Work Plan

Pilot Test Work Plan
Brownfield Cleanup Program
110 Luther Avenue Site
110 Luther Avenue, Liverpool, Onondaga County, New York

BCP Site # C734118

February 2011

S&W
REDEVELOPMENT

WORK PLAN
PILOT TEST WORK PLAN
BROWNFIELD CLEANUP PROGRAM
110 LUTHER AVENUE SITE
110 LUTHER AVENUE, LIVERPOOL, ONONDAGA COUNTY, NEW YORK

BCP Site # C734118

Prepared for

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February 2011

Project No. N9013

S&W
REDEVELOPMENT

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SECTION 1 - INTRODUCTION

This Work Plan presents the approach to collect the information necessary to prepare a groundwater remedial design at the 110 Luther Avenue Site (BCP # C734118). At this time in-situ chemical reduction (ISCR) is the remedial measure being considered. To provide the additional site information needed to develop a detailed groundwater remedial design and implementation approach, a pilot test will be completed following NYSDEC approval of this Plan.

1.1 BACKGROUND

A Remedial Investigation (RI) was completed at the 110 Luther Avenue site (the "site") as a component of the Brownfield Cleanup Program (Figure 1). The RI was conducted in accordance with the NYSDEC approved RI Work Plan, NYSDEC's draft *Brownfield Cleanup Program Guide* (May 2004) and *Technical Guidance for Site Investigation and Remediation* (DER-10) (December 2010), to provide a systematic assessment of environmental conditions on the property. The objective was to define the nature and extent of contamination, identify contaminant source areas (if present), produce data of sufficient quantity and quality to complete an exposure assessment and provide the basis for remedial action based on the site's contemplated use. The Remedial Investigation Report is currently being reviewed by NYSDEC. The RI did not identify a source (e.g. tank) or grossly contaminated soils, and laboratory results of soil samples indicated that samples were below Industrial Use Soil Cleanup Objectives (SCOs). The RI identified soil vapor and groundwater as media of concern. A summary of the RI groundwater results is provided in Section 1.2 below.

1.2 REMEDIAL INVESTIGATION GROUNDWATER RESULTS

The nature and extent of groundwater contamination was identified during a Remedial Investigation completed at the site. The Remedial Investigation identified chlorinated VOCs, specifically, tetrachloroethene (PCE) and its degradation byproducts as the primary contaminants of concern. Groundwater contamination is generally focused in the area of a historic floor trench drain (Figure 1). The floor trench drain is located in the central/eastern portion of the site (Figure 1).

Laboratory results of samples taken from wells MW-7, MW-11, and MW-17, located along the reported trench drain, identified elevated PCE, trichloroethene (TCE), cis-1,2-Dichloroethene (DCE), and vinyl chloride (VC) concentrations in groundwater. Sample results from surrounding monitoring wells indicate that the concentration of these compounds decrease substantially radially away from the trench drain.

Samples taken from the most distant wells (MW-5, MW-9, and MW-19) had non-detectable levels of PCE, TCE, DCE, and VC. Samples taken from MW-1, MW-2, MW-8, MW-12, MW-13, MW-16, and MW-18 indicate that chlorinated VOC concentrations decrease by an order of magnitude within a short distance of the trench drain. A summary of chlorinated VOC[1] concentrations (ug/L) in samples taken from wells in and around the trench drain are provided below. Table 1 provides a complete summary of groundwater VOC results compared to TOGS groundwater standards.

	Concentration (ug/L)			
Monitoring Well ID	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene (DCE)	Vinyl chloride (VC)
MW-7	27,000	4,300	2,600	260
MW-11	20,000	6,100	4,400	270
MW-17	14,000	2,000	750	ND
MW-1	60	39	150	33
MW-2	22	1.2	ND	ND
MW-8	3,900	860	2,500	250
MW-12	220	79	670	18
MW-13	410	600	780	29
MW-16	ND	ND	50	2.3
MW-18	ND	ND	ND	2.7

1.3 PILOT OBJECTIVES

Based on the groundwater RI results, remedial action will be necessary to remediate groundwater contamination at the site. In-situ chemical reduction (ISCR) using

[1] Only chlorinated alkenes are included since they are the predominant VOC found across the site. The results for other compounds can be found in Table 1.

Adventus's proprietary EHC® technology is currently being contemplated as a remedial approach, however, before designing a full scale remedy additional information is needed. The additional information will be collected during the course of the Pilot Test proposed in this work plan. The specific objectives of the pilot test will be:

- to determine the radius of influence that results from injection;
- to establish baseline conditions of the groundwater system;
- to demonstrate the efficacy of ISCR; and
- to estimate the time necessary to implement a full scale ISCR approach.

Following pilot test completion a groundwater Remedial Work Plan (RWP) will be prepared and submitted to NYSDEC for approval prior to implementing the site remedy.

Other more aggressive in-situ chemical oxidation technologies were not proposed due to concern for shallow utilities that could be impacted by chemical oxidation reaction.

SECTION 2 – PILOT TEST APPROACH

The in-situ chemical reduction (ISCR) reagent being considered is a controlled release, integrated carbon and microscale zero valent iron (ZVI) reagent (Adventus EHC®), that can enhance biological and chemical processes to create conditions which stimulate the rapid and complete dechlorination of chlorinated solvents such as PCE and its degradation by products (i.e. TCE, DCE, and VC)[2].

The reagents organic component consists of a high surface area, hydrophilic material that is nutrient rich. This material supports the growth of heterotrophic bacteria which consume dissolved oxygen as they grow, which reduces the redox potential (i.e. lower Eh). The heterotrophic bacteria also ferment carbon, releasing fatty acids that are used as electron donors for other bacteria including dehalogenating and halorespiring bacteria.

In addition to providing a carbon source, EHC® utilizes ZVI particles, which provide a reactive surface that stimulates the direct dechlorination of target contaminants. The ZVI particle also produces an additional decrease in the groundwater redox potential through oxygen scavenging. Redox potentials (as measured by Eh) as low as -550 mV are commonly observed as a result of the chemical and biological processes described. Under these conditions, PCE and TCE are thermodynamically unstable, and as a result, are destroyed with minimal production of biodegradation intermediates (i.e. DCE and VC).

EHC® was selected for this site for several reasons[3]:

- It will not oxidize ferrometallic infrastructure, such as subsurface utilities, that may be located in proximity of the site;
- Leverages preexisting reducing, and reductive dechlorination conditions which facilitate natural degradation of contaminants of concern in site groundwater;
- It produces strong reducing conditions capable of destroying the target contaminants (chlorinated VOCs);
- It can be deployed as a solid or liquid;

[2] EHC® information provided by Adventus Group (http://www.adventusgroup.com/products/ehc.shtml).
[3] A Material Safety Data Sheet (MSDS) for EHC® is provided in Attachment A.

- Safe to transport and handle, provided safe handling procedures are followed;
- It may persist after injection, up to sixty months, limiting rebound commonly observed by other in-situ remedial methods; and
- The presence of ZVI and the controlled release carbon source minimizes the production of problematic fermentation by-products such as methane.

The pilot test will precede the implementation of the site remedial approach, and will provide the necessary information to complete a remedial design and schedule for implementation for the target groundwater treatment area. SWRNA notified USEPA about the injection. Copies of the notification letter, and USEPA authorization letter are included in Attachment B. A copy of the USEPA authorization letter will be provided to NYSDEC upon receipt.

2.1 BASELINE SAMPLING

Prior to implementing the pilot test injection, baseline groundwater samples will be collected from wells MW-7, -11, and -17 to establish existing geochemical conditions. The baseline sampling parameters will include:

- chlorinated volatile organic compounds (VOCs) including PCE, TCE, DCE and VC by EPA Method 8260B;
- metals including iron, calcium, magnesium, and manganese by EPA Method 6010B;
- anions including chloride, sulfate, and nitrate;
- total organic carbon (TOC);
- biological oxygen demand (BOD);
- dissolved organic carbon (DOC);
- alkalinity;
- hardness;
- dissolved gasses including ethene, ethane, methane; and
- field parameters including pH, Eh, dissolved oxygen (DO), and turbidity.

The groundwater samples will be collected via low flow purge and sampling methodologies. Field parameters will be measured using a YSI 6820 water quality meter,

or equivalent device. All other parameters will be determined by an ELAP Certified Laboratory.

2.2 PILOT TEST ISCR INJECTION

As discussed in Section 1.2, the groundwater samples with the highest concentration of chlorinated VOCs identified during the remedial investigation were from monitoring wells located along the historic floor trench drain. Accordingly, the pilot test will focus on the area of the trench drain, specifically a 20-foot by 20-foot area in proximity to well MW-11, within the site building (Figure 2).

The delivery system will consist of a mixing tank (275 gallons), a grout pump unit, direct push (i.e. Geoprobe®) drilling equipment (Figure 3), and seven (7) to ten (10) soil borings. The soil borings will be installed in a 20-foot by 20-foot grid centered on well MW-11. The actual number and locations of soil borings will vary depending on field conditions. Each boring will be completed by advancing steel casing and an expendable drive point by direct push methods to a depth of approximately 14-feet bgs consistent with existing monitoring wells.

Once complete, the drive point will be disengaged and batch mixed slurry (approximately 29 percent solids) of EHC® and potable water will be injected into the subsurface as the drilling casing is withdrawn from the borehole. It is estimated that approximately 2,800 pounds of EHC® will be mixed with approximately 1,300 gallons of potable water, and injected during the course of the pilot test.

Particulate and VOC monitoring will occur inside the building during the implementation of the pilot test. A particulate monitor and PID will be stationed at the interior portion of the building, and operated continuously during the pilot test. The procedure outline in the Community Air Monitoring Plan (CAMP, Section 2.5, Appendix E) will be followed during the indoor monitoring.

