IN-SITU CHEMICAL OXIDATION REMEDIATION PROGRAM INTERIM REPORT

SITE:

CHAMPAIGN FORMER MGP SITE
CHAMPAIGN, ILLINOIS

JUNE 18, 2013

PREPARED FOR:

PSC INDUSTRIAL OUTSOURCING, LP
210 WEST SAND BANK ROAD
COLUMBIA, ILLINOIS 62236

PROJECT NO. 901144

PREPARED BY:

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1.0 INTRODUCTION

In-Situ Oxidative Technologies, Inc. (ISOTEC) was retained by PSC Industrial Outsourcing, LP (PSC) to conduct an in-situ chemical oxidation (ISCO) remediation program at the former Manufactured Gas Plant (MGP) located at 308 N. 5th Street, in Champaign, Illinois (**Figure 1**). In this report the former Champaign MGP site is also identified as the "site".

The purpose of the ISCO remediation program is to address the perimeter of the site where concentrations of organic constituents of concern (COCs) exceed Tier 1 Remedial Objectives (ROs) for the soil inhalation exposure pathway in the upper 10 feet of soil. The remediation technology chosen for the site was ISOTEC's proprietary modified Fenton's reagent (MFR) technology.

This *In-Situ Chemical Oxidation Remediation Program Interim Report* describes the field activities completed by ISOTEC during the first injection event of the remediation program. The field activities conducted by ISOTEC to date occurred during one injection event (Phase 2A) between April 29 and May 15, 2013. The field activities were performed in accordance with the *In-Situ Chemical Oxidation Work Plan* that was prepared by PSC and submitted to the Illinois Environmental Protection Agency (IEPA) in March 2013.

1.1 SITE-SPECIFIC CHARACTERISTICS

The ISCO treatment area occupies approximately 35,000 square feet of the 2.5 acre site and encompasses the western and northern portion of the site perimeter. The extent of the treatment area was determined from post-excavation soil confirmation sample analytical data.

According to data provided by PSC, the remediation site has vadose and saturated zone soils impacted by inorganics, metals, volatile aromatics and polycylic aromatic hydrocarbons (PAHs). The primary COCs at the site are benzene, toluene, ethylbenzene, and xylenes (BTEX) and naphthalene.

The treatment interval for the ISCO remediation program is from 3 to 10 feet. Two additional treatment intervals, 20 to 25 feet bgs and 36 to 44 feet bgs, were identified by PSC at three limited areas within the designated ISCO remediation treatment area. The first area is located along the northern perimeter and has exceedances in soils from 3 to 10 feet bgs and 20 to 25 feet bgs. The second area is located in the middle portion of the site and has soil exceedances present from 20 to 25 feet bgs. The third area is located along the southern perimeter of the site and has soil exceedances from 3 to 10 feet bgs and potential groundwater exceedances present at approximately 36 to 44 feet bgs. The ISCO treatment areas are illustrated on **Figure 1**.

Review of lithologic logs for soil borings advanced across the site indicate that the subsurface soils consist of fill material from grade surface to depths of 3 to 4 feet bgs.

This surficial fill unit along the perimeter of the site is underlain by a clay and silty-clay unit to a depth of approximately 16 to 20 feet bgs. Below this unit is a weathered till unit present from 16 feet bgs to a maximum depth explored of 33 feet bgs. This weathered till unit is comprised of silty-clay and sandy-clay with some gravel and fine-grained sand. According to PSC, depth to groundwater ranges from 2 to 10 feet bgs.

1.2 ISCO REMEDIATION PROGRAM OBJECTIVES

The objective of the ISCO remediation program is to reduce benzene, ethylbenzene, toluene, xylenes and naphthalene concentrations in the upper 10 feet of soil to their respective Tier 1 ROs for the soil inhalation exposure pathway.

The Tier 1 ROs for the soil inhalation pathway are:

- Benzene - 0.8 mg/kg
- Ethylbenzene - 400 mg/kg
- Toluene - 650 mg/kg
- Xylenes - 320 mg/kg
- Naphthalene - 170 mg/kg

Based on post-excavation soil confirmation data and past experience, it was determined that multiple injection events would be required to reach the remediation program objective.

1.3 ISCO REMEDIATION PROGRAM DESIGN

ISOTEC proposed to utilize neutral pH chelated iron catalyst and stabilized 8% hydrogen peroxide to implement an MFR ISCO program. ISOTEC was to utilize direct-push technology (DPT) to introduce reagents into the subsurface at the site. The ISCO program was designed to address vadose zone and saturated zone soils within the treatment areas specified by PSC (**Figure 1**).

The design was based upon data supplied by PSC and had several potentially limiting factors to implementation success. Limiting factors at the site included the presence of previous investigative penetrations and the fact that the majority of the target treatment interval is shallow vadose zone soils (3 to 10 feet bgs). These factors, in unison, presented potential problems for the injection of modified Fenton's reagent. The presence of previous penetrations in the treatment area may provide vertical conduits through which produced gas can travel to the surface. Surfacing was a significant issue during the Phase 1 2009 ISCO pilot test and would most certainly occur during Phase 2. Chemical oxidation remediation is a dissolved phase/saturated zone technology. Since the majority of the Phase 2 target treatment interval is shallow vadose zone soils, ISOTEC would have to attempt to saturate the vadose zone soils with reagent in order to achieve the project objectives, which would most likely result in varying amounts of surfacing. In order to achieve project success, the site's limiting factors were taken into account when the injection program was designed.

Based on review of site data provided by PSC, ISOTEC anticipated that two full-scale injection applications and one reduced application would be required. ISOTEC assumed that the full-scale ISCO remediation program would be designated Phase 2 and that each injection event would be given the following alphabetical designations:

- Phase 2A – First Injection Event (Entire Treatment Area)
- Phase 2B – Second Injection Event (Entire Treatment Area)
- Phase 2C – Third Injection Event (50% of the Treatment Area)

During Phase 2A, also referred to as "first event", temporary injection screens were to be installed at approximately 120 injection locations within the on-site perimeter treatment areas. Two separate direct-push rods were to be installed at each location; one screen deployed from approximately 3 to 6 feet bgs to target the upper shallow vadose zone soils and the second screen deployed from approximately 6 to 10 feet bgs to target the lower shallow vadose/saturated zone soils.

The injection locations within the on-site perimeter ISCO treatment areas would be spaced approximately 15 feet apart based on an anticipated 7.5-foot radius of influence (ROI). The actual spacing for the locations may vary due to underground utilities, above-ground impediments and other associated field conditions. The injection locations were to be placed on a triangular grid-like pattern across the treatment area. The subsequent injection event locations (Phase 2B and Phase 2C) would be shifted laterally from the First event locations.

The effectiveness of the remediation program was to be determined by comparing the concentrations of soil samples collected prior to injection activities with the concentrations of soil samples collected during post-injection sampling events. The post-injection soil samples were to be collected from the 3 to 6 feet bgs interval and the 6 to 10 feet bgs interval at multiple selected locations within the treatment area(s). The post injection performance soil samples would be collected at locations immediately adjacent to the baseline boring locations and from the same associated depth intervals. This would allow for the most direct comparison possible of concentration reductions as a result of the injection application. In the event that a specific post-injection soil sample reports all of the target COC concentrations at or below the Tier 1 ROs for the soil inhalation exposure pathway, that specific boring location and/or depth interval would no longer be sampled and injections in the immediate vicinity of the boring(s) and/or depth interval(s) would be eliminated from the subsequent injection applications. These soil sampling and evaluation procedures would be repeated following each of the injection applications.

2.0 ISCO REMEDIATION PROGRAM

To date, ISOTEC has conducted one injection event (Phase 2A) at the site from April 29 to May 15, 2013. Field operations completed by ISOTEC during the Phase 2A injection event included equipment mobilization and demobilization, temporary injection screen installations and abandonments, reagent preparation, and reagent injections. ISOTEC injected reagents into target treatment intervals within the ISCO treatment areas at 98 injection locations through 203 injection screens. The Phase 2A injection locations are shown on **Figure 2**.

It is important to note that the actual number of locations was reduced from the design scope of approximately 120 to 98 because once the locations were marked with survey flags across the site, it became apparent that multiple locations were actually within the excavation limits. Those locations situated within the excavation limits were eliminated from Phase 2A.

One, two or three injection screens were installed at each of the 98 injection locations during the first event. For identification purposes, each injection screen was labeled with an injection event identifier (“1I” for the Phase 2A injection event), followed by an injection location number, and ending in an injection interval identifier (“A”, “B”, “C” or “D”). The “A” designation indicates a 3 to 6 feet bgs screen, the “B” designation indicates a 6 to 10 feet bgs screen, the “C” designation indicates a 20 to 25 feet bgs screen, and the “D” designation indicates a 36 to 44 feet bgs screen.

