; however, were below the NYSDEC Restricted Residential Use SCOs.
- Metals including lead and mercury were detected in four soil samples collected from TP-4, TP-5, TP-6, and TP-8 at concentrations exceeding NYSDEC Unrestricted Use SCOs. Lead in the sample from TP-8 and mercury in the samples from TP-4, TP-5, and TP-8 were detected at concentrations exceeding NYSDEC Restricted Residential Use SCOs as well.

4.0 STANDARDS, CRITERIA AND GUIDANCE

This section identifies the Standards, Criteria and Guidance (SCGs) for the Site. The SCGs identified are used to quantify the extent of contamination at the Site requiring remedial work based on the cleanup goal. The SCGs to be utilized as part of the implementation of this RIWP are identified below:

Soil SCGs: The following SCGs for soil were used in developing this RIWP:

- NYSDEC Part 375 Unrestricted Use SCOs.
- NYSDEC Part 375 Restricted Residential Use SCOs.

Groundwater SCGs: The following SCGs for groundwater were used in developing this RIWP:

- NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS)

5.0 OBJECTIVES AND RATIONALE

The objective of the RI is to further evaluate the nature and extent of limited VOC and pesticide impact to soil and metals impact to soil at the Site as identified during previous investigations (refer to Section 3.0). Implementation of this RIWP will support existing information and fill in data gaps to rule out the presence of other contaminants (i.e. PCBs, herbicides, PFAS, 1.4-dioxane, etc.) and to identify the extent to which remediation is warranted. In addition, the BCP general requirements (e.g., "full suite" testing, quality assurance/quality control (QA/QC), etc.) will also be fulfilled.

5.1 Areas of Concern

Based on the May 8, 2020 limited subsurface investigation, the following area of concern (AOC) has been identified at the Site:

AOC #1: Impacted Soil

One VOC (acetone), one pesticide (4,4'-DDD), and lead and mercury were detected at concentrations exceeding NYSDEC Unrestricted Use SCOs in soil samples collected from the west portion of the Site. Acetone was detected at a concentration of 200 micrograms per kilogram (µg/kg) in the soil sample from TP-8. 4,4'-DDD was detected at a concentration of 3.57 µg/kg in the soil sample from TP-8. Lead was detected at concentrations ranging from 137 milligrams per kilogram (mg/kg) to 400 mg/kg in the soil samples from TP-4, TP-5, TP-6, and TP-8. Mercury was detected at concentrations ranging from 0.275 mg/kg to 1.77 mg/kg in the soil samples from TP-4, TP-5, TP-6, and TP-8. The surface and subsurface conditions at the Site will be further evaluated during the RI.

6.0 REMEDIAL INVESTIGATION SCOPE

The proposed RI field activities to be completed as part of this work plan have been separated into tasks and are presented in this section. Prior to implementation of the RI field activities, a Dig Safely New York stakeout will be conducted at the Site to locate any subsurface utilities in the areas where subsurface activities will take place.

A list with contact information for the anticipated personnel involved with the project is included in Appendix 2. Qualifications for the personnel are also included. Additionally, a BCP Site contact list is included as Appendix 3.

6.1 Remedial Investigation Tasks

The RI Field Plan is detailed below:

Task 1: Surface Soil Investigation- This task is proposed to assess surface soil conditions throughout the Site.

Task 2: Soil Boring and Groundwater Investigation- This task is proposed to further assess the subsurface soil and groundwater conditions across exterior areas of the Site for all Target Compound List analytes and to fill in data gaps to rule out the presence of other contaminants (i.e. PCBs, herbicides, PFAS, 1.4-dioxane, etc.), and to assist in determining groundwater flow direction at the Site.

QA/QC samples will also be collected and analyzed [e.g., trip blank, duplicate sample, matrix spike/ matrix spike duplicate (MS/MSD), equipment rinsate blank]. The specific QA/QC program is detailed in Section 6.4. The samples will be delivered under chain of custody procedures to an Environmental Laboratory Accreditation Program (ELAP)-certified laboratory. The laboratory will provide a NYSDEC Analytical Services Protocol (ASP) Category B Deliverables data package and a Data Usability Summary Report (DUSR) will be completed by a third-party data validator.

A summary of the proposed sampling locations and analysis is included in Table 6.1 – 1 below.

Table 6.1-1: Proposed Sample Location and Analysis Summary

Investigation Task	Number of Samples	Media	Depth	Analysis	QA/QC	Rationale
Surface Soil Samples	Four	Soil	0-0.5 ft bgs	• Target compound list (TCL) semi-volatile organic compounds (SVOCs) plus tentatively identified compounds (TICs) by 8270 • Target Analyte List (TAL) metals by 6010/7471 • PCBs by 8082 • Pesticides by 8081 • Herbicides by 8151	•One Field Duplicate •One MS/MSD •One Trip Blank	Assess surface soil conditions at the Site.
	Two			• NYSDEC Analyte list PFAS		

Investigation Task	Number of Samples	Media	Depth	Analysis	QA/QC	Rationale
Subsurface soil from Soil Borings	Eight	Soil/Fill	0.5-8 ft bgs	• TCL plus NYSDEC Commissioner Policy (CP) – 51 VOCs plus TICs by 8260 • TCL SVOCs plus TICs by 8270 • TAL metals by 6010/7471	•	Assess subsurface soil/fill material at the Site.
	Four			• PCBs by 8082 • Pesticides by 8081 • Herbicides by 8151		
	Two			• NYSDEC Analyte list PFAS		
Subsurface soil from Soil Borings	Four	Native Soil	0.5-20 ft bgs	• TCL plus NYSDEC Commissioner Policy (CP) – 51 VOCs plus TICs by 8260 • TCL SVOCs plus TICs by 8270 • TAL metals by 6010/7471 • PCBs by 8082 • Pesticides by 8081 • Herbicides by 8151		Assess subsurface native soil conditions at the Site.
	Two			• NYSDEC Analyte list PFAS (Two samples)		
Groundwater from Permanent Monitoring Wells	Three	Groundwater	15-20 ft bgs	• TCL plus NYSDEC CP-51 VOCs plus TICs by 8260 • TCL SVOCs plus TICs by 8270 • TAL metals by 6010/7471 • PCBs by 8082 • Pesticides by 8081 • Herbicides by 8151	•One Field Duplicate •One MS/MSD •One Trip Blank •One Equipment Rinsate Blank (PFAS and 1,4-Dioxane only)	Assess groundwater conditions at the Site.
	Two			• NYSDEC PFAS Analyte list by 537.1 • 1,4-Dioxane by 8270		

6.1.1 Task 1: Surface Soil Investigation

This task will involve the collection of four surface soil samples throughout exterior areas of the Site to assess surface soil conditions. The surface soil samples will be collected during the soil boring activities discussed below via soil recovered from the soil borings or collected manually to a depth ranging between approximately 0-0.5 ft bgs. The surface soil samples will be collected from four of the eight soil boring locations depicted on Figure 4. This work will be completed in accordance with NYSDEC DER-10 as well as the Quality Control Program (QCP) included as Appendix 4. The following methods will be utilized during the surface soil investigation:

- Surface soil samples will be collected from soil retrieved from the soil borings and/or manually collected utilizing a hand auger or spade. The equipment will be properly decontaminated prior to sampling and between sampling locations using an Alconox and water solution.
- Surface soil samples retrieved will be screened in the field for visible impairment, olfactory indications of impairment, and/or indication of detectable VOCs with a photoionization detector (PID), collectively referred to as "evidence of impairment."
- Surface soil samples will be collected and analyzed for the following parameters as is also detailed above in Table 6.1-1:
    - TCL SVOCs plus TICs by USEPA Method 8270
    - TAL Metals by USEPA Method 6010/7471
    - PCBs by USEPA Method 8082
    - Pesticides by USEPA Method 8081
    - Herbicides by USEPA Method 8151

  Additionally, two surface soil samples will be analyzed for NYSDEC PFAS Analyte list.

6.1.2 Task 2: Soil Boring and Groundwater Investigation

This task will involve the advancement of eight soil borings across exterior areas of the Site to further assess the subsurface conditions at the Site, with three converted to new groundwater monitoring wells. The soil borings will be advanced to a maximum depth of approximately 20 ft bgs or until equipment refusal. The proposed soil boring locations are depicted on Figure 4. This work will be completed in accordance with NYSDEC DER-10 as well as the QCP included as Appendix 4. The following methods will be utilized during the soil boring investigation.

- Soil borings will be advanced utilizing a Geoprobe system® to reach the desired depths.
- Soils retrieved from the soil borings will be continuously screened in the field for visible impairment, olfactory indications of impairment, and/or indication of detectable VOCs with a PID, collectively referred to as "evidence of impairment."
- Upon completion of soil boring activities, the removed materials will be returned to the soil borings from which they originated.
- Equipment will be decontaminated prior to commencing with soil boring activities and between soil boring locations using an alconox and water solution.

- Eight subsurface samples will be collected from the soil/fill material encountered and submitted for laboratory analyzed for the following parameters:
    - TCL plus NYSDEC CP-51 VOCs plus TICs by USEPA Method 8260
    - TCL SVOCs plus TICs by USEPA Method 8270
    - TAL Metals by USEPA Method 6010/7471

  Four of the eight soil/fill samples will be analyzed for the following parameters.

    - PCBs by USEPA Method 8082
    - Pesticides by USEPA Method 8081
    - Herbicides by USEPA Method 8151

  Two of the eight soil/fill samples will be analyzed for NYSDEC PFAS Analyte list.
- Four subsurface native soil samples will be collected and submitted for laboratory analyzed for the following parameters:
    - TCL plus NYSDEC CP-51 VOCs plus TICs by USEPA Method 8260
    - TCL SVOCs plus TICs by USEPA Method 8270
    - TAL Metals by USEPA Method 6010/7471
    - PCBs by USEPA Method 8082
    - Pesticides by USEPA Method 8081
    - Herbicides by USEPA Method 8151

  Two of the four native soil samples will be analyzed for NYSDEC PFAS Analyte list.

This task will also involve the installation of a total of three 2-inch permanent groundwater monitoring wells to anticipated depths of 15-20 ft bgs. Groundwater samples will be collected from each new permanent groundwater monitoring well to assess the groundwater conditions across the Site and to assist in determining groundwater flow direction at the Site. The proposed monitoring well locations are depicted on Figure 4. This work will be completed in accordance with NYSDEC DER-10 as well as the Quality Control Plan (QCP) included as Appendix 4. The following methods will be utilized during the groundwater investigation:

- The 2-inch wells will be constructed using a 5-ft. to 10-ft. long 0.010-inch slotted PVC well screen finished with a PVC riser to an appropriate elevation above the ground surface. The screened section will be placed to intersect the water table as observed in the soil boring. The annulus will be filled with sand to approximately 1 to 2 feet above the top of the screen, a one to two-foot bentonite seal will be placed atop the sand, and the remainder of the annulus will be grouted to the surface. The monitoring wells will be completed at the surface with stickup casings set in 2-ft by 2-ft concrete pads.
- Excess soil cuttings generated during installation of the wells exhibiting evidence of impairment will be placed in containers and transported off-site for proper disposal. Soil cuttings not exhibiting evidence of impairment will be spread on the ground surface in the vicinity of the boring/well from which they originated.
- Equipment will be decontaminated prior to well installation activities and between well locations using an alconox and water solution.

- Groundwater samples will be collected from each of the three wells and analyzed for the following parameters:
    - TCL plus NYSDEC CP-51 VOCS plus TICs using USEPA method 8260
    - TCL SVOCs plus TICs using USEPA 8270
    - TAL Metals using USEPA Method 6010/7471
    - PCBs using USEPA Method 8082
    - Pesticides using USEPA Method 8081
    - Herbicides using USEPA Method 8151

In addition, two of the three wells (one up-gradient and one down-gradient relative to the presumed groundwater flow direction at the Site) will be sampled for the following parameters.

- NYSDEC PFAS Analyte list using USEPA Method 537.1
- 1,4-Dioxane using USEPA Method 8270

Results will be reported for the PFAS target analyte list contained in the NYSDEC Guidelines for Sampling and Analysis of PFAS (January 2020) document included at the end of Appendix 4 (QCP), and reporting limits of 2 ng/l (parts per trillion) will be requested.

Groundwater sampling procedures are as follows:

- Prior to sample collection, the groundwater monitoring wells will be developed and field parameters including pH, temperature, turbidity, dissolved oxygen (DO), oxidation reduction potential (ORP) and specific conductance will be measured periodically until they become relatively stable (approximately 10% fluctuation or less) or until at least three well volumes have been removed or dry conditions are observed.
- Subsequent to the development of the groundwater monitoring wells, samples will be collected using low-flow techniques. During sampling, the following parameters will be measured and recorded at three to five minute intervals:
    - Water level drawdown (<0.3')
    - Temperature (+/- 3%)
    - pH (+/- 0.1 unit)
    - Dissolved oxygen (+/- 10%)
    - Specific conductance (+/- 3%)
    - Oxidation reduction potential (+/- 10 millivolts)
    - Turbidity (+/- 10%, <50 NTU for metals)
- Samples will be collected when the parameters have stabilized within the specified range for at least three consecutive intervals. If dry conditions are encountered during low-flow sampling, samples will be collected when the well has recharged a sufficient volume to allow for sample collection.
- Development and pruge water will be allowed to infiltrate back into the subsurface of the Site in the vicinity of the well from which the water originated. Development water exhibiting sheen will be placed in 55-gallon drums and transported off-site for proper disposal. No water will be allowed to flow off-site.

- All groundwater sampling will be completed in a manner to minimize potential cross-contamination of the samples by completing all work as outlined in the QCP, in the NYSDEC Guidelines for Sampling and Analysis of PFAS (January 2020) document included at the end of Appendix 4 (QCP), and as identified below. Because PFAS are found in numerous everyday items, the following special precautions will be taken during all sampling activities:
    - Acceptable materials for sampling include stainless steel, high density polyethylene (HDPE), PVC, silicone, acetate and polypropylene
    - No use of Teflon®-containing materials (e.g., Teflon® tubing, bailers, tape, sample jar lid liners, plumbing paste)
    - No Tyvek® clothing will be worn onsite
    - Clothing that contains polytetrafluorethylene (PTFE, GORE-TEX®, etc.) or that have been waterproofed with PFC materials will not be worn on-site.
    - All clothing worn by sampling personnel must have been laundered multiple times. Clothing must not be laundered with fabric softener.
    - No Post-It® notes will be brought onsite.
    - No fast food wrappers, disposable cups or microwave popcorn will be brought on-site.
    - No use of chemical (blue) ice packs will be allowed.
    - No use of aluminum foil, low density polyethylene (LDPE), glass or PTFE materials will be allowed.
    - No use of Sharpies®, rather ball point pens will be utilized.
    - No use of sunscreen, insect repellants, cosmetic, lotions or moisturizers will be allowed by sampling personnel the day of sampling.
    - If any of the above items are handled by the field personnel prior to sampling activities, field personnel will wash their hands thoroughly with soap and water prior to any sampling activities.
    - Powder-free nitrile gloves will be worn during all sample collection activities.

- In the event of insufficient sample volume for full suite parameters, samples will be analyzed for as many of the listed parameters as possible, in the below listed order:
    - TCL plus NYSDEC CP-51 VOCs using USEPA Method 8260
    - TCL SVOCs using USEPA Method 8270
    - TAL metals using USEPA Methods 6010/7470/7471
    - Pesticides using USEPA Method 8081
    - PCBs using USEPA Method 8082
    - Herbicides using USEPA Method 8151
    - PFOA and PFOS using USEPA Method 537
    - 1,4-Dioxane using USEPA Method 8270
- In addition, each of the three monitoring wells and depth to groundwater will be surveyed (latitude, longitude, and elevation) following installation and a groundwater contour map will be developed.

6.2 *Health and Safety and Community Air Monitoring*

LaBella's Health and Safety Plan for this project is included as Appendix 5. The NYSDOH Generic Community Air Monitoring Plan and Fugitive Dust and Particulate Monitoring will be utilized for this RI and are included as Appendix 6.

6.3 *Housekeeping and Investigation Derived Waste*

Good housekeeping practices will be followed to prevent leaving contaminated material on the ground surface. Waste materials anticipated to be generated during the implementation of this RIWP include soil generated from soil borings, groundwater generated from development and sampling of the wells, and decontamination water generated from decontaminating field equipment. These waste materials will be spread across the Site surface in the vicinity of the investigation location from which the soils originated, or allowed to infiltrate back into the subsurface of the Site in the vicinity of the sample location from which the material originated. Excess soil generated exhibiting evidence of impairment will be placed in containers and transported off-site for proper disposal. Development water exhibiting sheen will be placed in 55-gallon drums and transported off-site for proper disposal. Procedures will be implemented to prevent soils or water from leaving the Site.

Additional information regarding Investigation Derived Waste is included in Section 9 of the QCP, included in Appendix 4.

6.4 *Quality Assurance/Quality Control Plan*

Activities completed at the Site will be managed under LaBella's QCP, which is included in Appendix 4. Laboratory QA/QC sampling will include analysis of one trip blank and one duplicate sample for each matrix type (i.e., soil and groundwater) at a rate of one per 20 samples collected for each parameter group, or one per shipment, whichever is greater. Additionally, one MS/MSD will be collected and analyzed for each 20 samples collected for each parameter group, or one per shipment, whichever is greater. The MS/MSD will be analyzed for the same parameters as that of the field samples. Furthermore, one equipment rinsate blank will be collected and analyzed for PFAS and 1,4-dioxane associated with the groundwater sampling of the Site. The samples will be delivered under Chain of Custody procedures to an ELAP-certified laboratory. The laboratory will provide a NYSDEC ASP Category B Deliverables data package for all samples. A DUSR will be completed for all ASP-B format laboratory data packages per DER-10. The DUSRs will include summaries of the laboratory data reviewed and data quality or usability concerns identified by the data validator.

7.0 RI SCHEDULE AND REPORTING – DELIVERABLES

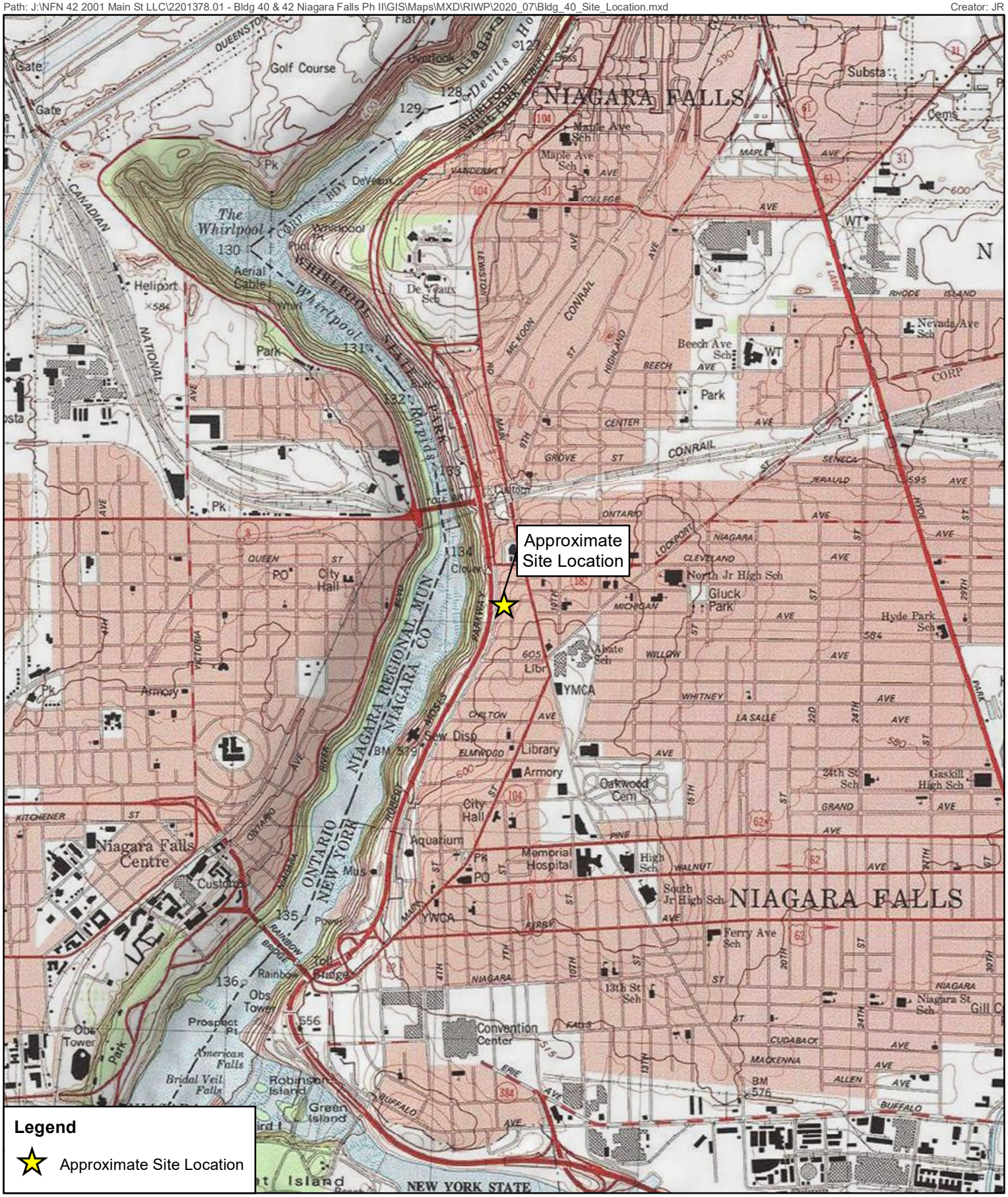
The information and laboratory analytical data obtained during the RI will be included in a RI Report, completed in accordance with DER-10.

It is anticipated that implementation of the RIWP will begin within 30 days after, the later of Participants entering into a Brownfield Cleanup Agreement, or NYSDEC approval of this work plan and the standard three-day Dig Safely New York waiting period. The field work is anticipated to require approximately four days to complete *(Note: this timeframe does not include laboratory analysis or data validation).* The RI Report will be submitted within two months of receipt of DUSRs.

The above schedule assumes that an addendum to the RI Work Plan will not be required. If an RI Work Plan addendum is required, it will be submitted as the need is identified and it will include a revised schedule.

All data will also be submitted in the NYSDEC-approved EDD format. The data will be submitted on a continuous basis immediately after data validation occurs.

FIGURES



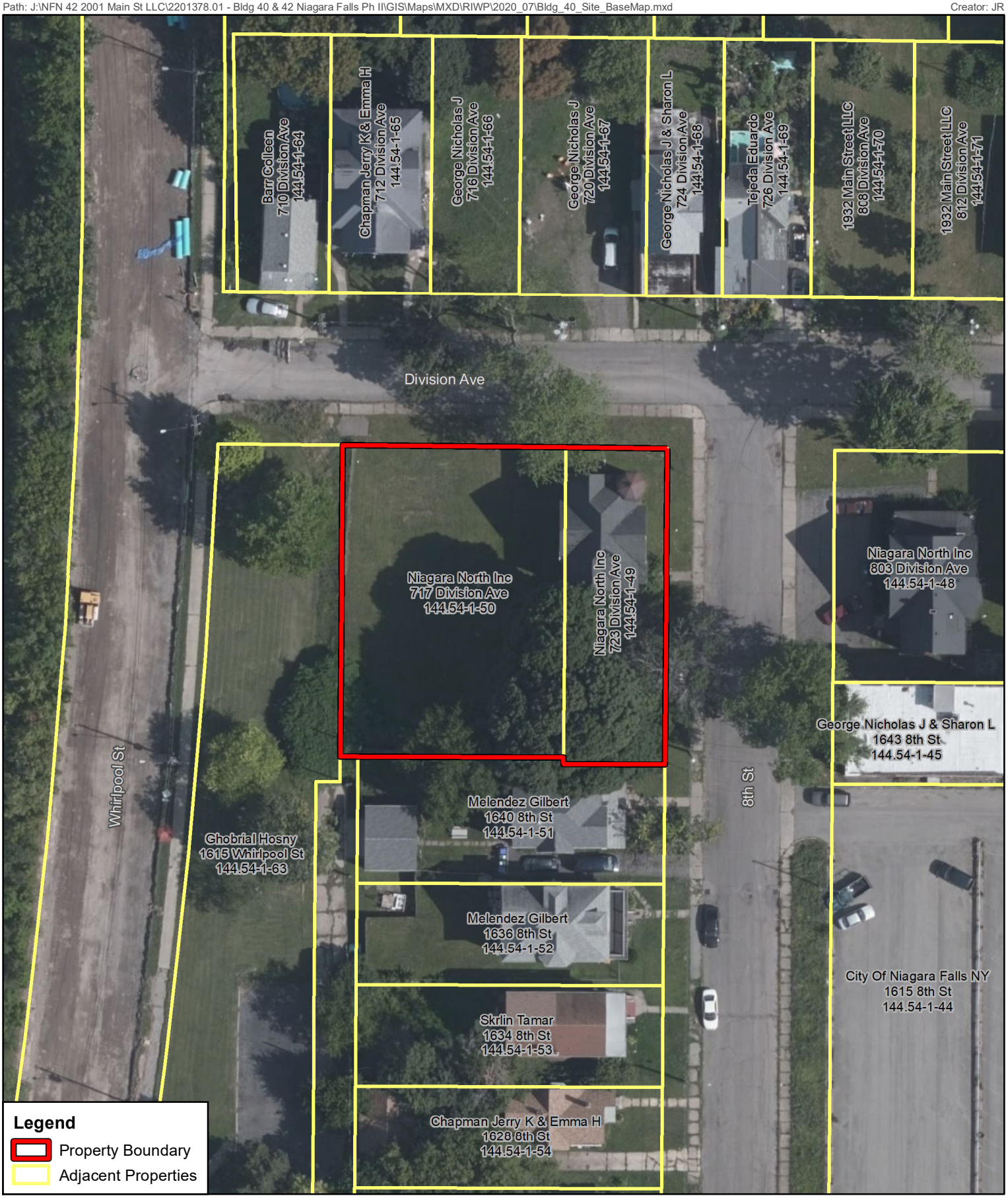
PROJECT # / DRAWING # / DATE:	DRAWING TITLE:	PROJECT:
2201378.1 **FIGURE 1** JULY 2020	SITE LOCATION MAP	REMEDIAL INVESTIGATION WORK PLAN, BUILDING #40 717 AND 723 DIVISION AVE. NIAGARA FALLS, NEW YORK

N

0 1,000 2,000 Feet

LaBella Powered by partnership.

Data Source: LaBella (2020); USGS, National Geographic, i-cubed (2019).



PROJECT # / DRAWING # / DATE:	DRAWING TITLE:	PROJECT:	
2201378.1 **FIGURE 2** JULY 2020	SITE BASE MAP	REMEDIAL INVESTIGATION WORK PLAN, BUILDING #40 717 AND 723 DIVISION AVE. NIAGARA FALLS, NEW YORK	N 0 25 50 Feet LaBella Powered by partnership.

Data Source: Bing Maps (2020); LaBella (2020); Niagara Falls (2017).

Path: J:\NFN 42 2001 Main St LLC\2201378.01 - Bldg 40 & 42 Niagara Falls Ph II\GIS\Maps\MXD\RIWP\2020_07\Bldg_40_Previous_Investigation_Locations.mxd Creator: JR

Legend

Property Boundary

Approximate location of Test Pit

Notes:
mg/kg = milligrams per kilogram
Samples collected 5/8/2020
Parameter concentrations exceed NYSDEC Part 375 Restricted-Residential Use Soil Cleanup Objectives

PROJECT # / DRAWING # / DATE:	DRAWING TITLE:	PROJECT:
2201378.1 **FIGURE 3** JULY 2020	PREVIOUS INVESTIGATION LOCATIONS	REMEDIAL INVESTIGATION WORK PLAN, BUILDING #40 717 AND 723 DIVISION AVE. NIAGARA FALLS, NEW YORK

N

0 10 20 Feet

LaBella
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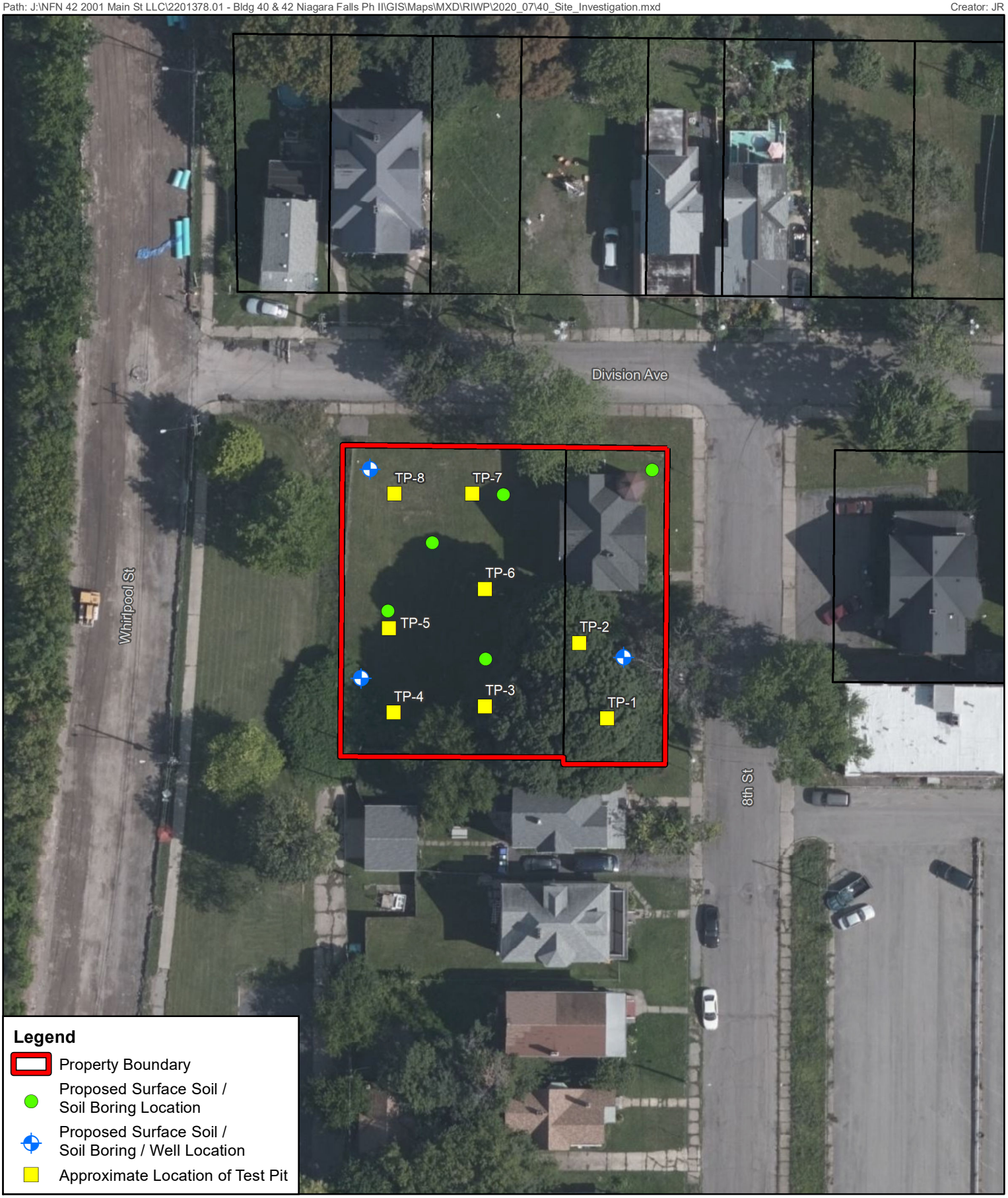
Data Source: Bing Maps (2020); LaBella (2020); Niagara Falls (2017).

Path: J:\NFN 42 2001 Main St LLC\2201378.01 - Bldg 40 & 42 Niagara Falls Ph II\GIS\Maps\MXD\RIWP\2020_07\40_Site_Investigation.mxd Creator: JR



PROJECT # / DRAWING # / DATE:	DRAWING TITLE:	PROJECT:
2201378.1 **FIGURE 4** JULY 2020	PROPOSED REMEDIAL INVESTIGATION LOCATIONS	REMEDIAL INVESTIGATION WORK PLAN, BUILDING #40 717 AND 723 DIVISION AVE. NIAGARA FALLS, NEW YORK

N

0 20 40 Feet

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Data Source: Bing Maps (2020); LaBella (2020); Niagara Falls (2017).

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TABLES

Table 1
Building #40
717 & 723 Division Avenue
Niagara Falls, New York
Remedial Investigation Work Plan
Summary of Limited Subsurface Investigation Subsurface Soil Analytical Results
(Detected Analytes Only)

Sample ID	TP-1	TP-2	TP-3	TP-4	TP-5	TP-6	TP-7	TP-8	Unrestricted Use SCOs	Restricted Residential Use SCOs
Depth (ft bgs)	7-8	3-4	6-7	2-3	5-6	0-1	4-5	1-2		
Sample Date	5/8/2020	5/8/2020	5/8/2020	5/8/2020	5/8/2020	5/8/2020	5/8/2020	5/8/2020		
Volatile Organic Compounds (µg/kg)										
Acetone	<	<	<	<	<	<	<	**200**	50	100,000
Chloroform	<	0.48 J	0.19 J	<	<	0.25 J	<	0.24 J	370	49,000
Methyl Acetate	<	<	<	<	<	<	<	1,400 E	NL	NL
p-Isopropyltoluene	<	<	<	<	<	<	<	0.23 J	NL	NL
Semi-Volatile Organic Compounds (µg/kg)										
Anthracene	<	<	<	85 J	<	<	<	<	100,000	100,000
Benzo(a)anthracene	<	<	<	450	48 J	<	<	500 J	1,000	1,000
Benzo(a)pyrene	<	<	<	560	<	<	<	<	1,000	1,000
Benzo(b)fluoranthene	<	<	<	700	71 J	<	<	690 J	1,000	1,000
Benzo(g,h,i)perylene	<	<	<	440	33 J	<	<	550 J	100,000	100,000
Benzo(k)fluoranthene	<	<	<	200	<	<	<	<	800	3,900
Chrysene	<	<	<	490	53 J	<	<	540 J	1,000	3,900
Dibenzo(a,h)anthracene	<	<	<	88 J	<	<	<	<	330	330
Fluoranthene	<	<	<	680	87 J	<	<	880 J	100,000	100,000
Fluorene	<	<	<	25 J	<	<	<	<	30,000	100,000
Indeno(1,2,3-cd)pyrene	<	<	<	420	39 J	<	<	380 J	500	500
Phenanthrene	<	<	<	430	50 J	<	<	550 J	100,000	100,000
Pyrene	<	<	<	710	74 J	<	<	760 J	100,000	100,000
Herbicides (µg/Kg)										
2,4,5-T	<	NA	NA	<	NA	<	NA	<	NL	NL
2,4,5-TP (Silvex)	<	NA	NA	<	NA	<	NA	<	3,800	100,000
2,4-D	<	NA	NA	<	NA	<	NA	<	NL	NL
Pesticides (µg/Kg)										
4,4'-DDD	<	NA	NA	<	NA	<	NA	**3.57**	3.3	13,000
4,4'-DDE	<	NA	NA	<	NA	<	NA	1.83 J	3.3	8,900
PCBs (µg/Kg)										
Aroclor 1268	<	NA	NA	<	NA	6.99 J	NA	<	100	1,000
Total PCBs	<	NA	NA	<	NA	6.99 J	NA	<	100	1,000
Total Metals (mg/kg)										
Arsenic	1.86	2.51	1.99	9.96	8.12	7.69	1.84	10.3	13	16
Barium	35	111	29.2	121	103	108	41	266	350	400
Cadmium	0.371 J	0.498	0.395 J	0.718	0.452 J	0.768	0.388 J	2.45	2.5	4
Chromium	8.44	13.4	7.89	16.3	12.1	14.7	8.48	15	22/36*	*110/180
Lead	3.1	5.43	3.75	**247**	**166**	**137**	4.65	**400**	63	400
Mercury	<	<	<	**1.06**	**1.77**	**0.275**	<	**0.833**	0.18	0.81
Selenium	<	<	<	0.332 J	0.72 J	0.716 J	<	0.859	3.9	180
Silver	<	<	<	0.283 J	0.572	0.251 J	<	0.188	2	180

Unrestricted Use SCOs = New York State Department of Environmental Conservation (NYSDEC) Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs), Table 375-6.8(b) (December, 2006)

Restricted Residential Use SCOs = NYSDEC Part 375 Restricted Residential Use SCOs, Table 375-6.8(b) (December, 2006)

Concentrations in bold exceed Part 375 Unrestricted Use SCOs

Concentrations in gray exceed Part 375 Restricted-Residential Use SCOs

< = Not detected

NL = Not listed

NA = Not analyzed

ft bgs = Feet below the ground surface

µg/kg = Micrograms per kilogram

mg/kg = Milligrams per kilogram

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

E = Concentration of analyte exceeds the range of the clibration curve and/or linear range of the instrument.

* = Chromium, hexavalent/Chromium, trivalent (The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.)

