

APPENDIX A



Technology Discussion and Field Report

to

URS Corporation

for

**The Application of "Zero Valent Iron Catalyzed Hydroxyl &
Sulfate Free Radical Oxidation"**

at

*Essex Jamestown Site
Jamestown, New York
URS Project # 41568097*

November 2011

Innovative Environmental Technologies, Inc.

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IET-INC.NET**

EXECUTIVE SUMMARY

On behalf of URS, Innovative Environmental Technologies, Inc (IET) has prepared the following injection report. This report has been prepared to document remediation activities conducted at the site.

The injection program was implemented between November 8th and November 18th, 2011. The remedial approach employed the integration of both Fenton's chemistry and persulfate chemistry, utilizing zero valent iron as the catalyst for both reactions. The integration of these two chemistries shall allow for synergistic catalyzed reactions and long lasting (via persulfate) oxidation.

66,575 pounds of Klozur[®] mixed with approximately 15,815 gallons of water, 4,424 pounds of ZVI suspended in 8,015 gallons of water and 1,221 gallons of 50% hydrogen peroxide solution were injected into the subsurface of the site.

The number of injection locations was reduced and the mass/volumes were increased based on site conditions prior to implementing the remedial design. Slight surfacing was observed in several of the injection locations, especially in the areas of former excavations. By observation, most all injectants remained in the subsurface. All of the injections were completed in locations consistent with those that were proposed.

INTRODUCTION

The Essex Jamestown Site located in Jamestown, NY, was identified by URS, their consulting engineer, as having soils and groundwater impacted by the historical release of petroleum hydrocarbons. The primary class of compounds of concern at the site was CTEX which is cumene (isopropyl benzene), toluene, ethylbenzene, and xylenes. An injection program was proposed by IET for the remediation of residual levels of VOC impacts at the site utilizing advanced oxidation technologies.

REMEDIATION IMPLEMENTATION

1.1 INJECTION PROCEDURES

Innovative Environmental Technologies, Inc (IET) completed a total of 383 injections at 123 injection locations at the Essex Jamestown Facility. Injection logs are provided in the Appendix.

Direct-Push-Driven Perforated Rod Placement

A Geoprobe 6610 unit comparable to the one pictured below, was utilized to drive the perforated injection rod (similar to Figure 2) to depths ranging from 8 to 40 feet below ground surface (bgs). It is at these depths, that the likelihood exists of being in close



Figure 1: Geoprobe 6610DT

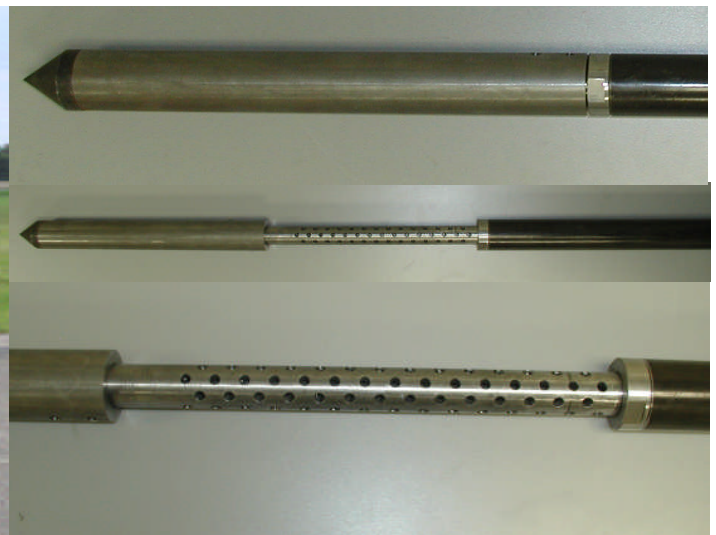


Figure 2: IET Retractable Injection Point

proximity to the targeted waters in the more permeable layers that were identified during characterization of the site. These more permeable layers are those believed to have historically provided the preferential pathways taken by the chemicals of concern.

Subsurface Fracture

Compressed air was used to propel all injectants into the subsurface. Compressed air was first injected into the subsurface at approximately 150 pounds per square inch (psi) until a significant pressure drop was observed at the injection pressure vessel. This process is referred to as pathway development. The intent of this step is to open pathways in the subsurface for the injectants to follow. Liquid and liquid-entrained injectants are then delivered with pressurized gas to the pathways that were produced during the development step.

ZVI, Klozur[®] and Hydrogen Peroxide Injection

A colloidal suspension of micron scale zero valent iron (ZVI) was immediately injected into the subsurface fractures and voids that were developed during the compressed air injection step. A predetermined volume of an either 2.5% or 5% solution of H₂O₂ followed this step. Immediately following, under constant pressure a sodium persulfate solution was then introduced.