2.3 POST INJECTION MONITORING

Concurrent with injection, observation soil borings will be installed to the same depth as injection borings (14 feet below ground surface) to evaluate the distribution of EHC® in the subsurface. The quantity and location of the observation soil borings will be field

determined, but it is expected that between two (2) and four (4) observation borings will be interspersed with injection borings. The evaluation of reagent distribution will be made based on visual observations of the soils, which are expected to turn bright orange (Attachment C).

Two (2) rounds of groundwater monitoring will be completed after pilot test injection. The monitoring will be completed at 30 (March 2011) and 60 (April 2011) days after the pilot test injection. Samples will be collected from MW-7, -11, and -17, and analyzed for the same parameters included in the baseline sampling. Groundwater sampling will be completed utilizing low flow methodologies.

2.4 HEALTH AND SAFETY

S&W Redevelopment staff will complete the pilot test in accordance with the Site Specific Health and Safety Plan (HASP) included in Attachment D. Contractors involved in completing the pilot test will develop and implement separate HASPs to govern the safe completion of work.

2.5 COMMUNITY AIR MONITORING AND HEALTH AND SAFETY

All site activities will be completed in conformance with the site specific community air monitoring plan (CAMP) included in Attachment E, and Health and Safety Plan (HASP).

2.6 PILOT TEST REPORTING

The pilot test results will be reported in a Remedial Work Plan (RWP). The RWP will also provide the basis of design for the site remedy.

SECTION 3– REMEDIAL DESIGN

Following the completion of the pilot test all laboratory and field data will be evaluated to determine the feasibility of an ISCR approach. The information collected will then be used to prepare a remedial design which will be presented as part of a Remedial Work Plan containing a description and a basis for the design and approach, and remediation objectives and goals.

SECTION 4 - WASTE MANAGEMENT AND SPILL PREVENTION

Reasonable care will be taken to minimize waste materials requiring disposal. The proposed work may produce certain waste materials, including decontamination water, well development water, and soil/rock cuttings, which will be characterized for proper disposal.

Other miscellaneous waste materials that may be produced during the proposed work will be properly disposed of as either non-hazardous or hazardous waste as appropriate at permitted facilities. These materials include used personal protective equipment (PPE) and miscellaneous expendable materials (well construction materials, litter, etc.).

4.1 REAGENT HANDLING, STORAGE, AND SPILL PREVENTION

The reagent being used during the pilot test is EHC®, which is a dry powder. The chemical will be provided by Adventus, and will be delivered to the site in 50 pound bags.

The bags will be stored inside of the Syracuse Label facility in a secured area. The reagent will remain in its closed shipping containers in a secure, dry area until ready for use. Dry reagent, if spilled on the floor in the storage area, will be swept or shoveled up immediately and transferred into a clean metal drum. Recovered reagent will be reused for ISCR injection.

Contact equipment used for the implementation of ISCR, including, mixing tanks, pumps, hoses, buckets, and other containers which may contain residual liquid reagent slurry will be thoroughly rinsed, and rinsate used as part of the pilot test injection process. Prior to shipping equipment off site, additional final rinses will be completed as necessary, and equipment allowed to air dry.

4.2 REAGENT SLURRY MIGRATION AND MONITORING

During the pilot test up to 3,500 pounds of reagent will be mixed into a slurry with potable water and injected into borings as discussed in Section 2. The treatment zone will include a discrete volume of contaminated groundwater. The radius of influence will be used to estimate the number of injection points that may be needed during full scale

implementation, and the rate of contaminant decrease will be used to estimate an appropriate dosage.

SECTION 5 - SCHEDULE

Based on the need for issuance of a site COC by December 2011, the proposed pilot test schedule is as follows:

• Submit work plan to NYSDEC	February 2011
• NYSDEC reviews/accepts work plan	February 2011
• Implement pilot test	Late February 2011
• 1st post pilot test monitoring	March 2011
• 2nd post pilot test monitoring	April 2011
• Submit Remedial Work Plan/Remedial Design (RWP/RD)	April 2011
• RWP/RD Public Comment Period	45 Days
• Implement Remedy	May 2011

FIGURES

ALBION AVENUE

STREET

KNAPP

POST

CONCRETE GUTTER

SHRUBS

MW-2

MW-2			
Analyte	Concentration (ug/L)		
	7/1998	12/2007	2/2010
PCE	NA	ND	22

MW-3

159.9'

15.1'

116.9'

15.6'

15.4'

10.1'

58.1'

67.4'

CONC PAD

CURB

CURB

CURB

CONC PAD

CONC PAD

CONCRETE PAD

70.1'

10.7'

2.0'

30.5'

MW-4

MW-5

MW-14

MW-15

MW-16

MW-17

MW-11

MW-11		
Analyte	Concentration (ug/L)	
	3/2008	2/2010
PCE	14,000	20,000
TCE	2,400	6,100
cis-DCE	ND	4,400
VC	ND	270

MW-17	
Analyte	Concentration (ug/L)
	2/2010
PCE	14,000
TCE	2,000
cis-DCE	750

MW-16		
Analyte	Concentration (ug/L)	
	4/2008	2/2010
cis-DCE	ND	50
VC	2.5	2.3

MW-12		
Analyte	Concentration (ug/L)	
	3/2008	2/2010
PCE	1,200	220
TCE	280	79
cis-DCE	ND	670
VC	ND	18

N/F
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77.2'

5

4.0'

Near Trench Drain

1,000
5,000
10,000
15,000
20,000
25,000

MW-12

MW-13

MW-13		
Analyte	Concentration (ug/L)	
	3/2008	2/2010
PCE	900	410
TCE	470	600
cis-DCE	ND	780
VC	ND	29
trans-DCE	ND	12

39.3'

40.4'

70.1'

CONC PAD

40.1'

1.0'

28.5'

36.5'

0.3'

110.9'

MW-1

MW-8

MW-7

CONCRETE PAD

MW-10

BOLLARDS

CONC PAD

MW-9

MW-6

MW-1			
Analyte	Concentration (ug/L)		
	7/1998	12/2007	2/2010
PCE	NA	170	60
TCE	NA	NA	39
cis-DCE	NA	NA	150
VC	NA	NA	33

MW-8		
Analyte	Concentration (ug/L)	
	1/2008	2/2010
PCE	6,200	3,900
TCE	920	860
cis-DCE	1,600	2,500
VC	290	250

MW-7		
Analyte	Concentration (ug/L)	
	1/2008	2/2010
PCE	14,000	27,000
TCE	1,700	4,300
cis-DCE	2,600	2,600
VC	560	260

MW-10		
Analyte	Concentration (ug/L)	
	3/2008	2/2010
VC	29	NS

MW-18	
Analyte	Concentration (ug/L)
	10/2010
VC	2.7

MW-18

MW-19

Scale in Feet

15 0 30 60

Features based on site survey by Ianuzi & Romans, P.C. March, 2010 and November, 2010

Legend:

MW-16 Monitoring Well Location

Monitoring Well ID	
Analyte	Concentration (ug/L)
	Date Sampled

Property Boundary

PCE Iso Concentration Contours (ug/L)

Pilot Test Area

Notes:
Only Chlorinated VOC analysis results are shown.

NA - Not Analyzed
ND - Non-Detect
NS - Not Sampled
PCE - Tetrachloroethene
TCE - Trichloroethene
cis-DCE - cis-1,2-Dichloroethene
VC - Vinyl chloride
trans-DCE - trans-1,2-Dichloroethene

Groundwater samples for VOC analysis were not collected from wells MW-3, -4, -6, -10, -14, and -15 during the February 2010 sampling event because previous results identified no exceedances or no detections.

Groundwater samples taken from wells MW-1 through MW-4 during the July 1998 sampling event were not analyzed for chlorinated VOCs.

Monitoring Well Elevations		
Monitoring Well I.D.	Lid	Top of PVC
MW-1	97.88	97.75
MW-2	100.67	100.38
MW-3	100.66	100.21
MW-4	99.50	99.22
MW-5	99.83	99.65
MW-6	98.01	97.49
MW-7	97.81	97.28
MW-8	97.85	97.38
MW-9	97.61	97.14
MW-10	97.77	97.34
MW-11	98.13	97.89
MW-12	98.32	98.02
MW-13	98.14	97.98
MW-14	100.82	100.40
MW-15	98.46	98.13
MW-16	98.11	97.80
MW-17	98.14	97.89
MW-18	97.31	96.86
MW-19	97.59	97.14

S&W Redevelopment

of North America, LLC.