APPENDIX 1

Limited Subsurface Investigation Test Pit Logs

LaBella
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300 Pearl Street, Suite 130, Buffalo, NY 14202

TEST PIT LOG

Blue Cardinal Studio
Phase II ESA
Site #1 Building 40: 717 and 723 Division Ave.,
Niagara Falls, NY

TEST PIT: TP-1

Sheet 1 of 8
JOB: 2201378
Checked by: CK

CONTRACTOR: LaBella Associates, D.P.C.
DRILLER: LaBella Env., LLC
LABELLA REPRESENTITIVE: CK
START DATE: 5/8/20
END DATE:
TIME: 9:15 to
DATUM:

TYPE OF EQUIPMENT:
OTHER:

DEPTH (FT)	SAMPLE				REMARKS	VISUAL CLASSIFICATION
	SAMPLE RECOVERY	PID FIELD SCREEN (Parts per Million)	RAD COUNT (Counts per Minute)	STRATA CHANGE		
0-1		0	7,700		No odors or staining	0-2' Brown silt (high plasticity, moist) 2'-8' Brown-red silty clay (high plasticity, soft, moist) -no slag -no groundwater -test pit to 8' bgs-excavator limit
1-2		0	7,800			
2-3		0	8,100			
3-4		0	8,900			
4-5		0	8,400			
5-6		0	8,200			
6-7		0	8,100			
7-8		0	8,100			

GROUNDWATER ENCOUNTERED

DATE	DEPTH	WELL INSTALLED	WELL ID

NOTES: bgs = below the ground surface

Site RAD background count ~7,900 Counts per Minute

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300 Pearl Street, Suite 130, Buffalo, NY 14202

TEST PIT LOG

Blue Cardinal Studio
Phase II ESA
Site #1 Building 40: 717 and 723 Division Ave.,
Niagara Falls, NY

TEST PIT: TP-2

Sheet 2 of 8
JOB: 2201378
Checked by: CK

CONTRACTOR: LaBella Associates, D.P.C.
DRILLER: LaBella Env., LLC
LABELLA REPRESENTITIVE: CK START DATE: 5/8/20 END DATE:

TIME: 9:45 to
DATUM:

TYPE OF EQUIPMENT: OTHER:

DEPTH (FT)	SAMPLE				REMARKS	VISUAL CLASSIFICATION
	SAMPLE RECOVERY	PID FIELD SCREEN (Parts per Million)	RAD COUNT (Counts per Minute)	STRATA CHANGE		
0-1		0	7,900		No odors or staining	0-4" Asphalt 4"-8" Gravel sub-base 8"-2' Brown silt (high plasticity, moist) 2'-8' Brown-red silty clay (high plasticity, soft, moist) -no slag -no groundwater -test pit to 8' bgs-excavator limit
1-2		0	8,400			
2-3		0	8,100			
3-4		0	8,100			
4-5		0	8,200			
5-6		0	7,900			
6-7		0	7,800			
7-8		0	7,800			

GROUNDWATER ENCOUNTERED

DATE	DEPTH	WELL INSTALLED	WELL ID

NOTES:

LaBella Powered by partnership. 300 Pearl Street, Suite 130, Buffalo, NY 14202	**TEST PIT LOG** Blue Cardinal Studio Phase II ESA Site #1 Building 40: 717 and 723 Division Ave., Niagara Falls, NY	**TEST PIT: TP-3** Sheet 3 of 8 **JOB:** 2201378 Checked by: CK

CONTRACTOR: LaBella Associates, D.P.C.
DRILLER: LaBella Env., LLC
LABELLA REPRESENTITIVE: CK START DATE: 5/8/20 END DATE:
TIME: 10:15 to DATUM:

TYPE OF EQUIPMENT: OTHER:

DEPTH (FT)	SAMPLE				REMARKS	VISUAL CLASSIFICATION
	SAMPLE RECOVERY	PID FIELD SCREEN (Parts per Million)	RAD COUNT (Counts per Minute)	STRATA CHANGE		
0-1		0	7,900		No odors or staining	0-4” Top soil 4”-8” Gravel crusher run 8”-2’ Brown silt (high plasticity, moist) 2’-8’ Red-brown silty clay (high plasticity, soft, moist) -no slag -no groundwater -test pit to 8’ bgs-excavator limit
1-2		0	7,900			
2-3		0	8,100			
3-4		0	8,100			
4-5		0	8,200			
5-6		0	8,300			
6-7		0	7,800			
7-8		0	7,700			

GROUNDWATER ENCOUNTERED

DATE	DEPTH	WELL INSTALLED	WELL ID

NOTES:

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300 Pearl Street, Suite 130, Buffalo, NY 14202

TEST PIT LOG

Blue Cardinal Studio
Phase II ESA
Site #1 Building 40: 717 and 723 Division Ave.,
Niagara Falls, NY

TEST PIT: TP-4

Sheet 4 of 8
JOB: 2201378
Checked by: CK

CONTRACTOR: LaBella Associates, D.P.C.
DRILLER: LaBella Env., LLC
LABELLA REPRESENTITIVE: CK START DATE: 5/8/20 END DATE:

TIME: 10:45
to
DATUM:

TYPE OF EQUIPMENT: OTHER:

DEPTH (FT)	SAMPLE				REMARKS	VISUAL CLASSIFICATION
	SAMPLE RECOVERY	PID FIELD SCREEN (Parts per Million)	RAD COUNT (Counts per Minute)	STRATA CHANGE		
0-1		0	8,000		No odors or staining	0-4" Top soil 4"-8" Gravel crusher run 8"-3' Brown silt (high plasticity, moist) 3'-8' Red-brown silty clay (high plasticity, soft, moist) -no slag -no groundwater -test pit to 8' bgs-excavator limit
1-2		0	7,900			
2-3		0	7,800			
3-4		0	8,400			
4-5		0	8,500			
5-6		0	8,200			
6-7		0	8,100			
7-8		0	8,100			

GROUNDWATER ENCOUNTERED

DATE	DEPTH	WELL INSTALLED	WELL ID

NOTES:

LaBella Powered by partnership. 300 Pearl Street, Suite 130, Buffalo, NY 14202	**TEST PIT LOG** Blue Cardinal Studio Phase II ESA Site #1 Building 40: 717 and 723 Division Ave., Niagara Falls, NY	**TEST PIT: TP-5** Sheet 5 of 8 **JOB:** 2201378 Checked by: CK

CONTRACTOR: LaBella Associates, D.P.C.
DRILLER: LaBella Env., LLC
LABELLA REPRESENTITIVE: CK START DATE: 5/8/20 END DATE:
TIME: 11:15 to DATUM:

TYPE OF EQUIPMENT: OTHER:

DEPTH (FT)	SAMPLE				REMARKS	VISUAL CLASSIFICATION
	SAMPLE RECOVERY	PID FIELD SCREEN (Parts per Million)	RAD COUNT (Counts per Minute)	STRATA CHANGE		
0-1		0	7,700		No odors or staining	0-4" Top soil 4"-6' Brick, fill material 6'-8' Red-brown silty clay (medium plasticity, medium stiff, moist to wet) -no slag -possible groundwater at 8' bgs -test pit to 8' bgs-excavator limit
1-2		0	7,600			
2-3		0	7,400			
3-4		0	7,400			
4-5		0	7,400			
5-6		0	7,900			
6-7		0	8,100			
7-8		0	7,900			

GROUNDWATER ENCOUNTERED

DATE	DEPTH	WELL INSTALLED	WELL ID

NOTES:

LaBella Powered by partnership. 300 Pearl Street, Suite 130, Buffalo, NY 14202	**TEST PIT LOG** Blue Cardinal Studio Phase II ESA Site #1 Building 40: 717 and 723 Division Ave., Niagara Falls, NY	**TEST PIT: TP-6** Sheet 6 of 8 **JOB:** 2201378 Checked by: CK

CONTRACTOR: LaBella Associates, D.P.C.
DRILLER: LaBella Env., LLC
LABELLA REPRESENTITIVE: CK START DATE: 5/8/20 END DATE:
TIME: 11:45 to DATUM:

TYPE OF EQUIPMENT: OTHER:

DEPTH (FT)	SAMPLE				REMARKS	VISUAL CLASSIFICATION
	SAMPLE RECOVERY	PID FIELD SCREEN (Parts per Million)	RAD COUNT (Counts per Minute)	STRATA CHANGE		
0-1		0	7,900		No odors or staining	0-2’ Brown silt (high plasticity, moist) 2’-8’ Red-brown silty clay (medium plasticity, medium stiff, moist) -no slag -no groundwater -test pit to 8’ bgs-excavator limit
1-2		0	8,400			
2-3		0	8,400			
3-4		0	8,500			
4-5		0	8,100			
5-6		0	8,000			
6-7		0	8,000			
7-8		0	7,900			

GROUNDWATER ENCOUNTERED

DATE	DEPTH	WELL INSTALLED	WELL ID

NOTES:

LaBella Powered by partnership. 300 Pearl Street, Suite 130, Buffalo, NY 14202	**TEST PIT LOG** Blue Cardinal Studio Phase II ESA Site #1 Building 40: 717 and 723 Division Ave., Niagara Falls, NY	**TEST PIT: TP-7** Sheet 7 of 8 **JOB:** 2201378 Checked by: CK

CONTRACTOR: LaBella Associates, D.P.C.
DRILLER: LaBella Env., LLC
LABELLA REPRESENTITIVE: CK START DATE: 5/8/20 END DATE:
TIME: 12:15 to DATUM:

TYPE OF EQUIPMENT: OTHER:

DEPTH (FT)	SAMPLE				REMARKS	VISUAL CLASSIFICATION
	SAMPLE RECOVERY	PID FIELD SCREEN (Parts per Million)	RAD COUNT (Counts per Minute)	STRATA CHANGE		
0-1		0	7,900		No odors or staining	0-4" Top soil 4"-5' Gravel, fill material 5'-8' Red-brown silty clay (medium plasticity, medium stiff, moist) -no slag -no groundwater -test pit to 8' bgs-excavator limit
1-2		0	7,800			
2-3		0	7,700			
3-4		0	7,700			
4-5		0	7,800			
5-6		0	7,900			
6-7		0	8,200			
7-8		0	7,900			

GROUNDWATER ENCOUNTERED

DATE	DEPTH	WELL INSTALLED	WELL ID

NOTES:

LaBella Powered by partnership. 300 Pearl Street, Suite 130, Buffalo, NY 14202	**TEST PIT LOG** Blue Cardinal Studio Phase II ESA Site #1 Building 40: 717 and 723 Division Ave., Niagara Falls, NY	**TEST PIT: TP-8** Sheet 8 of 8 **JOB:** 2201378 Checked by: CK

CONTRACTOR: LaBella Associates, D.P.C.
DRILLER: LaBella Env., LLC
LABELLA REPRESENTITIVE: CK START DATE: 5/8/20 END DATE:
TIME: 12:45 to DATUM:

TYPE OF EQUIPMENT: OTHER:

DEPTH (FT)	SAMPLE				REMARKS	VISUAL CLASSIFICATION
	SAMPLE RECOVERY	PID FIELD SCREEN (Parts per Million)	RAD COUNT (Counts per Minute)	STRATA CHANGE		
0-1		14.1	7,800		No odors or staining	0-4" Top soil 4"-8" Gravel crusher run 8"-8' Fill including brick, cement and glass -no slag -no groundwater -test pit to 8' bgs-excavator limit and apparent basement slab within former dwelling footprint
1-2		163.2	7,900			
2-3		41.3	8,100			
3-4		17.1	8,200			
4-5		17.3	8,300			
5-6		7.1	8,100			
6-7		1.2	7,900			
7-8		0.4	7,900			

GROUNDWATER ENCOUNTERED

DATE	DEPTH	WELL INSTALLED	WELL ID

NOTES:

APPENDIX 2

Qualifications

LaBella
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LaBella Project Personnel

LaBella Staff Member	Title	Phone Number
Greg Senecal	Environmental Director	585-295-6243
Rob Napieralski	Environmental Operations Manager	716-551-6283
Adam Zebrowski	Project Manager	716-840-2548
Daniel Noll	Design Team Leader	585-295-6611
Chris Kibler	Senior Environmental Analyst	716-768-3184
Richard Rote	Health and Safety Director	585-295-6241
Heather Geoghegan	Environmental Analyst	716-710-3043

GREG SENECAL

Environmental Division Director

Greg is Director of Environmental Services and is a Certified Hazardous Materials Manager responsible for the direction of all environmental investigation projects undertaken by the firm. He has over 25 years of experience in designing, managing, and conducting numerous site assessments, remedial projects, Brownfield redevelopment projects, groundwater monitoring well installations, test pit excavations, underground petroleum storage tank removals, and spill cleanups.

CHMM

Certified Hazardous Materials Manager

EDUCATION

SUNY College of Environmental Science and Forestry: BS, Environmental Science

SUNY Cobleskill: AAS, Fisheries and Wildlife Technology

CERTIFICATIONS/ REGISTRATIONS

Certified Hazardous Waste Operations & Emergency Response (40-Hour OSHA Health & Safety Training 29)

Ithaca Chainworks: Brownfield Redevelopment Project - Ithaca, NY

Greg has designed all of the purchasers environmental due diligence efforts for this project. The Chainworks project involves the purchase and redevelopment of Ithaca's largest Industrial Complex. The project Site is a state superfund listed property that encompasses 98 acres and houses 900,000 of vacant industrial building space. Greg worked very closely with the purchaser and the purchasers environmental legal team to negotiate with the seller and the NYSDEC. The out come of these negotiations was an agreement to hold the purchaser harmless for the contamination that exists at the property. An agreement was designed and signed by the seller, that requires the seller to conduct all environmental clean up to meet restricted residential levels. Cleanup has been ongoing since the late 1990's and is expected to be complete in approximately twenty years.

Monoco Oil Brownfield Cleanup & Redevelopment - Pittsford, NY

Greg has been responsible for directing all environmental services associated with the NYSDEC Brownfield Cleanup Program for this project. This complex environmental project involves the cleanup and demolition of a 20-acre blighted vacant oil refinery. The redevelopment plan for the project includes redevelopment of an upscale waterfront apartment and town home complex along the Canal. Greg has conducted NYSDEC, NYSDOH, and local negotiations for many aspects of the project. Public participation and communication has been paramount to the project success.

Former Emerson Street Landfill: Redevelopment Programs - Rochester, NY

Greg is Client Manager for these studies which have been ongoing for the past 15 years. Greg functions a liaison between the City of Rochester and the owners of 66 buildings that have been constructed on the 260 acre landfill footprint.

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Tasks include:

- Development of environmental cost premiums for projects that are being completed on the landfill;
- Development of a fill management protocol for redevelopment projects;
- Direction of soil vapor intrusion studies as required by the NYSDEC for the 66 buildings that have been redeveloped on the landfill footprint;
- Formation of technical teams to design sub slab soil vapor mitigation systems for buildings and building additions that are being constructed on the landfill footprint;
- Directed environmental efforts for the expansion at a City of Rochester High School that is located on the landfill footprint.

Monroe County Environmental Testing Term Agreement Monroe County, NY

As Director of Environmental Services, Greg has been responsible for the successful completion of over 12 years of term agreements (with annual renewals) for hazardous materials inspection and abatement design with Monroe County. Greg's responsibilities typically include meeting with the County, understanding the needs of the environmental project and forming the best possible project team to meet the County's needs. Recent assignments include environmental evaluation of three Sites for the County Crime Lab, and the asbestos inspection, design, and abatement monitoring for a New Downtown Monroe Community College Campus at a former Kodak headquarters building.

City of Rochester: Brownfield Assistance Program Term Agreement (4 Consecutive Terms) - Rochester, NY

Greg serves as the Client Manager who directs all of the projects under the term. Projects range from Phase I Environmental Site Assessments to Site Characterizations, Remedial Cost Estimates, and Brownfield Cleanups. Greg works with the City and the individual property owner to design and implement investigative programs and evaluate clean up and redevelopment options.

690 St. Paul Street: NYSDEC Brownfield Cleanup Project - Rochester, NY

Greg is serving as the project director for this multi-faceted Brownfield investigation and cleanup project. Greg acts as the liaison between the building owners, the former owner (Bausch & Lomb), the Building tenant (City of Rochester School District), and the numerous regulatory agencies involved in the project. This project includes a large SVI investigation, design and installation of a SVI mitigation system, monthly performance monitoring of indoor, sub slab, and exterior air, and communication of the above results to the agencies, tenants, and various stakeholder groups this project also included several IRM's for the removal of orphan tanks and petroleum impacted soils. The RI is currently focusing on the identification and delineation of suspected TCE plumes on the property and under the building structures.

Buffalo Avenue Industrial Corridor Brownfield Opportunity Area: Pre-Nomination Study - Niagara Falls, NY

Greg served as the project director for this 1500 acre, 2500 industrial parcel Brownfield Opportunity Area Project. Greg coordinated the effort between LaBella's Planning and environmental division. He also oversaw the schedule and public outreach components of the project.

Vacuum Oil/South Genesee Brownfield Opportunity Area: Pre-Nomination Study - Rochester, NY

Director of the Project Team for the City of to prepare a pre-nomination study for the proposed Vacuum Oil-South Genesee River Corridor Brownfield Opportunity Area. LaBella developed mapping that allowed for the Brownfield Opportunity Area boundaries to be established in a logical manner at the 56 acre 1.2 mile long corridor along the Genesee River. LaBella conducted economic and demographic research for the project site and gathered zoning, occupancy, and environmental information for potential underutilized Brownfield properties within the BOA.

Oswego River Corridor BOA - Oswego County, NY

Environmental Division Director for this 1,300 acre BOA on the Lake Ontario and Oswego River waterfronts. The project will focus on opportunities to redevelop strategic sites on the waterfront, downtown and underutilized or contaminated brownfields.Town of Tonawanda: Tonawanda BOA - Tonawanda, NY

Foster Wheeler Plant: Site Characterization - Dansville, NY

Project Manager for this due diligence investigation, which consisted of a complete Phase I Environmental Site Assessment and Phase II Site Characterization.

Port of Rochester Redevelopment Project: Phase II Site Characterization - Rochester, NY

Project Manager for complete Phase II Site Characterization, which involved sub surface characterization of approximately 38 acres. Greg directed the environmental team who received a beneficial re-use determination to re use 80,000 cubic yards of iron foundry slag as on site fill.

Bureau of Water, Lighting, & Parking Meter Operations - Rochester, NY

Greg served as Client Manager to remediate the Water Bureau site to obtain regulatory closure or inactivation. The project scope includes the redevelopment of the current site for reuse as a new facility for the operations center.

CSXT Train Derailment & Hazardous Materials Spill - Rochester, NY

Project Manager responsible for review of all delineation reports, implementation of additional delineation studies, review of remedial work plans, and oversight of all facets of the execution of IRM as it related to achieving a cleanup that would limit long term liability for the City and allow for the planned redevelopment to occur.

Rochester Rhinos Stadium: Brownfield Redevelopment - Rochester, NY

Greg served as Project Manager of the NYSDEC Voluntary Cleanup of this prominent urban redevelopment site. The voluntary clean was based around a soils management plan approach that included the re-use of approximately sixty thousand yards of low level petroleum contaminated soils as on site fill under parking lots and in landscaped berm areas of the property.

Seneca Nation: USEPA Brownfield Cleanup Grant

Client Manager responsible for the preparation of a USEPA funded Brownfield Cleanup. The site consists of a vacant rail yard that is contaminated with diesel fuel and heavy metals. The cleanup involves removal and ex-situ bio-remediation of petroleum impacted soils and an environmental management approach that allows for the re-use of railroad ballast and shallow soil impacted with low levels of heavy metals and semi volatile organic compounds as fill under paved parking lots.

NYSDOT: Hazardous Waste Projects, Region 4, Region 5 - State of New York

Project Manager responsible for the development of a characterization workplan to satisfy City, NYSDEC, NYSDOH, MCEMC, and NYSDOT requirements, and implementation of a multiple phase work plan including: shallow soil sampling, test pitting, drilling, geo-probing, and groundwater monitoring well installation. Greg also served as the environmental liaison between LaBella Associates, the NYSDOT, the NYSDEC, and the City of Rochester. In addition, he provided direction of investigative and remedial work and evaluation of contamination levels and impacts. Greg was responsible for final report preparation for the City and the NYSDEC.

Automotive Service Center: Voluntary Cleanup Investigation - Rochester, NY

Project Manager responsible for the delineation of an area of impairment for the client, and the release of future environmental liability for the client from the NYSDEC.

Pennsylvania Act II Site Characterization: Soil and Groundwater Remediation - Coudersport, Pennsylvania

Greg was Project Manager for a Pennsylvania Department of Environmental Protection Act II Voluntary Cleanup project. The site consisted of approximately five acres of land, two vacant gas stations and an agricultural chemical retail store.

Former Trucking Maintenance Facility: Phase II Site Characterization and Remedial Measures - Bloomfield, NY

Project Manager for a multi-phased site characterization and remedial effort. Greg was responsible for the oversight of the spill closure, design of a sub slab venting system, removal of 800 tons of impaired soil, and negotiations with the NYSDEC.

ROBERT NAPIERALSKI

Buffalo Regional Manager

Rob is the Regional Manager for Environmental Services in the Buffalo office. He has more than 25 years of professional consulting experience for public and private sector clients involving a wide range of environmental, infrastructure and transportation projects. His experience includes: SEQRA/NEPA compliance and documentation; regulatory compliance and permitting; environmental due diligence assessments; brownfield investigation, remediation and redevelopment; solid waste management facility permitting and monitoring; municipal infrastructure planning, design and construction; and locally-administered, federally-funded transportation projects.

CPG

Certified Professional Geologist

EDUCATION

Boston University: BA, Geology (Hydrogeology)

CERTIFICATIONS/ REGISTRATIONS

American Institute of Professional Geologists

Association of Groundwater Scientists and Engineers

Remedial Investigation & Remedy Selection, 193 Ship Canal Parkway BCP Site – Buffalo, NY

Project Manager for the remedial investigation and alternatives analysis pursuant to the Brownfield Cleanup Program (BCP) for a 10-acre former steel manufacturing site located in the Buffalo Lakeside Commerce Park. Responsible for negotiating the final investigation scope with NYSDEC and oversight of technical staff and subcontractors involved in the implementation of the field program, data management and evaluation, and technical report preparation. A remedy was selected to address soil and groundwater contamination that will be implemented at the time of site redevelopment.

BCP Site Inspection & Periodic Review Report – Former ExxonMobil OU-1 Site, Buffalo, NY – Project Manager responsible for inspection of engineering controls and preparation of a Periodic Review Report (PRR) for this BCP site. Work was performed in accordance with Site Management Plan (SMP) and PRR was submitted to, and accepted by, NYSDEC.

Annual Inspection & Reporting for Nine BCP Sites – Former Bethlehem Steel Site, Lackawanna, NY – Project Manager responsible for the annual inspection of engineering controls at nine individual BCP Sites located on the former Bethlehem Steel property. Project required the preparation of Institutional and Engineering Control Certification Forms and Periodic Review Reports (PRRs) for each site in accordance with the Site Management Plans (SMPs).

Brownfields

Brownfield Redevelopment Project | Former Edgewood Warehouse Site, Dunkirk, NY

Project Manager for the cleanup and redevelopment of an 8.6 acre former industrial site under the NYS Brownfield Cleanup Program (BCP). Project includes decommissioning/abatement/ demolition of a 170,000 SF

building; soil and groundwater remediation; establishment of engineering controls; site/infrastructure design; and construction of a 71,000 SF cold storage warehouse. Responsible for SEQRA documentation, BCP tasks from Remedial Work Plan (RWP) development through Final Engineering Report (FER), and site design/site plan approval.

USEPA Brownfield Assessments - Phase I and II ESAs of Priority Brownfield Sites | Niagara County, NY

Project Director for the completion of over 35 Phase I/II ESAs at priority brownfield redevelopment sites within the context of the Niagara County Brownfield Program. The ESAs were funded by EPA Brownfield Assessment Grants.

Brownfield Redevelopment Project | Covanta Rail-to-Truck Intermodal Facility, Niagara Falls, NY

Project Manager for the accelerated investigation, remediation and redevelopment of a 15-acre former industrial site for use as a Rail-to-Truck Intermodal Facility (RTIF). The project was completed under the Brownfield Cleanup Program (BCP) and involved the delineation, removal and proper disposal of over 50,000 tons of contaminated soil and 5,000 tons of TENORM slag, and the construction of engineering controls consisting of RTIF components across the entire site. Responsible for BCP tasks from program application and Remedial Investigation (RI) through Remedial Construction and Final Engineering Report (FER); SEQRA compliance/documentation; site design/site plan approval; design of a new 12,000 SF maintenance facility; remedial program oversight and monitoring; and RTIF construction phase services.

Petroleum Brownfields Inventory - Niagara County, NY

Principal-in-Charge for the preparation of an inventory of petroleum Brownfield sites throughout Niagara County under a USEPA assessment grant. The work included review of existing Brownfield databases and state and federal records; community outreach; surveys of municipalities; conversion of the inventory into GIS; and preparation of site evaluation worksheets for identified sites. The site evaluation worksheets were ultimately used to rank sites for prioritization for funding environmental site assessments with the remainder of the County's USEPA grant and other grant programs.

Brownfield Cleanup Program RI/AA, A&A Metals Site - Perry, NY

Principal/Project Manager for the investigation of former industrial site under the Brownfield Cleanup Program (BCP). The site is located along the Silver Lake outlet, functioned as a metal tank manufacturing facility for over 50 years and is currently slated for redevelopment as an alternative energy incubator. Rob was responsible for the management of technical staff and subcontractors, completion of the risk assessment, technical review of project deliverables and communications with the Client and NYSDEC.

Brownfield Redevelopment Project, Covanta Rail-to-Truck Intermodal Facility - Niagara Falls, NY

Project Manager for the accelerated investigation, remediation and redevelopment of a 15-acre former industrial site for use as a Rail-to-Truck Intermodal Facility (RTIF). The project is being advanced under the Brownfield Cleanup Program (BCP) and has involved the completion of a Remedial Investigation (RI); development of a NYSDEC-approved Remedial Action Work Plan to address a range of contamination, including radioactive slag; obtaining site plan approval for the proposed development; and completing site and architectural design of the RTIF. The remedial design and site design efforts were fully integrated to produce a cleanup plan that dovetails with the site development plan and optimizes the project schedule.

Chautauqua County: Brownfield Assessment, Demonstration Pilot Program - Chautauqua County, NY

Responsible for the management of programmatic and technical services provided in support of this EPA Brownfield Pilot Program under a multi-year contract. Duties included the management of technical staff and subcontractors involved in the assessment, investigation, and remedial planning for multiple Brownfield sites. Responsibilities also included participation in the County's Brownfield Task Force and community involvement program, as well as assisting the County with the preparation of quarterly progress reports for submittal to EPA. Project required extensive communication with regulatory personnel from EPA and NYSDEC, as well as public officials and agencies. (E13/200)

Niagara Region Brownfield Coalition: Grant Management Services

Principal-in-Charge for a multi-year contract to assist the Niagara Region Brownfield Coalition

(NRBC), consisting of the Cities of Buffalo and Niagara Falls and Erie and Niagara Counties, with the management and implementation of a USEPA-funded Brownfield Showcase Community Grant. Responsible for providing programmatic and site specific technical and strategic assistance to coalition members relative to site prioritization and assessment, funding and regulatory programs, and community/agency outreach.

Brownfield Opportunity Area: Step 1 Pre-Nomination Study - City of Dunkirk, NY

Principal-in-Charge for the BOA Pre-Nomination Study which focused on a large former steel manufacturing complex within the City of Dunkirk. The scope of the Step 1 BOA program included identifying a manageable study area; completing community outreach activities; completing an inventory of Brownfield sites; identifying current and historic uses of the study area; describing current conditions within the proposed BOA; and assembling a vision for the successful redevelopment of the area. Responsible for general oversight of contractual, budgetary, scheduling and quality assurance/quality control aspects of the project, as well as periodic communications with the client, NYSDOS and NYSDEC.

Brownfield Opportunity Area: Step 1 Pre-Nomination Study - City of Olean, NY

Principal-in-Charge for the BOA Pre-Nomination Study that focuses on a 500-acre area within the northwestern portion of the City of Olean that was formerly occupied by a large petroleum refinery complex. The scope of the Step 1 BOA program includes identifying a manageable study area; completing community outreach activities; completing an inventory of Brownfield sites; identifying current and historic uses of the study area; describing current conditions within the proposed BOA; and assembling a vision for the successful redevelopment of the area. Additionally, the work includes the preparation of conceptual redevelopment plans to assist with the advancement of the remediation of a portion of the study area by a responsible private party. Responsible for general oversight of contractual, budgetary, scheduling and quality assurance/quality control aspects of the project, as well as periodic communications with the client, NYSDOS and NYSDEC.

Brownfield Opportunity Area: Step 2 Nomination Study - City of Lackawanna, NY

Principal/Project Manager for the BOA Nomination study focusing on 2,000-acres that encompass the former Bethlehem Steel site and First Ward of the City of Lackawanna. Responsible for the management of technical staff and subconsultants involved in environmental and infrastructure analysis, market and economic studies, conceptual planning efforts, and stakeholder and public consultation.

Brownfield Opportunity Area: Step 2 Nomination Study, Highland Area - City of Niagara Falls, NY

Principal-in-Charge for the environmental and infrastructure characterization and analysis portion of an area-wide redevelopment planning study of the Highland Area of Niagara Falls. Assisted the City with a successful BOA grant application, providing $375,000 to complete a redevelopment plan for this 560-acre area community that contains a high concentration of Brownfield sites. As a subconsultant to an international planning firm, analyzed environmental and infrastructure constraints and opportunities to assist in the development of the redevelopment plan.

Brownfield Opportunity Area: Step 1 Pre-Nomination Study, Chadakoin River Corridor - City of Jamestown, NY

Principal-in-Charge for characterization and preliminary analysis of redevelopment opportunities within a 600-acre segment of the Chadakoin River corridor, which extends through the industrial spine of the City of Jamestown. Responsible for guiding community and stakeholder outreach programs, efforts to characterize existing conditions within the project corridor and the analysis of redevelopment opportunities and constraints.

Brownfield Opportunity Area: Step 1 Pre-Nomination Study - City of Lockport, NY

Principal-in-Charge for the BOA Pre-Nomination Study that focuses on the two primary stream corridors in the City of Lockport: the Erie Canal and 18-Mile Creek. The scope of the Step 1 BOA program includes identifying a manageable study area; completing community outreach activities; completing an inventory of Brownfield sites; identifying current and historic uses of the study area; describing current conditions within the proposed BOA; and assembling a vision for the successful redevelopment of the area. Responsible for general oversight of contractual, budgetary, scheduling and quality assurance/quality control aspects of the project, as well as

periodic communications with the client, NYSDOS and NYSDEC.

Brownfield Redevelopment Feasibility Study, Former ALCO Complex - Dunkirk, NY

Project Manager for the analysis of redevelopment potential for the 30-acre site of a former locomotive manufacturing complex. Project involved the building condition assessment of a 300,000 SF building complex to determine potential for rehabilitation and/or adaptive reuse, as well as the comparative analysis of demolition and rehabilitation costs. Project also included the development of conceptual site plans for several reuse alternatives, and coordination of strategic planning process to identify critical issues (e.g., funding shortfalls, environmental liability, flow of ownership complications) and strategies for addressing said issues.

Brownfield Reuse Assessment: Flintkote Complex - Lockport, NY

Project Manager for the assessment of an abandoned manufacturing complex to determine the potential for reuse of the remaining structures. Project involved a structural evaluation and development of order of magnitude cost estimates for the rehabilitation of portions of the building complex. Recommendations and cost estimates for asbestos abatement and demolition were ultimately made.

Niagara Metals Facility: Brownfield Redevelopment - Niagara Falls, NY

Principal-in-Charge for the first phase of redevelopment of the 53-acre former Airco Speer Carbon Graphite site in the City of Niagara Falls, NY. Obtained site plan approval and special use permit to construct the new headquarters and recycling facility for Niagara Metals on this Class 3 Inactive Hazardous Waste Site. Project required the review and evaluation of historical environmental reports, coordination with the NYSDEC Division of Environmental Remediation, SEQRA documentation, site plan preparation and presentation to the City Planning Board.

Assessment of Brownfield Site - Brocton, NY

Project Manager for the Phase I ESA and asbestos and lead-based paint survey of a 100,000 SF former food processing facility. This work was performed in conjunction with the potential remediation, demolition and redevelopment of the property. It served as the basis for the development of a 1996 Clean Water/Clean Air Bond Act Environmental Restoration Project Application for Investigation submitted to the NYSDEC on behalf of the County.

Brownfield Site Evaluation, Abandoned Steel Plant Complex - Lackawanna, NY

Responsible for the evaluation of a former fully integrated steel plant that encompasses more than 1,000 acres along the waterfront to the south of Buffalo. Technical responsibilities include the review of existing site data to define site conditions and the magnitude and extent of contamination, chemicals and wastes. Duties also include determination of probable cleanup levels, and the oversight of technical staff involved in the screening of remedial alternatives, remedial cost estimating, and reporting. Responsibilities also include expert testimony and analysis of potential funding opportunities via insurance asset recovery.

Phase I/II Environmental Site Assessments, Brownfield Pilot Sites - Niagara Falls, NY

Project Manager for the Phase I/II ESAs of two Brownfield sites funded via a Supplemental EPA Brownfield Assessment Demonstration Pilot. The Phase I ESAs were performed in accordance with ASTM E-1527, while the Phase II ESAs were in accordance with site-specific work plans prepared pursuant to EPA requirements. Responsible for client and regulatory communications, public meetings, management of technical staff and subcontractors, and technical review of project deliverables (e.g., work plans, health and safety plans, ESA reports).

Phase II Environmental Site Assessment, Brownfield Site - Jamestown, NY

Project Manager for the Phase II ESA of the site of a former metal office furniture manufacturing complex located in the main industrial corridor of the City of Jamestown. This project involved the drilling and installation of seven monitoring wells and the collection and chemical analysis of groundwater, soil, and river sediment samples. Negotiated a No Further Action letter from the NYSDEC to facilitate site redevelopment.

Phase II Environmental Site Assessment, Brownfield Site - Jamestown, NY

Project Manager for the Phase II ESA of a former furniture manufacturing facility site located in the main industrial corridor of the City of Jamestown. This project involved the investigation of potential impacts to groundwater following the discovery and removal of a number of leaking fuel oil USTs.

The results of this investigation were utilized to verify the successful completion of site remediation activities and clear the site for redevelopment.

Remedial Investigation/ Alternatives Analysis (RI/AA) Program, Edgewood Warehouse: - Dunkirk, NY

Principal-in-Charge for the RI/AA of a former locomotive manufacturing facility advanced under the New York State Environmental Restoration Program (ERP). The scope of the RI program includes the characterization of potentially contaminated fill, soil, sediments, building materials and groundwater. The project also involves the identification and detailed analysis of remedial alternatives available to address the affected media.

Remedial Investigation/ Alternatives Analysis (RI/AA) and Interim Remedial Measures (IRMs), Electruk Site -Town of Lockport, NY

Principal-in-Charge for the implementation of an RI/AA program and IRMs at a former battery manufacturing facility advanced under the New York State Environmental Restoration Program (ERP). The scope of the RI program included the characterization of soil, sediment, surface water, and groundwater potentially contaminated with lead and VOCs. The project also involved the identification and detailed analysis of remedial alternatives available to address the affected media. The IRM activities included the removal of contaminated sediment and water and the closure of drainage features.

Remedial Investigation/ Alternatives Analysis Program (RI/AA), Former Niagara Motors Site - Dunkirk, NY

Quality Assurance Officer for the RI/AA of an abandoned four-acre site formerly utilized for the manufacture of marine engines. Project is being performed under the New York State Environmental Restoration Program (ERP). Responsibilities include review of project Quality Assurance Plan, implementation of project audits, Quality Assurance reviews of project staff and subcontractors involved in site characterization and remedial alternatives analysis, as well as client and regulatory communications. Duties also include technical review of project plans, reports and estimates.

Remedial Investigation/ Alternatives Analysis Program (RI/AA), Former Felmont Oil Site - Olean, NY

Quality Assurance Officer for the RI/AA of a 22-acre former oil refining, storage, and distribution facility under the New York State Environmental Restoration Program (ERP). The scope of the RI program includes a passive soil gas survey, a geophysical survey, and the characterization of potentially contaminated fill, soil, groundwater, surface water, and sediment. The project involves the identification and detailed analysis of remedial alternatives available to address the affected media. Responsibilities included client and regulatory communications, implementation of community involvement plan, coordination of project staff and subcontractors, and technical review of project plans and reports.

Remedial Investigation/ Alternatives Analysis (RI/AA) Program, Youngstown Cold Storage - Youngstown, NY

Principal-in-Charge for the RI/AA of a former apple storage facility adjacent to a public park that is being advanced under the New York State Environmental Restoration Program (ERP). The scope of the RI program included the characterization of fill, soil, and groundwater potentially contaminated with arsenic and PCBs, and building materials that contain asbestos. The project involves the identification and detailed analysis of remedial alternatives available to address the affected media. Responsibilities included client and regulatory communications, and the technical review of project plans and reports.

Remedial Investigation/ Alternatives Analysis Program (RI/AA), Former C&B Dry Cleaner Site - Jamestown, NY

Principal-in-charge for the RI/AA of an abandoned commercial site formerly occupied by a dry cleaning facility. Project was performed under the New York State Environmental Restoration Program (ERP) and involved the onsite and offsite delineation of subsurface PCE contamination, implementation of an IRM to address vapor intrusion in a neighboring business, and the development of a remedy consisting of soil removal and insitu treatment. Responsibilities included the technical review of project plans, reports and estimates, as well as extensive interaction with regulatory officials.

Remedial Investigation/ Alternatives Analysis (RI/AA) and Interim Remedial Measures (IRM) Program, Bristol Avenue Site - Lockport, NY

Principal-in-Charge for the implementation of an RI/AA and IRM program at a commercial site that formerly contained petroleum bulk storage (PBS)

facilities. Project is being advanced under the New York State Environmental Restoration Program (ERP) and involves the delineation of subsurface petroleum contamination, implementation of an IRM to remove petroleum-contaminated soil, and the selection of a long term remedy that is supportive of reuse of the site for commercial purposes.

Chautauqua County Department of Public Facilities Site Investigation/Remedial Alternatives Report (SI/RAR), Brownfield Site - Dunkirk, NY

Project Manager for the SI/RAR of an abandoned 12-acre site utilized for heavy industrial purposes since the early 1900s. This project was completed under the New York State Environmental Restoration Program (ERP). The scope of the SI program included a radiological survey and the characterization of fill, soil, groundwater, surface water, building components, and drainage systems contaminated with chlorinated solvents, PCBs and lead. The project involved the identification and detailed analysis of remedial alternatives available to address the affected media. Responsibilities included client and regulatory communications, implementation of community involvement plan, technical and administrative oversight of project staff and subcontractors, technical review of project plans and reports. Duties also included the coordination of efforts to obtain cleanup funding via insurance asset recovery.

Site Investigation/Remedial Alternatives Report (SI/RAR), Former Industrial Site - Buffalo, NY

Quality Assurance Officer for the SI/RAR of a 16-acre site formerly occupied by a fertilizer manufacturing facility and later developed as a public park. This project was completed under the NYS ERP. Responsibilities include technical and administrative oversight of project staff and subcontractors involved in site characterization and remedial alternatives analysis, as well as client and regulatory communications. Duties also include technical review of project plans, reports and estimates.

Site Investigation/Remedial Alternatives Report (SI/RAR), Flintkote Site - Lockport, NY

Project Manager for the SI/RAR of an abandoned six-acre site utilized for industrial purposes since the 1880s. This project was completed under the NYS ERP. Responsibilities include technical and administrative oversight of project staff and subcontractors involved in site characterization and remedial alternatives analysis, as well as client and regulatory communications. Duties also include technical review of project plans, reports and estimates, and analysis of potential funding opportunities via insurance asset recovery. Project also requires close communication with County planning agency to ensure integration of end use planning and remedial alternative selection.

Site Investigation/Remedial Alternatives (SI/RAR) Report, Brownfield Site - Brocton, NY

Project Manager for the SI/RAR of a former food processing facility under the New York State Environmental Restoration Program (ERP). This project involved the investigation of soil, fill, groundwater, building surfaces and components, and drainage systems at this 70,000 SF facility, as well as the evaluation of appropriate remedial alternatives to address contamination identified in on-site fill and drainage systems. Responsibilities included client and regulatory communications, technical and administrative oversight of project staff and subcontractors, and technical review of project plans and reports.

Site Investigation/Remedial Alternatives Report (SI/RAR), Brownfield Site - Town of Ellicott, NY

Project Manager for the SI/RAR for an abandoned industrial site in Chautauqua County, NY under the Brownfield Program. Assisted municipal representatives with the preparation of a complete application for State financial assistance through the assembly of a Statement of Work (SOW) and detailed cost estimate that was approved by the NYSDEC, Division of Environmental Remediation. Also responsible for the design of the site investigation program and the management of technical staff involved in the preparation of the SI/RAR Work Plan, including the Field Sampling Plan, QA/QC Plan, Health and Safety Plan, and Citizen Participation Plan.

Buffalo Niagara International Airport (BNIA): Remedial Action Summary Report, Landside Expansion Project - Cheektowaga, NY

Responsible for managing the preparation of the post-construction, remedial action summary report for the BNIA east access improvements and parking expansion project, much of which was constructed on a NYSDEC Inactive Hazardous Waste Site, the former

Westinghouse Site. The report was submitted to the NYSDEC to certify that remedial activities conducted in connection with soil and groundwater contamination encountered during construction of new access roads and parking areas were conducted in accordance with applicable standards, criteria and/or guidance.

Assessment, Remediation and Demolition, Brownfield Site - Jamestown, NY

Project Manager for the assessment and demolition of a 150,000 SF abandoned manufacturing facility. Project involved a Phase I ESA of the property and pre-demolition inspection of a building complex comprised of six structures. Responsibilities included the preparation of plans and specifications for environmental remediation, asbestos abatement and building demolition, bid administration, and monitoring of contractor activities.

Remedial Construction Administration and Oversight, Former Welch Foods Site - Brocton, NY

Principal-in-Charge responsible for the remediation and demolition of a former food processing facility. The $1.2M project is being completed under the New York State Environmental Restoration Program (ERP). The work includes the demolition of the existing building, the cleanup of contaminated sediments and soil, and the removal of asbestos-containing materials.

Remedial Design/Remedial Construction, Former Roblin Steel Site - Dunkirk, NY

Principal-in-Charge for $1.5M cleanup of former steel plant site under the New York State Environmental Restoration Program (ERP). Project was completed in two phases involving the removal of metals and PAH contaminated soil and fill, insitu groundwater remediation of chlorinated solvents and placement of a soil cover system.

Remedial Design and Oversight, Franczyk Park - Buffalo, NY

Principal-in-Charge for the implementation of a Pre-Design Investigation; the preparation of the Remedial Action Work Plan, contract documents, and technical specifications; and the oversight and administration of the remediation of this 16-acre Brownfield site. The work was completed under a New York State Environmental Restoration Program (ERP) grant. The remediation included metals impacted soil excavation and off-site disposal, installation of an interceptor trench, the placement of a clean soil cover, and the design and installation of new park equipment.

Transportation

Jamestown Gateway Intermodal Station and Visitor Center: Riverwalk Connector Trail - Jamestown, NY

Principal-in-Charge for preliminary/final design and construction phases of this locally administered federal aid project involving the rehabilitation of a national historic register-listed train station and extension of a recreational trail along the Chadakoin River in the City of Jamestown. Project required intense coordination with multiple funding and approval agencies including, FHWA, FTA, NYSDOT and SHPO. Design and environmental approvals were hinged on the negotiation of a Programmatic Agreement relative to historic preservation elements, and were obtained within a 6-month timeframe to meet funding program requirements.

Niagara County Community College: New Entrance Road - Sanborn, NY

Principal-in-Charge for the design of a new 2,900 LF entrance road off of NY Route 31 to Niagara County Community College (NCCC). The roadway is intended to provide a separate access for trucks entering to the service area, to provide access and parking to campus sports facilities at the east end of the campus, and to complete a circulatory roadway system around the campus to improve emergency vehicle access and response times. Project involved a wetland delineation and reconfiguration of preliminary roadway alignment to avoid wetland impacts.

Millennium Parkway: Industrial Access Road Project - Dunkirk, NY

Principal-in-Charge for environmental and engineering services provided for a new access road intended to improve access from Interstate 90 to the existing Chadwick Bay Industrial Park in the Towns of Dunkirk and Sheridan, New York. This $10 million locally administered federal aid project involved extensive agency, stakeholder and public coordination; a comprehensive alternatives analysis; preparation of a NEPA/SEQRA documentation; and preliminary through final design services.