2.1 FIELD METHODS

ISOTEC injection screens were installed with a DPT drill rig operated by Bulldog Drilling at specific locations across the treatment area. At each location, ISOTEC injection screens were used to deliver reagents to the target treatment interval(s). In general, Bulldog Drilling advanced a direct-push rod with an expendable point to a predetermined depth at each injection location. A specially designed injection screen was then placed in each rod. The direct-push rods were retracted to expose the preferred length of injection screen. ISOTEC reagents were injected through each rod and injection screen into the subsurface. The following sections detail the injection screen installation and abandonment (**Section 2.1.1**), reagent preparation procedures (**Section 2.1.2**), and injection method during the injection event (**Section 2.1.3**).

2.1.1 Injection Screen Installation and Abandonment

Temporary injection screens installed with direct-push technology (DPT) were used to deliver ISOTEC’s modified Fenton’s reagents into the target treatment depth intervals. The equipment and tooling provided by Bulldog Drilling included a track-mounted AMS drill rig, 1.25-inch and 1.5-inch diameter direct-push drill rods, extension rods used to deploy and retrieve the injection screens, and decontamination equipment. Tooling provided by ISOTEC included specialized 0.5-inch diameter injection screens designed to pass through the center of the drill rods, specialized point holders designed to hold the injection screens in place within the target injection interval, and 1-inch expendable drive points.

Bulldog Drilling (Bulldog) began each screen installation by advancing drill rods to a desired depth at each injection location. Once the proper depth was reached, an injection screen was lowered through the center of the rods to the bottom of the rod string and then held in place with extension rods. The rod string was then slowly retracted until the entire length of injection screen was exposed across the specific target treatment interval. ISOTEC reagents were then injected through the newly installed temporary injection screen and into the subsurface. A direct-push injection screen schematic illustrating the A- and B-screen installation is included as **Figure 3**.

Following daily injection activities, ISOTEC oversaw the proper abandonment of each injection location by Bulldog. After removing the rod string, each borehole was abandoned by slowing hand pouring 3/8-inch bentonite chips from the bottom of the borehole to approximately 6-inches bgs. The bentonite was hydrated and the borehole was then completed with a concrete patch.

2.1.2 Reagent Preparation

ISOTEC reagents consist of a neutral pH chelated ferrous iron solution (catalyst) and dilute stabilized hydrogen peroxide (oxidizer). During Phase 2A, ISOTEC utilized an oxidizer concentration of 8%. Hydrogen peroxide at a concentration of 30% was shipped directly to the site immediately prior to field injection activities and stored in DOT-approved 55-gallon drums. The 30% hydrogen peroxide was diluted to an 8% concentration in 300-gallon polyethylene bulk tanks with water obtained from a fire hydrant located in the southwest corner of the site. ISOTEC's proprietary catalyst is a pH buffered (pH of approximately 7) ferrous iron complex. The catalyst components were shipped to the site in dry form and mixed with water in 300-gallon polyethylene bulk tanks. A reagent mixing schematic is included as **Figure 4**.

2.1.3 Injection Method

The injections were accomplished using air-operated double-diaphragm pumps, flow meters, polyvinyl chloride (PVC) reinforced tubing, cam-lock valves & fittings, and steel wellhead assemblies. The wellhead assemblies, with pressure gauges and relief valves, were attached to the uppermost drill rod at each injection screen location. The wellhead assemblies were attached with PVC reinforced tubing to an air-operated diaphragm pump and from the pump to either the oxidizer, catalyst or water tanks with additional PVC tubing. Oxidizer, catalyst and water were conveyed through the PVC tubing using a pneumatic diaphragm pump with air supplied by a portable air compressor.

In general, the injection process was similar for each injection screen. First, water was injected, followed by catalyst, a second water flush to clear the injection equipment of catalyst, then the oxidizer, and a final water flush to clear the injection equipment of oxidizer. An injection method schematic detailing the injection process is included as **Figure 5**.

Reagent volumes, flow rates, and injection pressures were monitored at regular intervals and recorded in a field log during the injection process at each injection screen. Reagent volumes and flow rates were measured with battery-operated turbine flow meters/totalizers. Injection pressures were measured with pressure gauges attached to the wellhead assemblies.

2.2 PHASE 2A INJECTION FIELD ACTIVITIES

During the Phase 2A injection event, ISOTEC attempted to inject catalyst and oxidizer into 203 injection screens installed at 98 locations (1I-1 through 1I-108). As previously noted, screens were not installed at some locations because the locations were within the excavation limits. These locations included 1I-42, 1I-64, 1I-65, 1I-66, 1I-76, 1I-77, 1I-85, 1I-86 and 1I-87, and combined for a total of 21 screens not installed. At locations where multiple injection screens were required in order to target separate treatment intervals, the individual screens were installed in separate boreholes spaced approximately two feet apart. The majority of the Phase 2A injection locations utilized two injection screens; the A-screen deployed from 3 to 6 feet bgs and the B-screen deployed from 6 to 10 feet bgs. In addition to using two screens to deliver reagents across the 3 to 10 feet bgs interval, six injection locations (1I-73, 1I-74, 1I-75, 1I-79, 1I-80, and 1I-81) utilized a third injection screen that was deployed from 20 to 25 feet bgs. Injection locations 1I-104 through 1I-106 also used a third screen, deployed from 36 to 44 feet bgs. Injection locations 1I-94, 1I-95, 1I-96 and 1I-97 utilized only one injection screen deployed from 20 to 25 feet bgs.

ISOTEC was able to inject 9,664 gallons of reagent (catalyst and oxidizer) into the 203 injection screens (95 A-screens, 95 B-screens, 10 C-screens and 3 D-screens) installed during the Phase 2A injection event. Surfacing of reagent occurred at 40% of the A-screens, 27% of the B-screens and 10% of the C-screens. Surfacing is described as the migration of gasses, groundwater or reagent to the ground surface through natural or man-made conduits in the subsurface. When surfacing occurred, the injection process at the screen observed to be surfacing was stopped and no further injection activities were attempted at that particular injection screen location. Surfacing did not occur while injecting into the D-screens.

The average volume of total reagent (oxidizer and catalyst) injected into the A-screens (3 to 6 feet bgs) was approximately 41 gallons per screen. The average volume of total reagent injected into the B-screens (6 to 10 feet bgs) was approximately 49 gallons per screen. The average volume of total reagent injected into the C-screens (20 to 25 feet bgs) was approximately 83 gallons per screen. The average volume of total reagent injected into the D-screens (36 to 44 feet bgs) was 100 gallons per screen.

Reagent flow rates ranged from approximately 1.8 to 2.8 gallons per minute (gpm). Injection pressures ranged from approximately 0 to 30 pounds per square inch (psi) during injection activities. A summary of the volumes injected at each location during the first event is presented in **Table 1**.

3.0 SOIL ANALYTICAL RESULTS

Confirmation soil samples were collected by PSC following the first injection event (Post-Phase 2A) to evaluate the effectiveness of the first injection event. Confirmation soil samples were collected at sample locations CS-01 through CS-23 within the ISCO treatment areas (**Figure 1**). Samples were collected from specific depths within the 3 to 6 feet bgs interval and 6 to 10 feet bgs interval at boring locations CS-01 through CS-18, and CS-21 through CS-23. Soil samples were collected from a specific depth interval within the 20 to 25 feet bgs interval at boring locations CS-15, CS-16, CS-19 and CS-20 as stated in the *In-Situ Chemical Oxidation Work Plan*. A total of 46 samples were collected during the Post-Phase 2A sampling event.

Soil confirmation samples were collected using a DPT drill rig operated by Bulldog Drilling. Samples were collected using macrocore samplers with acetate liners, and drilling implements were decontaminated between samples. An onsite geologist selected the sample depths within the target intervals based upon field observations and PID readings. The geologist wore a new pair of clean nitrile gloves to collect each sample to avoid cross contamination. The soil confirmation samples were placed into laboratory provided containers and labeled according to sample location, depth, date, time, and analytical method upon collection. The samples were placed into coolers with ice and delivered to Teklab, Inc. for analysis under proper chain of custody procedures.

For identification purposes, each confirmation soil boring location (CS) was labeled with an injection event identifier ("A" for the Phase 2A injection event), followed by the boring location number, and ending in the sample collection depth.

For comparison purposes, PSC will also collect confirmation soil samples from the same specific depth interval at soil boring locations CS-01 through CS-23 after the Phase 2B injection event (CSB-01 through CSB-23) and Phase 2C injection event (CSC-01 through CSC-23).

The soil samples were analyzed for the four BTEX compounds using SW-846 Method 8260 and naphthalene using SW-846 Method 8270 SIM. The COCs at the site that exceed the Tier 1 Remediation Objectives are benzene and naphthalene. Therefore, the subsequent discussion is focused on these compounds. The soil analytical data is presented in **Section 3.1**. Since baseline soil samples were not collected, the Post-Phase 2A soil analytical data will be used for comparison purposes with the subsequent Phase 2B and Phase 2C sampling event analytical data.

The soil sample collection dates and analytical data for benzene are included in **Table 2**. The soil sample collection dates and analytical data for naphthalene are included in **Table 3**. It is important to note that since samples were not collected prior to the Phase 2A injection event, percentage reductions will not be discussed.