Liquid Rinse

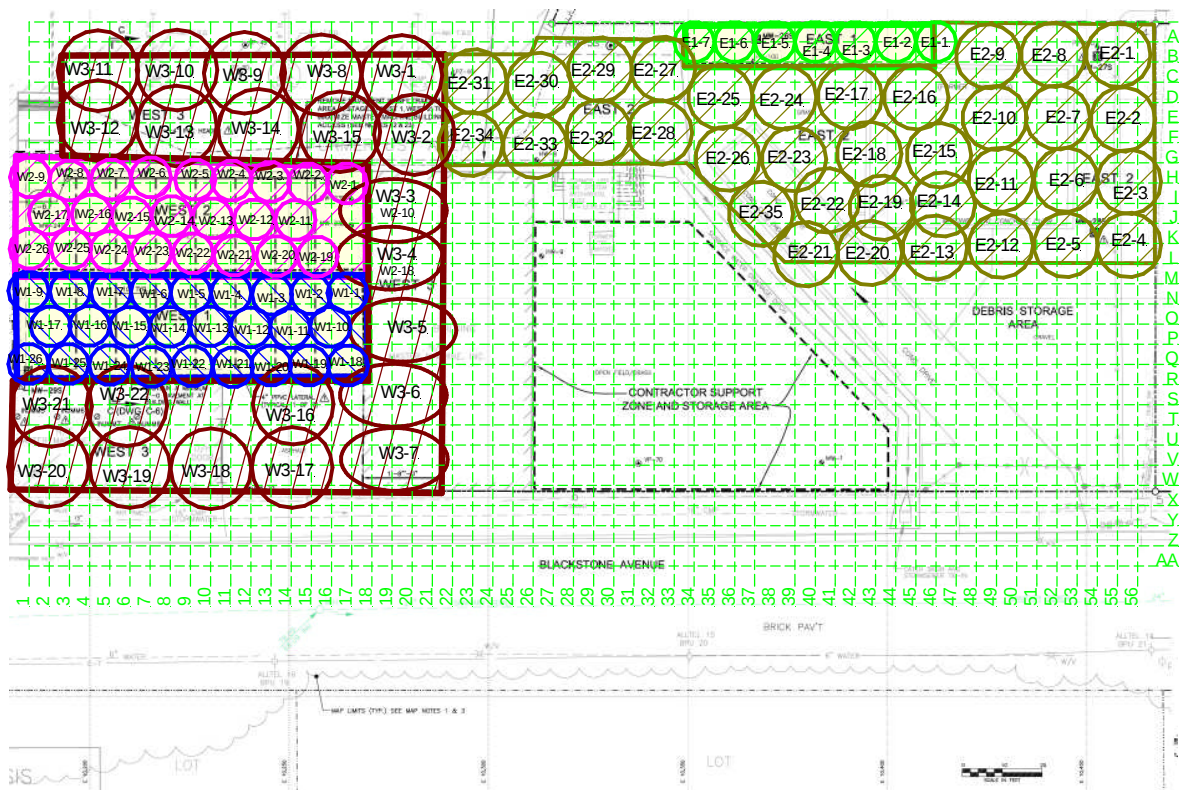
A small amount of water was injected to clear the injection lines of the chemical oxidants and ZVI and promotes mounding of groundwater into the vadose zone.

Post Injection Line Purge

Compressed air was injected to clear the lines of all material and to force the remedial components further into the formation before moving to the next injection location.

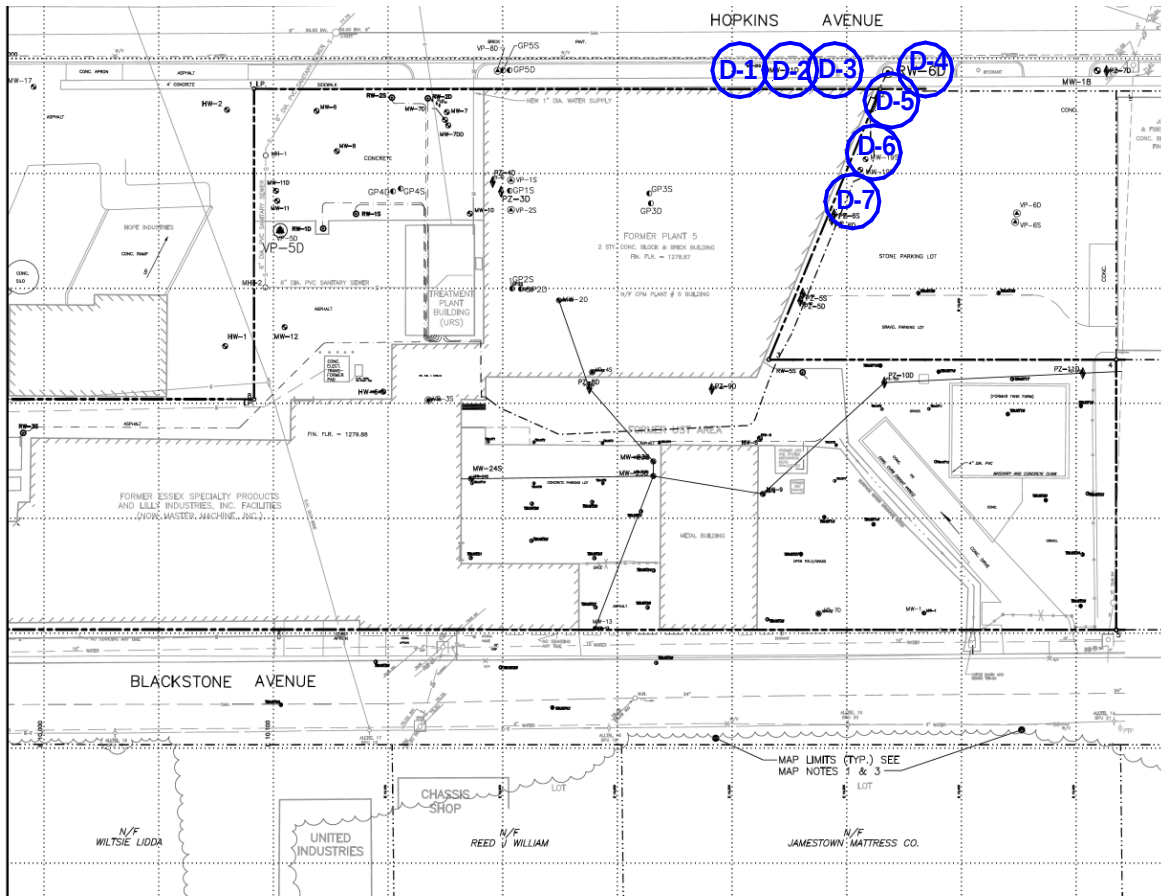
General Injection Implementation – East West Area

The injection locations of are identified in the appendix by alphanumeric labels beginning with E1-1 through W3-22, as seen in the map below.