Transportation Planning, Feasibility Studies - Chautauqua, Cattaraugus and Allegany Counties, NY

Principal-in-Charge for three transportation studies

commissioned by the Southern Tier West Regional Planning and Development Board. These included a preliminary corridor planning study for the Route 60/62 corridor in Chautauqua County for the purpose of analyzing a City of Jamestown bypass, and a preliminary feasibility study for an east-west highway corridor extending through the northern regions of Cattaraugus through Allegany County.

Environmental Impact Statement (EIS), Williamsville Toll Barrier Improvement Project - Western NY

Project Manager responsible for managing the preparation of the EIS pursuant to NEPA and SEQRA for the development of a modern mainline toll barrier on the New York State Thruway (I-90) to the northeast of the Buffalo metropolitan area. Key components of this $80 million project include the analysis of a 17-mile study corridor for potential relocation sites, as well as the evaluation of potential impacts to travel patterns on a regional level. Duties have included the implementation of a public/agency scoping process, coordination with State and Federal regulatory agencies and local government agencies, and the management of technical staff and subconsultants involved in the development and analysis of alternatives, as well as natural and human resource impact evaluation.

Progress Drive Reconstruction - Dunkirk, NY

Principal-in-Charge for design and construction phase services for the reconstruction of Progress Drive in the City and Town of Dunkirk, New York. This $2.5M project was funded through a grant from the US Department of Commerce, Economic Development Administration and included the realignment of Middle Road and reconfiguration of multiple intersections to enable connection of Progress Drive with Millennium Parkway.

New York State Department of Transportation, Region 5: Environmental and Hazardous Waste/Contaminated Materials Screening, Six LDSA Bridge Projects - Region 5, NY

Managed the environmental screening and hazardous waste/contaminated materials screening for six bridge replacement or rehabilitation projects conducted under the Local Design Service Agreement (LDSA) Program in NYSDOT Region 5. Screenings were performed in accordance with the procedures outlined in the NYSDOT Environmental Procedures manual, as well as ASTM Practice E 1527. Required SEQRA and NEPA documentation was prepared, as were applicable State and Federal permit applications.

City of Buffalo: Hazardous Waste/Contaminated Materials Assessment, South Park Avenue Lift Bridge - Erie County, NY

Managed the environmental investigation of a former industrial property situated adjacent to the South Park Avenue Lift Bridge over the Buffalo River and slated for acquisition by the City of Buffalo for the construction of a new ancillary electrical building. The investigation involved the drilling of a series of test borings and the installation of groundwater monitoring wells to enable the collection and chemical analysis of soil and groundwater samples. Based upon the results of the investigation, recommendations were developed to minimize worker exposure to contaminated fill material during the construction of the new infrastructure and building.

Industrial Access Road Feasibility Study - Fredonia, NY

Project Manager for the feasibility study associated with a new 0.7 mile access road between NY State Route 60 and an active manufacturing facility. Project involved the review of soil suitability, drainage, wetlands, threatened/endangered species, cultural resources, traffic, noise, and existing utilities to aid in alignment selection.

Winsor Street Reconstruction - City of Jamestown, NY

Principal-in-Charge for the reconstruction of Winsor Street in the City of Jamestown. Project involved roadway and utility design, the preparation of plans and specifications, bid administration, and construction phase services.

Handicap Ramp Improvement Project - Jamestown, NY

Principal-in-Charge for construction inspection services provided to the City of Jamestown for a city-wide handicap ramp improvement project. Responsible for client communications and the coordination of inspection staff.

Dunkirk Waterfront Recreational Trail - Dunkirk, NY

Principal-in-Charge for environmental, survey, design and construction phase services for a 3-mile long recreational trail extending along the Lake Erie waterfront in the City of Dunkirk, New York. This project links three of the City's waterfront parks, including Point Gratiot, Veterans and Wright Parks and is funded by New York State Office of Parks, Recreation and

Historic Preservation and federal transportation grants.

Outer Harbor Greenbelt, Recreational Trail - Buffalo, NY

Principal-in-Charge for construction services provided for the Port Greenbelt Shoreline Restoration project completed for the Niagara Frontier Transportation Authority. Project involved the construction of shoreline improvements for a public park and asphalt pathway along 5,500 LF of Lake Erie shoreline.

SEQRA/NEPA Environmental Impact Statement, Limestone Quarry - Cheektowaga, NY

Project Manager for the modification of the Mined Land Reclamation Permit for a limestone quarry encompassing the relocation of onsite stone processing and asphalt production facilities and the mining of an additional 40 acres of the site. The project involved the preparation of an Environmental Impact Statement pursuant to SEQRA. This entailed numerous detailed human and natural resource studies, including air quality and noise modeling, blasting studies, and the assessment of potential impacts to property values. Responsibilities included extensive communication with regulatory officials, the oversight of project staff and subconsultants, and the technical review of project deliverables.

Generic Environmental Impact Statement, Infrastructure Design, Business Park Development - Tonawanda, NY

Principal-in-Charge for environmental and engineering services provided for a public sector, 92-acre business park development project, including GEIS preparation, and sewer and water infrastructure design. Project involved coordination with a multi-member steering committee and multiple local, state and federal agencies. Studies performed in support of the GEIS included wetland delineation, Stage 1A/B cultural resource survey, and traffic impact study.

Niagara-Wheatfield Central School District: Draft Environmental Impact Statement (DEIS) - Niagara, NY

Project Manager responsible for the preparation of the DEIS pursuant to SEQRA and New York State Education Department requirements for the development of a new elementary school. Directed technical staff and subconsultants during the characterization and evaluation of impacts to human and natural resources.

Environmental Impact Statement Review (EIS) - Lancaster, NY

Performed third party technical and procedural reviews of the draft and final EIS for a proposed 870,000 SF warehouse and distribution facility on 136 acres of undeveloped farmland. Involved in assisting with the preparation of the Positive Findings Statement.

Supplemental Environmental Impact Statement (SEIS), Commercial Plaza - Amherst, NY

Project Manager for the preparation of a SEIS for the expansion of a retail plaza in the Town of Amherst. The expansion consisted of 67,000 SF of additional retail space and 8,000 SF of restaurant space. Significant issues evaluated in the SEIS included potential impacts to traffic, wetlands, drainage and visual resources.

Environmental Impact Assessment (EIA), Pharmaceutical Manufacturing Facility Expansion - Grand Island, NY

Completed Parts 1, 2, and 3 of the SEQRA full Environmental Assessment Form (EAF) for the rezoning of 15 acres of undeveloped land to accommodate the 140,000 SF expansion of an existing pharmaceutical manufacturing facility. The proposed development included administrative offices and manufacturing, distribution and wastewater treatment facilities. Part 3 of the full EAF consisted of a detailed report describing the project setting and proposed development, and thoroughly analyzed the severity and importance of potential impacts identified in connection with the project. Issues analyzed in the report included air quality, water services, historical and archaeological resources, traffic, visual and aesthetic resources, land use and zoning, noise, community services, historical and archaeological resources, and socioeconomics. Following review of the EIA, the Lead Agency issued a Negative Declaration for the project, signifying that the project would not result in any significant adverse environmental impacts and that a DEIS was not required.

Environmental Impact Assessment, Brownfield Restoration and Redevelopment - Falconer, NY

Project Manager responsible for assisting the Lead Agency, Chautauqua County Industrial Development Agency, with the environmental review pursuant to SEQRA of an environmental restoration and redevelopment project at a Brownfield site. The project consisted of the environmental remediation of residual contamination at an abandoned industrial site under a Voluntary Cleanup Agreement between the NYSDEC and the developer, and the subsequent redevelopment of the property for manufacturing use. Prepared Parts 1, 2 and 3 of the full Environmental Assessment Form (EAF). Part 3 of the full EAF consisted of a detailed report describing the environmental setting of the project, the proposed remediation program, and the proposed 160,000 SF development. Assisted the Lead Agency in the preparation and filing of a Negative Declaration for the project signifying that the project would not result in any significant adverse impacts and that a DEIS would not be required.

Environmental Assessment Forms (EAF), Multiple Projects - New York State

Prepared short and full EAFs pursuant to SEQRA for numerous projects across New York State ranging from mining projects to telecommunication tower development sites.

Phase I & II Environmental Site Assessments

Phase II ESA & TENORM Removal | Commercial Site, Niagara Falls, NY

Project Manager for the Phase II ESA of a commercial site located on Hyde Park Blvd. in the City of Niagara Falls, NY completed in support of a real estate transaction. The scope of services included a subsurface investigation targeting TENORM slag and petroleum contamination. Assisted prospective purchaser with evaluating environmental risks and remedial costs. Provided oversight, monitoring and recordkeeping during a TENORM removal action prior to closing the transaction.

Phase I/II Environmental Site Assessment | Proposed Police Shooting Range Facility, Buffalo, NY

Project Manager for the Phase I & II Environmental Site Assessment (ESA) of a one acre site proposed for construction of a new shooting range for the Buffalo Police Department. Results of the Phase I ESA identified a historical filling station with underground storage tanks on a portion of the site. The proposed building footprint was shifted to avoid this area and a Phase II ESA involving a subsurface investigation was performed to identify potential environmental issues associated with the construction of the new shooting range.

Environmental Due Diligence for Former Bethlehem Steel Site Acquisition - Lackawanna, NY

Project Manager for environmental due diligence services provided in support of the ECIDA's acquisition of a portion of the former Bethlehem Steel site for redevelopment into a business park. Assisted with the review of historical environmental documents, identification of regulatory requirements, risk management decisions, and remedial cost estimating for Business Parks 1 & 2.

Chautauqua County Department of Public Facilities: Term Environmental Services - Chautauqua County, NY

Program Manager for environmental services provided under 11 consecutive one-year term contracts. He managed

technical staff, subconsultants and subcontractors involved in environmental assignments including Phase I and II environmental site assessments, UST removal, environmental impact assessment and analysis for business/industrial park developments, Brownfield redevelopment, grant preparation and administration, and regulatory compliance. He was responsible for contract administration, technical review of project deliverables, Client consultation, public presentations and outreach, and regulatory communications.

Vapor Intrusion Assessment, Commercial Plaza - Alden, NY

Project Manager for a Vapor Intrusion Assessment (VIA) of a commercial plaza that formerly contained a dry-cleaning business. Project involved the collection and laboratory analysis of sub-slab vapor and indoor air samples; the evaluation of the resulting data relative to applicable regulatory guidance; and the preparation of a technical report with recommendations for mitigation.

Site Investigation, Commercial Property - West Seneca, NY

Principal-in-Charge for the investigation of a commercial property containing purifier waste from a manufactured gas plant. The work was implemented in an effort to fully characterize the fill materials at the site and was performed in response to concern by the NYSDEC. Project involved the development and implementation of a NYSDEC-approved investigation work plan.

Environmental Analysis, Historic Canal District - City of Utica, NY

Project Manager for the environmental assessment of the City of Utica's historic canal district, an area that encompasses approximately 30 city blocks. Responsible for the oversight of staff conducting an ASTM-type assessment, which identified 23 sites with environmental concerns, and the categorization of the relative level of concern associated with each of these sites. Outlined potential impacts to redevelopment options for the City to aid in the redevelopment planning process, and provided recommendations for additional site specific studies and Brownfield funding opportunities.

Vapor Intrusion Assessment, Adaptive Re-use Project - Lockport, NY

Project Manager for a Vapor Intrusion Assessment (VIA) of a former industrial building in connection with adaptive re-use for mixed use purposes. Project involved the collection and laboratory analysis of sub-slab vapor and indoor air samples; the evaluation of the resulting data relative to applicable regulatory guidance; and the preparation of a technical report.

Phase I Environmental Site Assessments, Telecommunication Tower Sites - New York State

Responsible for the coordination and review of Phase I ESAs of over 90 sites proposed for the development of telecommunication towers. These ESAs were performed in accordance with ASTM E-1527 and were completed within an aggressive three-month schedule.

Phase I/II Environmental Site Assessment, City Block - Jamestown, NY

Project Manager for the Phase I/II ESAs of a city block located adjacent to a new downtown ice arena. The site is slated for redevelopment and currently contains several commercial buildings and surface parking lots. Assessments were performed in accordance with ASTM E-1527 and involved site inspections, historic land use and records review, and interviews with past, present and adjacent land owners. This Phase I ESA resulted in the identification of numerous recognized environmental conditions in connection with the subject property including the potential for subsurface petroleum contamination, and the potential for past discharge solvents and other chemicals based on historical land use. The Phase II portion of the project involved the drilling and installation of eight test borings (four of the test borings contained groundwater monitoring wells), and the collection and chemical analysis of groundwater, and soil samples.

Phase I Environmental Site Assessments (ESA) - Various Locations, New York State

Conducted numerous Phase I ESAs for commercial property transfers. Performed assessments in accordance with American Society for Testing and Materials (ASTM) Standards and involved site inspections, historical land use and records review, and interviews with past, present and adjacent land owners. Projects required extensive interaction with clients and financial institutions.

Phase I/II Environmental Site Assessment - Buffalo, NY

Performed an ESA of vacant land situated in a former industrial sector of Buffalo, NY in association with the proposed

commercial development of the property. Extensive historical research indicated that the property had at one time been occupied by support facilities related to aircraft manufacturing and numerous USTs had been present on the property. To further define potential liabilities associated with the site, a surface geophysical survey to detect buried metal objects was performed and was supplemented by a drilling program designed to characterize soil and groundwater conditions at the site.

Phase I Environmental Site Assessment (ESA) - Hamburg, NY

Performed a Phase I ESA of an industrial facility involved in the manufacture of fiberglass reinforced plastic (FRP) tanks and towers for the chemical industry. This Phase I ESA resulted in the identification of numerous recognized environmental conditions in connection with the subject property including the improper storage of hazardous chemicals and wastes, the discharge of hazardous waste and petroleum products to the subsurface, and leaking aboveground storage tanks.

Phase I Environmental Site Assessment (ESA) - East Northport, NY

Performed a Phase I ESA of an industrial facility involved in the inspection, repair and reconditioning of aircraft life support equipment. This Phase I ESA was conducted in accordance with ASTM E-1527 and resulted in the identification of numerous recognized environmental conditions including improper storage of hazardous chemicals, hazardous waste, low-level radioactive waste, the discharge of spent solvents to the subsurface, the presence of five underground storage tanks, and the lack of a process wastewater management system meeting applicable local and state regulations.

Phase I Environmental Site Assessment (ESA), Industrial Site - Dunkirk, NY

Project Manager for the Phase I ESA of a seven acre industrial site that was originally developed as part of a Civil War era railroad locomotive manufacturing complex. The purpose of this ESA was to assist the Chautauqua County Industrial Development Agency in evaluating the feasibility of pursuing a site investigation grant under the NYSDEC Brownfield Program pursuant to the Clean Water/ Clean Air Bond Act of 1996. Based upon the historical records and information obtained as a result of site reconnaissance, interviews with former employees, and a regulatory record search, numerous environmental concerns were identified in connection with the subject site. These concerns included documented hazardous waste discharges, groundwater contamination and the potential presence of underground storage tanks.

Investigation and Remediation, Fleet Vehicle Maintenance Facility - Waterport, NY

Project Manager for the subsurface investigation of petroleum contamination at an active fleet vehicle maintenance and repair facility operated by the New York State Office of Parks, Recreation and Historic Preservation. The investigation was designed to delineate the extent of soil and groundwater contamination, was conducted in accordance with a NYSDEC-approved work plan, and involved completion of a soil gas survey, drilling and installation of test probes and monitoring wells, and the chemical analysis of soil and groundwater samples. Implemented NYSDEC-approved in situ groundwater treatment program using Oxygen Release Compound (ORC) coupled with a quarterly monitoring program.

Phase II Environmental Investigation - Buffalo, NY

Conducted a Phase II investigation of a manufacturing facility contaminated with heavy metals and polynuclear aromatics (PNA). Project involved soil, sediment and storm water characterization that revealed PNA and metals contamination in a storm water control system. Developed program for storm sewer remediation and prepared Remedial Action Plan for regulatory agency review.

Phase II Environmental Investigation - Buffalo, NY

Conducted a Phase II investigation of an industrial site located adjacent to several listed inactive hazardous waste sites. Developed and implemented a NYSDEC approved subsurface investigation plan which entailed the installation of seven groundwater monitoring wells, the excavation of test pits, and the collection and analysis of groundwater, surface water and soil samples. Prepared a report identifying the type and extent of contamination, potential contaminant sources and possible pathways of migration.

Subsurface Investigation, Fuel Dispensing Facility - Amherst, NY

Project Manager for the

subsurface investigation of inactive retail dispensing facility involving the delineation of soil contamination, installation of shallow and bedrock monitoring wells to characterize groundwater quality, and the assessment of appropriate remedial alternatives. Project involved preparation of investigation plan for regulatory agency review, as well as extensive client relations.

Phase II Environmental Site Assessment (ESA) - East Northport, NY

Project Manager for the Phase II ESA of an active industrial facility conducted to investigate potential contamination associated with the historical use of the facility, numerous USTs, and the subsurface discharge of spent solvents. This Phase II ESA involved the advancement of 17 test probes to enable the collection and field screening of continuous soil samples, and the chemical analysis of soil samples. The resulting report identified several areas of soil contamination and was utilized to define the scope of remedial measures required to complete the transfer of ownership of the facility.

Phase II Environmental Site Assessment - Hamburg, NY

Based upon a review of a Phase I ESA, developed and conducted a Phase II ESA at the site on an automotive service and repair facility contaminated with hydraulic oil. Project involved the drilling of 26 test borings and the installation of three groundwater monitoring wells for the purpose of characterizing physical and chemical subsurface conditions. Developed program for soil remediation involving the decommissioning and removal of belowground hydraulic lifts and an oil/water separator, as well as the excavation and off-site disposal of petroleum-contaminated soil.

Phase I/II Environmental Site Assessment - Cheektowaga, NY

Project Manager for the Phase I/II ESA of an abandoned aircraft controls manufacturing facility proposed for commercial redevelopment. Based upon the results of the Phase I ESA that indicated the potential presence of a UST and solvent releases, a Phase II ESA was conducted to confirm the presence or absence of contamination. In response to the detection of asbestos containing building materials during the Phase I ESA, a pre-demolition asbestos survey was also conducted. The Phase II ESA included the completion of a surface geophysical survey and the advancement of 17 test probes to enable the collection, field screening and chemical analysis of soil samples. This investigation resulted in the detection of TCE contamination in soil proximal to the facility's service entrance.

Risk Based Corrective Action (RBCA) Evaluation, Automobile Dealership - Town of Hamburg, NY

Project Manager for the evaluation of a petroleum-impacted site using the RBCA process outlined in the NYSDEC Draft Interim Procedures for Inactivation of Petroleum-Impacted Sites. This project involved the identification of complete exposure pathways and the calculation of Site Specific Target Levels (SSTLs) for residual contamination that are protective of human health and the environment under current and future site use scenarios. This evaluation demonstrated that levels of residual contamination in groundwater at the site are below the calculated risk-based thresholds, and received NYSDEC technical approval.

Phase II Environmental Site Assessment (ESA), Maintenance and Storage Yard - Falconer, NY

Project Manager for the investigation of a public works maintenance and storage yard involving the drilling of a series of test borings and the installation of eight groundwater monitoring wells to investigate potential subsurface contamination identified as a result of a Phase I ESA. As a result of this investigation, soil contamination in connection with the historical storage and dispensing of liquid asphalt was identified, as was groundwater contamination emanating from an off-site source.

Phase I/II Environmental Site Assessment (ESA) - Lancaster, NY

Project Manager for the Phase I/II ESA of an active industrial facility containing a chrome-plating operation. This work involved the advancement of soil probes and the installation of groundwater monitoring wells to characterize subsurface conditions, as well as the sampling and analysis of drain, sump and sewer sediments/fluids. Developed and implemented a remediation plan involving the proper abandonment of a dry well, removal of an in-floor oil sump, the removal of contaminated sewer sediments, the remediation of petroleum-contaminated soil, and the modification of the facility's wastewater collection and conveyance system. Following regulatory review of the confirmatory sampling results, the site was given closed status signifying the satisfactory completion of the remedial program.

Phase II Environmental Site Assessment - Dunkirk, NY

Project Manager for the Phase II ESA of an abandoned industrial site proposed for redevelopment by adjacent industry. The scope of the investigation included the drilling and installation of nine monitoring wells and seven additional test borings to characterize subsurface conditions. Additionally, the inspection and sampling of numerous drains, sumps, vaults, and potential PCB containing electrical equipment located on the property was conducted. Based on the results of the investigation, recommendations for site remediation were developed.

New York Power Authority: NAPL Investigation, NYPA Right-of-Way - Niagara Falls, NY

Principal-in-Charge for an investigation designed to delineate non-aqueous phase liquids (NAPL) within the NYPA Lewiston Power Project conduit right-of-way in the vicinity of Royal Avenue. The project included the review of historical documents, drilling of overburden and bedrock test borings, collection of characterization samples, and preparation of work plan and final reports.

Assessment and Remediation of Former Secondary Lead Smelting Site – Buffalo, NY

Project Manager for the sampling and analysis of surface soil pursuant to US Environmental Protection Agency (USEPA) requirements to delineate lead, arsenic and cobalt contaminated soil in a residential development originating from emissions from a former secondary lead smelting facility. Prepared an USEPA-approved sampling plan and oversaw staff and subcontractors involved in the drilling of 90 soil borings and the collection and analysis of soil samples. Based on the sampling results, negotiated final removal limits with USEPA and generated an USEPA-approved Removal Action Work Plan detailing the soil remediation, community monitoring and site restoration to be performed at the site.

Pre-Acquisition Environmental Review for Proposed School Athletic Fields – Middleport, NY

Project Manager responsible for conducting an environmental review of a 3.6 acre site contemplated for acquisition and use for athletic fields by the Royalton Hartland Central School District (RHCSD). Site soils were impacted with arsenic related to historical air emissions from a neighboring pesticide manufacturer. Reviewed data and reports from previous environmental investigations and remedial actions at the site and compiled information pertaining to remaining contaminant levels; the effectiveness of the institutional and engineering controls implemented at the site; the suitability of the site for the intended use; current and future regulatory implications; and costs associated with ongoing operations, maintenance and monitoring of the site remedy. Advised the RHCSD on these issues and provided technical support for their decision-making process.

Impacted Fill Management: Coyer Field Track and Turf Replacement, Buffalo State College – Buffalo, NY

Project Manager for the sampling, characterization and specifications for proper management of impacted fill material to be generated during the construction of improvements to Coyer Field at Buffalo State College. Oversaw field staff responsible for sampling and screening of fill material; reviewed resulting analytical laboratory data and determined appropriate disposal requirements. Prepared specifications for excavation, off-site disposal and environmental monitoring during construction.

Demolition

Building Demolition, Food Processing Plant - Town of Ripley, NY

Principal-in-Charge for the design, bidding and construction phases of a building demolition project involving a 26,000 SF concrete block/wood/steel structure. Project involved demolition design; preparation of plans, specifications and contract documents; bid administration; and oversight of demolition. Project also involves removal of asbestos containing materials and drums/containers of chemicals.

Building Demolition, Former Randolph Foundry - Village of Randolph, NY

Principal-in-Charge for the design and preparation of contract documents for the demolition of a 25,000 SF former foundry and machine shop. The work was completed under a New York State Environmental Restoration Program grant as an Interim Remedial Measure. The project included removal of asbestos containing materials, foundry sand and containers of chemicals and the demolition and disposal of the building.

Building Demolition, Former Roblin Steel Plant - Dunkirk, NY

Principal-in-Charge for the design, bidding and construction phases of a building demolition project involving a 90,000 SF

former steel mill building. Scope of services includes demolition and asbestos abatement design; preparation of plans, specifications and contract documents; bid administration; and oversight of demolition. Contract documents were prepared in accordance with NYS Environmental Restoration Program requirements for this brownfield redevelopment project.

Building Demolition, Former Alumax Extrusion Facility - Dunkirk, NY

Principal-in-Charge for the design, bidding and construction phases of a building demolition project involving a 143,000 SF former industrial complex. Scope of services includes demolition and asbestos abatement design; preparation of plans, specifications and contract documents; bid administration; and oversight of demolition at this brownfield redevelopment site.

Building Demolition, Former Edgewood Warehouse - Dunkirk, NY

Principal-in-Charge for the design, bidding and construction phases of a building demolition project involving a 165,000 SF former industrial building. Scope of services included demolition and asbestos abatement design and the preparation of plans, specifications and contract documents.

Manufacturing Facility, Decommissioning/Demolition - Tonawanda, NY

Principal-in-Charge for design and oversight services provided for the decommissioning and demolition of a 75,000 SF portion of an active manufacturing facility. Project included the removal and disposal of contaminated sediment, decommissioning of numerous pits and sumps, asbestos abatement, abandonment of portions of the existing mechanical and electrical systems, structural closure and restoration of new exterior building walls. Demolition of multiple buildings, including a tall chimney, was conducted without disruption of ongoing plant operations.

Asbestos

Assessment and Remediation of Former Secondary Lead Smelting Site – Buffalo, NY

Project Manager for the sampling and analysis of surface soil pursuant to US Environmental Protection Agency (USEPA) requirements to delineate lead contaminated soil in a residential development originating from emissions from a former secondary lead smelting facility. Prepared an USEPA-approved sampling plan and oversaw staff and subcontractors involved in the drilling of 90 soil borings and the collection and analysis of soil samples. Based on the sampling results, negotiated final removal limits with USEPA and generated an USEPA-approved Removal Action Work Plan detailing the soil remediation, community monitoring and site restoration to be performed at the site.

Asbestos Survey of Commercial Site - Tonawanda, NY

Project Manager for the Phase I ESA and Asbestos Survey of a commercial site containing two buildings encompassing 100,000 SF. The project was completed in support of the acquisition and renovation of the buildings.

Pre-Renovation Survey, Commercial Building - Jamestown, NY

Project Manager for the asbestos-containing material (ACM) and lead-based paint (LBP) survey of a commercial building slated for renovation and reuse as the headquarters of the Chautauqua Area Rural Transit System (CARTS). The project involved the review of available building plans, an inspection of the structure, the sampling and laboratory analysis of suspect ACM and LBP, the evaluation and presentation of the resulting data in a technical report, and cost estimating for abatement.

Pre-Demolition Asbestos Surveys, Numerous Redevelopment Sites - State of NY

Project Manager for the pre-demolition survey of numerous commercial redevelopment sites containing multiple structures. Responsibilities included the coordination of multiple survey crews involved in building inspections and sample collection, the review of data resulting from the analysis of samples via polarized light microscopy (PLM), and the compilation of final reports identifying the location, type and quantity of asbestos containing building materials.

Asbestos and Lead-Based Paint Survey, Harness Racing Complex - Batavia, NY

Project Manager for the Phase I ESA of a 45-acre harness racing complex. Responsible for managing asbestos and lead-based paint inspections of five buildings encompassing 117,000 SF in conjunction with planned demolition and renovation activities at the complex.

Pre-Demolition Survey, Food Processing Facility - Brocton, NY

Project Manager for the pre-demolition asbestos survey

of the abandoned portion of a former food processing facility encompassing approximately 70,000 SF. The survey involved the review of historical building plans, the collection and laboratory analysis of hundreds of samples of suspect asbestos-containing material, technical report preparation and abatement cost estimating.

Pre-Demolition Environmental Assessment and Decommissioning Program, Industrial Facility - Tonawanda, NY

Principal-in-Charge for the environmental assessment and decommissioning program performed at an active industrial complex in support of the planned demolition of unused portions of the facility. Responsibilities included consultation with the Client and their legal counsel relative to environmental conditions at the site and corresponding implications with respect to regulatory requirements, risk management and the demolition project. Also provided oversight of project team and subcontractors conducting site-specific sampling and analysis, pre-demolition asbestos surveys, and the cleanup and closure of an outdoor electrical substation and a number of process pits and sumps.

Water Resources

Chautauqua Lake Watershed: Watershed Management Project - Chautauqua County, NY

Principal-in-Charge for the development of a management program for the Chautauqua Lake watershed. The project includes community outreach; identification and evaluation of areas with acute erosion issues; GIS database development; technical assistance to municipalities and private entities; and educational seminars.

Aquifer Study, Landfill Site - Cattaraugus County, NY

Participated in the design and execution of a drilling, well installation and pump test program to determine the areal extent and hydrologic properties of a valley fill aquifer, as well as its hydraulic connection to an adjacent landfill site. The relationship of the subject aquifer was also evaluated relative to a nearby primary aquifer based upon available literature and mapping.

Storm Water Pollution Prevention Plans, Various Facilities - New York State

Managed the preparation of Storm Water Pollution Prevention Plans for over 10 industrial facilities in western and central New York. Plans were prepared in accordance with State Pollutant Discharge Elimination System (SPDES) regulations pertaining to industrial storm water discharge, and involved the review of site activities, potential contaminants utilized or stored at the facility, current storm water management practices, and the development of best management practices to minimize storm water pollution.

Wetland Delineations - Various Locations, New York State

Project Manager for the investigation and delineation of Federal jurisdictional wetlands in accordance with the 1987 Manual issued by the US Army Corps of Engineers (USCOE). Projects ranged from residential and commercial developments to several airport expansions, and involved the preparation of reports characterizing and delineating upland and wetland communities encountered during field investigations, the completion of joint State and Federal permit applications, and extensive interaction with NYSDEC and USCOE representatives.

Hydrogeologic Appraisal - Clarence, NY

Characterized the existing hydrogeologic resources on and adjacent to the site of a proposed 75,000 SF manufacturing facility, and identified and evaluated potential impacts to these resources associated with project development. The design of the project included the installation of several water supply wells to provide the facility with cooling water directly to groundwater. This study included an evaluation of impacts to a nearby unconsolidated aquifer and an underlying bedrock aquifer, and was incorporated in the Environmental Impact Statement for the project.

Brass Foundry: Storm Water Management System, Evaluation and Redesign - Elmira, NY

Project Manager for the investigation and redesign of the storm water management system at a 100+ year old foundry site to improve site drainage, enable the proper closure of numerous dry wells, and assist in achieving pollution prevention initiatives. This work involved the topographic survey of the site, delineation of the existing storm water conveyance system for which no historical plans existed, storm water calculations, and design modifications to the on-site collection and conveyance systems. As part of this program, a closure plan complying with the Underground Injection Control Program (UICP) was developed for the on-site industrial drainage

wells.

ISG Lackawanna LLC: Industrial Facility SPDES Monitoring - Lackawanna, NY

Principal-in-Charge for weekly, monthly and quarterly SPDES monitoring conducted at galvanizing and rolling mills operated by ISG. Supervised staff involved in sample collection, laboratory coordination and Discharge Monitoring Report (DMR) preparation. Also provided technical support relative to permit compliance and other waste disposal issues.

Water Line Replacement - Town of Lancaster, NY

Principal-in-Charge for design and construction phase services provided in conjunction with the replacement of 7,800-LF of waterline in the Town of Lancaster.

Evaluation of Waste Water Treatment Plant Discharges Wellsville, NY

Principal-in-Charge for the evaluation of wastewater treatment plant influent consisting of sanitary sewage and leachate and the resulting discharges from the plant. The project included the evaluation of existing information, the collection of wastewater samples for analysis, performance of calculations of Maximum Allowable Headworks Loadings, and establishment of pretreatment discharge limitations and a protocol for acceptance of new or increased discharges.

Mining

Mined Land Reclamation Permit Modification, Quarry Expansion - Shelby, NY

Project Manager for the modification of the Mine Land Reclamation Permit enabling an 11.3 acre expansion of an existing 95-acre limestone and dolomite quarry. Conducted hydrogeologic, noise and blasting studies to assess potential impacts to nearby residences, stream and wetlands and prepared revised Mining Plan Map. Project also involved close coordination with NYSDEC, USACOE and NYSOPRHP regarding stream crossing, wetland and cultural resource issues. Additionally, technical support was also provided for procurement of a Special Use Permit from the Town of Shelby to address recently enacted local zoning law relative to mining.

Mining Permit - Wheatfield, NY

Prepared a 6 NYCRR Part 420-426 Mining Permit Application and Mined Land Use Plan for a 20-acre surface unconsolidated mine. The mining plan involved the excavation of over 300,000 cubic yards of clay for use off site, while the reclamation plan entailed the use of the affected land for storm water retention ponds for a proposed residential subdivision.

Limestone Quarry Expansion - Cheektowaga, NY

Project Manager for the development of a revised Reclamation Plan pursuant to 6 NYCRR Part 420-426 for the 65-acre expansion of an existing limestone quarry. The reclamation objective outlined in the graphical and written plans consisted of a lake surrounded by mixed-use development.

Mining Permit - Waterloo, NY

Project Manager for the preparation of a Mining Permit Application and Mined Land Use Plan for a 35-acre surface unconsolidated mine. The mining plan involved the extraction of 850,000 cubic yards of clay to be used in conjunction with the operation and closure of an adjacent solid waste landfill, while the reclamation plan consisted of the creation of a storm water retention pond surrounded by graded, revegetated land suitable for a return to agricultural use or for commercial development.

Mining Permit - Phelps, NY

Project Manager for the preparation of a Mining Permit Application and Mined Land Use Plan for a 9-acre surface unconsolidated mine. The mining plan involved the extraction of 200,000 cubic yards of sand and gravel to be used in conjunction with the operation and closure of a nearby solid waste landfill, while the reclamation plan provided for graded, revegetated land suitable for residential development and/or recreational use.

Draft Environmental Impact Statement (DEIS), Limestone Quarry Expansion - Cheektowaga, NY

Project Manager responsible for the preparation of a DEIS pursuant to SEQRA for the rezoning of 140 acres of undeveloped land to accommodate the expansion of an existing limestone quarry. Detailed investigations of the following natural and human resources were completed in support of the DEIS: hydrogeology, air quality, ecology, wetlands, traffic, noise, land use and rezoning, archaeology, and aesthetics. Evaluation of potential impacts to an adjacent Critical Environmental Area (CEA) and two adjacent waste disposal facilities was also required.

Mining Permit Modification, Limestone Quarry - Cheektowaga, NY

Project Manager for the modification of the Mined Land Reclamation Permit for a limestone quarry encompassing the relocation of onsite stone processing and asphalt production facilities and the mining of an additional 40 acres of the site. Responsibilities included extensive communication with regulatory officials and the negotiation of special MLR permit conditions.

Site Development

Ripley Interstate Development Site, Warehouse/Distribution Center, Site Planning and Shovel-Ready Status - Ripley, NY

Principal-in-Charge for site planning and preliminary design services for a 200-acre interstate site in the Town of Ripley that is being marketed for the development of a 1,000,000 SF warehouse/distribution center. Oversaw pre-acquisition environmental site assessments of multiple parcels, the development and evaluation of multiple site plan alternatives, traffic impact analysis and the modeling and preliminary design of stormwater management facilities. Also, assisted the Chautauqua County IDA with the process of obtaining shovel-ready status through ESDC.

Buffalo Lakeside Commerce, Park Industrial/Business Park Site, Planning and Design, Phase III - Buffalo, NY

Principal-in-Charge for the site planning and infrastructure design for Phase III of the Buffalo Lakeside Commerce Park, which is a 275-acre brownfield redevelopment project. Project involved the layout of parcels, roadways and utilities; SEQRA compliance/documentation; geotechnical investigation; wetland permitting; the design of roadways, waterlines, sanitary sewer and pump station, and stormwater management facilities; the preparation of plans and specifications; bid and construction administration; and construction inspection. Extensive coordination with NYSDEC to ensure compliance with brownfield soil/fill management plan was also required.

Phase III, Country View Estates - Jamestown, NY

Principal-in-Charge for roadway and utility design and construction phase services provided for a 15-acre residential subdivision. Project included topographic survey, design of 1,200 LF of roadway and the design of stormwater management facilities. Bid documents and cost estimates were prepared and construction support was provided.

Business Park Development, Environmental Assessment and Conceptual Design - Ripley, NY

Project Manager for the environmental review and conceptual design of a 42-acre business park. Managed technical staff and subconsultants involved with natural and human resource studies including ecological survey, wetland delineation, Stage 1A cultural resource survey, and traffic impact study. The results of these studies were used to develop concept plans for the proposed development that minimized impacts while optimizing the developable area.

Geotechnical Engineering Investigation - Geneseo, NY

Supervised the drilling of test borings and the installation of piezometers as part of the geotechnical investigation for the design of surface facilities associated with a proposed subterranean salt mine. Responsibilities included classifying soil samples and logging rock cores, piezometer placement, and the collection of groundwater samples for chemical analysis.

Geotechnical Engineering Investigations, Development Sites - New York State

Supervised the collection of data for use in foundation design for several sites proposed for the development of restaurant, hotel and institutional facilities. Responsibilities included the supervision of drilling activities, the classification of soil samples, piezometer design and placement, and the preparation of reports characterizing existing hydrogeologic conditions.

Remediation

Former Industrial Site Investigation & Cleanup - Cheektowaga, NY

Project Manager for the Phase I/II ESA and subsequent cleanup of a commercial property in connection with a real estate transaction. Recognized Environmental Conditions (RECs) identified as a result of the Phase I ESA were investigated and contamination was delineated in subsurface fill and sediment occurring within an on-site drainage ditch. Worked closely with the purchaser and owner to develop and implement a remedial program to address contamination and enable the transaction to proceed. The cleanup was completed in accordance with a NYSDEC approved work plan and spill file closure was achieved.

Technology Incubator Development Site - Dunkirk, NY

Principal-in-Charge for environmental services provided in conjunction with the development of a $5 million high technology incubator facility in Dunkirk, NY. Project involved the investigation and cleanup of subsurface petroleum contamination in order to prepare the site for redevelopment.

Jamestown Community College: Investigation and Remediation of Petroleum Spill Site - Jamestown, NY

Project Manager for a multi-phased investigation of a former truck terminal site slated for redevelopment as part of Jamestown Community College's Manufacturing Technology Institute. Subsurface petroleum contamination was delineated and cleanup was completed in accordance with a NYSDEC approved remedial work plan. Responsibilities include regulatory negotiations, client communications and coordination and technical oversight of staff and subcontractors.

Industrial Facility, PCB Remediation - Buffalo, NY

Developed and managed the implementation of the Post-Cleanup Sampling Program, pursuant to TSCA, following the completion of remedial activities at a PCB spill site in an industrial section of Buffalo, NY. Following EPA approval of sampling design, which employed a statistical sampling scheme developed by the Midwest Research Institute, supervised sample collection and implementation of a QA/QC program. Directed additional remedial measures to reduce contaminant levels to within acceptable levels and verified compliance with federal standards. Prepared Spill Remediation Report in order to document and certify remedial efforts. Report was submitted to and accepted by NYSDEC and USEPA.

Groundwater Remediation, Federal Leaking Underground Storage Tank (LUST) - Various Sites, NY

Managed the design, installation and monitoring of several groundwater extraction and treatment systems at LUST sites owned and operated by the Federal Government. Systems utilized included a mobile unit equipped with oil/water separator, total suspended solids filtration, and liquid phase granular activated carbon components. Projects involved periodic monitoring of treatment system effluent and the procurement of applicable discharge approvals from State regulatory agencies.

Remedial Action Plan (RAP) - Hamburg, NY

Prepared a RAP for regulatory review and negotiated clean-up requirements for the voluntary remediation of petroleum-contaminated soil at an automotive dealership, repair and service facility. Managed the implementation of the remedial program which involved the decommissioning and removal of 18 leaking belowground hydraulic lifts and the excavation and off-site disposal of over 3,000 tons of soil contaminated with hydraulic oil and waste oil. The project also involved the removal of an old oil/water separator and replacement with a new unit meeting current regulatory requirements for separation, as well as the removal of several previously undiscovered USTs. A field laboratory was utilized throughout the project to define the limits of contaminated soil and to verify that clean-up levels were achieved. The project was completed without suspending the daily operations of the facility.

Industrial Facility, Underground Storage Tank (UST) Closures - Lockport, NY

Project Manager for the closure of two inactive USTs occurring at an industrial facility involved in the manufacture and machining of parts for the paper industry. Following the removal of residual product and sludge, the tanks were removed and cleaned for proper off-site disposal. Visually contaminated soil encountered in the tank cavities was also excavated for disposal at an appropriately permitted off-site facility. Confirmatory samples were collected from the tank cavities and chemically analyzed to verify compliance with regulatory levels. A report summarizing tank closure activities and documenting the quantity and final disposition of wastes generated as a result of the project was submitted to and accepted by the NYSDEC who issued a No Further Action letter.

Industrial Facility PCB, Drum and Tank Remediation - Elmira, NY

Supervised the remedial program at a former steel foundry that involved the disassembly and removal of eight leaking transformers from on-site buildings to a secure staging/contaminant area for draining and transport to an off-site disposal facility. The project also entailed the overpacking and secure staging of numerous drums containing hazardous substances and petroleum products encountered throughout the 19-

acre site, and the proper closure of eight aboveground storage tanks ranging in size from 250 to 6,000 gallons.