3.1 POST-PHASE 2A SAMPLING EVENT: MAY 23, 24 AND 28, 2013

3.1.1 Benzene

3.1.1.1 3 to 6 feet bgs

The average Post-Phase 2A benzene soil concentration in the 3 to 6 feet bgs interval was approximately 4.9 milligrams per kilogram (mg/kg). Post-Phase 2A benzene concentrations above varying detection limits (due to dilution) ranged from 0.0037 mg/kg at CSA-01 (5.0-6.0) to 19.9 mg/kg at CSA-07 (5.0-6.0).

Eight of the 21 confirmation soil locations sampled at this depth were below the Tier 1 ROs: CSA-01(5.0-6.0), CSA-06(5.0-6.0), CSA-09(5.0-6.0), CSA-11(5.0-6.0), CSA-15(5.0-6.0), CSA-21(5.0-6.0), CSA-22(5.0-6.0) and CSA-23(5.0-6.0).

3.1.1.2 6 to 10 feet bgs

The average Post-Phase 2A soil benzene concentration in the 6 to 10 feet bgs interval was approximately 22.7 mg/kg. Reported Post-Phase 2A benzene concentrations above detection limits ranged from 0.0057 mg/kg at CSA-01 (7.5-8.5) to 33.3 mg/kg at CSA-03 (9.0-10.0).

Ten of the 21 confirmation soil locations sampled at this depth were below the Tier 1 ROs: CSA-01(7.5-8.5), CSA-08(8.5-9.5), CSA-09(8.0-9.0), CSA-10(8.5-9.5), CSA-11(8.0-9.0), CSA-14(7.5-8.5), CSA-15(8.0-9.0), CSA-17(7.0-8.0), CSA-21(9.0-10.0) and CSA-22(7.0-8.0).

3.1.1.3 20 to 25 feet bgs

The average Post-Phase 2A soil benzene concentration in the 20 to 25 feet bgs interval was approximately 13.4 mg/kg. Post-Phase 2A soil benzene concentrations in the four samples collected from the 20 to 25 feet bgs interval were reported at <0.842 mg/kg at CSA-14 (20.5-21.5), 28 mg/kg at CSA-15 (20.5-21.5), <3.58 mg/kg at CSA-19 (22.5-23.5) and 21.1 mg/kg at CSA-20 (9.0-10.0).

3.1.2 Naphthalene

3.1.2.1 3 to 6 feet bgs

The average naphthalene soil benzene concentration in the 3 to 6 feet bgs interval was approximately 145.4 mg/kg. Post-Phase 2A naphthalene soil concentrations above detection limits ranged from 0.006 mg/kg at CSA-01 (5.0-6.0) to 1,710 mg/kg at CSA-03 (5.0-6.0).

Nineteen of the 21 confirmation soil locations sampled at this depth were below the Tier 1 ROs: CSA-01(5.0-6.0), CSA-02(5.0-6.0), CSA-04(5.0-6.0), CSA-05(4.5-5.5), CSA-06(5.0-6.0), CSA-07(5.0-6.0), CSA-08(4.5-5.5), CSA-09(5.0-6.0), CSA-10(5.0-6.0), CSA-11(5.0-6.0), CSA-12(4.0-5.0), CSA-13(5.0-6.0), CSA-14(4.0-5.0), CSA-15(5.0-6.0), CSA-16(4.0-5.0), CSA-17(5.0-6.0), CSA-21(5.0-6.0), CSA-22(5.0-6.0), and CSA-23(5.0-6.0).

3.1.2.2 6 to 10 feet bgs

The average naphthalene soil concentration in the 6 to 10 feet bgs interval was approximately 237.9 mg/kg. Post-Phase 2A naphthalene soil concentrations ranged from 0.005 mg/kg at CSA-01 (7.5-8.5) to 1,750 mg/kg at CSA-02 (7.0-8.0).

Fifteen of the 21 confirmation soil locations sampled at this depth were below the Tier 1 ROs CSA-01(7.5-8.5), CSA-04(5.0-6.0), CSA-07(7.5-8.5), CSA-08(8.5-9.5), CSA-09(8.0-9.0), CSA-10(8.5-9.5), CSA-11(8.0-9.0), CSA-12(9.0-10.0), CSA-13(9.0-10.0), CSA-14(7.5-8.5), CSA-16(7.0-8.0), CSA-17(7.0-8.0), , CSA-21(9.0-10.0), CSA-22(7.0-8.0), and CSA-23(9.0-10.0).

3.1.2.3 20 to 25 feet bgs

The average Post-Phase 2A naphthalene soil concentration in the 20 to 25 feet bgs interval was approximately 113 mg/kg. Reported Post-Phase 2A naphthalene soil concentrations collected from the 20 to 25 feet bgs interval were reported at 35.3 mg/kg at CSA-14 (20.5-21.5), 194 mg/kg at CSA-15 (20.5-21.5), 66.8 mg/kg at CSA-19 (22.5-23.5) and 156 mg/kg at CSA-20 (22.0-23.0).

4.0 CONCLUSIONS

The objective of the ISCO remediation program using ISOTEC's Fenton's-based oxidation process is to reduce COCs in soil to below Tier 1 ROs for the soil inhalation pathway in the upper 10 feet of soil.

To achieve this goal, ISOTEC estimated that three separate injection mobilizations would be required. To date, ISOTEC has completed one of the three injection events at the site.

As stated in **Section 1.3** above, the effectiveness, and therefore progress, of the remediation program was to be determined by comparing the concentrations of soil samples collected prior to injection activities with the concentrations of soil samples collected during post-injection sampling events. If a specific post-injection soil sample reports all of the target COC concentrations at or below the Tier 1 ROs for the soil inhalation exposure pathway, that specific boring location and/or depth interval would no longer be sampled and injections in the immediate vicinity of the boring(s) and/or depth interval(s) would be eliminated from the subsequent injection applications.

4.1 ISCO Parameter and Effectiveness

The effectiveness of the ISCO remediation program, and therefore the parameters (volumes, concentrations, rates, pressures and ROI) used, can be evaluated by changes in benzene and naphthalene in soil concentrations collected from the 23 confirmation soil boring locations.

Since baseline data is incomplete, the effectiveness of the Phase 2A injection event is difficult to measure. However, review of the Post-Phase 2A analytical data indicates benzene and naphthalene on soil across the 3 to 10 feet bgs interval at several areas of the treatment area currently meets the Tier 1 ROs. Specifically, the soil samples collected from the 3 to 6 feet bgs and 6 to 10 feet bgs intervals at confirmation sample locations CSA-01, CSA-09, CSA-11, CSA-21 and CSA-22 did not report benzene and naphthalene concentrations above the Tier 1 ROs.

The Post-Phase 2A analytical data also indicated that specific intervals at various confirmation soil boring locations met the Tier 1 ROs. Specifically, the 3 to 6 feet bgs interval at boring locations CSA-06, CSA-15 and CSA-23 did not report benzene and naphthalene concentrations above 0.8 mg/kg and 170 mg/kg, respectively. The 6 to 10 feet bgs interval at boring locations CSA-08, CSA-10, CSA-14 and CSA-17 also met the Tier 1 ROs.

4.2 Recommendations

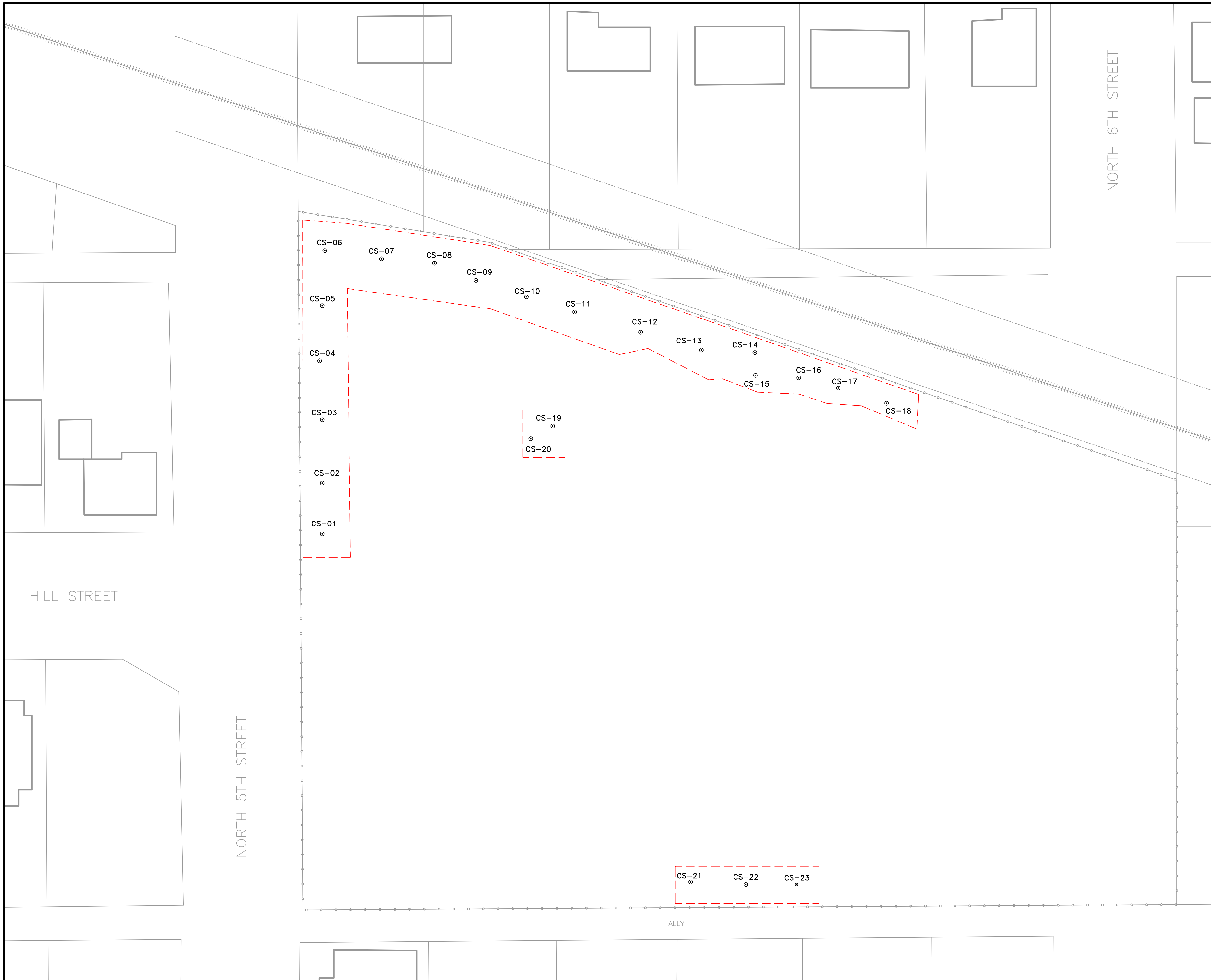
Based on the results of the Phase 2A injection event, ISOTEC recommends continuing with the original injection design for the remediation program. ISOTEC recommends no changes to the ISCO parameters for the next injection event as they appear to be sufficient for contaminant mass reduction at the site.