Acetone Area

The injection locations of are identified in the appendix by alphanumeric labels beginning with D-1 through D-7, as seen in the map below.



Conclusion

The injection program at the Essex Jamestown Site was implemented and all proposed materials were introduced to the targeted subsurface planes. Modifications to the original design were made based upon the sites limitations. One extra injection point was added to the East 2 Area, W3-3 through W3-7 were directionally injected using tooling which would focus the majority of the remedial compounds under the building (which was otherwise inaccessible,) and a couple of injection points were combined in order to address short circuiting issues. All other aspects of the injection program were implemented successfully.

Odors, varying in degree, were observed throughout the sites soils. Detailed descriptions of odors, volumes and masses are included in the attached injection logs.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/09/11

Time of Injection : 9:22 AM

Grid Point: E1-1

Grid Point Location: A-46

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	11.4	11.4	11.4	11.4	11.4	11.4	34.2	34.2
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	118	118	118	118	118	118	354	354
Gallons of 50% H ₂ O ₂	3.2	3.2	3.2	3.2	3.2	3.2	9.6	9.6
Gallons of Dilution Water	50	50	50	50	50	50	150	150
Gallons of Klozur/H ₂ O ₂	53.2	53.2	53.2	53.2	53.2	53.2	159.6	159.6
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/09/11

Time of Injection : 9:57 AM

Grid Point: E1-2

Grid Point Location: A-44

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	11.4	11.4	11.4	11.4	11.4	11.4	34.2	34.2
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	118	118	118	118	118	118	354	354
Gallons of 50% H ₂ O ₂	3.2	3.2	3.2	3.2	3.2	3.2	9.6	9.6
Gallons of Dilution Water	50	50	50	50	50	50	150	150
Gallons of Klozur/H ₂ O ₂	53.2	53.2	53.2	53.2	53.2	53.2	159.6	159.6
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/09/11

Time of Injection : 10:25 AM

Grid Point: E1-3

Grid Point Location: A-42

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	11.4	11.4	11.4	11.4	11.4	11.4	34.2	34.2
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	118	118	118	118	118	118	354	354
Gallons of 50% H ₂ O ₂	3.2	3.2	3.2	3.2	3.2	3.2	9.6	9.6
Gallons of Dilution Water	50	50	50	50	50	50	150	150
Gallons of Klozur/H ₂ O ₂	53.2	53.2	53.2	53.2	53.2	53.2	159.6	159.6
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/09/11

Time of Injection : 11:09 AM

Grid Point: E1-4

Grid Point Location: A-40

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	11.4	11.4	11.4	11.4	11.4	11.4	34.2	34.2
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	118	118	118	118	118	118	354	354
Gallons of 50% H ₂ O ₂	3.2	3.2	3.2	3.2	3.2	3.2	9.6	9.6
Gallons of Dilution Water	50	50	50	50	50	50	150	150
Gallons of Klozur/H ₂ O ₂	53.2	53.2	53.2	53.2	53.2	53.2	159.6	159.6
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/09/11

Time of Injection : 11:50 AM

Grid Point: E1-5

Grid Point Location: A-38

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	11.4	11.4	11.4	11.4	11.4	11.4	34.2	34.2
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	118	118	118	118	118	118	354	354
Gallons of 50% H ₂ O ₂	3.2	3.2	3.2	3.2	3.2	3.2	9.6	9.6
Gallons of Dilution Water	50	50	50	50	50	50	150	150
Gallons of Klozur/H ₂ O ₂	53.2	53.2	53.2	53.2	53.2	53.2	159.6	159.6
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/09/11

Time of Injection : 12:52 PM

Grid Point: E1-6

Grid Point Location: A-36

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	11.4	11.4	11.4	11.4	11.4	11.4	34.2	34.2
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	118	118	118	118	118	118	354	354
Gallons of 50% H ₂ O ₂	3.2	3.2	3.2	3.2	3.2	3.2	9.6	9.6
Gallons of Dilution Water	50	50	50	50	50	50	150	150
Gallons of Klozur/H ₂ O ₂	53.2	53.2	53.2	53.2	53.2	53.2	159.6	159.6
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/09/11

Time of Injection : 1:28 PM

Grid Point: E1-7

Grid Point Location: A-34

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	0	4.7	4.7	4.7		
Pounds of ZVI	11.4	11.4	0	11.4	22.8	11.4	34.2	34.2
Gallons of ZVI Solution	20	20	0	20	40	20	60	60
Pounds of Klozur	118	118	0	118	236	118	354	354
Gallons of 50% H ₂ O ₂	3.2	3.2	0	3.2	6.4	3.2	9.6	9.6
Gallons of Dilution Water	50	50	0	50	100	50	150	150
Gallons of Klozur/H ₂ O ₂	53.2	53.2	0	53.2	106.4	53.2	159.6	159.6
Duration of Post-Injection Fracture (seconds):	5	5	0	5	5	5		
Pressure of Post-injection pathway development	100	100	0	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Slight surface escape noted at completion of 6-8' interval.