Abandoned Industrial Facility Soil Remediation - Cheektowaga, NY

Prepared a Remedial Action Plan (RAP) under the NYSDEC Voluntary Cleanup Program for the remediation of an inactive industrial site contaminated with chlorinated solvents. Following regulatory approval of the Remedial Action Plan, managed the remedial program consisting of the proper closure of an inactive UST, extraction and on-site treatment of contaminated groundwater in the area of concern, excavation of contaminated soil for off-site treatment and disposal, and the further investigation of down-gradient groundwater conditions. The program also involved the development and implementation of community and site-specific health and safety plans requiring continuous air monitoring for particulate and organic vapor levels.

Solid Waste Management Facilities

Allegany County Landfill Environmental Monitoring Program - Angelica, NY

Project Manager for the environmental monitoring program at a 24-acre municipal solid waste landfill. Responsible for the supervision of technical staff involved in the evaluation, management and reporting of quarterly and annual groundwater, surface water, sediment, leachate and landfill gas data pursuant to 6 NYCRR Part 360. Also responsible for the development and implementation of the landfill gas monitoring program at the site, including the design and installation of a network of permanent gas monitoring probes, and associated plan and report preparation for NYSDEC review.

Landfill Closure Design and Construction | Allegany County Landfill, Angelica, NY

Principal/Project Manager for the phased closure of cells 4-7 at the Allegany County Landfill pursuant to 6 NYCRR Part 360. Responsible for the management of permitting, engineering and construction services provided for this multi-year closure program.

Construction and Demolition (C&D) | Landfill Hydrogeologic Investigation, Cheektowaga, NY

Performed a hydrogeologic investigation of a 25-acre C&D debris landfill associated with a 6 NYCRR Part 360 permit renewal application. The landfill is located adjacent to a Class 2 inactive hazardous waste disposal site. Supervised the installation of new groundwater monitoring well network, abandonment of old wells, in-situ hydraulic conductivity testing, and collection of groundwater and surface water samples. Participated in the review and interpretation of analytical data as well as report preparation. Managed execution of quarterly water quality monitoring program.

Water Quality Monitoring Program | Ischua Landfill, City of Olean, NY

Principal-in-Charge for water quality monitoring program at the Ischua Landfill. Project involves the collection and reporting of quarterly water quality monitoring samples from the landfill.

Draft Environmental Impact Statement (DEIS) | Integrated Solid Waste Management Facility, Cattaraugus County, NY

Project Manager for the preparation of the DEIS pursuant to SEQRA for a proposed solid waste management facility designed to accept 3,000 tons per day of municipal solid waste (MSW). Primary components included a 135-acre MSW landfill, recyclables handling and recovery facility, and yard waste composting facility. Managed the implementation of site-specific investigations designed to assess human and natural resources on the project site and its environments. This required the coordination of subconsultants for a cultural resources survey, traffic analysis, socioeconomic assessment and acoustical evaluation. Resultant document was submitted to the NYSDEC's central office for review and was subsequently noticed as complete.

Draft Environmental Impact Statement (DEIS) | Integrated Solid Waste Management Facility, Orleans County, NY

Project Manager for the preparation of the DEIS in association with the Conceptual Review Application for an integrated facility that featured yard waste composting, recyclables recovery and processing components, as well as sanitary and construction and demolition (C&D) landfill areas. Project involved the development of conceptual design parameters, the evaluation of potential impacts to existing natural and human resources in the site vicinity, and the identification of appropriate measures to mitigate

adverse impacts.

Municipal Solid Waste Composting Facility | Permit Documents, Dinwiddie County, VA

Technical Manager for the preparation of the Solid Waste Management Facility Permit Application and supporting technical plans and documentation for a facility designed to anaerobically compost municipal solid waste and wastewater treatment sludge at a rate of 200 tons per day. Supervised the preparation of Engineering Report, Operation and Maintenance Manual, Environmental Monitoring Plan, and Contingency Plan.

Municipal Solid Waste Composting Facility | Permit Documents, Greene County, VA

Technical Manager for the preparation of the Solid Waste Management Facility Permit Application and supporting technical plans and documentation for a facility designed to aerobically compost municipal solid waste and wastewater treatment sludge at a rate of 100 tons per day. Supervised the preparation of the Engineering Report, Operation and Maintenance Manual, Environmental Monitoring Plan and Contingency Plan.

Yard Waste Composting Facility | Permit Application, Clarence, NY

Prepared the 6 NYCRR Part 360 permit application and supporting technical documents for a private yard waste composting facility proposed to be sited in a former sand and gravel mine. The design of the facility was based on the Windrow composting method. Responsibilities included the completion of a market analysis and hydrogeologic investigation of the site, equipment selection (e.g., tub grinder, Windrow turning equipment, etc.), and the preparation of the Operation and Maintenance Manual, Environmental Monitoring Plan and Contingency Plan. Other responsibilities included the preparation of technical information concerning the composting process for presentation to the public. The resulting application received a Notice of Complete Application from the NYSDEC.

Solid Waste Management Facility | Permit Applications, Various Facilities, NY

Prepared several 6 NYCRR Part 360 permit applications and supporting technical documents for solid waste management facilities in New York including the East Side transfer station, Hopkins Street material recovery facility, Schultz landfill, and integrated tire processing/storage facility.

Waste Tire Processing and Storage Facility, Western NY

Managed and directed the preparation of 6 NYCRR Part 360 permit renewal application and supporting technical documentation to bring a waste tire processing and storage facility into compliance with current regulations. The facility received waste tires from the western New York region, recovered recyclable metals and reusable tires, and temporarily stored waste tires prior to processing for tire derived fuel (TDF). The TDF was supplied to Midwestern electric cogeneration facilities. Prepared the Engineering Report and supervised the preparation of the Operation and Maintenance Manual, Contingency and Response Plan.

Waste-To-Energy Facility, Buffalo, NY

Prepared the 6 NYCRR Part 360 permit application and supporting technical documents for a Waste-To-Energy (WTE) facility designed to generate heating energy from the combustion of waste wood material recovered by companion construction and demolition processing, recovery and transfer station. Documents prepared in support of the application included an Engineering Report, Operation and Maintenance Manual, Ash Residue Management Plan, Waste Control Plan, and Contingency and Response Plan. Project required extensive negotiations with State regulatory personnel.

Waste Processing, Recyclables Recovery and Transfer Stations, Buffalo, NY

Responsible for the preparation of 6 NYCRR Part 360 permit applications and supporting technical documents for two solid waste management facilities designed to receive, process, extract recyclable materials, and transfer by-pass waste from a waste stream consisting of both municipal solid waste and construction/demolition debris. Projects entailed the development of detailed process flow and waste control provisions to ensure and maintain the segregation of numerous waste types.

Landfill Gas Recovery Facility, Lancaster, NY

Prepared the permit renewal application and supporting technical documents for an active facility that recovers landfill gas from 160 collection wells and generates 6.5 megawatts of electric power.

Construction and Demolition (C&D) Processing, Recyclables

Recovery and Transfer Station, Ulster County, NY

Prepared the technical reports/ manuals in support of a 6 NYCRR Part 360 permit application for a proposed facility designed to process, extract recyclable materials and transfer by-pass waste from a waste stream consisting of both municipal solid waste and C&D debris. The project involved the development of detailed process flow and waste control provisions to ensure and maintain the segregation of numerous waste types.

Municipal Yard Waste Composting Facility, Orchard Park, NY

Project Manager for the planning, design and permitting of a new yard waste composting facility. Responsibilities included the management of natural and human resource investigations, completion of a Market and Economic Analysis, SEQRA compliance, and oversight of facility design and 6 NYCRR Part 360 permit application preparation.

Construction and Demolition (C&D) | Landfill Hydrogeologic Investigation, Cheektowaga, NY

Performed a hydrogeologic investigation of a 25 acre C&D debris landfill associated with a 6 NYCRR Part 360 permit renewal application. The landfill is located adjacent to a Class 2 inactive hazardous waste disposal site. Supervised the installation of a new groundwater monitoring well network, abandonment of old wells, in-situ hydraulic conductivity testing, and collection of groundwater and surface water samples. Participated in the review and interpretation of analytical data as well as report preparation.

Corrective Measures Assessment | Municipal Landfill Site, Ulster, NY

Completed a Corrective Measures Assessment of a closed 23-acre municipal solid waste landfill to address groundwater contamination detected at the site. This work was performed in accordance with 6 NYCRR Part 360 and involved the evaluation and comparative analysis of potential remedial measures ranging from landfill reclamation (source removal) to groundwater extraction and treatment.

Remedial Investigation (RI) | Superfund Site, Buffalo, NY

Technical Manager for RI of an abandoned industrial landfill located in a heavily industrialized section of Buffalo, NY. Supervised the implementation of subsurface investigation, sediment sampling and analysis program. Participated in data evaluation/ interpretation and report preparation.

Remedial Investigation/ Feasibility Study (RI/FS) | Landfill Site, Salina, NY

Prepared the Field Sampling Plan (FSP) for the RI/FS of a 55-acre, Class 2 inactive hazardous waste site. Also performed technical review of validated data packages for groundwater, surface water, soil, sediment and leachate resulting from the implementation of the FSP.

Water Quality Monitoring Program | Schultz C&D Landfill, Cheektowaga, NY

Managed the execution of the Part 360 quarterly monitoring program at a 25-acre active construction and demolition debris landfill. The program consisted of the collection and analysis of samples from a network of 12 groundwater monitoring wells and three surface water stations, as well as the preparation of reports for regulatory review. Responsibilities included the supervision of field sampling personnel, coordination of laboratory analysis, data review and interpretation, and quarterly and annual report preparation.

Water Quality Monitoring Program | Orleans Sanitary Landfill, Albion, NY

Project Hydrogeologist for the Part 360 quarterly monitoring program at an active Municipal Solid Waste landfill involving groundwater, surface water and leachate monitoring. Responsibilities included data management, review and interpretation, and preparation of quarterly and annual reports for regulatory review.

Baseline Water Quality Monitoring | Proposed Municipal Solid Waste Landfill, Farmersville, NY

Project Hydrogeologist for the water quality monitoring program implemented at a proposed landfill site to establish baseline groundwater and surface water quality pursuant to Part 360. Responsibilities included data management, review and interpretation.

Grant Writing

Restore NY Program | Former Dahlstrom Complex, Jamestown, NY

Managed the preparation of a successful $1M Restore NY grant application to fund the asbestos abatement and demolition of a large manufacturing complex in the City of Jamestown.

Restore NY Program | Former Agway Site, Olean, NY

Managed the preparation of a successful $1.5M Restore NY

grant application to fund the demolition of multiple industrial buildings located on the former Agway site in Olean, NY.

Restore NY Program | Former American Locomotive Complex, Dunkirk, NY

Assisted the City of Dunkirk with a successful $2M Restore NY grant application for the demolition and redevelopment of the former ALCO site in Dunkirk, NY.

US Department of Commerce EDA Grant Program | Progress Drive Reconstruction, Dunkirk, NY

Assisted Chautauqua County with the preparation of a successful $2.4M EDA grant to fund the reconstruction of Progress Drive in the City and Town of Dunkirk, NY.

1996 Clean Water/Clean Air Bond Act Environmental Restoration (Brownfield) Program | Investigation Grant, Chautauqua County, NY

Prepared a successful grant application on behalf of Chautauqua County for the completion of a Site Investigation/ Remedial Alternatives Report (SI/RAR) of an abandoned 12-acre heavy industrial site in Dunkirk, NY. This grant provided state funding assistance in the amount of $175,000 for the completion of the SI/RAR program.

1996 Clean Water/Clean Air Bond Act Environmental Restoration (Brownfield) Program | Investigation Grant, Chautauqua County, NY

On behalf of the Chautauqua County Department of Public Facilities, prepared the grant application and supporting technical information for the completion of a Site Investigation/Remedial Alternatives Report (SI/RAR) of a Brownfield site located in the Village of Brocton, NY. Technical information prepared in support of the grant application included a preliminary work plan for the SI/RAR and detailed project budget. This grant application was approved by the NYSDEC for reimbursement of 75% of the eligible project costs.

USEPA Brownfields Assessment | Demonstration Pilot Program, Chautauqua County, NY

Assisted the Chautauqua County Department of Public Facilities with the preparation of a successful grant application under this Federal Brownfield redevelopment initiative to fund the development of a county-wide Brownfield inventory, develop a site evaluation process, and investigate and perform remedial planning for seven high priority Brownfield sites. This grant was awarded in the amount of $200,000.

1998 Parks Grant Program, Chautauqua County, NY

Assisted the Chautauqua County Department of Public Facilities with the preparation of a successful grant application for the acquisition of 8.5 acres of land situated along the Chadakoin River in the Village of Falconer and the development of a public park. Prepared the project narrative and full Environmental Assessment Form (EAF) and supervised the development of a conceptual site plan depicting access and parking facilities, nature trails, and a canoe launch for the grant application.

NYSDEC Environmental Restoration Program | Investigation Grant Application, Chautauqua County, NY

On behalf of the Chautauqua County Department of Public Facilities, prepared a successful grant application and supporting technical information for the completion of the investigation of the former C&B Cleaners site in Jamestown, New York.

NYSDEC Environmental Restoration Program | Investigation Grant Application, Dunkirk, NY

On behalf of the City of Dunkirk, prepared a successful grant application and supporting technical information for the completion of the investigation of the former Niagara Motors site.

NYSDEC Environmental Restoration Program | Investigation Grant Application, Olean, NY

On behalf of the City of Olean, prepared a successful grant application and supporting technical information for the completion of the investigation of the former Felmont Oil site.

NYSDEC Environmental Restoration Program | Remediation Grant Application, Chautauqua County, NY

On behalf of the Chautauqua County

DANIEL NOLL

Senior Remedial Design Engineer

Dan has more than 20 years of experience with environmental projects at industrial/manufacturing facilities and environmental investigation projects for a variety of clients including developers, financial institutions, industrial clients, and municipalities. Dan has managed numerous Phase II Environmental Site Assessments and remediation projects such as groundwater monitoring programs, soil vapor investigations, test pit investigations, geo-probe investigations, underground storage tank removals, soil removals, bio-cell remediations, and in-situ groundwater remediation. He also has experience with the design and installation oversight of mitigation systems. In addition, Dan has assisted industrial, municipal and agricultural clients with permitting and annual reporting for State Pollution Discharge Elimination System (SPDES) permits, Part 360 Land Application permits, Composting permits, and Petroleum Bulk Storage (PBS) registrations.

PE

Professional Engineer, NY and ME

EDUCATION

Clarkson University: BS, Chemical Engineering

CERTIFICATIONS/ REGISTRATIONS

OSHA 40-Hour Certified Hazardous Waste Site Worker Training

OSHA 8-Hour Certified Hazardous Waste Site Worker Refresher Training

PFAS Investigation at Former Landfill – Orleans County, NY

Mr. Noll managed a project to assess a former landfill in Orleans County NY for Per and Polyfluoroalkyl Substances (PFAS). Due to concerns with the landfill closure (1980s), the NYSDEC required sampling of nearby residential drinking water wells and an assessment of the soil and groundwater at the landfill. Mr. Noll coordinated an assessment of drinking water wells in proximity of the landfill. Municipal water serviced a majority of the area but four residences still utilized private wells. Mr. Noll coordinated sampling with the NYSDOH, NYSDEC, Orleans County DOH and the property owners. In addition, Mr. Noll managed soil and groundwater sampling within and around the landfill to assess for PFAS sources.

PFAS Investigation at Former Landfill – Palmyra, NY

Mr. Noll currently is managing a project to assess a former landfill in Palmyra NY for Per and Polyfluoroalkyl Substances (PFAS). The landfill was closed in the late 1970s. NYSDEC conducted an initial testing program and identified elevated levels of PFAS in groundwater. Mr. Noll has been working with the Town to evaluate nearby residences for private wells and public water availability. Mr. Noll is also managing an assessment of the landfill history and subsequent to completing that assessment a detailed investigation will be completed to determine any remedial actions required.

PFAS at Brownfield Sites – Various Locations, NY

The NYSDEC is currently undergoing a statewide assessment of Per and Polyfluoroalkyl Substances (PFAS) in groundwater. As part of that assessment NYSDEC has been requesting that active and former Brownfield sites be assessed for PFAS across the State of New York. This program resulted in numerous old and active remedial sites

LaBella
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being further investigated. Mr. Noll was the project manager for over 15 Brownfield sites in NY where such testing was requested. Mr. Noll negotiated the details of the sampling and managed/coordinated the field activities and reporting. In addition to PFAS NYSDEC also required conducting emerging contaminant testing for 1,4-Dioxane.

Former Rock Quarry Water Sampling – Cortland, NY

Mr. Noll coordinated a project to characterize quarry water as part of a larger construction project. The former quarry filled with water after operations ceased. A large natural gas pipeline was being installed near the quarry and required ballast water for the pipeline installation. Mr. Noll coordinated the approvals for baseline sampling of the water through the Town of Cortland who owned the quarry. The sampling included contaminants of concern including Per and Polyfluoroalkyl Substances (PFAS). Mr. Noll negotiated the sampling requirements/scope and coordinated implementation with internally and with the natural gas company, Town and contractor. The sampling included baseline and post discharge of the ballast water to confirm there was no impact to the water since the Town was exploring possible future uses of the quarry.

City of Hornell – Wastewater Plant Aeration Basin Upgrades

Mr. Noll was the project manager for assessing and implementing replacements for the aeration basin aerators. The City's aeration basins had not been upgraded in almost 30 years and the aging equipment was past its useful life. Mr. Noll worked with the City to assess potential replacement equipment and coordinated a performance contract approach to complete the aeration equipment upgrades. Mr. Noll worked closely with the chief operator to assess the preferred equipment in order to make sure that the equipment would not only meet the process/ treatment requirements but to take into account the long-term maintenance and operations for a facility that will utilize the equipment for the next 30 years. Mr. Noll and the LaBella team assessed numerous types of aeration equipment and assisted with selection of the equipment. Mr. Noll also worked with the City to conduct construction administration activities to ensure a successful completion of the project.

City of Hornell – Wastewater Plant Phosphorus Removal Program

Mr. Noll was the project manager to assist the City of Hornell with completing the New York State mandated actions for removal of phosphorus from the wastewater. Initially, Mr. Noll worked with the City of Hornell to evaluate potential chemicals for use in removing phosphorus. Mr. Noll coordinated bench-scale studies with chemical suppliers to assess performance and cost of the chemicals. Based on the bench-scale studies a pilot-test was developed and proposed to NYSDEC. The pilot test was approved and implemented and the results were utilized to design and bid for construction a new chemical feed building. The design included a pre-fabricated building to house the chemicals and associated equipment (chemical feed pumps, day tank, piping, and controls). Mr. Noll also worked with the City to bid the project in such a way that the City could self-perform some of the construction work and reduce the overall cost of the project. The project was successful in utilizing alum in reducing the WPCP effluent phosphorus concentration to one (1) mg/l to meet new limits in the State Pollution Discharge Elimination System (SPDES) permit.

City of Hornell – Wastewater Plant Filter Building and Drive Upgrades

Mr. Noll worked with the City to apply for funding to complete upgrades to aging equipment. The drives providing mixing for numerous tanks were over 30 years old and beyond their useful life. Mr. Noll worked with the City to obtain the information on the aging drives and coordinate with replacement of similar equipment. Mr. Noll coordinated with the City to assess the sequencing of drive replacements to ensure that the plant processes would be maintained throughout the construction work so that effluent limits would be met. This project also included replacing filter blocks on the sand filter equipment. Similar to the drives, the filter building had not been upgraded in over 30 years and the blocks required replacement. Mr. Noll led the project to provide design drawings, bid specs and work with the City to bid and award the project. Mr. Noll also further assisted the City with the construction administration services.

Enbridge (Spectra Energy, LP): Gas Pipeline Characterization Work

Mr. Noll has worked with Enbridge to coordinate/oversee a program that characterizes natural gas piping that has been removed from service. Mr. Noll managed the program to characterized the exterior coating of piping (PCBs and asbestos) as well as the piping interior (PCBs). This work

has included the characterization of over 25 miles of line piping and numerous pieces of compressor station equipment and associated piping over various projects in the northeast. The work was completed in accordance with applicable Federal regulations (e.g., 40 CFR 761) and state regulations depending on the project site (included New York, Massachusetts, Connecticut, Rhode Island and Pennsylvania).

Enbridge (Spectra Energy, LP): Wastewater Characterization Work

Mr. Noll was the project manager for the characterization of ballast water used as part of a 1-mile horizontal drilling program to install 42-inch diameter natural gas piping beneath the Hudson River. Mr. Noll coordinated with the regulatory agencies to develop the required sampling program and oversaw the collection and analysis for the sampling of approximately 500,000 gallons of ballast water. Based on the sampling completed a treatment system was developed and the water was directly discharged to surface water. LaBella completed this work in a very short timeframe based on the Client's request in order to accommodate the construction schedule.

Enbridge (Spectra Energy, LP): Radiological Characterization Work

Mr. Noll has worked with Enbridge to complete the characterization of suspect radiological materials. Specifically, Mr. Noll has worked with Enbridge to complete the necessary sampling of natural gas equipment that has been removed from service. LaBella coordinated/ completed radiological surveys (alpha, beta and gamma) in order to preliminarily characterize the material. LaBella also coordinated/ completed the collection of samples and analysis (through a 3rd party laboratory) for waste characterization purposes of materials that warranted such testing. This sampling included gamma spec analysis and other parameters as needed for the disposal facility.

LMC Industrial Contractors: Gas Pipeline Reclamation Facility

Mr. Noll has partnered with LMC Industrial Contractors in order to design and permit a facility that specializes in the recycling of natural gas piping that contains an asbestos coating. LaBella worked with LMC to design the facility and obtained the necessary New York State permits (air permit) and local permits (wastewater discharge). LaBella also oversees the program that completes the waste characterization of the piping for PCBs (exterior coating and interior) and asbestos (exterior coating). The facility has led to the reclamation of steel that may otherwise have been disposed of in landfills or transported at significant expense to facilities in Texas or elsewhere. The facility has taken piping from project sites in New York, Massachusetts, Connecticut, Rhode Island and Pennsylvania.

Confidential Utility Client: SPCC Program

Mr. Noll worked with a private utility client in order to develop a program to complete Spill Prevention, Control and Countermeasure (SPCC) Plans for approximately 600 electrical substations in New York State. Mr. Noll organized the program and led a team of over forty staff members to complete the inspection of each facility and develop an SPCC Plan for each facility in order to keep the facilities in compliance with Federal Regulations. The project included making recommendations for identifying areas of compliance issues. Mr. Noll worked with the Client on a second phase to implement recommendations at approximately 200 facilities across New York State to ensure compliance with regulations. The recommendations included modifications to routine monitoring and where necessary additional secondary containment.

Repsol (Talisman Energy) – Stray Gas Assessments

Mr. Noll has managed the assessment of stray gas issues in the Marcellus Shale area of Northern Pennsylvania. The stray gas issues were related to gas fracturing projects per the Pennsylvania Department of Environmental Protection (PADEP) regulations and additional requirements by the Client. The work included assessing gas sampling information from the well field installation work and potable water wells samples. Mr. Noll also assisted with assessing potable water sampling information in order to evaluate and recommend potential treatment systems to address stray gas issues. Mr. Noll and his team were nominated by the Client as Environmental Service Provider of the year for their work on this project.

NYS Department of Transportation: Hazardous Materials Assessment & Remediation Term - DOT Regions 3, 4, 5, & 6

Mr. Noll manages a NYSDOT Term Agreement for Hazardous Materials Assessment & Remediation for Regions 3, 4, 5, & 6. This agreement includes a variety of services to support the NYSDOT for all manner of construction projects and

for property acquisition. The work includes Phase I & II Environmental Site Assessments to support property acquisitions and/or to pre-characterize soil and groundwater prior to construction in a NYSDOT corridor. Mr. Noll also has assisted NYSDOT with waste characterization of soil, spent paint, and wastewater. In addition, NYSDOT has utilized LaBella for community air monitoring during construction work at impacted properties and to complete radiological screening for areas where radioactive slag has been a concern.

Stern Family Limited Partnership: Former Manufacturing Facility BCP Site - Rochester, NY

Dan was the Project Engineer for this BCP Site, which underwent a Remedial Investigation, Interim Remedial Measures, and installation of a sub-slab depressurization system. Dan completed and stamped the Final Engineering Report required to obtain the Certificate of Completion for the property owner, allowing them to obtain their tax credits.

Springs Land Company: Carriage Cleaners BCP Site - Rochester, NY

As Project Manager, Dan completed a Brownfield Cleanup Program (BCP) Application & Work Plan to conduct a Remedial Investigation at a former dry cleaning facility. A soil, groundwater, and soil gas study was undertaken to develop remedial costs and assist with redeveloping the property. Subsequently, an Interim Remedial Measure was completed to remove the source area of impacts from the Site. Dan completed a remedial alternatives analysis for selecting a treatment approach for the residual groundwater plume. Dan also attended Town Board Meetings regarding this project.

American Siepmann Corporation: Former Manufacturing Facility BCP Site - Henrietta, NY

Dan was the Project Manager for this Brownfield Cleanup Program (BCP) Site and has overseen the installation of a groundwater monitoring well network and subsequent routine sampling as part of a Monitored Natural Attenuation (MNA) program for remediation of chlorinated groundwater impacts at the Site.

RJ Dorschel Corporation: Former Gasoline/Service Station BCP Site - Rochester, NY

Dan was the Project Manager for this BCP Site, which included Remedial Investigations at two adjoining parcels, implementation of Interim Remedial Measures, and development of the Final Engineering Report and Site Management Plan. The project also included implementation of necessary Citizen Participation requirements. The project ultimately obtained the Certificate of Completion and thus the NYS tax credits.

One Flint Street Associates: Vacuum Oil BCP Site - Rochester, NY

Dan was the Project Manager for this Brownfield site that is the oldest oil refinery in the United States. The current project includes developing a remedial investigation plan for two parcels that have had a history of oil refining since the 1800s. The remedial investigation was designed to fill data gaps from previous studies in order to minimize cost to the Client.

Genesee Valley Real Estate: Former Bausch & Lomb Facility BCP Site - Rochester, NY

Dan is Project Manager for this Brownfield site that served as a manufacturing facility from the 1930s to the 1970s. The project includes a Remedial Investigation (RI) of a four-acre parcel with ten areas of concern identified based on historic information. The RI identified four areas requiring remedial actions and Interim Remedial Measures have been completed in three of the locations. The areas of remediation included petroleum impacted soil and groundwater with free floating petroleum product, and chlorinated solvent contamination including bedrock impacts at depth. A remedial alternatives analysis is being completed to determine a final remedy for the site.

Former Corning Hospital - Corning, NY

Dan was the project manager for completion of a Phase II Environmental Site Assessment at the Former Corning Hospital and 8 associated adjacent properties. A soil boring and groundwater monitoring program was implemented to identify subsurface impacts associated with former uses of the site including gasoline filling stations and former railroad.

Bajrangee, Inc.: Comfort Inn – BCP Site - Rochester, NY

Dan was the Project Manager for this Brownfield site that included a design phase investigation to determine the extent of remedial work. The remediation work included excavation of chlorinated solvent impacts to soil and groundwater from the basement of the building. This included proper shoring design to facilitate the removal action. A second phase of the remediation included injection of treatment chemicals to address downgradient groundwater

impacts.

NYSDEC Petroleum Spill Investigation and Remediation Projects

Alexander Associates: Former Genesee Hospital - Rochester, NY

Dan was Project Manager for a Phase II ESA of a former hospital campus and adjoining parking garage. This assessment included evaluating potential impacts from the hospital chemical storage area, backup generators and associated fuel tanks, and historical site uses which included a former car dealership and service center. The Phase II ESA progressed in to the remediation of a NYSDEC Spill prior to redevelopment of the property. The investigation and remediation work obtained closure of a 20+ year old spill in less than 6-months.

DeCarolis Truck Rental: Petroleum Spill Site Remediation - Rochester, NY

Dan was Project Engineer for this site, responsible for the coordination of the removal/ disposal of approximately 800 tons of petroleum impacted soil and development of a confirmatory soil sampling program. Dan also coordinated work with NYSDEC and completed post removal monitoring in order to close the spill file.

City of Rochester: Petroleum Soil Removal & Oxygen Injection System - Rochester, NY

As Project Engineer, Dan developed a soil and groundwater study to investigate former underground storage tanks at a former gasoline/ auto repair facility. A remedial alternatives analysis was conducted to evaluate several options for remediating soil and groundwater at the site including light non-aqueous phase liquid. Dan followed this project through remediation which consisted of removing about 1,500 cy of soil and designing/installing an oxygen injection system to remediate groundwater over time.

Hoselton: Petroleum Spill Remediation - Rochester, NY

Dan was project manager for this project which included the removal and disposal of approximately 900 tons of petroleum impacted soil. Dan negotiated closure of the spill file with NYSDEC by addressing off-site contaminant migration by injection of treatment chemicals at the property line.

Permitting & Land Application Sites Mizkan Americas: Lagoon Design/Construction and SPDES Permitting - Lyndonville, NY

Dan served as the Project Manager and Engineer for the design and construction assistance for a 700,000 gallon lagoon to store food-grade wastewater. The objective was to reduce facility costs by discharge of food-grade wastewater to local sprayfields. The lagoon was designed and installed in accordance with NYSDEC requirements in order to store wastewater during the non-spraying season. This is a 20+ year old client who built their existing lagoon with LaBella's assistance in 1987. Project also includes permitting through NYSDEC SPDES (State Pollution Discharge Elimination System) Program.

Leo Dickson and Sons, Inc.: Land Application and Composting Permits - Bath, NY

Dan managed a project to permit a facility for composting of wastewater biosolids. The project included developing a report for NYSDEC to document design details for the facility, facility operations, and proposed monitoring. The facility received a NYSDEC Part 360 Composting Permit. In addition, Dan continues to provide annual reporting services for ensuring the facility operates within the permit conditions. He also assists this client with the annual reporting and permit renewals of a 2,000+ acre land application project under NYSDEC Part 360 solid waste regulations. The land application work includes permitting approximately 16 municipal facilities for land application.

City of Hornell: Land Application Reporting, Permit Renewals and Modifications - Hornell, NY

Project Manager and Engineer responsible for assisting the City of Hornell with their annual Land Application Reporting, permit renewals and modifications to their permit for over 20 years. In addition to completing each annual report in the past five years, LaBella also recently assisted the City of Hornell with their Permit Renewal (May 2010) and a Permit Modification (July 2011). LaBella has assisted the City of Hornell for the past 20 years with permitting approximately 498 acres of land for their biosolids application work. Hornell conducts land applications via subsurface injection and typically applies 700,000 to 1 Million gallons annually. In 2011, LaBella assisted Hornell with permitting approximately 204 acres of land. LaBella assisted with all aspects of the process including coordinating with agencies, wetland issues, test pitting, soil sampling, etc. LaBella's work with the City of Hornell has provided us with significant experience in quickly determining issues that require resolution/clarification as a first step prior to completing the application process.

Miscellaneous Projects

Former Emerson Power Transmission Facility - Ithaca, NY

Dan completed a detailed review of this 100-acre site with 800,000 sq. ft. of manufacturing space. The site is in the NYSDEC Inactive Hazardous Waste Disposal Site registry and was a heavy industrial facility for over 100 years. The facility closed in 2009 and Dan is the project manager for environmental due diligence activities for a potential buyer. The facility has known issues with chlorinated solvents in bedrock and with significant off-site impacts. The overall project will include a detailed and in-depth environmental site assessment with sampling for soil, bedrock, groundwater, soil gas, sediments, and surface waters in order to document any impacts above NYSDEC criteria and thus limit liability for the purchaser.

City of Rochester: Genesee River Dredging Project - Rochester, NY

Dan managed a project to permit three areas for dredging near the mouth of the Genesee River. The project included evaluating the previous dredging operations in the area, the existing sediment sampling data, sediment levels, discharge points in the area to be dredged and 3-D modeling of the sediments for accurate volume calculations. This information was summarized in a presentation to NYSDEC and the Army Corp of Engineers in order to streamline the permitting process and determine any additional requirements for obtaining a permit. Subsequent to the presentation, Dan developed the permit and submitted them to the Client for signature, and then approval by regulatory agencies.

MRB Group: Sediment Sampling Project - Erie Canal, NY

Dan managed a project to pre-characterize sediment in the Erie Canal in order to determine the depth and volume of sediment in the work area, as well as the waste disposal requirements. This work was conducted prior to a utility line installation project in order to determine the feasibility of the project and the associated costs.

Dansville Properties, Inc.: Former Foster Wheeler Facility - Dansville, NY

Dan managed the effort to close out existing NYSDEC and EPA permits for the former facility and subsequently obtained permits for the new facility, which included multiple industrial companies operating throughout the campus. The permitting effort included obtaining: a sewer use permit from the local municipality, a SPDES Multi-Sector General Permit for 5 outfalls, RCRA Generator ID, Title V Air Permit, and PBS Registration. Dan has managed this client's permits for more than 10 years, including permit modifications, renewals, and routine sampling.

Buckingham Properties: Manufacturing Facility - Rochester, NY

Dan assisted a developer that purchased a former Bausch & Lomb manufacturing facility to obtain a SPDES Permit for Industrial Discharges. This project included assessing the new operations and discussion of the Site with NYSDEC to determine the appropriate permits for the facility, since multiple tenants with various operations were in operation at the Site.

City of Rochester: Port Marina - Rochester, NY

Dan assisted with the environmental investigation of the City of Rochester Port Marina. This project included evaluating the extent of slag fill materials that would require proper management during any redevelopment work. The extent of slag was evaluated by implementing a grid pattern of soil borings and using the resulting data to develop a 3-dimensional model of the subsurface at the Site. This model was used to generate volumes of material to be disturbed during redevelopment and estimate the cost burden of the environmental portion of the project. This project also included evaluating the magnitude and permitting of a massive dewatering program to allow the mass excavation to be completed.

City of Rochester: Former Forestry Building - Rochester, NY

Dan managed a project to evaluate the extent of mercury impacts at a former City of Rochester Forestry operations building. The project included multiple rounds of sampling at various depths in order to determine the extent of mercury impacted soils that required removal prior to redevelopment of the Site by a local manufacturing company.

Valeo North America: Former Valeo Facility - Rochester, NY

Dan managed Remedial Investigations of two areas of potential contamination at this former manufacturing facility. These assessments included evaluating bedrock groundwater for plating waste impacts (metals and chlorinated solvents). These evaluations were complicated by the fact that multiple industrial companies were in operation at the Site in the past and thus requiring LaBella to provide a focused assessment to only evaluate potential Valeo responsibilities.

City of Rochester: NYSDEC Legacy Site Soil Vapor Intrusion Project - Rochester, NY

Dan is Project Manager for this project which includes evaluating soil vapor intrusion from a former 230-acre municipal landfill with methane gas and chlorinated solvent impacts. The landfill was converted into an industrial park after closure in 1971 and is now developed with 45 separate parcels and over 2,000,000 square feet of building space. This challenging project included obtaining access from 27 different property owners and conducting site assessments at each facility and separately evaluating groundwater impacts over approximately 20-acre area. The results of this work determined the cost burden and liability of the City for addressing soil vapor intrusion. LaBella utilized all of the following mitigation approaches for minimizing this significant cost burden to the City: sealing of floors, vapor barriers, sub-slab depressurization systems and building pressurization depending on building conditions/uses.

City of Rochester: Vacuum Oil Brownfield Opportunity Area - Rochester, NY

Dan was Project Engineer for this project and his role was to develop a Pre-Nomination Study Report to facilitate entering the area into the NYSDEC Brownfield Opportunity Area program. The pre-nomination study included evaluating demographics of the area, current and past property uses, property ownership, area-wide utilities, etc. The pre-nomination report was approved by NYS Department of State and a grant was approved for the next phase of the BOA program.

Yates County: Environmental Restoration Program - Penn Yan, NY

Dan was project manager for this Environmental Restoration Program site that included completing a Remedial Investigation at the site and developing a Site Management Plan to guide future redevelopment in-conjunction with remediation. This project turned a liability into an asset for the Count

Monroe County: Crime Lab Property Acquisition - Rochester, NY

Dan was project manager for this project which included conducting Phase I ESAs and Phase II ESAs at three properties being considered for development by the County for a new crime lab facility. The project included investigation and remedial cost estimates for the County to use in property acquisition negotiations. After property selection, Dan assisted with implementation of a remedial program that included removal of over 3,000 tons of NYSDEC Regulated Solid Waste. In addition, he designed and oversaw installation of a sub-slab depressurization system for addressing soil vapor intrusion concerns at the approximate 11,000 square foot new building.

City of Rochester: Fill Relocation and Sub-Slab Mitigation System - Rochester, NY

Dan was project manager for this project which relocated approximately 3,000 cubic yards of fill material from a development site that is located on a former landfill operated by the City of Rochester. This work was conducted for the City but on private property. The fill was relocated and placed in a soil berm on City property with NYSDEC approval. In addition, Dan designed and oversaw construction of a sub-slab depressurization system for the new 8,000 square foot building.

City of Rochester: Bureau of Water, Lighting, and Parking Meter Operations - Rochester, NY

As Environmental Engineer, Dan worked on the redevelopment of the current site for reuse as a new facility for the operations center, which included the following tasks: delineate the extent of soil and groundwater contamination, evaluate potential remediation options, develop a Comprehensive Action Plan (CAP), assist in the development of remediation specifications, and identify the scope of potential Interim Remedial Measures (IRMs) at the site.

935 West Broad Street Petroleum Spill Site Characterization and Corrective Action - Rochester, NY

As Project Engineer, Dan developed a soil and groundwater study to investigate former underground storage tanks at a former gasoline/ auto repair facility. A remedial alternatives analysis was conducted to evaluate several options for remediating soil and groundwater at the site including light non-aqueous phase liquid. Dan followed this project through remediation which consisted of removing about 1,500 cy of soil and installing an oxygen injection system to remediate groundwater over time.

ADAM ZEBROWSKI

Environmental Due Diligence Program Manager

Adam Zebrowski is an Environmental Due Diligence Program Manager with eight years of professional consulting experience on projects throughout the Northeastern United States with a variety of developers, financial institutions, attorneys, municipalities, and county clients. Adam's background includes experience with the following.

- Management of more than 2,000 Phase I Environmental Site Assessments (ESAs) & Transaction Screen Assessments
- Management of over 300 Phase II ESAs
- Underground Storage Tank Removal/Closure
- Remediation and management of petroleum and hazardous substances sites
- Technologically Enhanced Naturally Occurring Radioactive Materials
- Soil vapor intrusion assessment and mitigation
- Hazardous building materials

Adam's responsibilities include project management, business development, and client management.such as HUD, NYSHCR and HFA.

EDUCATION

University at Buffalo: BS, Environmental Science

Erie Community College: AS, General Studies

CERTIFICATIONS

HAZWOPER 40-hour Certificate

Accredited Environmental Professional

Affordable Housing Redevelopment — Corning, New York

Adam provided consulting services for redevelopment of a 30 structure affordable housing development in Corning, New York. The property was developed in the 1950s, was in various stages of disrepair, and redevelopment of the site was desired by the local community. Adam assessed hazardous building materials within the site buildings prior to demolition or renovation, prepared several Phase I ESAs, monitored geotechnical soil borings at the Site for the presence of glass waste reportedly imported to the Site historically, managed completion of a lead risk assessment, and evaluated the property for wetlands and endangered species in compliance with New York State Homes and Community Renewal requirements. Furthermore, Adam helped the client explore options for handling suspected hazardous fill materials historically imported to the site if encountered during future redevelopment of the property.

Residential Apartment Building Portfolio, 20 Properties — Buffalo & North Tonawanda, New York

Adam managed completion of 20 Phase I Environmental Site Assessments at 20 properties located throughout the City of Buffalo and North Tonawanda, New York. The properties consisted of various residential apartment buildings varying in size from four-tenant 2-story buildings to multi-story high-rise apartment buildings/complexes.

USEPA Priority Brownfield Sites — Niagara County, NY

Adam has successfully assisted the Niagara County Department of Economic Development with assessment of environmental liabilities

LaBella
Powered by partnership.

associated with underutilized, environmentally problematic properties throughout Niagara County, NY. The assessments typically include properties with significant environmental liens or tax delinquency with histories including hazardous waste disposal sites, abandoned gasoline filling stations, automotive repair facilities, and historical manufacturing facilities. Services provided to the Niagara County Department of Economic Development often include Phase I ESAs, assessment or delineation of subsurface soil and groundwater impact, vapor intrusion, Technologically Enhanced Naturally Occurring Radioactive Materials, and hazardous building materials. These projects require the strictest quality controls and are subject to USEPA review and approval. Adam has successfully assisted the County in evaluating environmental risk prior to tax foreclosure or redevelopment initiatives of several properties throughout Niagara County.

Automotive Dealership — Niagara Falls, NY

Adam assisted a purchasing entity evaluate environmental liabilities associated with an automotive dealership located in Niagara Falls, New York. Environmental concerns identified at the property included a historical gasoline filling station located on a noncontiguous parcel associated with the greater dealership operation, approximately 20 in-ground hydraulic lifts, historical underground storage tanks, and long-term automotive repair operations. During subsurface exploration activities, it was revealed that the property was overlain with slag exhibiting elevated gamma radiation levels. In addition, slag in one portion of the Site was intermixed with apparent industrial waste. Adam was successful in assisting his Client's evaluation of the environmental liability associated with the property, exploration and implementation of remedial and engineering control options, and obtaining bank financing to purchase the property.