Syracuse, NY

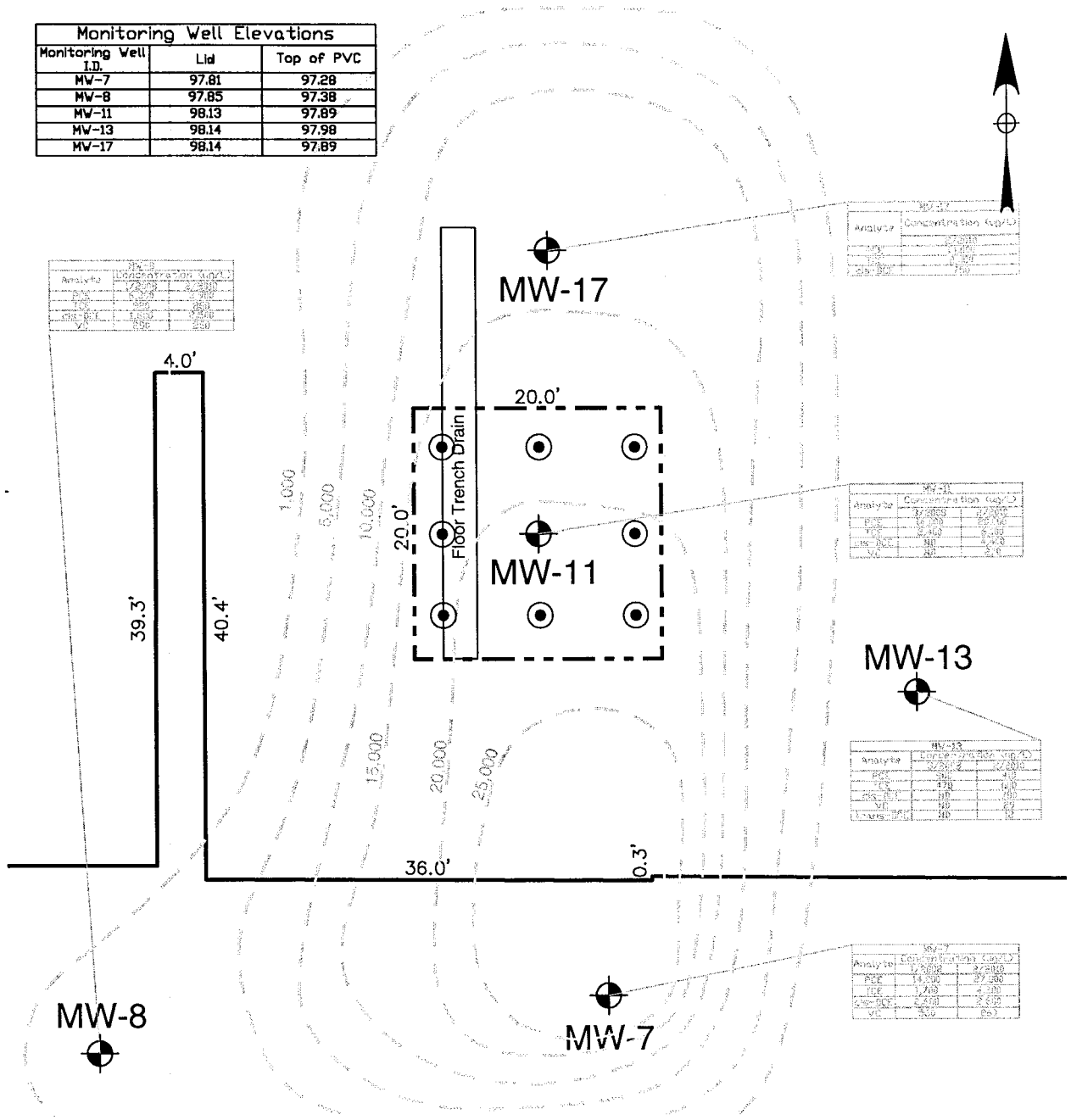
DATE: 2/2011 JOB No: N9013

110 Luther Ave. Site (BCP Site #C734118)
Pilot Test Work Plan
110 Luther Ave., Liverpool
Onondaga County, New York

Figure 1
Site Layout and Pilot Test Area

X-REF: NAMES?
2010/nov/gyr/lem
J:\PROJECTS\N-xxxx\N9000\N9013 - Syracuse Label\REMEDIATION\Pilot Test\Rev 2\Figure 1.dwg

Monitoring Well Elevations		
Monitoring Well I.D.	Lid	Top of PVC
MW-7	97.81	97.28
MW-8	97.85	97.38
MW-11	98.13	97.89
MW-13	98.14	97.98
MW-17	98.14	97.89



Legend:

MW-11 Monitoring Well Location

Pilot Test Area

PCE Iso Concentration (ug/L)

Proposed Injection Location

Scale in Feet

6.5 0 13 26

Note:
Features based on site survey by Ianuzi & Romans, P.C. March 2010 and November 2010.

S&W Redevelopment of North America, LLC. Syracuse, New York DATE: 2/2011 JOB No.: N9013	110 Luther Ave. Site (BCP Site #C734118) Pilot Test Work Plan 110 Luther Ave., Liverpool Onondaga County, New York
	Figure 2 Pilot Test Area

X-REF: NAMES?
2010/nov/syr/fem
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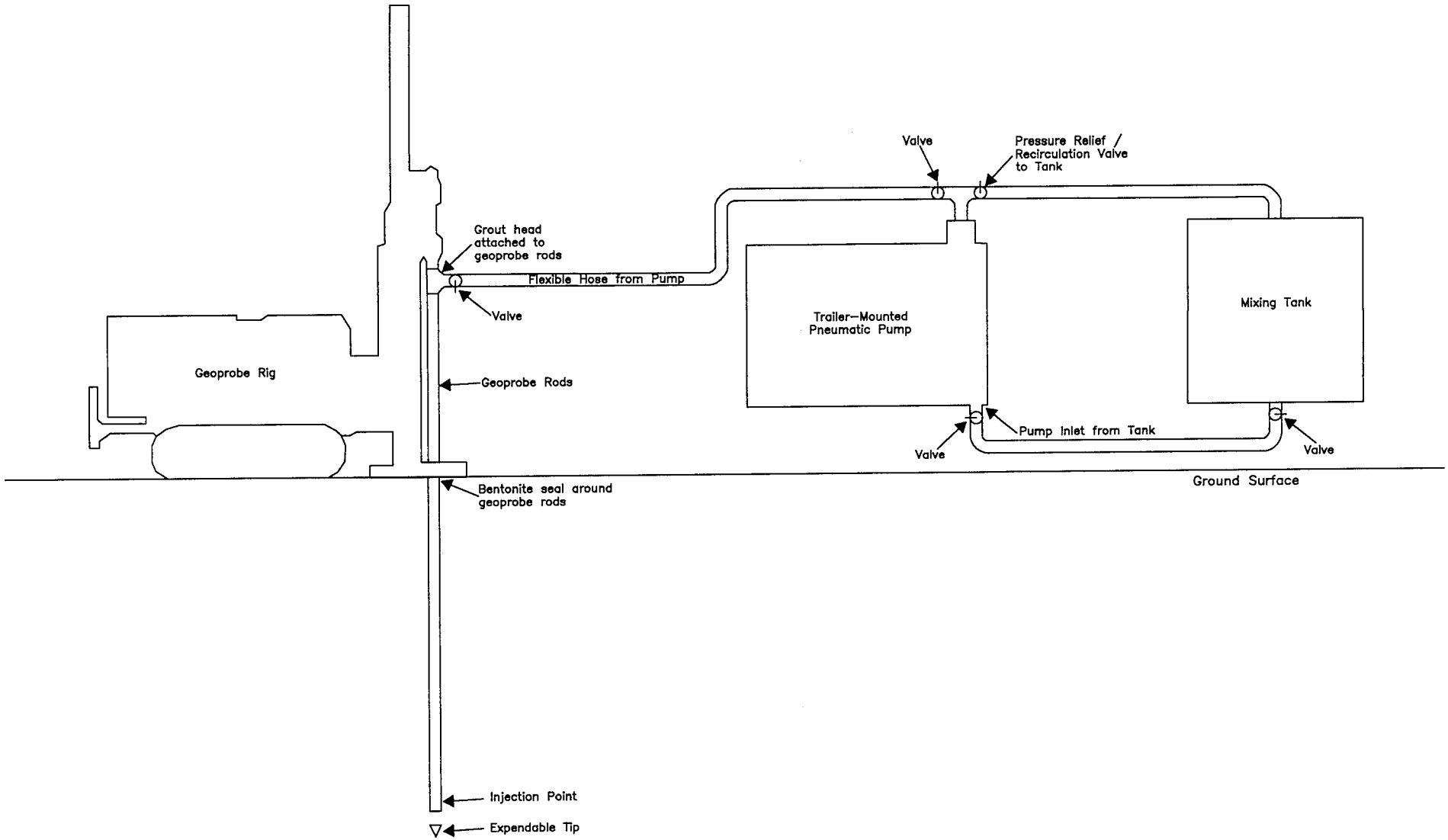

Conceptualized equipment layout based on description provided in Adventus EHC Direct Injection Installation Procedures.

S&W Redevelopment
of
North America, LLC
Syracuse, New York

DATE: 2/2011 JOB No: N9013

110 Luther Ave. Site (BCP Site #C734118)
Pilot Test Work Plan
110 Luther Ave., Liverpool
Onondaga County, New York

Figure 3
Conceptual Equipment Layout

X-REF: NAMES?
2010/dec/syr/fem
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TABLES

Table 1: (Page 1 of 4) Groundwater Sample Analytical Results. Pilot Test Work Plan. February-October 2010. 110 Luther Ave, Syracuse Label.