Short circuit observed during pathway development stage of 10-12' injection interval. Doubled remedial compounds introduced into deep interval.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Summary

	Actual	Proposed
Pounds of ZVI	239.4	239.4
Gallons of ZVI Solution	420	420
Pounds of Klozur	2478	2478
Gallons of 50% H ₂ O ₂	67.2	67.2
Gallons of Dilution Water	1050	1050
Gallons of Klozur/H ₂ O ₂	1117.2	1117.2

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/8/11

Time of Injection : 2:00 PM

Grid Point: E2-1

Grid Point Location: B-55

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/8/11

Time of Injection : 3:12 AM

Grid Point: E2-2

Grid Point Location: E-55

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/8/11

Time of Injection : 3:49 PM

Grid Point: E2-3

Grid Point Location: H-55

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/8/11

Time of Injection : 4:18 PM

Grid Point: E2-4

Grid Point Location: K-55

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 8:25 AM

Grid Point: E2-5

Grid Point Location: K-52

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/9/11

Time of Injection : 2:50 PM

Grid Point: E2-6

Grid Point Location: H-52

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/9/11

Time of Injection : 2:16 PM

Grid Point: E2-7

Grid Point Location: E-52

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/8/11

Time of Injection : 4:50 PM

Grid Point: E2-8

Grid Point Location: B-52

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/9/11

Time of Injection : 8:45 AM

Grid Point: E2-9

Grid Point Location: B-49

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/9/11

Time of Injection : 3:26 PM

Grid Point: E2-10

Grid Point Location: E-49

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/9/11

Time of Injection : 3:52 PM

Grid Point: E2-11

Grid Point Location: H-49

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 8:58 AM

Grid Point: E2-12

Grid Point Location: K-49

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 9:24 AM

Grid Point: E2-13

Grid Point Location: K-46

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/9/11

Time of Injection : 4:53 PM

Grid Point: E2-14

Grid Point Location: I-46

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 7:53 AM

Grid Point: E2-15

Grid Point Location: G-46

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/9/11

Time of Injection : 4:23 PM

Grid Point: E2-16

Grid Point Location: D-45

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 10:30 AM

Grid Point: E2-17

Grid Point Location: D-42

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 11:00 AM

Grid Point: E2-18

Grid Point Location: F-43

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 11:33 AM

Grid Point: E2-19

Grid Point Location: I-43

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 9:55 AM

Grid Point: E2-20

Grid Point Location: K-43

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 3:21 PM

Grid Point: E2-21

Grid Point Location: L-40

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 2:53 PM

Grid Point: E2-22

Grid Point Location: I-41

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 12:36 PM

Grid Point: E2-23

Grid Point Location: G-39

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 12:00 PM

Grid Point: E2-24

Grid Point Location: D-38

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS ☐ None ☐ Slight ☐ Moderate ☐ Strong ☒ X

Other Field Observations:

Strong odors detected



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 1:50 PM

Grid Point: E2-25

Grid Point Location: D-35

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 2:22 PM

Grid Point: E2-26

Grid Point Location: G-36

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 8:30 AM

Grid Point: E2-27

Grid Point Location: C-29

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 4:31 PM

Grid Point: E2-28

Grid Point Location: F-32

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 9:12 AM

Grid Point: E2-29

Grid Point Location: C-30

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 9:45 AM

Grid Point: E2-30

Grid Point Location: C-26

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 10:14 AM

Grid Point: E2-31

Grid Point Location: D-26

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Refusal encountered at 8' bgs. Offset 2' South and 1' East.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 11:58 AM

Grid Point: E2-32

Grid Point Location: F-29

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 11:20 AM

Grid Point: E2-33

Grid Point Location: F-26

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 10:56 AM

Grid Point: E2-34

Grid Point Location: F-23

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/10/11

Time of Injection : 3:59 PM

Grid Point: E2-35

Grid Point Location: I-37

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	8-10' bgs	11-13' bgs	11-13' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	8	8	8	8	8	8		
Pounds of ZVI	11.5	11.5	11.5	11.5	11.5	11.5	34.5	34.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	63	63	63	63	63	63	189	189
Gallons of 50% H ₂ O ₂	1.15	1.15	1.15	1.15	1.15	1.15	3.45	3.45
Gallons of Dilution Water	30	30	30	30	30	30	90	90
Gallons of Klozur/H ₂ O ₂	40	40	40	40	40	40	120	120
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Additional point added



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

East Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Summary

	Actual	Proposed
Pounds of ZVI	1207.5	1207.5
Gallons of ZVI Solution	2100	2100
Pounds of Klozur	6615	6615
Gallons of 50% H ₂ O ₂	120.75	120.75
Gallons of Dilution Water	3150	3150
Gallons of Klozur/H ₂ O ₂	4200	4200

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 8:18 AM

Grid Point: W1-1

Grid Point Location: M-18

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	0	6-8' bgs	0	10-12' bgs	0	14-16' bgs		
Duration of Fracture (seconds):	0	4	0	4	0	4		
Pressure of Pre-injection pathway development	0	150	0	150	0	150		
Estimated Radius of Influence	0	5	0	5	0	5		
Pounds of ZVI	0	12.7	0	12.7	0	12.7	0	38.1
Gallons of ZVI Solution	0	20	0	20	0	20	0	60
Pounds of Klozur	0	280	0	280	0	280	0	840
Gallons of 50% H ₂ O ₂	0	5.34	0	5.34	0	5.34	0	16.02
Gallons of Dilution Water	0	55	0	55	0	55	0	165
Gallons of Klozur/H ₂ O ₂	0	60	0	60	0	60	0	180
Duration of Post-Injection Fracture (seconds):	0	5	0	5	0	5		
Pressure of Post-injection pathway development	0	100	0	100	0	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Refusal on footing under concrete slab. Added material to W1-2.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 8:21 AM

Grid Point: W1-2

Grid Point Location: M-16

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	25.4	12.7	25.4	12.7	25.4	12.7	76.2	38.1
Gallons of ZVI Solution	40	20	40	20	40	20	120	60
Pounds of Klozur	560	280	560	280	560	280	1680	840
Gallons of 50% H ₂ O ₂	10.68	5.34	10.68	5.34	10.68	5.34	32.04	16.02
Gallons of Dilution Water	110	55	110	55	110	55	330	165
Gallons of Klozur/H ₂ O ₂	120	60	120	60	120	60	360	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Added material from W1-1. Slight surface escapes noted along cracks in concrete. Also observed in

W2-19 and W2-20 concrete cores.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 7:46 AM

Grid Point: W1-3

Grid Point Location: M-14

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 2:00 PM

Grid Point: W1-4

Grid Point Location: M-12

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Stopped injection at deep interval due to short circuit at building foundation.