Construction Services — Northeast United States

Adam has experience managing numerous construction Plan Specification Reviews, Draw Inspections, and Property Condition Assessment projects throughout the northeast. Such services were primarily completed for financial institutions for lending purposes or property transactions.

Urban Redevelopment Project — Buffalo, NY

Adam provided environmental assessment services to a developer for redevelopment of 28 underutilized parcels of land within a portion of the City of Buffalo undergoing urban revitalization. LaBella provided environmental consulting services prior to the client retaining ownership of the properties. These included a Phase I ESA and a National Environmental Policy Act review. Furthermore, Adam explored remedial design options with the Client to be implemented concurrent with development activities to address various gasoline filling station operations, automotive repair operations, dry cleaners, and blacksmith operations historically conducted at the Site.

Environmental Due Diligence: Automotive Dealerships — Northern Ohio

Adam was retained to conduct environmental due diligence services on behalf of his client, a finical institution, to evaluate a portfolio of six large automotive car dealerships located in the Cleveland and Canton metropolitan areas. Operations at each automotive dealerships included large scale automotive repair and collision repair. The Sites generally included legacy environmental issues related to historical resales associated with in-ground hydraulic lifts, oilwater separators, and petroleum bulk storage. In addition, one of the dealerships were on land historically occupied with a large scale industrial operation, previous automotive and truck repair operations, and two gasoline filling stations. Adam assisted the client assess the environmental risk associated with each Site and conducted a Phase II Environmental Site Assessment to evaluate the environmental concerns identified.

Low-Income Housing Redevelopment — Corning, NY

Adam provided consulting services for redevelopment of a 30 structure low-income housing development in Corning, NY. The property was developed in the 1950s, was in various stages of disrepair, and redevelopment of the site was desired by the local community. Adam assessed hazardous building materials within the site buildings prior to demolition, prepared several Phase I ESAs, and evaluated the site for wetlands and endangered species in compliance with New York State Homes and Community Renewal requirements. Furthermore, Adam helped the client explore options for handling suspected hazardous fill materials historically imported to the site.

Hazardous Building Materials — Various, NY

Adam Zebrowski has interfaced

directly with LaBella's hazardous building materials specialists on various hazardous building material projects and has been responsible for maintaining project goals, work product quality, schedule, client relations, and field personnel. Adam has provided his clients such services to assess regulatory, environmental, and financial liabilities associated with property transactions, tax foreclosures, building demolition and renovation projects, and compliance with the Asbestos Hazard Emergency Response Act.

!!!!! Iberdrola USA: SPCC — Various, NY !!!!!!

Adam Zebrowski managed preparation of Spill Prevention Control and Countermeasure (SPCC) plans for 85 New York State Electric and Gas (NYSEG) electrical substations located throughout Western New York. The SPCC scope of work for each electrical substation included an inventory of oil containing electrical equipment and total oil volume, documentation of secondary oil containment measures, evaluation of local topographic conditions, locating nearby potential water body receptors, and preparation of a SPCC plan report. The purpose of each SPCC plan is to determine whether on-site controls (i.e. secondary containment such as berms or concrete containment structures) would adequately contain an oil release in the event of electrical equipment failure. And in the event the such controls were inadequate, to identify approximate surface flow characteristics and local at risk water bodies. Obstacles associated with the project included the volume of substations to be assessed, the large geographical distribution of the substations, and strict schedule demands which required all aspects of the project to be completed within four-six weeks. The SPCC plans were successfully completed and delivered to the client within the schedule required.

Talisman USA: Well Pad Assessments — Various, NY

Adam Zebrowski managed completion of several Environmental Natural Gas Well Pad Assessments on behalf of Talisman Energy USA. The scope of work for the assessments included a visual assessment of each well pad, review of Talisman Energy USA well records, New York State Department of Environmental Conservation (NYSDEC) records, well permits, historical records (i.e. historical aerial photography, historical atlases, Sanborn maps, etc.), natural gas well lease agreements, completion of an American Society for Testing and Materials 1527 compliant regulatory records review, interviews with Talisman Energy USA representatives and the property owner, and preparation of a report summarizing the results of the assessment. The purpose of the assessments were to determine site specific reclamation requirements subsequent natural gas well extraction activities. LaBella successfully completed the assessments meeting Talisman Energy USA requirements, project schedules, and budget. In addition, LaBella assisted Talisman Energy USA to characterize well cuttings previously buried at several well pads to determine well cutting disposal requirements.

Phase I ESAs

Phase I Environmental Site Assessments — Northeastern United States

Adam has managed over 2,000 Phase I ESAs, Transaction Screens, and RSRAs on a wide variety of residential, commercial, industrial, and manufacturing facilities including gasoline stations, repair shops, dry cleaners, apartment complexes, office buildings, and restaurants for various financial institutions, developers, municipalities, attorneys, and non-profit groups. Adam has conducted these assessments throughout the United States with particular project focus on the States of New York, Pennsylvania, and Ohio.

Site Characterization

Phase II Environmental Site Assessments — Northeastern United States

Adam has managed over 300 Phase II ESAs throughout the Northeastern United States for various financial institutions, developers, municipalities, attorneys, and non-profit groups. Adam has completed investigation of historic and active industrial/manufacturing operations, retail petroleum operations, petroleum distribution facilities, automotive and collision repair facilities, hazardous waste disposal sites, landfills, drycleaners, printing operations, orchards, blacksmiths, technologically enhanced naturally occurring radioactive materials (TENORM) sites. Adam has extensive experience with investigation methods including exploratory test pit excavations, direct push soil borings, soil vapor sampling, groundwater monitoring well installation and sampling. Adam has conducted assessments throughout the United States with particular project focus on the states of

New York, Pennsylvania, Ohio, Maryland, and New Jersey.

Former Dry Cleaners — Buffalo & Batavia, NY

As project manager, Adam completed a Phase I ESA at two commercial retail plazas. Based on the results of the Phase I ESAs, both properties were historically utilized as dry cleaning operations. Vapor intrusion assessments were completed and concentrations of chlorinated solvents were identified in vapor samples collected from both properties at concentrations above regulatory guidance values.

Fuel Oil Underground Storage Tank Assessment — Rochester, NY

As project manager, Adam completed a Phase I ESA at a commercial property for a real estate purchase. Based on the results of the Phase I ESA, one fuel oil underground storage tank was removed at the site without subsurface sampling. Adam managed completion of a Phase II assessment proximate the former fuel oil UST at an accelerated schedule. As no subsurface impact was identified, the property transaction was completed within the desired schedule of the client.

NYSDEC: Former Petroleum Distribution Facility — Buffalo, NY

On behalf of the New York State Department of Environmental Conservation (NYSDEC), Adam provided project and field management services to characterize the subsurface conditions of a large petroleum distribution facility containing dozens of historic and current underground storage tanks. The property owner was absent and the property was owned by the City of Buffalo for back taxes. Due to the previous use of the property, the City of Buffalo could not find a party interested in purchasing the property. As such, the NYSDEC funded by federal stimulus money requested that a subsurface investigation be completed to characterize the property. Based on the results of initial and subsequent investigations, extensive petroleum related contamination was identified. Adam collaborated with the NYSDEC Region 9 Spills Division and a private developer to identify the likely extent of the petroleum contamination. The property was ultimately purchased by the private developer from the City of Buffalo and enrolled in the NYSDEC Brownfield Cleanup Program.

Marina Property — Dunkirk, NY

As project and field manager, Adam completed a site wide subsurface investigation to determine the subsurface conditions on a large marina property located in Dunkirk, New York. Historical use of the property included a gasoline filling station, oil storage and an asphalt plant. Furthermore, large portions of the property received fill material from unknown sources. Based on the results of the investigation, extensive petroleum related subsurface impact was discovered. As the purpose of the investigation was to provide due diligence for a potential purchaser of the property, Adam explored various remedial options and cost estimates to assist his client determine an appropriate purchase price for the property and assess the risk associated with property ownership. The property was ultimately enrolled in the NYSDEC Brownfield Cleanup Program.

Former Petroleum Distribution Facility — Berlin, NJ

As project manager, Adam managed a Site Investigation (SI) of a petroleum distribution and truck repair facility in anticipation that the property would be accepted into the New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program. Based on the results of the investigation, several areas of petroleum impacted soil and groundwater were identified at the property. Although portions of the groundwater contamination was clearly the result of onsite operations, a VOC plume appeared to be migrating onto a portion of the site from an adjoining property utilized as a gasoline filling station. As releases were documented at the adjoining gasoline filling station, Adam assisted his client in exploring methods to determine the origin of the groundwater contamination migrating on-site and ultimately the liable party. The property was subsequently accepted into the NJDEP Site Remediation Program.

Railroad Car Manufacturer — Pueblo West, CO

As project manager, Adam managed a site wide subsurface investigation of a manufacturer of railroad cars in Colorado. In addition, an up-gradient chemical manufacturing facility with documented releases had reportedly impacted the local groundwater table. Based on the results of the investigation, Adam was able to determine that the groundwater beneath the subject property had not been impacted. However, arsenic was detected in soils collected from across the site at concentrations above Colorado Department of Public Health and the Environment (CDPHE) guidance and published background levels. Through communication with the CDPHE and the United

States Environmental Protection Agency, Adam was able to advise his client that the arsenic concentrations were likely due to a localized elevated arsenic condition and therefore not likely the result of on-site operations.

Apartment Complex — Buffalo, NY

As project and field manager, Adam completed a site wide subsurface investigation of a large apartment complex located in the City of Buffalo. The property was redeveloped as an apartment complex in the 1960s and was historically comprised of several city blocks which included various manufacturing and industrial operations. Based on the result of initial and subsequent investigations, several areas of semi-volatile organic compound (SVOC) contamination was identified and delineated. As the purpose of the investigation was to provide due diligence for a potential purchaser of the property, Adam explored various remedial options and cost estimates to assist his client determine an appropriate purchase price for the property and assess the risk associated with property ownership.

Spill Closures/ Remediation Projects

Historic Gasoline Station — Canandaigua, NY

As project and field manager, Adam completed a subsurface investigation to investigate a historic gasoline station located in Canandaigua, New York. Based on the results, petroleum contaminated soil and groundwater was identified and a spill was reported to the NYSDEC. At the request of the NYSDEC, Adam designed a subsequent subsurface investigation to determine the extent of the subsurface soil and groundwater impact. Based on the results of both studies, the NYSDEC "closed" the spill and did not require further work.

Former Automotive Dealership — Baltimore, MD

As project manager, Adam managed the removal of a large oil/water separator at a vacant automotive dealership. The purpose of the UST removal was to prepare the property for sale to another party. During excavation activities, it was discovered that the reported oil/water separator discharged directly to the ground. Extensive petroleum contaminated soil was encountered and a case was opened by the Maryland Department of the Environment (MDE) Oil Control Program. At the request of the MDE, approximately 800 tons of contaminated soil was removed from the property. On behalf of the property owner, Adam corresponded with the MDE to gain "closure" of the case and the property was sold.

Automotive Repair Facility — Cheektowaga, NY

As project and field manager, Adam was retained to remove three underground storage tanks (USTs) from an automotive repair facility located in Cheektowaga, New York. The purpose of the UST removal was to prepare the property for sale to another party. During UST removal activities, petroleum impacted soil was discovered and a spill was reported to the NYSDEC. At the completion of the project, a total of seven USTs and approximately 1,000-tons of petroleum impacted soil was removed from the property. Based on the work completed, the NYSDEC spill was "closed" and the client successfully sold the property.

Automotive Dealership — Honeoye Falls, NY

As the previous dealership structure was destroyed by fire, the property was being redeveloped with a new dealership facility. During demolition activities in-ground hydraulic lifts were removed from within the building footprint, and petroleum impacted soil was encountered by the general contractor. As such the NYSDEC was notified and a spill was assigned to the site. Adam provided oversight services to the general contractor for removal of approximately 1,500-tons of impacted soil from the property associated with the in-ground hydraulic lifts, former trench drains and oil water separator. Upon removal of the soil, the general contractor was able to complete the new structure. The NYSDEC spill associated with the site remained open as continued groundwater monitoring was required prior to spill closure.

Former Tin Smith — Buffalo, NY

As project and field manager, Adam completed an initial subsurface investigation at a convenient store property that was historically developed with an automotive repair facility and an associated gasoline UST, a varnish shop and a tin shop. The purpose of the investigation was to provide due diligence services for a lending institution which was accepting the property as part of a real estate portfolio as collateral for a commercial loan. Upon completion of the initial investigation, concentrations of SVOCs, lead and mercury were detected at concentrations above NYSDEC guidance within soil samples collected. A subsequent investigation was designed by Adam which successfully delineated the extent of the SVOC and metal impact. As such, approximately 100 tons of contaminated soil was excavated from the property. Upon completion of the work, the lending institution accepted the

property as collateral.

Groundwater Monitoring

Former Gasoline Station Properties — New York City, NY

Adam managed quarterly groundwater sampling and injection events at two former gasoline filling stations for a period of almost three years. Both sites were active New York State Department of Environmental Conservation (NYSDEC) spill sites. Remedial efforts at the properties included removal of underground storage tanks, removal of petroleum impacted soil, and in-situ groundwater remediation in accordance with NYSDEC requirements.

Vapor Intrusion

Former Manufacturing Plant — Gates, NY

As project and field manager, Adam completed a subsurface investigation on behalf of the owner of the facility to characterize the subsurface conditions prior to sale of the property to another party. Based on the results of the subsurface investigation, chlorinated solvent impacted soil and groundwater was identified beneath the facility. As such, Adam completed a vapor intrusion assessment of the building which identified a vapor intrusion issue. Adam designed an extensive subsequent vapor intrusion study to delineate the extent of the vapor impact beneath the building and assisted the property owner with implementing corrective action consisting of a sub-slab depressurization system. As no further work was required, the property owner successfully sold the property as collateral.

RICK ROTE

Senior Industrial Hygienist

Rick is a Certified Industrial Hygienist with a background in occupational and public safety. He brings to his projects an expertise in asbestos, lead, PCB and the management of hazardous materials. Projects have included building surveys, hazard assessments, abatement project planning, and project inspection and monitoring. His responsibility is to identify environmental impacts, and design and manage appropriate environmental responses for these projects.

CERTIFICATION

Certified Industrial Hygienist

EDUCATION

University of Rochester: MS, Industrial Hygiene

St. Lawrence University: BS, Geology

ORGANIZATIONS

40 Hour Hazwaste

American Industrial Hygiene Association

American Board of Industrial Hygiene

Air & Waste Management

American Society of Safety Engineers

CAROLINAS

Beard Hall Asbestos Inspection, UNC Chapel Hill, Chapel Hill NC

Rick completed a comprehensive inspection of the second and third floors of the building and the attic in support of a major renovation. Existing inspection and abatement documentation was carefully reviewed and utilized to prevent duplicate sampling. An inspection report for asbestos, lead paint, mercury and perchlorates was provided and abatement options were reviewed. Abatement drawings and specifications were prepared separately but in conjunction with the larger renovation project. SCO approval was received without need for modification.

The work was completed under an Open Ended Design Services Agreement with the University. Contract services include inspection for regulated building materials such as asbestos, lead paint, mercury, and PCB, and abatement design services in support of the preparation of bid documents.

Pre-renovation Asbestos Inspection | Carolinas Telco Federal Credit Union | Charlotte, NC

A comprehensive building asbestos inspection was completed, except for the roof, to assist with renovation design feasibility and to provide an approximate abatement cost estimate. The building is a main branch and office, and was in active use when the inspection was completed. Pipe insulation and floor tile were identified, and the exterior is sided with thick asbestos cement panels. Abatement design, including abatement drawings and specifications, is anticipated.

Wallace House Renovation | Mitchell Community College | Statesville, NC

Project Manager responsible for a pre-renovation asbestos inspection of a historic building used for arts instruction. Abatement of flooring and pipe insulation was required as part of the extensive renovation to convert the one-time residence to an alumni support and meeting facility.

Blue Heel Development | Huntersville, NC

Rick was Project Manager of a Phase I and an asbestos inspection required for the development of a site and the construction of town homes. The Phase I uncovered the presence of a UST and the asbestos inspection revealed the presence of several asbestos-containing materials. Rick managed the abatement design and tank removal projects.

Southeast Sewer Project, Wetland and Stream Permitting, Gaston County, NC

The scope includes a wetland and stream delineation along approximately 9.3-miles of propose new gravity and force-main sewer pipeline extensions, including two new pump stations. Rick performed tasks related to wetlands permitting for Phase I of this project. This included submission of a Preliminary Jurisdictional Determination application to the Corps and a Pre-Construction Notification to North Carolina Department of Water Quality.

Roxboro Wastewater Treatment Plant ACM and LBP Inspection, City of Roxboro, Roxboro, NC

LaBella Associates reviewed the project for environmental impacts to endangered species, wetlands, historical and tribal concerns and other considerations. Supporting documentation was prepared and submitted to the state with the project design documents.

Community Block Grant Development Environmental Assessment, City of Monroe, Monroe, NC

LaBella completed an Environmental Assessment for a sidewalk improvement project affecting Concord Ave and an elementary school along the project. The City had obtained funding through a Community Block Grant Development source and was required to submit an environmental assessment determination for the project.

A NEPA Environmental Assessment Part 58 EA submission was completed and submitted for the project. The review included potential impacts such as floodplain, hazardous waste sites, endangered species, historical preservation, wetlands and others.

The EA was accepted and funding approved without comment.

Community Medicine Foundation, Inc | Rock Hill, SC

Rick managed a series of projects facilitating the preparation of a site for the construction of a new medical services building. Due to the use of federal grant money from the Health Resources & Services Administration, a NEPA Environmental Assessment was required for the project Site.

The EA included review of environmental impacts such as water quality, floodplains, wetlands, endangered species, traffic, environmental justice, noise, and others.

The EA was accepted and funding approved without comment.

ASBESTOS ABATEMENT/ DESIGN/MONITORING

BeeBee Station | RG&E

Rochester, NY

Rick served as Project Manager for Regulated Building Material abatement design for the abatement required prior to the demolition of a dozen support buildings and associated exterior piping. Existing inspection reports were reviewed, deficiencies identified and data gaps filled with additional investigation and sampling. Abatement drawings and specifications were prepared for bid. Asbestos-containing materials were field marked for easy identification to aid both the bid and the abatement process.

College Town, LLC | Asbestos, PCB & Lead Inspection, Design, & Monitoring for Building Demolition

Rochester, NY

Project Manager for hazardous materials management services provided to CollegeTown, LLC for the demolition of 3 large commercial buildings in preparation for the development of the new College Town Project site. Rick was responsible for the management of all services, including building inspection, abatement design, variance development and submission, bid document preparation, bid support and project and air monitoring.

Rick's team prepared site-specific variances proposing methods allowing safe demolition with non-friable asbestos in-place, saving the project significant time and money.

Asbestos Term Agreement | Rochester Housing Authority

Rochester, NY

Rick manages LaBella Associates' Term Agreement (4 consecutive years) for Asbestos Management Services. His responsibilities include coordinating scheduling and supervising field work, abatement design, variance development, reviewing final reports and contract management. Services include Project and Air Monitoring during abatement. Projects have ranged from single family homes to multi-building residential complexes.

Wegmans Food Markets | M&T Bank Pre-demo Abatement

Rochester, NY

Rick was the project manager for the regulated building materials inspection and abatement design required to accomplish the demolition of the 7 story bank and the adjacent parking garage. The inspection revealed spray-on fireproofing and other ACMs, as well as extensive use of PCB caulk around the exterior of both structures and on the interior side of windows. Fireproofing was identified between structural steel and exterior pre-fabricated cement panels, requiring partial demolition of the panels to gain access for abatement in otherwise inaccessible locations. This was a unique and challenging project, requiring innovative design and flexible response.

Wegmans Food Markets | Asbestos Inspection, Design, & Monitoring for Store Demolition

Rochester, NY

Project Manager for hazardous materials management services provided to Wegmans for over 15 years, including the demolition of buildings at 10 retail store sites. Rick is responsible for the management of all services, including building inspection, abatement design, bid document preparation, bid support and project and air monitoring.

Rick's team has provided the same services for pre-renovation projects that have occurred in Wegmans stores, as well a number of leased spaces.

Monroe Community College Downtown Campus | Monroe County | Rochester, NY

Project Manager responsible for all regulated building materials inspection and abatement design services to support required abatement for the conversion of former Kodak Office Building space into the MCC Downtown Campus. This scope required a floor-by-floor investigation of 250,000 square feet of office space and mechanical rooms for asbestos-containing materials, lead-based paint (LBP), PCB-containing items, mercury and others. Coordination and phasing considerations were important due to the multiple work areas across the seven floors and rooftop.

LaBella completed the investigation and determination of suspect ACMs discovered at the Site. Samples of suspect materials were collected and submitted to our in-house laboratory for analysis. Abatement drawings and specifications were prepared for bidding. The inspection and abatement design work for this 3 million dollar abatement/ demolition project was completed within the original budget.

Environmental Testing Term Agreement | Monroe County

Rochester, NY

Rick is the Project Manager for LaBella's term agreement service (with annual renewals since 1999) for hazardous materials inspection and abatement design with Monroe County. Projects range from small utility spaces to large multi-story commercial complexes. Recently completed projects include: MCC multi-year window replacement project, Monroe County Jail (asbestos & lead paint testing), MCC Field House Addition, Monroe Community Hospital renovations and Faith Wing roof replacement.

Asbestos Inspection and Abatement Design | University of Rochester | SWBR

Project Manager for asbestos and lead paint inspection, and abatement design services supporting renovation of the coffee shop lounge in Wilson Hall. The lounge area, the Lobby below and the entrance way were inspected for asbestos and lead paint. Abatement specifications and drawings were prepared for the project bid documents.

Asbestos Inspection and Abatement Design | University of Rochester | HBT Architects

Project Manager for asbestos and lead paint inspection, and abatement design services supporting renovation of a pair of bathrooms. The bathrooms and associated chases were inspected for asbestos and lead paint. Abatement specifications and drawings were prepared for the project bid documents.

Asbestos Inspection and Abatement Design | University of Rochester | SWBR

Project Manager for asbestos and lead paint inspection, and abatement design services supporting a classroom and office space renovation project in Gavett Hall. Inspections were completed in various spaces that would be impacted by the project. Abatement specifications and drawings were prepared for the abatement required for the renovations.

Asbestos Inspection and Abatement Design | Gates Chili Central School District

Gates, NY

Project Manager for asbestos and lead paint inspection, and abatement design services related to improvements and modifications to 10 buildings. Asbestos and lead management services have been provided for an on-going series projects since 2009. The project work requires coordination between the project team, school staff, and several architectural firms.

Asbestos Inspection and Abatement Design | Greece Central School District

Greece, NY

Project Manager of the Team providing pre-renovation asbestos inspection and abatement design services for the district-wide Excel II Capital Improvement Project. Extensive renovations will impact asbestos in nearly every school. AHERA records are reviewed, spaces inspected, reports written, specifications prepared and abatement drawings created for each affected school.

Mills II | Urban League of Rochester, Economic Development Corporation

Rochester, NY

Rick was the project manager of lead and asbestos services for a rehab project converting a section of vacant street side shops and housing into multiple housing units. Inspection and lead remediation design services were provided. Architecturally important wooden door and window parts were saved, de-leaded, painted and re-installed. Worker safety required interim lead clearance testing during different phases of construction, and final clearance testing was performed for each of 21 housing units.

Asbestos Abatement Design | Fredric Douglas Building

University of Rochester, Rochester, NY

Project Manager and lead abatement designer for Phase I of a major building renovation project. A thorough review of a recently completing building asbestos inspection preceded the preparation of detailed abatement drawings for 4 floors of the building. Abatement specifications were also prepared for the bid package.

Asbestos Inspection, Design, and Monitoring for Renovation | Rush Henrietta Central School District

Henrietta, NY

Project Manager for regulated building materials management services provided to the school district for the renovation of six schools. Services, including hazardous materials inspection, abatement design, bid document preparation, bid support and project and air monitoring, have been provided over a 10 year period.

Asbestos Term Agreement | NYSDOT

Statewide, NY

Rick managed LaBella Associates' six Term Agreements for Asbestos Management, spanning over 20 years. His responsibilities included coordinating scheduling and supervising field work, reviewing final reports and contract management. Services are provided to four regions and included asbestos sampling, analysis, Project Design, Project Monitoring and Air Monitoring. Over the six consecutive term agreements, Rick's group has inspected hundreds of bridges and completed over one hundred pre-demolition surveys of other structures. (1990 – 2010)

Asbestos Inspection and Abatement Design | Hilton Central School District

Hilton, NY

Project Manager for asbestos and lead paint inspection, and abatement design services in support of the District 2013 Capital Improvements project. Five schools and the Facilities & Transportation buildings were inspected for the project. Abatement specifications and drawings were prepared in response to the planned renovations.

Asbestos Inspection and Abatement Design | Dansville Central School District

Dansville, NY

Project Manager for asbestos and lead paint inspection, and abatement design services in support of the District 2012 Capital Improvements project. The Primary, Elementary and High Schools were inspected for the project. Abatement

specifications and drawings were prepared in response to the planned renovations.

Asbestos Inspection and Abatement Design | Spencerport Central School District

Spencerport, NY

Project Manager for asbestos and lead paint inspection, and abatement design services in support of projects at several different schools in 2012 and 2013. Inspections were completed in various spaces that would be impacted by the projects. Abatement specifications and drawings were prepared in response to the planned renovations.

Asbestos Inspection and Abatement Design | Rochester Joint Schools Construction Board

Rochester, NY

Project Manager for asbestos, PCB and lead paint inspection, and abatement design services in support of major renovation projects at School 28 and Edison Technical School. The presence of spray-on insulation required careful inspection methods and PCB caulk presented challenging design issues at School 28. Abatement specifications and drawings were prepared in response to the planned renovations at both schools.

Asbestos Inspection | English Village Apartments

Rochester, NY

Project Manager for asbestos and lead paint inspection of a limited number of units to develop an Asbestos-containing Materials report that was representative of 550 units present at the site. The client's requirement for an accurate abatement cost estimate and sufficient documentation for bidding and abatement were successfully satisfied (2003).

Monroe County Water Authority | 2010 Roof Replacement Projects

Rochester, NY

Rick was the Project Manager for an asbestos inspection and abatement design project required for roof replacements at two facilities. Testing was completed, specs and drawings prepared, and a cost estimate generated for both sites. Project Monitoring services were provided for one roof project completed in 2010.

Asbestos Inspection and Abatement Design for Pioch Hall, Basil Hall, and Science Center | St. John Fisher College

Rochester, NY

Project Manager for the asbestos inspections and abatement design services. Planned renovations and selective demolition required inspection and testing materials likely to be disturbed by the project. The project required coordination with college staff, the contractor and school schedules.

Bureau of Water, Lighting, and Parking Meter Operations

Rochester, NY

Rick served as Project Manager, where pre-existing asbestos inspection reports were field verified, and previously untested materials were sampled and submitted for analysis. The buildings were assessed for lead, mercury lamps and PCBs. A detailed cost estimate, abatement specifications, and drawings were prepared.

Hazardous Materials Inspection and Testing | Garlock Sealing Technologies

Palmyra, NY

Rick was Project Manager for the comprehensive hazardous materials inspection and testing of an 80 year old industrial building slated for a complete renovation. Specifications and drawings were prepared for the abatement of ACM, PCB, and mercury-containing items.

SUNY Fredonia | Alumni Hall Bathroom Updates

Fredonia, NY

Project Manager of inspection and abatement design services for the management of asbestos, PCB, lead and mercury related to the rehabilitation of eight student bathrooms in Alumni Hall. Tile floors and walls were cored to determine the presence of asbestos-containing waterproofing. Specifications and drawings were prepared for the abatement of asbestos, lead and mercury-containing light bulbs. Abatement was completed in the spring of 2011. LaBella provided project and air monitoring services during abatement of asbestos plaster ceilings and insulated light fixtures from the eight bathrooms.

DASNY | SUNY Oswego, Onondaga Hall | ACM and Lead Inspection and Testing

Oswego, NY

Rick was the manager of the asbestos and lead inspection and testing efforts required for this project. The planned work presented the potential for impact of asbestos-containing materials (ACM) and lead-based paint. Rick conducted the lead

inspection and assisted with the asbestos inspection of bathrooms in this high rise dormitory. A major renovation project for the upgrade of bathrooms and restrooms in the dorm required new fixtures, finishes and plumbing. Abatement specifications and drawings are being prepared for the abatement of confirmed ACM; all paint coatings were found to be lead-free.

iKon 5 | SUNY Alfred, Harder Hall | AM/PM Services (2010)

Alfred, NY

Project Manager for the air and project monitoring services required during the abatement of acoustical ceiling coating and floor tile at Harder Hall. Abatement was completed in several work areas during the summer months of 2010. Additional suspect materials were discovered during construction, including the identification of suspected pipe insulation in a steam tunnel and foundation wall waterproofing. LaBella assisted with the collection of bulk samples. Samples of suspect materials were submitted to our in-house laboratory for analysis and rush turn around. PCM air monitoring.

Hall Partnership | SUNY Alfred, McMahon Hall | AM/PM Services

Alfred, NY

Rick was responsible for the successful completion of all air and project monitoring required during the abatement of pipe insulation, floor tile, and other ACM at McMahon Hall. During construction other suspect materials were identified; samples were collected and tested in the LaBella laboratory. An incidental disturbance of pipe insulation was identified, delimited, and quantified. Advice and oversight was provided during the response to the disturbance.

Erdman Anthony | State University at Buffalo, Cary, Farber, & Sherman Halls | AM/PM Services

Buffalo, NY

Project Manager for all air and project monitoring required during the abatement of pipe insulation, duct insulation, floor tile, and caulk for a facilities upgrade project at Cary, Farber & Sherman Halls. Coordination and phasing considerations were important due to the building remaining occupied and the need for multiple work areas across three buildings.

HOK | SUNY Geneseo, Greene Hall | AM/PM Services

Geneseo, NY

Rick was Project Manager responsible for overseeing all air and project monitoring required during the abatement of pipe insulation, floor tile, asbestos & PCB caulk and other ACM at Greene Hall.

Feasibility Study | Newark Housing Authority

Newark, NY

Project Manager for a feasibility study for the conversion of 13 buildings and over 1 million s.f. of floor space to day treatment and senior assisted housing. A comprehensive asbestos inspection was completed for 7 buildings and nearly half the floor space to prepare abatement cost estimates as part of the feasibility study.

Asbestos Inspection and Abatement | Boylan Brown

Rochester, NY

Project Manager for the inspection of 5,000 s.f. of professional building in preparation for demolition. Prepared abatement design and specifications for removal of ACM, light ballasts, and refrigeration. Services included pre-bid support and walkthrough, AM/PM during abatement.

SUCF 12338 | SUNY Potsdam | Upgrade Site Utilities Phase 3

Potsdam, NY

Project scope consisted of the upgrade and reconstruction of site infrastructure including roadways, parking lots, sidewalks, site storm drainage systems, and site accessory elements on the campus. Rick acted as Project Manager of inspections and testing necessary to determine the presence of asbestos-containing materials such as caulks, joint fillers, Transite, waterproofing, etc in the structures impacted by these improvements. LaBella provided abatement design services, which included the preparation of the specification sections and abatement drawings.

Holy Family Catholic Community | Hazardous Materials Pre-Demo Inspection, Abatement & Demo Design

Rochester, NY

A hazardous materials pre-demo inspection was performed at the St. Joseph School. Abatement and demolition design and bid support services were provided. Project Monitoring was performed during abatement and construction management services were provided during demolition.

Former Photech Plant Pre-demolition Inspection | City of Rochester

Rochester, NY

Project Manager for the comprehensive inspection of hazardous and Regulated Building Materials at a 3 acre former industrial site, abandoned for many years. Inspection and design were hampered by years of vandalism and widespread industrial chemical contamination. Staff completed inspections, prepared a pre-demo report, abatement drawings, specifications, provided bid support, and project and air monitoring.

SUNY Alfred | Greenhouses, Asbestos Inspection, Abatement Design, & Demolition Specifications

Alfred, NY

Project Manager for the asbestos and lead inspection and testing of three greenhouses slated for demolition. Specifications and drawings were prepared for abatement and subsequent demolition.

LEAD RELATED PROJECTS

Residential

Rick has conducted many industrial hygiene studies and exposure evaluations on operations where lead exposure was a concern, and appreciates how easily serious lead exposures can occur. Rick manages the staff responsible for inspections and risk assessments required for compliance with EPA and HUD lead paint guidelines for housing inspections and abatement clearance.

Industrial

Rick has conducted many industrial hygiene studies and exposure evaluations on operations where lead exposure was a concern. The types of operations studied include production, maintenance and demolition. Specific operations include: part finishing, hand and wave soldering for circuit board manufacturing, lead chromate painting operations, incinerator maintenance and ash handling operations, lead smelting, and demolition of lead paint coated steel structures. Rick has experience with the HUD lead paint guidelines for home inspections and abatement clearance.

City of Rochester: Lead Paint Program — Rochester, NY

Rick has managed LaBella Associates participation in the City Lead Paint Program as a provider of 3rd party Clearance testing following hazard reduction activities. Nearly 100 Clearance Certifications have been completed within the last 6 years.

Asbestos Abatement and Inspection | Gates Chili Central School District

Gates, NY

Project Manager for asbestos and lead paint inspection, and abatement design related to improvements and modifications to 10 buildings. The projects required coordination between the project team, school staff, and several architectural firms. Lead considerations included inspection, testing, abatement design, interim and final clearance tests.

DASNY | SUNY Oswego, Onondaga Hall | ACM and Lead Inspection and Testing

Oswego, NY

Rick was the manager of the asbestos and lead inspection and testing efforts required for this project. The planned work presented the potential for impact of asbestos-containing materials (ACM) and lead-based paint. Rick conducted the lead inspection and assisted with the asbestos inspection of bathrooms in this high rise dormitory. A major renovation project for the upgrade of bathrooms and restrooms in the dorm required new fixtures, finishes and plumbing. Abatement specifications and drawings are being prepared for the abatement of confirmed ACM; all paint coatings were found to be lead-free.

School Campus Conversion to Housing | Providence Housing—Rochester, NY

This large project involves the conversion of a former Parrish and private school campus to program housing. Rick managed the provision of lead and asbestos inspection and abatement design services.

Lead testing was completed in 5 different campus buildings that were converted to housing. The project also included limited risk assessments, interim lead clearance and final clearance testing in each completed housing unit.

HEALTH & SAFETY

Rick is an industrial hygienist certified in the Comprehensive Practice of Industrial Hygiene. He has been providing health, safety and environmental services to LaBella clients for 25 years. Prior to joining LaBella Associates,

he worked over 10 years for Eastman Kodak Company. Rick has conducted a wide variety of industrial hygiene investigations including:

- Industrial Hygiene Walk-Through Surveys
- OSHA Personnel Exposure Studies
- Noise Exposure Studies
- OSHA Compliance Programs and Audits
- Asbestos Site Surveys
- Indoor Air Quality Studies
- Mold Assessment and Testing
- Non- ionizing Radiation Surveys
- Health & Safety Plans for Hazardous Waste Sites

Rick has performed exposure studies for a wide variety of agents, from carcinogens and heavy metals to simple irritants and asphyxiates. He is routinely called upon to complete indoor air quality studies, including the assessment of 'Toxic Mold' contamination and potential for occupant exposure. In some studies, computerized data acquisition is used, allowing for complex data analysis and graphical representations of results.

Rick has prepared corporate programs for compliance with OSHA regulations such as Confined Space, Lock Out/ Tag Out, Respiratory Protection, Hazard Communication, asbestos, lead and others.

OSHA Safety Compliance

Rick routinely provides OSHA compliance audits and performance reviews. He prepares compliance programs and consults with industries on their implementation. Rick also provides employee training for most OSHA safety programs. Example safety programs include Confined Space, Lock Out/Tag Out, Hazcom, Lead, Asbestos, Emergency Evacuation, Laboratory Safety and many more.

HEALTH & SAFETY TRAINING

Rick has extensive experience with employee health and safety training programs. He has provided Hazard Communication, Right to Know and Hazard Awareness training courses for many large organizations. Some of the training courses Rick has prepared and presented are:

- Lead
- Hazard Communication
- Hearing Conservation
- Confined Space Entry
- Respiratory Protection
- Lock Out/Tag Out
- Lab Safety

HEALTH & SAFETY TRAINING

Lattimore Community Surgicenter: Septic Contamination Remediation Response — Rochester, NY

LaBella prepared a remediation design to safely respond to a pipe break that resulted in septic contamination of surgical suites and associated support areas. The affected areas were isolated, remediation approach and methods identified, and a remediation contractor selected. Work methods were monitored, limited air sampling completed during work and the work areas were cleared with post-remediation wipe samples.

U**CB Manufacturing | Occupational Exposure Monitoring of Methylene Chloride and Dust—Rochester, NY**

Project Manager for the assessment of occupational exposures to methylene chloride and dust during the production of two pharmaceutical products. Several different production phases were monitored for both products. Both 8-hr Time Weighted Averages and Short Term Exposure Limit concentrations were determined for each phase. Ventilation evaluations and recommendations were provided to improve contaminant capture and reduce exposures.

Optimation Technology | Hexavalent Chromium Concentrations during Welding

Rochester, NY

Project Manager retained in response to new OSHA regulations, personal exposure monitoring was completed during a variety of stainless steel welding tasks to determine exposure concentrations of hexavalent chromium. Standard welding operations were evaluated with excellent ventilation controls in the work areas. Exposure concentrations did not exceed OSHA limits.

Wegmans Food Markets, Inc.: Project Manager,

Employee Exposure Assessment — Rochester, NY

LaBella measured the concentrations of several different solvents and dark room chemicals to assess employee exposures during various printing operations. The exhaust ventilation system was

evaluated for effectiveness. Recommendations were provided on chemical handling and modifications to the exhaust system.

Wegmans Food Markets, Inc.

Employee Exposure Assessment — Rochester, NY

Personal and area samples were taken to measure employee exposures to ammonia and dust at a large egg farm. Full shift dosimetry was performed with data logging. Time history graphs were used to identify specific high exposure tasks.

American Motive Power

Project manger for on-site provision of environmental, health & safety services. Plant operations were reviewed and investigated; Hazcom, Lockout/Tagout, Respiratory Protection, waste management and air permit programs were developed. Employee training was provided as required. Employees were monitored to determine exposure concentrations to noise and solvents.

Pfaulder, US, Inc.

A number of air monitoring studies have been completed to determine exposure concentrations to metals, silica and solvent vapors across a variety of production operations. The work has been completed as a component of the company's Safety Management Program.

LaBella updated Pfaudler's Confined Space Program by reevaluating the plant for confined space hazards, preparing a new program manual and written entry procedures. The plant was also evaluated for Lock-Out/Tag Out hazards. All powered equipment was assessed and a new Lock-Out/Tag-Out Program was prepared, including written Lock-Out/Tag Out procedures. LaBella has provided employee training in these programs and Hazcom on a regular basis.

Nestle Purina

Completed employee exposure monitoring for two corrosive irritants used during routine cleaning of processing equipment. The client needed immediate support to respond to employee concerns about the process. Samples were taken for several employee tasks during the B shift within one week of the request to complete the work, the final report was provided two weeks later.

Nexpress/Kodak

Project Manager for the assessment of occupational exposures to solvents and noise during the development of coating equipment and processes. Ventilation evaluations and design services were provided to improve performance. Respiratory protection program training and fit testing were provided to new users.

Legionella Assessment – 2 Projects

RIT, Contact: David Armanini, (585) 475-2040, daaehs@rit.edu

An assessment of several ventilation systems serving a main campus building was conducted after standing water was recognized to be present within system components. Several systems had condensation pans which, by design, collected and held pooled water several inches deep. The water in these systems was tested for Legionella, and Legionella was not detected. Two other systems had large diameter return air ducts placed well below grade in the basement of the building. Groundwater was naturally infiltrating and collecting in low areas of duct. The infiltrating water was tested at several locations and found to contain non-viable Legionella and evidence of bacterial slime. Cleaning of the duct and remediation of the water infiltration was recommended. Specifications were prepared for appropriate cleaning methods.

Water samples were collected from condensation pans from two ventilation systems in the Student Alumni Union Building, and air samples were collected in several areas served by those ventilations systems. Legionella was detected by the PCR method at low levels in both sets of samples. Facilities took immediate steps to reduce ventilation and treat the contained water in the systems. Water and air sampling were repeated several times using viable analytical methods until consecutive clean samples confirmed that Legionella was no longer present.

IAQ & MOLD

Indoor Air Quality

LaBella has completed numerous indoor air quality studies in a variety of environments in response to employee complaints such as, upper respiratory tract irritation, odors, headaches and a high rate of illness. Building design, ventilation, equipment, and operations are evaluated

for factors which could contribute to poor indoor air quality. Testing has included agents such as carbon dioxide, volatile organic compounds, solvents, dust, noise and bioaerosols. Recommendations for remediation and ventilation improvements are provided.