Based on the IEPA approved *In-Situ Chemical Oxidation Work Plan* prepared by PSC, ISOTEC recommends eliminating the Phase 2B injection locations that are adjacent to the confirmation soil boring locations that met Tier 1 ROs. Specifically, ISOTEC recommends:

- Eliminating both the 3 to 6 feet bgs interval screens (A-screen) and 6 to 10 feet bgs interval screens (B-screen) at those Phase 2B injection locations surrounding soil confirmation boring locations CSA-01, CSA-09, CSA-11, CSA-21 and CSA-22;
- Eliminating the A-screens from the Phase 2B injection locations surrounding CSA-06, CSA-15 and CSA-23; and
- Eliminating the B-screens from the Phase 2B injection locations surrounding CSA-08 CSA-10, CSA-14 and CSA-17.

The proposed Phase 2B injection plan is shown on **Figure 6**.

FIGURES



LEGEND

Existing Structure

Fence/Remediation Site Boundary

ISCO Treatment Area

CS-05 Confirmation Soil Sample Location

Base map provided by PSC Industrial Outsourcing, LP.

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SITE MAP
ISCO REMEDIATION PROGRAM
Former Champaign MGP Site
Champaign, Illinois

DRAWN BY: TE	DATE: 6/10/2013	FIGURE
CHECKED BY: SH	PROJECT NO: 901144	1

LEGEND

Existing Structure

Fence/Remediation Site Boundary

ISCO Treatment Area

CS-05 Confirmation Soil Sample Location

Conceptual Radius of Influence (7.5 feet)

Phase 2A Injection Locations

Two Screens Installed (A, B)

Three Screens Installed (A, B, C)

One Screen Installed (C)

Three Screens Installed (A, B, D)

Excavation Area/Screens Not Installed

Injection Screen Intervals

A	3 to 6 feet bgs
B	6 to 10 feet bgs
C	20 to 25 feet bgs
D	36 to 44 feet bgs

N

0 30 60

1 INCH = 60 FEET

Base map provided by PSC Industrial Outsourcing, LP.

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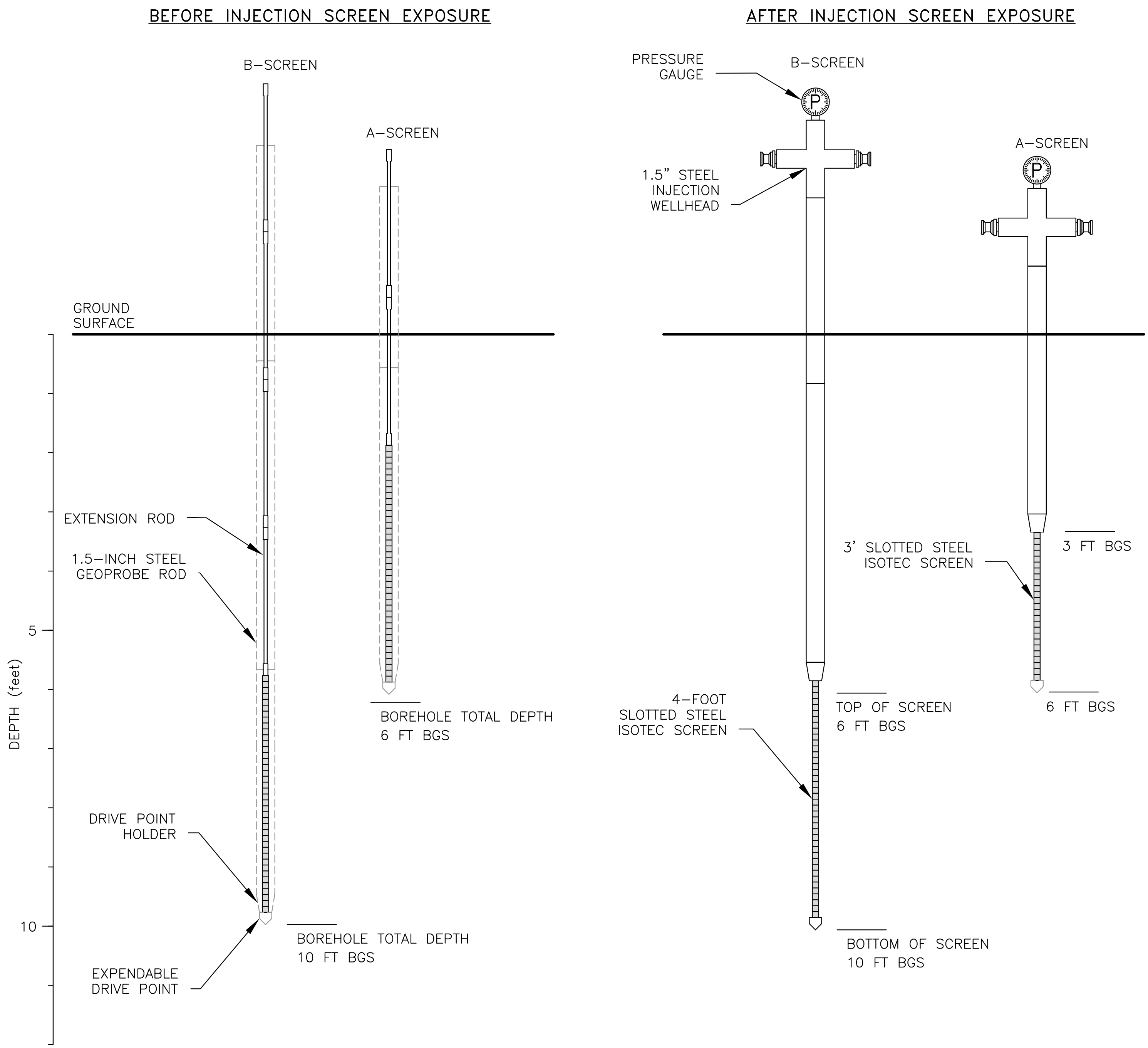
PHASE 2A INJECTION LOCATION MAP
ISCO REMEDIATION PROGRAM
Former Champaign MGP Site
Champaign, Illinois

DRAWN BY: TE	DATE: 6/10/2013	FIGURE
CHECKED BY: SH	PROJECT NO: 901144	2



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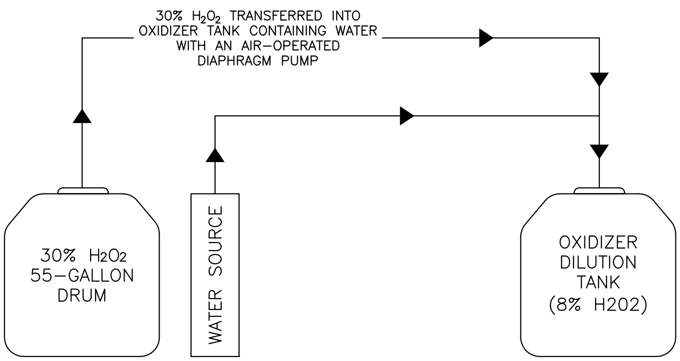
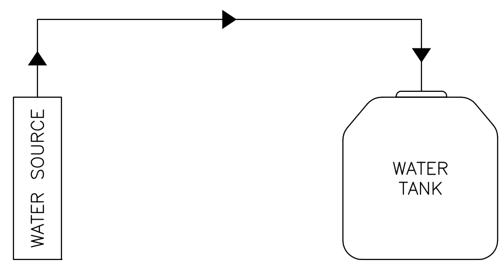
DIRECT–PUSH INJECTION SCHEMATIC
ISCO REMEDIATION PROGRAM
Former Champaign MGP Site
Champaign, Illinois