Completed injection at 4:00 pm



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 4:11 PM

Grid Point: W1-5

Grid Point Location: M-10

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate X Strong _____

Other Field Observations:

Moderate odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 3:43 PM

Grid Point: W1-6

Grid Point Location: M-7

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight X Moderate _____ Strong _____

Other Field Observations:

Slight odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 3:14 PM

Grid Point: W1-7

Grid Point Location: M-5

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Strong odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 2:42 PM

Grid Point: W1-8

Grid Point Location: M-3

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 12:30 PM

Grid Point: W1-9

Grid Point Location: M-1

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 7:48 AM

Grid Point: W1-10

Grid Point Location: O-16

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 9:01 AM

Grid Point: W1-11

Grid Point Location: O-14

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate X Strong _____

Other Field Observations:

Moderate odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 8:37 AM

Grid Point: W1-12

Grid Point Location: O-12

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Strong odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 1:46 PM

Grid Point: W1-13

Grid Point Location: O-10

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 1:16 PM

Grid Point: W1-14

Grid Point Location: O-8

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 12:50 PM

Grid Point: W1-15

Grid Point Location: O-6

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Strong odors detected



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 12:22 PM

Grid Point: W1-16

Grid Point Location: O-4

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Strong odors detected



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 2:30 PM

Grid Point: W1-17

Grid Point Location: O-2

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight X Moderate _____ Strong _____

Other Field Observations:

Slight odors observed. Non petroleum/non chlorinated.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 8:07 AM

Grid Point: W1-18

Grid Point Location: Q-17

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 7:38 AM

Grid Point: W1-19

Grid Point Location: Q-15

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight X Moderate _____ Strong _____

Other Field Observations:

Slight odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 10:13 AM

Grid Point: W1-20

Grid Point Location: Q-13

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS ☐ None ☐ Slight ☐ Moderate ☐ Strong ☒ X

Other Field Observations:

Strong odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 9:43 AM

Grid Point: W1-21

Grid Point Location: Q-9

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 9:17 AM

Grid Point: W1-22

Grid Point Location: Q-7

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/14/11

Time of Injection : 8:45 AM

Grid Point: W1-23

Grid Point Location: Q-6

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 4:00 PM

Grid Point: W1-24

Grid Point Location: Q-5

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 3:17 PM

Grid Point: W1-25

Grid Point Location: Q-3

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 1:42 PM

Grid Point: W1-26

Grid Point Location: Q-1

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	12.7	12.7	12.7	12.7	12.7	12.7	38.1	38.1
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	280	280	280	280	280	280	840	840
Gallons of 50% H ₂ O ₂	5.34	5.34	5.34	5.34	5.34	5.34	16.02	16.02
Gallons of Dilution Water	55	55	55	55	55	55	165	165
Gallons of Klozur/H ₂ O ₂	60	60	60	60	60	60	180	180
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate X Strong _____

Other Field Observations:

Moderate odors observed.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 1

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Summary

	Actual	Proposed
Pounds of ZVI	990.6	990.6
Gallons of ZVI Solution	1560	1560
Pounds of Klozur	21840	21840
Gallons of 50% H ₂ O ₂	416.52	416.52
Gallons of Dilution Water	4290	4290
Gallons of Klozur/H ₂ O ₂	4680	4680

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 9:12 AM

Grid Point: W2-1

Grid Point Location: H-17

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Strong petroleum odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 3:04 PM

Grid Point: W2-2

Grid Point Location: H-15

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 2:22 PM

Grid Point: W2-3

Grid Point Location: H-3

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 12:10 PM

Grid Point: W2-4

Grid Point Location: H-11

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 11:45 AM

Grid Point: W2-5

Grid Point Location: H-9

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 11:21 AM

Grid Point: W2-6

Grid Point Location: H-7

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Slight surface escapes noted in fill material.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 10:52 AM

Grid Point: W2-7

Grid Point Location: H-5

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Slight surface escapes noted in fill material.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 9:20 AM

Grid Point: W2-8

Grid Point Location: H-3

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 10:45 AM

Grid Point: W2-9

Grid Point Location: H-1

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: _____

Time of Injection : _____

Grid Point: W2-10

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	0	4	0	4	0	4		
Pressure of Pre-injection pathway development	0	150	0	150	0	150		
Estimated Radius of Influence	0	5	0	5	0	5		
Pounds of ZVI	0	19.05	0	9.53	0	9.53	0	38.11
Gallons of ZVI Solution	0	20	0	20	0	20	0	60
Pounds of Klozur	0	315	0	158	0	158	0	631
Gallons of 50% H ₂ O ₂	0	5.57	0	2.79	0	2.79	0	11.15
Gallons of Dilution Water	0	60	0	40	0	40	0	140
Gallons of Klozur/H ₂ O ₂	0	65	0	43	0	43	0	151
Duration of Post-Injection Fracture (seconds):	0	5	0	5	0	5		
Pressure of Post-injection pathway development	0	100	0	100	0	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Added material to W3-3 due to surfacing.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 12:51 PM

Grid Point: W2-11

Grid Point Location: J-14

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 3:30 PM

Grid Point: W2-12

Grid Point Location: J-12

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Injection point clogged after 6-8' interval. Completed injection 11-16-11 at 7:22am



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 8:38 AM

Grid Point: W2-13

Grid Point Location: J-10

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	0	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	0	4	0	4	0	4		
Pressure of Pre-injection pathway development	0	150	0	150	0	150		
Estimated Radius of Influence	0	5	0	5	0	5		
Pounds of ZVI	0	19.05	19.06	9.53	19.06	9.53	38.12	38.11
Gallons of ZVI Solution	0	20	40	20	40	20	80	60
Pounds of Klozur	0	315	316	158	316	158	632	631
Gallons of 50% H ₂ O ₂	0	5.57	5.58	2.79	5.58	2.79	11.16	11.15
Gallons of Dilution Water	0	60	80	40	80	40	160	140
Gallons of Klozur/H ₂ O ₂	0	65	86	43	86	43	172	151
Duration of Post-Injection Fracture (seconds):	0	5	0	5	0	5		
Pressure of Post-injection pathway development	0	100	0	100	0	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Skipped shallow interval due to surfacing in unconsolidated fill. 6-8' interval added to middle and deep

injection intervals. Slight surfacing still noted.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 2:58 PM