Childtime: Various Sites — Upstate, NY

LaBella completed visual inspections and assessments for mold contamination at 10 sites across Upstate New York. Contaminated areas were delineated, limited sampling was completed, remediation recommendations were provided and a remediation specification was prepared. During and post remediation inspections were performed with clearance testing done as needed.

Soldiers & Sailors Hospital: Mold Assessment — Penn Yan, NY

LaBella completed an assessment of mold contamination in a portion of a building affected by water intrusion from a pipe break. Following an initial response by the hospital to dewater and dehumidify the affected areas, LaBella completed an inspection for visual signs of water damage and mold growth and conducted limited sampling. Rapid response by the hospital had prevented significant mold growth, some minor corrective actions were recommended.

SUNY Fredonia, Admissions

The Fenner House Admissions Office was assessed for mold contamination in response to occupant concerns. Inspection and sampling determined that occupied areas were in good condition, but that the basement needed some corrective actions. The inspection revealed several areas and aspects of water infiltration, leading to recommendations for better drainage and other methods to prevent the reoccurrence of mold growth.

NYSDOT | Fredonia Maintenance Residency

Fredonia, NY

Volatile Organic Compounds were scanned using SUMA canisters and Method TO-15 to achieve very low detection levels in response to employee concerns over sub-slab gasoline and fuel oil contamination. Sample data was compiled and presented in an industrial hygiene format for presentation to employees. Vapor concentrations were concluded to be low enough to not present the potential for adverse health effects.

Wegmans Food Markets, Inc.: Indoor Air Quality —

Rochester, NY

Warehouse guards had expressed concern about exposure to engine exhaust and particulate. Personal sampling was conducted to determine employee exposure concentrations to respirable dust, carbon monoxide, and nitrogen dioxide. Recommendations were made for modifications to the guard house ventilation system to help reduce particulate and exhaust gas infiltration.

City of Rochester Indoor Air Quality Studies | City of Rochester, Rochester, NY

Project Manager for Indoor Air Quality studies, including toxic mold investigations, which been performed at a number of city facilities. Studies have been triggered by employee complaints of upper respiratory irritation, dry scratchy eyes, illness, odors and stale air. Testing was completed for specific contaminants based on conditions identified during the initial walk-through evaluation. Ventilation system design and function are also evaluated. All work was carried out in close association with the Environmental Services Department, including the development of corrective actions.

Childtime | Various Sites

Upstate, NY

LaBella completed visual inspections and assessments for mold contamination at 10 sites across Upstate New York. Contaminated areas were delineated, limited sampling was completed, remediation recommendations were provided and a remediation specification was prepared. During and post remediation inspections were performed with clearance testing done as needed.

RIT | Indoor Air Quality Study

Rochester, NY

Industrial Hygienist and investigator for several Indoor Air Quality and mold studies performed at a number of campus buildings. Studies have been triggered by employee, faculty and student complaints of upper respiratory irritation, dry scratchy eyes, illness, odors and stale air. Investigations include observation, interviews and testing. Testing assesses ventilation effectiveness,

contaminant concentrations, and mold types and concentrations. Recommendations are provided for improved air quality and mold remediation.

Wegmans Food Markets, Inc. | Project Manager,

Employee Exposure Assessment

Rochester, NY

LaBella measured the concentrations of several different solvents and dark room chemicals to assess employee exposures during various printing operations. The exhaust ventilation system was evaluated for effectiveness. Recommendations were provided on chemical handling and modifications to the exhaust system.

Employee Exposure

Personal and area samples were taken to measure employee exposures to ammonia and dust at a large egg farm. Full shift dosimetry was performed with data logging. Time history graphs were used to identify specific high exposure tasks.

Spring Hill High School | Project Manager,

Mold Assessment

Spring Hill, TN

LaBella visually inspected each classroom in 2 wings of the school where water infiltration had impacted ceiling tile and other building materials. Observed conditions and unit ventilator operation were recorded. Spore Trap air samples were collected in select areas to assess levels of airborne mold spore.

Results were used to identify areas requiring remediation and ventilation improvement. Simple cleaning and disposal measures were implemented for mold contaminated materials, and ventilation function was improved to correct poor conditions in affected spaces.

Westview High School | Project Manager,

Mold Assessment

Martin, TN

A mold assessment was completed prior to a major ventilation improvement project in order to establish pre-project and background air quality conditions. Previous ventilation and water intrusion problems had resulted in wide spread mold growth and resulting legal proceedings. Both the client, Trane, and the school system wanted to establish an understanding of background conditions before the new project got underway. No major problems were identified.

RADON

Elmira Psychiatric Center | NYSOGS

Elmira, NY

Project Manager for the comprehensive assessment of radon across the entire facility. Results were reported and at-risk spaces were identified. After consideration of site characteristics, space usage, and existing ventilation performance, a design for a comprehensive ventilation upgrade was provided.

Affinity Realty Partners, LLC

Radon monitoring was performed to satisfy lender requirements at this and many other apartment complexes. Testing needs are assessed and monitoring is completed quickly and efficiently.

COMPLIANCE AUDIT AND MANAGEMENT PROJECTS

Hazardous Waste Management

Rick has completed audits and provided consulting assistance to a variety of industries on practices and issues relating to hazardous waste disposal and management. Industry experience includes polymer processing, spray painting, silk screening, plating and varied solvent use.

Air Emission Compliance

Rick is a certified third party compliance inspector for the NYS DEC in the dry cleaner perchloroethylene inspection program. The certified inspector acts as an agent of the DEC in performing annual Part 232 compliance inspections. Rick has performed many Part 201, 228 and Title V compliance determinations for a variety of industries. He has also reviewed and prepared Risk Management Plans for the accidental release of toxic materials.

Astra Zeneca | Environmental, Health & Safety Management

Project Manager for on-site environmental, health & safety management services to a large pharmaceutical research facility through a four year contract. LaBella's personnel were responsible for day to day health & safety responsibilities, including facility inspections, accident investigation and reporting, chemical exposure monitoring, compliance program updates and employee training. LaBella was also responsible for the on-going collection and disposal of all chemical and biological wastes generated at the facility.

The contract terminated when the company relocated to an out of state facility. LaBella managed the environmental shut down operations of the facility. Labs and storage areas were inspected for remaining chemicals. Unused chemicals and chemical wastes were marshaled in selected areas and sorted in preparation for lab pack disposal. Disposal contractors were interviewed and the chemical disposal was bid out. Non-hazardous laboratory equipment and supplies were collected in selected areas and made available to local schools and clinics free of charge. Lab hoods were tested for contaminated residues and cleaned as appropriate. Dumpsters were ordered for the disposal of non-hazardous materials. A cleaning company was contracted to complete a final clean to leave the space as required in the lease.

Nazareth College | HSE Compliance Services

Project Manager for the assessment of compliance with OSHA and environmental regulations and exposure monitoring in the Art Department. A Spill Prevention Control & Countermeasure Plan and a Laboratory Chemical Hygiene Plan were developed to assist with compliance measures.

Astra Zeneca

Rick and his staff had full responsibility for ongoing health, safety and environmental compliance at a pharmaceutical research operation for over 4 years, until site relocation out of state. The project was initiated with a comprehensive audit of operations, followed by correction of deficiencies and management of ongoing compliance with all applicable OSHA, EPA, DEC and NRC requirements. Responsibilities included safety audits, training and management; pest inspections and management; and Hazwaste management. Hazwaste management included waste characterization, container labeling, lab pack preparation, scheduling removal, review of manifests and annual reporting.

Warren County Public Safety Facility

A community noise study was completed to address neighbor complaints about noise from a recently installed roof top chiller. Measurements were taken at several locations revealing that noise from the chiller was only slightly higher than ambient noise levels.

APD Engineering

Community noise studies have been completed in several upstate locations in support of the placement and development of large retail establishments. Follow up noise studies have been completed to support retail store response to neighbor noise complaints.

BIRD CRAP

Attic Cleanup, South Buffalo Charter School

Buffalo, NY

Rick served as Project Manager for an indoor air quality study and the cleanup of a bird contaminated attic space in the main school building. Cleanup methods were proposed and reviewed. Air sampling before, during and after cleanup documented successful cleanup and control methods.

Port of Rochester Redevelopment

Rochester, NY

Project Manager of asbestos and environmental management services associated with the design and construction of a new ferry and customs terminal at the Port of Rochester. A large building slated for renovation was contaminated with bird carcass and several inches of bird feces. Rick managed the asbestos inspection and the abatement design for the proper removal of both the asbestos and bird residues.

Pole Barn Cleanup, Greece Central School District

Rochester, NY

Rick reviewed conditions associated with the reconstruction of a transportation pole barn that had bird feces in the attic spaces. A specification was developed to inform the contractor of the hazard and to specify control conditions intended to protect adjacent school property from emissions and impact from the cleanup work.

Ice Rink Cleanup, Ithaca, NY

The ice rink and open canopy roof was to be upgraded and enclosed. Over the years bird feces and nests had collected in the canopy support structure. A specification was developed to inform the contractor of the hazard and to specify control conditions intended to protect

adjacent occupied property from emissions and impact from the cleanup work.

EDUCATION

University at Buffalo: BA, Geography - Physical & Environmental Systems

CERTIFICATIONS/ TRAINING

OSHA 40-Hour HAZWOPER

OSHA 8-Hour HAZWOPER Refresher

PSMJ Project Management Bootcamp

Princeton Groundwater Pollution & Hydrology Training

ORGANIZATIONS

New York State Commercial Association of Realtors

Risk Management Association

National Association for Industrial and Office Parks-Commercial Real Estate Development

Turnaround Management Association

Buffalo Building Owner and Managers Assocation

Buffalo Niagara Partnership

LaBella
Powered by partnership.

CHRIS KIBLER

Project Manager

Chris is a Project Manager with over ten years of environmental consulting experience. Working with financial institutions, attorneys, private developers and municipalities, he conducts Environmental Site Assessments (ESAs) in support of real estate transactions and brownfield redevelopment initiatives. His experience includes managing projects encompassing Phase II ESAs, brownfield investigation, remediation and redevelopment, underground storage tank (UST) removal, vapor intrusion, geophysical surveys, and tank tightness testing. He has working knowledge of regulatory criteria/ compliance relating to projects within several states including, but not limited to New York, Pennsylvania, Maryland, New Jersey, Ohio, Delaware and Virginia.

Phase I ESAs

Phase I Environmental Site Assessments

Performed numerous Phase I ESAs on a wide variety of residential, commercial, industrial, and manufacturing facilities including gasoline stations, repair shops, apartment complexes, office buildings, and restaurants including but not limited to the following groups:

Financial Institutions

- Bank of Akron
- Bank on Buffalo
- Community Bank, N. A.
- Evans Bank
- Five Star Bank
- Lake Shore Savings Bank
- Northwest Bank
- Steuben Trust Company
- The Community Preservation Corporation
- M&T Bank
- Wells Fargo
- Key Bank
- S&T Bank
- Tompkins Bank of Castile

Municipal & Government Clients

City of Buffalo

- Barclay Damon LLP
- Harter Secrest & Emery LLP
- Hodgson Russ LLP
- Niagara County Department of Economic Development
- Niagara County Refuse Disposal District
- New York State Department of Environmental Conservation
- Phillips Lytle LLP
- Lippes Mathias Wexler Friedman LLP
- Seneca Nation of Indians

Development & Construction Companies

- Buffalo Niagara Waterkeeper
- Buffalo Urban Development Corporation
- Ciminelli Real Estate Corporation
- Ellicott Development
- Iskalo Development Corp.
- Sinatra & Company Real Estate
- Savarino Companies
- The Benchmark Group

Phase II ESAs

Lake Shore Savings Bank – Vapor Intrusion Assessment: 2924 Main Street, Buffalo, NY

Project manager for the assessment of sub-slab soil vapor and indoor air associated with a pediatric medical office adjacent to a state-registered Voluntary Cleanup Project.

Evans Bank – Phase II ESA: 1849 Harlem Road, Cheektowaga, New York

Project manager for a site-wide investigation at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. Historical uses included manufacturing of hoists, lifts, docks and equipment.

M&T Bank – Phase II ESA: 1891 Blinker Parkway, DuBois, Pennsylvania

Project manager for a site-wide investigation at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. Historical uses included automotive repair and automotive body repair operations.

New York State Office of Mental Health – Phase II ESA: 10 Maple Avenue, Philmont, New York

Project manager for the assessment of subsurface soil and groundwater conditions proximate an active heating oil underground storage tank at the property. Additional tasks included client correspondence on the proper registration and maintenance of the underground storage tank with state authorities.

Community Bank, N.A. – Phase II ESA: 416 Elm Street, Kingston, Pennsylvania

Project manager for a site-wide investigation at the property in order to assess surface and subsurface soil conditions, and groundwater conditions, prior to acquisition of the property. The investigation also included a geophysical survey for potential underground storage tanks. Historical use included various industrial-type operations.

Mr. Stephen Townsend – UST Removal Investigation: 165 Summer Street, Buffalo, New York

Project manager for an underground storage tank removal investigation. Tasks included a geophysical survey to confirm the presence of the underground storage tank; and, proper subsequent removal of the tank per state regulations.

Evans Bank – Phase II ESA: 1415 West Summit Avenue, Ponca City, Oklahoma

Project manager for a site-wide investigation at the property in order to assess surface and subsurface soil conditions, and groundwater conditions prior to acquisition of the property. Historical uses included heavy machine shop operations.

M&T Bank – Phase II ESA – 128 Broadway, Newburgh, New York

Project manager for a site-wide investigation at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. Additional components of this investigation included a geophysical survey for a potential underground storage tank and a vapor intrusion assessment to investigate sub-slab soil vapor and indoor air within the Site Building. Historical uses included a dry cleaner and adjoining fuel oil underground storage tank.

Savarino Companies – Vapor Intrusion Assessment: 101 North Union Street, Olean, New York

Project manager for the assessment of sub-slab soil vapor and indoor air associated with the redevelopment of a former office building into a multi-purpose office, retail and residential building.

The Community Preservation Corp.: Vapor Intrusion Assessment, 316 Grote Street - Buffalo, NY

Assessment of the Site Building indoor air and subsurface soil vapor surrounding such with the potential for vapor mitigation design, if warranted. Adjacent properties of historical concern had been identified relating to several different types of manufacturing processes.

Brent Industries, LLC: Phase II ESA, 1 Bernzomatic Drive - Medina, New York

A site-wide investigation was completed at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. The investigation also included vapor intrusion analysis of on-site buildings based on the historical use of the west adjacent property which was included in the NYSDEC Brownfield Cleanup Program.

MWM Properties, LLC: Phase I & II ESAs - 400 East Main Street, Palmyra, New York

A site-wide investigation was completed at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. Historical use of the property included machining, painting and gasoline underground storage tanks.

CDS Housing, LLC: Phase II ESA, 422 East State St. - Olean, New York

A site-wide investigation was completed at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. The investigation also included a geophysical survey for potential underground storage tanks. Historical use of the property included a wagon works, automotive painting and underground storage tanks. Based on the results of subsurface investigation conducted at the Site, remedial measures were proposed including impacted soil delineation and removal.

Iskalo Development Corp. - Phase II ESA, 34 & 42 Spring St. West - Williamsville, NY

A site-wide investigation was completed at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. The results of this investigation were utilized to identify viable remedial options for the Site and potentially clear it for redevelopment. Historical use of the property included automotive repair and gasoline underground storage tanks.

459 Broadway LLC: Phase II ESA, 459-483 Broadway St. - Buffalo, New York

A site-wide investigation was completed at the property in order to assess subsurface soil and groundwater conditions. Historical use of the property included potential dry cleaning operations.

Bank of Akron - Phase II ESA: 11 W. Main St. & 10 Aurora

A site-wide investigation was completed at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. Historical uses of the property included a tin shop, a machine shop, an automotive repair shop, a printing shop and a dry cleaner. A small area of chlorinated solvent impact was identified in the subsurface soils on a portion of the property. Coordinated with client on remedial strategies for the area of impacted soil.

Gold Wynn Residential, LLC: Phase II ESA, 175 North Street - Buffalo, NY

A site-wide investigation was completed at the property in order to assess subsurface soil and groundwater conditions prior to acquisition of the property. Historical uses included printing and an underground fuel oil storage tank.

Barker Chemical - Barker, New York

A site-wide investigation was completed to determine conditions at the former Barker Chemical in Barker, New York. Such included testing of surface water, groundwater, surface soil and subsurface soil at the Site. Historical use of the property included manufacturing and distribution of fungicides and herbicides. The results of this investigation were utilized to identify viable remedial options for the Site and potentially clear it for redevelopment.

2020 River Road - Wheatfield, New York

A site-wide investigation was completed to determine conditions at the property located at 2020 River Road, Wheatfield, New York. Such included environmental and radiological testing of surface soil at the site. In addition, test pits were conducted throughout the property including environmental and radiological testing of the subsurface soil. Historically, the property was utilized for filling purposes including industrial-type wastes such as slag, ash, cinders, fire-brick, coal and foundry sand. The results of this investigation were utilized to determine if the Town of Wheatfield could redevelop the property into a public park.

Carr's Warehouse - Batavia, New York

A site-wide investigation was completed to determine conditions at the property in Batavia, New York. Such included subsurface soil and groundwater testing at the site. The results of this investigation were utilized to evaluate reuse options for the property through the City of Batavia's Brownfield Opportunity Area Program Grant.

Vapor Intrusion Assessment-Commercial Plaza - Alden, New York

Vapor intrusion assessment of a commercial plaza which historically contained dry cleaning operations. Included the collection and laboratory analysis of sub-slab vapor and indoor air samples; the evaluation of the resulting data relative to applicable regulatory guidance; and the preparation of a technical report with recommendations for mitigation.

120-Acre GMCH Site - Lockport, New York

A site-wide investigation was completed to determine conditions at the site located in Lockport, New York, prior to acquisition of the property. Such included environmental and radiological testing of surface soil, subsurface soil and sediment.

Della Penna Site - Batavia, New York

A site-wide investigation was completed to determine conditions at the property in Batavia, New York. Such included subsurface soil and groundwater testing at the site. The results of this investigation were utilized to evaluate reuse options for the property through the City of Batavia's Brownfield Opportunity Area Program Grant.

Delta Sonic - Buffalo, New York

A site-wide investigation was completed to determine conditions at the property in Buffalo, New York. Such included subsurface soil and groundwater testing at the site. The results of the investigation were utilized to assist in the replacement of the fuel assets at the facility.

Brownfields

David Communities LLC – NYSDEC BCP: 4185 Military Road, Niagara, New York

Assistant Project Manager for the on-going investigation of a former middle school property with the goal of remediating and re-purposing the property. The investigation includes demolition of on-site structures and assessment of the subsurface soil and groundwater at the property.

Annual Inspection, Monitoring and Reporting, Former Alumax Extrusions Site - Dunkirk, NY

Conducted annual inspections of this brownfield redevelopment site pursuant to the Site Management Plan approved by NYSDEC under the Voluntary Cleanup Program (VCP). Also conducted annual groundwater monitoring, evaluated resulting analytical data and prepared Periodic Review Reports for submittal to NYSDEC. Services provided annually from 2018-2020 reporting periods under an environmental term contract.

Annual Inspection, Monitoring and Reporting, Former Roblin Steel Site - Dunkirk, NY

Conducted annual inspections of this brownfield redevelopment site pursuant to the Site Management Plan approved by NYSDEC under the Environmental Restoration Program (ERP). Also conducted annual groundwater monitoring, evaluated resulting analytical data and prepared Periodic Review Reports for submittal to NYSDEC. Services provided annually from 2018-2020 reporting periods under an environmental term contract.

Seneca Nation of Indians: USEPA-Funded Site Investigation of Former Salamanca Rail - Salamanca, NY

Assistant Project Manager for the investigation of a property with the goal of remediating and re-purposing the property. The investigation included demolition of on-site structures and assessment of the subsurface soil and groundwater at the property.

Former Doritex Corp. Facility - 11075 Walden Avenue, Alden, New York

Ongoing Brownfield Cleanup Program Site including remedial measures and a site-wide investigation associated with solvent-impact due to historical dry cleaning operations. Contributing to drafting and/or reviewing BCP Application, Interim Remedial Measures Work Plan and Remedial Measures Work Plan. Also assisting with logistical coordination of regulatory meetings, sub-contracting agreements, project scheduling and budgeting.

Jamestown Brewery - 115-121 West 3rd Street, Jamestown, New York

Ongoing Brownfield Cleanup Program Site during renovation of the Site Building into a brewery and restaurant including remedial measures and a site-wide investigation associated with solvent impact due to historical dry cleaning operations. Contributing to drafting and/or reviewing BCP Application, Interim Remedial Measures Work Plan and Remedial Measures Work Plan. Also assisting with logistical coordination of regulatory meetings, sub-contracting agreements, project scheduling and budgeting.

Brownfield Redevelopment Project, Covanta Rail-to-Truck Intermodal Facility - Niagara Falls, New York

Field Manager for the accelerated investigation, remediation and redevelopment for a 15-acre former industrial site for use as a Rail-to-Truck Intermodal Facility (RTIF). The project is being advanced under the Brownfield Cleanup Program (BCP) and has involved the completion of a Remedial Investigation; development of a NYSDEC-approved Remedial Action Work Plan to address a range of contamination, including radioactive slag; obtaining site plan approval for the proposed development; and completing site and architectural design of the RTIF. The remedial design and site design efforts were fully integrated to produce a cleanup plan that coincides with the site development plan and optimizes the project schedule.

Brownfield Opportunity Area Step 1 Nomination Study Batavia Central Corridor - Batavia, New York

Environmental Analyst for the characterization and analysis of environmental conditions and redevelopment opportunities within a 250-acre area in the center of the City of Batavia.

USEPA Brownfield Site-Philadelphia Furniture - Salamanca, New York

A site-wide investigation was completed to determine conditions at the property due to historical operations of concern and fill placement. Such included environmental testing of the surface and subsurface soil, and groundwater at the site. The results of this investigation were utilized to evaluate redevelopment options for the property through the USEPA Brownfield Assessment Grant Program.

Remediation

Track 266 Relocation Easement - Niagara Falls, New York

Field manager responsible for environmental and radiological monitoring during the remediation of soil/fill and relocation of CSX Track 266 at the property. Additional responsibilities included oversight, management of personnel and document preparation.

Occidental Chemical Corporation: Hydrogen Line Excavation - Niagara Falls, New York

Field manager responsible for environmental and radiological monitoring during the excavation of, and installation of a protection casing over a hydrogen line. Additional responsibilities included oversight, management of personnel and document preparation.

Landfills

Niagara County Refuse Disposal District Monitoring - Lockport, New York

Implementation of fieldwork and reporting for the quarterly monitoring program at the Niagara County Refuse Disposal District's active and closed landfills. The work includes the performance of gas monitoring, leachate and groundwater sampling, data summary and evaluation, and quarterly and annual reporting.

Lead in Drinking Water Sampling & Remediation

Global Concepts Charter School - Lackawanna, New York

Lead was detected in the potable drinking water from ten outlets at the property. Subsequently, these locations were fitted with Brita filtration systems. Following installation of such, Chris served as the field technician for the collection and laboratory analysis of ten potable water samples from each of the ten source outlets previously identified with lead concentrations of concern. The samples were assessed in accordance with USEPA sampling protocols by collecting a first draw sample from each outlet. It was determined thereafter that installation of the Brita filters successfully remedied the previously-identified lead levels of concern at the Site.

City of Buffalo - Buffalo, New York

Field manager responsible for coordinating the collection of potable water samples from City of Buffalo Community Centers in order to test for lead in drinking water. The samples were assessed in accordance with USEPA sampling protocols by collecting first and second draw samples from each outlet.

Planning

Finger Lakes Economic Development Council: NY Main Street Grant Administration - Penn Yan, New York

Joint effort with Planning Division to conduct a large environmental assessment on several properties in Penn Yann, New York associated with a larger New York Main Street Grant Program.

Village of Hamburg: NY Main Street Grant Administration - Hamburg, New York

Joint effort with Planning Division to conduct an environmental assessment on the Historic Hamburg Palace Theater in Hamburg, New York associated with a larger New York Main Street Grant Program.

HEATHER GEOGHEGAN

Environmental Geologist

Mrs. Geoghegan is a Geologist with nearly 14 years of experience in the environmental consulting and natural gas industries. Her experience includes the planning and implementation of Phase II Environmental Site Assessments, Remedial Investigations, environmental monitoring and remedial oversight programs at industrial sites, brownfield sites, landfills and active remediation sites. Mrs. Geoghegan routinely oversees subsurface investigations involving overburden and bedrock exploration/sampling, as well as the drilling, design, installation, development and sampling of groundwater monitoring wells. Her duties also include the review and interpretation of geochemical data for the purpose of determining the type, magnitude and extent of contamination and the preparation of technical reports.

9.5 years' experience as an On-site Geologist for Natural Gas Drilling in the Appalachian Basin (Marcellus and Utica Plays) and Eagle Ford formation; as participated with SHELL, Eclipse Resources and Arsenal Resources Exploratory Drilling in the Utica formation.

EDUCATION

State University at Buffalo: NYS Secondary Earth Science Teaching Certification

State University at Buffalo: BS, Geology, minor in Environmental Science

SUNY Morrisville: AS, Natural Resources

CERTIFICATIONS

ICHMM

IEP

PEc Card

PUBLICATIONS

Atmospheric Deposition in the Great Lakes; International Poster Presentation with Dr. Stephen Vermette

Environmental Geology Experience

Former Rockwell Facility, Russellville, Kentucky PCB contamination groundwater and NAPL. Remediation Ground-Water Monitoring Program. Conduct bi-annual groundwater sampling events.

Roehlen Engraving monitoring well abandonment.

Mattel Medina Facility

Remedial Action Plan Bioventing System. Sol Boring and sampling. Report findings in report.

Phase II

Towne and Garden, East Buffalo, NY

This is a Phase II removal of (Lead and other metals) contaminated soil from a residential area which is a Remedial Program developed in consultation with the USEPA.

International Paper Oswego NY

soil boring, ground water monitoring wells installation and sampling. Report findings in report.

Superfund

Batavia landfill, Batavia NY; RI/FS;

Drilling in substrate to determine depth of landfill; installation of Piezometers to monitor and sample groundwater. Installation of monitoring wells to determine extent of contamination, develop and sample wells.

Byron Bergen Remedial Investigation and Work Plan.

Monitoring well installation, Piezometer installation and sampling. Installation of a pumping well and the sampling event.

JIS Landfill, South Brunswick NJ;

Installation and monitoring of groundwater biosparging treatment system, sampling of wells.

LaBella
Powered by partnership.

Remedial Program

Lage Quantity Generator: McInerney Farm Site, Southport NY: biannual groundwater sampling event.

Landfill Design

High Acres Landfill (Waste Management) delineation of glacial outwash

Soil boring for cell development. Installation of monitoring wells, development of wells and sampling; produce finding in reports. Also, well abandonment oversite for nearby drinking wells on purchased properties.

Health and safety Plan

For COI Main Plant Site Investigation, Muskogee, Oklahoma. (review and make sure all MSDS were in health and safety plan, proper contact information and all correct data was within the plan. Write and review)

Envirotek RI/FS

Soil boring, sampling, monitoring well installation, groundwater sampling. (oversight for monitoring well installation, conducted well development and sampling, conducted soil sampling; collection of analytical results and generate reports in accordance to work plan)

Crossman Corporation (East Bloomfield NY) RI/FS

Groundwater monitoring, and sampling. (conducting sampling events, monitor ground water monthly, produce monthly reports, and tables)

Kodak: RI/FS

Monitoring well installation into bedrock; monitor wells and conduct groundwater sampling. Coring. Insitu hydraulic conductivity testing was performed on al wells, which included rising-head slug tests and pressure injection. Pressure injection tests using a dual inflatable packer assembly. (Provided the oversight of coring activities, participating in labeling of core samples, and monitoring well installation, well development and sampling).

Brownsfield

Gonsenhauser Farm (Brighton, NY)

Phase I, Phase II, SI/RAR; soil sampling, piezometer installation, ground water sampling, removal of waste. (I was responsible over sight for contractors, bidding of contracts, debris removal, piezometer installation, soil and groundwater sampling, report production and presentation at public hearing)

APPENDIX 3

BCP Contact List Information

Contact List Information

Municipal and County Contacts		
Name	**Department**	**Address**
Mr. Robert Restaino	City of Niagara Falls Mayor	745 Main Street P.O. Box 69 Niagara Falls, NY 14304
Mr. Anthony J. Restiano	City of Niagara Falls Administrator	745 Main Street P.O. Box 69 Niagara Falls, NY 14304
Mr. William Kennedy III	City of Niagara Councilmen	745 Main Street P.O. Box 69 Niagara Falls, NY 14304
Mr. John Spanbauer		
Mr. Andrew Touma		
Mr. Kenny Tompkins		
Mr. Christopher Voccio		
Ms. Leonard Lapp Jr.	City of Niagara Falls Principal Account Clerk	745 Main Street P.O. Box 69 Niagara Falls, NY 14304
Mr. Christopher Mazur	City of Niagara Falls Corporation Counsel	745 Main Street P.O. Box 69 Niagara Falls, NY 14304

Adjacent Property Owners		
Direction	**Property Address**	**Owner Contact Information**
North	Residential (710 Division Avenue)	Barr, Colleen 710 Division Ave Niagara Falls, NY 144.54-1-64
	Residential (712 Division Avenue)	Chapman, Jerry K & Emma H 712 Division Ave Niagara Falls, NY 144.54-1-65
	Residential (716 Division Avenue)	George Nicholas 716 Division Ave Niagara Falls, NY 144.54-1-66
	Residential (720 and 724 Division Avenue	George, Nicholas J & Sharon L 720 Division Ave Niagara Falls, NY 144.54-1-68; 144.54-1-68
East	Vacant Residential (803 Division Avenue)	Niagara North Inc. 803 Division Ave Niagara Falls, NY 144.54-1-48
	Vacant Residential (1643 8th Street)	George, Nicholas J & Sharon L 144.54.1-45
South	Vacant Residential (1640 8th Street)	Melendez, Gilbert 1640 8th Street Niagara Falls, NY 144.54-1-51
West	Vacant land (1615 Whirlpool Street)	Ghobrial Hosny 1615 Whirlpool Street Niagara Falls, NY 144.54-1-63

Site Owner

NFN 40 717 Division St, LLC
500 Seneca Street, Suite 503
Buffalo, New York 14204
(716) 861-6177

Public Water Supply

Water Treatment Plant
5815 Buffalo Avenue
Niagara Falls, New York
14304
(716) 283-9770

Local Media

Niagara Gazetteer
473 Third Street
Niagara Falls, New York
14301
(716) 282-2311

Document Repository

Niagara Falls Public
Library
607 Walnut Avenue
Niagara Falls, New York
14301
(716) 286-4211

APPENDIX 4

Quality Control Program

Quality Control Program (QCP)

Location:

Building #40
717 and 723 Division Avenue
Niagara Falls, New York 14305

Prepared For:

Mr. Robert Richardson
NFN 40 717 Division St, LLC
500 Seneca Street, Suite 503
Buffalo, New York 14204

LaBella Project No. 2201378.01

August 2020

Olympic Towers, 300 Pearl Street, Suite 130 | Buffalo, NY 14202 | p 716-551-6281 | f 716-551-6282
www.labellapc.com

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1.0 INTRODUCTION

LaBella's Quality Control Program (QCP) is an integral part of its approach to environmental investigations. By maintaining a rigorous QCP, our firm is able to provide accurate and reliable data. QCP also provides safe working conditions for all on-Site workers.

The QCP contains procedures which allow for the proper collection and evaluation of data and documents that QCP procedures have been followed during field investigations. The QCP presents the methodology and measurement procedures used in collecting quality field data. This methodology includes the proper use of equipment, documentation of sample collection, and sample handling procedures.

Procedures used in the firm's QCP program are compatible with federal, state, and local regulations, as well as, appropriate professional and technical standards.

This QCP program has been organized into the following areas:

- QC Objectives and Checks
- Field Equipment, Handling, and Calibration
- Sampling Techniques
- Sample Handling and Packaging

It should be noted that project-specific work plans (e.g., Remedial Investigation Work Plans) may have project specific details that will differ from the procedures in this QC program. In such cases, the project-specific work plan should be followed (subsequent to regulatory approval).

2.0 QUALITY CONTROL OBJECTIVES

The United States Environmental Protection Agency (USEPA) has identified five general levels of analytical data quality as being potentially applicable to site investigations conducted under comprehensive environmental response compensation and liability act (CERCLA). These levels are summarized below:

- **Level I** - Field screening. This level is characterized by the use of portable instruments, which can provide real-time data to assist in the optimization of sampling point locations and for health and safety support. Data can be generated regarding the presence or absence of certain contaminants (especially volatiles) at sampling locations.
- **Level II** - Field analysis. This level is characterized by the use of portable analytical instruments, which can be used on site or in mobile laboratories stationed near a site (close-support labs). Depending upon the types of contaminants, sample matrix, and personnel skills, qualitative and quantitative data can be obtained.

- **Level III** - Laboratory analysis using methods other than the Contract Laboratory Program (CLP) Routine Analytical Services (RAS). This level is used primarily in support of engineering studies using standard USEPA-approved procedures. Some procedures may be equivalent to CLP RAS, without the CLP requirements for documentation.
- **Level IV** - CLP Routine Analytical Services. This level is characterized by rigorous QC protocols and documentation and provides qualitative and quantitative analytical data. Some regions have obtained similar support via their own regional laboratories, university laboratories, or other commercial laboratories.
- **Level V** - Non-standard methods. Analyses, which may require method modification and/or development. CLP Special Analytical Services (SAS) are considered Level V.

Unless stated otherwise, all data will be generated in accordance with Level IV. When CLP methodology is not available, federal and state approved methods will be utilized. Level III will be utilized, as necessary, for non-CLP RAS work which may include ignitability, corrosivity, reactivity, EP toxicity, and other state approved parameters for characterization. Level I will be used throughout the RI for health and safety monitoring activities.

All measurements will be made to provide that analytical results are representative of the media and conditions measured. Unless otherwise specified, all data will be calculated and reported in units consistent with other organizations reporting similar data to allow comparability of data bases among organizations. Data will be reported in nanograms per liter (ng/L), micrograms (µg)/L and milligrams (mg)/L for aqueous samples, and µg/ kilogram (kg) and mg/kg (dry weight) for soils, or otherwise as applicable.

The characteristics of major importance for the assessment of generated data are accuracy, precision, completeness, representativeness, and comparability. Application of these characteristics to specific projects is addressed later in this document. The characteristics are defined below.

2.1 Accuracy

Accuracy is the degree of agreement of a measurement or average of measurements with an accepted reference or "true" value and is a measure of bias in the system.

2.2 Precision

Precision is the degree of mutual agreement among individual measurements of a given parameter.

2.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under correct normal conditions.

2.4 Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition

Careful choice and use of appropriate methods in the field will ensure that samples are representative. This is relatively easy with water or air samples since these components are homogeneously dispersed. In soil and sediment, contaminants are unlikely to be evenly distributed, and thus it is important for the sampler and analyst to exercise good judgment when removing a sample.

2.5 Comparability

Comparability expresses the confidence with which one data set can be compared to another. The data sets may be inter- or intra- laboratory.

3.0 MEASUREMENT OF DATA QUALITY

3.1 Accuracy

Accuracy of a particular analysis is measured by assessing its performance with "known" samples. These "knowns" take the form of USEPA standard reference materials, or laboratory prepared solutions of target analytes spiked into a pure water or sample matrix. In the case of gas chromatography (GC) or GC/MS (mass spectrometry) analyses, solutions of surrogate compounds are used. These solutions can be spiked into every sample and are designed to mimic the behavior of target analytes without interfering with their determination.

In each case the recovery of the analyte is measured as a percentage, correcting for analytes known to be present in the original sample if necessary, as in the case of a matrix spike analysis. For USEPA supplied known solutions, this recovery is compared to the published data that accompany the solution.

For the firm's prepared solutions, the recovery is compared to USEPA-developed data or the firm's historical data as available. For surrogate compounds, recoveries are compared to USEPA CLP acceptable recovery tables.

If recoveries do not meet required criteria, then the analytical data for the batch (or, in the case of surrogate compounds, for the individual sample) are considered potentially inaccurate. The analyst or his supervisor must initiate an investigation of the cause of the problem and take corrective action. This can include recalibration of the instrument, reanalysis of the QC sample, reanalysis of the samples in the batch, or flagging the data as suspect if the problems cannot be resolved. For highly contaminated samples, recovery of the matrix spike may depend on sample homogeneity. As

a rule, analyses are not corrected for recovery of matrix spike or surrogate compounds.

3.2 Precision

Precision of a particular analysis is measured by assessing its performance with duplicate or replicate samples. Duplicate samples are pairs of samples taken in the field and transported to the laboratory as distinct samples. Their identity as duplicates is typically not known to the laboratory. For most purposes, precision is determined by the analysis of replicate pairs (i.e., two samples prepared at the laboratory from one original sample). Often in replicate analysis the sample chosen for replication does not contain target analytes so that quantitation of precision is impossible. For USEPA CLP analyses, replicate pairs of spiked samples, known as matrix spike/matrix spike duplicate samples, are used for precision studies. This has the advantage that two real positive values for a target analyte can be compared.

Precision is calculated in terms of Relative Percent Difference (RPD).

- Where X_1 and X_2 represent the individual values found for the target analyte in the two replicate analyses or in the matrix spike/matrix spike duplicate analyses.
- RPDs must be compared to the method RPD for the analysis. The analyst or his supervisor must investigate the cause of RPDs outside stated acceptance limits. This may include a visual inspection of the sample for non-homogeneity, analysis of check samples, etc. Follow-up action may include sample reanalysis or flagging of the data as suspect if problems cannot be resolved.
- During the data review and validation process, field duplicate RPDs are assessed as a measure of the total variability of both field sampling and laboratory analysis.

3.3 Completeness

Completeness for each parameter is calculated as follows:

- The firm's target value for completeness for all parameters is 100%. A completeness value of 95% will be considered acceptable. Incomplete results will be reported to the site managers. In planning the field sample collection, the site manager will plan to collect field duplicates from identified critical areas. This procedure should assure 100% completeness for these areas.

3.4 Representativeness

The characteristic of representativeness is not quantifiable. Subjective factors to be taken into account are as follows:

- The degree of homogeneity of a site;
- The degree of homogeneity of a sample taken from one point in a site; and
- The available information on which a sampling plan is based.

To maximize representativeness of results, sampling techniques and sample locations will be carefully chosen so that they provide laboratory samples representative of the site and the specific area. Within the laboratory, precautions are taken to extract from the sample bottle an aliquot representative of the whole sample. This includes premixing the sample and discarding pebbles from soil samples.

4.0 QUALITY CONTROL TARGETS

Target values for detection limit, percent spike recovery and percent "true" value of known check standards, and RPD of duplicates/replicates are included in the QCP, Analytical Procedures. Note that tabulated values are not always attainable. Instances may arise where high sample concentrations, non-homogeneity of samples, or matrix interferences preclude achievement of target detection limits or other quality control criteria. In such instances, the firm will report reasons for deviations from these detection limits or noncompliance with quality control criteria.

5.0 SAMPLING PROCEDURES

This section describes the sampling procedures to be utilized for each environmental medium that will be collected and analyzed in accordance with appropriate state and federal requirements. All procedures described are consistent with USEPA sampling procedures as described in SW-846, third edition, September 1986, and subsequent updates. All samples will be delivered to the laboratory and analyzed within the holding times specified by the analytical method.

6.0 SOIL & GROUNDWATER INVESTIGATION

The groundwater sampling plan outlined in this subsection has been prepared in general accordance with Resource Conservation and Recovery Act (RCRA) Groundwater Monitoring Technical Enforcement Guidance Document 9950.1 (September 1986), Office of Solid Waste and Emergency Response.

Prior to drilling, all drill sites will be cleared with appropriate utility companies to avoid potential accidents relating to underground utilities.

6.1 Surface Soil Sampling, Soil Borings, and Well Installation

6.1.1 Investigation Equipment

Manual Surface Soil Collection

Collection of surface soil samples will be completed manually with a hand auger or spade. The equipment will be decontaminated prior to commencement of surface soil sampling and also between samples using an alconox and water solution. Samples will be placed directly into sample

containers. Upon collection of surface soil samples, any excess, removed materials will be returned to the area from which they originated.

Direct Push Geoprobe Soil Borings and Monitoring Wells:

Soil borings and monitoring wells may be advanced with a Geoprobe direct push sampling system. The use of direct push technology allows for rapid sampling, observation, and characterization of relatively shallow overburden soils. The Geoprobe utilizes a four-foot or five-foot Macrocore sampler, with disposable polyethylene sleeves. Soil cores will be retrieved in four-foot or five-foot sections, and can be easily cut from polyethylene sleeves for observation and sampling. The Macrocore sampler will be decontaminated prior to commencing with boring activities and between samples and borings using an alconox and water solution. Upon completion of soil boring activities, the removed materials will be returned to the bore holes from which they originated. Excess soil cuttings generated during installation of the wells exhibiting evidence of impairment will be placed in containers and transported off-site for proper disposal. Soil cuttings not exhibiting evidence of impairment will be spread on the ground surface in the vicinity of the boring/well from which they originated. Development and pruge water will be allowed to infiltrate back into the subsurface of the Site in the vicinity of the well from which the water originated. Development water exhibiting sheen will be placed in 55-gallon drums and transported off-site for proper disposal. No water will be allowed to flow off-site.