DRAWN BY: KH	DATE: 5/21/2013	FIGURE 3
CHECKED BY: SH	PROJECT NO: 901144	

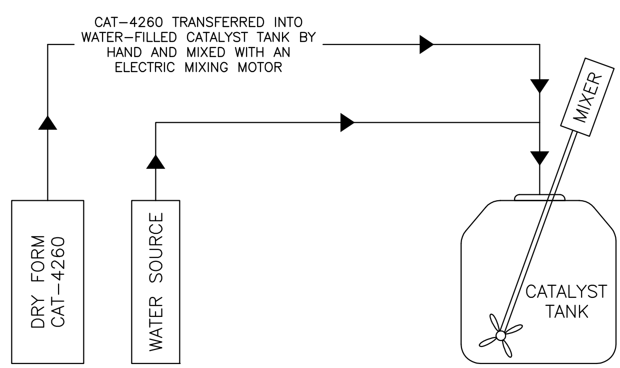
OXIDIZER TANK POCEDURES



WATER TANK PROCEDURES



CATALYST TANK PROCEDURES



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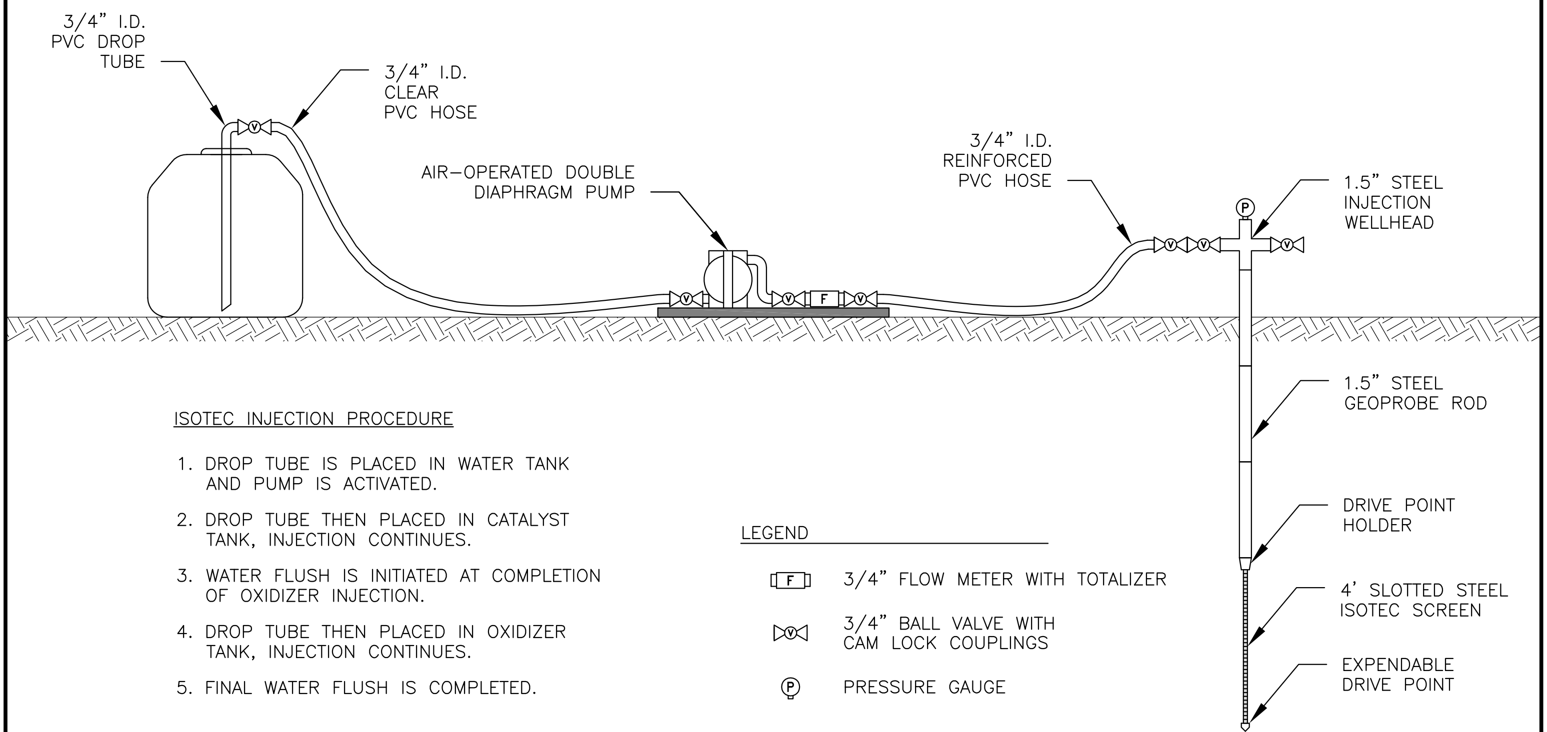
REAGENT MIXING SCHEMATIC
ISCO REMEDIATION PROGRAM
Former Champaign MGP Site
Champaign, Illinois

DRAWN BY: KH	DATE: 5/21/2013	FIGURE
CHECKED BY: SH	PROJECT NO: 901144	4

REAGENT INJECTION DIAGRAM



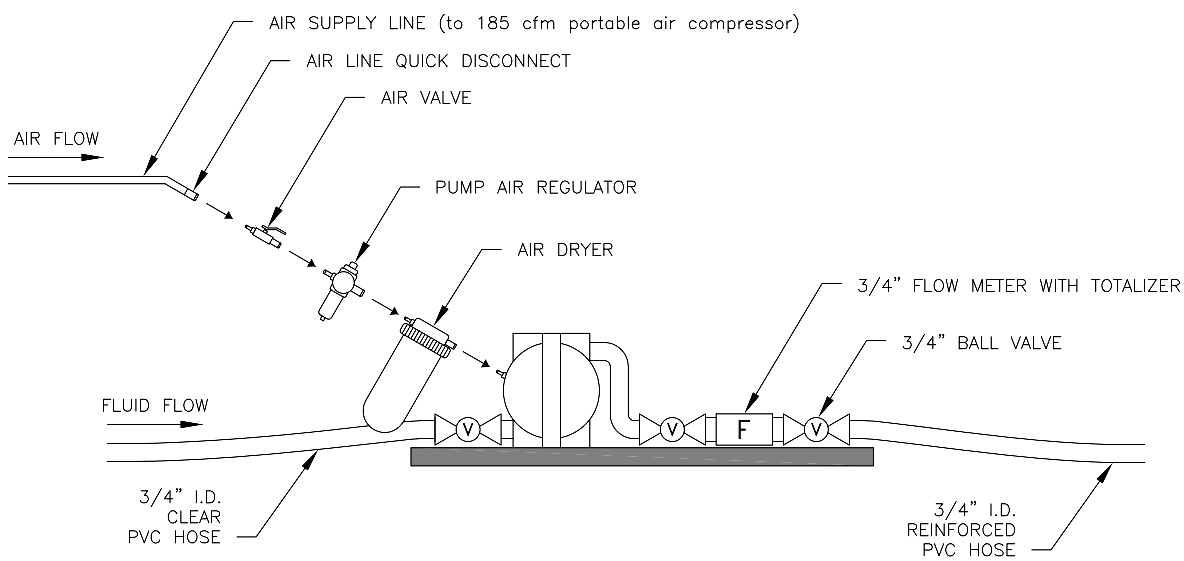
ISOTEC INJECTION PROCEDURE

1. DROP TUBE IS PLACED IN WATER TANK AND PUMP IS ACTIVATED.
2. DROP TUBE THEN PLACED IN CATALYST TANK, INJECTION CONTINUES.
3. WATER FLUSH IS INITIATED AT COMPLETION OF OXIDIZER INJECTION.
4. DROP TUBE THEN PLACED IN OXIDIZER TANK, INJECTION CONTINUES.
5. FINAL WATER FLUSH IS COMPLETED.