Grid Point: W2-14

Grid Point Location: J-8

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 2:36 PM

Grid Point: W2-15

Grid Point Location: J-6

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 2:00 PM

Grid Point: W2-16

Grid Point Location: J-4

							Summary	
	Actual 6-8' bgs	Proposed 6-8' bgs	Actual 10-12' bgs	Proposed 10-12' bgs	Actual 14-16' bgs	Proposed 14-16' bgs	Actual	Proposed
Injection Zone								
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 11:17 AM

Grid Point: W2-17

Grid Point Location: J-2

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: _____

Time of Injection : _____

Grid Point: W2-18

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	0	4	0	4	0	4		
Pressure of Pre-injection pathway development	0	150	0	150	0	150		
Estimated Radius of Influence	0	5	0	5	0	5		
Pounds of ZVI	0	19.05	0	9.53	0	9.53	0	38.11
Gallons of ZVI Solution	0	20	0	20	0	20	0	60
Pounds of Klozur	0	315	0	158	0	158	0	631
Gallons of 50% H ₂ O ₂	0	5.57	0	2.79	0	2.79	0	11.15
Gallons of Dilution Water	0	60	0	40	0	40	0	140
Gallons of Klozur/H ₂ O ₂	0	65	0	43	0	43	0	151
Duration of Post-Injection Fracture (seconds):	0	5	0	5	0	5		
Pressure of Post-injection pathway development	0	100	0	100	0	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Added material to W3-4 due to surfacing.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/16/11

Time of Injection : 3:41 PM

Grid Point: W2-19

Grid Point Location: L-15

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 8:16 AM

Grid Point: W2-20

Grid Point Location: L-13

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	0	4	0	4	0	4		
Pressure of Pre-injection pathway development	0	150	0	150	0	150		
Estimated Radius of Influence	0	5	0	5	0	5		
Pounds of ZVI	0	19.05	19.06	9.53	19.06	9.53	38.12	38.11
Gallons of ZVI Solution	0	20	40	20	40	20	80	60
Pounds of Klozur	0	315	316	158	316	158	632	631
Gallons of 50% H ₂ O ₂	0	5.57	5.58	2.79	5.58	2.79	11.16	11.15
Gallons of Dilution Water	0	60	80	40	80	40	160	140
Gallons of Klozur/H ₂ O ₂	0	65	86	43	86	43	172	151
Duration of Post-Injection Fracture (seconds):	0	5	10	5	10	5		
Pressure of Post-injection pathway development	0	100	200	100	200	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Skipped shallow interval due to elevated groundwater table and surface escapes. Added material to

bottom two intervals.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 10:32 AM

Grid Point: W2-21

Grid Point Location: L-11

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 12:20 PM

Grid Point: W2-22

Grid Point Location: L-9

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 11:51 AM

Grid Point: W2-23

Grid Point Location: L-7

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 11:24 AM

Grid Point: W2-24

Grid Point Location: L-5

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/15/11

Time of Injection : 10:53 AM

Grid Point: W2-25

Grid Point Location: L-3

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 11:48 AM

Grid Point: W2-26

Grid Point Location: L-1

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	5	5	5	5	5	5		
Pounds of ZVI	19.05	19.05	9.53	9.53	9.53	9.53	38.11	38.11
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	315	315	158	158	158	158	631	631
Gallons of 50% H ₂ O ₂	5.57	5.57	2.79	2.79	2.79	2.79	11.15	11.15
Gallons of Dilution Water	60	60	40	40	40	40	140	140
Gallons of Klozur/H ₂ O ₂	65	65	43	43	43	43	151	151
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 2

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Summary

	Actual	Proposed
Pounds of ZVI	914.66	990.86
Gallons of ZVI Solution	1480	1560
Pounds of Klozur	15146	16406
Gallons of 50% H ₂ O ₂	267.62	289.9
Gallons of Dilution Water	3400	3640
Gallons of Klozur/H ₂ O ₂	3666	3926

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 1:35 PM

Grid Point: W3-1

Grid Point Location: C-19

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	6-8' bgs	11-13' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Began injections 2' deeper due to change in surface elevation.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 9:52 AM

Grid Point: W3-2

Grid Point Location: F-20

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Very strong odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 11:11 AM

Grid Point: W3-3

Grid Point Location: J-19

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	26.55	7.5	17.03	7.5	17.03	7.5	60.61	22.5
Gallons of ZVI Solution	40	20	40	20	40	20	120	60
Pounds of Klozur	439	124	282	124	282	124	1003	372
Gallons of 50% H ₂ O ₂	7.57	2	4.79	2	4.79	2	17.15	6
Gallons of Dilution Water	85	25	65	25	65	25	215	75
Gallons of Klozur/H ₂ O ₂	95	30	73	30	73	30	241	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Added material from W2-10 to directional injection point due to surfacing.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 11:56 AM

Grid Point: W3-4

Grid Point Location: L-17

							Summary	
	Actual 6-8' bgs	Proposed 6-8' bgs	Actual 10-12' bgs	Proposed 10-12' bgs	Actual 14-16' bgs	Proposed 14-16' bgs	Actual	Proposed
Injection Zone								
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	26.55	7.5	17.03	7.5	17.03	7.5	60.61	22.5
Gallons of ZVI Solution	40	20	40	20	40	20	120	60
Pounds of Klozur	439	124	282	124	282	124	1003	372
Gallons of 50% H ₂ O ₂	7.57	2	4.79	2	4.79	2	17.15	6
Gallons of Dilution Water	85	25	65	25	65	25	215	75
Gallons of Klozur/H ₂ O ₂	95	30	73	30	73	30	241	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Added material from W2-18 to directional injection point due to surfacing.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 4:30 PM