6.1.2 Investigation Techniques

Direct Push Advanced Borings:

Prior to initiating drilling activities, the Geoprobe, Macrocore, drive rods and/or other pertinent equipment will be steam cleaned or washed with an alconox and water solution. This cleaning procedure will also be used between each boring. Throughout and after the cleaning processes, direct contact between the equipment and the ground surface will be avoided. Plastic sheeting and/or clean support structures (e.g., pallets, sawhorses) will be used. All sampling equipment will be steam cleaned or washed with an alconox and water solution upon completion of the investigation and prior to leaving the site.

Soil borings will be advanced with a 2-inch (or larger) inside diameter (ID) direct push Macrocore through overburden soils. Drilling fluids, other than water from a NYSDEC-approved source, will be not allowed without special consideration and agreement of the NYSDEC. The use of lubricants is also not allowed unless approved by the NYSDEC representative.

It will be the responsibility of the consultant to arrange for the appropriate drilling equipment to be present at the site. Standby time to arrange for additional equipment or a water supply will not be allowed unless caused by unexpected site conditions.

During the drilling, a photoionization detector (PID) will be used to screen soils cores retrieved from the Macrocores.

Direct Push Geoprobe advanced groundwater-monitoring wells typically utilize 2-inch threaded flush joint PVC pipe with 0.010-inch slotted screen. However, well construction will vary by project and will be specified in the project-specific work plan. PVC piping used for risers and screens will conform to the requirements of American Society for Testing and Materials (ASTM)-D 1785 Schedule 40 pipe, and shall bear markings that will identify the material as which is specified. All materials used to construct the wells will be ASTM approved. Solvent PVC glue shall not be used at any time in the construction of the wells. The bottom of the screen shall be sealed with a treated cap or plus. No lead shot or lead wool is to be employed in sealing the bottom of the well or for sealant at any point in the well. All risers and screens shall be set round, plumb and true to line.

6.1.3 Artificial Sand Pack

When utilized, granular backfill will be chemically and texturally clean, inert, siliceous, and of appropriate grain size for the screen slot size and the host environment. The sand pack will be installed using a tremie pipe, when possible (i.e., a tremie pipe may not fit into smaller, 2-in. diameter boreholes). When utilized, the well screen and casing will be installed, and the sand pack placed around the screen and casing to a depth extending 2-ft. or at least 25 percent of the screen length above the top of the screen.

6.1.4 Bentonite Seal

A minimum 2-ft. thick seal of tamped bentonite pellets will be placed directly on top of the sand pack, and care will be taken to avoid bridging. In the event that Site geology does not allow for a 2-ft. seal (e.g., only 1-ft. of space remains between the top of the sand pack and ground surface), the remaining space in the annulus will be filled with bentonite. The seal will be measured immediately after placement, without allowance for swelling.

6.1.5 Grout Mixture

Upon completion of the bentonite seal, the well may be grouted with a non-shrinking cement grout (e.g., Volclay^{R}) mix to be placed from the top of the bentonite seal to the ground surface. The cement grout shall consist of a mixture of Portland cement (ASTM C 150) and water, in the proportion of not more than 7 gallons of clean water per bag of cement (1 cubic foot or 94 pounds). Additionally, 3% by weight of bentonite powder shall be added, if permitted.

6.1.6 Surface Protection

At all times during the progress of the work, precautions shall be used to prevent tampering with or the entrance of foreign material into the well. Upon completion of the well, a suitable lockable cap shall be installed to prevent material from entering the well. Where permanent wells are to be installed, the well riser shall be protected by a stickup casing set into a concrete pad. A concrete pad, sloped away from the well, shall be constructed around the stickup casing at ground level.

Any well that is to be temporarily removed from service or left incomplete due to delay in construction shall be capped with a watertight cap and equipped with a "vandal-proof" cover, satisfying applicable

NYSDEC regulations or recommendations.

6.1.7 Surveying

Coordinates and elevations will be established for each monitoring well and sampling location. Elevations to the closest 0.01 foot shall be used for the survey. These elevations shall be referenced to a regional, local, or project-specific datum. USGS benchmarks will be used whenever available. The location, identification, coordinates, and elevations of the wells will be plotted on maps with a scale large enough to show their location with reference to other structures at each site.

6.1.8 Well Development

After completion of the well, but not sooner than 24 hours after grouting is completed, development will be accomplished using pumping, bailing, or surge blocking. No dispersing agents, acids, disinfectants, or other additives will be used during development or introduced into the well at any other time. During development, water will be removed throughout the entire water column by periodically lowering and raising the pump intake (or bailer stopping point). Development water will be allowed to infiltrate back into the subsurface of the Site in the vicinity of the well from which the water originated. Development water exhibiting sheen will be placed in 55-gallon drums and transported off-site for proper disposal. No water will be allowed to flow off-site.

7.0 GEOLOGIC LOGGING AND SAMPLING

At each investigative location, borings will be advanced through overburden using either a drill rig and hollow-stem auger or direct push technology. Soils will be evaluated for visual and olfactory evidence of impairment (i.e., staining, odors, and elevated PID readings) by a geologist, engineer or qualified Environmental Professional. Sampling devices will be decontaminated according to procedures outlined in the Decontamination section of this document. When required, samples will be stored in glass jars until they are needed for testing or the project is complete.

If hydrogeologic conditions are favorable for well installation at a depth less than design, the well may be installed at the boring or coring termination depth. In the event that maximum design depth is reached and hydrogeologic conditions are not suitable for well installation, the maximum drilling depth may be revised. Hydrogeologic suitability for well placement will be determined by the supervising geologist, engineer or qualified Environmental Professional in consultation with NYSDEC, based on thickness and estimated hydraulic conductivity of the saturated zone encountered. If necessary, the borehole will be advanced to water or abandoned.

Boulders and bedrock encountered during well installation may be cored by standard diamond-core drilling methods using an "NX" size core barrel. All rock cores recovered will be logged by a geologist, labeled and stored in wooden core boxes. The cores will be stored by the firm until the project is completed or for at least one year. Drilling logs will be prepared by an experienced geologist or engineer, who will be present during all drilling operations. One copy of each field boring and well construction log and groundwater data, will typically be submitted as part of the investigation

summary report (e.g., Remedial Investigation Report). The value shall be calculated for each 5-foot section. Information provided in the logs shall include, but not be limited to, the following:

- Date, test hole identification, and project identification;
- Name of individual developing the log;
- Name of driller and assistant(s);
- Drill, make and model, auger size;
- Identification of alternative drilling methods used and justification thereof (e.g., rotary drilling with a specific bit type to remove material from within the hollow stem augers);
- Standard penetration test (ASTM D-1586) blow counts;
- Field diagram of each monitoring well installed with the depth to bottom of screen, top of screen, and pack, bentonite seal, etc.;
- Reference elevation for all depth measurements;
- Depth of each change of stratum;
- Thickness of each stratum;
- Identification of the material of which each stratum is composed, according to the USCS system or standard rock nomenclature, as appropriate;
- Depth interval from which each sample was taken;
- Depth at which hole diameters (bit sizes) change;
- Depth at which groundwater is encountered;
- Depth to static water level and changes in static water level with well depth;
- Total depth of completed well;
- Depth or location of any loss of tools or equipment;
- Location of any fractures, joints, faults, cavities, or weathered zones;
- Depth of any grouting or sealing;
- Nominal hole diameters;
- Amount of cement used for grouting or sealing;
- Depth and type of well casing;
- Description of well screen (to include depth, length, location, diameter, slot sizes, material, and manufacturer);
- Any sealing-off of water-bearing strata;
- Static water level upon completion of the well and after development;
- Drilling date or dates;
- Construction details of well; and
- An explanation of any variations from the work plan.

8.0 GROUNDWATER SAMPLING PROCEDURES

The groundwater in all new monitoring wells will be allowed to stabilize for at least 24-hours following development. Water levels will be measured to within 0.01 feet prior to purging and sampling. Sampling of each well will typically be accomplished as outlined below.

Purging will be completed prior to active sampling. During purging, the following will be recorded in

field books or groundwater sampling logs:

- date
- purge start time
- weather conditions
- PID reading immediately after the well cap is removed
- presence of Non-Aqueous Phase Liquid, if any, and approximate thickness
- pH
- dissolved oxygen
- temperature
- specific conductance
- depth of well
- depth to water
- estimated water volume
- purge end time
- volume of water purged

In general, wells will be purged until the pH, conductivity, temperature, and turbidity of the water being pumped from the well have stabilized with a turbidity goal of 50 NTU.

All groundwater samples and their accompanying QC samples will analyzed using NYSDEC Analytical Services Protocol (ASP; revised July 2005 and subsequent amendments or revisions).

9.0 MANAGEMENT OF INVESTIGATIVE-DERIVED WASTE

Investigation-derived waste (IDW) may include the following:

- Drill cuttings, discarded soil samples, drilling mud solids, and used sample containers;
- Well development and purge waters and discarded groundwater samples;
- Decontamination waters and associated solids;
- Soiled disposable personal protective equipment (PPE);
- Used disposable sampling equipment;
- Used plastic sheeting and aluminum foil;
- Other equipment or materials that either contain or have been in contact with potentially-impacted environmental media.

Waste materials anticipated to be generated during the implementation of this RIWP include soil from soil borings, excess soil cuttings during installation of the wells, development water during purging of the wells and decontamination water generated from decontaminating field equipment. Upon completion of soil boring activities, the removed materials will be returned to the bore holes from which they originated. Excess soil cuttings generated during installation of the wells, development water generated during purging activities and decontamination water generated from decontaminating field equipment will be spread across the Site surface in the vicinity of the

investigation location from which the soils originated, or allowed to infiltrate back into the subsurface of the Site in the vicinity of the sample location from which the material originated. Excess soil generated exhibiting evidence of impairment will be placed in containers and transported off-site for proper disposal. Development water exhibiting sheen will be placed in 55-gallon drums and transported off-site for proper disposal. Procedures will be implemented to prevent soils and water generated during investigation activities from leaving the Site.

10.0 DECONTAMINATION

Sampling methods and equipment have been chosen to minimize decontamination requirements and to prevent the possibility of cross-contamination. Decontamination of equipment will be performed between discrete sampling locations. Equipment used to collect samples between composite sample locations will not require decontamination between collection of samples. All investigation equipment will be decontaminated after the completion of each location. Special attention will be given to the drilling assembly and augers.

Non-disposable equipment will be decontaminated between each sampling event. The sampler will be cleaned prior to each use, by one of the following procedures:

- Initially cleaned of all foreign matter;
- Sanitized with a steam cleaner;

  OR
- Initially cleaned of all foreign matter;
- Scrubbed with brushes in alconox solution;
- Rinsed; and
- Allowed to air dry.

Sampling equipment / bottleware constructed of aluminum foil, low density polyethylene (LDPE), glass or Teflon will *not* be used and the sampling containers will not come into contact with these materials during soil or groundwater sampling associated with PFAS.

All groundwater sampling will be completed in a manner to minimize potential cross-contamination of the samples by completing all work as identified below. Because PFAS are found in numerous everyday items, the following special precautions will be taken during all sampling activities:

- Acceptable materials for sampling include stainless steel, high density polyethylene (HDPE), PVC, silicone, acetate and polypropylene
- No use of Teflon®-containing materials (e.g., Teflon® tubing, bailers, tape, sample jar lid liners, plumbing paste)
- No Tyvek® clothing will be worn onsite
- Clothing that contains polytetrafluorethylene (PTFE, GORE-TEX®, etc.) or that have been waterproofed with PFC materials will not be worn on-site.

- All clothing worn by sampling personnel must have been laundered multiple times. Clothing must not be laundered with fabric softener.
- No Post-It® notes will be brought onsite
- No fast food wrappers, disposable cups or microwave popcorn will be brought on-site.
- No use of chemical (blue) ice packs will be allowed.
- No use of aluminum foil, low density polyethylene (LDPE), glass or PTFE materials will be allowed.
- No use of Sharpies®, rather ball point pens will be utilized.
- No use of sunscreen, insect repellants, cosmetic, lotions or moisturizers will be allowed by sampling personnel the day of sampling.
- If any of the above items are handled by the field personnel prior to sampling activities, field personnel will wash their hands thoroughly with soap and water prior to any sampling activities.
- Powder-free nitrile gloves will be worn during all sample collection activities.

11.0 SAMPLE CONTAINERS

The containers required for sampling activities are pre-washed and ordered directly from a laboratory, which has the containers prepared in accordance with USEPA bottle washing procedures. The following tables detail sample volumes, containers, preservation and holding time for typical analytes.

Table 11-1
Water Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Maximum Holding Time
Volatile organic compounds (VOCs)	40-milliliter (ml) glass vial with Teflon-backed septum	Two; fill completely, no air space	Cool to 4 degrees (°) Celsius (C) (ice in cooler), Hydrochloric acid to pH <2	7 days
Semi-volatile organic compounds (SVOCs)	1,000-ml amber glass jar	One; fill completely	Cool to 4° C (ice in cooler)	7/40 days
Target Analyte List (TAL) Metals	500-ml polyethylene	One; fill completely	Cool to 4° C (Nitric acid to pH <2	6 months
Pesticides	1,000-ml amber glass jar	One; fill completely	Cool to 4° C (ice in cooler)	7/40 days
Herbicides	1,000-ml amber glass jar	One; fill completely	Cool to 4° C (ice in cooler)	7/40 days
Polychlorinated biphenyls (PCBS)	1,000-ml glass jar	One; fill completely	Cool to 4° C (ice in cooler)	7/40 days

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Maximum Holding Time
Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS)	250-ml high density polyethylene (HDPE) container with Teflon-free lined caps	Three; fill completely	Cool to 4° C (ice in cooler), preserved with Trizma	14 days
1, 4 dioxane	500-ml amber bottles	Two; fill completely	Cool to 4° C (ice in cooler)	7/40 days

-Holding time is based on verified time of sample collection.

TABLE 11-2
Soil Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Maximum Holding Time
VOCs	40-ml glass vial with Teflon-backed septum	Three, fill with five grams of soil using soil syringe	Cool to 4° C (ice in cooler). Two with 10 ml deionized (DI) water or 5 ml sodium bisulfate, one with five ml methanol	14 days
SVOCs, PCBs, Pesticides, and Herbicides	8- ounce (oz.), glass jar with Teflon-lined cap	One, fill as completely as possible	Cool to 4° C (ice in cooler)	7 days
TAL Metals	8-oz. glass jar with Teflon-lined cap	One; fill completely	Cool to 4° C (ice in cooler)	Must be extracted within 10 days; analyzed with 30 days
PFOA and PFOS	8-oz HDPE plastic	One; fill completely	Cool to 4° C (ice in cooler)	14 days

-Holding time is based on the times from verified time of sample collection.

TABLE 11-3
List of Major Instruments
for Sampling and Analysis

- MiniRae 3000 PID
- YSI Professional Plus Multi-Parameter Instrument – Conductivity, pH, ORP, and Temperature
- LaMotte 2020we Portable Turbidity Meter
- Hewlett Packard (HP) 1000 computer with RTE-6 operating system; and HP 9144 computer with RTE-4 operating system equipped with Aquarius software for control and data acquisition from gas chromatograph/mass spectrometer (GC/MS) systems; combined wiley and National Bureau of Standards (NBS) mass spectral library; and data archiving on magnetic tape
- Viriam 6000 and 37000 gas chromatrographs equipped with flame ionization, electron capture, photoionization and wall detectors as appropriate for various analyses, and interfaced to Variam DS604 or D5634 data systems for processing data.
- Spectra-Physics Model SP 4100 and SP 4270 and Variam 4270 cam puting integrators
- Perkin Eimer (PE) 3000% and 3030% fully Automated Atomic Absorption Spectrophotometers (AAS) with Furnace Atomizer and background correction system
- PE Plasma II Inductively Coupled Argon Plasma (ICAP) Spectre meter with PE7500 laboratory computer
- Dionex 20001 ion chromatograph with conductivity detector for anion analysis, with integrating recorder
- MGD-2002 Helium Gas Leak Detector

12.0 SAMPLE CUSTODY

This section describes standard operating procedures for sample identification and chain-of-custody to be utilized for all field activities. The purpose of these procedures is to ensure that the quality of the samples is maintained during their collection, transportation, and storage through analysis. All chain-of-custody requirements comply with standard operating procedures indicated in USEPA sample handling protocol.

Sample identification documents must be carefully prepared so that sample identification and chain-of-custody can be maintained and sample disposition controlled. Sample identification documents include:

- Field notebooks,
- Sample label,
- Custody seals, and
- Chain-of-custody records.

12.1 Chain-of-Custody

The primary objective of the chain-of-custody procedures is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from collection to completion of all required analyses. A sample is in custody if it is:

- In someone's physical possession;
- In someone's view;
- Locked up; or
- Kept in a secured area that is restricted to authorized personnel.

12.2 Field Custody Procedures

- As few persons as possible should handle samples.
- Sample bottles will be obtained pre-cleaned from a source such as I-Chem. Coolers or boxes containing cleaned bottles should be sealed with a custody tape seal during transport to the field or while in storage prior to use.
- The sample collector is personally responsible for the care and custody of samples collected until they are transferred to another person or dispatched properly under chain-of-custody rules.
- The sample collector will record sample data in the notebook.
- The site manager will determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

12.3 Sample Tags

Sample tags attached to or affixed around the sample container must be used to properly identify all samples collected in the field. The sample tags are to be placed on the bottles so as not to obscure any QC lot numbers on the bottles; sample information must be printed in a legible manner using waterproof ink. Field identification must be sufficient to enable cross-reference with the logbook. For chain-of-custody purposes, all QC samples are subject to exactly the same custodial procedures and documentation as "real" samples.

12.4 Transfer of Custody and Shipment

- The coolers in which the samples are packed must be accompanied by a chain-of-custody record. When transferring samples, the individuals relinquishing and receiving them must sign, date, and note the time on the chain-of-custody record. This record documents sample custody transfer
- Shipping containers must be sealed with custody seals for shipment to the laboratory. The method of shipment, name of courier, and other pertinent information are entered in the "Remarks" section of the chain-of-custody record and traffic reports.
- All shipments must be accompanied by the chain-of-custody record identifying their contents.

The original record accompanies the shipment. The other copies are distributed appropriately to the site manager.

- If sent by mail, the package is registered with return receipt requested. If sent by common carrier, a bill of lading is used. Freight bills, Postal Service receipts, and bill of lading are retained as part of the permanent documentation.

12.5 Chain-of-Custody Record

The chain-of-custody record must be fully completed in duplicate, using black carbon paper where possible, by the field technician who has been designated by the project manager as responsible for sample shipment to the appropriate laboratory for analysis. In addition, if samples are known to require rapid turnaround in the laboratory because of project time constraints or analytical concerns (e.g., extraction time or sample retention period limitations, etc.), the person completing the chain-of-custody record should note these constraints in the "Remarks" section of the record.

12.6 Laboratory Custody Procedures

A designated sample custodian accepts custody of the shipped samples and verifies that the sample identification number matches that on the chain-of-custody record and traffic reports, if required. Pertinent information as to shipment, pickup, and courier is entered in the "Remarks" section.

12.7 Custody Seals

Custody seals are preprinted adhesive-backed seals with security slots designed to break if the seals are disturbed. Sample shipping containers (coolers, cardboard boxes, etc., as appropriate) are sealed in as many places as necessary to ensure security. Seals must be signed and dated before use. On receipt at the laboratory, the custodian must check (and certify, by completing the package receipt log and LABMIS entries) that seals on boxes and bottles are intact. Strapping tape should be placed over the seals to ensure that seals are not accidentally broken during shipment.

13.0 LABORATORY REQUIREMENTS AND DELIVERABLES

This section will describe laboratory requirement and procedures to be followed for laboratory analysis. Samples collected in New York State will be analyzed by a NYSDOH Environmental Laboratory Accreditation Program (ELAP)-certified laboratory. When required, analyses will be conducted in accordance with the most current NYSDEC ASP. For example, ASP Category B reports will be completed by the laboratory for samples representing the final delineation of the Remedial Investigation, confirmation samples, samples to determine closure of a system, and correlation samples taken using field testing technologies analyzed by an ELAP-certified laboratory to determine correlation to field results. Data Usability Summary Reports will be completed by a third party for samples requiring ASP Category B format reports. Electronic data deliverables will also be generated by the laboratory in “EQUIS” format for samples requiring ASP Category B format reports.

14.0 DOCUMENTATION

14.1 Sample Identification

All containers of samples collected from the project will be identified using the following format on a label or tag fixed to the sample container:

XX-ZZ-O/D-DDMMYYYY

XX:	This set of initials indicates the Site from which the sample was collected.
ZZ:	These initials identify the sample location. Actual sample locations will be recorded in the task log.
O/D:	An "O" designates an original sample; "D" identifies it as a duplicate.
DDMMYYYY:	This set of initials indicates the date the sample was collected

Each sample will be labeled, chemically preserved (if required) and sealed immediately after collection. To minimize handling of sample containers, labels will be filled out prior to sample collection when possible. The sample label will be filled out using waterproof ink and will be firmly affixed to the sample containers. The sample label will give the following information:

- Date and time of collection
- Sample identification
- Analysis required
- Project name/number
- Preservation

14.2 Daily Logs

Daily logs and data forms are necessary to provide sufficient data and observations to enable participants to reconstruct events that occurred during the project and to refresh the memory of the field personnel if called upon to give testimony during legal proceedings.

The site log is the responsibility of the site manager and will include a complete summary of the day's activity at the site.

The **Task Log** will include:

- Name of person making entry (signature).
- Names of team members on-site.
- Levels of personnel protection:
  - Level of protection originally used;
  - Changes in protection, if required; and

  - Reasons for changes.
- Documentation on samples taken, including:
  - Sampling location and depth station numbers;
  - Sampling date and time, sampling personnel;
  - Type of sample (grab, composite, etc.); and
  - Sample matrix.
- On-site measurement data.
- Field observations and remarks.
- Weather conditions, wind direction, etc.
- Unusual circumstances or difficulties.
- Initials of person recording the information.

15.0 CORRECTIONS TO DOCUMENTATION

15.1 Notebook

As with any data logbooks, no pages will be removed for any reason. If corrections are necessary, these must be made by drawing a single line through the original entry (so that the original entry can still be read) and writing the corrected entry alongside. The correction must be initialed and dated. Most corrected errors will require a footnote explaining the correction.

15.2 Sampling Forms

As previously stated, all sample identification tags, chain-of-custody records, and other forms must be written in waterproof ink. None of these documents are to be destroyed or thrown away, even if they are illegible or contain inaccuracies that require a replacement document.

If an error is made on a document assigned to one individual, that individual may make corrections simply by crossing a line through the error and entering the corrected information. The incorrect information should not be obliterated. Any subsequent error discovered on a document should be corrected by the person who made the entry. All corrections must be initialed and dated.

15.3 Photographs

Photographs will be taken as directed by the site manager. Documentation of a photograph is crucial to its validity as a representation of an existing situation. The following information will be noted in the task log concerning photographs:

- Date, time, location photograph was taken;
- Photographer
- Description of photograph taken;

16.0 SAMPLE HANDLING, PACKAGING, AND SHIPPING

The transportation and handling of samples must be accomplished in a manner that not only protects the integrity of the sample, but also prevents any detrimental effects due to the possible hazardous nature of samples. Regulations for packaging, marking, labeling, and shipping hazardous materials are promulgated by the United States Department of Transportation (DOT) in the Code of Federal Regulation, 49 CFR 171 through 177. All samples will be delivered to the laboratory and analyzed within the holding times specified by the analytical method for that particular analyte.

All chain-of-custody requirements must comply with standard operating procedures in the USEPA sample handling protocol.

16.1 Sample Packaging

Samples must be packaged carefully to avoid breakage or contamination and must be shipped to the laboratory at proper temperatures. The following sample packaging requirements will be followed:

- Sample bottle lids must never be mixed. All sample lids must stay with the original containers.
- The sample volume level can be marked by placing the top of the label at the appropriate sample height, or with a grease pencil. This procedure will help the laboratory to determine if any leakage occurred during shipment. The label should not cover any bottle preparation QC lot numbers.
- All sample bottles are placed in a plastic bag to minimize the potential for cross-contamination.
- Shipping coolers must be partially filled with packing materials and ice when required, to prevent the bottles from moving during shipment.
- The sample bottles must be placed in the cooler in such a way as to ensure that they do not touch one another. Ice will be added to the cooler to ensure that the samples reach the laboratory at temperatures no greater than 4°C.
- The environmental samples are to be placed in plastic bags. Ice is not to be used as a substitute for packing materials.
- Any remaining space in the cooler should be filled with inert packing material. Under no circumstances should material such as sawdust, sand, etc., be used.
- A duplicate custody record and traffic reports, if required must be placed in a plastic bag and taped to the bottom of the cooler lid. Custody seals are affixed to the sample cooler.

16.2 Shipping Containers

Shipping containers are to be custody-sealed for shipment as appropriate. The container custody seal will consist of filament tape wrapped around the package and custody seals affixed in such a way that access to the container can be gained only by cutting the filament tape and breaking a seal.

Field personnel will make arrangements for transportation of samples to the lab. The lab must be notified as early in the week as possible regarding samples intended for Saturday delivery.

16.3 Marking and Labeling

- Chain of custody seals shall be placed on the container, signed, and dated prior to taping the container to ensure the chain of custody seals will not be destroyed during shipment.
- If samples are designated as medium or high hazard, they must be sealed in metal paint cans, placed in the cooler with vermiculite and labeled and placarded in accordance with DOT regulations.
- In addition, the coolers must also be labeled and placarded in accordance with DOT regulations if shipping medium and high hazard samples.

17.0 CALIBRATION PROCEDURES AND FREQUENCY

All instruments and equipment used during sampling and analysis will be operated, calibrated, and maintained according to the manufacturer's guidelines and recommendations as well as criteria set forth in the applicable analytical methodology references. Operation, calibration, and maintenance will be performed by personnel properly trained in these procedures. Section 11 lists the major instruments to be used for sampling and analysis. In addition, brief descriptions of calibration procedures for major field and laboratory instruments follow.

18.0 FIELD INSTRUMENTATION

18.1 Photovac/MiniRae PID

Standard operating procedures for the PID require that routine maintenance and calibration be performed every six months. The packages used for calibration are non-toxic analyzed gas mixtures available in pressurized containers.

18.3 Conductance, Temperature, and pH Tester

Temperature and conductance instruments are factory calibrated. Temperature accuracy can be checked against a certified thermometer prior to field use if necessary. Conductance accuracy may be checked with a solution of known conductance and recalibration can be instituted, if necessary.

18.4 Turbidity Meter

LaMotte 2020WE Turbidity Meter is calibrated before each use. The default units are set to NTU and the default calibration curve is formazin. A 0 NTU Standard (Code 1480) is included with the meter. To calibrate, rinse a clean tube three times with the blank. Fill the tube to the fill line with the blank. Insert the tube into the chamber, close the lid, and select "scan blank".

19.0 INTERNAL QUALITY CONTROL CHECKS

QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of field equipment. Field-based QC will comprise at least 10% of each data set generated and will consist of standards, replicates, spikes, and blanks. Field duplicates and field blanks will be analyzed by the laboratory as samples and will not necessarily be identified to the laboratory as duplicates or blanks. For each matrix, field duplicates will be provided at a rate of one per 20 samples collected or one per shipment, whichever is greater. Field blanks which consist of trip, routine field, and rinsate blanks (groundwater only) will be provided at a rate of one per 20 samples collected for each parameter group, or one per shipment, whichever is greater.

Calculations will be performed for recoveries and standard deviations along with review of retention times, response factors, chromatograms, calibration, tuning, and all other QC information generated. All QC data, including split samples, will be documented in the site logbook. QC records will be retained and results reported with sample data.

19.1 Blank Samples

Blank samples are analyzed in order to assess possible contamination from the field and/or laboratory so that corrective measures may be taken, if necessary. Field samples are discussed in the following subsection:

19.2 Field Blanks

Various types of blanks are used to check the cleanliness of field handling methods. The following types of blanks may be used: the trip blank, the routine field blank, and the field equipment blank. They are analyzed in the laboratory as samples, and their purpose is to assess the sampling and transport procedures as possible sources of sample contamination. Field staff may add blanks if field circumstances are such that they consider normal procedures are not sufficient to prevent or control sample contamination, or at the direction of the project manager. Rigorous documentation of all blanks in the site logbooks is mandatory.

- **Routine Field Blanks** or bottle blanks are blank samples prepared in the field to access ambient field conditions. They will be prepared by filling empty sample containers with deionized water and any necessary preservatives. They will be handled like a sample and shipped to the laboratory for analysis.
- **Trip Blanks** are similar to routine field blanks with the exception that they are **not** exposed to

field conditions. Their analytical results give the overall level of contamination from everything except ambient field conditions. For the RI/FS, one trip blank will be collected with every batch of water samples for VOC analysis. Each trip blank will be prepared by filling a 40-ml vial with deionized water prior to the sampling trip, transported to the site, handled like a sample, and returned to the laboratory for analysis without being opened in the field.

- **Field Equipment Blanks** are blank samples (sometimes called transfer blanks or rinsate blanks) designed to demonstrate that sampling equipment has been properly prepared and cleaned before field use, and that cleaning procedures between samples are sufficient to minimize cross contamination. If a sampling team is familiar with a particular site, they may be able to predict which areas or samples are likely to have the highest concentration of contaminants. Unless other constraints apply, these samples should be taken last to avoid excessive contamination of sampling equipment.

19.3 Field Duplicates

Field duplicate samples consist of a set of two samples collected independently at a sampling location during a single sampling event. In some instances the field duplicate can be a blind duplicate, i.e., indistinguishable from other analytical samples so that personnel performing the analyses are not able to determine which samples are field duplicates. Field duplicates are designed to assess the consistency of the overall sampling and analytical system.

19.4 Quality Control Check Samples

Inorganic and organic control check samples are available from USEPA free of charge and are used as a means of evaluating analytical techniques of the analyst. Control check samples are subjected to the entire sample procedure, including extraction, digestion, etc., as appropriate for the analytical method utilized.

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

GUIDELINES FOR SAMPLING AND ANALYSIS OF PFAS

Under NYSDEC's Part 375 Remedial Programs

January 2020

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Contents

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Guidelines for Sampling and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs

Objective

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) performs or oversees sampling of environmental media and subsequent analysis of PFAS as part of remedial programs implemented under 6 NYCRR Part 375. To ensure consistency in sampling, analysis and reporting of PFAS, DER has developed this document to summarize procedures and update previous DER technical guidance pertaining to PFAS.

Applicability

Sampling for PFAS has already been initiated at numerous sites under DER-approved work plans, in accordance with specified procedures. All future work plans should include PFAS sampling and analysis procedures that conform to the guidelines provided herein.

As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Potentially affected media can include soil, groundwater, surface water, and sediment. Based upon the potential for biota to be affected, biota sampling and analysis for PFAS may also be warranted as determined pursuant to a Fish and Wildlife Impact Analysis. Soil vapor sampling for PFAS is not required.

Field Sampling Procedures

DER-10 specifies technical guidance applicable to DER's remedial programs. Given the prevalence and use of PFAS, DER has developed "best management practices" specific to sampling for PFAS. As specified in DER-10 Chapter 2, quality assurance procedures are to be submitted with investigation work plans. Typically, these procedures are incorporated into a work plan, or submitted as a stand-alone document (e.g., a Quality Assurance Project Plan). Quality assurance guidelines for PFAS are listed in Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS.

Field sampling for PFAS performed under DER remedial programs should follow the appropriate procedures outlined for soils, sediments or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F).

QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c). For sampling equipment coming in contact with aqueous samples only, rinsate or equipment blanks should be collected. Equipment blanks should be collected at a minimum frequency of one per day or one per twenty samples, whichever is more frequent.

Data Assessment and Application to Site Cleanup

Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFAS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10.

Water Sample Results

PFAS should be further assessed and considered as a potential contaminant of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L (ppt). In addition, further assessment of water may be warranted if either of the following screening levels are met:

a. any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or
b. total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L

If PFAS are identified as a contaminant of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

The extent of soil contamination for purposes of delineation and remedy selection should be determined by having certain soil samples tested by Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed for PFAS. Soil exhibiting SPLP results above 70 ppt for either PFOA or PFOS (individually or combined) are to be evaluated during the cleanup phase.

Sites in the site management phase should evaluate for PFAS to determine if modification to any components of the SMP is necessary (e.g., monitoring for PFAS, upgrading treatment facilities, or performing an RSO).

Testing for Imported Soil

Soil imported to a site for use in a soil cap, soil cover, or as backfill is to be tested for PFAS in general conformance with DER-10, Section 5.4(e) for the *PFAS Analyte List* (Appendix F) using the analytical procedures discussed below and the criteria in DER-10 associated with SVOCs.

If PFOA or PFOS is detected in any sample at or above 1 µg/kg, then soil should be tested by SPLP and the leachate analyzed for PFAS. If the SPLP results exceed 10 ppt for either PFOA or PFOS (individually) then the source of backfill should be rejected, unless a site-specific exemption is provided by DER. SPLP leachate criteria is based on the Maximum Contaminant Levels proposed for drinking water by New York State's Department of Health, this value may be updated based on future Federal or State promulgated regulatory standards. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.

Analysis and Reporting

As of January 2020, the United States Environmental Protection Agency (EPA) does not have a validated method for analysis of PFAS for media commonly analyzed under DER remedial programs (non-potable waters, solids). DER has developed the following guidelines to ensure consistency in analysis and reporting of PFAS.

The investigation work plan should describe analysis and reporting procedures, including laboratory analytical procedures for the methods discussed below. As specified in DER-10 Section 2.2, laboratories should provide a full Category B deliverable. In addition, a Data Usability Summary Report (DUSR) should be prepared by an independent, third party data validator. Electronic data submissions should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

DER has developed a *PFAS Analyte List* (Appendix F) for remedial programs to understand the nature of contamination at sites. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any analytes, the DER project manager, in consultation with the DER chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site. As with other contaminants that are analyzed for at a site, the *PFAS Analyte List* may be refined for future sampling events based on investigative findings.

Routine Analysis

Currently, New York State Department of Health's Environmental Laboratory Approval Program (ELAP) does not offer certification for PFAS in matrices other than finished drinking water. However, laboratories analyzing environmental samples for PFAS (e.g., soil, sediments, and groundwater) under DER's Part 375 remedial programs need to hold ELAP certification for PFOA and PFOS in drinking water by EPA Method 537.1 or ISO 25101. Laboratories should adhere to the guidelines and criteria set forth in the DER's laboratory guidelines for PFAS in non-potable water and solids (Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids). Data review guidelines were developed by DER to ensure data comparability and usability (Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids).

LC-MS/MS analysis for PFAS using methodologies based on EPA Method 537.1 is the procedure to use for environmental samples. Isotope dilution techniques should be utilized for the analysis of PFAS in all media. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. If laboratories indicate that they are not able to achieve these reporting limits for the entire *PFAS Analyte List*, site-specific decisions regarding acceptance of elevated reporting limits for specific PFAS can be made by the DER project manager in consultation with the DER chemist.

Additional Analysis

Additional laboratory methods for analysis of PFAS may be warranted at a site, such as the Synthetic Precipitation Leaching Procedure (SPLP) and Total Oxidizable Precursor Assay (TOP Assay). Commercially methods are also available for biota and air samples.

SPLP is a technique used to determine the mobility of chemicals in liquids, soils and wastes, and may be useful in determining the need for addressing PFAS-containing material as part of the remedy. SPLP by EPA Method 1312 should be used unless otherwise specified by the DER project manager in consultation with the DER chemist.

Impacted materials can be made up of PFAS that are not analyzable by routine analytical methodology. A TOP Assay can be utilized to conceptualize the amount and type of oxidizable PFAS which could be liberated in the environment, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized. For example, some polyfluoroalkyl substances may degrade or transform to form perfluoroalkyl substances (such as PFOA or PFOS), resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from a source. The TOP Assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by routine analytical methodology.

Please note that TOP Assay analysis of highly-contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances.

Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS

The following guidelines (general and PFAS-specific) can be used to assist with the development of a QAPP for projects within DER involving sampling and analysis of PFAS.

General Guidelines in Accordance with DER-10

- Document/work plan section title – Quality Assurance Project Plan
- Summarize project scope, goals, and objectives
- Provide project organization including names and resumes of the project manager, Quality Assurance Officer (QAO), field staff, and Data Validator
    - The QAO should not have another position on the project, such as project or task manager, that involves project productivity or profitability as a job performance criterion
- List the ELAP-approved lab(s) to be used for analysis of samples
- Include a site map showing sample locations
- Provide detailed sampling procedures for each matrix
- Include Data Quality Usability Objectives
- List equipment decontamination procedures
- Include an "Analytical Methods/Quality Assurance Summary Table" specifying:
    - Matrix type
    - Number or frequency of samples to be collected per matrix
    - Number of field and trip blanks per matrix
    - Analytical parameters to be measured per matrix
    - Analytical methods to be used per matrix with minimum reporting limits
    - Number and type of matrix spike and matrix spike duplicate samples to be collected
    - Number and type of duplicate samples to be collected
    - Sample preservation to be used per analytical method and sample matrix
    - Sample container volume and type to be used per analytical method and sample matrix
    - Sample holding time to be used per analytical method and sample matrix
- Specify Category B laboratory data deliverables and preparation of a DUSR

Specific Guidelines for PFAS

- Include in the text that sampling for PFAS will take place
- Include in the text that PFAS will be analyzed by LC-MS/MS for PFAS using methodologies based on EPA Method 537.1
- Include the list of PFAS compounds to be analyzed (*PFAS Analyte List*)
- Include the laboratory SOP for PFAS analysis
- List the minimum method-achievable Reporting Limits for PFAS
    - Reporting Limits should be less than or equal to:
        - Aqueous – 2 ng/L (ppt)
        - Solids – 0.5 µg/kg (ppb)
- Include the laboratory Method Detection Limits for the PFAS compounds to be analyzed
- Laboratory should have ELAP certification for PFOA and PFOS in drinking water by EPA Method 537.1, EPA Method 533, or ISO 25101
- Include detailed sampling procedures
    - Precautions to be taken
    - Pump and equipment types
    - Decontamination procedures
    - Approved materials only to be used
- Specify that regular ice only will be used for sample shipment
- Specify that equipment blanks should be collected at a minimum frequency of 1 per day per matrix

Appendix B - Sampling Protocols for PFAS in Soils, Sediments and Solids

General

The objective of this protocol is to give general guidelines for the collection of soil, sediment and other solid samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Containers

Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in to contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel spoon
- stainless steel bowl
- steel hand auger or shovel without any coatings

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification. Previous results of "non-detect" for PFAS from the UCMR3 water supply testing program are acceptable as verification.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a pre-cleaned trowel or shovel should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) should then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a pre-cleaned hand auger or shovel. When the desired subsurface depth is reached, a pre-cleaned hand auger or spoon shall be used to obtain the sample.

When the sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix C - Sampling Protocols for PFAS in Monitoring Wells

General

The objective of this protocol is to give general guidelines for the collection of groundwater samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including plumbers tape and sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel inertia pump with HDPE tubing
- peristaltic pump equipped with HDPE tubing and silicone tubing
- stainless steel bailer with stainless steel ball
- bladder pump (identified as PFAS-free) with HDPE tubing

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Monitoring wells should be purged in accordance with the sampling procedure (standard/volume purge or low flow purge) identified in the site work plan, which will determine the appropriate time to collect the sample. If sampling using standard purge techniques, additional purging may be needed to reduce turbidity levels, so samples contain a limited amount of sediment within the sample containers. Sample containers that contain sediment may cause issues at the laboratory, which may result in elevated reporting limits and other issues during the sample preparation that can compromise data usability. Sampling personnel should don new nitrile gloves prior to sample collection due to the potential to contact PFAS containing items (not related to the sampling equipment) during the purging activities.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank every day that sampling is conducted and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Additional equipment blank samples may be collected to assess other equipment that is utilized at the monitoring well
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A purge log shall document the location of the sample, sampling equipment, groundwater parameters, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix D - Sampling Protocols for PFAS in Surface Water

General

The objective of this protocol is to give general guidelines for the collection of surface water samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel cup

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Where conditions permit, (e.g. creek or pond) sampling devices (e.g. stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point the sample can be collected and poured into the sample container.

If site conditions permit, samples can be collected directly into the laboratory container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank every day that sampling is conducted and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix E - Sampling Protocols for PFAS in Private Water Supply Wells

General

The objective of this protocol is to give general guidelines for the collection of water samples from private water supply wells (with a functioning pump) for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Drinking water samples collected using this protocol are intended to be analyzed for PFAS by ISO Method 25101. The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials (e.g. plumbers tape), including sample bottle cap liners with a PTFE layer.