LEGEND

- F — 3/4" FLOW METER WITH TOTALIZER
- V — 3/4" BALL VALVE WITH CAM LOCK COUPLINGS
- P — PRESSURE GAUGE

INJECTION PUMP INSTALLATION



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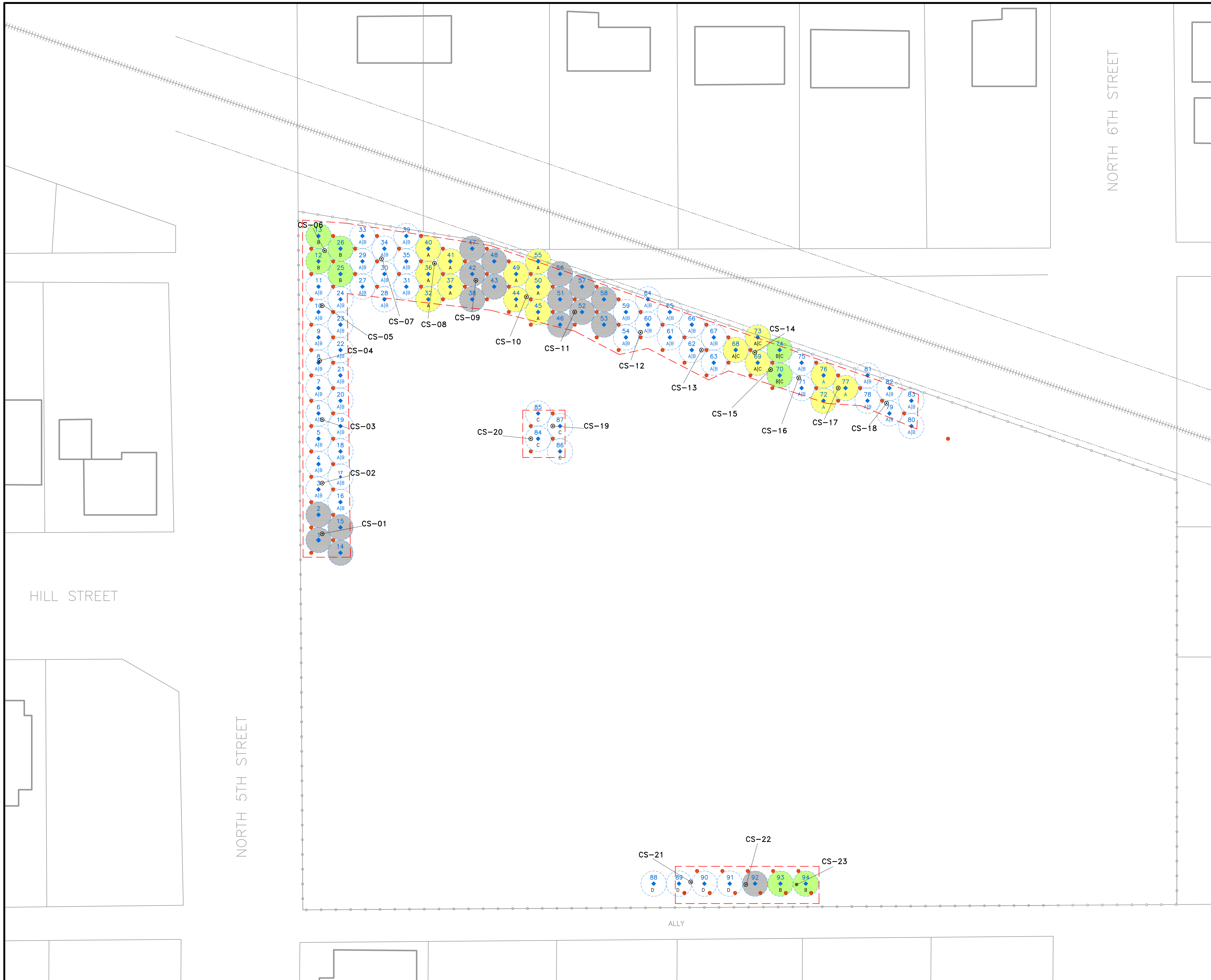
INJECTION METHOD SCHEMATIC
ISCO REMEDIATION PROGRAM
Former Champaign MGP Site
Champaign, Illinois

DRAWN BY: KH	DATE: 5/21/2013	FIGURE
CHECKED BY: SH	PROJECT NO: 901144	5



LEGEND

- Existing Structure
- Fence/Remediation Site Boundary
- ISCO Treatment Area
- Confirmation Soil Sample Location
- Phase 2A Injection Locations
- Conceptual Radius of Influence (7.5 feet)

Phase 2B Injection Locations

- Phase 2B Injection Location
- No Screens Eliminated
- A–Screen Eliminated
- B–Screen Eliminated
- A–Screen and B–Screen Eliminated

Injection Screen Intervals

A	3 to 6 feet bgs
B	6 to 10 feet bgs
C	20 to 25 feet bgs
D	36 to 44 feet bgs

N

0 30 60

1 INCH = 60 FEET

Base map provided by PSC Industrial Outsourcing, LP.

In-Situ Oxidative Technologies, Inc.
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PROPOSED PHASE 2B INJECTION LOCATION PLAN
ISCO REMEDIATION PROGRAM
Former Champaign MGP Site
Champaign, Illinois

DRAWN BY: TE	DATE: 6/10/2013	FIGURE 6
CHECKED BY: SH	PROJECT NO: 901144	

TABLES

TABLE 1
PHASE 2A INJECTION SUMMARY

ISCO Remediation Program
Former Champaign MGP Site
Champaign, Illinois 61820

Injection Location	Injection Date	Injection Interval	H2O2 (gallons)	Catalyst (gallons)	Surfaced	Surface Distance (feet)	Surface Direction
1I-1A	05/16/13	3-6	25	25			
1I-1B	05/16/13	6-10	25	25			
1I-2A	05/03/13	3-6	20	25	TRUE	7	W
1I-2B	05/03/13	6-10	25	25			
1I-3A	05/14/13	3-6	25	25			
1I-3B	05/14/13	6-10	25	25			
1I-4A	05/02/13	3-6	25	25			
1I-4B	05/02/13	6-10	25	25			
1I-5A	05/06/13	3-6	25	25			
1I-5B	05/06/13	6-10	25	25			
1I-6A	05/03/13	3-6	25	25			
1I-6B	05/03/13	6-10	20	25	TRUE	12	E
1I-7A	05/05/13	3-6	25	25			
1I-7B	05/05/13	6-10	25	25			
1I-8A	05/15/13	3-6	0	0	TRUE	0	
1I-8B	05/15/13	6-10	17	25	TRUE	0	
1I-9A	05/03/13	3-6	25	25			
1I-9B	05/03/13	6-10	12	25	TRUE	0	
1I-10A	05/05/13	3-6	25	25			
1I-10B	05/05/13	6-10	25	25			
1I-11A	05/15/13	3-6	25	25			
1I-11B	05/15/13	6-10	25	25			
1I-12A	05/03/13	3-6	2	25	TRUE	0	
1I-12B	05/03/13	6-10	25	25			
1I-13A	05/05/13	3-6	0	1	TRUE	9	SE
1I-13B	05/05/13	6-10	25	25	TRUE	9	SE
1I-14A	05/06/13	3-6	25	25			
1I-14B	05/06/13	6-10	25	25			
1I-15A	05/07/13	3-6	25	25			
1I-15B	05/07/13	6-10	25	25			
1I-16A	05/05/13	3-6	25	25			
1I-16B	05/05/13	6-10	25	25			
1I-17A	05/08/13	3-6	25	25			
1I-17B	05/08/13	6-10	25	25			
1I-18A	05/04/13	3-6	25	25			

TABLE 1
PHASE 2A INJECTION SUMMARY

ISCO Remediation Program
Former Champaign MGP Site
Champaign, Illinois 61820

Injection Location	Injection Date	Injection Interval	H2O2 (gallons)	Catalyst (gallons)	Surfaced	Surface Distance (feet)	Surface Direction
1I-18B	05/04/13	6-10	25	25			
1I-19A	05/07/13	3-6	25	25			
1I-19B	05/07/13	6-10	25	25			
1I-20A	05/02/13	3-6	25	25			
1I-20B	05/02/13	6-10	25	25			
1I-21A	05/04/13	3-6	25	25			
1I-21B	05/04/13	6-10	25	25			
1I-22A	05/07/13	3-6	25	25			
1I-22B	05/07/13	6-10	25	25			
1I-23A	05/02/13	3-6	25	25			
1I-23B	05/02/13	6-10	25	25			
1I-24A	05/04/13	3-6	25	25			
1I-24B	05/04/13	6-10	25	25			
1I-25A	05/14/13	3-6	24	25	TRUE	10	S
1I-25B	05/14/13	6-10	25	25			
1I-26A	05/02/13	3-6	25	25			
1I-26B	05/02/13	6-10	25	25			
1I-27A	05/16/13	3-6	25	25			
1I-27B	05/16/13	6-10	25	25			
1I-28A	05/05/13	3-6	25	25			
1I-28B	05/05/13	6-10	25	25			
1I-29A	05/06/13	3-6	25	25			
1I-29B	05/06/13	6-10	25	25	TRUE	18	SW
1I-30A	05/08/13	3-6	25	25	TRUE	12	S
1I-30B	05/08/13	6-10	25	25			
1I-31A	05/15/13	3-6	25	25			
1I-31B	05/15/13	6-10	25	25			
1I-32A	05/06/13	3-6	25	25	TRUE	4	E
1I-32B	05/06/13	6-10	25	25			
1I-33A	05/16/13	3-6	25	25			
1I-33B	05/16/13	6-10	25	25			
1I-34A	05/04/13	3-6	25	25			
1I-34B	05/04/13	6-10	25	25			
1I-35A	05/01/13	3-6	0	0	TRUE	11	SE
1I-35B	05/01/13	6-10	20	25	TRUE	11	SE

TABLE 1
PHASE 2A INJECTION SUMMARY

ISCO Remediation Program
Former Champagin MGP Site
Champaign, Illinois 61820

Injection Location	Injection Date	Injection Interval	H2O2 (gallons)	Catalyst (gallons)	Surfaced	Surface Distance (feet)	Surface Direction
1I-36A	05/14/13	3-6	0	4	TRUE	20	SW
1I-36B	05/14/13	6-10	25	25			
1I-37A	05/01/13	3-6	25	25			
1I-37B	05/01/13	6-10	25	25			
1I-38A	05/04/13	3-6	25	25			
1I-38B	05/04/13	6-10	25	25			
1I-39A	05/01/13	3-6	25	25	TRUE	30	SE
1I-39B	05/01/13	6-10	25	25			
1I-40A	05/07/13	3-6	25	25			
1I-40B	05/07/13	6-10	25	25			
1I-41A	05/01/13	3-6	0	12	TRUE	9	NE
1I-41B	05/01/13	6-10	25	25			
1I-42A	Injection location 1I-42 was eliminated because the location was within the excavation limits.						
1I-42B	Injection location 1I-42 was eliminated because the location was within the excavation limits.						
1I-43A	05/03/13	3-6	25	25			
1I-43B	05/03/13	6-10	25	25			
1I-44A	05/05/13	3-6	8	25	TRUE	12	SW
1I-44B	05/05/13	6-10	25	25	TRUE	12	SW
1I-45A	05/15/13	3-6	0	25	TRUE	20	E
1I-45B	05/15/13	6-10	25	25			
1I-46A	05/02/13	3-6	5	25	TRUE	21	21
1I-46B	05/02/13	6-10	25	25			
1I-47A	05/05/13	3-6	25	25			
1I-47B	05/05/13	6-10	25	25			
1I-48A	05/15/13	3-6	15	25	TRUE	6	N
1I-48B	05/15/13	6-10	25	25	TRUE	6	N
1I-49A	05/02/13	3-6	0	10	TRUE	15	E
1I-49B	05/02/13	6-10	25	25	TRUE	15	E
1I-50A	05/05/13	3-6	25	25	TRUE	12	SE
1I-50B	05/05/13	6-10	10	25	TRUE	3	W
1I-51A	05/15/13	3-6	25	25	TRUE	16	S
1I-51B	05/15/13	6-10	25	25			
1I-52A	05/03/13	3-6	6	25	TRUE	4	N
1I-52B	05/02/13	6-10	5	25	TRUE	4	N
1I-53A	05/06/13	3-6	15	25	TRUE	12	SE

TABLE 1
PHASE 2A INJECTION SUMMARY

ISCO Remediation Program
Former Champaign MGP Site
Champaign, Illinois 61820

Injection Location	Injection Date	Injection Interval	H2O2 (gallons)	Catalyst (gallons)	Surfaced	Surface Distance (feet)	Surface Direction
1I-53B	05/06/13	6-10	14	25	TRUE	12	SE
1I-54A	05/14/13	3-6	0	15	TRUE	15	SE
1I-54B	05/14/13	6-10	17	25	TRUE	15	SE
1I-55A	05/01/13	3-6	25	25			
1I-55B	05/01/13	6-10	25	25			
1I-56A	05/06/13	3-6	15	25			
1I-56B	05/06/13	6-10	25	25			
1I-57A	05/01/13	3-6	0	25	TRUE	12	SW
1I-57B	05/01/13	6-10	25	25	TRUE	12	SW
1I-58A	05/08/13	3-6	15	25	TRUE	22	W
1I-58B	05/08/13	6-10	12	25	TRUE	22	W
1I-59A	05/01/13	3-6	0	10	TRUE	15	SW
1I-59B	05/01/13	6-10	25	25	TRUE	15	SW
1I-60A	05/07/13	3-6	25	25			
1I-60B	05/07/13	6-10	15	25	TRUE	30	W
1I-61A	05/01/13	3-6	25	25	TRUE	9	E
1I-61B	05/01/13	6-10	25	25			
1I-62A	05/08/13	3-6	0	16	TRUE	14	SE
1I-62B	05/08/13	6-10	15	30	TRUE	14	SE
1I-63A	05/02/13	3-6	15	25	TRUE	1	W
1I-63B	05/01/13	6-10	25	25			
1I-64A							
1I-64B							
1I-64C	Injection location 1I-64 was eliminated because the location was within the excavation limits.						
1I-65A	Injection location 1I-65 was eliminated because the location was within the excavation limits.						
1I-65B	Injection location 1I-65 was eliminated because the location was within the excavation limits.						
1I-65C	Injection location 1I-65 was eliminated because the location was within the excavation limits.						
1I-66A	Injection location 1I-66 was eliminated because the location was within the excavation limits.						
1I-66B	Injection location 1I-66 was eliminated because the location was within the excavation limits.						
1I-66C	Injection location 1I-66 was eliminated because the location was within the excavation limits.						
1I-67A	05/04/13	3-6	25	25			
1I-67B	05/04/13	6-10	25	25			
1I-68A	05/06/13	3-6	25	25			
1I-68B	05/06/13	6-10	25	25			
1I-69A	05/14/13	3-6	25	25			

TABLE 1
PHASE 2A INJECTION SUMMARY

ISCO Remediation Program
Former Champaign MGP Site
Champaign, Illinois 61820

Injection Location	Injection Date	Injection Interval	H2O2 (gallons)	Catalyst (gallons)	Surfaced	Surface Distance (feet)	Surface Direction
1I-69B	05/14/13	6-10	25	25			
1I-70A	05/04/13	3-6	25	25			
1I-70B	05/04/13	6-10	25	25			
1I-71A	05/06/13	3-6	15	25	TRUE	6	N
1I-71B	05/06/13	6-10	25	25			
1I-72A	05/15/13	3-6	0	20	TRUE	10	S
1I-72A	05/14/13	3-6	25	25			
1I-72B	05/14/13	6-10	25	25			
1I-72B	05/15/13	6-10	25	25			
1I-73A	05/04/13	3-6	25	25			
1I-73B	05/04/13	6-10	25	25			
1I-73C	05/04/13	20-25	25	25			
1I-74A	05/06/13	3-6	5	25			
1I-74B	05/06/13	6-10	25	25			
1I-74C	05/06/13	20-25	25	25			
1I-75A	05/14/13	3-6	5	25			
1I-75B	05/14/13	6-10	3	25			
1I-75C	05/14/13	20-25	50	25	TRUE	18	W
1I-76A	Injection location 1I-76 was eliminated because the location was within the excavation limits.						
1I-76B	Injection location 1I-76 was eliminated because the location was within the excavation limits.						
1I-77A	Injection location 1I-77 was eliminated because the location was within the excavation limits.						
1I-77B	Injection location 1I-77 was eliminated because the location was within the excavation limits.						
1I-78A	05/03/13	3-6	10	25	TRUE	10	SW
1I-78B	05/03/13	6-10	20	25	TRUE	10	SW
1I-79A	05/05/13	3-6	25	25	TRUE	4	SE
1I-79B	05/05/13	6-10	25	25			
1I-79C	05/16/13	20-25	50	50			
1I-80A	05/07/13	3-6	25	25			
1I-80B	05/07/13	6-10	25	25			
1I-80C	05/07/13	20-25	50	50			
1I-81A	05/03/13	3-6	25	25			
1I-81B	05/02/13	6-10	0	25			
1I-81B	05/03/13	6-10	25	25			
1I-81C	05/15/13	20-25	50	50			
1I-82A	05/05/13	3-6	25	25			

TABLE 1
PHASE 2A INJECTION SUMMARY

ISCO Remediation Program
Former Champaign MGP Site
Champaign, Illinois 61820

Injection Location	Injection Date	Injection Interval	H2O2 (gallons)	Catalyst (gallons)	Surfaced	Surface Distance (feet)	Surface Direction
1I-82B	05/05/13	6-10	25	25			
1I-83A	05/07/13	3-6	3	25			
1I-83B	05/07/13	6-10	25	25			
1I-84A	05/03/13	3-6	8	25			
1I-84B	05/02/13	6-10	0	25			
1I-84B	05/03/13	6-10	25	25			
1I-85A	Injection location 1I-85 was eliminated because the location was within the excavation limits.						
1I-85B	Injection location 1I-85 was eliminated because the location was within the excavation limits.						
1I-86A	Injection location 1I-86 was eliminated because the location was within the excavation limits.						
1I-86B	Injection location 1I-86 was eliminated because the location was within the excavation limits.						
1I-87A	Injection location 1I-87 was eliminated because the location was within the excavation limits.						
1I-87B	Injection location 1I-87 was eliminated because the location was within the excavation limits.						
1I-88A	05/03/13	3-6	0	15	TRUE	12	SW
1I-88B	05/03/13	6-10	25	25			
1I-89A	05/04/13	3-6	15	25	TRUE	23	SW
1I-89B	05/04/13	6-10	15	25	TRUE	23	SW
1I-90A	05/06/13	3-6	25	25			
1I-90B	05/06/13	6-10	25	25			
1I-91A	05/03/13	3-6	21	25	TRUE	2	NW
1I-91B	05/03/13	6-10	20	25	TRUE	9	S
1I-92A	05/04/13	3-6	25	25			
1I-92B	05/04/13	6-10	25	25			
1I-93A	05/03/13	3-6	0	0			
1I-93B	05/03/13	6-10	15	25			
1I-94C	05/14/13	20-25	50	50			
1I-95C	05/16/13	20-25	50	50			
1I-96C	05/15/13	20-25	50	50			
1I-97C	05/03/13	20-25	25	25			
1I-98A	05/08/13	3-6	6	25			
1I-98B	05/08/13	6-10	25	25			
1I-99A	05/14/13	3-6	5	25			
1I-99B	05/14/13	6-10	10	25			
1I-100A	05/07/13	3-6	0	0			
1I-100B	05/07/13	6-10	25	25			
1I-101A	05/08/13	3-6	6	25			

Table 2
BENZENE CONCENTRATIONS IN SOIL

ISCO Program Sample Locations
Former Champaign MGP Site
Champaign, Illinois 61820

Soil Sample Location ID	**Sample Collection Depth** (feet bgs)	**Post-Phase 2A Injection**		**Post-Phase 2B Injection**		**Post-Phase 2C Injection**		
		5/23/2013 (mg/kg)		<date> (mg/kg)	vs Post-Phase 2A	<date> (mg/kg)	vs Post-Phase 2A	vs Post-Phase 2B
CSA-01	5.0-6.0		0.0037		-		-	-
	7.5-8.5		0.0057		-		-	-
CSA-02	5.0-6.0	<	**8.24**		-		-	-
	7.0-8.0	<	**138**		-		-	-
CSA-03	5.0-6.0	<	**36.4**		-		-	-
	9.0-10.0		**33.3**		-		-	-
CSA-04	5.0-6.0		**0.9**		-		-	-
	8.0-9.0	<	**47.5**		-		-	-
CSA-05	4.5-5.5		**7.54**		-		-	-
	9.0-10.0	<	**189**		-		-	-
CSA-06	5.0-6.0		0.168		-		-	-
	9.0-10.0	<	**48.8**		-		-	-
CSA-07	5.0-6.0		**19.9**		-		-	-
	7.5-8.5		**2.87**		-		-	-
CSA-08	4.5-5.5		**3.13**		-		-	-
	8.5-9.5		0.734		-		-	-
CSA-09	5.0-6.0	<	0.027		-		-	-
	8.0-9.0	<	0.192		-		-	-
CSA-10	5.0-6.0		**4.12**		-		-	-
	8.5-9.5		0.426		-		-	-
CSA-11	5.0-6.0		0.307		-		-	-
	8.0-9.0	<	0.482		-		-	-
CSA-12	4.0-5.0		**2.43**		-		-	-
	9.0-10.0		**1.89**		-		-	-
CSA-13	5.0-6.0		**2.31**		-		-	-
	9.0-10.0	<	**1.84**		-		-	-
CSA-14	4.0-5.0		**2.12**		-		-	-
	7.5-8.5		0.101		-		-	
	20.5-21.5	<	**0.842**		-		-	-
CSA-15	5.0-6.0		0.712		-		-	-
	8.0-9.0		0.456		-		-	
	20.5-21.5		**28**		-		-	-

Table 2
BENZENE CONCENTRATIONS IN SOIL

ISCO Program Sample Locations
Former Champaign MGP Site
Champaign, Illinois 61820

Soil Sample Location ID	Sample Collection Depth (feet bgs)	Post-Phase 2A Injection	Post-Phase 2B Injection		Post-Phase 2C Injection		
		5/23/2013 (mg/kg)	<date> (mg/kg)	vs Post-Phase 2A	<date> (mg/kg)	vs Post-Phase 2A	vs Post-Phase 2B
CSA-16	4.0-5.0	**3.36**		-		-	-
	7.0-8.0	**1.02**		-		-	-
CSA-17	5.0-6.0	**5.65**		-		-	-
	7.0-8.0	0.499		-		-	-
CSA-18	3.5-4.5	< **5.28**		-		-	-
	7.0-8.0	< **1.77**		-		-	-
CSA-19	22.5-23.5	< **3.58**		-		-	-
CSA-20	22.0-23.0	**21.1**		-		-	-
CSA-21	5.0-6.0	< 0.0221		-		-	-
	9.0-10.0	< 0.17		-		-	-
CSA-22	5.0-6.0	< 0.0213		-		-	-
	7.0-8.0	< 0.0958		-		-	-
CSA-23	5.0-6.0	< 0.0779		-		-	-
	9.0-10.0	**7.27**		-		-	-
Average - 3.0-6.0 ft.		**4.9**	#DIV/0!	**-**	#DIV/0!	**-**	**-**
Average - 6-10 ft		**22.7**	#DIV/0!	**-**	#DIV/0!	**-**	**-**
Average - 20-25 ft		**13.4**	#DIV/0!	**-**	#DIV/0!	**-**	**-**

NOTES

mg/kg = Miilligrams per kilogram

ND = Not detected above detection limit

21.1 = Value in bold (RED) exceeds Tier 1 Remediation Objectives for Benzene of 0.8 mg/kg.

Table 3
NAPHTHALENE CONCENTRATIONS IN SOIL

ISCO Program Sample Locations
Former Champaign MGP Site
Champaign, Illinois 61820

Soil Sample Location ID	Sample Collection Depth (feet bgs)	Post-Phase 2A Injection	Post-Phase 2B Injection		Post-Phase 2C Injection		
		5/23/2013 (mg/kg)	<date> (mg/kg)	vs Post-Phase 2A	<date> (mg/kg)	vs Post-Phase 2A	vs Post-Phase 2B
CSA-01	5.0-6.0	0.006		-		-	-
	7.5-8.5	0.005		-		-	-
CSA-02	5.0-6.0	10.6		-		-	-
	7.0-8.0	**1,750**		-		-	-
CSA-03	5.0-6.0	**1,710**		-		-	-
	9.0-10.0	**213**		-		-	-
CSA-04	5.0-6.0	1.55		-		-	-
	8.0-9.0	**300**		-		-	-
CSA-05	4.5-5.5	4.09		-		-	-
	9.0-10.0	**511**		-		-	-
CSA-06	5.0-6.0	0.73		-		-	-
	9.0-10.0	**1,450**		-		-	-
CSA-07	5.0-6.0	17		-		-	-
	7.5-8.5	94		-		-	-
CSA-08	4.5-5.5	47.4		-		-	-
	8.5-9.5	7.81		-		-	-
CSA-09	5.0-6.0	0.059		-		-	-
	8.0-9.0	69.1		-		-	-
CSA-10	5.0-6.0	1.8		-		-	-
	8.5-9.5	15.2		-		-	-
CSA-11	5.0-6.0	128		-		-	-
	8.0-9.0	12.7		-		-	-
CSA-12	4.0-5.0	83.4		-		-	-
	9.0-10.0	79		-		-	-
CSA-13	5.0-6.0	111		-		-	-
	9.0-10.0	90		-		-	-
CSA-14	4.0-5.0	142		-		-	-
	7.5-8.5	12.8		-		-	
	20.5-21.5	35.3		-		-	-
CSA-15	5.0-6.0	114		-		-	-
	8.0-9.0	**200**		-		-	
	20.5-21.5	**194**		-		-	-

Table 3
NAPHTHALENE CONCENTRATIONS IN SOIL

ISCO Program Sample Locations
Former Champaign MGP Site
Champaign, Illinois 61820

Soil Sample Location ID	Sample Collection Depth (feet bgs)	Post-Phase 2A Injection	Post-Phase 2B Injection		Post-Phase 2C Injection		
		5/23/2013 (mg/kg)	<date> (mg/kg)	vs Post-Phase 2A	<date> (mg/kg)	vs Post-Phase 2A	vs Post-Phase 2B
CSA-16	4.0-5.0	137		-		-	-
	7.0-8.0	48.7		-		-	-
CSA-17	5.0-6.0	124		-		-	-
	7.0-8.0	2.85		-		-	-
CSA-18	3.5-4.5	**417**		-		-	-
	7.0-8.0	95.9		-		-	-
CSA-19	22.5-23.5	66.8		-		-	-
CSA-20	22.0-23.0	156		-		-	-
CSA-21	5.0-6.0	0.305		-		-	-
	9.0-10.0	36.5		-		-	-
CSA-22	5.0-6.0	0.634		-		-	-
	7.0-8.0	0.344		-		-	-
CSA-23	5.0-6.0	2.38		-		-	-
	9.0-10.0	6.59		-		-	-
Average - 3.0-6.0 ft.		**145.4**	#DIV/0!	**-**	#DIV/0!	**-**	**-**
Average - 6-10 ft		**237.9**	#DIV/0!	**-**	#DIV/0!	**-**	**-**
Average - 20-25 ft		**113.0**	#DIV/0!	**-**	#DIV/0!	**-**	**-**

NOTES

mg/kg = Miilligrams per kilogram

ND = Not detected above detection limit

194 = Value in bold (RED) exceeds Tier 1 Remediation Objectives for Naphthalene of 170 mg/kg.