Analyte	GW Std^ (ug/L)	Sample Identification															
		MW-1	MW-2	MW-5	MW-7	MW-8	MW-9	MW-11	MW-12	MW-13	MW-16	MW-17	MW-18	MW-19	Duplicate	
Date Sampled		Feb-10	Feb-10	Feb-10	Feb-10	Feb-10	Feb-10	Feb-10	Feb-10	Feb-10	Feb-10	Feb-10	Oct-10	Oct-10	Feb-10 (MW-8)	Oct-10 (MW-19)
VOCs by EPA Method 8260B																
acetone	50	U	U	U	U	U	U	U	U	**83**	U	U	UJ	UJ	U	UJ
benzene	1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
bromodichloromethane	50	U*J	U*J	U*J	U	U*J	U	U*J	U*J	U*J	U*J	U	U	U	U	U
bromoform	50	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
bromomethane	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
methyl ethyl ketone	50	U*	U*	U*	U	U*	U	U*	U*	U*	U*	U	U	U	U	U
carbon disulfide	60	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
carbon tetrachloride	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
chlorobenzene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
chloroethane	5	U	U	U	U	U	U	U	U	U	U	U	UJ	UJ	U	UJ
chloroform	7	U	U	U	U	U	U	U	U	U	U	U	UJ	UJ	U	UJ
chloromethane		U	U	U	U	U	U	U	U	U	U	U	UJ	UJ	U	UJ
dibromochloromethane	50	U*J	U*J	U*J	U*J	U*J	U	U*J	U*J	U*J	U*J	U*J	U	U	U*J	U
1,1-dichloroethane	5	1.1 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1,2-dichloroethane	0.6	U	U	U	U	U	U	U	U	U	U	U	U	**2.8 J**	U	**2.6 J**
1,1-dichloroethene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1,2-dichloropropane	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,3-dichloropropene	0.4	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,3-dichloropropene	0.4	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
ethylbenzene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2-hexanone	50	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
methylene chloride	5	U	U	U	**170 J**	**21 J**	U	**110 J**	**8.6 J**	U	U	**87 J**	U	U	**35 J**	U
methyl isobutyl ketone	50	U	U	U	U*J	U	U	U	U	U	U	U*J	U	U	U*J	U
styrene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1,1,2,2-tetrachloroethane	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
tetrachloroethene	5	**60**	**22**	U	**27,000**	**3,900**	U	**20,000**	**220**	**410**	U	**14,000**	U	U	**3,500**	U
toluene	5	U	U	U	U	U	U	U	U	U	U	**140 J**	0.73 J	U	U	U
1,1,1-trichloroethane	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1,1,2-trichloroethane	1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
trichloroethene	5	**39**	1.2 J	U	**4,300**	**860**	U	**6,100**	**79**	**600**	U	**2,000**	U	U	**900**	U
vinyl chloride	2	**33**	U	U	**260 J**	**250**	U	**270 J**	**18 J**	**29**	**2.3 J**	U	**2.7 J**	U	**270**	U
xylenes, total	5	U	U	U	U	U	U	U	U	U	U	U	**9.7**	U	U	U
cis-1,2-dichloroethene	5	**150**	U	U	**2,600**	**2,500**	U	**4,400**	**670**	**780**	**50**	**750**	U	U	**2,500**	U
trans-1,2-dichloroethene	5	0.91 J	U	U	U	U	U	U	U	**12 J**	U	U	U	U	U	U
Totals		284.01	23.2	ND	34,330	7,531	ND	30,880	995.6	1,914	52.3	16,977	13.13	2.8	7,205	2.6

All values reported as ug/L

U - Analyzed for but Not Detected

J - Indicates an estimated value

* - LCS or LCSD exceeds the control limits

ND - Non detect

Bold and boxed results indicate an exceedance of Groundwater Standards

^ - GW Std - Class GA Groundwater Quality Standard or Guidance Value from New York State Department of Environmental Conservation (NYSDEC) Division of Water Technical and Operational Guidance Series (June 1998).

Table 1: (Page 2 of 4) Groundwater Sample Analytical Results. Pilot Test Work Plan. February-October 2010. 110 Luther Ave, Syracuse Label.

Analyte	GW Std^ (ug/L)	Sample Identification									
		MW-6	MW-8	MW-9	MW-11	MW-15	MW-18	MW-19	Duplicate		
Date Sampled		Feb-10	Feb-10	Feb-10	Feb-10	Feb-10	Oct-10	Oct-10	Feb-10 (MW-8)	Oct-10 (MW-19)	
SVOCs by EPA Method 8270C											
1,2-dichlorobenzene	3	U	U	U	U	U	U	U	U	U	
1,3-dichlorobenzene	3	U	U	U	U	U	U	U	U	U	
1,4-dichlorobenzene	3	U	U	U	U	U	U	U	U	U	
bis(2-chloroethyl)ether	1	U	U	U	U	U	U	U	U	U	
benzyl alcohol		U	U	U	U	U	U	U	U	U	
2,2'-oxybis[1-chloropropane]		U	U	U	U	U	U	U	U	U	
hexachloroethane	5	U	U	U	U	U	U	U	U	U	
hexachlorobutadiene	0.5	U	U	U	U	U	U	U	U	U	
hexachlorocyclopentadiene	5	U	U	U	U	U	U	UJ	U	UJ	
hexachlorobenzene	0.04	U	U	U	U	U	U	U	U	U	
1,2,4-trichlorobenzene	5	U	U	U	U	U	U	U	U	U	
2,4,6-trichlorophenol		U	U	U	U	U	U	1.6 J		1.6 J	
2,4,5-trichlorophenol		U	U	U	U	U	U	1.6 J		1.6 J	
bis(2-chloroethoxy)methane	5	U	U	U	U	U	U	U	U	U	
butyl benzyl phthalate	50	U	U	U	0.56 J	U	U	UJ	U	UJ	
n-nitrosodi-n-propylamine		U	U	U	U	U	U	U	U	U	
nitrobenzene	0.4	U	U	U	U	U	U	U	U	U	
isophorone	50	U	U	U	U	U	U	U	U	U	
naphthalene	10	U	U	U	U	U	U	U	U	U	
4-chloroaniline	5	U	U	U	U	U	U	U	U	U	
2-methylnaphthalene		U	U	U	U	U	U	U	U	U	
2-chloronaphthalene	10	U	U	U	U	U	U	U	U	U	
2-nitroaniline	5	U	U	U	U	U	U	U	U	U	
acenaphthylene		U	U	U	U	U	U	U	U	U	
dimethyl phthalate	50	U	U	U	U	U	U	U	U	U	
2,6-dinitrotoluene	5	U	U	U	U	U	U	U	U	U	
acenaphthene	20	U	U	U	U	U	U	U	U	U	
3-nitroaniline	5	U	U	U	U	U	U	U	U	U	
dibenzofuran		U	U	U	U	U	U	U	U	U	
2,4-dinitrotoluene	5	U	U	U	U	U	U	U	U	U	
fluorene	50	U	U	U	U	U	U	U	U	U	
4-chlorophenyl phenyl ether		U	U	U	U	U	U	U	U	U	
diethyl phthalate	50	U	U	U	U	U	U	U	U	U	
4-nitroaniline	5	U	U	U	U	U	U	U	U	U	
n-nitrosodiphenylamine	50	U	U	U	U	U	U	U	U	U	
4-bromophenyl phenyl ether		U	U	U	U	U	U	U	U	U	
pentachlorophenol	1	U	U	U	U	U	U	100		110	
phenanthrene	50	U	U	U	U	U	U	U	U	U	
carbazole		U	U	U	U	U	U	U	U	U	
anthracene	50	U	U	U	U	U	U	U	U	U	
di-n-butyl phthalate	50	U	U	U	1.1 J	U	0.45 J	U	U	U	
fluoranthene	50	U	U	U	U	U	0.4 J	U	U	U	
pyrene	50	U	U	U	U	U	0.38 J	U	U	U	
3,3'-dichlorobenzidine	5	U	U	U	U	U	U	UJ	U	UJ	
benzo[a]anthracene	0.002	U	U	U	U	U	U	U	U	U	
chrysene	0.002	U	U	U	U	U	U	U	U	U	
bis(2-ethylhexyl)phthalate	5	3.8 J	UJ	1.2 J	1.4 J	0.76 J	1.6 J	5.1 J	1.3 J	5.6 J	
di-n-octyl phthalate	50	U	U	U	U	U	U	U	U	U	
benzo[b]fluoranthene	0.002	U	U	U	U	U	U	U	U	U	
benzo[k]fluoranthere	0.002	U	U	U	U	U	U	U	U	U	
benzo[a]pyrene	ND	U	U	U	U	U	U	U	U	U	
indeno[1,2,3-cd]pyrene	0.002	U	U	U	U	U	U	U	U	U	
dibenz(a,h)anthracene	50	U	U	U	U	U	UJ	UJ	U	U	
benzo[g,h,i]perylene	5	U	U	U	U	U	U	U	U	U	
2-chlorophenol		U	U	U	U	U	U	U	U	U	
phenol	1	U	U	U	U	U	U	U	U	U	
2-methylphenol		U	U	U	U	U	U	U	U	U	
2,4-dimethylphenol	50	U	U	U	U	U	U	U	U	U	
2-nitrophenol		U	U	U	U	U	U	U	U	U	
2,4-dichlorophenol	5	U	U	U	U	U	U	U	U	U	
4-chloro-3-methylphenol		U	U	U	U	U	U	U	U	U	
2,4-dinitrophenol	10	UJ	U	U	U	U	U	U	U	U	
4-nitrophenol		U	U	U	U	U	U	U	U	U	
methylphenol, 3&4		U	U	U	U	U	U	U	U	U	
Totals		3.8	ND	1.2	3.06	0.76	2.83	108.3	1.3	118.8	

All values reported as ug/L

U - Analyzed for but Not Detected

J - Indicates an estimated value

NS - Not sampled as part of this sampling event

Bold and boxed results indicate an exceedance of Groundwater Standards

^ - GW Std - Class GA Groundwater Quality Standard or Guidance Value from New York State Department of Environmental Conservation (NYSDEC) Division of Water Technical and Operational Guidance Series (June 1998).

Table 1: (Page 3 of 4) Groundwater Sample Analytical Results. Pilot Test Work Plan. February-October 2010. 110 Luther Ave, Syracuse Label.