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Locate and assess the pressure tank and determine if any filter units are present within the building. Establish the sample location as close to the well pump as possible, which is typically the spigot at the pressure tank. Ensure sampling equipment is kept clean during sampling as access to the pressure tank spigot, which is likely located close to the ground, may be obstructed and may hinder sample collection.

Prior to sampling, a faucet downstream of the pressure tank (e.g., wash room sink) should be run until the well pump comes on and a decrease in water temperature is noted which indicates that the water is coming from the well. If the homeowner is amenable, staff should run the water longer to purge the well (15+ minutes) to provide a sample representative of the water in the formation rather than standing water in the well and piping system including the pressure tank. At this point a new pair of nitrile gloves should be donned and the sample can be collected from the sample point at the pressure tank.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- If equipment was used, collect one equipment blank every day that sampling is conducted and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the private well, sample point location, owner contact information, sampling equipment, purge duration, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate and available (e.g. well construction, pump type and location, yield, installation date). Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appendix F - Sampling Protocols for PFAS in Fish

This appendix contains a copy of the latest guidelines developed by the Division of Fish and Wildlife (DFW) entitled “General Fish Handling Procedures for Contaminant Analysis” (Ver. 8).

Procedure Name: General Fish Handling Procedures for Contaminant Analysis

Number: FW-005

Purpose: This procedure describes data collection, fish processing and delivery of fish collected for contaminant monitoring. It contains the chain of custody and collection record forms that should be used for the collections.

Organization: Environmental Monitoring Section
Bureau of Ecosystem Health
Division of Fish and Wildlife (DFW)
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, New York 12233-4756

Version: 8

Previous Version Date: 21 March 2018

Summary of Changes to this Version: Updated bureau name to Bureau of Ecosystem Health. Added direction to list the names of all field crew on the collection record. Minor formatting changes on chain of custody and collection records.

Originator or Revised by: Wayne Richter, Jesse Becker

Date: 26 April 2019

Quality Assurance Officer and Approval Date: Jesse Becker, 26 April 2019

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GENERAL FISH HANDLING PROCEDURES FOR CONTAMINANT ANALYSES

A. Original copies of all continuity of evidence (i.e., Chain of Custody) and collection record forms must accompany delivery of fish to the lab. A copy shall be directed to the Project Leader or as appropriate, Wayne Richter. All necessary forms will be supplied by the Bureau of Ecosystem Health. Because some samples may be used in legal cases, it is critical that each section is filled out completely. Each Chain of Custody form has three main sections:

   1. The top box is to be filled out **and signed** by the person responsible for the fish collection (e.g., crew leader, field biologist, researcher). This person is responsible for delivery of the samples to DEC facilities or personnel (e.g., regional office or biologist).

   2. The second section is to be filled out **and signed** by the person responsible for the collections while being stored at DEC, before delivery to the analytical lab. This may be the same person as in (1), but it is still required that they complete the section. Also important is the **range of identification numbers** (i.e., tag numbers) included in the sample batch.

   3. Finally, the bottom box is to record any transfers between DEC personnel and facilities. Each subsequent transfer should be **identified, signed, and dated**, until laboratory personnel take possession of the fish.

B. The following data are required on each **Fish Collection Record** form:

   1. Project and Site Name.

   2. DEC Region.

   3. All personnel (and affiliation) involved in the collection.

   4. Method of collection (gill net, hook and line, etc.)

   5. Preservation Method.

C. The following data are to be taken on each fish collected and recorded on the **Fish Collection Record** form:

   1. Tag number - Each specimen is to be individually jaw tagged at time of collection with a unique number. Make sure the tag is turned out so that the number can be read without opening the bag. Use tags in sequential order. For small fish or composite samples place the tag inside the bag with the samples. The Bureau of Ecosystem Health can supply the tags.

   2. Species identification (please be explicit enough to enable assigning genus and species). Group fish by species when processing.

   3. Date collected.

   4. Sample location (waterway and nearest prominent identifiable landmark).

   5. Total length (nearest mm or smallest sub-unit on measuring instrument) and weight (nearest g or

smallest sub-unit of weight on weighing instrument). Take all measures as soon as possible with calibrated, protected instruments (e.g. from wind and upsets) and prior to freezing.

6. Sex - fish may be cut enough to allow sexing or other internal investigation, but do not eviscerate. Make any incision on the right side of the belly flap or exactly down the midline so that a left-side fillet can be removed.

D. General data collection recommendations:

1. It is helpful to use an ID or tag number that will be unique. It is best to use metal striped bass or other uniquely numbered metal tags. If uniquely numbered tags are unavailable, values based on the region, water body and year are likely to be unique: for example, R7CAY11001 for Region 7, Cayuga Lake, 2011, fish 1. If the fish are just numbered 1 through 20, we have to give them new numbers for our database, making it more difficult to trace your fish to their analytical results and creating an additional possibility for errors.

2. Process and record fish of the same species sequentially. Recording mistakes are less likely when all fish from a species are processed together. Starting with the bigger fish species helps avoid missing an individual.

3. If using Bureau of Ecosystem Health supplied tags or other numbered tags, use tags in sequence so that fish are recorded with sequential Tag Numbers. This makes data entry and login at the lab and use of the data in the future easier and reduces keypunch errors.

4. Record length and weight as soon as possible after collection and before freezing. Other data are recorded in the field upon collection. An age determination of each fish is optional, but if done, it is recorded in the appropriate "Age" column.

5. For composite samples of small fish, record the number of fish in the composite in the Remarks column. Record the length and weight of each individual in a composite. All fish in a composite sample should be of the same species and members of a composite should be visually matched for size.

6. Please submit photocopies of topographic maps or good quality navigation charts indicating sampling locations. GPS coordinates can be entered in the Location column of the collection record form in addition to or instead for providing a map. These records are of immense help to us (and hopefully you) in providing documented location records which are not dependent on memory and/or the same collection crew. In addition, they may be helpful for contaminant source trackdown and remediation/control efforts of the Department.

7. When recording data on fish measurements, it will help to ensure correct data recording for the data recorder to call back the numbers to the person making the measurements.

E. Each fish is to be placed in its own individual plastic bag. For small fish to be analyzed as a composite, put all of the fish for one composite in the same bag but use a separate bag for each composite. It is important to individually bag the fish to avoid difficulties or cross contamination when processing the fish for chemical analysis. Be sure to include the fish's tag number inside the bag, preferably attached to the fish with the tag number turned out so it can be read. Tie or otherwise secure the bag closed. **The Bureau of Ecosystem Health will supply the bags.** If necessary, food grade bags may be procured from a suitable vendor (e.g., grocery store). It is preferable to redundantly label each bag with a manila tag tied between the knot and the body of the bag. This tag should be labeled with the project name, collection location, tag number, collection date, and fish species. If scales are collected, the scale envelope should be labeled with

the same information.

F. Groups of fish, by species, are to be placed in one large plastic bag per sampling location. **The Bureau of Ecosystem Health will supply the larger bags.** Tie or otherwise secure the bag closed. Label the site bag with a manila tag tied between the knot and the body of the bag. The tag should contain: project, collection location, collection date, species and **tag number ranges**. Having this information on the manila tag enables lab staff to know what is in the bag without opening it.

G. Do not eviscerate, fillet or otherwise dissect the fish unless specifically asked to. If evisceration or dissection is specified, the fish must be cut along the exact midline or on the right side so that the left side fillet can be removed intact at the laboratory. If filleting is specified, the procedure for taking a standard fillet (SOP PREPLAB 4) must be followed, including removing scales.

H. Special procedures for PFAS: Unlike legacy contaminants such as PCBs, which are rarely found in day to day life, PFAS are widely used and frequently encountered. Practices that avoid sample contamination are therefore necessary. While no standard practices have been established for fish, procedures for water quality sampling can provide guidance. The following practices should be used for collections when fish are to be analyzed for PFAS:

No materials containing Teflon.
No Post-it notes.
No ice packs; only water ice or dry ice.
Any gloves worn must be powder free nitrile.
No Gore-Tex or similar materials (Gore-Tex is a PFC with PFOA used in its manufacture).
No stain repellent or waterproof treated clothing; these are likely to contain PFCs.
Avoid plastic materials, other than HDPE, including clipboards and waterproof notebooks.
Wash hands after handling any food containers or packages as these may contain PFCs.
Keep pre-wrapped food containers and wrappers isolated from fish handling.
Wear clothing washed at least six times since purchase.
Wear clothing washed without fabric softener.
Staff should avoid cosmetics, moisturizers, hand creams and similar products on the day of sampling as many of these products contain PFCs (Fujii et al. 2013). Sunscreen or insect repellent should not contain ingredients with "fluor" in their name. Apply any sunscreen or insect repellent well downwind from all materials. Hands must be washed after touching any of these products.

I. All fish must be kept at a temperature <45° F (<8° C) immediately following data processing. As soon as possible, freeze at -20° C ± 5° C. Due to occasional freezer failures, daily freezer temperature logs are required. The freezer should be locked or otherwise secured to maintain chain of custody.

J. In most cases, samples should be delivered to the Analytical Services Unit at the Hale Creek field station. Coordinate delivery with field station staff and send copies of the collection records, continuity of evidence forms and freezer temperature logs to the field station. For samples to be analyzed elsewhere, non-routine collections or other questions, contact Wayne Richter, Bureau of Ecosystem Health, NYSDEC, 625 Broadway, Albany, New York 12233-4756, 518-402-8974, or the project leader about sample transfer. Samples will then be directed to the analytical facility and personnel noted on specific project descriptions.

K. A recommended equipment list is at the end of this document.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE
FISH COLLECTION RECORD

Project and Site Name _____ DEC Region _____

Collections made by (include all crew) _____

Sampling Method: □Electrofishing □Gill netting □Trap netting □Trawling □Seining □Angling □Other _____

Preservation Method: □Freezing □Other _____ Notes (SWFDB survey number): _____

FOR LAB USE ONLY- LAB ENTRY NO.	COLLECTION OR TAG NO.	SPECIES	DATE TAKEN	LOCATION	AGE	SEX &/OR REPROD. CONDIT	LENGTH ( )	WEIGHT ( )	REMARKS

richter: revised 2011, 5/7/15, 10/4/16, 3/20/17; becker: 3/23/17, 4/26/19

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAIN OF CUSTODY

I, _____, of _____ collected the
(Print Name) (Print Business Address)

following on _____, 20____ from _____
(Date) (Water Body)

in the vicinity of _____
(Landmark, Village, Road, etc.)

Town of _____, in _____ County.

Item(s) _____

_____

Said sample(s) were in my possession and handled according to standard procedures provided to me prior to collection. The sample(s) were placed in the custody of a representative of the New York State Department of Environmental Conservation on _____, 20_____.

_____ _____
Signature Date

I, _____, received the above mentioned sample(s) on the date specified and assigned identification number(s) _____ to the sample(s). I have recorded pertinent data for the sample(s) on the attached collection records. The sample(s) remained in my custody until subsequently transferred, prepared or shipped at times and on dates as attested to below.

_____ _____
Signature Date

SECOND RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
THIRD RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
FOURTH RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
RECEIVED IN LABORATORY BY (Print Name)	TIME & DATE	REMARKS
SIGNATURE	UNIT	
LOGGED IN BY (Print Name)	TIME & DATE	ACCESSION NUMBERS
SIGNATURE	UNIT	

richter: revised 21 April 2014; becker: 23 March 2017, 26 April, 2019

NOTICE OF WARRANTY

By signature to the chain of custody (reverse), the signatory warrants that the information provided is truthful and accurate to the best of his/her ability. The signatory affirms that he/she is willing to testify to those facts provided and the circumstances surrounding the same. Nothing in this warranty or chain of custody negates responsibility nor liability of the signatories for the truthfulness and accuracy of the statements provided.

HANDLING INSTRUCTIONS

On day of collection, collector(s) name(s), address(es), date, geographic location of capture (attach a copy of topographic map or navigation chart), species, number kept of each species, and description of capture vicinity (proper noun, if possible) along with name of Town and County must be indicated on reverse.

Retain organisms in manila tagged plastic bags to avoid mixing capture locations. Note appropriate information on each bag tag.

Keep samples as cool as possible. Put on ice if fish cannot be frozen within 12 hours. If fish are held more than 24 hours without freezing, they will not be retained or analyzed.

Initial recipient (either DEC or designated agent) of samples from collector(s) is responsible for obtaining and recording information on the collection record forms which will accompany the chain of custody. This person will seal the container using packing tape and writing his signature, the time and the date across the tape onto the container with indelible marker. Any time a seal is broken, for whatever purpose, the incident must be recorded on the Chain of Custody (reason, time, and date) in the purpose of transfer block. Container then is resealed using new tape and rewriting signature, with time and date.

EQUIPMENT LIST

Scale or balance of appropriate capacity for the fish to be collected.

Fish measuring board.

Plastic bags of an appropriate size for the fish to be collected and for site bags.

Individually numbered metal tags for fish.

Manila tags to label bags.

Small envelops, approximately 2” x 3.5”, if fish scales are to be collected.

Knife for removing scales.

Chain of custody and fish collection forms.

Clipboard.

Pens or markers.

Paper towels.

Dish soap and brush.

Bucket.

Cooler.

Ice.

Duct tape.

Appendix G – PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluroroctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) developed the following guidelines for laboratories analyzing environmental samples for PFAS under DER programs. If laboratories cannot adhere to the following guidelines, they should contact DER's Quality Assurance Officer, Dana Maikels, at dana.maikels@dec.ny.gov prior to analysis of samples.

Isotope Dilution

Isotope dilution techniques should be utilized for the analysis of PFAS in all media.

Extraction

For water samples, the entire sample bottle should be extracted, and the sample bottle rinsed with appropriate solvent to remove any residual PFAS.

For samples with high particulates, the samples should be handled in one of the following ways:

1. Spike the entire sample bottle with isotope dilution analytes (IDAs) prior to any sample manipulation. The sample can be passed through the SPE and if it clogs, record the volume that passed through.
2. If the sample contains too much sediment to attempt passing it through the SPE cartridge, the sample should be spiked with isotope dilution analytes, centrifuged and decanted.
3. If higher reporting limits are acceptable for the project, the sample can be diluted by taking a representative aliquot of the sample. If isotope dilution analytes will be diluted out of the sample, they can be added after the dilution. The sample should be homogenized prior to taking an aliquot.

If alternate sample extraction procedures are used, please contact the DER remedial program chemist prior to employing. Any deviations in sample preparation procedures should be clearly noted in the case narrative.

Signal to Noise Ratio

For all target analyte ions used for quantification, signal to noise ratio should be 3:1 or greater.

Blanks

There should be no detections in the method blanks above the reporting limits.

Ion Transitions

The ion transitions listed below should be used for the following PFAS:

PFOA	413 > 369
PFOS	499 > 80
PFHxS	399 > 80
PFBS	299 > 80
6:2 FTS	427 > 407
8:2 FTS	527 > 507
N-EtFOSAA	584 > 419
N-MeFOSAA	570 > 419

Branched and Linear Isomers

Standards containing both branched and linear isomers should be used when standards are commercially available. Currently, quantitative standards are available for PFHxS, PFOS, NMeFOSAA, and NEtFOSAA. As more standards become available, they should be incorporated in to the method. All isomer peaks present in the standard should be integrated and the areas summed. Samples should be integrated in the same manner as the standards.

Since a quantitative standard does not exist for branched isomers of PFOA, the instrument should be calibrated using just the linear isomer and a technical (qualitative) PFOA standard should be used to identify the retention time of the branched PFOA isomers in the sample. The total response of PFOA branched and linear isomers should be integrated in the samples and quantitated using the calibration curve of the linear standard.

Secondary Ion Transition Monitoring

Quantifier and qualifier ions should be monitored for all target analytes (PFBA and PFPeA are exceptions). The ratio of quantifier ion response to qualifier ion response should be calculated for each target analyte and the ratio compared to standards. Lab derived criteria should be used to determine if the ratios are acceptable.

Reporting

Detections below the reporting limit should be reported and qualified with a J qualifier.

The acid form of PFAS analytes should be reported. If the salt form of the PFAS was used as a stock standard, the measured mass should be corrected to report the acid form of the analyte.

Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

These guidelines are intended to be used for the validation of PFAS analytical results for projects within the Division of Environmental Remediation (DER) as well as aid in the preparation of a data usability summary report. Data reviewers should understand the methodology and techniques utilized in the analysis. Consultation with the end user of the data may be necessary to assist in determining data usability based on the data quality objectives in the Quality Assurance Project Plan. A familiarity with the laboratory's Standard Operating Procedure may also be needed to fully evaluate the data. If you have any questions, please contact DER's Quality Assurance Officer, Dana Maikels, at dana.maikels@dec.ny.gov.

Preservation and Holding Time

Samples should be preserved with ice to a temperature of less than 6°C upon arrival at the lab. The holding time is 14 days to extraction for aqueous and solid samples. The time from extraction to analysis for aqueous samples is 28 days and 40 days for solids.

Temperature greatly exceeds 6ºC upon arrival at the lab*	Use professional judgement to qualify detects and non-detects as estimated or rejected
Holding time exceeding 28 days to extraction	Use professional judgement to qualify detects and non-detects as estimated or rejected if holding time is grossly exceeded

*Samples that are delivered to the lab immediately after sampling may not meet the thermal preservation guidelines. Samples are considered acceptable if they arrive on ice or an attempt to chill the samples is observed.

Initial Calibration

The initial calibration should contain a minimum of five standards for linear fit and six standards for a quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20%. Linear fit calibration curves should have an R^2 value greater than 0.990.

The low-level calibration standard should be within 50% - 150% of the true value, and the mid-level calibration standard within 70% - 130% of the true value.

%RSD >20%	J flag detects and UJ non detects
R^2 >0.990	J flag detects and UJ non detects
Low-level calibration check <50% or >150%	J flag detects and UJ non detects
Mid-level calibration check <70% or >130%	J flag detects and UJ non detects

Initial Calibration Verification

An initial calibration verification (ICV) standard should be from a second source (if available). The ICV should be at the same concentration as the mid-level standard of the calibration curve.

ICV recovery <70% or >130%	J flag detects and non-detects

Continuing Calibration Verification

Continuing calibration verification (CCV) checks should be analyzed at a frequency of one per ten field samples. If CCV recovery is very low, where detection of the analyte could be in question, ensure a low level CCV was analyzed and use to determine data quality.

CCV recovery <70 or >130%	J flag results

Blanks

There should be no detections in the method blanks above the reporting limits. Equipment blanks, field blanks, rinse blanks etc. should be evaluated in the same manner as method blanks. Use the most contaminated blank to evaluate the sample results.

Blank Result	Sample Result	Qualification
Any detection	<Reporting limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
>Reporting limit	>Reporting limit and <10x blank result	J+ biased high

Field Duplicates

A blind field duplicate should be collected at rate of one per twenty samples. The relative percent difference (RPD) should be less than 30% for analyte concentrations greater than two times the reporting limit. Use the higher result for final reporting.

RPD >30%	Apply J qualifier to parent sample

Lab Control Spike

Lab control spikes should be analyzed with each extraction batch or one for every twenty samples. In the absence of lab derived criteria, use 70% - 130% recovery criteria to evaluate the data.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects

Matrix Spike/Matrix Spike Duplicate

One matrix spike and matrix spike duplicate should be collected at a rate of one per twenty samples. Use professional judgement to reject results based on out of control MS/MSD recoveries.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only
RPD >30%	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only

Extracted Internal Standards (Isotope Dilution Analytes)

Problematic analytes (e.g. PFBA, PFPeA, fluorotelomer sulfonates) can have wider recoveries without qualification. Qualify corresponding native compounds with a J flag if outside of the range.

Recovery <50% or >150%	Apply J qualifier
Recovery <25% or >150% for poor responding analytes	Apply J qualifier
Isotope Dilution Analyte (IDA) Recovery <10%	Reject results

Secondary Ion Transition Monitoring

Quantifier and qualifier ions should be monitored for all target analytes (PFBA and PFPeA are exceptions). The ratio of quantifier ion response to qualifier ion response should be calculated from the standards for each target analyte. Lab derived criteria should be used to determine if the ratios are acceptable. If the ratios fall outside of the laboratory criteria, qualify results as an estimated maximum concentration.

Signal to Noise Ratio

The signal to noise ratio for the quantifier ion should be at least 3:1. If the ratio is less than 3:1, the peak is discernable from the baseline noise and symmetrical, the result can be reported. If the peak appears to be baseline noise and/or the shape is irregular, qualify the result as tentatively identified.

Branched and Linear Isomers

Observed branched isomers in the sample that do not have a qualitative or quantitative standard should be noted and the analyte should be qualified as biased low in the final data review summary report. Note: The branched isomer peak should also be present in the secondary ion transition.

Reporting Limits

If project-specific reporting limits were not met, please indicate that in the report along with the reason (e.g. over dilution, dilution for non-target analytes, high sediment in aqueous samples).

Peak Integrations

Target analyte peaks should be integrated properly and consistently when compared to standards. Ensure branched isomer peaks are included for PFAS where standards are available. Inconsistencies should be brought to the attention of the laboratory or identified in the data review summary report.

APPENDIX 5

Health & Safety Plan

Site Health and Safety Plan

Location:

Building #40
717 and 723 Division Avenue
Niagara Falls, New York 14305

Prepared For:

Mr. Robert Richardson
NFN 40 717 Division St, LLC
500 Seneca Street, Suite 503
Buffalo, New York 14204

LaBella Project No. 2201378.01

August 2020

Olympic Towers, 300 Pearl Street, Suite 130 | Buffalo, NY 14202 | p 716-551-6281 | f 716-551-6282
www.labellapc.com

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SITE HEALTH AND SAFETY PLAN

Project Title:	Building #40: 717 and 723 Division Avenue - Brownfield Cleanup Program
Project Number:	2201378.01
Project Location (Site):	717 and 723 Division Avenue, Niagara Falls, New York 14305
Environmental Director:	Rob Napieralski
Project Manager:	Adam Zebrowski
Plan Review Date:	_____
Plan Approval Date:	_____
Plan Approved By:	_____ Mr. Richard Rote, CIH
Site Safety Supervisor:	Chris Kibler
Site Contact:	Mr. Robert Richardson
Safety Director:	Rick Rote, CIH
Proposed Date(s) of Field Activities:	To Be Determined
Site Conditions:	0.35± acres; Current Site features include a two-story 2,378 square foot vacant residential building (Site Building), asphalt-paved parking area located east of the Site Building, and undeveloped land.
Site Environmental Information Provided By:	❑ Phase I Environmental Site Assessment report, prepared by LaBella Associated D.P.C. dated April 30, 2020. ❑ Limited subsurface investigation completed May 8, 2020 by LaBella Associates, D.P.C.
Air Monitoring Provided By:	LaBella Associates, D.P.C.
Site Control Provided By:	LaBella Environmental, LLC

EMERGENCY CONTACTS

	Name	Phone Number
Ambulance:	As Per Emergency Service	911
Hospital Emergency:	Niagara Falls Memorial Medical Center	716-278-4000
Poison Control Center:	National Poison Control Center (serving Buffalo Area)	800-222-1222
Police (local, state):	Niagara Falls Police Department	716-286-4547
Fire Department:	City of Niagara Falls Fire Department	716-286-4720
Site Contact:	Robert Richardson, NFN 40 717 Division St, LLC	716-861-6177
Agency Contact:	NYSDEC – Joshua Vaccaro NYSDOH – To Be Determined	716-851-7220 To Be Determined
Environmental Director:	Rob Napieralski	Direct: 716-551-6283
Project Manager:	Adam Zebrowski	Direct: 716-840-2548
Site Safety Supervisor:	Heather Geoghegan	Direct: 716-710-3043
Safety Director	Rick Rote, CIH (LaBella)	Direct: 704-941-2123

MAP AND DIRECTIONS TO THE MEDICAL FACILITY
NIAGARA FALLS MEMORIAL MEDIACL CENTER

717 Division Ave
Niagara Falls, NY 14305

Follow Whirlpool St and Orchard Pkwy to Main St

2 min (0.6 mi)

1. Head west on Division Ave toward Whirlpool St

125 ft

2. Turn left onto Whirlpool St

0.3 mi

3. Turn left onto Orchard Pkwy

0.2 mi

Drive along Portage Rd

3 min (0.8 mi)

4. Turn left onto Main St

371 ft

5. Turn right onto Portage Rd

0.6 mi

6. Turn right onto Walnut Ave

469 ft

Drive to your destination

20 s (141 ft)

7. Turn right at Memorial Pkwy

79 ft

8. Turn left
Destination will be on the left

62 ft

Niagara Falls Memorial Medical Center
621 10th St, Niagara Falls, NY 14301

Source: Google Maps 2020

1.0 INTRODUCTION

The purpose of this Health and Safety Plan (HASP) is to provide guidelines for responding to potential health and safety issues that may be encountered during the Remedial Investigation (RI) at 717 and 723 Division Avenue in the City of Niagara Falls, Niagara County, New York (Site). This HASP only reflects the policies of LaBella Associates, D.P.C. The requirements of this HASP are applicable to all approved LaBella personnel at the work Site. This document's project specifications, and the Community Air Monitoring Plan (CAMP), are to be consulted for guidance in preventing and quickly abating any threat to human safety or the environment. The provisions of the HASP do not replace or supersede any regulatory requirements of the United States Environmental Protection Agency, New York State Department of Environmental Conservation, Occupational Safety and Health Administration or other regulatory bodies.

2.0 RESPONSIBILITIES

This HASP presents guidelines to minimize the risk of injury to project personnel, and to provide rapid response in the event of injury. The HASP is applicable only to activities of approved LaBella personnel and their authorized visitors. The Project Manager shall implement the provisions of this HASP for the duration of the project. It is the responsibility of LaBella employees to follow the requirements of this HASP, and all applicable company safety procedures.

3.0 ACTIVITIES COVERED

The activities covered under this HASP are limited to the following:

- Management of environmental investigation and remediation activities
- Environmental Monitoring
- Collection of samples
- Management of excavated soil and liquid waste (groundwater)

4.0 WORK AREA ACCESS AND SITE CONTROL

The contractor(s) will have primary responsibility for work area access and Site control.

5.0 POTENTIAL HEALTH AND SAFETY HAZARDS

This section lists some potential health and safety hazards that project personnel may encounter at the project Site and some actions to be implemented by approved personnel to control and reduce the associated risk to health and safety. This is not intended to be a complete listing of any and all potential health and safety hazards. New or different hazards may be encountered as Site environmental and Site work conditions change. The suggested actions to be taken under this plan are not to be substituted for good judgment on the part of project personnel. At all times, the Site Safety Officer has responsibility for Site safety and his instructions must be followed.

5.1 *Hazards Due to Heavy Machinery*

Potential Hazard:

Heavy machinery including drilling rigs, excavators, trailers, etc. will be in operation at the Site. The presence of such equipment presents the danger of being struck or crushed and can also create noise pollution. Use caution when working near heavy machinery.

Protective Action:

Make sure that operators are aware of your activities, and heed operator's instructions and warnings. Wear bright colored clothing and walk safe distances from heavy equipment. A hard hat, safety glasses, steel toe shoes and ear protection are required.

5.2 *Excavation Hazards*

Potential Hazard:

Excavations and trenches can collapse, causing injury or death. Edges of excavations can be unstable and collapse. Toxic and asphyxiant gases can accumulate in confined spaces and trenches. Excavations that require working within the excavation will require air monitoring in the breathing zone (refer to Section 9.0).

Excavations left open create a fall hazard which can cause injury or death.

Protective Action:

Personnel must receive approval from the Project Manager to enter an excavation for any reason. Subsequently, approved personnel are to receive authorization for entry from the Site Safety Officer. Approved personnel are not to enter excavations over 4 feet in depth unless excavations are adequately sloped. Additional personal protective equipment may be required based on the air monitoring.

Personnel should exercise caution near all excavations at the Site as excavation sidewalls may become unstable. Do not proceed closer than 3 feet to an unsupported or non-sloped excavation side wall. The contractor will be responsible to ensure that all excavations are left in a safe condition.

Excavations shall be backfilled immediately following completion. If this is not possible, fencing and/or barriers accompanied by "no trespassing" signs should be placed around all excavations when left open for any period of time when work is not being conducted.

5.3 *Cuts, Punctures and Other Injuries*

Potential Hazard:

In any excavation and construction work Site there is the potential for the presence of sharp or jagged edges on rock, metal materials, and other sharp objects. Serious cuts and punctures can result in loss of blood and infection.

Protective Action:

The Project Manager is responsible for making First Aid supplies available at the work Site to treat minor injuries. The Site Safety Officer is responsible for arranging the transportation of authorized on-site personnel to medical facilities when First Aid treatment in not sufficient. Do not move seriously injured workers. All injuries requiring treatment are to be reported to

the Project Manager. Serious injuries are to be reported immediately to the Site Safety Officer.

5.4 Injury Due to Exposure of Chemical Hazards

Potential Hazards:

Contaminants identified in testing locations at the Site include volatile organic compounds (VOCs), pesticides, and metals. Volatile organic vapors or other chemicals may be encountered during subsurface activities at the project work Site. Inhalation of high concentrations of volatile organic vapors can cause headache, stupor, drowsiness, confusion and other health effects. Skin contact can cause irritation, chemical burn, or dermatitis. For metals contaminated soils, dermal contact and inhalation of contaminated dust particles are the most likely exposure pathways.

Protective Action:

The use of properly selected Personal Protective Equipment (PPE), adherence to standard health and safety pre-cautions (e.g., no smoking or eating within work area or prior to personal decontamination), and implementation of routine dust suppression methods will effectively minimize exposure to the known contaminants on-site.

The presence of organic vapors may be detected by their odor and by monitoring instrumentation. Approved employees will not work in environments where hazardous concentrations of organic vapors are present. Air monitoring (refer to Section 9.0) of the work area will be performed at least every 60 minutes or more often using a Photoionization Detector (PID). Personnel are to leave the work area whenever PID measurements of ambient air exceed 25 parts per million (ppm) consistently for a 5 minute period. In the event that sustained total volatile organic compound (VOC) readings of 25 ppm are encountered personnel should upgrade personal protective equipment to Level C (refer to Section 8.0) and an Exclusion Zone should be established around the work area to limit and monitor access to this area (refer to Section 6.0).

5.5 Injuries due to extreme hot or cold weather conditions

Potential Hazards:

Extreme hot weather conditions can cause heat exhaustion, heat stress and heat stroke or extreme cold weather conditions can cause hypothermia.

Protective Action:

Precaution measures should be taken such as dress appropriately for the weather conditions and drink plenty of fluid. If personnel should suffer from any of the above conditions, proper techniques should be taken to cool down or heat up the body and taken to the nearest hospital if needed.

6.0 WORK ZONES

In the event that conditions warrant establishing various work zones (i.e., based on hazards - Section 5.0), the following work zones should be established:

Exclusion Zone (EZ):

The EZ will be established in the immediate vicinity and adjacent downwind direction of Site activities that elevate breathing zone VOC concentrations to unacceptable levels based on field screening. These Site activities include contaminated soil excavation and soil sampling activities. If access to the Site is required to accommodate non-project related personnel then an EZ will be established by constructing a barrier around the work area (yellow caution tape and/or construction fencing). The EZ barrier shall encompass the work area and any equipment staging/soil staging areas necessary to perform the associated work. The contractor(s) will be responsible for establishing the EZ and limiting access to approved personnel. Depending on the condition for establishing the EZ, access to the EZ may require adequate PPE (e.g., Level C).

Contaminant Reduction Zone (CRZ):

The CRZ will be the area where personnel entering the EZ will don proper PPE prior to entering the EZ and the area where PPE may be removed. The CRZ will also be the area where decontamination of equipment and personnel will be conducted as necessary.

7.0 DECONTAMINATION PROCEDURES

Upon leaving the work area, approved personnel shall decontaminate footwear as needed. Under normal work conditions, detailed personal decontamination procedures will not be necessary. Work clothing may become contaminated in the event of an unexpected splash or spill or contact with a contaminated substance. Minor splashes on clothing and footwear can be rinsed with clean water. Heavily contaminated clothing should be removed if it cannot be rinsed with water. Personnel assigned to this project should be prepared with a change of clothing whenever on Site.

Personnel will use the contractor's disposal container for disposal of PPE.

8.0 PERSONAL PROTECTIVE EQUIPMENT

Generally, Site conditions at this work Site require level of protection of Level D or modified Level D; however, air monitoring will be conducted to determine if up-grading to Level C PPE is required (refer to Section 9.0). Descriptions of the typical safety equipment associated with Level D and Level C are provided below:

Level D:

Hard hat, safety glasses, rubber nitrile sampling gloves, steel toe construction grade boots, etc.

Level C:

Level D PPE and full or ½-face respirator and tyvek suit (if necessary). [*Note: Organic vapor cartridges are to be changed after each 8-hours of use or more frequently.*]

9.0 AIR MONITORING

According to 29 CFR 1910.120(h), air monitoring shall be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection required for personnel working onsite. Air monitoring will consist at a minimum of the procedure listed below. Air monitoring instruments will be calibrated and maintained in accordance with the manufacturer's specifications.

The Air Monitor will utilize a PID to screen the ambient air in the work areas (drilling, excavation, soil staging, and soil grading areas) for total VOCs, DustTrak tm Model 8520 aerosol monitors or equivalent for measuring particulates and a carbon monoxide detector for total carbon monoxide concentrations. Work area ambient air will generally be monitored in the work area and downwind of the work area. Air monitoring of the work areas and downwind of the work areas will be performed at least every 60 minutes using a PID and the DustTrak meter.

If sustained PID readings of greater than 25 ppm are recorded in the breathing zone, either personnel are to leave the work area until satisfactory readings are obtained or approved personnel may re-enter the work areas wearing at a minimum a ½ face respirator with organic vapor cartridges for an 8-hour duration (i.e., upgrade to Level C PPE). Organic vapor cartridges are to be changed after each 8-hour use or more frequently, if necessary. If PID readings are sustained, in the work area, at levels above 50 ppm for a 5 minute average, work will be stopped immediately until safe levels of VOCs are encountered or additional PPE will be required (i.e., Level B).

10.0 EMERGENCY ACTION PLAN

In the event of an emergency, employees are to turn off and shut down all powered equipment and leave the work areas immediately. Employees are to walk or drive out of the Site as quickly as possible, wait at the assigned "safe area" and follow the instructions of the Site Safety Officer.

Employees are not authorized or trained to provide rescue and medical efforts. Rescue and medical efforts will be provided by local authorities.

11.0 MEDICAL SURVEILLANCE

Medical surveillance will be provided to all employees who are injured due to overexposure from an emergency incident involving hazardous substances at this Site.

12.0 EMPLOYEE TRAINING

Personnel who are not familiar with this Site plan will receive training on its entire content and organization before working at the Site.

Individuals involved with the remedial investigation must be 40-hour OSHA HAZWOPER trained with current 8-hour refresher certification.

Table 1
Exposure Limits and Recognition Qualities

Compound	PEL-TWA (ppm)(b)(d)	TLV-TWA (ppm)(c)(d)	STEL (ppm)(b)	LEL (%)(e)	UEL (%)(f)	IDLH (ppm)(g)(d)	Odor	Odor Threshold (ppm)	Ionization Potential
Acetone	750	500	NA	2.15	13.2	20,000	Sweet	4.58	9.69
Anthracene	.2	.2	NA	NA	NA	NA	Faint aromatic	NA	NA
Benzene	1	0.5	5	1.3	7.9	3000	Pleasant	8.65	9.24
Benzo (a) pyrene (coal tar pitch volatiles)	0.2	0.1	NA	NA	NA	700	NA	NA	NA
Benzo (a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (b) Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (k) Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	10.88
Carbon Disulfide	20	1	NA	1.3	50	500	Odorless or strong garlic type	.096	10.07
Chlorobenzene	75	10	NA	1.3	9.6	2,400	Faint almond	0.741	9.07
Chloroform	50	2	NA	NA	NA	1,000	ethereal odor	11.7	11.42
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethylene	200	200	NA	9.7	12.8	400	Acrid	NA	9.65
1,2-Dichlorobenzene	50	25	NA	2.2	9.2		Pleasant		9.07
Ethyl Alcohol	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100	100	NA	1.0	6.7	2,000	Ether	2.3	8.76
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl Alcohol	400	200	500	2.0	12.7	2,000	Rubbing alcohol	3	10.10
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	500	50	NA	12	23	5,000	Chloroform-like	10.2	11.35
Naphthalene	10, Skin	10	NA	0.9	5.9	250	Moth Balls	0.3	8.12
n-propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphoric Acid	1	1	3	NA	NA	10,000	NA	NA	NA
Polychlorinated Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium Hydroxide	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethane	NA	NA	NA	NA	NA	NA	Sweet	NA	NA
Toluene	100	100	NA	0.9	9.5	2,000	Sweet	2.1	8.82
Trichloroethylene	100	50	NA	8	12.5	1,000	Chloroform	1.36	9.45
1,2,4-Trimethylbenzene	NA	25	NA	0.9	6.4	NA	Distinct	2.4	NA
1,3,5-Trimethylbenzene	NA	25	NA	NA	NA	NA	Distinct	2.4	NA
Vinyl Chloride	1	1	NA	NA	NA	NA	NA	NA	NA
Xylenes (o,m,p)	100	100	NA	1	7	1,000	Sweet	1.1	8.56
Metals									
Arsenic	0.01	0.2	NA	NA	NA	100, Ca	NA	NA	NA
Cadmium	0.2	0.5	NA	NA	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	1	0.5	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.05	0.15	NA	NA	NA	700	NA	NA	NA
Mercury	0.05	0.05	NA	NA	NA	28	NA	NA	NA
Selenium	0.2	0.02	NA	NA	NA	Unknown	NA	NA	NA

(a) Skin = Skin Absorption
(b) OSHA-PEL Permissible Exposure Limit (flame weighted average, 8-hour): NIOSH Guide, June 1990
(c) ACGIH – 8 hour time weighted average from Threshold Limit Values and Biological Exposure Indices for 2003.
(d) Metal compounds in mg/m3
(e) Lower Exposure Limit (%)
(f) Upper Exposure Limit (%)
(g) Immediately Dangerous to Life or Health Level: NIOSH Guide, June 1990.

Notes:
1. All values are given in parts per million (PPM) unless otherwise indicated.
2. Ca = Possible Human Carcinogen, no IDLH information.

APPENDIX 6

Community Air Monitoring Plan

Site Community Air Monitoring Plan

Location:

Building #40
717 and 723 Division Avenue
Niagara Falls, New York 14305

Prepared for:

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500 Seneca Street, Suite 503
Buffalo, New York 14204

LaBella Project No. 2201378.01

August 2020

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Attachment 1: NYSDOH Community Air Monitoring Plan
Attachment 2: NYSDEC Fugitive Dust and Particulate Monitoring Plan

1.0 INTRODUCTION

The purpose of this Site Community Air Monitoring Plan (CAMP) is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of Remedial Investigation activities at the Site located at 717 and 723 Division Avenue in the City of Niagara Falls, Niagara County, New York. This Site-Specific Air Monitoring Program (SSAMP) is not intended for use in establishing action levels for worker respiratory protection.

This SSAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust), at the downwind perimeter of each designated work area when certain activities are in progress at the Site. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the SSAMP will help to confirm that work activities have not spread contamination off-site through the air.

2.0 RESPONSIBILITIES

This SSAMP is applicable to the remedial activities of contractors, engineers, consultants, facility employees, and their authorized visitors. The Project Manager shall implement the provisions of this SSAMP for the duration of the project. It is the responsibility of all remedial workers to follow the requirements of this SSAMP, and all applicable air safety procedures.

3.0 ACTIVITIES COVERED

The activities covered under this SSAMP include the following:

- Management of environmental investigation activities
- Environmental monitoring
- Collection of samples
- Management of excavated soil and liquid waste (groundwater)

4.0 WORK AREA ACCESS AND SITE CONTROLS

The contractor(s) will have primary responsibility for work area access and site control.

5.0 VOLATILE ORGANIC COMPOUND MONITORING

Monitoring for VOCs will be implemented in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan, which is included in Attachment 1.

6.0 PARTICULATE MONITORING

Monitoring for dust will be implemented in accordance with the NYSDOH Generic Community Air Monitoring Plan (Attachment 1) as well as New York State Department of Environmental Conservation's Fugitive Dust and Particulate Monitoring (Attachment 2).

J:\NFN 42 2001 MAIN ST LLC\2201378.01 - BLDG 40 & 42 NIAGARA FALLS PH II\REPORTS\BUILDING 40, 717 & 723 DIVISION AVE., NIAGARA FALLS, NY\RIWP\APPENDIX\APPENDIX 6 - CAMP\SITE SPECIFIC CAMP_BLDG 40 717 & 723 DIVISION.DOCX

ATTACHMENT 1

NYSDOH Community Air Monitoring Plan

Attachment 1
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

ATTACHMENT 2

NYSDEC Fugitive Dust and Particulate Monitoring Plan

Attachment 2
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.