Grid Point: W3-5

Grid Point Location: O-17

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Directional injection point



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 4:08 PM

Grid Point: W3-6

Grid Point Location: S-17

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 3:40 PM

Grid Point: W3-7

Grid Point Location: V-17

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Directional injection point



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 2:12 PM

Grid Point: W3-8

Grid Point Location: C-15

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	6-8' bgs	11-13' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Began injections 2' deeper due to change in surface elevation.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 2:40 PM

Grid Point: W3-9

Grid Point Location: C-16

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	6-8' bgs	11-13' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Began injections 2' deeper due to change in surface elevation.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 3:20 PM

Grid Point: W3-10

Grid Point Location: C-8

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	6-8' bgs	11-13' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Began injections 2' deeper due to change in surface elevation.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 3:52 PM

Grid Point: W3-11

Grid Point Location: C-4

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	8-10' bgs	6-8' bgs	11-13' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Began injections 2' deeper due to change in surface elevation.

Very strong odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/11/11

Time of Injection : 4:20 PM

Grid Point: W3-12

Grid Point Location: E-4

							Summary	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Injection Zone	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs		
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Very strong odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 8:55 AM

Grid Point: W3-13

Grid Point Location: F-8

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong X

Other Field Observations:

Very strong odors observed



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 9:37 AM

Grid Point: W3-14

Grid Point Location: F-13

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/13/11

Time of Injection : 8:59 AM

Grid Point: W3-15

Grid Point Location: F-16

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 3:18 PM

Grid Point: W3-16

Grid Point Location: S-14

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 4:38 PM

Grid Point: W3-17

Grid Point Location: V-14

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 2:38 PM

Grid Point: W3-18

Grid Point Location: U-11

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:

Refusal encountered in two location inside building. Moved injection location outside of overhead door.



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 10:30 AM

Grid Point: W3-19

Grid Point Location: V-6

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 11:25 AM

Grid Point: W3-20

Grid Point Location: V-2

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 12:08 PM

Grid Point: W3-21

Grid Point Location: S-2

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/12/11

Time of Injection : 1:19 PM

Grid Point: W3-22

Grid Point Location: S-6

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	6-8' bgs	6-8' bgs	10-12' bgs	10-12' bgs	14-16' bgs	14-16' bgs	Actual	Proposed
Duration of Fracture (seconds):	3	4	3	4	3	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150		
Estimated Radius of Influence	4.7	4.7	4.7	4.7	4.7	4.7		
Pounds of ZVI	7.5	7.5	7.5	7.5	7.5	7.5	22.5	22.5
Gallons of ZVI Solution	20	20	20	20	20	20	60	60
Pounds of Klozur	124	124	124	124	124	124	372	372
Gallons of 50% H ₂ O ₂	2	2	2	2	2	2	6	6
Gallons of Dilution Water	25	25	25	25	25	25	75	75
Gallons of Klozur/H ₂ O ₂	30	30	30	30	30	30	90	90
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

West Area 3

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Summary

	Actual	Proposed
Pounds of ZVI	571.22	495
Gallons of ZVI Solution	1440	1320
Pounds of Klozur	9446	8184
Gallons of 50% H ₂ O ₂	154.3	132
Gallons of Dilution Water	1930	1650
Gallons of Klozur/H ₂ O ₂	2282	1980

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Deep Injections

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/18/11

Time of Injection : 3:50 PM

Grid Point: D-1

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	16-18' bgs	16-18' bgs	22-24' bgs	22-24' bgs	28-30' bgs	28-30' bgs	34-36' bgs	34-36' bgs	38-40' bgs	38-40' bgs	Actual	Proposed
Duration of Fracture (seconds):	4	4	4	4	4	4	4	4	4	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150	150	150	150	150		
Estimated Radius of Influence	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		
Pounds of ZVI	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	71.5	71.5
Gallons of ZVI Solution	29	29	29	29	29	29	29	29	29	29	145	145
Pounds of Klozur	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	1578.5	1578.5
Gallons of 50% H ₂ O ₂	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	27.8	27.8
Gallons of Dilution Water	57	57	57	57	57	57	57	57	57	57	285	285
Gallons of Klozur/H ₂ O ₂	70	70	70	70	70	70	70	70	70	70	350	350
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Deep Injections

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/18/11

Time of Injection : 2:20 PM

Grid Point: D-2

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	16-18' bgs	16-18' bgs	22-24' bgs	22-24' bgs	28-30' bgs	28-30' bgs	34-36' bgs	34-36' bgs	38-40' bgs	38-40' bgs	Actual	Proposed
Duration of Fracture (seconds):	4	4	4	4	4	4	4	4	4	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150	150	150	150	150		
Estimated Radius of Influence	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		
Pounds of ZVI	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	71.5	71.5
Gallons of ZVI Solution	29	29	29	29	29	29	29	29	29	29	145	145
Pounds of Klozur	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	1578.5	1578.5
Gallons of 50% H ₂ O ₂	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	27.8	27.8
Gallons of Dilution Water	57	57	57	57	57	57	57	57	57	57	285	285
Gallons of Klozur/H ₂ O ₂	70	70	70	70	70	70	70	70	70	70	350	350
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Deep Injections