Analyte	GW Std^ (ug/L)	Sample Identification															
		MW-1		MW-5		MW-7		MW-10		MW-11		MW-12		MW-13		Duplicate	
Date Sampled		Feb-10		Feb-10		Feb-10		Feb-10		Feb-10		Feb-10		Feb-10		Feb-10 (MW-10)	
Metals by EPA Method 6010B																	
Silver	50	0.35	J		U		U		U		U		U		U		U
Aluminum		585		2,870			U		U		U		U		U	679	
Arsenic	25	6.8	J		U	5.2	J		U		U		U		U	5.6	J
Barium	1,000	274		389		215		398		124		212		36.6		396	
Beryllium	3		U		U		U		U		U		U		U		U
Calcium		229,000		121,000		181,000		141,000		170,000		84,200		21,300		137,000	
Cadmium	5		U		U		U	**13.7**			U		U		U	**15.3**	
Cobalt		1.2	J	0.61	J		U		U		U		U	1.1	J		U
Chromium	50	2.2	J	7			U		U	0.87	J	0.73	J	1.8	J	0.65	J
Copper	200	8.8	J	14.9		2.5	J	2	J	7.6	J	6.3	J	7.6	J	2.5	J
Iron	300	**5,140**		**3,620**		**2,800**		**1,570**		**34,900**		**42,900**		**21,600**		**2,010**	
Potassium		18,700		2,540		1,900		1,970		2,730		70,100		12,200		2,050	
Magnesium	35,000	**64,200**		24,300		**56,200**		**47,300**		**50,800**		22,000		5,280		**46,100**	
Manganese	300	**4,820**		119		150		140		233		**605**		105		146	
Sodium	20,000	**868,000**		**76,100**		**53,200**		**59,700**		**97,200**		**117,000**		**103,000**		**57,800**	
Nickel	100		U	5.8			U		U	11		1.1	J	6			U
Lead	25		U		U		U		U		U		U		U		U
Antimony	3		U		U		U		U		U		U		U		U
Selenium	10		U		U		U		U		U		U		U		U
Thallium	0.5		U		U		U		U		U		U		U		U
Vanadium		6.3		5.6		2.9	J	2.9	J	3.7	J	2.3	J	1.8	J	3.2	J
Zinc	2,000	215		104		52.5		8.2	J	1,200		**3,930**		723		13.4	J
Mercury by EPA Method 7470A																	
Mercury	0.7		U		U		U		U		U		U		U		U

All values reported as ug/L

U - Analyzed for but Not Detected

J - Sample result is greater than the MDL but below the CRDL

Bold and boxed results indicate an exceedance of Groundwater Standards

^ - GW Std - Class GA Groundwater Quality Standard or Guidance Value from New York State Department of Environmental Conservation (NYSDEC) Division of Water Technical and Operational Guidance Series (June 1998).

Groundwater samples were excessively turbid which could lead to anomalously high levels of metals.

Table 1: (Page 4 of 4) Groundwater Sample Analytical Results. Pilot Test Work Plan.
February-October 2010. 110 Luther Ave, Syracuse Label.

Analyte	GW Std^ (ug/L)	Sample Identification		
		MW-15	MW-16	Duplicate
Date Sampled		Feb-10	Feb-10	Feb-10 (MW-16)
Glycols by EPA Method 8015B				
Propylene glycol	1,000	U	U	U
Ethylene glycol	50	U	U	U
Diethylene glycol		U	U	U
Totals		ND	ND	ND

U - Analyzed for but Not Detected

J - Sample result is greater than the MDL but below the CRDL

ND - None detected

Bold and boxed results indicate an exceedance of Groundwater Standards

^ - GW Std - Class GA Groundwater Quality Standard or Guidance Value from New York State Department of Environmental Conservation (NYSDEC) Division of Water Technical and Operational Guidance Series (June 1998).

ATTACHMENTS

Attachment A

Adventus EHC® Material
Safety Data Sheet (MSDS)

MATERIAL SAFETY DATA SHEET: **EHC™**

1. PRODUCT IDENTIFICATION:

PRODUCT IDENTIFICATION: EHC™

PRODUCT USE: Bioremediation product for the remediation of contaminated soil and groundwater only. Not for use in potable drinking water.

MANUFACTURER:

Adventus Remediation Technologies
1345 Fewster Drive
Mississauga, Ontario
L4W 2A5

EMERGENCY PHONE:

Office Hours: 905-273-5374
After Hours: 416-457-9491

TRANSPORTATION OF DANGEROUS GOOD CLASSIFICATION:
Not Regulated

WHMIS CLASSIFICATION:
Not Regulated

CONTAINMENT HAZARD:
Any vessel that contains wet EHC or EHC and water must be vented due to potential pressure build up from fermentation gasses.

2. INGREDIENTS

CHEMICAL NAME:	CAS#	TLV (mg/m3)	LD low (mg/Kg)	% in Product
Organic Amendment	N/D	N/E	N/E	52 - 62
Iron	7439-89-6	5 (as iron oxide fume)	N/E	37 - 48

3. PHYSICAL DATA

Physical state	Solid	Melting point	1371-1480°F
Odour threshold	N/A	Boiling point	3000°C
Density	0.75 Kg/L	Vapour pressure (mm Hg)	1 @ 1787°C
pH	N/A	Vapour density (air=1)	N/A
Solubility in water	Insoluble	Evaporation rate	N/A
Coeff. of water/oil	N/A		
Appearance & odour	Odourless, Tan/Brown Flakes		

4. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Deg. C PMCC): N/A

	LOWER	UPPER
FLAMMABLE LIMITS IN AIR % BY VOLUME:	N/A	N/A

AUTO IGNITION TEMP (Deg. C): N/A

EXTINGUISHING MEDIA: Dry chemicals or sand or universal type foam.

SPECIAL PROCEDURES:
Firefighters should wear SCBA and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Dust can present fire and explosion hazards when exposed to fire, chemical reaction, or contact with powerful oxidizers.

5. REACTIVITY DATA

STABILITY (NORMAL COND.):
Stable: X **Unstable:**

CONDITIONS TO AVOID:	Contact with powerful oxidizers such as strong acids.
INCOMPATIBILITY (Materials to Avoid):	Powerful oxidizers such as strong acids.
HAZARDOUS DECOMPOSITION PRODUCTS:	Hydrogen, Carbon monoxide, Carbon dioxide.

6. TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:
Inhalation
Ingestion (not likely)

HEALTH HAZARDS:

Acute overexposure may cause eye, nose, mouth and skin irritation.

Carcinogenicity:	No Information Available
Signs and Symptoms of Exposure:	No Information Available
Medical Conditions Generally Aggravated by Exposure:	No Information Available

7. PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: X **Gloves: X** **Clothing:**

RESPIRATORY PROTECTION:

Use dust mask in severe conditions.
Use good housekeeping practices to keep dust to a minimum.

VENTILATION REQUIREMENTS:
Not normally required.

SPILL AND LEAK PROCEDURES:
Sweep up and return to container.

WASTE DISPOSAL:
Sanitary landfill. Follow Federal, State and Local guidelines.

HANDLING PROCEDURES:
Wear safety glasses for normal use. Avoid generating excessive dust, wear dust mask in severe conditions.

STORAGE REQUIREMENTS:
Do not store near powerful oxidizers such as strong acids.
Keep dry.
Any vessel that contains wet EHC or EHC and water must be vented due to potential pressure build up from fermentation gasses.

SPECIAL HANDLING INFORMATION:
Treat as a nuisance dust

8. FIRST AID MEASURES

INHALATION: Remove to fresh air. Seek medical attention.
INGESTION: Seek medical attention.
SKIN CONTACT: Brush off excess. Wash with soap and water.
EYE CONTACT: Flush with running water. Seek medical attention.

9. OTHER INFORMATION

None

10. PREPARATION INFORMATION

Prepared By: Adventus Remediation Technologies
1345 Fewster Drive
Mississauga, Ontario
L4W 2A5

Date Prep./Rev.: 5/24/07
Print Date: 5/24/07
Phone: 905-273-5374
Fax: 905-273-4367

Definitions:

N/D - No Data	N/A - Not Applicable	N/E - Not Established	< - Less than
A= Oral rat LD50	B= Oral rat	LD low C= Oral LD50/LD low other animal	> - Greater than
D= Estimated 1000	E= Arbitrary 2000	F= Other route prefix	
C= Ceiling limit			

EHC™ is a trademark of Adventus Intellectual Property Inc.

Attachment B

USEPA Notification and
Authorization Letters

February 4, 2011

Mr. Dennis McChesney
Chief UIC Branch
United States Environmental Protection Agency
Region 2
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: UIC Notification
New York State Brownfield Cleanup Program (NYS BCP)
BCP Site No. C734118
110 Luther Avenue BCP Site
Liverpool, New York

Dear Mr. McChesney:

We have been directed by the New York State Department of Environmental Conservation (NYSDEC) to notify your agency of our plan to implement an in-situ chemical reduction (ISCR) pilot test at the referenced site. The subject site is in the NYS BCP, and a remedial investigation has identified dissolved-phase chlorinated organic compounds in groundwater.

The planned ISCR pilot test approach will direct inject between 2,500 and 3,500 pounds of an carbon source and zero valent iron (ZVI) reagent as a slurry (minimum percent solids 30%). The reagent proposed is EHC™ and is produced by Adventus located in Union, New Jersey. A product material safety data sheet is enclosed for your reference.

The EHC slurry will be direct injected into an array of 10 to 16 soil borings located in a 20-foot by 20-foot area near the center of the site. The target injection zone is between 2 and 14 feet below ground surface. The actual pilot test injection array and volume of slurry injected during the pilot test will be based on field conditions.

Kindly acknowledge this notification so that we may proceed with the pilot test as soon as possible. If you require any further information please contact me or Damian Vanetti at (315) 422-4949.

Very truly yours,

S&W REDEVELOPMENT OF NORTH AMERICA, LLC

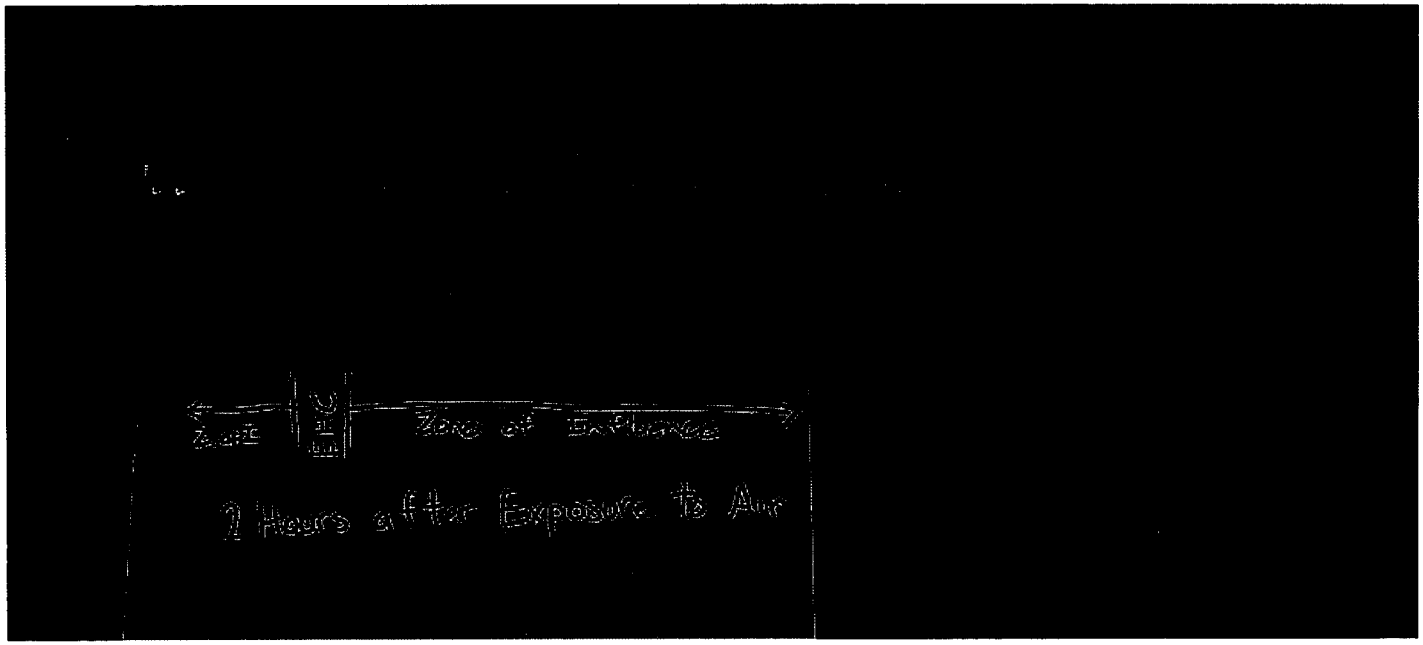
Donald Sorbello, CPG
Project Manager

Enclosure: EHC MSDS

cc: Paul Roux (Syracuse Label and Surround Printing
Doreen Simmons (Hancock & Estabrook)
Chris Mannes (NYSDEC Region 7)
Nicole Foley Kraft (US EPA Region 2)

Attachment C

Representative Photograph Showing
EHC® Zone of Influence



Representative photograph of soil core taken from 30 to 35 feet below ground surface (from another site) showing that EHC® injection creates a wide zone of influence outside of its immediate location. The native soil color is the yellow visible on the right hand side of the core. The orange discoloration is due to the low redox conditions created by the EHC®, which became apparent after exposure to the air for 2 hours.

Photograph by Adventus Group.

S&W Redevelopment of North America, LLC. Syracuse, New York Date: 1/2011 Job No.: N9013	110 Luther Ave. Site (BCP Site #C734118) Pilot Test Work Plan 110 Luther Ave., Liverpool Onondaga County, New York
	Attachment C Zone of Influence of EHC® Injection

Attachment D

Site Health and Safety Plan (HASP)

110 LUTHER AVENUE SITE HEALTH AND SAFETY PLAN

D.1. SITE DESCRIPTION

Date ..... Date: December 2010 Revised: January 3, 2011
Location ..... 110 Luther Avenue
Liverpool, New York
Hazards .....Potential volatile and semivolatile organic compounds, and metals in groundwater. Adventus EHC® used in remediation.
Area Affected .....Groundwater
Surrounding Population ..... Commercial and Light Industrial
Topography ..... Flat at site, with flat to moderate slopes surrounding
Weather Conditions ..... Usually partly sunny to overcast, west-northwest winds

D.2 ENTRY OBJECTIVES: The objective of site entry is to conduct an in-situ chemical reduction pilot test in areas of concern under the Brownfield Cleanup Program, and to collect groundwater samples.

D.3 ON-SITE ORGANIZATION AND COORDINATION. The following S&W Redevelopment personnel are designated to carry out the stated job functions on site. (Note: One person may carry out more than one job function.)

Project Manager:	Donald Sorbello or designee	(315) 422-4949
Field Team Leader:	Ian McNamara or designee	(315) 439-8612
Field Sampling Team Member	Ian McNamara or designee	(315) 422-4949
Project Safety Officer	Damian J. Vanetti or designee	(315) 422-4949

D.4 ON-SITE CONTROL. Syracuse Label and Surround Printing or its designated agent will coordinate access control and security for the work area for each day of on site work. No unauthorized personnel should be within the established work area. EHC® and pilot test equipment will be secured within the site perimeter.

D.5 HAZARD EVALUATION.

A. Chemical Hazards. It is anticipated that a number of different chemical contaminants may be encountered during site activities. A human health exposure assessment identified pentachlorophenol, bis(2-ethylhexyl)phthalate, cadmium, iron, magnesium, manganese, sodium, zinc, acetone, 1,2-dichloroethane, methylene chloride, toluene, xylenes (total), tetrachloroethene (PCE), trichloroethene (TCE), cis and trans-1,2-dichloroethene (DCE), and vinyl chloride (VC) as Contaminants of Potential Concern (COPCs) in groundwater.

The maximum concentration found in groundwater at the Site for each COPC is as follows:

- pentachlorophenol – 100 micrograms per liter (µg/L);
- bis(2-ethylhexyl)phthalate – 5.1 µg /L;
- cadmium – 13.7 µg /L;
- iron – 42,900 µg/L;

- magnesium – 64,200 µg /L;
- manganese – 4,820 µg /L;
- sodium – 868,000 µg /L;
- zinc – 3,930 µg /L;
- acetone – 83 µg /L;
- 1,2-dichloroethane – 2.8 µg /L;
- methylene chloride – 170 µg /L;
- toluene – 140 µg /L;
- xylenes (total) – 9.7 µg /L;
- PCE – 27,000 µg /L;
- TCE – 4,300 µg /L;
- cis-DCE – 4,400 µg /L;
- trans-DCE – 12 µg /L; and
- VC – 270 µg /L.

The locations with the highest concentration of these contaminants are MW-7, MW-8, MW-11, and MW-17.

Exposure to EHC® that might occur while handling during completion of the pilot test and remedial action is another potential hazard at the site. The exposure risks and mitigative measures are included in the attached material safety data sheet (MSDS).

The primary hazards of each known or suspected chemical contaminant are identified below. The main potential exposure route is associated primarily with direct skin contact and inhalation.

SUBSTANCE	PRIMARY HAZARDS
Volatile Organics in Groundwater	
Tetrachloroethene	Eye, skin, nose, and throat irritation, nausea, dizziness, carcinogen
Trichloroethene	Eye and skin irritation, nausea, vomiting, headache, carcinogen
1,2-dichloroethene	Eye and respiratory irritation, central nervous system
Vinyl chloride	Abdominal pain, GI bleeding, carcinogen
Acetone	Eye and respiratory irritation, central nervous system
1,2-dichloroethane	Respiratory irritation, dizziness, nausea, vomiting
Methylene chloride	Eye and skin irritation, dizziness, nausea, carcinogen
Toluene	Eye and nose irritation, drowsiness, liver and kidney damage
Xylenes (total)	Eye and skin irritation, headache, dermatitis
Semi-Volatile Organics in Groundwater	
Pentachlorophenol	Eye and nose irritation, dizziness, vomiting, chest pain
bis(2-ethylhexyl)phthalate	Gastric disturbance

SUBSTANCE	PRIMARY HAZARDS
Metals in Groundwater	
Cadmium	Cough, nausea, vomiting, carcinogen
Iron	If inhaled, localized lung and GI irritation
Magnesium	Respiratory irritation, digestive disorders
Manganese	Dry throat, cough, vomiting, kidney damage
Sodium	Eye, skin, and respiratory irritation
Zinc	Eye and skin irritation, nausea, chills, muscle aches

B. Physical Hazards. Physical hazards for this project relate to mechanical exposure associated with working around heavy equipment and vehicles, noise exposure, and heat or cold stress. Basic safety guidelines for the above noted main physical hazards are included below.

1. **Excavation and Backfilling.** Site activities will involve excavation and trenching of impacted material. The estimated location of all underground utilities must be determined before digging begins. Necessary clearances must be observed. Appropriate engineering controls will be implemented during excavation to maintain road stability and protect the public.

   The standard operating procedure (SOP) for excavation and construction work will follow New York State Department of Labor (NYSDOL), Division of Safety and Health, Industrial Code Rules (Part 23).

2. **Utility Clearances.** Prior to any intrusive activities (e.g. drilling, excavating, probing) New York State Dig Safe shall be contacted to mark underground lines before any work is started.

   Personnel directly involved in intrusive work shall determine the minimum distance from marked utilities which work can be conducted with the assistance of the locator line service.

3. **Heavy Lifting Method.** Personnel conducting work that may require lifting of heavy objects should use the following proper lifting techniques:

   - Feet must be parted, with one foot alongside the object being lifted and one foot behind. When the feet are comfortably spread a more stable lift can occur and the rear foot is in a better position for the upward thrust of the lift.
   - Use the squat position and keep the back straight. A straight back means the spine, back muscles, and organs of the body are in correct alignment.

- To grip the item being lifted, the fingers and the hand are extended around the object being lifted, using the full palm. Fingers have very little power – use the strength of the entire hand.
- The load must be drawn close, and the arms and elbows must be tucked into the side of the body. Holding the arms away from the body increases the strain on the arms and elbows. Keeping the arms tucked in helps keep the body weight centered.
- The body must be positioned so that the weight of the body is centered over the feet. This provides a more powerful line of thrust and also ensures better balance. Start the lift with a thrust of the rear foot. Do not twist.

4. **Slip/Trip/Hit/Fall.** These injuries are the most frequent of all injuries to workers. They occur for a wide variety of reasons, but can be minimized by the following practices:

   - Spot-check the work area to identify hazards;
   - Establish and utilize pathways that are most free of slip and trip hazards. Avoid pathways that are more hazardous;
   - Beware of trip hazards such as wet floors, slippery floors, and uneven terrain;
   - Carry only loads you can see over;
   - Keep work areas clean and free of clutter, especially in storage areas and walkways;
   - Communicate observed hazards to site personnel.

5. **Heat Stress.** All field personnel engaged in site work shall have completed training to recognize and avoid heat related illness. Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat-related illness. To avoid heat stress, the following steps may be taken:

   - Adjust work schedules.
     Modify work/rest schedules according to monitoring requirements.
     Mandate work slowdowns as needed.
     Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
   - Provide shelter (air conditioned, if possible) or shaded areas to protect personnel during rest periods.

- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, i.e., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more.
- Members of each Work Crew shall be properly trained by each Crew's respective employer to recognize the symptoms of heat-related illnesses.

6. **Adverse Weather Conditions.** The Field Leader for each Work Crew will be responsible for deciding on the continuation or discontinuation of work for his/her Crew based on current and pending weather conditions. Electrical storms, tornado warnings, and strong winds are examples of conditions that would call for the discontinuation of work and evacuation of the site. Site operations should not be permitted during an electrical storm.

7. **Vehicle Traffic.** As the scope of work includes the transport and disposal of material, there is a potential to encounter a temporarily high volume of vehicular traffic. Project Work Crews that have the potential to be exposed to vehicle traffic should wear a high visibility safety vest. The excavation Work Crew will provide proper signage, flagging, and barricades to maintain a safe flow of traffic.

POTENTIAL HAZARD	PREVENTATIVE MEASURES
Slip/Trip/Falls	Use three points of contact to mount and dismount equipment. Continuously inspect work areas for slip, trip, & fall hazards. Be aware of surroundings. Practice good housekeeping.
Noise	Wear appropriate hearing protection.
Pinch Points	Keep hands, feet, & clothing away from moving parts/devices.
Utilities	Maintain proper utility clearances. All utilities should be properly located and marked out prior to start of work.
Heavy Lifting	Follow safe lifting practices. Lift items within your capabilities and assigned project role. Ask for assistance if necessary.
Proximity to Heavy Equipment and Vehicles	Maintain adequate distance from trucks/equipment. Obey barriers and/or signage
Heat/Cold Stress	Dress appropriately and follow HASP guidelines

POTENTIAL HAZARD	PREVENTATIVE MEASURES
Dangerous Weather Conditions	Consult local weather reports daily, watch for signs of severe weather, etc. Suspend or reduce work during severe weather.
Chemical hazards	Use PID as indicated in HASP. Wear specified PPE. No smoking.
Biological Hazards – Insects, Snakes, Poisonous Plants, etc.	Wear appropriate PPE and keep necessary first aid supplies readily available. Use insect repellant and snake chaps as needed. Learn to identify poisonous plants.

C. Biological Hazards. Biological hazards may include contact with biting insects, reptiles, and poisonous plants.

1. Tick-Borne Diseases._Lyme disease is caused by a bacterial parasite called spirochete, and is spread by infected ticks that live in and near wooded areas, tall grass, and brush. Once the tick deposits the spirochete, it must feed on the host blood for 12 to 24 hours before it can transmit the disease. The ticks that cause the disease in the Northeast and Midwest are often no bigger than a poppy seed or a comma in a newsprint. The peak months for human infection are June through October. There are many other tick borne diseases such as Rocky Mountain Spotted Fever, which can be carried by a variety of ticks. The prevention and treatment of these diseases are similar to those of Lyme disease.

Ticks hang on blades of grass or shrubs waiting for a host to come by. When a host brushes against the vegetation, the tick grabs on. They usually first climb onto a persons legs and then crawl up looking for a place to attach. Preventative measures include wearing light-colored clothing, keeping clothing buttoned, tucking pant legs in socks, and keeping shirt tails tucked in. Periodic checks for ticks should be made during the day, and especially at night. Hair should also be checked by parting it and combing through it to make sure that no ticks have attached to the scalp. Also, check clothing when it is first removed, before ticks have a chance to crawl off.

The most common repellent recommended for ticks is n,n-dimethyl-m-toluamide, or DEET. It is important to follow the manufacturer's instructions found on the container for use with all insecticides especially those containing DEET.

In general, DEET insect repellent should only be applied to clothing, not directly on the skin. Do not apply to sunburns, cuts or abrasions. Use soap and water to remove DEET once indoors.

The best way to remove a tick is removal by tweezers. If tweezers are not available, cover your fingers (tissue paper) while grasping the tick. It is important to grasp the tick as close as possible to the Site of attachment and use a firm steady pull to remove it. When removing the tick, be certain to remove all the mouth parts from your skin so

as not to cause irritation or infection. Wash hands immediately after with soap and water, and apply antiseptic to the area where tick was removed.

A variety of tests exist for determining Lyme Disease infection. However, most of these tests are not exact. The first symptoms of Lyme Disease usually appear from 2 days to a few weeks after a person is bitten by an infected tick. Symptoms usually consist of a ring-like red rash on the skin where the tick attached. The rash is often bull's eye-like with red on the outside and clear in the center. The rash may be warm, itchy, tender, and/or "doughy." Unfortunately, this rash appears in only 60 to 80 percent of infected persons. An infected person also has flu-like symptoms of fever, fatigue, chills, headaches, a stiff neck, and muscle aches and pains (especially knees). Rashes may be found some distance away from original rash. These symptoms often disappear after a few weeks.

2. Mosquitoes. Mosquitoes are known to carry diseases including encephalitis and West Nile virus, which can be passed on to humans through the bite of the mosquito. Mosquito bites can also cause itching and swelling. Prevention of mosquito bites is recommended to avoid these diseases. When possible, avoid activity near stagnant water bodies or in deep woods. Mosquitoes are most active later in the day. The most common repellent recommended for mosquitoes is n,n-dimethyl-m-toluamide, or DEET. It is important to follow the manufacturer's instructions found on the container for use with all insecticides especially those containing DEET.

In general, DEET insect repellent should only be applied to clothing, not directly on the skin. Do not apply to sunburns, cuts or abrasions. Use soap and water to remove DEET once indoors.

3. Bees and Wasps. The insects most likely to cause strong allergic reactions are wasps, honeybees, hornets, and yellow jackets. Although they differ in appearance and reside in different habitats, all stinging insects have one thing in common -- when upset, they will attack.

Yellow Jackets and honeybees make their nests in the ground, in old tree stumps, or in walls. Wasps nest in trees, in bushes, under the house, or on buildings. Hornets construct a gray or brown paper football shaped nest in trees and shrubs, 5 to 10 feet above the ground. All of the above may also be found in above ground protective well casings.

Insect sting reactions can be classified into three types -- a normal reaction, a toxic reaction, and an allergic reaction. A normal reaction usually lasts only a few hours.

If you have had an allergic reaction to an insect sting before, an allergist should be consulted. There is a treatment, venom immunotherapy, which is 97 percent

effective in preventing future allergic reactions to insect stings.

If stung by a honeybee, the only bee to leave its stinger, instant removal of the stinger and sac usually reduces harmful effects. To remove the stinger, never try to use the thumb and forefinger or tweezers to pinch it out, instead with a fingernail or flat object, scrape it away with one quick scrape in a sideways movement. This method prevents more venom from being injected into the wound.

Other helpful tips would be to take a rapid acting antihistamine to reduce itching; apply ice or cold compresses to the area to reduce swelling; and rest, because physical activity hastens the absorption of the venom.

People with severe allergic reactions should be given a dose of epinephrine immediately following the insect sting. They should also be taken to the hospital for further evaluation. Severe or even life threatening reactions to insect stings, if treated properly usually clear up in one or two hours after treatment.

4. Poisonous Plants. Common Poison Ivy (Rhus radicans) grows as a small plant, a vine, and a shrub. Poison Ivy occurs in every state. The leaves always consist of three glossy leaflets. Poison Sumac (Rhus vernix) grows as a woody shrub or small tree 5 to 25 feet tall. It usually contains nine leaves, with eight paired leaves and one on top, and is common in swampy areas. The plants are potent sensitizes and can cause a mild to severe allergic reaction. This reaction is called contact dermatitis.

Dermatitis, in Rhus-sensitive persons, can result from contact with the milky sap found in the roots, stems, leaves, and fruit. The sap may retain its potency for months or years in a dry atmosphere, and can occur during any time of the year. The sap may also be carried by animals, equipment, or apparel.

D.6 PERSONAL PROTECTIVE EQUIPMENT. Based on evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work areas or tasks:

LOCATION	JOB FUNCTION	LEVEL OF PROTECTION
Work zone	Site investigation	A B C (D) Other

Specific protective equipment for each level of protection is as follows:

Level A	Fully-encapsulating suit SCBA (disposable coveralls)
Level B	Splash gear (saranax-coated Tyvek suit) SCBA or airline respirators

Level C	Splash gear (Tyvek suit) Half-face canister respirator Safety glasses Boots Gloves Hard hat
Level D	**Work boots** **Gloves (latex)** **Hard hat**

Action Levels. Action levels shall be determined by monitoring of work zone breathing space with a portable photoionization detector (PID) or comparable instrument. Measurement of a sustained concentration above ambient (background) conditions shall initiate action. The following criteria shall be used to determine appropriate action:

VOLATILE ORGANICS IN BREATHING ZONE (SUSTAINED AND ABOVE BACKGROUND)	LEVEL OF RESPIRATORY PROTECTION
0-5 ppm	Level D
5-200 ppm	Level C
200-1000 ppm	Level B - air line
1000+ ppm	Level B - SCBA

% LOWER EXPLOSIVE LIMIT (LEL)	ACTION
Above 10	Discontinue work and take remedial action

NO CHANGE TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SITE SAFETY OFFICER AND THE PROJECT TEAM LEADER.

If the above criteria indicate the need to increase from Level D to a higher level of personal protection, work will be immediately suspended in that particular site area until the required personal protective equipment is made available, or until Level D conditions return.

D.7 ON-SITE WORK PLANS. The following personnel or designated alternate(s) will perform the field investigation.

Field Team Leader: ..... Ian McNamara or designee
Work Party ..... Ian McNamara and designated as needed to support field effort

The work party was briefed on the contents of this plan prior to commencement of work.

D.8 COMMUNICATION PROCEDURES. The Project Manager should remain in communication with the Field Team Leader. A cellular phone will be used in the field.

Continuous horn blast is the emergency signal to indicate that all personnel should leave the Work Zone.

In the event that radio communications are used, the following standard hand signals will be used in case of failure of radio communications:

Hand gripping throat	Out of air; can't breathe
Grip partner's wrist or both hands around waist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	OK; I am all right; I understand
Thumbs down	No; negative

D.9 SITE HEALTH AND SAFETY PLAN.

A. The designated Site Safety Officer will have responsibility for safety recommendations on site. The Field Team Leader will be responsible for carrying out the Site Health and Safety Plan, and for enforcing it on all SWRNA employees engaged in site work.

B. **Emergency Medical Care.** St. Joseph's Hospital Health Center is located at 301 Prospect Avenue, in Syracuse, NY, approximately 3.3 miles from the site. A map of the route to this facility is available at the field vehicle (attached).

Leaving the site, head northeast towards Knapp St. Turn RIGHT at 7th North St/County Rd 45. Continue approximately 0.7 miles. Turn RIGHT at Wolf St. Continue approximately 0.9 miles. Turn LEFT at Salina St. Continue approximately 1.2 miles. Turn SLIGHT LEFT at N State St. Continue approximately 0.2 miles. Turn LEFT at Hickory St. Continue approximately 400 feet. Turn LEFT at Prospect Ave. Continue approximately 450 feet to St. Joseph's Hospital.

First aid equipment is available on site at the following locations:

First aid kit Field vehicle

List of emergency phone numbers:

AGENCY/FACILITY	PHONE NUMBER
Syracuse Label	(315) 422-1037
Police – Onondaga County Sheriff	911
Fire – Liverpool Fire Department	911
Ambulance	911
Saint Joseph's Hospital Health Center	(315) 448-5111

C. **Environmental Monitoring.** The following environmental monitoring instruments shall be used on site at the specified intervals:

- MiniRAE photoionization detector (PID). Continuous during installation of soil borings and soil gas monitoring probes.
- Dust (particulate) monitor. Continuous during installation of soil borings per Community Air Monitoring Plan (CAMP)

D. **Emergency Procedures.** The following standard procedures will be used by on-site personnel. The Site Safety Officer shall be notified of any on-site emergencies and be responsible for ensuring that the appropriate procedures are followed:

1. **Personnel Injury in the Work Zone.** Upon notification of an injury in the Work Zone, the designated emergency signal, a continuous horn blast, shall be sounded. A rescue team will enter the Work Zone (if required) to remove the injured person to safety. Appropriate first aid shall be initiated and contact should be made for an ambulance and with the designated medical facility (if required). No persons shall re-enter the Work Zone until the cause of the injury or symptoms is determined.

2. **Fire/Explosion.** Upon notification of a fire or explosion on site, the designated emergency signal, a continuous horn blast, shall be sounded and all site personnel assembled at the decontamination line. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

3. **Personal Protective Equipment Failure.** If any site worker experiences a failure or alteration of protective equipment that affects the protection factor that person and his/her buddy shall immediately leave the Work Zone. Re-entry shall not be permitted until the equipment has been repaired or replaced.

4. **Other Equipment Failure.** If any other equipment on site fails to operate properly, the Project Team Leader and Site Safety Officer shall be notified and then determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Work Zone until the situation is evaluated and appropriate actions taken.

In all situations, when an on-site emergency results in evacuation of the Work Zone, personnel shall not re-enter until:

a. The conditions resulting in the emergency have been corrected.
b. The hazards have been reassessed.
c. The Site Health and Safety Plan has been reviewed.
d. Site personnel have been briefed on any changes in the Site Health and Safety Plan.

E. **Personal Monitoring.** The following personal monitoring will be in effect on site:

Personal exposure sampling: MiniRAE PID screening, sampling pumps/tubes , or organic vapor monitors.

Medical monitoring: The expected air temperature will be less than 70°F. If it is determined that heat stress monitoring is required (mandatory if over 70°F), the following procedures shall be followed: Monitoring body temperature, body weight, and pulse rate.

Attachment E

Community Air Monitoring Plan (CAMP)

ATTACHMENT E

COMMUNITY AIR MONITORING PLAN

E.1 INTRODUCTION

The 110 Luther Ave site (the 'Site') occupies approximately 1.4 acres along the west side of Luther Avenue in the Town of Salina, Onondaga County, New York. The Site is owned by Syracuse Label whose office, light manufacturing, and warehousing operations are housed within the one story building which occupies the majority of the parcel. The remainder of the site consists primarily of paved parking areas. The site is located in a commercial/industrial area just east of Interstate 81 and is bordered by Albion Ave to the west, Knapp Ave to the north, Luther Ave to the east, and an open lot and maintenance garage to the west.

Syracuse label is interested in investigating and remediating the 110 Luther Ave Site in the New York State Brownfield Cleanup Program (BCP) under agreement with the NYSDEC. Under the BCP, a Remedial Investigation must be completed in accordance with the NYSDEC's Department of Environmental Remediation (DER) Draft DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, December 2002) to provide a systematic assessment of environmental conditions at the Site. Data has been generated during previous Phase II investigations at the Site, therefore, additional investigation is necessary only to fill data gaps for the assessment of potential remedial approaches.

The Remedial Investigation (RI) will define the extent of contamination, if any, in order to implement a remedial strategy, if determined to be necessary. This Community Air Monitoring Plan (CAMP) describes the measures that will be undertaken during field work to monitor ambient air at the downwind site perimeter.

E.2 OBJECTIVES

The objective of this CAMP is to provide a measure of protection for the downwind community from potential airborne contaminant releases that might arise as a result of the planned field work that penetrates the ground surface, which will include test pits and soil borings.

E.3 METHODS

The CAMP will include monitoring for volatile organic compounds (VOCs) and particulate matter (e.g. airborne "dust"). Readings will be recorded and will be available for State (DEC and DOH) personnel to review, as requested.

A. VOC MONITORING

A MiniRAE photoionization detector (PID) will be used to measure VOCs in air. VOCs will be monitored at the downwind perimeter of the site, based on the prevailing wind direction as determined at the beginning of each workday. The site perimeter is defined as the existing property boundary.

Upwind concentrations of VOCs will be measured at the beginning of every workday to establish background conditions. VOC concentrations will be measured at the property boundary directly downwind of the work area. Downwind data will be checked as needed to provide a measure of assurance that contaminants are not being spread off site through the air.

- If the ambient air concentration for total organic vapors at the downwind property boundary exceeds 5 parts per million (ppm) above background for a 15-minute average, work activity will be halted and monitoring will continue until levels decline to below 5 ppm over background. At this point, work will resume and monitoring will continue.

- If total organic vapor levels at the downwind property boundary persist at levels above 5 ppm over background but less than 25 ppm, work activities will be halted, the source of the vapors will be identified, and corrective actions will be taken to abate emissions. Work will resume after organic vapor levels fall to below 5 ppm over background at the downwind property boundary.

- If organic vapor levels exceed 25 ppm at the downwind property boundary activities will be shut down. An appropriate course of action to abate emissions in order to resume work will be discussed with NYSDEC personnel.

B. PARTICULATE MONITORING

Particulate (e.g. "dust") emissions will be measured continuously at the upwind and downwind property boundaries when work activities are being completed outside of site buildings. Real time monitoring equipment (e.g. MiniRAM or equivalent), with audible alarms and capable of measuring particulate matter less than 10 micrometers in size, will be used.

- If the downwind particulate level is 100 micrograms per cubic meter (ug/m^3) greater than background (upwind) for a 15-minute period, then dust suppression techniques will be employed. Work will continue with dust suppression provided that downwind particulate levels do not exceed 150 ug/m^3 above upwind levels and provided that no visible dust is migrating from the work area.

- If, after dust suppression techniques, downwind particulate levels are greater than 150 ug/m^3 above upwind levels, work will be stopped and a re-evaluation of activities will be initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing downwind particulate concentrations to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

During work activities that are conducted within site buildings, perimeter air monitoring for dust will be suspended unless visible dust is observed migrating from the building work area.