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/18/11

Time of Injection : 1:10 PM

Grid Point: D-3

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	16-18' bgs	16-18' bgs	22-24' bgs	22-24' bgs	28-30' bgs	28-30' bgs	34-36' bgs	34-36' bgs	38-40' bgs	38-40' bgs	Actual	Proposed
Duration of Fracture (seconds):	4	4	4	4	4	4	4	4	4	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150	150	150	150	150		
Estimated Radius of Influence	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		
Pounds of ZVI	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	71.5	71.5
Gallons of ZVI Solution	29	29	29	29	29	29	29	29	29	29	145	145
Pounds of Klozur	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	1578.5	1578.5
Gallons of 50% H ₂ O ₂	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	27.8	27.8
Gallons of Dilution Water	57	57	57	57	57	57	57	57	57	57	285	285
Gallons of Klozur/H ₂ O ₂	70	70	70	70	70	70	70	70	70	70	350	350
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Deep Injections

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/18/11

Time of Injection : 11:15 AM

Grid Point: D-4

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	16-18' bgs	16-18' bgs	22-24' bgs	22-24' bgs	28-30' bgs	28-30' bgs	34-36' bgs	34-36' bgs	38-40' bgs	38-40' bgs	Actual	Proposed
Duration of Fracture (seconds):	4	4	4	4	4	4	4	4	4	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150	150	150	150	150		
Estimated Radius of Influence	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		
Pounds of ZVI	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	71.5	71.5
Gallons of ZVI Solution	29	29	29	29	29	29	29	29	29	29	145	145
Pounds of Klozur	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	1578.5	1578.5
Gallons of 50% H ₂ O ₂	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	27.8	27.8
Gallons of Dilution Water	57	57	57	57	57	57	57	57	57	57	285	285
Gallons of Klozur/H ₂ O ₂	70	70	70	70	70	70	70	70	70	70	350	350
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Deep Injections

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/18/11

Time of Injection : 9:48 AM

Grid Point: D-5

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	16-18' bgs	16-18' bgs	22-24' bgs	22-24' bgs	28-30' bgs	28-30' bgs	34-36' bgs	34-36' bgs	38-40' bgs	38-40' bgs	Actual	Proposed
Duration of Fracture (seconds):	4	4	4	4	4	4	4	4	4	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150	150	150	150	150		
Estimated Radius of Influence	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		
Pounds of ZVI	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	71.5	71.5
Gallons of ZVI Solution	29	29	29	29	29	29	29	29	29	29	145	145
Pounds of Klozur	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	1578.5	1578.5
Gallons of 50% H ₂ O ₂	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	27.8	27.8
Gallons of Dilution Water	57	57	57	57	57	57	57	57	57	57	285	285
Gallons of Klozur/H ₂ O ₂	70	70	70	70	70	70	70	70	70	70	350	350
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Deep Injections

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/18/11

Time of Injection : 8:07 AM

Grid Point: D-6

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	16-18' bgs	16-18' bgs	22-24' bgs	22-24' bgs	28-30' bgs	28-30' bgs	34-36' bgs	34-36' bgs	38-40' bgs	38-40' bgs	Actual	Proposed
Duration of Fracture (seconds):	4	4	4	4	4	4	4	4	4	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150	150	150	150	150		
Estimated Radius of Influence	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		
Pounds of ZVI	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	71.5	71.5
Gallons of ZVI Solution	29	29	29	29	29	29	29	29	29	29	145	145
Pounds of Klozur	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	1578.5	1578.5
Gallons of 50% H ₂ O ₂	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	27.8	27.8
Gallons of Dilution Water	57	57	57	57	57	57	57	57	57	57	285	285
Gallons of Klozur/H ₂ O ₂	70	70	70	70	70	70	70	70	70	70	350	350
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Deep Injections

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Date of Injection: 11/17/11

Time of Injection : 4:00 PM

Grid Point: D-7

Grid Point Location: _____

Injection Zone	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Summary	
	16-18' bgs	16-18' bgs	22-24' bgs	22-24' bgs	28-30' bgs	28-30' bgs	34-36' bgs	34-36' bgs	38-40' bgs	38-40' bgs	Actual	Proposed
Duration of Fracture (seconds):	4	4	4	4	4	4	4	4	4	4		
Pressure of Pre-injection pathway development	150	150	150	150	150	150	150	150	150	150		
Estimated Radius of Influence	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		
Pounds of ZVI	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	71.5	71.5
Gallons of ZVI Solution	29	29	29	29	29	29	29	29	29	29	145	145
Pounds of Klozur	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	315.7	1578.5	1578.5
Gallons of 50% H ₂ O ₂	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	27.8	27.8
Gallons of Dilution Water	57	57	57	57	57	57	57	57	57	57	285	285
Gallons of Klozur/H ₂ O ₂	70	70	70	70	70	70	70	70	70	70	350	350
Duration of Post-Injection Fracture (seconds):	5	5	5	5	5	5	5	5	5	5		
Pressure of Post-injection pathway development	100	100	100	100	100	100	100	100	100	100		

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Acetone Hot Spot

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Summary

	Actual	Proposed
Pounds of ZVI	500.5	500.5
Gallons of ZVI Solution	1015	1015
Pounds of Klozur	11049.5	11049.5
Gallons of 50% H ₂ O ₂	194.6	194.6
Gallons of Dilution Water	1995	1995
Gallons of Klozur/H ₂ O ₂	2450	2450

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:



INNOVATIVE ENVIRONMENTAL TECHNOLOGIES, INC.

Job Name: Essex Jamestown Site

Phase I

Zero Valent Iron Catalyzed Hydroxyl and Sulfate Free Radical Oxidation

Summary

	Actual	Proposed
Pounds of ZVI	4423.88	4423.86
Gallons of ZVI Solution	8015	7975
Pounds of Klozur	66574.5	66572.5
Gallons of 50% H ₂ O ₂	1220.99	1220.97
Gallons of Dilution Water	15815	15775
Gallons of Klozur/H ₂ O ₂	18395.2	18353.2

ODORS None _____ Slight _____ Moderate _____ Strong _____

Other Field Observations:
