**BEFORE THE POLLUTION CONTROL BOARD
OF THE STATE OF ILLINOIS**

S & S INFINITE GROUP, INC.,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 2020-033
	)	(LUST Appeal)
ILLINOIS ENVIRONMENTAL	)	
PROTECTION AGENCY,	)	
Respondent.	)	

NOTICE

Don Brown, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, IL 60601
don.brown@illinois.gov

Carol Webb, Hearing Officer
Illinois Pollution Control Board
1021 North Grand Avenue East
P.O. Box 19274
Springfield, IL 62794-9274
carol.webb@illinois.gov

Patrick D. Shaw
Law Office of Patrick D. Shaw
80 Bellerive Road
Springfield, IL 62704
pdshaw1law@gmail.com

PLEASE TAKE NOTICE that I have today filed with the office of the Clerk of the Pollution Control Board an **APPEARANCE,** the **ADMINISTRATIVE RECORD,** and a **CERTIFICATE OF RECORD ON APPEAL,** copies of which are herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,
Respondent

RK

Rich Kim
Assistant Counsel - Division of Legal Counsel
Special Assistant Attorney General
1021 North Grand Avenue, East
P.O. Box 19276
Springfield, Illinois 62794-9276
217/782-5544
866/273-5488 (TDD)
Dated: December 19, 2024

BEFORE THE POLLUTION CONTROL BOARD
OF THE STATE OF ILLINOIS

S & S INFINITE GROUP, INC., Petitioner,	)	
v.	)	PCB 2020-033 (LUST Appeal)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, Respondent.	)	

APPEARANCE

The undersigned, as one of its attorneys, hereby enters his Appearance on behalf of the Respondent, the Illinois Environmental Protection Agency.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,
Respondent

Rich Kim
Assistant Counsel - Division of Legal Counsel
Special Assistant Attorney General
1021 North Grand Avenue, East
P.O. Box 19276
Springfield, Illinois 62794-9276
217/782-5544
866/273-5488 (TDD)
richard.kim@illinois.gov
Dated: December 19, 2024

BEFORE THE POLLUTION CONTROL BOARD
OF THE STATE OF ILLINOIS

S & S INFINITE GROUP, INC.,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 2020-032
	)	(LUST Appeal)
ILLINOIS ENVIRONMENTAL	)	
PROTECTION AGENCY,	)	
Respondent.	)	

CERTIFICATE OF RECORD ON APPEAL

Pursuant to 35 Ill. Adm. Code 105.116(b) and 105.410, the following constitutes an index of documents comprising the record:

PAGES	DOCUMENT(S)	DATE
AR000001-AR000002	IEMA HazMat Report (2014-0963)	August 19, 2014
AR000003	IEPA Notice of Release Letter	August 22, 2014
AR000004–AR000079	CAP/Budget (2014-0963)	July 2, 2015
AR000080-AR000081	IEPA Technical Review Notes	July 15, 2015
AR000082–AR000085	CAP/Budget Response Letter	July 21, 2015
AR000086–AR000087	IEMA HazMat Report (2016-1089)	November 21, 2016
AR000088	IEPA Notice of Release Letter	December 9, 2016
AR000089–AR000199	CAP/Budget (2016-1089)	March 19, 2018
AR000200- AR000205	IEPA Technical Review Notes	June 4, 2018
AR000206–AR000214	CAP/Budget Response Letter	June 20, 2018
AR000215–AR000368	Amended CAP/Budget	November 12, 2018
AR000369- AR000370	IEPA Technical Review Notes	January 31, 2019
AR000371–AR000380	Budget Costs Email	February 7, 2019
AR000381- AR000384	Amended CAP/Budget Response Letter	February 11, 2019
AR000385–AR000390	CAP Budget Amendment	August 13, 2019
AR000391–AR000400	CAP Budget Amendment	September 10, 2019
AR000401- AR000403	CAP Budget Response Letter	October 22, 2019
AR000404–AR000408	CAP Budget Response Letter	October 22, 2019

I, Stephanie A. Sample, certify on information and belief that the entire record of the Respondent's decision, as defined in 35 Ill. Adm. Code 105.410(b), is hereby enclosed.

By: Stephanie Sample

Stephanie A. Sample
Leaking Underground Storage Tank Section
Illinois Environmental Protection Agency

Date: 12/12/2024

CERTIFICATE OF SERVICE

I, the undersigned attorney at law, hereby certify that on **December 19, 2024**, I served true and correct copies of an **APPEARANCE**, the **ADMINISTRATIVE RECORD**, and a **CERTIFICATE OF RECORD ON APPEAL**, via the Board's COOL system and email, upon the following named persons:

Don Brown, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, IL 60601
don.brown@illinois.gov

Carol Webb, Hearing Officer
Illinois Pollution Control Board
1021 North Grand Avenue East
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Patrick D. Shaw
Law Office of Patrick D. Shaw
80 Bellerive Road
Springfield, IL 62704
pdshaw1law@gmail.com

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,
Respondent

Rich Kim
Assistant Counsel - Division of Legal Counsel
Special Assistant Attorney General
1021 North Grand Avenue, East
P.O. Box 19276
Springfield, Illinois 62794-9276
217/782-5544
866/273-5488 (TDD)
richard.kim@illinois.gov

Hazardous Materials Incident Report

14306501114 - Peoria

Incident #:	H-2014-0963
Entered By:	Kirgan, Ken (IEMA) on 2014-08-19 11:23:33
Data Input Status:	Closed
Leaking Underground Storage Tank (LUST):	Yes

S+S Infinite Group, Inc

Leaking UST Tech File

IEPA-DIVISION OF RECORDS MANAGEMENT RELEASABLE

SEP 22 2014

REVIEWER: JKS

Caller:	Jeff Wienhoff		
Call Back #:	217/899-5486		
Caller Represents:	Marlin Environmental		
Hazmat Incident Type:	Leak or spill		
INCIDENT LOCATION			
Incident Location:	400 NE Adams St		
County:	Peoria 61603	City:	Peoria
Primary IEMA Region:	6	Secondary IEMA Region:	Not Applicable
Full Address:	400 NE Adams St, Peoria, IL		
Latitude:	40.694236	Longitude:	-89.585712
Milepost:	n/a	Sec:	n/a
Twp.:	n/a	Range:	n/a
Area Involved:	Fixed Facility		
Media or medium into which the release occurred:	Ground		

WEATHER INFORMATION			
Temp (deg F):	n/a	Wind Dir/Speed m.p.h:	n/a

MATERIALS INVOLVED			
Material Name:	unleaded gasoline and diesel fuel	Material Type:	Liquid
CHRIS Code:	unknown	CAS #:	unknown
UN/NA #:	unknown		
Is this a 302(a) Extremely Hazardous Substance?	No		
Is this a RCRA Hazardous Waste?	No		
Is this a RCRA regulated facility?	No		
Container Type:	Under ground storage tank	Container Size:	1-10,000 gallons (gasoline), 1-6,000 gallons (diesel)
Amount Released:	unknown	Rate of Release/min:	unknown
Duration of Release:	unknown		
Cause of Release:	unknown		
Estimated Spill Extent:	unknown	Spill Extent Units:	

Date/Time Occured:	(Date/Time Unknown)
Date/Time Discovered:	2014-08-19 10:00

Number Injured:	0	Where Taken:	none
Number Killed:	0	# Evacuated:	0
On Scene Contact:	Jeff Wienhoff	On Scene Phone #:	217/899-5486

Proper safety precautions to take as a result of the release, including evacuation:
none

Assistance needed from State Agencies:
none

Containment/Cleanup actions and plans:
caller is with the hired contractor

Responsible Party:	S&S Infinite Group, Incorporated
Contact Person:	Syed Muneeb
Callback Phone Number:	309/673-1066
Facility Manager:	Syed Muneeb
Facility Manager Phone #:	309/673-1066
Street Address:	400 NE Adams St
City:	Peoria State: IL Zip Code: 61603

Emergency Units Contacted	Contacted	On Scene	Agencies Contacted
ESDA			none
Fire			none
Police			none
Sheriff			none
Other			none

AGENCIES OR PERSONS NOTIFIED

Agency	Date/Time	Name of Person	Notification Action
IEPA, NRTP, OSFM	2014-08-19 11:25	emailed	Report Sent
IEMA Region 6	2014-08-19 11:25	emailed	Report Sent

Narrative:

Follow-Up Information:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829
PAT QUINN, GOVERNOR LISA BONNETT, DIRECTOR

217/524-3300

August 22, 2014

EPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE

SEP 22 2014

REVIEWER RDH

S&S Infinite Group, Inc.
Attn: Syed Muneeb
400 NE Adams Street
Peoria, IL 61603

Re: LPC #1430650114 -- Peoria County
Peoria/S&S Infinite Group, Inc.
400 NE Adams Street
Leaking UST Incident No. 20140963
Leaking UST Technical File

Dear Owner/Operator:

The Illinois Environmental Protection Agency (Illinois EPA) received notification from the Illinois Emergency Management Agency that a release from an underground storage tank system(s) has occurred at the above-referenced site. As a result of this release, the owner or operator of the underground storage tank(s) is required to comply with the Leaking Underground Storage Tank (Leaking UST) Program requirements, including the submittal of applicable documentation on forms prescribed and provided by the Illinois EPA.

To obtain copies of the forms, as well as additional information regarding the Illinois EPA's Leaking UST Program, please visit our Web page at http://www.epa.state.il.us/land/lust/index.html.

1. The direct link to the technical forms page is http://www.epa.state.il.us/land/lust/forms/technical-forms/index.html.

2. If you intend to seek reimbursement from the Illinois Underground Storage Tank Fund for costs incurred, the direct link to the budget and reimbursement forms page is: http://www.epa.state.il.us/land/lust/forms/budget-forms/index.html.

If you do not have access to the Internet and/or have questions about the Leaking UST Program requirements, please contact the Leaking UST Program project manager on call at 217/524-3300.

Sincerely,

Hernando A. Albarracin

Hernando A. Albarracin, Manager
Leaking Underground Storage Tank Section
Division of Remediation Management
Bureau of Land

HAA: jw\

cc: BOL File

1430650114 – Peoria County
S & S Infinite Group, Inc.
Incident # 20140963
Leaking UST Technical File

MARLIN Environmental

CORRECTIVE ACTION PLAN
TACO CLOSURE

DOWNTOWN 66 - PEORIA
400 NE ADAMS STREET
PEORIA, PEORIA COUNTY
ILLINOIS 61603
LUST INCIDENT # 20140963
LPC# 1430650114

IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
JUL 30 2015
REVIEWER JRM

Prepared for:

S & S INFINITE GROUP, INC.
400 NE ADAMS STREET
PEORIA, Illinois 61603

Prepared by:

MARLIN ENVIRONMENTAL, INC.
3900 Wood Duck Drive, Suite F
Springfield, Illinois 62711

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IEPA/BOL

July 2, 2015

Jeff R. Wienhoff, P.E.
Senior Professional Engineer

Joe Buhlig
Project Manager

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G. Signatures

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FIGURES
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2. CAP Budget Forms and OSFM Eligibility Letter

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
Corrective Action Plan

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S &S Infinite Group, Inc. (Downtown 66)

Site Address (Not a P.O. Box): 400 NE Adams St.

City: Peoria County: Peoria ZIP Code: 61603

Leaking UST Technical File

B. Site Information

1. Will the owner or operator seek reimbursement from the Underground Storage Tank Fund? Yes ☒ No ☐
2. If yes, is the budget attached? Yes ☒ No ☐
3. Is this an amended plan? Yes ☐ No ☒
4. Identify the material(s) released: Unleaded Gasoline, Diesel Fuel
5. This Corrective Action Plan is being submitted pursuant to:

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a. 35 Ill. Adm. Code Section 731.166:

The material released was:
- petroleum ☐
- hazardous substance (see Environmental Protection Act Section 3.215) ☐

b. 35 Ill. Adm. Code Section 732.404 ☐

c. 35 Ill. Adm. Code Section 734.335 (Pursuant to PA 96-0908) ☒

C. Proposed Methods of Remediation

1. Soil The soil contamination that exists at the site will be addressed institutionally. The required institutional controls to address the soil contamination that exists are the usage of Tier 2 objectives, an on-site potable well restriction, an Industrial/Commercial Land Use Restriction, an ELUC and an IDOT Highway Authority Agreement for Spalding Ave.

2. Groundwater Site investigation activities have determined that groundwater was not encountered on this property. The remaining soil contaminants that Equation S28 demonstrates as posing a potential future leaching threat were modeled for potential future groundwater extent using the IEPA sanctioned Risk Based Corrective Action (RBCA) Equation R26. An on-site groundwater use restriction, an Industrial/Commercial Land Use Restriction, an ELUC and an IDOT HAA will be relied upon to mitigate any potential threats.

D. Soil and Groundwater Investigation Results (for incidents subject to 35 Ill. Adm. Code 731 only or 732 that were classified using Method One or Two, if not previously provided)

Provide the following:

1. **Description of investigation activities performed to define the extent of soil and/or groundwater contamination;**

   Please refer to the Site Investigation Completion Report (SICR) approved on April 7, 2015, which details the soil and groundwater investigation activities performed to define the extent of contamination at the subject LUST site. The pertinent site area features are illustrated in **Figure 1.**

   Soil Gas Indoor Inhalation Exposure Pathway
   Tier 1 Residential and Industrial/Commercial Indoor Inhalation Exposure Routes: Utilizing the IEPA Petroleum Vapor Intrusion (PVI) flowchart, Marlin Environmental, Inc. completed a preliminary evaluation to assess the need for PVI investigation. Free product has not been encountered at this site and no exceedances of the IEPA TACO Tier 1 Soil Saturation Limits exist from LUST Incident No. 20140963. In addition, there have been no reports of petroleum vapors present within buildings at the site or adjacent properties. Furthermore, there is no groundwater contamination associated with LUST Incident No. 20140963. Given the above, Marlin Environmental, Inc. requests that the IEPA conduct their site-specific Tier 3 PVI evaluation to conclusively exclude the Indoor Inhalation exposure route from further consideration for LUST Incident No. 20140963.

2. **Analytical results, chain-of-custody forms, and laboratory certifications;**

   Please refer to the 45-Day Report and the SICR.

3. **Tables comparing analytical results to applicable remediation objectives;**

   Please refer to the 45-Day Report and the SICR.

4. **Boring logs;**

   Please refer to the SICR.

5. **Monitoring well logs; and**

   Please refer to the SICR.

6. **Site maps meeting the requirements of 35 Ill. Adm. Code 732.110(a) or 734.440 and showing:**
   a. Soil sample locations; Please refer to **Figure 1**.
   b. Monitoring well locations; Please refer to **Figure 1**.
   c. The plume of soil contamination based on analytical results; Please refer to **Figure 1**.

E. Technical Information - Corrective Action Plan

Provide the following:

1. **Executive summary identifying the objectives of the corrective action plan and the technical approach to be utilized to meet such objectives;**

   a. The major components (e.g., treatment, containment, removal) of the corrective action plan;
   b. The scope of the problems to be addressed by the proposed corrective action; and

   Soil contamination above TACO Tier 1 Objectives exists at the Downtown 66 Property. The calculation of Tier 2 Objectives along with the reliance upon an on-site potable well restriction and an IDOT Highway Authority Agreement will be used to addresses the soil contamination that exists at the site. Soil sample SB-4 (2'-4'), SB-5 (2'-4'), SB-8 (2'-4'), SB-8 (6'-8'), SB-9 (2'-4') and SB-14 (2'-4') returned a concentration of benzo(a)pyrene and or Dibenzo(a,h)anthracene above the IEPA TACO Tier 1 SRO for the Residential Soil Ingestion Exposure Route. Pursuant to 35 IAC 742.415(b)(2), for those PNA compounds whose background concentrations (for populated areas within any county in a Metropolitan Statistical Area) exceed the most stringent IEPA TACO Tier 1 SROs, the background concentration shall be used as the Tier 1 SRO as promulgated in 35 IAC 742 Appendix A, Table H. The City of Peoria, located in Peoria County, had a population of more than 50,000 people as of the 2010 Census. Therefore, the subject site is located in a populated area, as defined by 35 IAC 742.200, within a county in a Metropolitan Statistical Area. The reported concentrations of benzo(a)pyrene and Dibenzo(a,h)anthracene are below the PNA background concentration for populated areas within Metropolitan Statistical Areas. **Table 1** compares the results above Tier 1 Objectives to appropriate Tier 2 Objectives to demonstrate compliance with TACO. **Figure 2** demonstrates the area to be addressed by the Highway Authority Agreement.

   Groundwater modeling was performed on each of the affected elevated soil samples to determine the potential long-term impaction of the contaminants that currently exist at the site. Due to the fact that groundwater was not encountered during site investigation, groundwater flow direction could not be established. However, because of the visible topography of the site and the location of the river in relation to the site, it is apparent groundwater flows to the south towards the river. The modeled distances for soil exceedances of the groundwater objective are demonstrated in this Corrective Action Plan and the calculations are included in **Attachment 1**. A map showing the horizontal extents the modeled contamination is included in **Figure 1**. The HAA will address the potential migration of soils into the groundwater in the Right-of-way.

   Following the approval of this Corrective Action Plan; a highway authority agreement will be sought from IDOT. A Corrective Action Completion Report will be submitted to the Illinois EPA requesting issuance of a No Further Remediation letter for the incident. Upon issuance of the NFR designation from the Agency, Marlin Environmental, Inc. shall record the NFR document to the title of the site with the County Recorder of Peoria County. The groundwater monitoring wells shall be properly abandoned, in accordance with 77 IAC 920.120, following the receipt of the NFR designation from the Agency.

The budget for the work associated with this CAP proposal is included as **Attachment 2**.

c. A schedule for implementation and completion of the plan;

The Corrective Action Completion Report will be prepared and submitted following the approval of the Highway Authority Agreement for Spalding Ave. Following issuance of the No Further Remediation letter, the monitoring wells at the site will be abandoned and proper notifications required through the use an on-site potable well restriction.

2. **Identification of the remediation objectives proposed for this site;**

The indicator contaminants for the unleaded gasoline and diesel fuel associated with this facility are BTEX/MTBE and PNA constituents. Soil cleanup objectives have been based upon the calculated Tier 2 SROs on-site and the Tier 1 SROs off-site. Groundwater remediation objectives are based upon the IEPA TACO Tier 1 GROs for Class I Groundwater

3. **A description of the remedial technologies selected:**

a. The feasibility of implementing the remedial technologies;
b. Whether the remedial technologies will perform satisfactorily and reliably until the remediation objectives are achieved; and
c. A schedule of when the technologies are expected to achieve the applicable remediation objectives;

Not applicable for this CAP.

4. **A confirmation sampling plan that describes how the effectiveness of the corrective action activities will be monitored during their implementation and after their completion;**

Not applicable for this CAP.

5. **A description of the current and projected future uses of the site;**

The remediation site is currently a convenience store. The planned post remediation usage of the site is expected to remain the same, at least as of the time of this report.

6. **A description of engineered barriers or institutional controls that will be relied upon to achieve remediation objectives;**

a. An assessment of their long-term reliability;
b. Operating and maintenance plans; and
c. Maps showing area covered by barriers and institutional controls;

The institutional controls that will be required following implementation of the plan are an on-site groundwater use restriction and an IDOT HAA for Spalding Ave. The area over which the Highway Authority Agreement is required is demonstrated in **Figure 2**.

7. **The water supply well survey:**

a. Map(s) showing the locations of community water supply wells and other potable wells and the setback zone for each well;
b. Map(s) showing regulated recharge areas and wellhead protection areas;
c. Map(s) showing the current extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;
d. Map(s) showing the modeled extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;
e. Tables listing the setback zone for each community water supply well and other potable water supply wells;
f. A narrative identifying each entity contacted to identify potable water supply wells, the name and title of each person contacted, and any other field observations associated with any wells identified; and
g. A certification from a licensed Professional Engineer or Licensed Professional Geologist that the survey was conducted in accordance with the requirements and that documentation submitted includes information obtained as a result of the survey (certification of this plan satisfies this requirement);

Please refer to the **SICR** for the results of the water supply well survey conducted for the site.

8. Appendices;

a. References and data sources report that are organized; and

Not applicable for this CAP.

b. Field logs, well logs, and reports of laboratory analyses;

Please refer to the IEPA approved SICR.

9. Site map(s) meeting the requirements of 35 Ill. Adm. Code 732.110(a) or 734.440;

Please refer to **Figure 1 and Figure 2.**

10. Engineering design specifications, diagrams, schematics, calculations, manufacturer's specifications, etc.;

Not applicable for this CAP.

11. A description of bench/pilot studies;

Not applicable for this LUST facility.

12. Cost comparison between proposed method of remediation and other methods of remediation;

Not applicable for this LUST facility.

13. For the proposed Tier 2 or 3 remediation objectives, provide the following:

a. The equations used;
b. A discussion of how input variables were determined;
c. Map(s) depicting distances used in equations; and
d. Calculations;

The site-specific data collected during the Site Investigation activities was utilized to determine Tier 2 SROs for the Soil Component of the Groundwater Ingestion Exposure Pathway (using Equations S18 and S28) and Soil Inhalation Exposure Pathway for Residential properties (using Equations S4, S6 and S26 as appropriate) and Construction Worker populations (using Equations S5 and S26/S27 as appropriate). The data calculations sheet along with SSL IEPA forms are included in **Attachment 1.**

14. Provide documentation to demonstrate the following for alternative technologies:

a. The proposed alternative technology has a substantial likelihood of successfully achieving compliance with all applicable regulations and remediation objectives;
b. The proposed alternative technology will not adversely affect human health and safety or the environment;
c. The owner or operator will obtain all Illinois EPA permits necessary to legally authorize use of alternative technology;
d. The owner or operator will implement a program to monitor whether the requirements of subsection (14)(a) have been met;
e. Within one year from the date of Illinois EPA approval, the owner or operator will provide to the Illinois EPA monitoring program results establishing whether the proposed alternative technology will successfully achieve compliance with the requirements of subsection (14)(a); and
f. Demonstration that the cost of alternative technology will not exceed the cost of conventional technology and is not substantially higher than at least two other alternative technologies, if available and technically feasible.

Not applicable for this LUST facility.

15. Property Owner Summary Form

This will be provided within the *Corrective Action Completion Report* (*CACR*) for this facility.

F. Exposure Pathway Exclusion

Provide the following:

1. A description of the tests to be performed in determining whether the following requirements will be met:

a. Attenuation capacity of the soil will not be exceeded for any of the organic contaminants;
b. Soil saturation limit will not be exceeded for any of the organic contaminants;
c. Contaminated soils do not exhibit any of the reactivity characteristics of hazardous waste per 35 Ill. Adm. Code 721.123;
d. Contaminated soils do not exhibit a pH <2.0 or >12.5; and
e. Contaminated soils which contain arsenic, barium, cadmium, chromium, lead, mercury, or selenium (or their associated salts) do not exhibit any of the toxicity characteristics of hazardous waste per 35 Ill. Adm. Code 721.124.

Not applicable for this LUST facility.

2. **A discussion of how any exposure pathways are to be excluded.**

Not applicable for this LUST facility.

G. Signatures

All plans, budgets, and reports must be signed by the owner or operator and list the owner's or operator's full name, address, and telephone number.

UST Owner or Operator

Name: S & S Infinite Group, Inc.

Contact: Syed Muneeb

Address: 400 NE Adams Street

City: Peoria

State: Illinois

ZIP Code: 61603

Phone: (309) 673-7066

Signature:

Date: 6/30/15

Consultant

Company: Marlin Environmental, Inc.

Contact: Joe Buhlig

Address: 3900 Wood Duck Dr., Suite F

City: Springfield

State: Illinois

ZIP Code: 62711

Phone: 217-726-7569 Ext. 300

Signature: for Joe Buhlig

Date: 7/2/15

I certify under penalty of law that all activities that are the subject of this plan were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in this plan has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 731, 732, or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

Licensed Professional Engineer

Name: Jeff Wienhoff

Company: Marlin Environmental, Inc.

Address: 3900 Wood Duck Drive, Suite F

City: Springfield

State: Illinois

ZIP Code: 62711

Phone: (217) 726-7569 Ext. 250

Ill. Registration No.: 062-058441

License Expiration Date: 11-30-2015

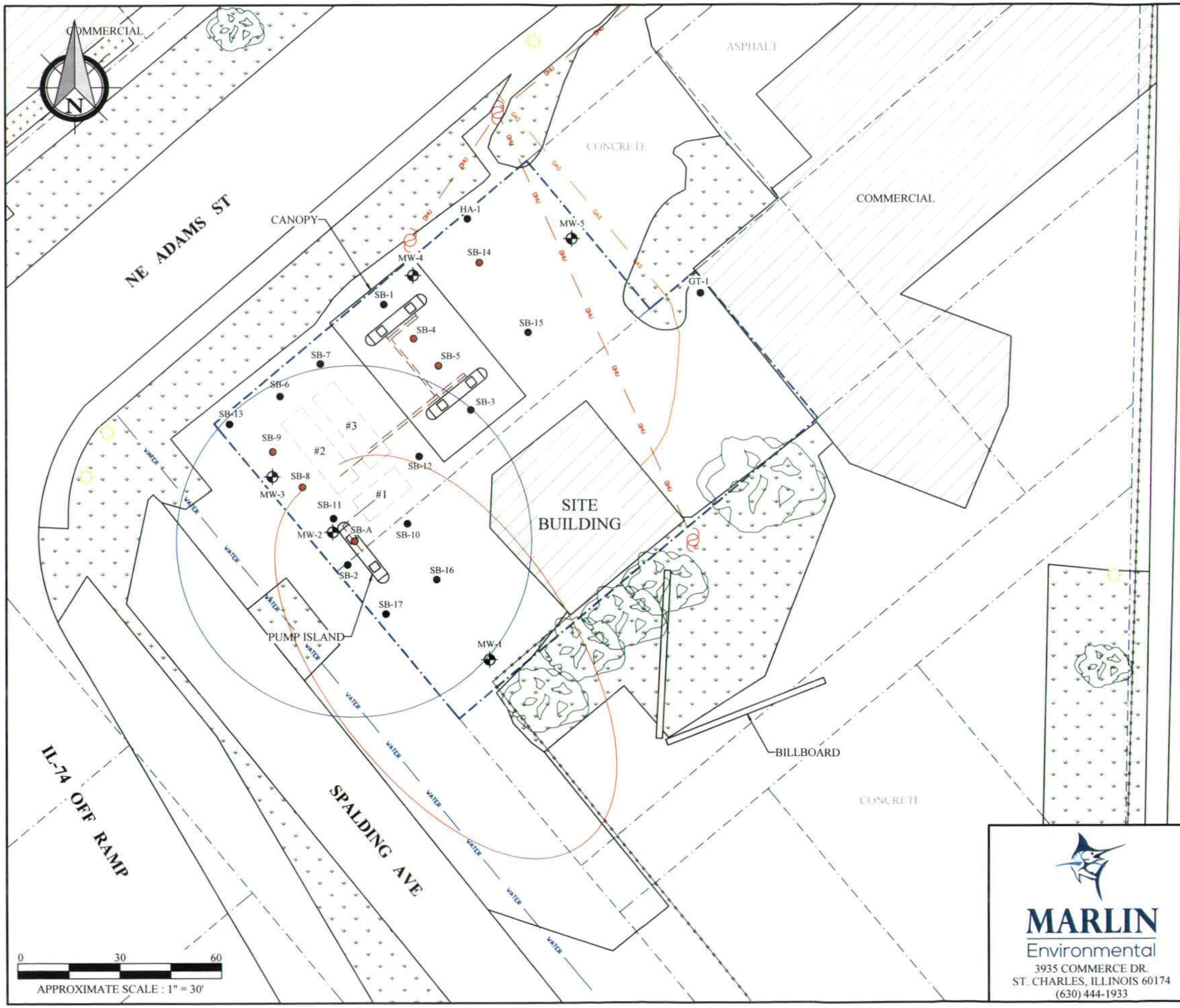
Signature:

Date: 7/2/15

L.P.E. Seal

JEFFREY R. WIENHOFF
062-058441
LICENSED PROFESSIONAL ENGINEER OF
ILLINOIS

RECEIVED
JUL 02 2015
IEPA/BOL



LEGEND

- APPROXIMATE SOIL BORING SAMPLE LOCATION (● = IMPACTED ABOVE TACO TIER 1 SRO'S)
- APPROXIMATE MONITORING WELL LOCATION (⊕ = IMPACTED ABOVE TACO TIER 1 GRO'S)
- SUBJECT SITE PROPERTY LINE
- PROPERTY LINE
- FORMER PRODUCT PIPING RUN
- CHAINLINK FENCE
- OHU — OVERHEAD UTILITIES (ELECTRIC AND/OR TELEPHONE)
- WATER — WATER LINE
- GAS — NATURAL GAS LINE
- UTILITY POLE
- LIGHT POLE
- BENZENE SOIL LEACHING TO GROUNDWATER MODEL
- BENZO (A) ANTHRACENE SOIL LEACHING TO GROUNDWATER MODEL

IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
JUL 30 2015
REVIEWER JRM

UST LEGEND

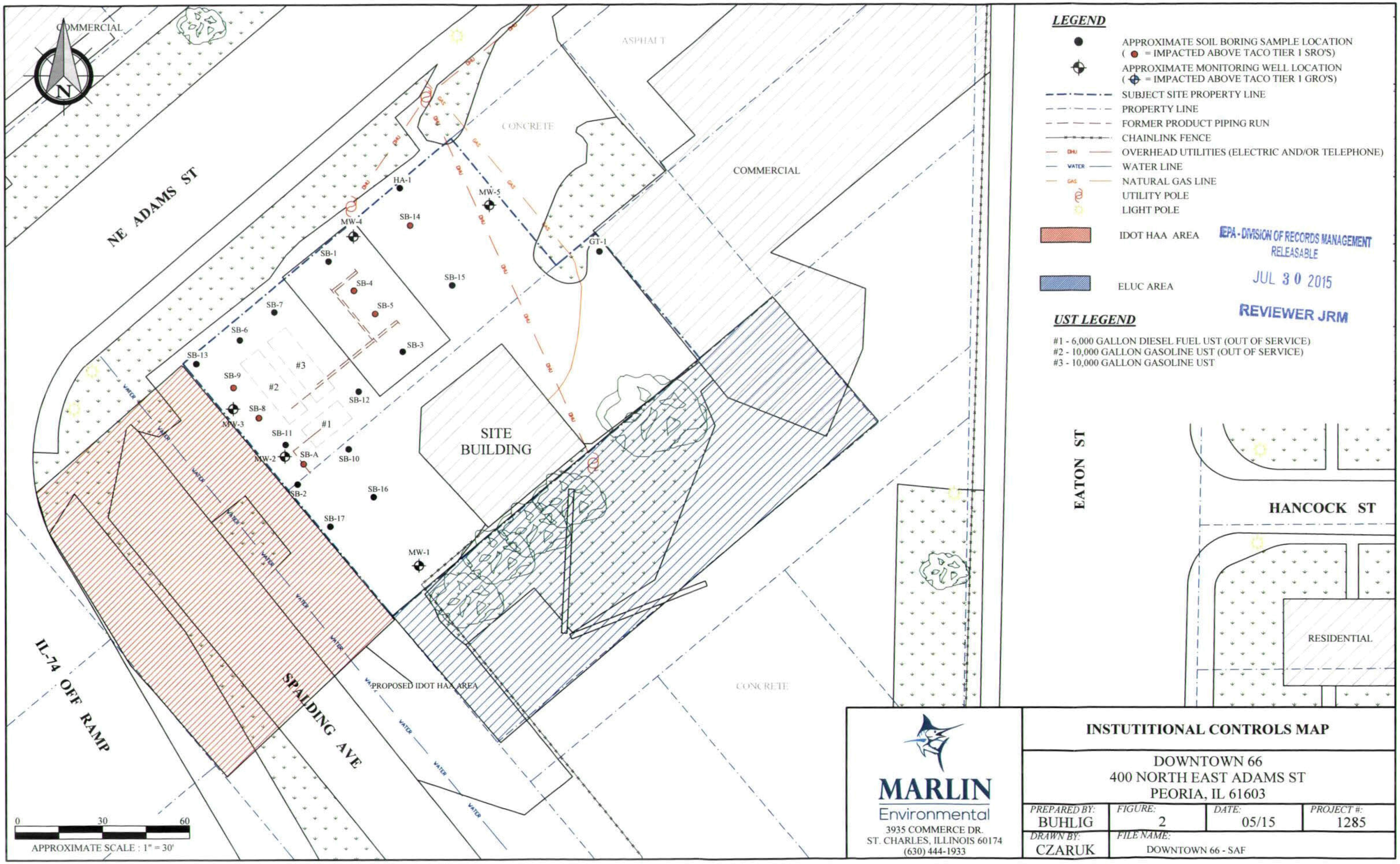
#1 - 6,000 GALLON DIESEL FUEL UST (OUT OF SERVICE)
#2 - 10,000 GALLON GASOLINE UST (OUT OF SERVICE)
#3 - 10,000 GALLON GASOLINE UST

MARLIN
Environmental
3935 COMMERCE DR.
ST. CHARLES, ILLINOIS 60174
(630) 444-1933

SITE AREA FEATURES MAP
R-26 MODELED EXTENTS

DOWNTOWN 66
400 NORTH EAST ADAMS ST
PEORIA, IL 61603

PREPARED BY:	FIGURE:	DATE:	PROJECT #:
BUHLIG	1	05/15	1285
DRAWN BY:	FILE NAME:		
CZARUK	DOWNTOWN 66 - SAF		



LEGEND
APPROXIMATE SOIL BORING SAMPLE LOCATION
(= IMPACTED ABOVE TACO TIER 1 SRO'S)
APPROXIMATE MONITORING WELL LOCATION
(= IMPACTED ABOVE TACO TIER 1 GRO'S)
SUBJECT SITE PROPERTY LINE
PROPERTY LINE
FORMER PRODUCT PIPING RUN
CHAINLINK FENCE
OVERHEAD UTILITIES (ELECTRIC AND/OR TELEPHONE)
WATER LINE
NATURAL GAS LINE
UTILITY POLE
LIGHT POLE
IDOT HAA AREA
ELUC AREA
IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
JUL 30 2015
REVIEWER JRM
UST LEGEND
#1 - 6,000 GALLON DIESEL FUEL UST (OUT OF SERVICE)
#2 - 10,000 GALLON GASOLINE UST (OUT OF SERVICE)
#3 - 10,000 GALLON GASOLINE UST
COMMERCIAL
N
NE ADAMS ST
ASPHALT
CONCRETE
COMMERCIAL
HA-1
MW-5
MW-4
SB-14
GT-1
SB-1
SB-4
SB-15
SB-7
SB-5
SB-6
SB-3
SB-13
#3
SB-9
#2
SB-12
SB-8
MW-3
#1
SB-11
SITE
BUILDING
MW-2
SB-A
SB-10
SB-2
SB-16
SB-17
MW-1
EATON ST
HANCOCK ST
RESIDENTIAL
IL-74 OFF RAMP
SPALDING AVE
PROPOSED IDOT HAA AREA
CONCRETE
WATER
0
30
60
APPROXIMATE SCALE : 1" = 30'
MARLIN
Environmental
3935 COMMERCE DR.
ST. CHARLES, ILLINOIS 60174
(630) 444-1933
INSTUTITIONAL CONTROLS MAP
DOWNTOWN 66
400 NORTH EAST ADAMS ST
PEORIA, IL 61603
PREPARED BY:
BUHLIG
FIGURE:
2
DATE:
05/15
PROJECT #:
1285
DRAWN BY:
CZARUK
FILE NAME:
DOWNTOWN 66 - SAF

TABLE I

Comparison of Tier 1 SRO Exceedences On-Site to Applicable Tier 2 SROs

Sample ID	Depth	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benzo (a) anthracene
TACO Tier 2 Soil Component of Groundwater Ingestion SROs for Class I Groundwater			**140**	**27,500**	**19,200**	**275,000**	**2,000**
TACO Tier 2 Residential Inhalation SROs			3,100	N/E	N/E	607,000	N/E
TACO Tier 2 Residential Ingestion SROs			N/E	N/E	N/E	N/E	900
TACO Tier 2 Commercial Ingestion SROs			N/E	N/E	N/E	N/E	800
TACO Tier 2 Industrial / Commercial Inhalation SROs			N/E	N/E	N/E	607,000	N/E
TACO Tier 2 Construction Worker Inhalation SROs			N/E	580,000	N/E	554,000	N/E
TACO Tier 2 Soil Saturation Limit			N/E	N/E	N/E	607,000	N/E
SB-A		08/12/2014	**1,460**	**104,000**	**51,300**	**450,000**	**197,000**
SB-8	2'-4'	09/25/2014	*	*	*	*	**5,300**

Notes:

Only samples above Tier 1 objectives collected on-site listed in the table.

Analytical testing resultsfor BTEX and PNAs are expressed in parts-per-billion (ppb) concentrations.

Key:

Bold	Indicates Exceeds TACO Tier 2 Soil Comp. of Groundwater Ingestion SRO for Class I GW.
Red	Indicates Exceeds TACO Tier 2 Residential Soil Inhalation SRO.
Underlined	Indicates Exceeds TACO Tier 2 Industrial / Commercial Soil Inhalation SRO.
Shaded	Indicates Exceeds TACO Tier 2 Construction Worker Soil Inhalation SRO.
*	Sample below Tier 1 SROs for specified contaminant
^	Calculated Tier 2 Objective was more restrictive than Tier 1, therefore Tier 1 objective was utilized
#	Calculated Tier 2 Objective exceeded soil saturation limit (SSL), therefore appropriate SSL was utilized
N/E	Specified Exposure Route SRO not exceeded at Tier 1 for on-site samples.

ATTACHMENT 1

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26: Benzene

Contact Information for Individual Who Performed Calculations: Joe Buhlig - Project Manager

Marlin Environmental, Inc. Phone: (217) 726-7569 x30

Land Use: Not Applicable Soil Type: Sand

Groundwater: ☐ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S18/S28 used in R26? ☐ Yes ☐ No Specify C_{source} from S18/S28 see page 3 mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT_c	=	70	yr	d	=		cm
AT_n	=		yr	D^{air}	=		cm^2/s
BW	=	70	kg	D^{water}	=		cm^2/s
C_{source}	=	see page 3	mg/L	D_s^{eff}	=		cm^2/s
$C_{(x)}$	=		mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 20140963 Chemical: Benzene Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
erf	=		unitless	RAF_d (PNAs)	=	0.05	unitless
f_{oc}	=		g/g	RAF_d (inorganics)	=	0	unitless
GW_{comp}	=		mg/L	RAF_0	=	1.0	unitless
GW_{source}	=		mg/L	$RBSL_{air}$ (carcinogenic)	=		μg/m³
H'	=		cm^3_{water}/cm^3_{air}	$RBSL_{air}$ (noncarcinogenic)	=		μg/m³
i	=	0.02	cm/cm	RfD_i	=		mg/kg-d
I	=	30	cm/yr	RfD_o	=		mg/kg-d
IR_{air}	=	20	m³/d	SA	=	3,160	cm²/d
IR_{soil}	=		mg/d	S_d	=	200	cm
IR_w	=		L/d	S_w	=	3,444.24	cm
K	=	8.64	cm/d for R15, R19, R26; cm/yr for R24	SF_i	=		$(mg/kg\text{-}d)^{-1}$
K_{oc}	=		cm³/g or L/kg	SF_o	=		$(mg/kg\text{-}d)^{-1}$
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}	THQ	=	1	unitless
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}	TR	=		unitless
k_s (inorganics)	=		cm^3_{water}/g_{soil}	U	=		cm/d
L_s	=	100	cm	U_{air}	=	225	cm/s
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$	U_{gw}	=		cm/yr
M	=	0.5	mg/cm²	VF_p	=		kg/m³
Pe	=	$6.9 \cdot 10^{-14}$	g/cm²-s	VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m³
RAF_d	=	0.5	unitless	VF_{ss}	=		kg/m³

Incident #:	20140963	Chemical:	Benzene	Land Use:	Not Applicable

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=	see below	cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=		cm^3/cm^3_{soil}
λ	=	0.0009	d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L

C_{source} Values: (mg/L)

SB- A: 0.0532

Maximum Predicted Extent of Groundwater Impact (X):
(feet from point source)

SB- A: 50'

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details	
Site Name & Location:	Downtown 66 Peoria, Illinois	**Sample Location:**	SB-A
		Sample Depth (feet):	0
LUST Incident Number(s):	20140963		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.0532	mg/L			
Distance along centerline of the plume coming from the source (X)=	50.00	ft	=	1,524.00	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	1.000E-04	cm/sec	=	8.640	cm/day
Hydraulic gradient (i)=	0.0200	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	113	ft	=	3,444.24	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Porosity
Gravel=0.25
Sand=0.32
Silt=0.40
Clay=0.36
Default=0.43

Calculated Parameters **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	152.4	cm
Transverse dispersivity	Ay=	50.8	cm
Vertical dispersivity	Az=	7.62	cm
Specific discharge	U=	0.54	cm/day
Sw/(4*SQRT(Ay*X))	B=	3.09463245	
Sd/(2*SQRT(Az*X))	C=	0.927724097	
Error function	erf(B)=	0.999987929	To determine error function values,
Error function	erf(C)=	0.810479731	see F46 & K46 in the linear interpolation section.

Actual B value=	3.09463245	Actual C value=	0.927724097
Automatic calculations : Actual erf(B)	0.999987929	Actual erf(C)=	0.810479731

Solutions

$C_{(x)}$

0.005 mg/l

C_{source}

0.00 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26

Maximum error in computation = 1.5 x 10^-7

x=	3.09463245	0.927724097
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.496580041	0.766921652
erf(x)=	0.999987929	0.810479731

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26: Toluene

Contact Information for Individual Who Performed Calculations: Joe Buhlig - Project Manager

Marlin Environmental, Inc. Phone: (217) 726-7569 x30

Land Use: Not Applicable Soil Type: Sand

Groundwater: ☐ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S18/S28 used in R26? ☐ Yes ☐ No Specify C_{source} from S18/S28 see page 3 mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT_c	=	70	yr	d	=		cm
AT_n	=		yr	D^{air}	=		cm²/s
BW	=	70	kg	D^{water}	=		cm²/s
C_{source}	=	see page 3	mg/L	D_s^{eff}	=		cm²/s
$C_{(x)}$	=		mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #:	20140963	Chemical:	Toluene	Land Use:	Not Applicable

Symbol			Unit	Symbol			Unit
erf	=		unitless	RAF_d (PNAs)	=	0.05	unitless
f_{oc}	=		g/g	RAF_d (inorganics)	=	0	unitless
GW_{comp}	=		mg/L	RAF_0	=	1.0	unitless
GW_{source}	=		mg/L	$RBSL_{air}$ (carcinogenic)	=		µg/m^3
H'	=		cm^3_{water}/cm^3_{air}	$RBSL_{air}$ (noncarcinogenic)	=		µg/m^3
i	=	0.02	cm/cm	RfD_i	=		mg/kg-d
I	=	30	cm/yr	RfD_o	=		mg/kg-d
IR_{air}	=	20	m^3/d	SA	=	3,160	cm^2/d
IR_{soil}	=		mg/d	S_d	=	200	cm
IR_w	=		L/d	S_w	=	3,444.24	cm
K	=	8.64	cm/d for R15, R19, R26; cm/yr for R24	SF_i	=		(mg/kg-d)$^{-1}$
K_{oc}	=		cm^3/g or L/kg	SF_o	=		(mg/kg-d)$^{-1}$
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}	THQ	=	1	unitless
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}	TR	=		unitless
k_s (inorganics)	=		cm^3_{water}/g_{soil}	U	=		cm/d
L_s	=	100	cm	U_{air}	=	225	cm/s
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$	U_{gw}	=		cm/yr
M	=	0.5	mg/cm^2	VF_p	=		kg/m^3
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s	VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m^3
RAF_d	=	0.5	unitless	VF_{ss}	=		kg/m^3

Incident #:	20140963	Chemical:	Toluene	Land Use:	Not Applicable

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=	see below	cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=		cm^3/cm^3_{soil}
λ	=	0.011	d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L

C_{source} Values: (mg/L)

SB- A: 3.7863

Maximum Predicted Extent of Groundwater Impact (X):
(feet from point source)

SB- A: 2.4'

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details	
Site Name & Location:	Downtown 66 Peoria, Illinois	**Sample Location:**	SB-A
		Sample Depth (feet):	0
LUST Incident Number(s):	20140963		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Toluene

Concentration at the source (C_{source})=	3.7863	mg/L			
Distance along centerline of the plume coming from the source (X)=	**2.400**	ft	=	73.15	cm
First order degradation constant (λ)=	0.011	/day			if toluene, lambda=0.011/day
Aquifer hydraulic conductivity (K)=	1.000E-04	cm/sec	=	8.640	cm/day
Hydraulic gradient (i)=	0.0200	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	113	ft	=	3,444.24	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Porosity
Gravel=0.25
Sand=0.32
Silt=0.40
Clay=0.36
Default=0.43

Calculated Parameters **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	7.3152	cm
Transverse dispersivity	Ay=	2.4384	cm
Vertical dispersivity	Az=	0.36576	cm
Specific discharge	U=	0.54	cm/day
Sw/(4*SQRT(Ay*X))	B=	64.47150937	
Sd/(2*SQRT(Az*X))	C=	19.32758535	
Error function	erf(B)=	1	To determine error function values,
Error function	erf(C)=	1	see F46 & K46 in the linear interpolation section.

Actual B value=	64.47150937	Actual C value=	19.32758535
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

Solutions

$C_{(x)}$

1.0 mg/l

C_{source}

0.00 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26

Maximum error in computation = 1.5 x 10^-7

x=	64.47150937	19.32758535
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.045207358	0.1363969
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26: Ethylbenzene

Contact Information for Individual Who Performed Calculations: Joe Buhlig - Project Manager

Marlin Environmental, Inc. Phone: (217) 726-7569 x30

Land Use: Not Applicable Soil Type: Sand

Groundwater: ☐ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S18/S28 used in R26? ☐ Yes ☐ No Specify C_{source} from S18/S28 see page 3 mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT_c	=	70	yr	d	=		cm
AT_n	=		yr	D^{air}	=		cm^2/s
BW	=	70	kg	D^{water}	=		cm^2/s
C_{source}	=	see page 3	mg/L	D_s^{eff}	=		cm^2/s
$C_{(x)}$	=		mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 20140963 Chemical: Ethylbenzene Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
erf	=		unitless	RAF_d (PNAs)	=	0.05	unitless
f_{oc}	=		g/g	RAF_d (inorganics)	=	0	unitless
GW_{comp}	=		mg/L	RAF_0	=	1.0	unitless
GW_{source}	=		mg/L	$RBSL_{air}$ (carcinogenic)	=		μg/m^3
H'	=		cm^3_{water}/cm^3_{air}	$RBSL_{air}$ (noncarcinogenic)	=		μg/m^3
i	=	0.02	cm/cm	RfD_i	=		mg/kg-d
I	=	30	cm/yr	RfD_o	=		mg/kg-d
IR_{air}	=	20	m^3/d	SA	=	3,160	cm^2/d
IR_{soil}	=		mg/d	S_d	=	200	cm
IR_w	=		L/d	S_w	=	3,444.24	cm
K	=	8.64	cm/d for R15, R19, R26; cm/yr for R24	SF_i	=		(mg/kg-d)$^{-1}$
K_{oc}	=		cm^3/g or L/kg	SF_o	=		(mg/kg-d)$^{-1}$
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}	THQ	=	1	unitless
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}	TR	=		unitless
k_s (inorganics)	=		cm^3_{water}/g_{soil}	U	=		cm/d
L_s	=	100	cm	U_{air}	=	225	cm/s
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$	U_{gw}	=		cm/yr
M	=	0.5	mg/cm^2	VF_p	=		kg/m^3
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s	VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m^3
RAF_d	=	0.5	unitless	VF_{ss}	=		kg/m^3

Incident #:	20140963	Chemical:	Ethylbenzene	Land Use:	Not Applicable

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=	see below	cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=		cm^3/cm^3_{soil}
λ	=	0.003	d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L

C_{source} Values: (mg/L)

SB- A: 1.8677

Maximum Predicted Extent of Groundwater Impact (X):
(feet from point source)

SB- A: 6'

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details	
Site Name & Location:	Downtown 66 Peoria, Illinois	**Sample Location:**	SB-A
LUST Incident Number(s):	20140963	**Sample Depth (feet):**	0
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Ethylbenzene

Concentration at the source (C_{source})=	1.8677 mg/L			
Distance along centerline of the plume coming from the source (X)=	**6.00** ft	=	182.88 cm	
First order degradation constant (λ)=	0.003 /day			if ethylbenzene, lambda=0.003/day
Aquifer hydraulic conductivity (K)=	1.000E-04 cm/sec	=	8.640 cm/day	
Hydraulic gradient (i)=	0.0200 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	113 ft	=	3,444.24 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Porosity
Gravel=0.25
Sand=0.32
Silt=0.40
Clay=0.36
Default=0.43

Calculated Parameters **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	18.288	cm
Transverse dispersivity	Ay=	6.096	cm
Vertical dispersivity	Az=	0.9144	cm
Specific discharge	U=	0.54	cm/day
Sw/(4*SQRT(Ay*X))	B=	25.78860375	
Sd/(2*SQRT(Az*X))	C=	7.731034141	
Error function	erf(B)=	1	To determine error function values,
Error function	erf(C)=	1	see F46 & K46 in the linear interpolation section.

Actual B value=	25.78860375	Actual C value=	7.731034141
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

Solutions

$C_{(x)}$
0.7 mg/l

C_{source}
0.00 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	25.78860375	7.731034141
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.105841195	0.283076179
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26: Total Xylenes

Contact Information for Individual Who Performed Calculations: Joe Buhlig - Project Manager

Marlin Environmental, Inc. Phone: (217) 726-7569 x30

Land Use: Not Applicable Soil Type: Sand

Groundwater: ☐ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S18/S28 used in R26? ☐ Yes ☐ No Specify C_{source} from S18/S28 see page 3 mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT_c	=	70	yr	d	=		cm
AT_n	=		yr	D^{air}	=		cm²/s
BW	=	70	kg	D^{water}	=		cm²/s
C_{source}	=	see page 3	mg/L	D_s^{eff}	=		cm²/s
$C_{(x)}$	=		mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 20140963 Chemical: Total Xylenes Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
erf	=		unitless	RAF_d (PNAs)	=	0.05	unitless
f_{oc}	=		g/g	RAF_d (inorganics)	=	0	unitless
GW_{comp}	=		mg/L	RAF_0	=	1.0	unitless
GW_{source}	=		mg/L	$RBSL_{air}$ (carcinogenic)	=		µg/m^3
H'	=		cm^3_{water}/cm^3_{air}	$RBSL_{air}$ (noncarcinogenic)	=		µg/m^3
i	=	0.02	cm/cm	RfD_i	=		mg/kg-d
I	=	30	cm/yr	RfD_o	=		mg/kg-d
IR_{air}	=	20	m^3/d	SA	=	3,160	cm^2/d
IR_{soil}	=		mg/d	S_d	=	200	cm
IR_w	=		L/d	S_w	=	3,444.24	cm
K	=	8.64	cm/d for R15, R19, R26; cm/yr for R24	SF_i	=		(mg/kg-d)$^{-1}$
K_{oc}	=		cm^3/g or L/kg	SF_o	=		(mg/kg-d)$^{-1}$
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}	THQ	=	1	unitless
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}	TR	=		unitless
k_s (inorganics)	=		cm^3_{water}/g_{soil}	U	=		cm/d
L_s	=	100	cm	U_{air}	=	225	cm/s
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$	U_{gw}	=		cm/yr
M	=	0.5	mg/cm^2	VF_p	=		kg/m^3
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s	VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m^3
RAF_d	=	0.5	unitless	VF_{ss}	=		kg/m^3

Incident #:	20140963	Chemical:	Total Xylenes	Land Use:	Not Applicable

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=	see below	cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=		cm^3/cm^3_{soil}
λ	=	0.0019	d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L

C_{source} Values: (mg/L)

SB- A: 16.3830

Maximum Predicted Extent of Groundwater Impact (X):
(feet from point source)

SB- A: 4.8'

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details	
Site Name & Location:	Downtown 66 Peoria, Illinois	**Sample Location:**	SB-A
LUST Incident Number(s):	20140963	**Sample Depth (feet):**	0
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Total Xylenes

Concentration at the source (C_{source})=	16.3830	mg/L			
Distance along centerline of the plume coming from the source (X)=	**4.80**	ft	=	146.30	cm
First order degradation constant (λ)=	0.0019	/day		if total xylenes, lambda=0.0019/day	
Aquifer hydraulic conductivity (K)=	1.000E-04	cm/sec	=	8.640	cm/day
Hydraulic gradient (i)=	0.0200	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	113	ft	=	3,444.24	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Porosity
Gravel=0.25
Sand=0.32
Silt=0.40
Clay=0.36
Default=0.43

Calculated Parameters **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	14.6304	cm
Transverse dispersivity	Ay=	4.8768	cm
Vertical dispersivity	Az=	0.73152	cm
Specific discharge	U=	0.54	cm/day
Sw/(4*SQRT(Ay*X))	B=	32.23575469	
Sd/(2*SQRT(Az*X))	C=	9.663792676	
Error function	erf(B)=	1	To determine error function values,
Error function	erf(C)=	1	see F46 & K46 in the linear interpolation section.

Actual B value=	32.23575469	Actual C value=	9.663792676
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

Solutions

$C_{(x)}$ **10.0** mg/l

C_{source} **0.00** mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	32.23575469	9.663792676
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.086504095	0.240051517
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26: Benzo (a) anthracene

Contact Information for Individual Who Performed Calculations: Joe Buhlig - Project Manager

Marlin Environmental, Inc. Phone: (217) 726-7569 x30

Land Use: Not Applicable Soil Type: Sand

Groundwater: ☐ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S18/S28 used in R26? ☐ Yes ☐ No Specify C_{source} from S18/S28 see page 3 mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT_c	=	70	yr	d	=		cm
AT_n	=		yr	D^{air}	=		cm²/s
BW	=	70	kg	D^{water}	=		cm²/s
C_{source}	=	see page 3	mg/L	D_s^{eff}	=		cm²/s
$C_{(x)}$	=		mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 20140963 Chemical: Benzo (a) anthracene Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
erf	=		unitless	RAF_d (PNAs)	=	0.05	unitless
f_{oc}	=		g/g	RAF_d (inorganics)	=	0	unitless
GW_{comp}	=		mg/L	RAF_0	=	1.0	unitless
GW_{source}	=		mg/L	$RBSL_{air}$ (carcinogenic)	=		μg/m³
H'	=		cm^3_{water}/cm^3_{air}	$RBSL_{air}$ (noncarcinogenic)	=		μg/m³
i	=	0.02	cm/cm	RfD_i	=		mg/kg-d
I	=	30	cm/yr	RfD_o	=		mg/kg-d
IR_{air}	=	20	m³/d	SA	=	3,160	cm²/d
IR_{soil}	=		mg/d	S_d	=	200	cm
IR_w	=		L/d	S_w	=	3,444.24	cm
K	=	8.64	cm/d for R15, R19, R26; cm/yr for R24	SF_i	=		$(mg/kg\text{-}d)^{-1}$
K_{oc}	=		cm³/g or L/kg	SF_o	=		$(mg/kg\text{-}d)^{-1}$
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}	THQ	=	1	unitless
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}	TR	=		unitless
k_s (inorganics)	=		cm^3_{water}/g_{soil}	U	=		cm/d
L_s	=	100	cm	U_{air}	=	225	cm/s
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$	U_{gw}	=		cm/yr
M	=	0.5	mg/cm²	VF_p	=		kg/m³
Pe	=	$6.9 \cdot 10^{-14}$	g/cm²-s	VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m³
RAF_d	=	0.5	unitless	VF_{ss}	=		kg/m³

Incident #: 20140963 Chemical: Benzo (a) anthracene Land Use: Not Applicable

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=	see below	cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=		cm^3/cm^3_{soil}
λ	=	0.00051	d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L

C_{source} Values: (mg/L)

SB- 8 (2'-4'): 0.0689

Maximum Predicted Extent of Groundwater Impact (X):
(feet from point source)

SB- 8 (2'-4'): 135'

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details	
Site Name & Location:	Downtown 66 Peoria, Illinois	**Sample Location:**	SB-8
		Sample Depth (feet):	2'-4'
LUST Incident Number(s):	20140963		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzo(a)anthracene

Concentration at the source (C_{source})=	0.0689 mg/L		
Distance along centerline of the plume coming from the source (X)=	135.00 ft	=	4,114.80 cm
First order degradation constant (λ)=	0.00051 /day		if benzo(a)anthracene, lambda=0.00051/day
Aquifer hydraulic conductivity (K)=	1.000E-04 cm/sec	=	8.640 cm/day
Hydraulic gradient (i)=	0.0200 m/m		
Total soil porosity (θ_T)=	0.43 cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	20 ft	=	609.60 cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm (assuming complete mixing)

Porosity
Gravel=0.25
Sand=0.32
Silt=0.40
Clay=0.36
Default=0.43

Calculated Parameters **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	411.48	cm
Transverse dispersivity	Ay=	137.16	cm
Vertical dispersivity	Az=	20.574	cm
Specific discharge	U=	0.401860465	cm/day
Sw/(4*SQRT(Ay*X))	B=	0.202860206	
Sd/(2*SQRT(Az*X))	C=	0.343601517	
Error function	erf(B)=	0.225801524	To determine error function values,
Error function	erf(C)=	0.372980302	see F46 & K46 in the linear interpolation section.

Actual B value=	0.202860206	Actual C value=	0.343601517
Automatic calculations : Actual erf(B)	0.225801524	Actual erf(C)=	0.372980302

Solutions

$C_{(x)}$

0.00013 mg/l

C_{source}

0.00 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26

Maximum error in computation = 1.5 x 10^-7

x=	0.202860206	0.343601517
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.937685898	0.898827283
erf(x)=	0.225801524	0.372980302

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

The Agency is authorized to require this information under Section 4 and Title XVI of the Environmental Protection Act (415 ILCS 5/4, 5/57 - 57.17). Failure to disclose this information may result in a civil penalty of not to exceed $50,000.00 for the violation and an additional civil penalty of not to exceed $10,000.00 for each day during which the violation continues (415 ILCS 5/42). Any person who knowingly makes a false material statement or representation in any label, manifest, record, report, permit, or license, or other document filed, maintained or used for the purpose of compliance with Title XVI commits a Class 4 felony. Any second or subsequent offense after conviction hereunder is a Class 3 felony (415 ILCS 5/57.17). This form has been approved by the Forms Management Center.

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
SSL Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infintie Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: S12, S17, S28): S28/S18: Soil Leaching to Groundwater - Benz./Ethylbenz.

Contact Information for Individual Who Performed Calculations: Joe Buhlig - Project Manager
Marlin Environmental, Inc. Phone: (217) 726-7569 x30

Land Use: not applicable Soil Type: Sand

Groundwater: ☒ Class I ☐ Class II

Mass Limit: ☒ Yes ☐ No If Yes, then Specify Acreage: ☒ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT (ingestion)	=		yr	d_a	=		m
AT (inhalation)	=		yr	d_s	=	4.2672	m
AT_c	=	70	yr	D_A	=		cm^2/s
BW	=		kg	D_i	=		cm^2/s
C_{sat}	=		mg/kg	D_w	=		cm^2/s
C_w	=		mg/L	DF	=	20	unitless
d	=	2	m	ED (ingestion of carcinogens)	=		yr

Incident #: 20140963 Chemical: BTEX, Benzo (a) Land Use: not applicable

Symbol			Unit	Symbol			Unit
ED (inhalation of carcinogens)	=		yr	K_{oc}	=		cm^3/g or L/kg
ED (ingestion of noncarcinogens)	=		yr	K_s	=		m/yr
ED (inhalation of noncarcinogens)	=		yr	L	=	39.624	m
ED (ingestion of groundwater)	=		yr	PEF	=		m^3/kg
ED_{M-L}	=	70	yr	PEF'	=		m^3/kg
EF	=		d/yr	Q/C (VF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
F(x)	=	0.194	unitless	Q/C (PEF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
f_{oc}	=		g/g	RfC	=		mg/m^3
GW_{obj}	=		mg/L	RfD_o	=		mg/(kg-d)
H'	=		unitless	S	=		mg/L
i	=	0.0131	m/m	SF_o	=		$(mg/kg\text{-}d)^{-1}$
I	=	0.3	m/yr	T	=		s
I_{M-L}	=	0.18	m/yr	T_{M-L}	=	30	yr
$IF_{soil\text{-}adj}$	=	114	(mg-yr)/(kg-d)	THQ	=	1	unitless
IR_{soil}	=		mg/d	TR	=		unitless
IR_w	=		L/d	U_m	=	4.69	m/s
K	=	0.46	m/yr	URF	=		$(\mu g/m^3)^{-1}$
K_d (non-ionizing organics)	=		cm^3/g or L/kg	U_t	=	11.32	kg/m^3
K_d (ionizing organics)	=		cm^3/g or L/kg	V	=		unitless
K_d (inorganics)	=		cm^3/g or L/kg	VF	=		m^3/kg

Incident #:	20140963	Chemical:	BTEX, Benzo (a)	Land Use:	not applicable

Symbol			Unit
VF'	=		m^3/kg
VF_{M-L}	=		m^3/kg
VF'_{M-L}	=		m^3/kg
η	=		L_{pore}/L_{soil}
θ_a	=		L_{air}/L_{soil}

Symbol			Unit
θ_w	=		L_{water}/L_{soil}
ρ_b	=	1.5	kg/L or g/cm^3
ρ_s	=		g/cm^3
ρ_w	=	1	g/cm^3
1/(2b+3)	=		unitless

Equation		Result	Unit(s)
S1	=		mg/kg
S2	=		mg/kg
S3	=		mg/kg
S4	=		mg/kg
S5	=		mg/kg
S6	=		mg/L
S7	=		mg/kg
S17	=		mg/kg
S28	=		mg/kg
S29	=		mg/L

Source Area Concentration Values:
(mg/Kg)

SB-A Benzene: 1.460
SB-A Toluene: 104
SB-A Ethylbenzene: 51.3
SB-A Total Xylenes: 450
SB-8 (2'-4') Benzo (a) anthracene: 5.30

Soil to Groundwater Leachate Potential (GW_{obj}):
(mg/L)

SB-A Benzene: 0.0532
SB-A Toluene: 3.7863
SB-A Ethylbenzene: 1.8677
SB-A Total Xylenes: 16.3830

SB-8(2'-4')Benzo(a)anthracene:
0.0689

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE EQUATION S28

Downtown 66

SB-A: BENZENE

Remediation Objective =
(milligrams per kilogram, mg/kg)

$$\frac{(C_w \bullet I_{M-L} \bullet ED_{M-L})}{(\rho_b \bullet d_s)}$$

Target Soil Leachate Concentration Cw =
(milligrams per kilogram, mg/kg)

$$DF \bullet GW_{obj}$$

Dilution Factor DF= 20
(unitless)

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
I_{M-L}	m/yr	Infiltration Rate			0.18
GW_{obj}	mg/L	**Soil to Groundwater Potential Leachate Concentration**			**0.0532**
			Class I	Class II	
		Benzene	**0.005**	0.025	
		Toluene	1	2.5	
		Ethylbenzene	0.7	1	
		Xylenes	10	10	
d_s	m	Depth of Source			4.2672
ED_{M-L}	year	Exposure Duration for Eq S28			70
ρb	Kg/L	Dry Soil Bulk Density			2.15

REFERENCE FOR INPUT PARAMETERS		
		ρb
Site-Specific, or:	Gravel	2
	Sand	1.8
	Silt	1.6
	Clay	1.7

MODEL CALCULATED OUTPUTS:

DF= 20
Cw= 1.063075

Soil Concentration in mg/Kg: 1.4600
(calculated using standard parameter value for d, mixing zone depth)

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE EQUATION S28

Downtown 66

SB-A: Toluene

Remediation Objective =
(milligrams per kilogram, mg/kg)

$$\frac{(C_w \bullet I_{M-L} \bullet ED_{M-L})}{(\rho_b \bullet d_s)}$$

Target Soil Leachate Concentration Cw =
(milligrams per kilogram, mg/kg)

$$DF \bullet GW_{obj}$$

Dilution Factor DF= 20
(unitless)

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter	Values
I_{M-L}	m/yr	Infiltration Rate	0.18
GW_{obj}	mg/L	**Soil to Groundwater Potential Leachate Concentration**	**3.7863**
		Class I / Class II	
		Benzene **0.005** 0.025	
		Toluene 1 2.5	
		Ethylbenzene 0.7 1	
		Xylenes 10 10	
d_s	m	Depth of Source	4.2672
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρb	Kg/L	Dry Soil Bulk Density	2.15

MODEL CALCULATED OUTPUTS:

DF=	20
Cw=	75.725867
Soil Concentration in mg/Kg:	104.0000

(calculated using standard parameter value for d, mixing zone depth)

REFERENCE FOR INPUT PARAMETERS		
		ρb
Site-Specific, or:	Gravel	2
	Sand	1.8
	Silt	1.6
	Clay	1.7

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
EQUATION S28

Downtown 66

SB-A: Ethylbenzene

Remediation Objective = (milligrams per kilogram, mg/kg)

$$\frac{(C_w \bullet I_{M-L} \bullet ED_{M-L})}{(\rho_b \bullet d_s)}$$

Target Soil Leachate Concentration Cw = (milligrams per kilogram, mg/kg)

$$DF \bullet GW_{obj}$$

Dilution Factor DF= (unitless) 20

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
I_{M-L}	m/yr	Infiltration Rate			0.18
GW_{obj}	mg/L	**Soil to Groundwater Potential Leachate Concentration**			**1.8677**
			Class I	Class II	
		Benzene	**0.005**	0.025	
		Toluene	1	2.5	
		Ethylbenzene	0.7	1	
		Xylenes	10	10	
d_s	m	Depth of Source			4.2672
ED_{M-L}	year	Exposure Duration for Eq S28			70
ρb	Kg/L	Dry Soil Bulk Density			2.15

REFERENCE FOR INPUT PARAMETERS		
		ρb
Site-Specific, or:	Gravel	2
	Sand	1.8
	Silt	1.6
	Clay	1.7

MODEL CALCULATED OUTPUTS:

DF= 20

Cw= 37.353240

Soil Concentration in mg/Kg: 51.3000

(calculated using standard parameter value for d, mixing zone depth)

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
EQUATION S28

Downtown 66

SB-A: Total Xylenes

Remediation Objective =
(milligrams per kilogram, mg/kg)

$$\frac{(C_w \bullet I_{M-L} \bullet ED_{M-L})}{(\rho_b \bullet d_s)}$$

Target Soil Leachate Concentration Cw =
(milligrams per kilogram, mg/kg)

$$DF \bullet GW_{obj}$$

Dilution Factor DF= 20
(unitless)

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
I_{M-L}	m/yr	Infiltration Rate			0.18
GW_{obj}	mg/L	**Soil to Groundwater Potential Leachate Concentration**			**16.3830**
			Class I	Class II	
		Benzene	**0.005**	0.025	
		Toluene	1	2.5	
		Ethylbenzene	0.7	1	
		Xylenes	10	10	
d_s	m	Depth of Source			4.2672
ED_{M-L}	year	Exposure Duration for Eq S28			70
ρb	Kg/L	Dry Soil Bulk Density			2.15

MODEL CALCULATED OUTPUTS:

DF=	20
Cw=	327.660000
Soil Concentration in mg/Kg:	450.0000

(calculated using standard parameter value for d, mixing zone depth)

REFERENCE FOR INPUT PARAMETERS		
		ρb
Site-Specific, or:	Gravel	2
	Sand	1.8
	Silt	1.6
	Clay	1.7

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
EQUATION S28

Downtown 66

SB-8 (2'-4'): Benzo (a) anthracene

Remediation Objective =
(milligrams per kilogram, mg/kg)

$$\frac{(C_w \bullet I_{M-L} \bullet ED_{M-L})}{(\rho_b \bullet d_s)}$$

Target Soil Leachate Concentration Cw =
(milligrams per kilogram, mg/kg)

$$DF \bullet GW_{obj}$$

Dilution Factor DF= 20
(unitless)

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
I_{M-L}	m/yr	Infiltration Rate			0.18
GW_{obj}	mg/L	**Soil to Groundwater Potential Leachate Concentration**			**0.0689**
			Class I	Class II	
		Benzene	**0.005**	0.025	
		Toluene	1	2.5	
		Ethylbenzene	0.7	1	
		Xylenes	10	10	
d_s	m	Depth of Source			1.524
ED_{M-L}	year	Exposure Duration for Eq S28			70
ρb	Kg/L	Dry Soil Bulk Density			2.15

REFERENCE FOR INPUT PARAMETERS		
		ρb
	Gravel	2
Site-Specific,	Sand	1.8
or:	Silt	1.6
	Clay	1.7

MODEL CALCULATED OUTPUTS:

DF=	20
Cw=	1.378252
Soil Concentration in mg/Kg:	5.3000

(calculated using standard parameter value for d, mixing zone depth)

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
SSL Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: S12, S17, S28): S29: Soil Saturation Limit

Contact Information for Individual Who Performed Calculations: Joe Buhlig Project Manager, Marlin Environmental, Inc. (217) 726-7569 x30

Land Use: not applicable Soil Type: Sand

Groundwater: ☒ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT (ingestion)	=		yr	d_a	=		m
AT (inhalation)	=		yr	d_s	=		m
AT_c	=	70	yr	D_A	=		cm^2/s
BW	=		kg	D_i	=		cm^2/s
C_{sat}	=		mg/kg	D_w	=		cm^2/s
C_w	=		mg/L	DF	=		unitless
d	=		m	ED (ingestion of carcinogens)	=		yr

Incident #: 20140963 Chemical: Total Xylenes Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
ED (inhalation of carcinogens)	=		yr	K_{oc}	=	see page 3	cm^3/g or L/kg
ED (ingestion of noncarcinogens)	=		yr	K_s	=		m/yr
ED (inhalation of noncarcinogens)	=		yr	L	=		m
ED (ingestion of groundwater)	=		yr	PEF	=		m^3/kg
ED_{M-L}	=	70	yr	PEF'	=		m^3/kg
EF	=		d/yr	Q/C (VF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
F(x)	=	0.194	unitless	Q/C (PEF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
f_{oc}	=	0.0136	g/g	RfC	=		mg/m^3
GW_{obj}	=		mg/L	RfD_o	=		mg/(kg-d)
H'	=	see page 3	unitless	S	=	see page 3	mg/L
i	=		m/m	SF_o	=		$(mg/kg\text{-}d)^{-1}$
I	=	0.3	m/yr	T	=		s
I_{M-L}	=	0.18	m/yr	T_{M-L}	=	30	yr
$IF_{soil-adj}$	=	114	(mg-yr)/(kg-d)	THQ	=	1	unitless
IR_{soil}	=		mg/d	TR	=		unitless
IR_w	=		L/d	U_m	=	4.69	m/s
K	=		m/yr	URF	=		$(\mu g/m^3)^{-1}$
K_d (non-ionizing organics)	=	see page 3	cm^3/g or L/kg	U_t	=	11.32	kg/m^3
K_d (ionizing organics)	=		cm^3/g or L/kg	V	=		unitless
K_d (inorganics)	=		cm^3/g or L/kg	VF	=		m^3/kg

Incident #:	20140963	Chemical:	Total Xylenes	Land Use:	Not Applicable

Symbol			Unit
VF'	=		m^3/kg
VF_{M-L}	=		m^3/kg
VF'_{M-L}	=		m^3/kg
η	=		L_{pore}/L_{soil}
θ_a	=	0.14	L_{air}/L_{soil}

Symbol			Unit
θ_w	=	0.18	L_{water}/L_{soil}
ρ_b	=	2.15	kg/L or g/cm^3
ρ_s	=		g/cm^3
ρ_w	=	1	g/cm^3
1/(2b+3)	=		unitless

Equation		Result	Unit(s)
S1	=		mg/kg
S2	=		mg/kg
S3	=		mg/kg
S4	=		mg/kg
S5	=		mg/kg
S6	=		mg/L
S7	=		mg/kg
S17	=		mg/kg
S28	=		mg/kg
S29	=	See Box Below	mg/L

Henry's Law Constant (H'): (dimensionless)

Total Xylenes = 0.25

Solubility in Water (S): (mg/L)

Total Xylenes = 186

Organic Carbon Partition Coefficient (K_{oc}): (cm^3/g)

Total Xylenes = 260

Soil-Water Partition Coefficient (K_d): Equation S19 (cm^3/g)

Total Xylenes = 2.55

Solution to Equation S29: (mg/kg)

Total Xylenes = 607

DERIVATION OF THE SOIL SATURATION LIMIT, Csat
SSL Equations S19 and S29

Downtown 66

$$C_{sat} = \frac{S}{\rho_b} \bullet \left[\left(K_d \bullet \rho_b \right) + \theta_w + \left(H' \bullet \theta_a \right) \right]$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES	
S	Solubility in Water	mg/l	Total Xylenes	110
ρ_b	Bulk Soil Density	g/cm^3	Gravel Sand Silt Clay or Site-Specific	2.0 1.8 1.6 1.7
K_d	Soil-Water Partition Coefficient	cm^3/g	$K_d = K_{oc} \bullet f_{oc}$	
K_{oc}	Organic Carbon Partition Coefficient	cm^3/g	Total Xylenes	398
f_{oc}	Fractional Organic Carbon	g/g	Site specific	
θ_w	Water Filled Soil Porosity	Dimensionless	Gravel Sand Silt Clay or Site-Specific	0.20 0.18 0.16 0.17 Equation S20
H'	Henry's Law Constant	Dimensionless	Total Xylenes	0.271
θ_a	Air Filled Soil Porosity	Dimensionless	Gravel Sand Silt Clay or Site-Specific	0.05 0.14 0.24 0.19 Equation S21

INPUT PARAMETER VALUES/INTERMEDIATE VALUES

S=	110	mg/l	**K_d=**	5.41E+00	cm^3/g
ρ_b=	2.15	g/cm^3	**θ_w=**	0.18	dimensionless
K_{oc}=	398	L/kg	**H'=**	0.271	dimensionless
f_{oc}=	13,600	mg/kg	**θ_a=**	0.14	dimensionless
f_{oc}=	0.0136	g/g			

$C_{sat =}$ 606.56 mg/kg

Calculated Tier 2 $C_{sat =}$ 607 mg/kg

Tier 1 Non-Exceedence Check (value of C_{sat} will change if Tier 2 C_{sat} is less than Tier 1 C_{sat}):

$C_{sat\ (Soil\ Comp\ of\ GW\ Ingestion)}$ =	**607 mg/kg**
$C_{sat\ (Soil\ Outdoor\ Inhalation)}$ =	**607 mg/kg**

TOTAL XYLENES

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
SSL Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: S12, S17, S28): S18 and S28: Soil Component of GW Ingestion SROs

Contact Information for Individual Who Performed Calculations: Joe Buhlig, Project Manager

Marlin Environmental, Inc. (217) 726-7569 x30

Land Use: not applicable Soil Type: Sand

Groundwater: ☒ Class I ☐ Class II

Mass Limit: ☒ Yes ☐ No If Yes, then Specify Acreage: ☒ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit
AT (ingestion)	=		yr
AT (inhalation)	=		yr
AT_c	=	70	yr
BW	=		kg
C_{sat}	=		mg/kg
C_w	=	see page 3	mg/L
d	=		m

Symbol			Unit
d_a	=		m
d_s	=	4.2672	m
D_A	=		cm²/s
D_i	=		cm²/s
D_w	=		cm²/s
DF	=	20	unitless
ED (ingestion of carcinogens)	=		yr

Incident #: 20140963 Chemical: BTEX/Benzo (a) Anth Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
ED (inhalation of carcinogens)	=		yr	K_{oc}	=		cm^3/g or L/kg
ED (ingestion of noncarcinogens)	=		yr	K_s	=		m/yr
ED (inhalation of noncarcinogens)	=		yr	L	=		m
ED (ingestion of groundwater)	=		yr	PEF	=		m^3/kg
ED_{M-L}	=	70	yr	PEF'	=		m^3/kg
EF	=		d/yr	Q/C (VF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
F(x)	=	0.194	unitless	Q/C (PEF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
f_{oc}	=		g/g	RfC	=		mg/m^3
GW_{obj}	=	see page 3	mg/L	RfD_o	=		mg/(kg-d)
H'	=		unitless	S	=		mg/L
i	=		m/m	SF_o	=		$(mg/kg\text{-}d)^{-1}$
I	=	0.3	m/yr	T	=		s
I_{M-L}	=	0.18	m/yr	T_{M-L}	=	30	yr
$IF_{soil\text{-}adj}$	=	114	(mg-yr)/(kg-d)	THQ	=	1	unitless
IR_{soil}	=		mg/d	TR	=		unitless
IR_w	=		L/d	U_m	=	4.69	m/s
K	=		m/yr	URF	=		$(\mu g/m^3)^{-1}$
K_d (non-ionizing organics)	=		cm^3/g or L/kg	U_t	=	11.32	kg/m^3
K_d (ionizing organics)	=		cm^3/g or L/kg	V	=		unitless
K_d (inorganics)	=		cm^3/g or L/kg	VF	=		m^3/kg

Incident #:	20140963	Chemical:	BTEX/Benzo (a) Anth	Land Use:	Not Applicable

Symbol			Unit
VF'	=		m^3/kg
VF_{M-L}	=		m^3/kg
VF'_{M-L}	=		m^3/kg
η	=		L_{pore}/L_{soil}
θ_a	=		L_{air}/L_{soil}

Symbol			Unit
θ_w	=		L_{water}/L_{soil}
ρ_b	=	2.15	kg/L or g/cm^3
ρ_s	=		g/cm^3
ρ_w	=	1	g/cm^3
1/(2b+3)	=		unitless

Equation		Result	Unit(s)
S1	=		mg/kg
S2	=		mg/kg
S3	=		mg/kg
S4	=		mg/kg
S5	=		mg/kg
S6	=		mg/L
S7	=		mg/kg
S17	=		mg/kg
S28	=	See Box to Right	mg/kg
S29	=		mg/L

Groundwater Cleanup Objectives (GW_{obj}): (mg/L)

Benzene: 0.005
Toluene: 1.0
Ethylbenzene: 0.7
Total Xylenes: 10.0

Target Soil Leachate Concentrations (C_W): (mg/L)

Benzene: 0.1
Toluene: 20.0
Ethylbenzene: 14.0
Total Xylenes: 200.0

Solution to Equation S28: (mg/kg)

Benzene = 0.14
Toluene = 27.5
Ethylbenzene = 19.2
Total Xylenes = 275
Benzo (a) anthracene = 2.0

*** = Tier 2 Soil Saturation Limit**

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATION S28

Downtown 66 - Peoria

Remediation Objective = $(C_w \times I_{M\text{-}L} \times ED_{M\text{-}L}) / (\rho_b \times d_s)$
(milligrams per kilogram, mg/kg)

Target Soil Leachate Concentration C_w = $DF \times GW_{obj}$
(milligrams per kilogram, mg/kg)

Dilution Factor DF= 20
(unitless)

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
$I_{M\text{-}L}$	m/yr	Infiltration Rate for Eq S28			0.18
I	m/yr	Infiltration Rate			0.3
GW_{obj}	mg/L	Ground Water Remdediation Objective			0.005
			Class I	Class II	
		Benzene	0.005	0.025	
d_s	m	Depth of Source			4.2672
$ED_{M\text{-}L}$	year	Exposure Duration for Eq S28			70
ρ_b	kg/L	Dry Soil Bulk Density			2.15

REFERENCE FOR INPUT PARAMETERS	
	ρb
Gravel	2
Sand	1.8
Silt	1.6
Clay	1.7
or site-specific	

MODEL CALCULATED OUTPUTS:

C_w =	0.1

Calculated Soil Remediation Objective:

Soil Remediation Objective =	0.13734 mg/kg

S*oil Saturation Limit Exceedence Check* (value of SRO will change if soil saturation limit is exceeded for chemical):

Soil Remediation Objective =	**0.14 mg/kg**
Soil Remediation Objective =	**140 µg/kg**

Benzene

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATION S28

Downtown 66 - Peoria

Remediation Objective = $(C_w \times I_{M\text{-}L} \times ED_{M\text{-}L}) / (\rho_b \times d_s)$
(milligrams per kilogram, mg/kg)

Target Soil Leachate Concentration C_w = DF x GW_{obj}
(milligrams per kilogram, mg/kg)

Dilution Factor DF= 20
(unitless)

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
$I_{M\text{-}L}$	m/yr	Infiltration Rate for Eq S28			0.18
I	m/yr	Infiltration Rate			0.3
GW_{obj}	mg/L	Ground Water Remdiation Objective			1
			Class I	Class II	
		Toluene	1	2.5	
d_s	m	Depth of Source			4.2672
$ED_{M\text{-}L}$	year	Exposure Duration for Eq S28			70
ρ_b	kg/L	Dry Soil Bulk Density			2.15

MODEL CALCULATED OUTPUTS:

C_w =	20

REFERENCE FOR INPUT PARAMETERS	
	ρb
Gravel	2
Sand	1.8
Silt	1.6
Clay	1.7
or site-specific	

Calculated Soil Remediation Objective:

Soil Remediation Objective =	27.46750 mg/kg

Soil Saturation Limit Exceedence Check (value of SRO will change if soil saturation limit is exceeded for chemical):

Soil Remediation Objective =	**27.5 mg/kg**
Soil Remediation Objective =	**27,500 µg/kg**

Toluene

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATION S28

Downtown 66 - Peoria

Remediation Objective = $(C_w \times I_{M\text{-}L} \times ED_{M\text{-}L}) / (\rho_b \times d_s)$
(milligrams per kilogram, mg/kg)

Target Soil Leachate Concentration Cw = DF x GW_{obj}
(milligrams per kilogram, mg/kg)

Dilution Factor DF= 20
(unitless)

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
$I_{M\text{-}L}$	m/yr	Infiltration Rate for Eq S28			0.18
I	m/yr	Infiltration Rate			0.3
GW_{obj}	mg/L	Ground Water Remdiation Objective			0.7
			Class I	Class II	
		Ethylbenzene	0.7	1	
d_s	m	Depth of Source			4.2672
$ED_{M\text{-}L}$	year	Exposure Duration for Eq S28			70
ρ_b	Kg/L	Dry Soil Bulk Density			2.15

MODEL CALCULATED OUTPUTS:

C_w = 14

REFERENCE FOR INPUT PARAMETERS	
	ρb
Gravel	2
Sand	1.8
Silt	1.6
Clay	1.7
or site-specific	

Calculated Soil Remediation Objective:

Soil Remediation Objective =	19.22725 mg/kg

Soil Saturation Limit Exceedence Check (value of SRO will change if soil saturation limit is exceeded for chemical):

Soil Remediation Objective =	**19.2 mg/kg**
Soil Remediation Objective =	**19,200 µg/kg**

Ethylbenzene

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATION S28

Downtown 66 - Peoria

Remediation Objective = (milligrams per kilogram, mg/kg)	$(C_w \times I_{M-L} \times ED_{M-L}) / (\rho_b \times d_s)$
Target Soil Leachate Concentration C_w = (milligrams per kilogram, mg/kg)	DF x GW_{obj}
Dilution Factor DF= (unitless)	20

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
I_{M-L}	m/yr	Infiltration Rate for Eq S28			0.18
I	m/yr	Infiltration Rate			0.3
GW_{obj}	mg/L	Ground Water Remdiation Objective			10
			Class I	Class II	
		Total Xylenes	10	10	
d_s	m	Depth of Source			4.2672
ED_{M-L}	year	Exposure Duration for Eq S28			70
ρ_b	kg/L	Dry Soil Bulk Density			2.15

REFERENCE FOR INPUT PARAMETERS	
	ρb
Gravel	2
Sand	1.8
Silt	1.6
Clay	1.7
or site-specific	

MODEL CALCULATED OUTPUTS:

C_w =	200

Calculated Soil Remediation Objective:

Soil Remediation Objective =	274.67497 mg/kg

Soil Saturation Limit Exceedence Check (value of SRO will change if soil saturation limit is exceeded for chemical):

Soil Remediation Objective =	275 mg/kg

Tier 1 Non-Exceedence Check (value of SRO will change if Tier 2 SRO is more stringent than Tier 1 SRO):

Soil Remediation Objective =	**275 mg/kg**
Soil Remediation Objective =	**275,000 µg/kg**

Total Xylenes

MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE SSL EQUATION S28

Downtown 66 - Peoria

Remediation Objective = (milligrams per kilogram, mg/kg) — $(C_w \times I_{M\text{-}L} \times ED_{M\text{-}L}) / (\rho_b \times d_s)$

Target Soil Leachate Concentration C_w = (milligrams per kilogram, mg/kg) — $DF \times GW_{obj}$

Dilution Factor DF= (unitless) — 20

MODEL PARAMETERS INPUT:

Symbol	Unit	Parameter			Values
$I_{M\text{-}L}$	m/yr	Infiltration Rate for Eq S28			0.18
I	m/yr	Infiltration Rate			0.3
GW_{obj}	mg/L	Ground Water Remediation Objective			0.00013
			Class I	Class II	
		Benzo(a)anthracene	0.00013	0.00065	
d_s	m	Depth of Source			4.2672
$ED_{M\text{-}L}$	year	Exposure Duration for Eq S28			70
ρ_b	kg/L	Dry Soil Bulk Density			2.15

MODEL CALCULATED OUTPUTS:

C_w =	0.0026

REFERENCE FOR INPUT PARAMETERS	
	ρb
Gravel	2
Sand	1.8
Silt	1.6
Clay	1.7
or site-specific	

Calculated Soil Remediation Objective:

Soil Remediation Objective =	0.00357 mg/kg

Tier 1 Non-Exceedence Check (value of SRO will change if Tier 2 SRO is less than Tier 1 SRO):

Soil Remediation Objective =	**2.0 mg/kg**	Class I Groundwater
Soil Remediation Objective =	**2,000 µg/kg**	

Soil Remediation Objective =	**8.0 mg/kg**	Class II Groundwater
Soil Remediation Objective =	**8,000 µg/kg**	

Benzo(a)anthracene

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
SSL Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: S12, S17, S28): S6, S7 and S26/S27: Inhalation of Carcinogens SROs

Contact Information for Individual Who Performed Calculations: Joe Buhlig Project Manager, Marlin Environmental, Inc. (217) 726-7569 x30

Land Use: Res., Ind./Com. & Const. Worker Soil Type: Sand

Groundwater: ☒ Class I ☐ Class II

Mass Limit: ☒ Yes ☐ No If Yes, then Specify Acreage: ☒ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT (ingestion)	=		yr	d_a	=		m
AT (inhalation)	=		yr	d_s	=	4.2672	m
AT_c	=	70	yr	D_A	=		cm²/s
BW	=		kg	D_i	=		cm²/s
C_{sat}	=		mg/kg	D_w	=		cm²/s
C_w	=		mg/L	DF	=		unitless
d	=		m	ED (ingestion of carcinogens)	=		yr

Incident #: 20140963 Chemical: Benzene Land Use: Res., Ind./Com., CW

Symbol			Unit	Symbol			Unit
ED (inhalation of carcinogens)	=	see page 3	yr	K_{oc}	=		cm^3/g or L/kg
ED (ingestion of noncarcinogens)	=		yr	K_s	=		m/yr
ED (inhalation of noncarcinogens)	=		yr	L	=		m
ED (ingestion of groundwater)	=		yr	PEF	=		m^3/kg
ED_{M-L}	=	70	yr	PEF'	=		m^3/kg
EF	=	see page 3	d/yr	Q/C (VF equations)	=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$
F(x)	=	0.194	unitless	Q/C (PEF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
f_{oc}	=		g/g	RfC	=		mg/m^3
GW_{obj}	=		mg/L	RfD_o	=		mg/(kg-d)
H'	=		unitless	S	=		mg/L
i	=		m/m	SF_o	=		$(mg/kg\text{-}d)^{-1}$
I	=	0.3	m/yr	T	=		s
I_{M-L}	=	0.18	m/yr	T_{M-L}	=	30	yr
$IF_{soil\text{-}adj}$	=	114	(mg-yr)/(kg-d)	THQ	=	1	unitless
IR_{soil}	=		mg/d	TR	=	0.000001	unitless
IR_w	=		L/d	U_m	=	4.69	m/s
K	=		m/yr	URF	=	see page 3	$(\mu g/m^3)^{-1}$
K_d (non-ionizing organics)	=		cm^3/g or L/kg	U_t	=	11.32	kg/m^3
K_d (ionizing organics)	=		cm^3/g or L/kg	V	=		unitless
K_d (inorganics)	=		cm^3/g or L/kg	VF	=		m^3/kg

Incident #: 20140963 Chemical: Benzene Land Use: Res., Ind./Com., CW

Symbol			Unit
VF'	=		m^3/kg
VF_{M-L}	=	9,569.33	m^3/kg
VF'_{M-L}	=	956.93	m^3/kg
η	=		L_{pore}/L_{soil}
θ_a	=		L_{air}/L_{soil}

Symbol			Unit
θ_w	=		L_{water}/L_{soil}
ρ_b	=	2.15	kg/L or g/cm^3
ρ_s	=		g/cm^3
ρ_w	=	1	g/cm^3
1/(2b+3)	=		unitless

Equation		Result	Unit(s)
S1	=		mg/kg
S2	=		mg/kg
S3	=		mg/kg
S4	=		mg/kg
S5	=		mg/kg
S6	=	See Boxes Below	mg/L
S7	=	See Box Below	mg/kg
S17	=		mg/kg
S28	=		mg/kg
S29	=		mg/L

Exposure Frequency (EF):
(days/year)

Residential = 350
Industrial/Commercial = 250
Construction Worker = 30

Exposure Duration (ED):
(years)

Residential = 30
Industrial/Commercial = 25
Construction Worker = 1

Inhalation Unit Risk Factor (URF):
$[(ug/m^3)^{-1}]$

Benzene = 0.0000078

Solution to Equation S6: (mg/kg) <u>Residential</u>	**Solution to Equation S6: (mg/kg) <u>Industrial/Commercial</u>**	**Solution to Equation S7: (mg/kg) <u>Construction Worker</u>**
Benzene = 3.1	**Benzene = 5.3**	**Benzene = 110**

EQUATIONS S6 AND S7 FOR INHALATION OF VOLATILE CONTAMINANTS IN SOIL (CARCINOGENS)

Downtown 66
Peoria, Illinois

Residential, Industrial/Commercial Remediation Objectives for Carcinogenic Contaminants (mg/kg)

$$\frac{TR \bullet AT_c \bullet 365\frac{d}{yr}}{URF \bullet 1000\frac{\mu g}{mg} \bullet EF \bullet ED \bullet \frac{1}{VF}}$$

Construction Worker Remediation Objectives for Carcinogenic Contaminants (mg/kg)

$$\frac{TR \bullet AT_c \bullet 365\frac{d}{yr}}{URF \bullet 1000\frac{\mu g}{mg} \bullet EF \bullet ED \bullet \frac{1}{VF'}}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
AT_c	AVERAGING TIME FOR CARCINOGENS	year	70
ED	EXPOSURE DURATION FOR INHALATION OF CARCINOGEN	year	RESIDENTIAL 30 INDUS/COMM. 25 CONST WRKR 1
EF	EXPOSURE FREQUENCY	d/yr	RESIDENTIAL 350 INDUS/COMM. 250 CONST WRKR 30
TR	TARGET CANCER RISK	unitless	RESIDENTIAL 10^{-6} INDUS/COMM. 10^{-6} CONST WRKR 10^{-6}
URF	INHALATION UNIT RISK FACTOR	$(^{\mu g}/_{m^3})^{-1}$	7.8×10^{-6} benzene
VF_{M-L}	VOLATILIZATION FACTOR	m^3/kg	REFER TO EQ. S26& S27 WITHIN TACO

S26 - Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Residential, Industrial/Commercial (m^3/kg)

$$VF_{M-L} = \frac{Q}{C} \bullet \left[\frac{T_{M-L} \bullet \left(3.15 \bullet 10^7 \frac{s}{yr}\right)}{\rho_b \bullet d_s \bullet 10^6 \frac{cm^3}{m^3}}\right]$$

S27 - Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Construction Worker (m^3/kg)

$$VF'_{M-L} = \frac{VF_{M-L}}{10}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
ds	DEPTH OF SOURCE	m	SITE SPECIFIC
Pb	DRY BULK DENSITY	g/cm^3	1.5, OR GRAVEL=2.0 SAND=1.8 SILT=1.6 CLAY=1.7, OR SITE SPECIFIC
Q/C	INVERSE OF THE MEAN CONCENTRATION AT THE CENTER OF A SQUARE SOURCE	$(g/m^2\text{-}s)/(kg/m^3)$	RESIDENTIAL 68.81 INDUS/COMM. 85.81 CONST WRKR 85.81 OR 742 Appendix C, Table H Q/C by Source Area
T_{M-L}	EXPOSURE INTERVAL	yr	30

INPUT PARAMETERS FOR VF_{M-L} RES/INDUS/COM PROP

Source Area	0.5	Acre
ds=	4.2672	m
Pb=	2.15	kg/L
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$ (Residential)
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$ (Industrial/Commercial)
T_{M-L} =	30	yr
VF_{M-L}=	10071.64	m^3/kg (Residential)
VF_{M-L}=	10071.64	m^3/kg (Industrial/Commercial)

INPUT PARAMTERS FOR VF'_{M-L} CONSTRUCTION WORKER

Source Area	0.5	Acre
ds=	4.2672	m
Pb=	2.15	kg/L
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$
T_{M-L} =	30	yr
VF_{M-L}=	1007.16	m^3/kg

INPUT PARAMETER VALUES RES/INDUS/COM PROP

AT_c=	70	year
ED=	30	year (Residential)
ED=	25	year (Industrial/Commercial)
EF=	350	d/yr (Residential)
EF=	250	d/yr (Industrial/Commercial)
TR=	1.00E-06	unitless
URF=	7.80E-06	$(^{\mu g}/_{m^3})^{-1}$
VF_{M-L}=	10071.64	m^3/kg (Residential)
VF_{M-L}=	10071.64	m^3/kg (Industrial/Commercial)

INPUT PARAMETER VALUES FOR CONSTRUCTION WORKERS

AT_c=	70	year
ED=	1	year
EF=	30	d/yr
TR=	1.00E-06	unitless
URF=	7.80E-06	$(^{\mu g}/_{m^3})^{-1}$
VF_{M-L}=	1007.16	m^3/kg

Residential Inhalation Remediation Objective (S6) = **3.14 mg/kg**

Construction Worker Inhalation Remediation Objective (S7) = **109.97 mg/kg**

Industrial/Commercial Inhalation Remediation Objective (S6) = **5.28 mg/kg**

Soil Saturation Limit Exceedence Check (value of SRO will change if soil saturation limit is exceeded for chemical):

Soil Remediation Objective (Residential Inhalation) =	**3.1 mg/kg**	**3,100 µg/kg**
Soil Remediation Objective (Industrial/Commercial Inhalation) =	**5.3 mg/kg**	**5,300 µg/kg**
Soil Remediation Objective (Construction Worker Inhalation) =	**110 mg/kg**	**110,000 µg/kg**
	Parts-Per-Million	*Parts-Per-Billion*

BENZENE

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
SSL Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20140963 IEPA LPC # (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (not a P.O. Box): 400 NE Adams Street

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: S12, S17, S28): S4, S5, S26 & S27: Inhalation of Non-Carcinogens SROs

Contact Information for Individual Who Performed Calculations: Joe Buhlig Project Manager, Marlin Environmental, Inc. (217) 726-7569 x30

Land Use: Resid, Indust/Com & Const Worker Soil Type: Sand

Groundwater: ☒ Class I ☐ Class II

Mass Limit: ☒ Yes ☐ No If Yes, then Specify Acreage: ☒ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT (ingestion)	=		yr	d_a	=		m
AT (inhalation)	=	see page 3	yr	d_s	=	4.2672	m
AT_c	=	70	yr	D_A	=		cm^2/s
BW	=		kg	D_i	=		cm^2/s
C_{sat}	=		mg/kg	D_w	=		cm^2/s
C_w	=		mg/L	DF	=		unitless
d	=		m	ED (ingestion of carcinogens)	=		yr

Incident #:	20140963	Chemical:	TEX	Land Use:	R, I/C & CW

Symbol			Unit	Symbol			Unit
ED (inhalation of carcinogens)	=		yr	K_{oc}	=		cm^3/g or L/kg
ED (ingestion of noncarcinogens)	=		yr	K_s	=		m/yr
ED (inhalation of noncarcinogens)	=	see page 3	yr	L	=		m
ED (ingestion of groundwater)	=		yr	PEF	=		m^3/kg
ED_{M-L}	=	70	yr	PEF'	=		m^3/kg
EF	=	see page 3	d/yr	Q/C (VF equations)	=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$
F(x)	=	0.194	unitless	Q/C (PEF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
f_{oc}	=		g/g	RfC	=	see page 3	mg/m^3
GW_{obj}	=		mg/L	RfD_o	=		mg/(kg-d)
H'	=		unitless	S	=		mg/L
i	=		m/m	SF_o	=		$(mg/kg\text{-}d)^{-1}$
I	=	0.3	m/yr	T	=		s
I_{M-L}	=	0.18	m/yr	T_{M-L}	=	30	yr
$IF_{soil\text{-}adj}$	=	114	(mg-yr)/(kg-d)	THQ	=	1	unitless
IR_{soil}	=		mg/d	TR	=		unitless
IR_w	=		L/d	U_m	=	4.69	m/s
K	=		m/yr	URF	=		$(\mu g/m^3)^{-1}$
K_d (non-ionizing organics)	=		cm^3/g or L/kg	U_t	=	11.32	kg/m^3
K_d (ionizing organics)	=		cm^3/g or L/kg	V	=		unitless
K_d (inorganics)	=		cm^3/g or L/kg	VF	=		m^3/kg

Incident #: 20140963 Chemical: TEX Land Use: R, I/C & CW

Symbol			Unit
VF'	=		m^3/kg
VF_{M-L}	=	9,569.33	m^3/kg
VF'_{M-L}	=	956.93	m^3/kg
η	=		L_{pore}/L_{soil}
θ_a	=		L_{air}/L_{soil}

Symbol			Unit
θ_w	=		L_{water}/L_{soil}
ρ_b	=	2.15	kg/L or g/cm^3
ρ_s	=		g/cm^3
ρ_w	=	1	g/cm^3
1/(2b+3)	=		unitless

Equation		Result	Unit(s)
S1	=		mg/kg
S2	=		mg/kg
S3	=		mg/kg
S4	=	See Boxes Below	mg/kg
S5	=	See Box Below	mg/kg
S6	=		mg/L
S7	=		mg/kg
S17	=		mg/kg
S28	=		mg/kg
S29	=		mg/L

Averaging Time (AT): (years)

Residential = 30
Industrial/Commercial = 25
Construction Worker = 0.115

Exposure Frequency (EF): (days/year)

Residential = 350
Industrial/Commercial = 250
Construction Worker = 30

Exposure Duration (ED): (years)

Residential = 30
Industrial/Commercial = 25
Construction Worker = 1

Inhalation Reference Concentration (RfC): (mg/m^3)

Toluene - chronic = 5.0
Toluene - subchronic = 5.0
Ethylbenzene - chronic = 1.0
Ethylbenzene - subchronic = 1.0
Total Xylenes - chronic = 0.1
Total Xylenes - subchronic = 0.4

Solution to Equation S4: (mg/kg) <u>Residential</u>	Solution to Equation S4: (mg/kg) <u>Industrial/Commercial</u>	Solution to Equation S5: (mg/kg) <u>Construction Worker</u>
Toluene = 580* Ethylbenzene = 350* Total Xylenes = 607 * = Soil Saturation Limit ** = Tier 2 Soil Saturation Limit**	**Toluene = 580* Ethylbenzene = 350* Total Xylenes = 607** * = Soil Saturation Limit ** = Tier 1 SRO**	**Toluene = 580* Ethylbenzene = 350* Total Xylenes = 564 * = Soil Saturation Limit**

EQUATIONS S4 AND S5 FOR INHALATION OF VOLATILE CONTAMINANTS IN SOIL (NONCARCINOGENS)

Downtown 66
Peoria, Illinois

Residential, Industrial/Commercial Remediation Objectives for Noncarcinogenic Contaminants (mg/kg)

$$\frac{THQ \bullet AT \bullet 365\ \frac{d}{yr}}{EF \bullet ED \bullet \left(\frac{1}{RfC} \bullet \frac{1}{VF}\right)}$$

Construction Worker Remediation Objectives for Noncarcinogenic Contaminants (mg/kg)

$$\frac{THQ \bullet AT \bullet 365\ \frac{d}{yr}}{EF \bullet ED \bullet \left(\frac{1}{RfC} \bullet \frac{1}{VF'}\right)}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
AT	AVERAGING TIME FOR NONCARCINOGENS	year	RESIDENTIAL 30 INDUS/COMM. 25 CONST WRKR 0.115
ED	EXPOSURE DURATION FOR INHALATION OF NONCARCINOGEN	year	RESIDENTIAL 30 INDUS/COMM. 25 CONST WRKR 1
EF	EXPOSURE FREQUENCY	d/yr	RESIDENTIAL 350 INDUS/COMM. 250 CONST WRKR 30
RfC	INHALATION REFERENCE CONCENTRATION	mg/m^3	RESIDENTIAL 5.0 INDUS/COMM. 5.0 CONST WRKR 5.0
THQ	TARGET HAZARD QUOTIENT	unitless	1
VF_{M-L}	VOLATILIZATION FACTOR	m^3/kg	REFER TO EQ. S26& S27 WITHIN TACO

S26 - Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Residential, Industrial/Commercial (m^3/kg)

$$VF_{M-L} = \frac{Q}{C} \bullet \frac{\left[T_{M-L} \bullet \left(3.15 \bullet 10^7\ \frac{s}{yr}\right)\right]}{\rho_b \bullet d_s \bullet 10^6\ \frac{cm^3}{m^3}}$$

S27 - Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Construction Worker (m^3/kg)

$$VF'_{M-L} = \frac{VF_{M-L}}{10}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
ds	DEPTH OF SOURCE	m	SITE SPECIFIC
Pb	DRY BULK DENSITY	kg/L	1.5, OR GRAVEL=2.0 SAND=1.8 SILT=1.6 CLAY=1.7, OR SITE SPECIFIC
Q/C	INVERSE OF THE MEAN CONCENTRATION AT THE CENTER OF A SQUARE SOURCE	$(g/m^2\text{-}s)/(kg/m^3)$	RESIDENTIAL 68.81 INDUS/COMM. 85.81 CONST WRKR 85.81 OR 742 Appendix C, Table H: Q/C by Source Area
T_{M-L}	EXPOSURE INTERVAL	yr	30

INPUT PARAMETERS FOR VF_{M-L} RES/INDUS/COM PROP

Source Area	0.5	Acre
ds=	4.2672	m
Pb=	2.15	kg/L
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$ (Residential)
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$ (Industrial/Commercial)
T_{M-L} =	30.00	yr
VF_{M-L}=	10071.64	m^3/kg (Residential)
VF_{M-L}=	10071.64	m^3/kg (Industrial/Commercial)

INPUT PARAMTERS VF'_{M-L} CONSTRUCTION WORKER

Source Area	0.5	Acre
ds=	4.2672	m
Pb=	2.15	kg/L
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$
T_{M-L} =	30.00	yr
VF'_{M-L}=	1007.16	m^3/kg

INPUT PARAMETER VALUES RES/INDUS/COM PROP

AT=	30	year
ED=	30	year (Residential)
ED=	25	year (Industrial/Commercial)
EF=	350	d/yr (Residential)
EF=	250	d/yr (Industrial/Commercial)
RfC=	5.0	mg/m^3
THQ	1	unitless
VF_{M-L}=	10071.64	m^3/kg (Residential)
VF_{M-L}=	10071.64	m^3/kg (Industrial/Commercial)

INPUT PARAMETER VALUES FOR CONSTRUCTION WORKERS

AT=	0.115	year
ED=	1	year
EF=	30	d/yr
RfC=	5.0	mg/m^3
THQ	1	unitless
VF'_{M-L}=	1007.16	m^3/kg

Residential Inhalation Remediation Objective (S4) = 52,516.4 mg/kg

Construction Worker Inhalation Remediation Objective (S5) = 7,046.0 mg/kg

Industrial/Commercial Inhalation Remediation Objective (S4) = 73,523.0 mg/kg

Soil Saturation Limit Exceedence Check (value of SRO will change if soil saturation limit is exceeded for chemical):

Soil Remediation Objective (Residential Inhalation) =	**580 mg/kg**	**580,000 µg/kg**
Soil Remediation Objective (Industrial/Commercial Inhalation) =	**580 mg/kg**	**580,000 µg/kg**
Soil Remediation Objective (Construction Worker Inhalation) =	**580 mg/kg**	**580,000 µg/kg**
	Parts-Per-Million	*Parts-Per-Billion*

TOLUENE

EQUATIONS S4 AND S5 FOR INHALATION OF VOLATILE CONTAMINANTS IN SOIL (NONCARCINOGENS)

Downtown 66
Peoria, Illinois

Residential, Industrial/Commercial Remediation Objectives for Noncarcinogenic Contaminants (mg/kg)

$$\frac{THQ \bullet AT \bullet 365\frac{d}{yr}}{EF \bullet ED \bullet \left(\frac{1}{RfC} \bullet \frac{1}{VF}\right)}$$

Construction Worker Remediation Objectives for Noncarcinogenic Contaminants (mg/kg)

$$\frac{THQ \bullet AT \bullet 365\frac{d}{yr}}{EF \bullet ED \bullet \left(\frac{1}{RfC} \bullet \frac{1}{VF'}\right)}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
AT	AVERAGING TIME FOR NONCARCINOGENS	YEAR	RESIDENTIAL 30 INDUS/COMM 25 CONST WRKR 0.115
ED	EXPOSURE DURATION FOR INHALATION OF CARCINOGEN	YEAR	RESIDENTIAL 30 INDUS/COMM 25 CONST WRKR 1
EF	EXPOSURE FREQUENCY	D/YR	RESIDENTIAL 350 INDUS/COMM 250 CONST WRKR 30
RfC	INHALATION REFERENCE CONCENTRATION	MG/M^3	RESIDENTIAL 1 INDUS/COMM 1 CONST WRKR 1
THQ	TARGET HAZARD QUOTIENT	UNITLESS	1
VF_{M-L}	VOLATILIZATION FACTOR	M^3/KG	REFER TO EQ. S26& S27 WITHIN TACO

S26 - Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Residential, Industrial/Commercial (m^3/kg)

$$VF_{M-L} = \frac{Q}{C} \bullet \frac{\left[T_{M-L} \bullet \left(3.15 \bullet 10^7 \frac{s}{yr}\right)\right]}{\rho_b \bullet d_s \bullet 10^6 \frac{cm^3}{m^3}}$$

S27 - Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Construction Worker (m^3/kg)

$$VF'_{M-L} = \frac{VF_{M-L}}{10}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
ds	DEPTH OF SOURCE	m	SITE SPECIFIC
Pb	DRY BULK DENSITY	kg/L	1.5, OR GRAVEL=2.0 SAND=1.8 SILT=1.6 CLAY=1.7, OR SITE SPECIFIC
Q/C	INVERSE OF THE MEAN CONCENTRATION AT THE CENTER OF A SQUARE SOURCE	$(g/m^2\text{-}s)/(kg/m^3)$	RESIDENTIAL 68.81 INDUS/COMM 85.81 CONST WRKR 85.81 OR 742.Appendix C, Table H. Q/C by Source Area
T_{M-L}	EXPOSURE INTERVAL	yr	30

INPUT PARAMETERS FOR VF_{M-L} RES/INDUS/COM PROP

Source Area	0.5	Acre
ds=	4.2672	m
Pb=	2.15	kg/L
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$ (Residential)
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$ (Industrial/Commercial)
T_{M-L} =	30.00	yr
VF_{M-L}=	10071.64	m^3/kg (Residential)
VF_{M-L}=	10071.64	m^3/kg (Industrial/Commercial)

INPUT PARAMTERS FOR CONSTRUCTION WORKER

Source Area	0.5	Acre
ds=	4.2672	m
Pb=	2.15	kg/L
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$
T_{M-L} =	30.00	yr
VF'_{M-L}=	1007.16	m^3/kg

INPUT PARAMETER VALUES RES/INDUS/COM PROP

AT=	30	year
ED=	30	year (Residential)
ED=	25	year (Industrial/Commercial)
EF=	350	d/yr (Residential)
EF=	250	d/yr (Industrial/Commercial)
RfC=	1.0	mg/m^3
THQ	1	unitless
VF_{M-L}=	10071.64	m^3/kg (Residential)
VF_{M-L}=	10071.64	m^3/kg (Industrial/Commercial)

INPUT PARAMETER VALUES FOR CONSTRUCTION WORKERS

AT=	0.115	year
ED=	1	year
EF=	30	d/yr
RfC=	1.0	mg/m^3
THQ	1	unitless
VF'_{M-L}=	1007.164	m^3/kg

Residential Inhalation Remediation Objective (S4) = 10,503.3 mg/kg

Construction Worker Inhalation Remediation Objective (S5) = 1,409.2 mg/kg

Industrial/Commercial Inhalation Remediation Objective (S4) = 14,704.6 mg/kg

Soil Saturation Limit Exceedence Check (value of SRO will change if soil saturation limit is exceeded for chemical):

Soil Remediation Objective (Residential Inhalation) =	**350 mg/kg**	**350,000 µg/kg**
Soil Remediation Objective (Industrial/Commercial Inhalation) =	**350 mg/kg**	**350,000 µg/kg**
Soil Remediation Objective (Construction Worker Inhalation) =	**350 mg/kg**	**350,000 µg/kg**
	Parts-Per-Million	*Parts-Per-Billion*

ETHYLBENZENE

EQUATIONS S4 AND S5 FOR INHALATION OF VOLATILE CONTAMINANTS IN SOIL (NONCARCINOGENS)

Downtown 66
Peoria, Illinois

Residential, Industrial/Commercial Remediation Objectives for Noncarcinogenic Contaminants (mg/kg)

$$\frac{THQ \bullet AT \bullet 365\frac{d}{yr}}{EF \bullet ED \bullet \left(\frac{1}{RfC} \bullet \frac{1}{VF}\right)}$$

Construction Worker Remediation Objectives for Noncarcinogenic Contaminants (mg/kg)

$$\frac{THQ \bullet AT \bullet 365\frac{d}{yr}}{EF \bullet ED \bullet \left(\frac{1}{RfC} \bullet \frac{1}{VF'}\right)}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
AT	AVERAGING TIME FOR NONCARCINOGENS	YEAR	RESIDENTIAL 30 INDUS/COMM. 25 CONST WRKR 0.115
ED	EXPOSURE DURATION FOR INHALATION OF NONCARCINOGENS	YEAR	RESIDENTIAL 30 INDUS/COMM. 25 CONST WRKR 1
EF	EXPOSURE FREQUENCY	D/YR	RESIDENTIAL 350 INDUS/COMM. 250 CONST WRKR 30
RfC	INHALATION REFERENCE CONCENTRATION	MG/M^3	RESIDENTIAL 0.1 INDUS/COMM. 0.1 CONST WRKR 0.4
THQ	TARGET HAZARD QUOTIENT	UNITLESS	1
VF_{M-L}	VOLATILIZATION FACTOR	M^3/KG	REFER TO EQ. S26& S27 WITHIN TACO

S26 - Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Residential, Industrial/Commercial (m^3/kg)

$$VF_{M-L} = \frac{Q}{C} \bullet \frac{\left[T_{M-L} \bullet \left(3.15 \bullet 10^7 \frac{s}{yr}\right)\right]}{\rho_b \bullet d_s \bullet 10^6 \frac{cm^3}{m^3}}$$

S27 - Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Construction Worker (m^3/kg)

$$VF'_{M-L} = \frac{VF_{M-L}}{10}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
ds	DEPTH OF SOURCE	m	SITE SPECIFIC
Pb	DRY BULK DENSITY	kg/L	1.5, OR GRAVEL=2.0 SAND=1.8 SILT=1.6 CLAY=1.7, OR SITE SPECIFIC
Q/C	INVERSE OF THE MEAN CONCENTRATION AT THE CENTER OF A SQUARE SOURCE	$(g/m^2\text{-}s)/(kg/m^3)$	RESIDENTIAL 68.81 INDUS/COMM. 85.81 CONST WRKR 85.81 OR 742 Appendix C, Table H: Q/C by Source Area
T_{M-L}	EXPOSURE INTERVAL	yr	30

INPUT PARAMETERS FOR VF_{M-L} RES/INDUS/COM PROP

Source Area	0.5	Acre
ds=	4.2672	m
Pb=	2.15	kg/L
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$ (Residential)
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$ (Industrial/Commercial)
T_{M-L} =	30.00	yr
VF_{M-L}=	10071.64	m^3/kg (Residential)
VF_{M-L}=	10071.64	m^3/kg (Industrial/Commercial)

INPUT PARAMTERS FOR CONSTRUCTION WORKER

Source Area	0.5	Acre
ds=	4.2672	m
Pb=	2.15	kg/L
Q/C=	97.78	$(g/m^2\text{-}s)/(kg/m^3)$
T_{M-L} =	30.00	yr
VF'_{M-L}=	1007.16	m^3/kg

INPUT PARAMETER VALUES RES/INDUS/COM PROP

AT=	30	year (Residential)
AT=	25	year (Industrial/Commercial)
ED=	30	year (Residential)
ED=	25	year (Industrial/Commercial)
EF=	350	d/yr (Residential)
EF=	250	d/yr (Industrial/Commercial)
RfC=	0.1	mg/m^3
THQ	1	unitless
VF_{M-L}=	10071.64	m^3/kg (Residential)
VF_{M-L}=	10071.64	m^3/kg (Industrial/Commercial)

INPUT PARAMETER VALUES FOR CONSTRUCTION WORKERS

AT=	0.115	year
ED=	1	year
EF=	30	d/yr
RfC=	0.4	mg/m^3
THQ	1	unitless
VF'_{M-L}=	1007.16	m^3/kg

Residential Inhalation Remediation Objective (S4) =	**1,050.3 mg/kg**
Construction Worker Inhalation Remediation Objective (S5) =	**563.7 mg/kg**
Industrial/Commercial Inhalation Remediation Objective (S4) =	**1,470.5 mg/kg**

Soil Saturation Limit Exceedence Check (value of SRO will change if soil saturation limit is exceeded for chemical):

Soil Remediation Objective (Residential Inhalation) =	**607 mg/kg**	**607,000 µg/kg**
Soil Remediation Objective (Industrial/Commercial Inhalation) =	**607 mg/kg**	**607,000 µg/kg**
Soil Remediation Objective (Construction Worker Inhalation) =	**564 mg/kg**	**564,000 µg/kg**
	Parts-Per-Million	*Parts-Per-Billion*

TOTAL XYLENES

ATTACHMENT 2

General Information for the Budget and Billing Forms

LPC #: 1430650114 County: Peoria

City: Peoria Site Name: S & S Infinite Group, Inc. (Downtown 66)

Site Address: 400 NE Adams Street

IEMA Incident No.: 20140963

IEMA Notification Date: 08/19/2014

Date this form was prepared: 7/2/2015

This form is being submitted as a (check one, if applicable):

- [x] Budget Proposal
- [ ] Budget Amendment (Budget amendments must include only the costs over the previous budget.)
- [ ] Billing Package

Please provide the name(s) and date(s) of report(s) documenting the costs requested:

Name(s):

Date(s):

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JUL 02 2015
IEPA/BOL

This package is being submitted for the site activities indicated below:

35 Ill. Adm. Code 734:

- [ ] Early Action
- [ ] Free Product Removal after Early Action
- [ ] Site Investigation .... Stage 1: [ ] Stage 2: [ ] Stage 3: [ ]
- [x] Corrective Action Actual Costs

35 Ill. Adm. Code 732:

- [ ] Early Action
- [ ] Free Product Removal after Early Action
- [ ] Site Classification
- [ ] Low Priority Corrective Action
- [ ] High Priority Corrective Action

35 Ill. Adm. Code 731:

- [ ] Site Investigation
- [ ] Corrective Action

General Information for the Budget and Billing Forms

The following address will be used as the mailing address for checks and any final determination letters regarding payment from the Fund.

Pay to the order of: S & S Infinite Group, Inc

Send in care of: Marlin Environmental,Inc.

Address: 3935 Commerce Drive

City: St. Charles State: Illinois Zip: 60174

The payee is the: Owner ☒ Operator ☒ (Check one or both.)

Signature of the owner or operator of the UST(s) (required)

If you have a change of address, click here to print off a W-9 Form.

Number of petroleum USTs in Illinois presently owned or operated by the owner or operator; any subsidiary, parent or joint stock company of the owner or operator; and any company owned by any parent, subsidiary or joint stock company of the owner or operator:

Fewer than 101: ☒ 101 or more: ☐

Number of USTs at the site: 3 (Number of USTs includes USTs presently at the site and USTs that have been removed.)

Number of incidents reported to IEMA for this site: 1

Incident Numbers assigned to the site due to releases from USTs: 20140963

Please list all tanks that have ever been located at the site and tanks that are presently located at the site.

Product Stored in UST	Size (gallons)	Did UST have a release?	Incident No.	Type of Release Tank Leak / Overfill / Piping Leak
Diesel Fuel	6,000	Yes ☒ No ☐	20140963	Tank Leak
Unleaded Gasoline	10,000	Yes ☒ No ☐	20140963	Tank Leak
Unleaded Gasoline	10,000	Yes ☐ No ☒		
		Yes ☐ No ☒		
		Yes ☐ No ☒		
		Yes ☐ No ☒		
		Yes ☐ No ☒		
		Yes ☐ No ☒		
		Yes ☐ No ☒		

Add More Rows Undo Last Add

Budget Summary

Choose the applicable regulation: ◉ 734 ○ 732

734	Free Product	Stage 1 Site Investigation	Stage 2 Site Investigation	Stage 3 Site Investigation	Corrective Action
Drilling and Monitoring Well Costs Form	$	$	$	$	$ .00
Analytical Costs Form	$	$	$	$	$ .00
Remediation and Disposal Costs Form	$	$	$	$	$ .00
UST Removal and Abandonment Costs Form	$	$	$	$	$ .00
Paving, Demolition, and Well Abandonment Costs Form	$	$	$	$	$ 1,216.00
Consulting Personnel Costs Form	$	$	$	$	$ 15,889.04
Consultant's Materials Costs Form	$	$	$	$	$ .00
Handling Charges Form	Handling charges will be determined at the time a billing package is submitted to the Illinois EPA. The amount of allowable handling charges will be determined in accordance with the Handling Charges Form.				
Total	$	$	$	$	$ 17,104.04

Paving, Demolition, and Well Abandonment Costs Form

A. Concrete and Asphalt Placement/Replacement

Number of Square Feet	Asphalt or Concrete	Thickness (inches)	Cost ($) per Square Foot	Replacement or Placement for an Engineered Barrier	Total Cost

Total Concrete and Asphalt Placement/Replacement Costs:	

B. Building Destruction or Dismantling and Canopy Removal

Item to Be Destroyed, Dismantled, or Removed	Unit Cost ($)	Total Cost ($)

Total Building Destruction or Dismantling and Canopy Removal Costs:	

Paving, Demolition, and Well Abandonment Costs Form

C. Well Abandonment

Monitoring Well ID #	Type of Well (HSA / PUSH / Recovery)	Depth of Well (feet)	Cost ($) per Foot	Total Cost
MW-1	HSA	20.00	12.15	$243.00
MW-2	HSA	20.00	12.15	$243.00
MW-3	HSA	20.00	12.15	$243.00
MW-4	HSA	20.00	12.15	$243.00
MW-5	HSA	20.00	12.15	$243.00

Total Monitoring Well Abandonment Costs:	**$1,215.00**

Total Paving, Demolition, and Well Abandonment Costs:	**$1,215.00**

Consulting Personnel Costs Form

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Project Manager	12.00	109.34	$1,312.08
TACO 2 or 3	TACO Prep: Tier 2 Calculations, Soil Analysis			
	Project Manager	15.00	109.34	$1,640.10
CCAP	CA Plan: Preparation and Budget			
	Senior Project Manager	5.00	121.49	$607.45
CCAP	CA Plan: Preparation and Budget			
	Senior Prof. Engineer	9.00	157.94	$1,421.46
CCAP	CA Technical Design, Data Interpretation, Evaluation/CAP Plan and Budget Review & Certification			
	Senior Admin. Assistant	8.00	54.67	$437.36
CCAP	CAP Plan and Budget Production and submittal			
	Senior Draftperson/CAD	6.00	72.88	$437.28
CCAP	CAP Plan Figure, Drafting and Printing			
	Engineer III	10.00	121.49	$1,214.90
TACO 2 or 3	TACO Prep: Contaminant Fate and Transport Modeling			
	Project Manager	9.00	109.34	$984.06
HAA	Obtain IDOT HAA			
	Senior Project Manager	2.00	121.49	$242.98
CA-Pay	CA Pay: Billing Package (CAP) - Management			

Employee Name	Remediation Category	Personnel Title	Task	Hours	Rate* ($)	Total Cost
	CCAP	Senior Acct. Technician	CA Pay: Billing Package (CAP) - Production	18.00	66.81	$1,202.58
	CA-Pay	Senior Prof. Geologist	CA Pay: Billing Package (CAP) - Review & Certify	3.00	133.64	$400.92
	CACR	Project Manager	CACR Preparation, Attachments	19.00	109.34	$2,077.46
	CACR	Senior Project Manager	CACR Design, Technical Plan and Review	5.00	121.49	$607.45
	CACR	Senior Prof. Engineer	CACR Plan and Budget Review & Certification	5.00	147.94	$739.70
	CACR	Senior Admin. Assistant	CACR Plan Production & Assembly	6.00	54.67	$328.02
	CACR	Senior Draftperson/CAD	CACR Plan Figure, Changes and Printing	3.00	72.88	$218.64
	CCA-Field	Project Manager	Coordination NFR Recording, Well Abandonment, Closure	4.00	109.34	$437.36
	CA-Pay	Senior Project Manager	CACR & NFR Billing Package - Management	2.00	121.49	$242.98

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Acct. Technician	14.00	66.81	$935.34
CA-Pay	CACR & NFR Billing Package - Production			
	Senior Prof. Geologist	3.00	133.64	$400.92
CA-Pay	CACR & NFR Billing Package - Review and Certification			

*Refer to the applicable Maximum Payment Amounts document.

Total of Consulting Personnel Costs	**$15,889.04**

Owner/Operator and Licensed Professional Engineer/Geologist Budget Certification Form

I hereby certify that I intend to seek payment from the UST Fund for costs incurred while performing corrective action activities for Leaking UST incident 20140963. I further certify that the costs set forth in this budget are for necessary activities and are reasonable and accurate to the best of my knowledge and belief. I also certify that the costs included in this budget are not for corrective action in excess of the minimum requirements of 415 ILCS 5/57, no costs are included in this budget that are not described in the corrective action plan, and no costs exceed Subpart H: Maximum Payment Amounts, Appendix D Sample Handling and Analysis amounts, and Appendix E Personnel Titles and Rates of 35 Ill. Adm. Code 732 or 734. I further certify that costs ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 732.606 or 734.630 are not included in the budget proposal or amendment. Such ineligible costs include but are not limited to:

Costs associated with ineligible tanks.
Costs associated with site restoration (e.g., pump islands, canopies).
Costs associated with utility replacement (e.g., sewers, electrical, telephone, etc.).
Costs incurred prior to IEMA notification.
Costs associated with planned tank pulls.
Legal fees or costs.
Costs incurred prior to July 28, 1989.
Costs associated with installation of new USTs or the repair of existing USTs.

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Owner/Operator: S & S Infinite Group, Inc. (Downtown 66)

Authorized Representative: Syed Muneeb   Title: Owner

Signature: ____________   Date: 6/30/15

Subscribed and sworn to before me the 30th day of June, 2015.

____________ (Notary Public)   Seal: D. EGGLESTON OFFICIAL SEAL Notary Public - State of Illinois My Commission Expires December 08, 2017

In addition, I certify under penalty of law that all activities that are the subject of this plan, budget, or report were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan, budget, or report and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in the plan, budget, or report has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

L.P.E./L.P.G.: Jeff Wienhoff   L.P.E./L.P.G. Seal: JEFFREY WIENHOFF 062-064441 LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

L.P.E./L.P.G. Signature: ____________   Date: 7/2/15

Subscribed and sworn to before me the 2nd day of July, 2015.

____________ (Notary Public)   Seal: D. EGGLESTON OFFICIAL SEAL Notary Public - State of Illinois My Commission Expires December 08, 2017

The Illinois EPA is authorized to require this information under 415 ILCS 5/1. Disclosure of this information is required. Failure to do so may result in the delay or denial of any budget or payment requested hereunder.

Office of the Illinois
State Fire Marshal
"Partnering With the Fire Service to Protect Illinois"

CERTIFIED MAIL - RECEIPT REQUESTED #7014 1820 0001 3147 8483

December 5, 2014

S and S Infinite Group, Inc.
400 North East Adams Street
Peoria, IL 61603

In Re: Facility No. 3-010480
IEMA Incident No. 14-0963
Downtown 66
400 North East Adams Street
Peoria, Peoria Co., IL

Dear Applicant:

The Reimbursement Eligibility and Deductible Application received on October 17, 2014 for the above referenced occurrence has been reviewed. The following determinations have been made based upon this review.

It has been determined that you are eligible to seek payment of costs in excess of $5,000. The costs must be in response to the occurrence referenced above and associated with the following tanks:

Eligible Tanks

Tank 1 6,000 gallon Diesel Fuel
Tank 2 10,000 gallon Gasoline

You must contact the Illinois Environmental Protection Agency to receive a packet of Agency billing forms for submitting your request for payment.

An owner or operator is eligible to access the Underground Storage Tank Fund if the eligibility requirements are satisfied:

1. Neither the owner nor the operator is the United States Government,

2. The tank does not contain fuel which is exempt from the Motor Fuel Tax Law,

3. The costs were incurred as a result of a confirmed release of any of the following substances:

   "Fuel", as defined in Section 1.19 of the Motor Fuel Tax Law

   Aviation fuel

   Heating oil

   Kerosene

Used oil, which has been refined from crude oil used in a motor vehicle, as defined in Section 1.3 of the Motor Fuel Tax Law.

4. The owner or operator registered the tank and paid all fees in accordance with the statutory and regulatory requirements of the Gasoline Storage Act.

5. The owner or operator notified the Illinois Emergency Management Agency of a confirmed release, the costs were incurred after the notification and the costs were a result of a release of a substance listed in this Section. Costs of corrective action or indemnification incurred before providing that notification shall not be eligible for payment.

6. The costs have not already been paid to the owner or operator under a private insurance policy, other written agreement, or court order.

7. The costs were associated with "corrective action".

This constitutes the final decision as it relates to your eligibility and deductibility. We reserve the right to change the deductible determination should additional information that would change the determination become available. An underground storage tank owner or operator may appeal the decision to the Illinois Pollution Control Board (Board), pursuant to Section 57.9 (c) (2). An owner or operator who seeks to appeal the decision shall file a petition for a hearing before the Board within 35 days of the date of mailing of the final decision, (35 Illinois Administrative Code 105.504(b)).

For information regarding the filing of an appeal, please contact:

Clerk
Illinois Pollution Control Board
State of Illinois Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601
(312) 814-3620

The following tanks are also listed for this site:

Tank 3 10,000 gallon Gasoline

Your application indicates that there has not been a release from these tanks under this incident number. You may be eligible to seek payment of corrective action costs associated with these tanks if it is determined that there has been a release from one or more of these tanks. Once it is determined that there has been a release from one or more of these tanks you may submit a separate application for an eligibility determination to seek corrective action costs associated with this/these tanks.

If you have any questions, please contact our Office at (217) 785-1020 or (217) 785-5878.

Sincerely,

Deanne Lock

Deanne Lock
Administrative Assistant
Division of Petroleum and Chemical Safety

cc: IEPA
Marlin Environmental

LEAKING UST TECHNICAL REVIEW NOTES

Reviewed by: Scott McGill
Date Reviewed: July 15, 2015

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 NE Adams Street
Leaking UST Incident No. 20140963
Leaking UST Technical File

Document(s) Reviewed:

This document consists of a corrective action plan and budget dated July 2, 2015 and received by the Agency on July 2, 2015 and prepared by Marlin Environmental, Inc. This plan and budget were prepared in accordance with the 734 requirements and summarized as follows:

General Site Information:

Site subject to: 734

IEMA date(s): August 19, 2014	Payment from the Fund? (Y/N/unknown): yes
UST system removed? (Y/N): yes	OSFM Fac. ID #: 20140963
Encountered groundwater? (Y/N/unknown): no	SWAP mapping and evaluation completion date: July 15, 2015
Free product? (Y/N/unknown): no	Site placement correct in SWAP? (Y/N): yes
Current/past land use: gas station	MTBE > 40 ppb in groundwater? (Y/N/unknown): no
Size & product of USTs: 1-6,000 gallon diesel fuel and 1-10,000 gallon gasoline tank.	
Is site located in EJ area? no	Is investigation of indoor inhalation exposure route required? No

Corrective Action Plan/Budget Review Notes:

The owner and operator submitted a corrective action plan consisting of a Tier 2 evaluation and institutional controls. The owner and operator propose a highway authority agreement for Spaulding Avenue, ELUC agreement, on-site groundwater use restriction and an industrial/commercial land use restriction. The proposed institutional controls are depicted in Figure 2. It should be noted that groundwater was not encountered at this site during early action activities and a groundwater investigation was not completed at the site. However, a Tier 2 modeling evaluation was completed to determine a leaching threat in the groundwater using equation S28. The modeled extent of contamination is depicted in Figure 1. The model calculations are included in Attachment 1.

The corrective action plan budget is included in Attachment 2. The budget is in the amount of $17,104.04. This amount includes costs for abandonment of 5 existing monitoring wells, personnel costs for preparing the corrective action plan and budget, corrective action completion report and billing package.

Illinois EPA Decision:

The proposed corrective action plan and budget consisting of a Tier 2 evaluation and institutional controls should be approved. The owner and operator should submit a corrective action completion report summarizing the results of the plan and request closure.

Response Due:

The owner and operator should submit a corrective action completion report.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829
BRUCE RAUNER, GOVERNOR LISA BONNETT, DIRECTOR

217/524-3300

JUL 21 2015

CERTIFIED MAIL

7013 2630 0001 4705 7907

S & S Infinite Group, Inc.
Attn: Syed Muneeb
400 NE Adams Street
Peoria, IL 61603

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 NE Adams Street
Leaking UST Incident No. 20140963
Leaking UST Technical File

Dear Syed Muneeb:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Corrective Action Plan (plan) submitted for the above-referenced incident. This plan, dated July 2, 2015, was received by the Illinois EPA on July 2, 2015. Citations in this letter are from the Environmental Protection Act (415 ILCS 5) (Act) and Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code).

Pursuant to Sections 57.7(b)(2) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(a), the plan is approved. The activities proposed in the plan are appropriate to demonstrate compliance with Title XVI of the Act. Please note that all activities associated with the remediation of this release proposed in the plan must be executed in accordance with all applicable regulatory and statutory requirements, including compliance with the proper permits.

In addition, the total budget is approved for the amounts listed in Attachment A. Please note that the costs must be incurred in accordance with the approved plan. Be aware that the amount of payment from the Fund may be limited by Sections 57.7(c), 57.8(d), 57.8(e), and 57.8(g) of the Act, as well as 35 Ill. Adm. Code 734.630 and 734.655.

Pursuant to Sections 57.7(b)(5) and 57.12(c) and (d) of the Act and 35 Ill. Adm. Code 734.100 and 734.125, the Illinois EPA requires that a Corrective Action Completion Report that achieves compliance with applicable remediation objectives be submitted within 30 days after completion of the plan to:

Illinois Environmental Protection Agency
Bureau of Land - #24
Leaking Underground Storage Tank Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276

Please submit all correspondence in duplicate and include the Re: block shown at the beginning of this letter.

If within four years after the approval of this plan, compliance with the applicable remediation objectives has not been achieved and a Corrective Action Completion Report has not been submitted, the Illinois EPA requires the submission of a status report pursuant to Section 57.7(b)(6) of the Act.

If you have any questions or need further assistance, please contact Scott McGill at (217) 524-5137.

Sincerely,

Michael T. Lowder
Unit Manager
Leaking Underground Storage Tank Section
Division of Remediation Management
Bureau of Land

Attachment: Attachment A

cc: Marlin Environmental, Inc.
BOL File

Attachment A

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 NE Adams Street
Leaking UST Incident No. 20140963
Leaking UST Technical File

SECTION 1

The following amounts are approved:

$0.00	Drilling and Monitoring Well Costs
$0.00	Analytical Costs
$0.00	Remediation and Disposal Costs
$0.00	UST Removal and Abandonment Costs
$1,215.00	Paving, Demolition, and Well Abandonment Costs
$15,889.04	Consulting Personnel Costs
$0.00	Consultant's Materials Costs

Handling charges will be determined at the time a billing package is reviewed by the Illinois EPA. The amount of allowable handling charges will be determined in accordance with Section 57.1(a) of the Environmental Protection Act and 35 Illinois Administrative Code 734.635.

000085

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

24

McGill

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7013 2630 0001 4705 7907

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62794@9276

Hazardous Materials Incident Report

143065 0114 - Peoria

Incident #:	**H-2016-1089**
Entered By:	**Kirgan, Ken (IEMA) on 2016-11-21 14:51:49**
Data Input Status:	**Closed**
Leaking Underground Storage Tank (LUST):	**Yes**

S&S Infinite Group Inc

Leaking UST Techfile

EPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE

DEC 19 2016

REVIEWER RDH

Caller:	Matt Rives		
Call Back #:	217/851-1404		
Caller Represents:	CW3M Company		
Hazmat Incident Type:	Leak or spill		
INCIDENT LOCATION			
Incident Location:	400 NE Adams St		
County:	Peoria 61603	City:	Peoria
Primary IEMA Region:	6	Secondary IEMA Region:	Not Applicable
Full Address:	400 NE Adams St, Peoria, IL		
Latitude:	40.694349	Longitude:	-89.585542
Milepost:	N/A	Sec:	N/A
Twp.:	N/A	Range:	N/A
Area Involved:	Fixed Facility		
Media or medium into which the release occurred:	Ground		

WEATHER INFORMATION			
Temp (deg F):	n/a	Wind Dir/Speed m.p.h:	n/a

MATERIALS INVOLVED			
Material Name:	gasoline, diesel and used oil	Material Type:	Liquid
CHRIS Code:	Unknown	CAS #:	Unknown
UN/NA #:	Unknown		
Is this a 302(a) Extremely Hazardous Substance?	Unknown		
Is this a RCRA Hazardous Waste?	Unknown		
Is this a RCRA regulated facility?	Unknown		
Container Type:	Under ground storage tank	Container Size:	see narrative
Amount Released:	unknown	Rate of Release/min:	unknown
Duration of Release:	unknown		
Cause of Release:	unknown		
Estimated Spill Extent:	Unknown	Spill Extent Units:	

Date/Time Occured:	(Date/Time Unknown)
Date/Time Discovered:	2016-11-21 14:30

Number Injured:	0	Where Taken:	none
Number Killed:	0	# Evacuated:	0
On Scene Contact:	Matt Rives	On Scene Phone #:	217/851-1404

Proper safety precautions to take as a result of the release, including evacuation:
none

Assistance needed from State Agencies:
none

Containment/Cleanup actions and plans:
caller is with the hired contractor, tanks will probably be removed

Responsible Party:	S&S Infiniti Group Inc
Contact Person:	Syed Munbed
Callback Phone Number:	309/453-2280
Facility Manager:	Syed Munbed
Facility Manager Phone #:	309/453-2280
Street Address:	400 NE Adams St
City:	Peoria State: IL Zip Code: 61603

Emergency Units Contacted	Contacted	On Scene	Agencies Contacted
ESDA			none
Fire			none
Police			none
Sheriff			none
Other			none

AGENCIES OR PERSONS NOTIFIED

Agency	Date/Time	Name of Person	Notification Action
IEPA, NRTP, OSFM	2016-11-21 14:55	emailed	Report Sent
IEMA Region 6	2016-11-21 14:55	emailed	Report Sent

Narrative:

Container sizes:
gasoline: 1-10,000 gallons, 2-2,000 gallons
diesel: 1-2,000 gallons
used oil: 1-2,000 gallons

Follow-Up Information:

Attachments:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
BRUCE RAUNER, GOVERNOR ALEC MESSINA, ACTING DIRECTOR

217/524-3300

December 9, 2016

S & S Infinite Group, Inc
Attn: Syed Munbed
400 NE Adams Street
Peoria, IL 61603

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc
400 NE Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

Dear UST Owner or Operator:

The Illinois Environmental Protection Agency (Illinois EPA) received notification from the Illinois Emergency Management Agency that a release from an underground storage tank system(s) has occurred at the above-referenced site. As a result of this release, the owner or operator of the underground storage tank(s) is required to comply with the Leaking Underground Storage Tank (Leaking UST) Program requirements, including the submittal of applicable documentation on forms prescribed and provided by the Illinois EPA.

To obtain copies of the forms, as well as additional information regarding the Illinois EPA's Leaking UST Program, please visit our Web page at http://www.epa.state.il.us/land/lust/index.html.

1. The direct link to the technical forms page is http://www.epa.state.il.us/land/lust/forms/technical-forms/index.html.
2. If you intend to seek reimbursement from the Illinois Underground Storage Tank Fund for costs incurred, the direct link to the budget and reimbursement forms page is: http://www.epa.state.il.us/land/lust/forms/budget-forms/index.html.

If you do not have access to the Internet and/or have questions about the Leaking UST Program requirements, please contact the Leaking UST Program project manager on call at 217/524-3300.

Sincerely,

Gregory W Dunn

Gregory W. Dunn, Manager
Leaking Underground Storage Tank Section
Division of Remediation Management
Bureau of Land

GWD: JW\

c: BOL File

CW³M Company
Environmental Consulting Services

701 W. South Grand Avenue
Springfield, IL 62704

Phone: (217) 522-8001
Fax: (217) 522-8009

1430650114 – Peoria County
S & S Infinite Group, Inc.
Incident # 20161089
Leaking UST Technical File

March 19, 2018

Mr. Scott McGill, Project Manager
LUST Section, Bureau of Land
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794-9276

RE: LPC #1430650114—Peoria County
S & S Infinite Group, Inc. - Peoria
400 North East Adams Street
Incident Number: 2016-1089
LUST Technical Reports—Corrective Action Plan

Dear Mr. McGill:

Enclosed, please find the Corrective Action Plan (CAP) for the above-referenced site for Incident Number 2016-1089. This CAP includes the actions necessary to address the contamination from the 2016-1089 incident that were not included in the CAP previously approved for the 2014-0963 incident. Once the activities required to address the contamination over Tier 2 Clean-up Objectives found in the 2016-1089 incident are completed, a Corrective Action Completion Report combining the incidents will be prepared and submitted.

If you have any questions or require additional information, please contact Mr. Vince Smith or me at (217) 522-8001.

Sincerely,

Carol Rowe, P.G.
Senior Environmental Geologist

xc: Mr. Syed Muneeb, *S & S Infinite Group, Inc. / Downtown 66*
Mr. William T. Sinnott, *CW³M Company, Inc.*

CORRECTIVE ACTION PLAN & BUDGET

S&S INFINITE GROUP, INC./ DBA-DOWNTOWN 66

PEORIA, ILLINOIS
LPC #1430560114 — Peoria County
Incident Number 2016-1089

RECEIVED
MAR 2 0 2018
IEPA/BOL

Submitted to:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
Leaking Underground Storage Tank Section, Bureau of Land
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Prepared by:

CW³M COMPANY, INC.

701 South Grand Avenue West
Springfield, Illinois
(217) 522-8001

400 West Jackson, Suite C
Marion, Illinois
(618) 997-2238

March 2018

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ACRONYMS AND ABBREVIATIONS

BETX	Benzene, ethylbenzene, toluene, total xylenes
CACR	Corrective Action Completion Report
CAP	Corrective Action Plan
Csat	Soil saturation limit
CUO	Clean-up Objective
CW³M	CW³M Company, Inc.
CWS	Community Water Supply
IEMA	Illinois Emergency Management Agency
IEPA	Illinois Environmental Protection Agency
Ill. Adm. Code	Illinois Administrative Code
ISGS	Illinois State Geological Survey
ISWS	Illinois State Water Survey
LUST	Leaking Underground Storage Tank
MTBE	Methyl tert-butyl ether
OSFM	Illinois Office of the State Fire Marshal
PNA	Polynuclear Aromatic Hydrocarbon
SICR	Site Investigation Completion Report
SWAP	Source Water Assessment Program
TACO	Tiered Approach to Corrective Action Objectives
UST	Underground Storage Tank

1. SITE HISTORY/EXECUTIVE SUMMARY

1.1 GENERAL

This proposed Corrective Action Plan (CAP) and Budget has been prepared in accordance with the requirements of the 35 Illinois Administrative Code (Ill. Adm. Code) 734. The Illinois Environmental Protection Agency (IEPA) Corrective Action Plan Form is included in this document as Appendix A.

Mr. Syed Muneeb, owner of the underground storage tanks (USTs) at the site, known as S&S Infinite Group, in Peoria, Illinois reported a release to the Illinois Emergency Management Agency (IEMA). Incident Number 2016-1089 was assigned to the notification on November 21, 2016. Mr. Syed Muneeb ultimately requested CW³M Company, Inc. (CW³M) to proceed with the reporting and early action requirements in accordance with 35 Ill. Adm. Code § 734.

The 20-Day Certification was submitted to the IEPA on December 2, 2016 (CW³M, 2016). A 45-Day Extension Request was submitted to the IEPA on December 20, 2016 (CW³M, 2016a) and was approved on December 28, 2016 (IEPA, 2016). A 45-Day Report was submitted to the IEPA on January 19, 2017 (CW³M, 2017) and was approved on January 26, 2017 (IEPA, 2017). A 45-Day Report Addendum was then submitted to the IEPA on February 10, 2017 (CW³M, 2017a) and was approved on May 17, 2017 (IEPA, 2017a). A Site Investigation Completion Report (SICR) was submitted to the IEPA on October 10, 2017 (CW³M, 2017b) and was approved February 2, 2018 (IEPA, 2018). A previous incident had occurred on site, 2014-0963, and had a CAP to address the contamination from its incident was submitted July 2, 2015 (Marlin, 2015), and approved on July 21, 2015 (IEPA, 2015). The CAP proposed to use a groundwater use restriction, a Highway Authority Agreement to address potential contamination beneath Spaulding Avenue, and to place a Tier 2 Industrial/Commercial restriction on site.

This report is certified by an Illinois Licensed Professional Engineer. The geological investigation and site investigation was performed under the direction of an Illinois Licensed Professional Geologist and completed in accordance with the Professional Geologist Licensing Act and its Rules for Administration.

1.2 SITE LOCATION

The site, known as S & S Infinite Group, Inc. / DBA – Downtown 66 is located at 400 North East Adams Street, Peoria, Peoria County, Illinois 61603. The site is located in the NE ¼ of the NE ¼ of the NE ¼ of Section 9, Township 8 North of the Centralia Baseline and Range 8 East of the Fourth Principal Meridian.

1.3 UNDERGROUND STORAGE TANK INFORMATION

A permit for the removal of seven USTs was approved by the Office of the State Fire Marshal (OSFM) on December 12, 2016 (OSFM, 2016). Tank removal activities were conducted by CW³M personnel on January 3, 2017 through January 5, 2017. OSFM Tank Specialist Jim Coffey was on site to oversee the removal of the USTs.

CW³M personnel were on site from January 4, 2017 through January 6, 2017, and January 9, 2017 through January 12, 2017 to complete early action activities, including removal of contaminated backfill material and replacement of clean fill to the UST excavation area. As the OSFM Field Specialists have been instructed not to make the official determination of the release in the field, the source of release has been determined in consult with the OSFM Field Specialist using the best professional judgment of the condition of tank, piping, and soil conditions.

Tank 1: This fiberglass UST was abandoned in place in 2014 as part of a separate incident. Its details are listed on the next page in Table 1-1.

Tank 2: This fiberglass UST was abandoned in place in 2014 as part of a separate incident. Its details are listed on the next page in Table 1-1.

Tank 3: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this fiberglass UST was a result of piping leaks and overfilling.

Tank 4: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this steel UST was a result of tank leaks as this tank had visual holes.

Tank 5: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this steel UST was a result of tank leaks as this tank had visual holes.

Tank 6: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this steel UST was a result of tank leaks as this tank showed signs of pitting.

Tank 7: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this steel UST was a result of tank leaks as this tank showed signs of pitting.

Table 1-1. Underground Storage Tank Summary

Tank Number	Tank Volume (gallons)	Tank Contents	Incident Number	Release Information	Current Status
1	6,000	Diesel	2014-0963	Unknown	Removed 1/5/17
2	10,000	Gasoline	2014-0963	Unknown	Removed 1/5/17
3	10,000	Gasoline	2016-1089	Overfilling/Piping Leaks	Removed 1/4/17
4	350	Gasoline	2016-1089	Tank Leaks	Removed 1/3/17
5	350	Gasoline	2016-1089	Tank Leaks	Removed 1/3/17
6	560	Diesel	2016-1089	Tank Leaks	Removed 1/3/17
7	560	Used Oil	2016-1089	Tank Leaks	Removed 1/3/17

1.4 EARLY ACTION SUMMARY

Samples were collected for every 20 feet of the excavation walls. Floor samples were obtained at the base of the tanks at a depth of around 12 feet. Samples for the piping trench of tank 3 were also taken every 20 feet at a depth of approximately 3 feet. Because tanks 1 and 2 were previously associated with Incident Number 2014-0963, the soil in the tank pit containing tanks 1, 2, and 3 was known to be contaminated. For this reason, the only samples taken from this pit were at the floor of tank 3 as well as the surrounding walls. The soil removed during the excavation of these three tanks was returned to the excavation after sampling had been completed.

All early action soil samples were collected and analyzed for benzene, ethylbenzene, toluene and total xylenes (BETX) and methyl tert-butyl ether (MTBE) contaminants. The wall samples and floor samples associated with tanks 4 through 7 were additionally analyzed for Polynuclear Aromatic Hydrocarbon (PNA) contaminants, due to the contents of the tanks. The floor of the used oil tank 7 was also sampled for used oil parameters. As previously stated, all tanks and product piping were removed. A total of 365.72 tons (243.81 cubic yards) of contaminated backfill was removed and taken to Indian Creek Landfill in Hopedale, Illinois for disposal. Analytical results and a map of the contaminants can be found in

Appendix F and Appendix B, respectively. These activities were documented in the 45-Day Report (CW³M, 2017) and the 45-Day Report Addendum (CW³M, 2017a).

1.5 SITE INVESTIGATION SUMMARY

On July 26, 2017 CW³M personnel were on site to conduct Stage 1 investigation activities. Two soil borings (24 and 25) were drilled and sampled, with boring 24 to a depth of 25 feet and boring 25 to a depth of 20 feet. Soil boring 24 was intended to be converted to a monitoring well to determine if contaminants from sample 11 had been in contact with groundwater. When no water was reached by 25 feet only soil samples were obtained. Since a groundwater investigation could not be performed, SB-24 was advanced to define the vertical extent of soil contamination. Once the groundwater level was determined to be lower than 25 feet, no more wells were attempted. Soil boring 25 was drilled to determine the horizontal extent of contamination from sample 11. Benzo(a) pyrene was exceeded at sample 24 but below Clean-up Objectives (CUOs) at sample 25A and B.

One reason for the large change in groundwater level elevation from this incident, below 25 feet, and the previous incident, at around 13 feet, could be due to the site's location and unusually dry summer. The site is very near the Illinois River which could have huge changes in the groundwater level from changes in the river. Soil samples were analyzed for BETX, MTBE, and PNA indicator parameters. Laboratory analytical results and a table summarizing the results are included in Appendix F, while soil boring logs are included in Appendix E. At the end of Stage 1 investigation, the soil plume was fully defined on site and groundwater was not encountered. The site investigation activities were documented in the SICR (CW³M, 2017b).

2. REMEDIATION OBJECTIVES

2.1 DETERMINATION OF CLEAN-UP OBJECTIVES

In accordance with 35 Ill. Adm. Code 734.410, remediation objectives will be determined in accordance with 35 Ill. Adm. Code § 742. During the previous incident on this site #2014-0963 a Tiered Approach to Corrective Action Objectives (TACO) sample was taken as part of the CAP for that incident. For this incident the site specific physical parameters that were presented in the CAP for incident 2014-0963 (Marlin, 2015) are being used for incident 2016-1089.

The parameters that have been determined are:

Soil bulk density (r_b)*, 2.15 g/cm*^{3}

Soil particle density (r_s) 2.69 g/cm³
Moisture content (w), 9.4%
Organic carbon content (f_{oc}) .0136 g/g
Hydraulic Conductivity 8.64 cm/day = 1.00 X 10^{-4} cm/sec

For the previous incident groundwater was encountered during drilling but never encountered after drilling. For the 2016-1089 incident, groundwater was not encountered. Since no groundwater was found, the assumed hydraulic gradient is 0.02.

2.2 SOIL AND GROUNDWATER OBJECTIVES

The soil objectives are listed for the site below in tabular format. With the TACO Tier 2 CUOs calculated, a groundwater use restriction and an industrial / commercial use restriction will be placed on the property. The calculations and the modeling of the existing contamination from incident 2016-1089 are included in Appendix G. The TACO inputs for plume width and length are shown on Drawing 0007 in Appendix B.

Table 2-1. Soil Remediation Objectives

Parameter	TACO Residential Tier 1 Clean-up Objective (mg/kg)	TACO Industrial / Commercial Tier 2 Clean-up Objective (mg/kg)
Benzene	0.03	3.70
Ethylbenzene	13.0	749.91
Toluene	12.0	535.89
Total Xylenes	5.6	73.45
Methyl tert-butyl ether	0.32	249.86
Acenaphthene	570	-
Acenphthylene	30	-
Anthracene	12,000	-
Benzo(a)anthracene	0.9	-
Benzo(a)pyrene	0.09	0.784
Benzo(b)flouranthene	0.9	-
Benzo(g,h,i)perylene	160	-
Benzo(k)flouranthene	9	-
Chrysene	88	-
Dibenzo(a,h)anthracene	0.09	-

Parameter	TACO Residential Tier 1 Clean-up Objective (mg/kg)	TACO Industrial / Commercial Tier 2 Clean-up Objective (mg/kg)
Flouranthene	3,100	-
Fluorene	560	-
Indeno(1,2,3-c,d)pyrene	0.9	-
Naphthalene	1.8	2.54
Phenanthrene	280	-
Pyrene	2,300	-

3. CORRECTIVE ACTION PLAN

The following CAP and Budget has been prepared by CW³M Company, Inc., as their recommendation for the most appropriate and economical approach to the remediation of the contamination at the S & S Infinite Group, Inc. / DBA – Downtown 66 in Peoria, Illinois.

Based upon the analytical data from the soil samples collected on-site, it is apparent that soil contamination above the TACO Tier 2 calculated CUOs was found on site for the current incident at sample locations 11, WC-1, WC-3, and backfill sample 3. The WC-1 and WC-3 samples are included because soil was not removed during early action from the tank pit from which these samples were taken. Soil contamination is confined to the site, and no groundwater contamination was found. All site investigation details were presented in the SICR (CW³M, 2017b).

Soil sample WC-1 exceeds the TACO Tier 2 soil saturation limit for total xylenes, so remediation must occur at that location. Sample WC-3 also has exceedances for industrial / commercial inhalation and construction worker inhalation CUOs. Due to the proximity of these two sample locations, an excavation in that area will be proposed to address the contamination. Since the limits of the area requiring remediation is not well defined, this CAP proposes additional soil borings to define the limits of the needed excavation. The location of the proposed borings is shown on Drawing 0004A in Appendix B.

Soil sample 11 exceeds the construction worker inhalation CUO, and this is proposed to be addressed with a construction worker caution imposed on the affected area.

While a potable well was found in the research, the well is not believed to be in service, and likely no longer exists. The existence of the well will be further researched, including a site visit to attempt to locate the well during the trip to the site to advance the proposed additional soil borings. If the well is located, the abandonment of it will be proposed to the current property owner, and the costs for the abandonment will be included in the proposed CAP Amendment.

The results of the proposed soil sampling and the potable well inspection will be presented in a CAP Amendment. The intent is to accept a groundwater use restriction and an industrial / commercial land use restriction as proposed in the CAP for the previous incident (Marlin, 2015). With the removal of the highly contaminated soil in the area of Tank 1, the remaining contamination found at the site would not model off-site beyond the right-of-way proposed to require a Highway Authority Agreement in the previous CAP. The only additional restriction required would be a construction worker caution in the area of early action sample 11.

3.1 ON-SITE CONTAMINATION

While no groundwater was encountered during this incident, groundwater was encountered during drilling of the previous incident but never encountered after the first round of drilling. Since no groundwater was encountered during site investigation groundwater, flow direction could not be established so for modeling groundwater flow was established in all directions. The soil-to-groundwater modeling dictates the maximum potential distance contamination can travel through the groundwater pathway, which was determined to be fifty-seven feet reaching outside the property line.

The soil contamination was defined to stay within the property boundaries. With the imposition of a groundwater use restriction and a Tier 2 Industrial / Commercial use restriction, the sample results which exceed the CUOs are WC-1, WC-2, WC-3, RC-1, and early action sample 11. WC-2 and RC-1 were from areas which were excavated and disposed of.

3.2 CURRENT AND PROJECTED USES OF THE SITE

The site is located near downtown Peoria and is surrounded by both commercial properties and townhomes; the site lies a few blocks north of Peoria Lake/Illinois River. Currently, the site is closed and there are no known plans on it for the future until such time as environmental issues are resolved. The likely usage would be commercial or industrial.

3.3 WATER SUPPLY WELL SURVEY

A survey of water supply wells for the purpose of identifying and locating all community water supply (CWS) wells within 2,500 feet of the UST system and all potable water supply wells within 200 feet of the UST system has been completed. The Illinois State Water Survey (ISWS), the Illinois State Geological Survey (ISGS) and the IEPA Division of Public Water Supplies were contacted via the Source Water Assessment Program (SWAP) online.

The ISGS, ISWS, and IEPA Division of Public Water Supplies were accessed online on September 19, 2017 (EPA.STATE.IL.US, 2016). The response indicated that twenty ISGS wells are located within 2,500 feet of the site. The site is within the setback of 2 of the potable wells listed on Table 3-1. Well 43700 is described as an engineering well in the listing. Well 74200 was described as a water well installed by a dairy. CW³M has contacted the current user of the former dairy site, who stated that only city provided water was used at the facility, and they did not believe that the well still existed. The existence of the well will be investigated during corrective action.

Table 3-1. Water Supply Well Information

Well ID	Type	Distance From USTs (*feet*)	Depth (*feet*)	Setback Zone (*feet*)
73600	ISGS	2,300	98	200
74900	ISGS	2,250	70	200
74600	ISGS	1,929	90	200
73800	ISGS	1,623	67	200
73100	ISGS	1,477	62	200
74100	ISGS	823	87	200
75000	ISGS	854	877	200
48100	ISGS	746	29	200
75200	ISGS	731	47	200
41600	ISGS	1,710	36	200
44600	ISGS	1,240	37	200
44100	ISGS	1,240	37	200
44700	ISGS	855	44	200
43700	ISGS	140	36	200
45100	ISGS	253	51	200
74200	ISGS	185	73	200
43500	ISGS	463	42	200

40500	ISGS	2,283	34	200
99700	ISGS	2,070	71	200
44300	ISGS	900	36	200

3.4 PROPOSED CORRECTIVE ACTION

The activities proposed in the prior approved CAP for the facility (Marlin, 2015) have been evaluated with regard to the contamination found for the 2016-1089 incident. Soil contamination in the area of tank 1 will required additional remediation, and sample 11 from early action exceeds the construction worker inhalation CUO, so a construction worker caution will be needed in that area. The largest potential difference was the discovery of a potential potable well which the site is within the setback of.

The activities proposed in this CAP are to further investigated the limits of the contamination which would require remediation in the area of tank 1, the further investigation of the potential potable well identified in the water supply well survey as the site being within the setback of, and the drafting of a construction worker caution area for the area around sample 11 from early action as depicted on Drawing 0006 in Appendix B.

The further soil investigation around tank 1 is described on Drawing 0004A in Appendix B and consists of three borings which will be advanced to a depth of 20 feet, with samples taken from each five-foot interval and analyzed for BETX, MTBE, and PNAs. One additional boring will be advanced to a depth of 20 feet adjacent to WC-1, and sampled from the 10 to 15 and 15 to 20 foot intervals for BETX, MTBE, and PNAs in order to determine the vertical extent of the contamination. Those sample results will be used to determine the limits of an excavation in that area to remove soil contamination which exceeds the TACO Tier 2 Industrial / Commercial CUOs as shown in Table 2-1. The excavation will be proposed in a CAP Amendment.

On the trip to the site to obtain the samples described above, a visit to the site where the potable well is supposed to be located will also be conducted. If the well is found to still exist, the abandonment of the well will be offered to the property owner, and the cost for the abandonment will be included in a CAP Amendment. If the owner does not want to abandon the well, then a CAP Amendment will be prepared to address the contamination which would threaten the potable well.

With the soil contamination in the area of Tank 1 removed, the remaining soil contamination associated with incident 2016-1089 does not model beyond the right-of-way area identified as needing a Highway Authority Agreement in the 2014-0963 CAP.

Following the June 2013 IEPA Leaking Underground Storage Tank (LUST) flowchart for vapor intrusion assessment, no free product was found. Only soil sample WC-1 from site investigation sampling exceeds the Soil Saturation Limits (Csat) for any of the contaminants of concern. The area where that sample is located will be proposed to be removed in a CAP amendment. Groundwater has not been encountered. Once the area around WC-1 has been excavated, based on the flowchart, vapor intrusion investigation would be required only if the Agency determines that a site-specific evaluation is necessary. For these reasons, it is not proposed to conduct a vapor intrusion investigation for this incident.

3.5 CLOSURE

The property will subject to a groundwater use restriction and an Industrial / Commercial land use restriction, as proposed in the previous CAP (Marlin, 2015). A construction worker caution will be imposed in the area of early action sample 11, as depicted on Drawing 0006 in Appendix B.

The existence of potable well which the site is within the setback of will be investigated during the activities proposed in this CAP. If the well does exist, the preferred option will be to abandon the well, and those costs would be proposed in the next CAP amendment. If the well is not found to exist, then no additional remediation efforts would be needed. Should the well exist and the owner of the well be unwilling to have the well abandoned, then additional remediation efforts on site would be needed, and these would be proposed in the next CAP amendment.

Once the limits of the soil contamination in the area of WC-1 and WC-3 which exceed Tier 2 CUOs are defined, a CAP amendment to excavate the identified area will be submitted. When the excavation is conducted, wall and floor samples will be used to verify the levels of contamination remaining, and that the area no longer has soil contamination over Tier 2 CUOs.

Modeling of the remaining contamination will then be conducted, and a Highway Authority Agreement will be used to address the potential off-site groundwater contamination. If the contamination models onto other off-site properties, then the CAP may need revised to either include Environmental Land Use Controls (ELUCs), or use a limited groundwater ordinance to address the potential off-site groundwater contamination instead of the approved Highway Authority Agreement.

Once all CAP activities conclude, a Corrective Action Completion Report (CACR) addressing both incidents at the site will be submitted to the IEPA. The closure report will be accompanied by a certification from an Illinois Registered Professional Engineer.

4.0 REFERENCES

City-Data.com, 2016. Peoria, Illinois, www.city-data.com, accessed December 28, 2016.

CW³M, 2016. CW³M Company, Inc., *20-Day Certification,* S&S Infinite Group, Peoria, Illinois, December 2, 2016.

CW³M, 2016a. CW³M Company, Inc., *Early Action Extension Request,* S&S Infinite Group, Peoria, Illinois, December 20, 2016.

CW³M, 2017. CW³M Company, Inc., *45 Day Report,* S&S Infinite Group, Peoria, Illinois, January 19, 2017.

CW³M, 2017a. CW³M Company, Inc., *45 Day Report Addendum,* S&S Infinite Group, Peoria, Illinois, February 10, 2017.

CW³M, 2017b. CW³M Company, Inc., *Site Investigation Completion Report,* S&S Infinite Group, Peoria, Illinois, October, 10, 2017.

EPA.STATE.IL.US, 2016. Source Water Assessment Program, *Water Well Survey Map* *www.maps.epa.state.il.us*, accessed October 6, 2016.

IEPA, 2015. Illinois Environmental Protection Agency, *Corrective Action Plan Correspondence (2014-0963)*, S&S Infinite Group, Peoria, Illinois, July 21, 2015.

IEPA, 2016. Illinois Environmental Protection Agency, *Early Action Extension Report Correspondence*, S&S Infinite Group, Peoria, Illinois, December 28, 2016.

IEPA 2017. Illinois Environmental Protection Agency, *45 Day Report Correspondence*, S&S Infinite Group, January 26, 2017.

IEPA 2017a. Illinois Environmental Protection Agency, *45 Day Correspondence*, May 17, 2017.

IEPA, 2018. Illinois Environmental Protection Agency, *Site Investigation Completion Report Correspondence*. S&S Infinite Group. February 2, 2018.

Marlin, 2015. Marlin Environmental, *Corrective Action Plan (2014-0963)*, S&S Infinite Group, Peoria, Illinois, July 2, 2015.

OSFM, 2016. Illinois Office of the State Fire Marshal, Permit for Removal of Underground Storage Tanks(s), S&S Infinite Group, Peoria, Illinois, December 12, 2016.

APPENDIX A

CORRECTIVE ACTION PLAN FORM

CORRECTIVE ACTION PLAN

S&S Infinite Group

Peoria, Illinois

Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

The Agency is authorized to require this information under Section 4 and Title XVI of the Environmental Protection Act (415 ILCS 5/4, 5/57 – 57.17). Failure to disclose this information may result in a civil penalty of not to exceed $50,000.00 for the violation and an additional civil penalty of not to exceed $10,000.00 for each day during which the violation continues (415 ILCS 5/42). Any person who knowingly makes a false material statement or representation, orally or in writing, in any label, manifest, record, report, permit, or license, or other document filed, maintained or used for the purpose of compliance with Title XVI commits a Class 4 felony. Any second or subsequent offense after conviction hereunder is a Class 3 felony (415 ILCS 5/44 and 57.17). This form has been approved by the Forms Management Center.

Leaking Underground Storage Tank Program
Corrective Action Plan

A. Site Identification

IEMA Incident # (6- or 8-digit): 20161089   IEPA LPC# (10-digit): 1430560114

Site Name: S&S Infinite Group, Inc./ DBA- Downtown 66

Site Address (Not a P.O. Box): 400 North East Adams Street

City: Peoria   County: Peoria   ZIP Code: 61603

B. Site Information

1. Will the owner or operator seek reimbursement from the Underground Storage Tank Fund? ☑ Yes ☐ No
2. If yes, is the budget attached? ☑ Yes ☐ No
3. Is this an amended plan? ☐ Yes ☑ No
4. Identify the material(s) released: Gasoline, Diesel Fuel, Used Oil
5. This Corrective Action Plan is submitted pursuant to:
   a. 35 Ill. Adm. Code 731.166 ☐

      The material released was:

      -petroleum ☐

      -hazardous substance (see Environmental Protection Act Section 3.215) ☐
   b. 35 Ill. Adm. Code 732.404 ☐
   c. 35 Ill. Adm. Code 734.335 ☑

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C. Proposed Methods of Remediation

1. Soil Tier 2 Industrial/Commercial CUOs, Construction Worker Caution, future excavation
2. Groundwater Groundwater use restriction, Highway Authority Agreement

D. Soil and Groundwater Investigation Results

(for incidents subject to 35 Ill. Adm. Code 731 only or 732 that were classified using Method One or Two, if not previously provided)

Provide the following:

1. Description of investigation activities performed to define the extents of soil and/or groundwater contamination;
2. Analytical results, chain-of-custody forms, and laboratory certifications;
3. Tables comparing analytical results to applicable remediation objectives;

4. Boring logs;
5. Monitoring well logs; and
6. Site maps meeting the requirements of 35 Ill. Adm. Code 732.110(a) or 734.440 and showing:
    a. Soil sample locations;
    b. Monitoring well locations; and
    c. Plumes of soil and groundwater contamination.

E. Technical Information - Corrective Action Plan

Provide the following:

1. Executive summary identifying the objectives of the corrective action plan and the technical approach to be utilized to meet such objectives;
    a. The major components (e.g., treatment, containment, removal) of the corrective action plan;
    b. The scope of the problems to be addressed by the proposed corrective action; and
    c. A schedule for implementation and completion of the plan;
2. Identification of the remediation objectives proposed for the site;
3. A description of the remedial technologies selected:
    a. The feasibility of implementing the remedial technologies;
    b. Whether the remedial technologies will perform satisfactorily and reliably until the remediation objectives are achieved; and
    c. A schedule of when the technologies are expected to achieve the applicable remediation objectives;
4. A confirmation sampling plan that describes how the effectiveness of the corrective action activities will be monitored during their implementation and after their completion;
5. A description of the current and projected future uses of the site;
6. A description of engineered barriers or institutional controls that will be relied upon to achieve remediation objectives:
    a. an assessment of their long-term reliability;
    b. operating and maintenance plans; and
    c. maps showing area covered by barriers and institutional controls;
7. The water supply well survey:
    a. Map(s) showing locations of community water supply wells and other potable wells and the setback zone for each well;
    b. Map(s) showing regulated recharge areas and wellhead protection areas;
    c. Map(s) showing the current extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;
    d. Map(s) showing the modeled extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;
    e. Tables listing the setback zone for each community water supply well and other potable water supply wells;
    f. A narrative identifying each entity contacted to identify potable water supply wells, the name and title of each person contacted, and any field observations associated with any wells identified; and
    g. A certification from a Licensed Professional Engineer or Licensed Professional Geologist that the survey was conducted in accordance with the requirements and that documentation submitted includes information obtained as a result of the survey (certification of this plan satisfies this requirement);

8. Appendices:
   a. References and data sources report that are organized; and
   b. Field logs, well logs, and reports of laboratory analyses;
9. Site map(s) meeting the requirements of 35 Ill. Adm. Code 732.110(a) or 734.440;
10. Engineering design specifications, diagrams, schematics, calculations, manufacturer's specifications, etc.;
11. A description of bench/pilot studies;
12. Cost comparison between proposed method of remediation and other methods of remediation;
13. For the proposed Tier 2 or 3 remediation objectives, provide the following:
    a. The equations used;
    b. A discussion of how input variables were determined;
    c. Map(s) depicting distances used in equations; and
    d. Calculations; and
14. Provide documentation to demonstrate the following for alternative technologies:
    a. The proposed alternative technology has a substantial likelihood of successfully achieving compliance with all applicable regulations and remediation objectives;
    b. The proposed alternative technology will not adversely affect human health and safety or the environment;
    c. The owner or operator will obtain all Illinois EPA permits necessary to legally authorize use of the alternative technology;
    d. The owner or operator will implement a program to monitor whether the requirements of subsection (14)(a) have been met;
    e. Within one year from the date of Illinois EPA approval, the owner or operator will provide to the Illinois EPA monitoring program results establishing whether the proposed alternative technology will successfully achieve compliance with the requirements of subsection (14)(a); and
    f. Demonstration that the cost of alternative technology will not exceed the cost of conventional technology and is not substantially higher than at least two other alternative technologies, if available and technically feasible.

F. Exposure Pathway Exclusion

Provide the following:

1. A description of the tests to be performed in determining whether the following requirements will be met:
   a. Attenuation capacity of the soil will not be exceeded for any of the organic contaminants;
   b. Soil saturation limit will not be exceeded for any of the organic contaminants;
   c. Contaminated soils do not exhibit any of the reactivity characteristics of hazardous waste per 35 Ill. Adm. Code 721.123;
   d. Contaminated soils do not exhibit a pH ≤ 2.0 or ≥ 12.5; and
   e. Contaminated soils which contain arsenic, barium, cadmium, chromium, lead, mercury, or selenium (or their associated salts) do not exhibit any of the toxicity characteristics of hazardous waste per 35 Ill. Adm. Code 721.124.
2. A discussion of how any exposure pathways are to be excluded.

G. Signatures

All plans, budgets, and reports must be signed by the owner or operator and list the owner's or operator's full name, address, and telephone number.

UST Owner or Operator

Name S & S Infinite Group, Inc.
Contact Syed Muneeb
Address 400 North East Adams Street
City Peoria
State Illinois
Zip Code 61603
Phone (309) 453-2280
Signature
Date 3/16/18

Consultant

Company CWM Company, Inc.
Contact Carol L. Rowe, P.G.
Address 701 W. South Grand Avenue
City Springfield
State Illinois
Zip Code 62704
Phone (217) 522-8001
Signature
Date 3/19/2018

I certify under penalty of law that all activities that are the subject of this plan were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in this plan has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 731, 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

Licensed Professional Engineer or Geologist

Name Vince E. Smith, P.E.
Company CWM Comapny, Inc.
Address 701 W. South Grand Avenue
City Springfield
State Illinois
Zip Code 62704
Phone (217) 522-8001
Ill. Registration No. 062-046118
License Expiration Date 11/30/19
Signature
Date 3/19/18

L.P.E. or L.P.G. Seal

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APPENDIX B

SITE MAPS AND ILLUSTRATIONS

CORRECTIVE ACTION PLAN

S&S Infinite Group

Peoria, Illinois

INDEX OF DRAWINGS

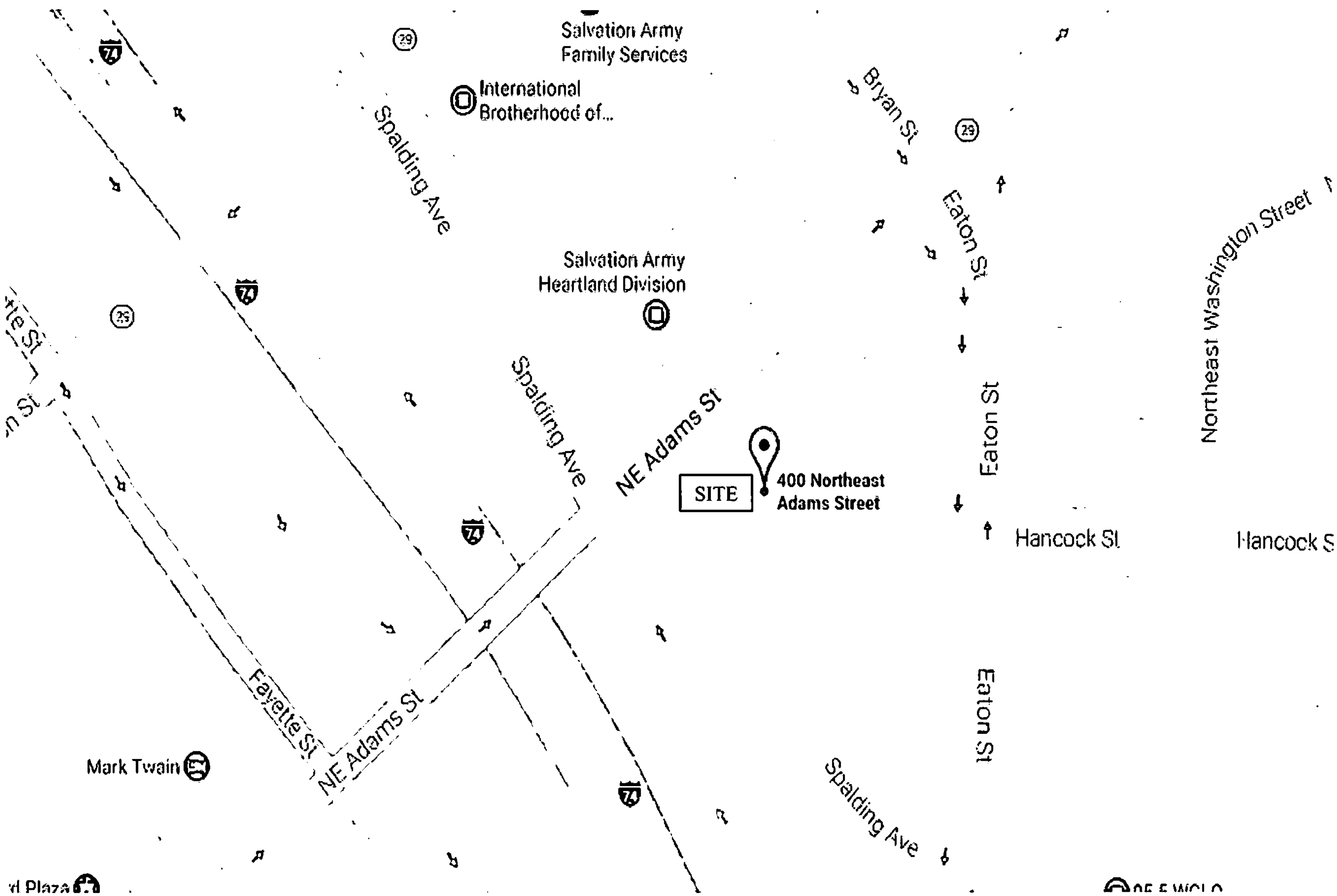
Drawing Number	Description
0001A	Site Location Map
0001B	Surrounding Populations Map
0001C	Water Supply Well Map
0002	Site Map
0003	Early Action Value Map
0004	Soil Boring Location Map
0004A	Proposed Soil Boring Location Map
0005A	Soil Contamination Values Map (0-5 feet)
0005B	Soil Contamination Values Map (5-10 feet)
0006	Construction Worker Caution Area
0007	TACO Parameters Map

The appearance of some of the images following this page is due to

Poor Quality Original Documents

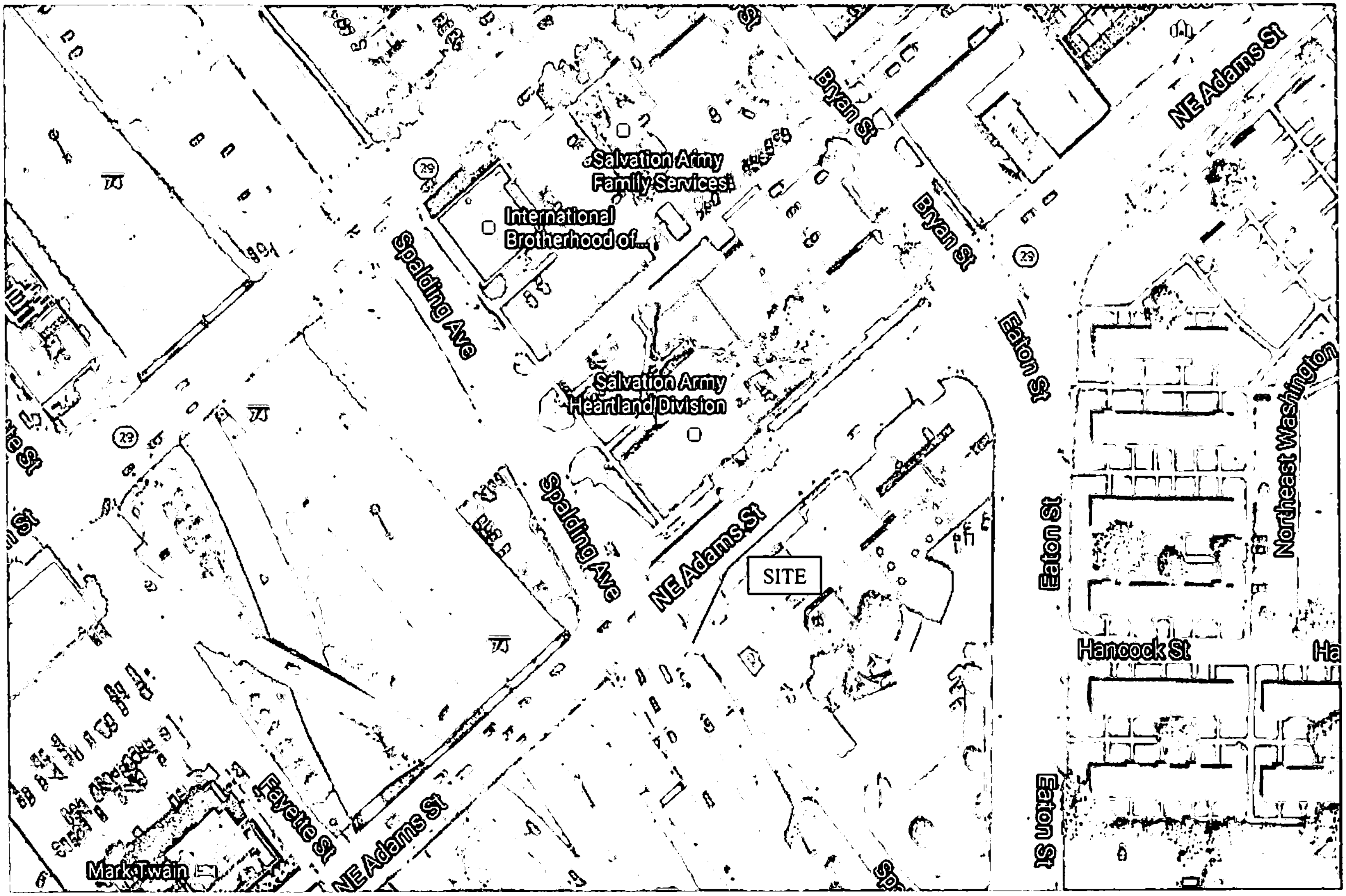
and not the scanning or filming processes.

Com Microfilm Company
(217) 525-5860



CW^{3}M Company, Inc. 701 South Grand Avenue West Springfield, IL 62704 (217)-522-8001	**Site Location Map** 400 North East Adams Street Peoria, Illinois	Drawn By: MJS Reviewed By: CLR Drawing 0001A SiteMap.doc

000113



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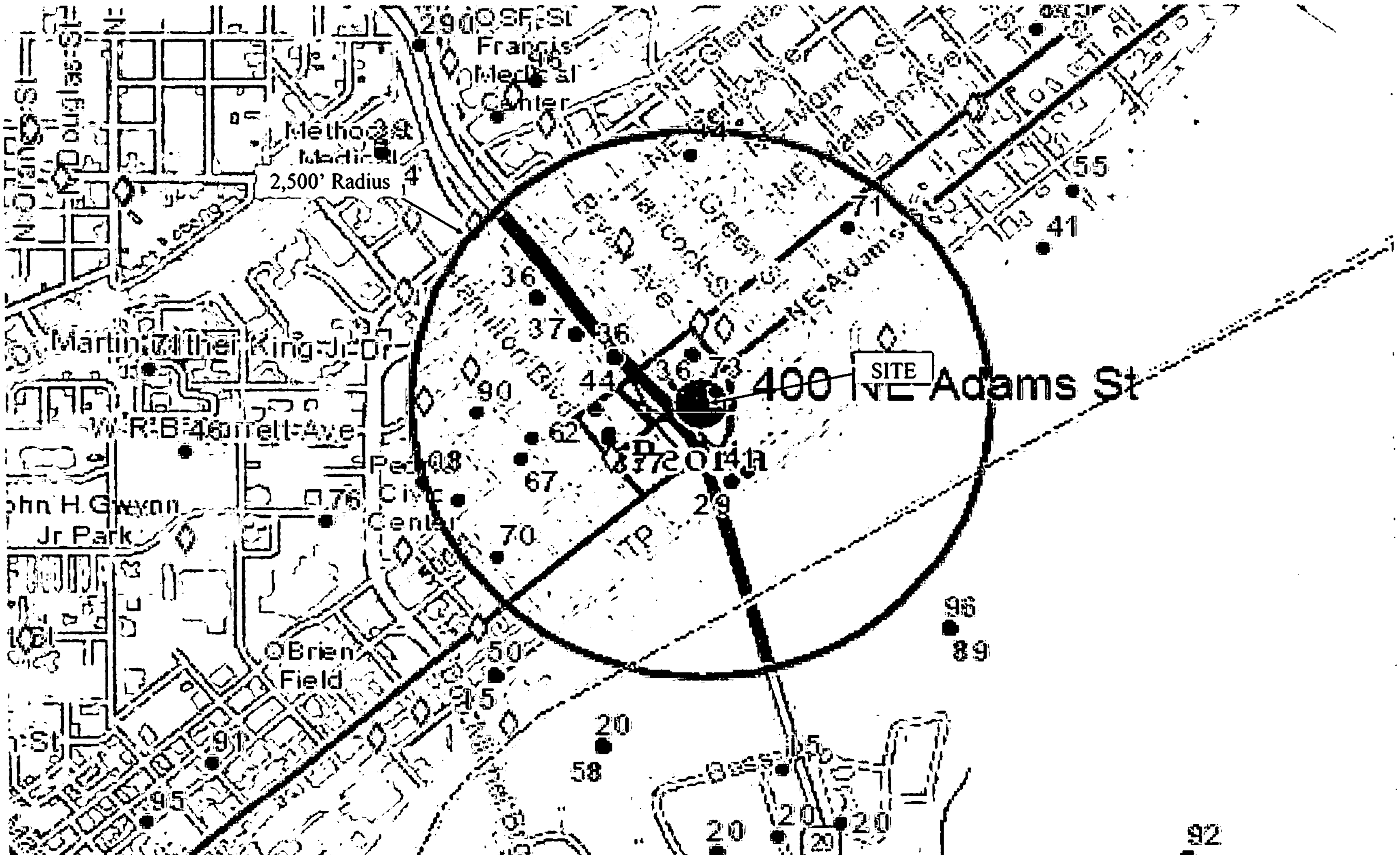
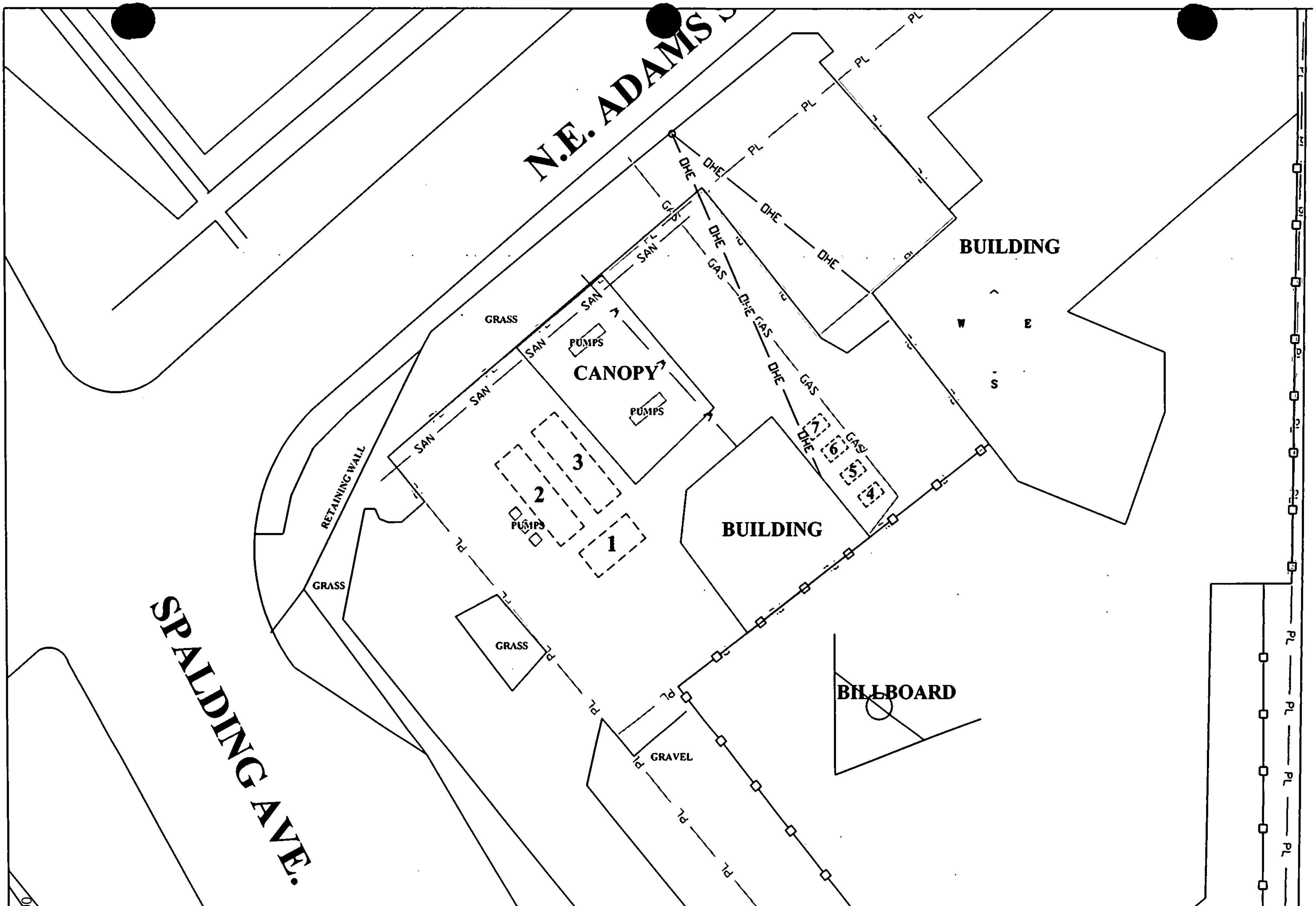
CW[3]M Company, Inc. 701 South Grand Avenue West Springfield, IL 62704 (217)-522-8001	**Surrounding Populations Map** 400 North East Adams Street Peoria, Illinois	Drawn By: MJS Reviewed By: CLR Drawing 0001B SP.doc

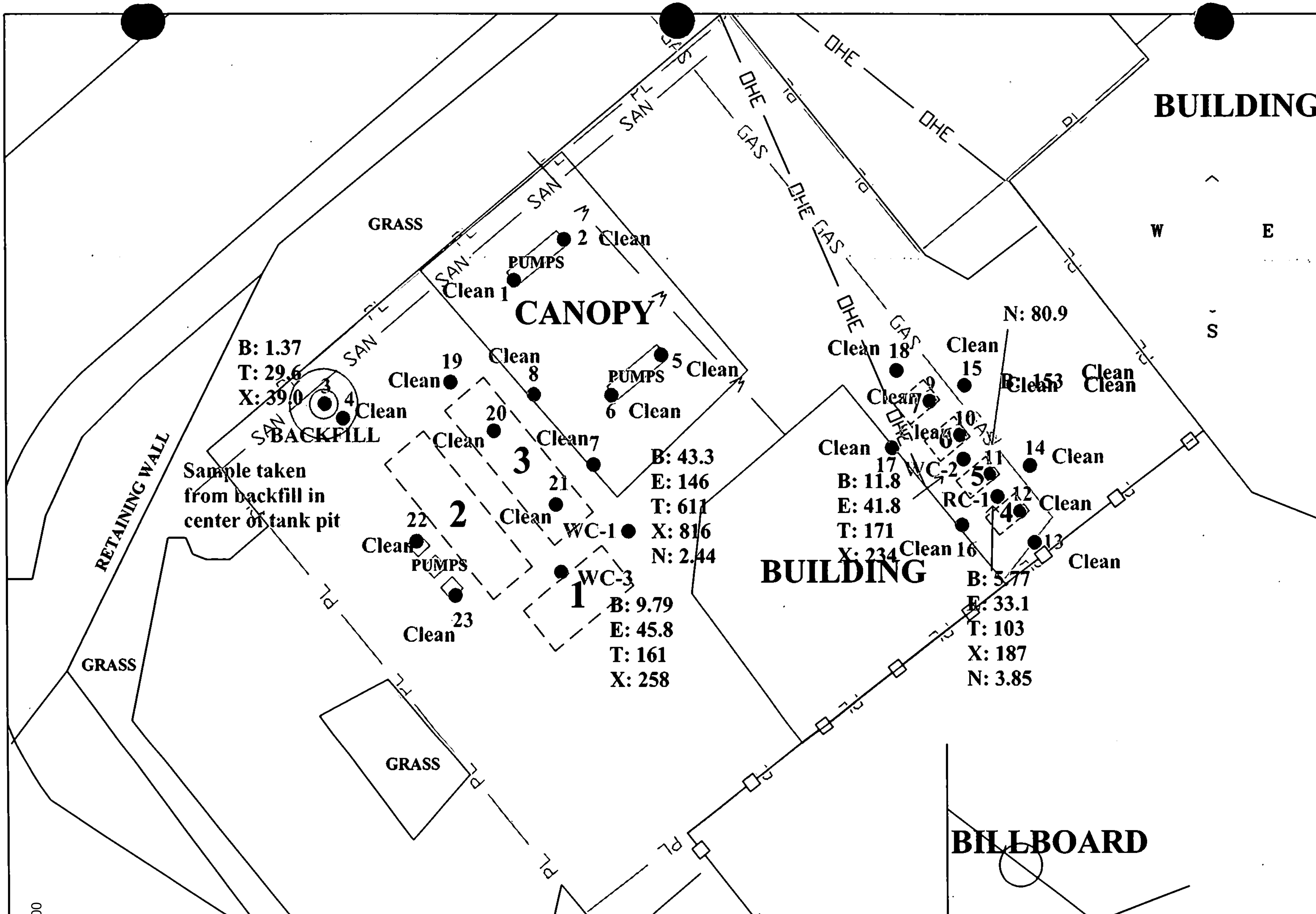


CW^{3}M Company, Inc. 701 South Grand Avenue West Springfield, IL 62704 (217)-522-8001	**Water Supply Well Map** 400 North East Adams Street Peoria, Illinois	Drawn By: MJS Reviewed By: CLR Drawing: 0001C Wellmap.doc

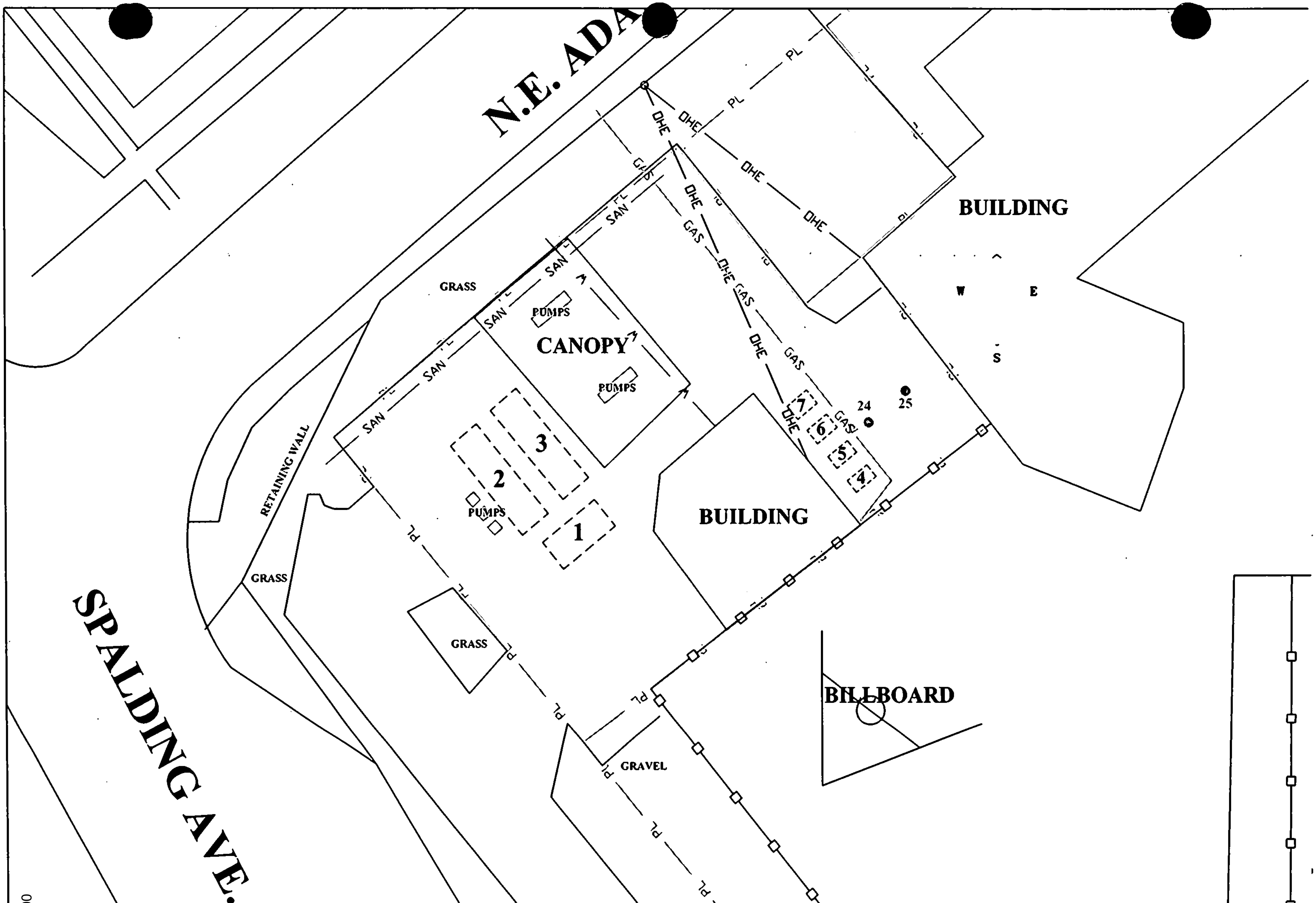


000116

CWM COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SITE MAP	DATE: 1/12/17 REVISED DATE: SCALE 1"=30' DRAWING: 0002	DRAWN BY: MJS REVISED BY: REVIEWED BY: CLR SITE.DWG

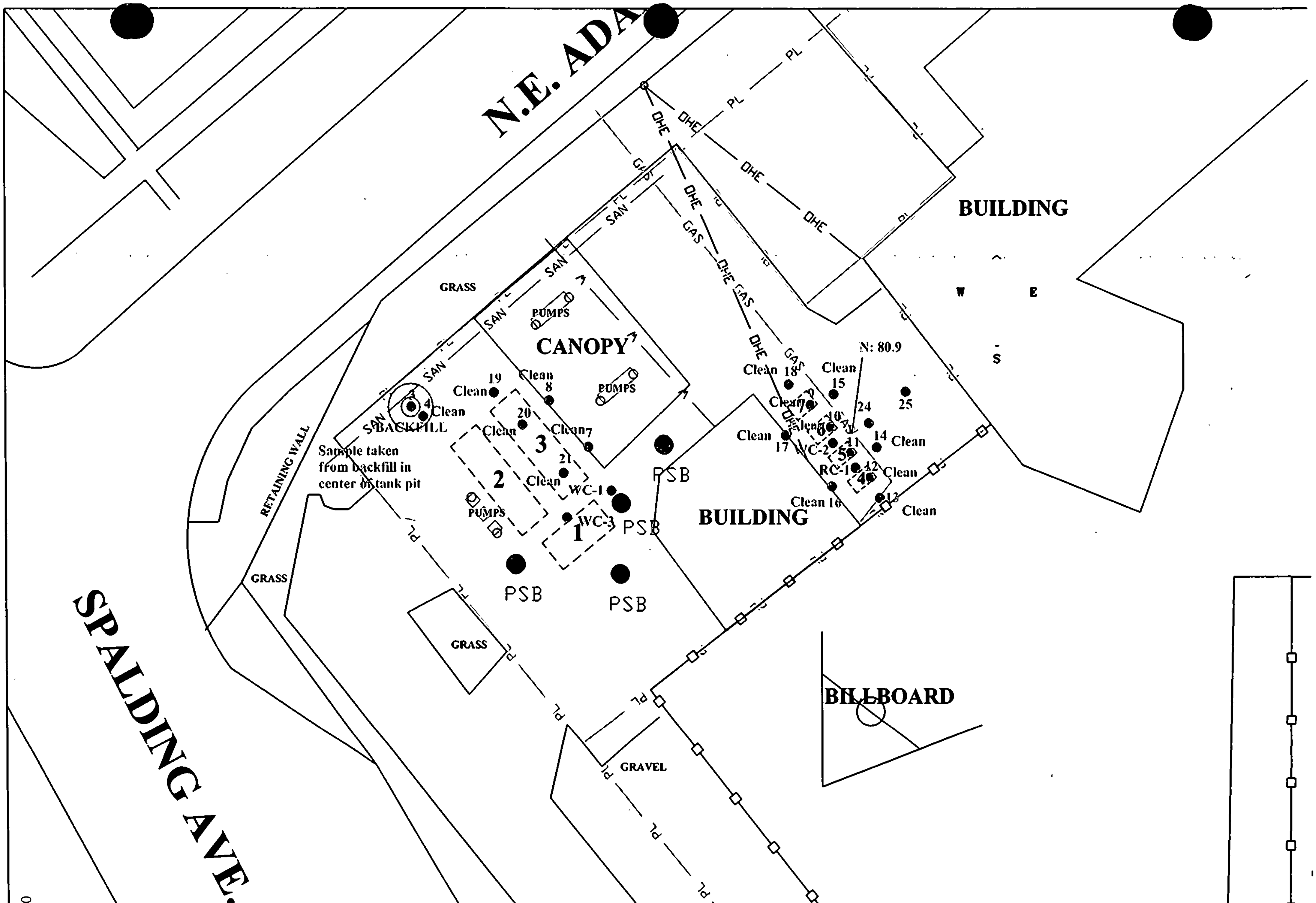


CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, LLC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	EARLY ACTION SAMPLE LOCATION MAP	DATE: 2/7/17 REVISED DATE: SCALE 1"=30' DRAWING: 0003	DRAWN BY: MJS REVISED BY: REVIEWED BY: CLR EAVAL.DWG



000118

CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL BORING LOCATION MAP	DATE: 1/12/17 REVISED DATE: SCALE 1"=30' DRAWING: 0004	DRAWN BY: MJS REVISED BY: REVIEWED BY: CLR SBLOC.DWG



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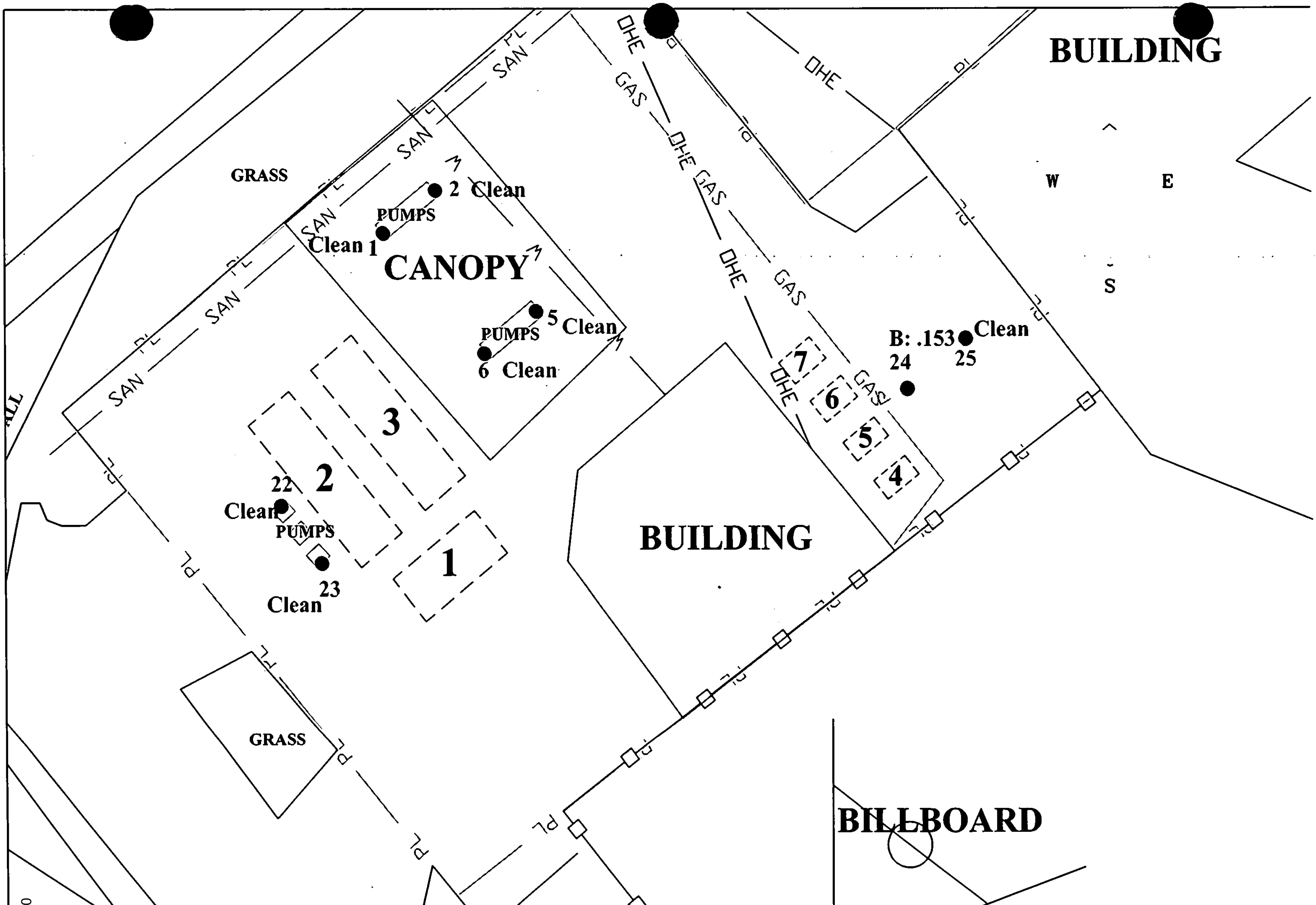
CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	PROPOSED SOIL BORING LOCATION MAP	DATE: 3/9/18 REVISED DATE: SCALE 1"=30' DRAWING: 0004A	DRAWN BY: VES REVISED BY: REVIEWED BY: CLR PSBLOC.DWG



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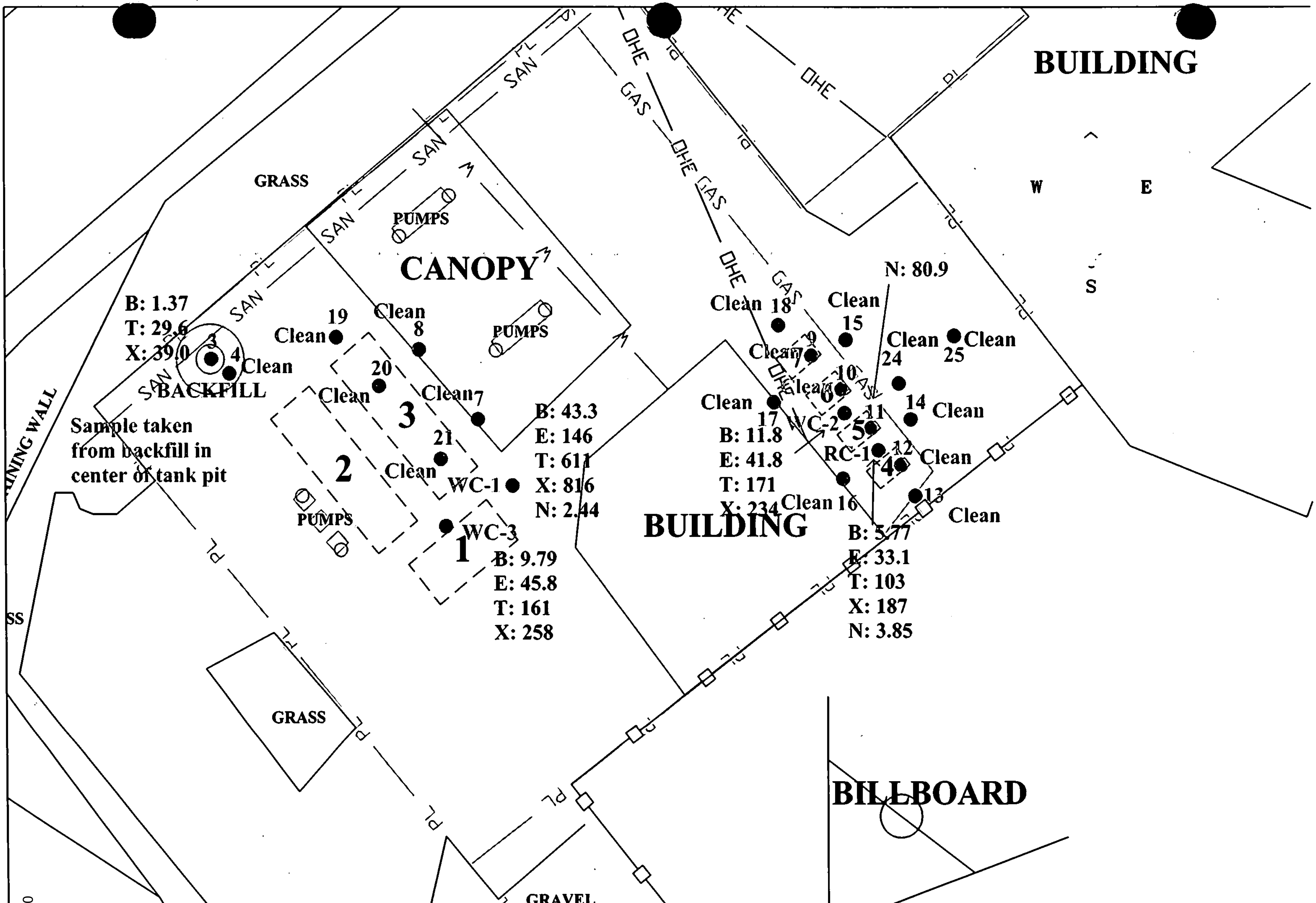
CW^3M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, LLC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL CONTAMINATION VALUES MAP (0-5 FEET)	DATE: 7/25/17 REVISED DATE: SCALE 1"=40' DRAWING: 0005A	DRAWN BY: MTK REVISED BY: REVIEWED BY: CLR SOILCON0-5.DWG



CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL CONTAMINATION VALUE MAP (5-10 feet)	DATE: 7/25/17 REVISED DATE: SCALE 1"=30' DRAWING: 0005B	DRAWN BY: MTK REVISED BY: REVIEWED BY: CLR SOILVAL.DWG

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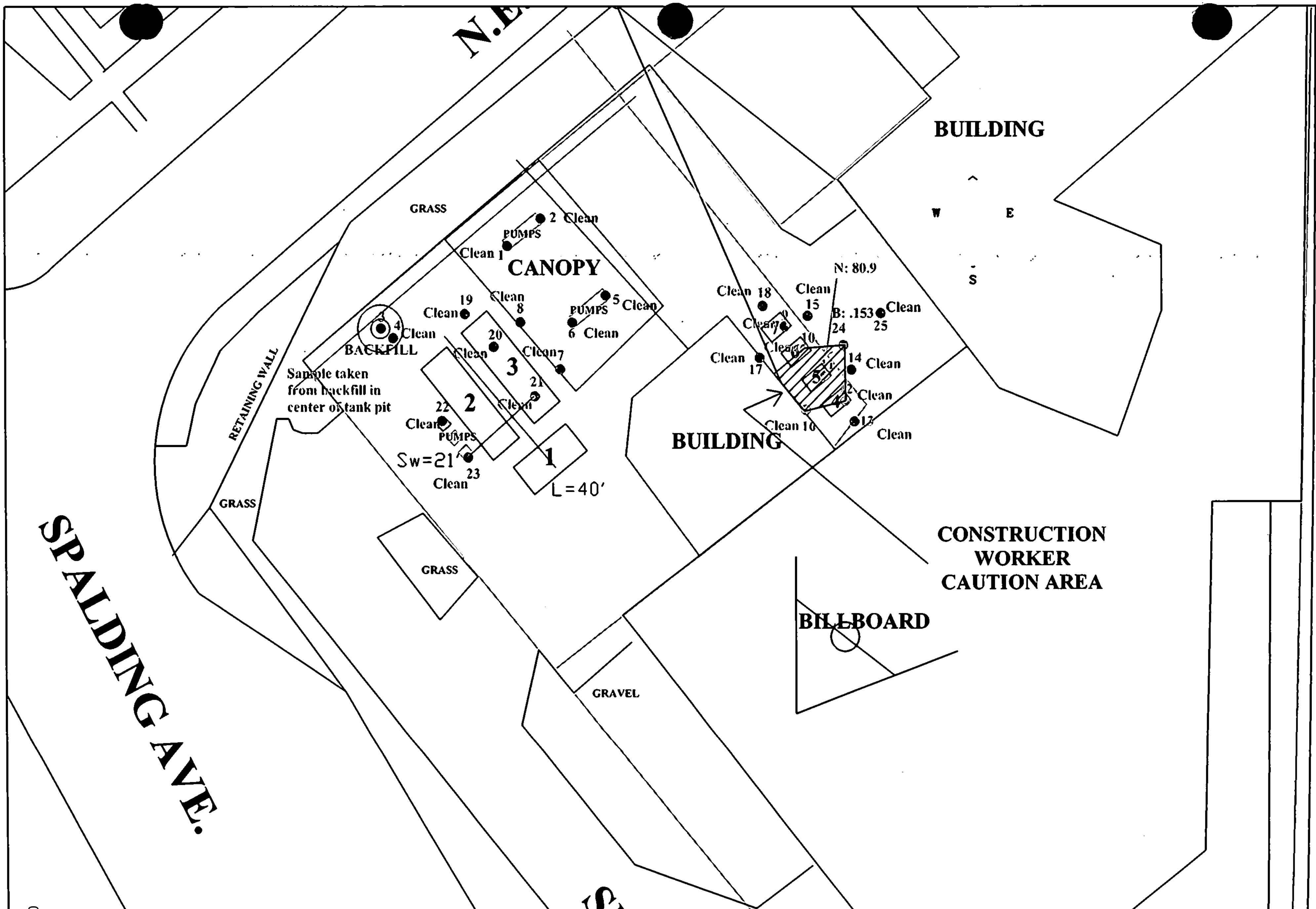

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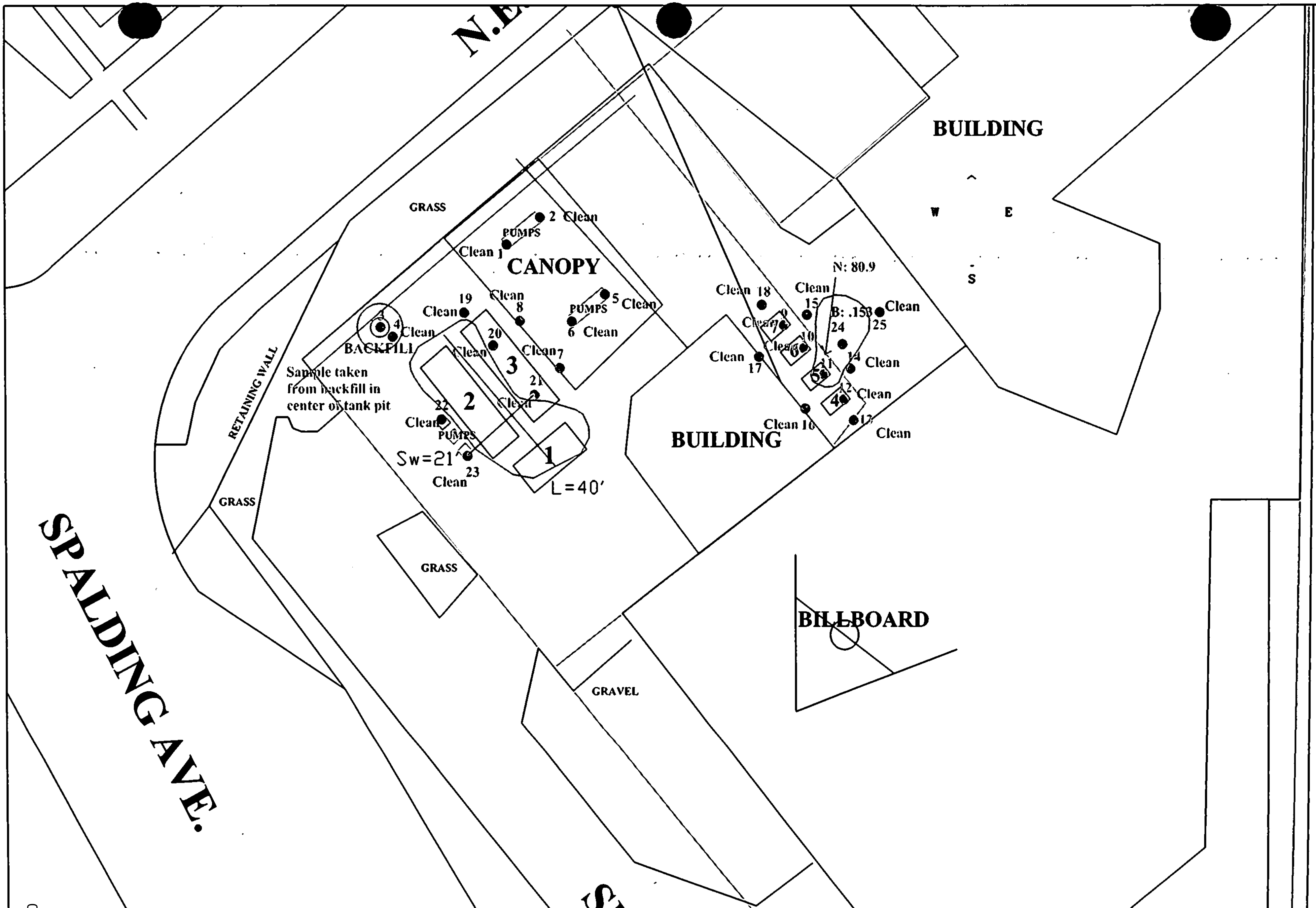
CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	CONSTRUCTION WORKER CAUTION AREA MAP	DATE: 3/14/18 REVISED DATE: SCALE 1"=30' DRAWING: 0006	DRAWN BY: VES REVISED BY: REVIEWED BY: CLR CWCAUTION.DWG



CWM COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	TACO PARAMETER MAP	DATE: 3/14/18 REVISED DATE: SCALE 1"=30' DRAWING: 0007	DRAWN BY: VES REVISED BY: REVIEWED BY: CLR TACO.DWG

APPENDIX C

OSFM ELIGIBILITY DETERMINATION

Office of the Illinois
State Fire Marshal

2/15/2017

S and S Infinite Group Incorporated
400 North East Adams Street
Peoria, IL 616034202

In Re: Facility No. 3010480
IEMA Incident No. 20161089
Downtown 66
400 North East Adams Street
Peoria, Peoria, IL 616034202

Dear Applicant:

The Reimbursement Eligibility and Deductible Application received on February 15, 2017 for the above referenced occurrence has been reviewed. The following determinations have been made based upon this review.

It has been determined that you are eligible to seek payment of costs in excess of $5,000. The costs must be in response to the occurrence referenced above and associated with the following tanks:

Eligible Tanks

Tank 3 10000 gallon Gasoline
Tank 4 350 gallon Gasoline
Tank 5 350 gallon Gasoline
Tank 6 560 gallon Diesel Fuel
Tank 7 560 gallon Used Oil

You must contact the Illinois Environmental Protection Agency to receive a packet of Agency billing forms for submitting your request for payment.

An owner or operator is eligible to access the Underground Storage Tank Fund if the eligibility requirements are satisfied:

1. Neither the owner nor the operator is the United States Government,

2. The tank does not contain fuel which is exempt from the Motor Fuel Tax Law,

3. The costs were incurred as a result of a confirmed release of any of the following substances:

   "Fuel", as defined in Section 1.19 of the Motor Fuel Tax Law

   Aviation fuel

   Heating oil

   Kerosene

   Used oil, which has been refined from crude oil used in a motor vehicle, as defined in Section 1.3 of the Motor Fuel Tax Law.

4. The owner or operator registered the tank and paid all fees in accordance with the statutory and regulatory requirements of the Gasoline Storage Act.

5. The owner or operator notified the Illinois Emergency Management Agency of a confirmed release, the costs were incurred after the notification and the costs were a result of a release of a substance listed in this Section. Costs of corrective action or indemnification incurred before providing that notification shall not be eligible for payment.

6. The costs have not already been paid to the owner or operator under a private insurance policy, other written agreement, or court order.

7. The costs were associated with "corrective action".

This constitutes the final decision as it relates to your eligibility and the set deductible. We reserve the right to change the deductible determination should additional information that would change the determination become available. An underground storage tank owner or operator may appeal the decision to the Illinois Pollution Control Board (Board), pursuant to Section 57.9 (c) (2). An owner or operator who seeks to appeal the decision shall file a petition for a hearing before the Board within 35 days of the date of issuance of the final decision, (35 Illinois Administrative Code 105.504(b)).

For information regarding the filing of an appeal, please contact:

Clerk
Illinois Pollution Control Board
State of Illinois Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601
(312) 814-3620

The following tanks are also listed for this site:

Tank 1 6000 gallon Diesel Fuel
Tank 2 10000 gallon Gasoline

Your application indicates that there has not been a release from these tanks under this incident number. You may be eligible to seek payment of corrective action costs associated with these tanks if it is determined that there has been a release from one or more of these tanks. Once it is determined that there has been a release from one or more of these tanks you may submit a separate application for an eligibility determination to seek corrective action costs associated with this/these tanks.

If you have any questions, please contact our Office at (217) 785-1020.

Sincerely,

Deanne Lock

Deanne Lock

Division of Petroleum and Chemical Safety

APPENDIX D

CORRECTIVE ACTION PLAN BUDGET AND CERTIFICATION

CORRECTIVE ACTION PLAN
S&S Infinite Group
Peoria, Illinois

Owner/Operator and Licensed Professional Engineer/Geologist Budget Certification Form

I hereby certify that I intend to seek payment from the UST Fund for costs incurred while performing corrective action activities for Leaking UST incident 2016-1089. I further certify that the costs set forth in this budget are for necessary activities and are reasonable and accurate to the best of my knowledge and belief. I also certify that the costs included in this budget are not for corrective action in excess of the minimum requirements of 415 ILCS 5/57, no costs are included in this budget that are not described in the corrective action plan, and no costs exceed Subpart H: Maximum Payment Amounts, Appendix D Sample Handling and Analysis amounts, and Appendix E Personnel Titles and Rates of 35 Ill. Adm. Code 732 or 734. I further certify that costs ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 732.606 or 734.630 are not included in the budget proposal or amendment. Such ineligible costs include but are not limited to:

Costs associated with ineligible tanks.
Costs associated with site restoration (e.g., pump islands, canopies).
Costs associated with utility replacement (e.g., sewers, electrical, telephone, etc.).
Costs incurred prior to IEMA notification.
Costs associated with planned tank pulls.
Legal fees or costs.
Costs incurred prior to July 28, 1989.
Costs associated with installation of new USTs or the repair of existing USTs.

Owner/Operator: S&S Infinite Group, Inc.

Authorized Representative: Syed Muneeb Title: Agent

Signature: Date: 3/10/18

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MAR 2 0 2018
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Subscribed and sworn to before me the 10th day of March, 2018

Seal: CAROL L ROWE
Official Seal
Notary Public - State of Illinois
My Commission Expires Mar 18, 2021

(Notary Public)

In addition, I certify under penalty of law that all activities that are the subject of this plan, budget, or report were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan, budget, or report and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in the plan, budget, or report has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

L.P.E./L.P.G.: Vince E. Smith L.P.E./L.P.G. Seal:

L.P.E./L.P.G. Signature: Date: 3/19/18

Subscribed and sworn to before me the 19th day of March 2018

Seal: CAROL L ROWE
Official Seal
Notary Public - State of Illinois
My Commission Expires Mar 18, 2021

(Notary Public)

The Illinois EPA is authorized to require this information under 415 ILCS 5/1. Disclosure of this information is required. Failure to do so may result in the delay or denial of any budget or payment requested hereunder.

Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

General Information for the Budget and Billing Forms

LPC #: 1430650114 County: Peoria

City: Peoria Site Name: S & S Infinite Group, Inc.

Site Address: 400 NE Adams Street

IEMA Incident No.: 2016-1089

IEMA Notification Date: 11/21/2016

Date this form was prepared: Mar 9, 2018

RECEIVED
MAR 20 2018
IEPA/BOL

This form is being submitted as a (check one, if applicable):

☒ Budget Proposal

☐ Budget Amendment (Budget amendments must include only the costs over the previous budget.)

☐ Billing Package

Please provide the name(s) and date(s) of report(s) documenting the costs requested:

Name(s):

Date(s):

This package is being submitted for the site activities indicated below:

35 Ill. Adm. Code 734:

☐ Early Action

☐ Free Product Removal after Early Action

☐ Site Investigation .... Stage 1: ☐ Stage 2: ☐ Stage 3: ☐

☒ Corrective Action Actual Costs

35 Ill. Adm. Code 732:

☐ Early Action

☐ Free Product Removal after Early Action

☐ Site Classification

☐ Low Priority Corrective Action

☐ High Priority Corrective Action

35 Ill. Adm. Code 731:

☐ Site Investigation

☐ Corrective Action

IL 532 -2825
LPC 630 Rev. 1/ 2007

General Information for the Budget and Billing Forms

The following address will be used as the mailing address for checks and any final determination letters regarding payment from the Fund.

Pay to the order of: S&S Infinite Group

Send in care of: CWM Company, Inc.

Address: P.O. Box 571

City: Carlinville State: IL Zip: 62626

The payee is the: Owner ☒ Operator ☐ (Check one or both.)

Signature of the owner or operator of the UST(s) (required)

W-9 must be submitted.
Click here to print off a W-9 Form.

Number of petroleum USTs in Illinois presently owned or operated by the owner or operator; any subsidiary, parent or joint stock company of the owner or operator; and any company owned by any parent, subsidiary or joint stock company of the owner or operator:

Fewer than 101: ☒ 101 or more: ☐

Number of USTs at the site: 7 (Number of USTs includes USTs presently at the site and USTs that have been removed.)

Number of incidents reported to IEMA for this site: 2

Incident Numbers assigned to the site due to releases from USTs: 20140963 20161089

Please list all tanks that have ever been located at the site and tanks that are presently located at the site.

Product Stored in UST	Size (gallons)	Did UST have a release?	Incident No.	Type of Release Tank Leak / Overfill / Piping Leak
Diesel	6,000	Yes ☒ No ☐	20140963	Overfill
Gasoline	10,000	Yes ☒ No ☐	20140963	Overfill
Gasoline	10,000	Yes ☒ No ☐	20161089	Overfill
Gasoline	350	Yes ☒ No ☐	20161089	Tank Leak
Gasoline	350	Yes ☒ No ☐	20161089	Tank Leak
Used Oil	560	Yes ☒ No ☐	20161089	Tank Leak
Used Oil	560	Yes ☒ No ☐	20161089	Tank Leak
		Yes ☐ No ☐		
		Yes ☐ No ☐		

Add More Rows Undo Last Add

Budget Summary

Choose the applicable regulation: (●) 734 ○ 732

734	Free Product	Stage 1 Site Investigation	Stage 2 Site Investigation	Stage 3 Site Investigation	Corrective Action
					Proposed
Drilling and Monitoring Well Costs Form	$	$	$	$	$ 1,820.00
Analytical Costs Form	$	$	$	$	$ 4,434.28
Remediation and Disposal Costs Form	$	$	$	$	$
UST Removal and Abandonment Costs Form	$	$	$	$	$
Paving, Demolition, and Well Abandonment Costs Form	$	$	$	$	$
Consulting Personnel Costs Form	$	$	$	$	$ 21,921.44
Consultant's Materials Costs Form	$	$	$	$	$ 467.50
Handling Charges Form	Handling charges will be determined at the time a billing package is submitted to the Illinois EPA. The amount of allowable handling charges will be determined in accordance with the Handling Charges Form.				
Total	$	$	$	$	$ 28,643.22

Drilling and Monitoring Well Costs Form

1. Drilling

Number of Borings to Be Drilled	Type HSA/PUSH/ Injection	Depth (feet) of Each Boring	Total Feet Drilled	Reason for Drilling
4	PUSH	20.00	80.00	Soil Plume Delineation

☐ Subpart H minimum payment amount applies.

	Total Feet	Rate per Foot ($)	Total Cost ($)
Total Feet via HSA:		29.07	
Total Feet via PUSH:	80.00	22.75	1,820.00
Total Feet for Injection via PUSH:		18.96	
		Total Drilling Costs:	1,820.00

2. Monitoring / Recovery Wells

Number of Wells	Type of Well HSA / PUSH / 4" or 6" Recovery / 8" Recovery	Diameter of Well (inches)	Depth of Well (feet)	Total Feet of Wells to Be Installed ($)

Well Installation	Total Feet	Rate per Foot ($)	Total Cost ($)
Total Feet via HSA:			
Total Feet via PUSH:			
Total Feet of 4" or 6" Recovery:			
Total Feet of 8" or Greater Recovery:			
		Total Well Costs:	

Total Drilling and Monitoring Well Costs:	$1,820.00

Analytical Costs Form

Laboratory Analysis	Number of Samples		Cost ($) per Analysis		Total per Parameter
Chemical Analysis					
BETX Soil with MTBE EPA 8260	14	X	107.44	=	$1,504.16
BETX Water with MTBE EPA 8260		X		=	
COD (Chemical Oxygen Demand)		X		=	
Corrosivity		X		=	
Flash Point or Ignitability Analysis EPA 1010		X		=	
Fraction Organic Carbon Content (f_{oc}) ASTM-D 2974-00		X		=	
Fat, Oil, & Grease (FOG)		X		=	
LUST Pollutants Soil - analysis must include volatile, base/ neutral, polynuclear aromatics and metals list in Section 732. Appendix B and 734.Appendix B		X		=	
Dissolved Oxygen (DO)		X		=	
Paint Filter (Free Liquids)		X		=	
PCB / Pesticides (combination)		X		=	
PCBs		X		=	
Pesticides		X		=	
pH		X		=	
Phenol		X		=	
Polynuclear Aromatics PNA, or PAH SOIL EPA 8270	14	X	192.14	=	$2,689.96
Polynuclear Aromatics PNA, or PAH WATER EPA 8270		X		=	
Reactivity		X		=	
SVOC - Soil (Semi-Volatile Organic Compounds)		X		=	
SVOC - Water (Semi-Volatile Organic Compounds)		X		=	
TKN (Total Kjeldahl) "nitrogen"		X		=	
TPH (Total Petroleum Hydrocarbons)		X		=	
VOC (Volatile Organic Compounds) - Soil (Non-Aqueous)		X		=	
VOC (Volatile Organic Compounds) - Water		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
Geo-Technical Analysis					
Soil Bulk Density (p_b) ASTM D2937-94		X		=	
Ex-situ Hydraulic Conductivity / Permeability		X		=	
Moisture Content (w) ASTM D2216-92 / D4643-93		X		=	
Porosity		X		=	
Rock Hydraulic Conductivity Ex-situ		X		=	
Sieve / Particle Size Analysis ASTM D422-63 / D1140-54		X		=	
Soil Classification ASTM D2488-90 / D2487-90		X		=	
Soil Particle Density (p_s) ASTM D854-92		X		=	
		X		=	
		X		=	
		X		=	

Analytical Costs Form

Metals Analysis					
Soil preparation fee for Metals TCLP Soil (one fee per soil sample)		X		=	
Soil preparation fee for Metals Total Soil (one fee per soil sample)		X		=	
Water preparation fee for Metals Water (one fee per water sample)		X		=	
Arsenic TCLP Soil		X		=	
Arsenic Total Soil		X		=	
Arsenic Water		X		=	
Barium TCLP Soil		X		=	
Barium Total Soil		X		=	
Barium Water		X		=	
Cadmium TCLP Soil		X		=	
Cadmium Total Soil		X		=	
Cadmium Water		X		=	
Chromium TCLP Soil		X		=	
Chromium Total Soil		X		=	
Chromium Water		X		=	
Cyanide TCLP Soil		X		=	
Cyanide Total Soil		X		=	
Cyanide Water		X		=	
Iron TCLP Soil		X		=	
Iron Total Soil		X		=	
Iron Water		X		=	
Lead TCLP Soil		X		=	
Lead Total Soil		X		=	
Lead Water		X		=	
Mercury TCLP Soil		X		=	
Mercury Total Soil		X		=	
Mercury Water		X		=	
Selenium TCLP Soil		X		=	
Selenium Total Soil		X		=	
Selenium Water		X		=	
Silver TCLP Soil		X		=	
Silver Total Soil		X		=	
Silver Water		X		=	
Metals TCLP Soil (a combination of all metals) RCRA		X		=	
Metals Total Soil (a combination of all metals) RCRA		X		=	
Metals Water (a combination of all metals) RCRA		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
Other					
EnCore® Sampler, purge-and-trap sampler, or equivalent sampling device .	14	X	12.64	=	$176.96
Sample Shipping per sampling event[1]	1	X	63.20	=	$63.20

[1]A sampling event, at a minimum, is all samples (soil and groundwater) collected in a calendar day.

Total Analytical Costs: $ 4,434.28

Consulting Personnel Costs Form

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Project Manager	40.00	126.40	$5,056.00
CCAP	Corrective Action Design / Report Development / IEPA Correspondence			
	Senior Prof. Engineer	3.00	164.33	$492.99
CCAP	Report Review and Certification			
	Senior Draftperson/CAD	6.00	75.83	$454.98
CCAP	Drafting and Editing Maps for Report			
	Senior Admin. Assistant	3.00	56.88	$170.64
CCAP	Report Compilation, Assembly, and Distribution			
	Senior Project Manager	16.00	126.40	$2,022.40
TACO 2 or 3	TACO Tier 2 Calculations / Development of CUOs / GW Modeling			

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Project Manager	24.00	126.40	$3,033.60
CCAP-Budget	Budget Preparation / Data Evaluation			
	Senior Prof. Engineer	3.00	164.33	$492.99
CCAP-Budget	Budget Review & Certification			

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Project Manager	4.00	126.40	$505.60
CCA-Field	Field Preparation, Scheduling, Arrangements/Coordination for Investigation Activities / Well Owner			
	Engineer II	8.00	107.44	$859.52
CCA-Field	Drilling / Soil Sampling / Potable Well Survey			
	Engineer III	10.00	126.40	$1,264.00
CCA-Field	Field Prep/Drilling / Soil Sampling / Potable Well Survey			
	Senior Project Manager	3.00	126.40	$379.20
CCA-Field	Documentation / Field Reports / Data			
	Senior Admin. Assistant	2.00	56.88	$113.76
CCA-Field	Arrangements for Investigation, Utilities/JULIE, and Scheduling			
	Senior Project Manager	8.00	126.40	$1,011.20
CCA-Field	Review Analytical Results, Borelogs?Tabulation of Analytical			
	Engineer III	6.00	126.40	$758.40
CCA-Field	Record Borelogs, Tabulation of Analytical Results			

Employee Name		Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	Task				
		Senior Prof. Engineer	6.00	164.33	$985.98
CA-Pay	Reimbursement Review and Certification				
		Senior Acct. Technician	30.00	69.51	$2,085.30
CA-Pay	Reimbursement Preparation Forms				
		Senior Admin. Assistant	8.00	56.88	$455.04
CA-Pay	Reimbursement Compilation, Assembly, and Distribution				
		Geologist III	16.00	111.24	$1,779.84
CA-Pay	Reimbursement Development / Inputs / Contractor Invoicing / Evaluation with Budget				

*Refer to the applicable Maximum Payment Amounts document.

Total of Consulting Personnel Costs	$21,921.44

Consultant's Materials Costs Form

Materials, Equipment, or Field Purchase		Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	**Description/Justification**				
Copies		300.00	.15	/each	$45.00
CCAP	Copies of Plan and Report				
Postage		3.00	7.50	/each	$22.50
CCAP	Report/ Forms/ Distribution				
Copies		100.00	.15	/each	$15.00
CCAP-Budget	Copies of Budget				
Copies		600.00	.15	/each	$90.00
CA-Pay	Copies of Reimbursement Claim				
Postage		4.00	7.50	/each	$30.00
CA-Pay	Reimbursement Distribution / Forms				
Copies		100.00	.15	/each	$15.00
CCA-Field	Field Preparation/Maps/Borelogs/Analytical Reports/Field Reports				
Mileage		150.00	.54	/mile	$81.00
CCA-Field	One Round Trip from Springfield Office to Site (Drilling, Potable Well Investigation)				

Materials, Equipment, or Field Purchase	Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	**Description/Justification**			
PID Rental	1.00	129.00	/day	$129.00
CCA-Field	Detect VOC Levels in Soil Samples			
Measuring Wheel	1.00	24.00	/day	$24.00
CCA-Field	Mapping Sampling Locations			
Disposable Gloves	1.00	16.00	/box	$16.00
CCA-Field	Disposable Latex Gloves for Soil Sampling			

Total of Consultant Materials Costs	$467.50

APPENDIX E

BORE LOGS

CORRECTIVE ACTION PLAN

S&S Infinite Group

Peoria, Illinois

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

T INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** WC-1
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' N of the NW corner of building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 11/21/16 3:00 PM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 11/21/16 3:10 PM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
	Top soil	OH		0			
1							
	Backfill						
2							
			95%	0	Grab	WC-1 2.5'	
3							
4				0			
5							
							Odor and Discoloration
6				132			
7							
8			100%	1178	Grab	WC-1 7.5'	BETX, MTBE, PNAs WC Parameters
9							
				1178			
10	End of Boring 10'						
11							
12							
13							
14							
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID reading above water table

Manway / Surface Elevation:

Groundwater Depth While Drilling: N/A	**Auger Depth:** 10'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	MDR

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

T INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** WC-2
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 20' S & 5' E of the NE corner of building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 11/21/16 3:10 PM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 11/21/16 3:20 PM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
	Top soil	OH		0			
1	Backfill						
2							
			90%	0	Grab	WC-2 2.5'	
3							
4							
				22			
5							Odor and Discoloration
6				560			
7							
8			95%	1178	Grab	WC-2 7.5'	BETX, MTBE, PNAs WC Parameters
9							
				992			
10	End of Boring 10'						
11							
12							
13							
14							
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID reading above water table

Manway / Surface Elevation:

Groundwater Depth While Drilling:	N/A	**Auger Depth:**	10'	**Driller:**	AEDC
Groundwater Depth After Drilling:		**Rotary Depth:**		**Geologist:**	MDR

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

T INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** WC-3
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' N & 12' W of the NW corner of building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 12/16/16 8:55 PM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 12/16/16 9:10 PM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
0–1	Top soil	OH		0			
1–5	Backfill		90%	0	Grab	WC-3 2.5'	
5–10			95%	125			Odor and Discoloration
				1178	Grab	WC-3 5-10'	BETX, MTBE, WC Parameters
				806			
10	End of Boring 10'						
11							
12							
13							
14							
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section with highest degree of contamination in WC-1, WC-2, and PID

EOB 20' Dry Sand

Manway / Surface Elevation:

Groundwater Depth While Drilling: N/A	**Auger Depth:** 10'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	MDR

Illinois Environmental Protection Agency

CWM COMPANY, INC.
DRILLING BOREHOLE LOG

T INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-24
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' E and 25' N of the NW corner of the building
SITE ADDRESS: 400 North East Adams Street Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 7/26/17 8:00 AM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 7/26/17 8:30 AM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
	Gravel/Sand Backfill	OH					No odor or discoloration
1				0			
	Brown/Black Silty Clay	CL					
2							
			90%	0	Grab	SB-24A 2.5'	BETX, MTBE, PNA
3							
4				0			
5						SB-24B	BETX, MTBE, PNA
	Sand: Med-Large Grained	SP		11		5.0'	Slight Odor and Discoloration
6							
				2			
			80%	0	Grab	SB-24C 7.5'	BETX, MTBE, PNA
8							
9							
				0			
10							
11							
12							
			90%	0	Grab	SB-24D 12.5'	BETX, MTBE, PNA
13							
14				0			
	Brown fine-grained and coarse-grained sand	SP					
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section were sampled at the highest PID reading or in the center of the sample
The soil boring log continues on page 2

Manway / Surface Elevation:

Groundwater Depth While Drilling: none	**Auger Depth:** 25'	**Driller:** AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:** GTR/MTK

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

T INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-24
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' E and 25' N of the NW corner of the building
SITE ADDRESS: 400 North East Adams Street Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 7/26/17 8:00 AM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 7/26/17 8:30 AM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
15							
16	Sand: Med-Large Grained	SP		0			
17							
18			90%	0	Grab	SB-24E 17.5'	BETX, MTBE, PNA
19				0			
20							
21							
				0			
23			90%	0	Grab	SB-24F 22.5'	BETX, MTBE, PNA
24							
25							
26	End of Boring						
27							
28							
29							
30							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section were sampled at the highest PID reading or in the center of the sample

EOB 25' Dry Sand

Manway / Surface Elevation:

Groundwater Depth While Drilling: None	**Auger Depth:** 25'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	GTR/MTK

Illinois Environmental Protection Agency

CW$^{\square}$M COMPANY, INC.
DRILLING BOREHOLE LOG

T INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-25
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' E and 5' N of the NW corner of the Building
SITE ADDRESS: 400 North East Adams Street Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 7/26/17 8:30 AM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 7/26/17 8:50 AM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
	Gravel/Sand Backfill	OH					No odor or discoloration
1				0			
	Brown/Black Silty Clay	CL					
2							
			80%	0	Grab		
3							
4				0			
5							
6				0			
7			80%	0	Grab		
8							
9				0			
10							
	Sand: Med-Large Grained	SP					
11							
12			80%	0	Grab	SB-25A 12.5'	BETX, MTBE, PNA
13							
14				0			
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section were sampled at the highest PID reading or in the center of the sample

The soil boring log continues on page 2

Manway / Surface Elevation:.

Groundwater Depth While Drilling: None	**Auger Depth:** 20'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	GTR/MTK

T INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-25
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' E and 5' N of the NW corner of the Building
SITE ADDRESS: 400 North East Adams Street Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 7/26/17 8:30 AM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 7/26/17 8:50 AM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
15							
	Sand: Med-Large Grained	SP					
16				0			
17							
			90%	0	Grab	SB-25B 17.5'	BETX, MTBE, PNA
18							
19				0			
20							
	End of Boring 20'						
21							
23							
24							
25							
26							
27							
28							
29							
30							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section were sampled at the highest PID reading or in the center of the sample

EOB 20' Dry Sand

Manway / Surface Elevation:

Groundwater Depth While Drilling:	None	**Auger Depth:**	20'	**Driller:**	AEDC
Groundwater Depth After Drilling:		**Rotary Depth:**		**Geologist:**	GTR/MTK

APPENDIX F

ANALYTICAL RESULTS

CORRECTIVE ACTION PLAN

S&S Infinite Group

Peoria, Illinois

S and S Infinite Group, Inc.
Site Assessment Data

Release Confirmation/Waste Characterization

	Location	WC-1	WC-2	WC-3	RC-1
	Date	11/21/2016	11/21/2016	12/16/2016	1/3/2017
	Depth				
Parameter	Tier I CUO				
Benzene	0.03	**43.3**	**11.8**	**9.79**	**5.77**
Ethylbenzene	13.0	**146.0**	**41.8**	**45.8**	**33.1**
Toluene	12.0	**611.**	**171.**	**161.**	**103.**
Total Xylenes	5.6	**816.**	**234.**	**258.**	**187.**
MTBE	0.32	ND	ND	ND	ND
Acenaphthene	570	ND	ND		ND
Acenaphthylene	30	ND	ND		ND
Anthracene	12,000	ND	ND		ND
Benzo(a)anthracene	0.9	ND	ND		ND
Benzo(a)pyrene	0.09	ND	ND		ND
Benzo(b)flouranthene	0.9	ND	ND		ND
Benzo(g,h,i)perylene	160	ND	ND		ND
Benzo(k)flouranthene	9	ND	ND		ND
Chrysene	88	ND	ND		ND
Dibenzo(a,h)anthracene	0.09	ND	ND		ND
Flouranthene	3,100	0.061	ND		ND
Fluorene	560	ND	ND		ND
Indeno(1,2,3-c,d)pyrene	0.9	ND	ND		ND
Napthalene	1.8	**2.44**	0.343		**3.85**
Phenanthrene	280	0.09	ND		0.09
Pyrene	2,300	0.066	ND		ND
Numbers not bold indicate actual quantities, but are below the TACO Tier 1 Most Stringent Soil Cl					
BOLD & SHADING -- Exceeds the TACO Tier 1 Most Stringent Soil Clean-up Objective.					
ND -- Not Detected					

000150

S and S Infinite Group, Inc.
Site Assessment Data

Early Action - Soil

	Location	1	2	3	4	5	6	7
	Date	1/5/2017	1/5/2017	1/5/2017	1/5/2017	1/6/2017	1/6/2017	1/6/2017
	Depth	3'	3'	Backfill	Backfill	3'	3'	7'
Parameter	Tier I CUO							
Benzene	0.03	ND	ND	**1.37**	ND	ND	ND	ND
Ethylbenzene	13.0	ND	ND	7.18	ND	ND	ND	ND
Toluene	12.0	ND	ND	**29.6**	ND	ND	ND	ND
Total Xylenes	5.6	ND	ND	**39.**	ND	ND	ND	ND
MTBE	0.32	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	570							
Acenaphthylene	30							
Anthracene	12,000							
Benzo(a)anthracene	0.9							
Benzo(a)pyrene	0.09							
Benzo(b)flouranthene	0.9							
Benzo(g,h,i)perylene	160							
Benzo(k)flouranthene	9							
Chrysene	88							
Dibenzo(a,h)anthracene	0.09							
Flouranthene	3,100							
Fluorene	560							
Indeno(1,2,3-c,d)pyrene	0.9							
Napthalene	1.8							
Phenanthrene	280							
Pyrene	2,300							

Numbers not bold indicate actual quantities, but are below the TACO Tier 1 Most Stringent Soil Clean-up Objective.
BOLD & SHADING -- Exceeds the TACO Tier 1 Most Stringent Soil Clean-up Objective.
ND -- Not Detected

S and S Infinite Group, Inc.
Site Assessment Data

Early Action - Soil

	Location	8	9	10	11	12	13	14	15	16	17
	Date	1/6/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017
	Depth	7'	11'	11'	11'	11'	7'	7'	7'	7'	7'
Parameter	Tier I CUO										
Benzene	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	13.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	12.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	5.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	570		ND	ND	0.121	ND	ND	ND	ND	ND	ND
Acenaphthylene	30		ND	ND	0.165	ND	ND	ND	ND	ND	ND
Anthracene	12,000		ND	ND	0.063	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.9		ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.09		ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)flouranthene	0.9		ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	160		ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)flouranthene	9		ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	88		ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.09		ND	ND	ND	ND	ND	ND	ND	ND	ND
Flouranthene	3,100		ND	ND	0.131	ND	ND	ND	ND	ND	ND
Fluorene	560		ND	ND	0.237	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	0.9		ND	ND	ND	ND	ND	ND	ND	ND	ND
Napthalene	1.8		ND	ND	**80.9**	0.146	ND	ND	ND	ND	ND
Phenanthrene	280		ND	ND	0.657	ND	ND	ND	ND	ND	ND
Pyrene	2,300		ND	ND	0.167	ND	ND	ND	ND	ND	ND
Numbers not bold indicate actual quantities, bu											
BOLD & SHADING -- Exceeds the TACO Ti											
ND -- Not Detected											

S and S Infinite Group, Inc.
Site Assessment Data

Early Action - Soil

	Location	**18**	**19**	**20**	**21**	**22**	**23**
	Date	**1/9/2017**	**1/10/2017**	**1/10/2017**	**1/10/2017**	**1/10/2017**	**1/10/2017**
	Depth	**7'**	**7'**	**13'**	**13'**	**3'**	**3'**
Parameter	**Tier I CUO**						
Benzene	**0.03**	ND	ND	0.0263	ND	ND	ND
Ethylbenzene	**13.0**	ND	ND	ND	ND	ND	ND
Toluene	**12.0**	ND	ND	0.132	ND	ND	ND
Total Xylenes	**5.6**	ND	ND	0.133	ND	ND	ND
MTBE	**0.32**	ND	ND	ND	ND	ND	ND
Acenaphthene	**570**	ND					
Acenaphthylene	**30**	ND					
Anthracene	**12,000**	ND					
Benzo(a)anthracene	**0.9**	ND					
Benzo(a)pyrene	**0.09**	ND					
Benzo(b)flouranthene	**0.9**	ND					
Benzo(g,h,i)perylene	**160**	ND					
Benzo(k)flouranthene	**9**	ND					
Chrysene	**88**	ND					
Dibenzo(a,h)anthracene	**0.09**	ND					
Flouranthene	**3,100**	ND					
Fluorene	**560**	ND					
Indeno(1,2,3-c,d)pyrene	**0.9**	ND					
Napthalene	**1.8**	ND					
Phenanthrene	**280**	ND					
Pyrene	**2,300**	ND					
Numbers not bold indicate actual quantities, bu							
BOLD & SHADING -- Exceeds the TACO Ti							
ND -- Not Detected							

000153

S and S Inf Group, Inc.
Site Assessment Data

Stage 1 - Soil

	Location	24A	24B	24C	24D	24E	24F	25A	25B
	Date	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017
	Depth	2.5	5	7.5	12.5	17.5	22.5	12.5	17.5
Parameter	**TEIR I CUO**								
Benzene	**0.03**	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**13.0**	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**12.0**	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	**5.6**	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	**0.32**	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**570**	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	**30**	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**12,000**	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	**0.9**	0.125	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	**0.09**	**0.153**	ND	ND	ND	ND	ND	ND	ND
Benzo(b)flouranthene	**0.9**	0.228	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	**160**	0.115	ND	ND	ND	ND	ND	ND	ND
Benzo(k)flouranthene	**9**	0.0771	ND	ND	ND	ND	ND	ND	ND
Chrysene	**88**	0.199	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	**0.09**	ND	ND	ND	ND	ND	ND	ND	ND
Flouranthene	**3,100**	0.307	ND	ND	ND	ND	ND	ND	0.0506
Fluorene	**560**	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	**0.9**	0.102	ND	ND	ND	ND	ND	ND	ND
Napthalene	**1.8**	ND	ND	ND	ND	ND	0.333	ND	ND
Phenanthrene	**280**	0.162	ND	ND	ND	ND	ND	ND	ND
Pyrene	**2,300**	0.285	ND	ND	ND	ND	ND	ND	0.043

Numbers not bold indicate actual quantities, but are below the TACO Tier 1 Most Stringent Soil Clean-up Objective.

BOLD & SHADING -- Exceeds the TACO Tier 1 Most Stringent Soil Clean-up Objective.

ND -- Not Detected

APPENDIX G

TACO CALCULATIONS

CORRECTIVE ACTION PLAN
S&S Infinite Group
Peoria, Illinois

Summary of Tier 2 Calculations
S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089
02/20/18

Table 3

Tier 1 Objectives

		Benzene		Toluene		Ethylbenzene		Total Xylenes		Naphthalene		MTBE	
Residential	Ingestion	12	mg/kg	16,000	mg/kg	7,800	mg/kg	16,000	mg/kg	1,600	mg/kg	780	mg/kg
	Inhalation	0.8	mg/kg	650	mg/kg	400	mg/kg	320	mg/kg	170	mg/kg	8,800	mg/kg
	Migration Class 1	0.03	mg/kg	12	mg/kg	13	mg/kg	150	mg/kg	12	mg/kg	0.32	mg/kg
	Migration Class 2	0.17	mg/kg	29	mg/kg	19	mg/kg	150	mg/kg	18	mg/kg	0.32	mg/kg
Industrial/Commercial	Ingestion	100	mg/kg	410,000	mg/kg	200,000	mg/kg	410,000	mg/kg	41,000	mg/kg	20,000	mg/kg
	Inhalation	1.60	mg/kg	650	mg/kg	400	mg/kg	320	mg/kg	270	mg/kg	8,800	mg/kg
Construction Worker	Ingestion	2,300	mg/kg	410,000	mg/kg	20,000	mg/kg	41,000	mg/kg	4,100	mg/kg	2,000	mg/kg
	Inhalation	2.20	mg/kg	42	mg/kg	58	mg/kg	5.6	mg/kg	1.80	mg/kg	140	mg/kg
Soil Saturation		580	mg/kg	290	mg/kg	150	mg/kg	110	mg/kg	212.16	mg/kg	8,400	mg/kg

Tier 2 SSL Objectives

		Benzene	Equation	Toluene	Equation	Ethylbenzene	Equation	Total Xylenes	Equation	Naphthalene	Equation	MTBE	
Residential	Ingestion	11.64	S-2	6,257	S-1	7,821	S-1	15,643	S-1	1,564	S-1	782.1	S-1
	Inhalation	1.94	S-6	52,029.80	S-4	14,496.77	S-4	1,782.88	S-4	246.63	S-4	29,111.06	S-4
	Migration Mass-Limit Class 1	0.19	S-28	38.45	S-28	26.92	S-28	384.54	S-28	5.38	S-28	2.69	S-28
	Migration Class 1	0.073	S-17	44.11	S-17	61.76	S-17	1,093.87	S-17	19.16	S-17	0.28	S-17
Industrial-Commercial	Ingestion	104.06	S-2	1,635,200	S-1	204,400	S-1	408,800	S-1	40,880	S-1	20,440	S-1
	Inhalation	3.70	S-6	62,835.65	S-4	23,060.08	S-4	2,838.48	S-4	392.66	S-4	46,347.27	S-4
	Migration Mass-Limit Class 1	0.19	S-28	38.45	S-28	26.92	S-28	384.54	S-28	5.38	S-28	2.69	S-28
	Migration Class 1	0.073	S-17	44.11	S-17	61.76	S-17	1,093.87	S-17	19.16	S-17	0.28	S-17
Construction Worker	Ingestion	2,258.21	S-3	163,236	S-1	10,202	S-1	81,618	S-1	122,427	S-1	20,405	S-1
	Inhalation	5.21	S-7	535.89	S-5	1,343.60	S-5	73.45	S-5	2.54	S-5	249.86	S-5
Soil Saturation		1,322.01	S-29	1,168.82	S-29	749.91	S-29	601.63	S-29	212.16	S-29	10,221.04	S-29

all values are in mg/kg

Site Specific Value cannot exceed Soil Saturation Limit, otherwise Tier 2 Inhalation or Tier 2 Migration objectives are the Soil Saturation objective

Groundwater Contaminate Concentration Exceedances at Surface Water or Set Back Zone (mg/L)

	Benzene	Equation	Toluene	Equation	Ethylbenzene	Equation	Total Xylenes	Equation	Naphthalene	Equation	MTBE	
Result	#DIV/0!	R-26	#DIV/0!	R-26	#DIV/0!	R-26	#DIV/0!	R-26			#DIV/0!	R-26
Surface Water Objective	0.86		0.6		0.014		0.36					

Version: 4/25/2016

Illinois Enviromental Protection Agency
Leaking Underground Storage Tank Program
SSL Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 2016-1089   IEPA LPC # (10-digit): 1430560114

Site Name: S & S Infinite Group, Inc. - DBA Downtown 66

Site Address (not a P.O. Box): 400 North East Adams

City: Peoria   County: Peoria   Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: S12,S17,S28): S5,6,7,8,9,10,17,18,19,20,21,22,24

Contact Information for Individual Who Performed Calculations:

CWM Company, Inc.,

Land Use: Residential   Soil Type: Sand

Groundwater: [X] Class I [ ] Class II

Mass Limit: [ ] Yes [X] No   If Yes, then Specify Acreage:

- Mass Limit Acreage other than defaults must always be rounded up.
- Failure to use site-specific parameters where allowed could affect payment from the UST Fund
- Maps depicting source width, plume dimensions, distance, etc. must also be submitted.
- Inputs must be submitted in the designated unit.

AT (ingestion)	=	Residential = 6	yr
		Con. Worker = 0.115	yr
AT (inhalation)	=	Residential = 30	yr
		Con. Worker = 0.115	yr
AT_c	=	70	yr
BW	=	Res. (NonCarcinogen) = 15	kg
		Res. (Carcinogen) = 70	kg
		Con. Worker = 70	kg
C_{sat}	=	Benzene = 1322.012	mg/kg
		Toluene = 1168.824	mg/kg
		Ethylbenzene = 749.906	mg/kg
		Total Xylenes = 601.626	mg/kg
		MTBE = 10221.038	mg/kg
		Naphthalene = 212.157	mg/kg
			mg/kg
			mg/kg
			mg/kg
			mg/kg

d_a	=	3.048	m
d_s	=	3.048	m
DA	=	Benzene = 0.000197775126141909	cm^2/s
		Toluene = 7.67193169192489E-05	cm^2/s
		Ethylbenzene = 3.95299980402237E-05	cm^2/s
		Xylenes = 2.61358477517448E-05	cm^2/s
		MTBE = 8.82257978856706E-05	cm^2/s
		Naphthalene = 1.22914273421043E-06	cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s

Incident # 2016-1089

C_w	=	Benzene = 0.1	mg/L
		Toluene = 20	mg/L
		Ethylbenzene = 61.757	mg/L
		Total Xylenes = 1093.865	mg/L
		MTBE = 0.28	mg/L
		Naphthalene = 19.162	mg/L
			mg/L
			mg/L
			mg/L
			mg/L
d	=	3.883	m
ED (inhalation of carcinogens)	=	Residential = 30	yr
		Con. Worker = 1	yr
ED (ingestion of noncarcinogens)	=	Residential = 6	yr
		Con. Worker = 1	yr
ED (inhalation of noncarcinogens)	=	Residential = 30	yr
		Con. Worker = 1	yr
ED (ingestion of groundwater)	=	Residential = 30	yr
		Con. Worker = 1	yr
ED_{M-L}	=	70	yr
EF	=	Residential = 350	d/yr
		Con. Worker = 30	d/yr
F(x)	=	0.194	unitless
f_{oc}	=	0.0136	g/g
GW_{obj}	=	Benzene = 0.005	mg/L
		Toluene = 1	mg/L
		Ethylbenzene = 0.7	mg/L
		Total Xylenes = 10	mg/L
		MTBE = 0.07	mg/L
		Naphthalene = 0.14	mg/L
			mg/L
			mg/L
			mg/L
			mg/L
H'	=	Benzene = 0.23	unitless
		Toluene = 0.271	unitless
		Ethylbenzene = 0.324	unitless
		Total Xylenes = 0.271	unitless
		MTBE = 0.0241	unitless
		Naphthalene = 0.0198	unitless
			unitless
			unitless
			unitless
			unitless
i	=	0.02	m/m
I	=	0.3	m/yr
I_{M-L}	=	0.18	m/yr
$IF_{soil-adj}$	=	114	(mg-yr)/(kg-d)
IR_{soil}	=	Residential = 200	mg/d
		Con. Worker = 480	mg/d

D_i	=	Benzene = 0.088	cm^2/s
		Toluene = 0.087	cm^2/s
		Ethylbenzene = 0.075	cm^2/s
		Total Xylenes = 0.0735	cm^2/s
		MTBE = 0.102	cm^2/s
		Naphthalene = 0.0000075	cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
D_w	=	Benzene = 0.0000102	cm^2/s
		Toluene = 0.0000086	cm^2/s
		Ethylbenzene = 0.0000078	cm^2/s
		Total Xylenes = 0.00000923	cm^2/s
		MTBE = 0.000011	cm^2/s
		Naphthalene = 0.0000075	cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
DF	=	1.669686986	unitless
ED (ingestion of carcinogens	=		yr
		Con. Worker = 1	yr
K_{oc}	=	Benzene = 50	cm^3/g or L/kg
		Toluene = 158	cm^3/g or L/kg
		Ethylbenzene = 320	cm^3/g or L/kg
		Total Xylenes = 398	cm^3/g or L/kg
		MTBE = 11.5	cm^3/g or L/kg
		Naphthalene = 500	cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
K_s	=	1830	m/yr
L	=	12.192	m
PEF	=		m^3/kg
PEF'	=		m^3/kg
Q/C (VF equations)	=	Residential = 68.81	$(g/m^2\text{-}s)/(kg/m^3)$
		Con. Worker = 85.81	$(g/m^2\text{-}s)/(kg/m^3)$
Q/C (PEF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
RfC (mg/m^3)		**Chronic**	**Subchronic**
Benzene	=	0.03	0.08
Toluene	=	5	5
Ethylbenzene	=	1	9
Total Xylenes	=	0.1	0.4
MTBE	=	3	2.5
Naphthalene	=	0.003	0.003
	=		NA
	=		NA
	=		NA
	=		NA

Incident # 2016-1089

IR_w	=	Residential = 2	L/d
K	=	31.536	m/yr
K_d(non-ionizing organcis)	=	Benzene = 0.68	cm^3/g or L/kg
		Toluene = 2.1488	cm^3/g or L/kg
		Ethylbenzene = 4.352	cm^3/g or L/kg
		Total Xylenes = 5.4128	cm^3/g or L/kg
		MTBE = 0.1564	cm^3/g or L/kg
		Naphthalene = 6.8	cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
K_d (ionizing organics)	=		cm^3/g or L/kg
K_d (inorganics)	=		cm^3/g or L/kg
VF'	=	Benzene = 477.089	m^3/kg
		Toluene = 766.007	m^3/kg
		Ethylbenzene = 1067.141	m^3/kg
		Total Xylenes = 1312.403	m^3/kg
		MTBE = 714.311	m^3/kg
		Naphthalene = 6051.797	m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
VM_{M-L}	=	#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
VF'_{M-L}	=	#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
η	=	0.201	L_{pore}/L_{soil}
θ_a	=	0.109	L_{air}/L_{soil}

RfD_o mg/(kg-d)		**Chronic**	**Subchronic**
Benzene	=	0.004	0.012
Toluene	=	0.08	0.8
Ethylbenzene	=	0.1	0.05
Total Xylenes	=	0.2	0.4
MTBE	=	0.01	0.1
Naphthalene	=	0.02	0.6
	=		0.6
	=		NA
	=		NA
	=		NA

S	=	Benzene = 1800	mg/L
		Toluene = 530	mg/L
		Ethylbenzene = 170	mg/L
		Total Xylenes = 110	mg/L
		MTBE = 51000	mg/L
		Naphthalene = 31	mg/L
			mg/L
			mg/L
			mg/L
			mg/L
SF_o	=	Benzene = 0.055	$(mg/kg\text{-}d)^{-1}$
		Toluene = NA	$(mg/kg\text{-}d)^{-1}$
		Ethylbenzene = 0.011	$(mg/kg\text{-}d)^{-1}$
		Total Xylenes = NA	$(mg/kg\text{-}d)^{-1}$
		MTBE = NA	$(mg/kg\text{-}d)^{-1}$
		Naphthalene = NA	$(mg/kg\text{-}d)^{-1}$
			$(mg/kg\text{-}d)^{-1}$
			$(mg/kg\text{-}d)^{-1}$
			$(mg/kg\text{-}d)^{-1}$
			$(mg/kg\text{-}d)^{-1}$
T	=	Residential = 9.5E08	s
		Con. Worker = 3.6×10^6	s
T_{M-L}	=	30	yr
THQ	=	1	unitless
TR	=	1.00E-06	unitless
U_m	=	4.69	m/s
URF	=	Benzene = 7.8×10^{-6}	$(\mu g/m^3)^{-1}$
U_t	=	11.32	m/s
V	=	0.5	unitless
VF	=	Benzene = 6214.753	m^3/kg
		Toluene = 9978.318	m^3/kg
		Ethylbenzene = 13901.009	m^3/kg
		Total Xylenes = 17095.878	m^3/kg
		MTBE = 9304.904	m^3/kg
		Naphthalene = 78833.093	m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg

Incident # 2016-1089

θ_w	=	0.092	L_{water}/L_{soil}
ρ_b	=	2.15	kg/l or g/cm^3
ρ_s	=	2.69	g/cm^3
ρ_w	=	1	g/cm^3
1/(2b+3)	=	0.09	unitless

Illinois Enviromental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 2016-1089 IEPA LPC # (10-digit): 1430560114

Site Name: S & S Infinite Group, Inc. - DBA Downtown 66

Site Address (not a P.O. Box): 400 North East Adams

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12,R14,R26): R16, R17, R18,R19, R21, R22, R23, R24,R26

Contact Information for Individual Who Performed Calculations:

CWM Company, Inc.,

Land Use: Residential Soil Type: Sand

Groundwater: [X] Class I [ ] Class II

Mass Limit: [ ] Yes [X] No If Yes, then Specify Acreage: ____________

Objective from S17 used in R26? [ ] Yes [X] | No

If Yes, then Specify C_{source} from S17 See Attached mg/L.

- Mass Limit Acreage other than defaults must always be rounded up.
- Failure to use site-specific parameters where allowed could affect payment from the UST Fund
- Maps depicting source width, plume dimensions, distance, etc. must also be submitted.
- Inputs must be submitted in the designated unit.

AT_c	=	70	yr
AT_n	=	Residential = 30 Con. Worker = 0.115	yr yr
BW	=	70	yr
C_{source}	=	See Attached	mg/L
$C_{(x)}$	=	See Attached	mg/L
d	=	100	cm

D^{air}	=	See Attached	cm^2/s
D^{water}	=	See Attached	cm^2/s
D_s^{eff}	=	See Attached	cm^2/s
ED	=	Residential = 30 Con. Worker = 1	yr yr
EF	=	Residential = 350 Con. Worker = 30	d/yr d/yr

erf	=	See Attached	unitless
f_{oc}	=	0.0136	g/g
GW_{comp}	=	See Attached	mg/L
GW_{source}	=	See Attached	mg/L
H'	=	See Attached	$cm3_{water}/cm^3_{air}$
i	=	0.02	cm/cm
I	=	30	cm/yr
IR_{air}	=	20	m^3/d
IR_{soil}	=	Residential = 100 Con. Worker = 480	mg/d mg/d
IR_w	=	Residential = 2	L/d
K	=	8.640 3153.600	cm/d cm/yr
K_{oc}	=	See Attached	cm^3/g or L/kg
k_s (non-ionizing organics)	=	See Attached	cm^3_{water}/g_{soil}
k_s (ionizing organics)	=	Not Applicable	cm^3_{water}/g_{soil}
k_s (inorganics)	=	Not Applicable	cm^3_{water}/g_{soil}
L_s	=	100	cm
LF_{sw}	=	See Attached	$(mg/L_{water})/(mg/kg_{soil})$
M	=	0.5	mg/cm^2
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s
RAF_d	=	0.5	unitless
α_x	=	See Attached	cm
α_y	=	See Attached	cm
α_z	=	See Attached	cm
λ	=	See Attached	d^{-1}
π	=	3.1416	
τ	=	$9.46 \cdot 10^8$	s

RAF_d (PNAs)	=	0.05	unitless
RAF_d (inorganics)	=	0	unitless
RAF_o	=	1	unitless
$RBSL_{air}$ (carcinoginic)	=	See Attached	$\mu g/m^3$
$RBSL_{air}$ (noncarcinoginic)	=	See Attached	$\mu g/m^3$
RfD_i	=	See Attached	mg/kg-d
SA	=	3,160	cm^2/d
S_d	=	200.0	cm
S_w	=	640.1	cm
SF_i	=	See Attached	$(mg/kg\text{-}d)^{-1}$
SF_o	=	See Attached	$(mg/kg\text{-}d)^{-1}$
THQ	=	1	unitless
TR	=	1.00E-06	unitless
U	=	0.6912	cm/d
U_{air}	=	225	cm/s
U_{gw}	=	3153.620	cm/y
VF_p	=	3.97133E-12	kg/m^3
VF_{samb}	=	See Attached	$(mg/m^3_{air})/(mg/kg_{soil})$ or kg/m^3
VF_{ss}	=	See Attached	kg/m3
W	=		cm
w	=	0.094	g_{water}/g_{soil}
δ_{air}	=	200	cm
δ_{gw}	=	200	cm
θ_{as}	=	0.0479	cm^3_{air}/cm^3_{soil}
θ_{ws}	=	0.2021	cm^3_{water}/cm^3_{soil}
θ_T	=	0.25	cm^3/cm^3_{soil}
ρ_b	=	2.15	g/cm^3
ρ_w	=	1	g/cm^3

	H'	λ	Koc
Benzene	0.23	0.0009	50
Toluene	0.271	0.011	158
Ethylbenzene	0.324	0.003	320
Total Xylenes	0.271	0.0019	398
MTBE	0.0241	0	11.5
Naphthalene	0.0198	0.0027	500

Benzene R26 Modeled Groundwater from Vertical Modeled Soils

Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
SB-A	0.099	0.005	1981.2	198.12	66.04	9.906	0.46844613	0.87606419
backfill 3	0.093	0.005	1950.72	195.072	65.024	9.7536	0.47483982	0.88182975
WC-1	2.948	0.005	4541.52	454.152	151.384	22.7076	0.21509171	0.49786925
WC-3	0.666	0.005	3322.32	332.232	110.744	16.6116	0.29091523	0.64108327

Benzene R26 Modeled Groundwater

Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

Toluene R26 Modeled Groundwater from Vertical Modeled Soils								
Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: S_w / (4 · $\sqrt{[\alpha_y \cdot X]}$)	erf: S_w / (2 · $\sqrt{[\alpha_z \cdot X]}$)
SB-A	2.3579	0.9675	60.96	6.096	2.032	0.3048	1	1
backfill 3	0.6711							
WC-1	13.8528	0.9515	213.36	21.336	7.112	1.0668	0.99999999	1
WC-3	3.6502	0.6916	121.92	12.192	4.064	0.6096	1	1

Toluene R26 Modeled Groundwater							
Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: S_w / (4 · $\sqrt{[\alpha_y \cdot X]}$)	erf: S_w / (2 · $\sqrt{[\alpha_z \cdot X]}$)

Ethylbenzene R26 Modeled Groundwater from Vertical Modeled Soils								
Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
SB-A	0.5815							
WC-1	1.6549	0.6304	243.84	24.384	8.128	1.2192	0.99999963	1
WC-3	0.5191							

Ethylbenzene R26 Modeled Groundwater							
Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	$\sqrt{[\alpha_y \cdot X]}$	$\sqrt{[\alpha_z \cdot X]}$

Total Xylenes R26 Modeled Groundwater from Vertical Modeled Soils								
Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
SB-A	4.1138							
backfill 3	0.3565							
WC-1	7.4598							
WC-3	2.3586							

Total Xylenes R26 Modeled Groundwater							
Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

Naphthalene R26 Modeled Groundwater from Vertical Modeled Soils								
Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w/(4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w/(2 \cdot \sqrt{[\alpha_z \cdot X]})$
11	0.5910	0.1374	426.72	42.672	14.224	2.1336	0.99632439	1
WC-1	0.0178							

Naphthalene R26 Modeled Groundwater							
Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w/(4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w/(2 \cdot \sqrt{[\alpha_z \cdot X]})$

Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
SB-8(2-4')	0.0000							

Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
SB-4 (2-4')	0.0000							
SB-5(2-4')	0.0000							
SB-14(2-4')	0.0000							
24	0.0000							

Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
SB-5(2-4')	0.0000							

Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

Math for R-29 Calculations
BENZENE MATH FOR VERTICAL SOIL MODELING AND R-29 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_w = (soil contamination at modeling point) / (Equation S-17)					$GW_{obj} = C_w / DF$					Conversion: 1 foot = 30.48 cm		R-16: $a_x = 0.10 * X$				
					C_w	C_w	/	DF	=	GW_{obj} (mg/L)	X (ft)	X (cm)	0.1	x	X (cm)		a_x (cm)
SB-A	1.46	/	0.734	=	1.988	1.988	/	20.000	=	0.09939	65	1981.2	0.1	x	1981.2	=	198.12
backfill 3	1.37	/	0.734	=	1.865	1.865	/	20.000	=	0.09327	64	1950.72	0.1	x	1950.72	=	195.072
WC-1	43.3	/	0.734	=	58.956	58.956	/	20.000	=	2.84778	149	4541.52	0.1	x	4541.52	=	454.152
WC-3	9.79	/	0.734	=	13.330	13.330	/	20.000	=	0.66848	109	3322.32	0.1	x	3322.32	=	332.232

Sample Location	R-17: $a_y = a_x / 3$					R-18: $a_z = a_x / 20$					"Term 1" = [X / (2 * a_x)]						
	a_x (cm)	/	3	=	a_y (cm)	a_x (cm)	/	20	=	a_z (cm)	X	/	2	x	a_x	=	"Term 1"
SB-A	198.12	/	3	=	66.04	198.12	/	20	=	9.906	1981.2	/	2	x	198.12	=	5
backfill 3	195.072	/	3	=	65.024	195.072	/	20	=	9.7536	1950.72	/	2	x	195.072	=	5
WC-1	454.152	/	3	=	151.384	454.152	/	20	=	22.7076	4541.52	/	2	x	454.152	=	5
WC-3	332.232	/	3	=	110.744	332.232	/	20	=	16.6116	3322.32	/	2	x	332.232	=	5

Sample Location	"Term 2" = (1 - SQRT[1 + (4 * λ * a_x) / (U)])													
	1	-	SQRT [	1	+ (	4	x	λ	x	a_x	) /	U	] =	"Term 2"
SB-A	1	-	SQRT [	1	+ (	4	x	0.0009	x	198.12	) /	0.69120	] =	-0.4254
backfill 3	1	-	SQRT [	1	+ (	4	x	0.0009	x	195.072	) /	0.69120	] =	-0.4199
WC-1	1	-	SQRT [	1	+ (	4	x	0.0009	x	454.152	) /	0.69120	] =	-0.8345
WC-3	1	-	SQRT [	1	+ (	4	x	0.0009	x	332.232	) /	0.69120	] =	-0.6524

Sample Location	$\beta_1 = S_w / (4 * SQRT(a_y * X))$											$\beta_2 = S_d / (2 * SQRT(a_z * X))$										
	S_w	/ (	4	x	SQRT	(	a_y	x	X	)) =	β_1	S_d	/ (	2	x	SQRT	(	a_z	x	X	)) =	β_2
SB-A	640.08	/ (	4	x	SQRT	(	66.04	x	1981.2	)) =	0.44239	304.8	/ (	2	x	SQRT	(	9.906	x	1981.2	)) =	1.08789
backfill 3	640.08	/ (	4	x	SQRT	(	65.024	x	1950.72	)) =	0.44930	304.8	/ (	2	x	SQRT	(	9.7536	x	1950.72	)) =	1.10485
WC-1	640.08	/ (	4	x	SQRT	(	151.384	x	4541.52	)) =	0.19299	304.8	/ (	2	x	SQRT	(	22.7076	x	4541.52	)) =	0.47457
WC-3	640.08	/ (	4	x	SQRT	(	110.744	x	3322.32	)) =	0.26381	304.8	/ (	2	x	SQRT	(	16.6116	x	3322.32	)) =	0.64872

Sample Location	ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 + Term 2)} \times erf(\beta_1) \times erf(\beta_2)$									
	Section 742 APPENDIX C: Table G		C_{source}	x e	("Term 1"	+	"Term 2")	x	ERF(β_1)	x	ERF(β_2)	= mg/L
SB-A	0.468446	0.876084	0.09939	x e	5	+	-0.4254	x	0.468446	x	0.876084	= 0.00488
backfill 3	0.474840	0.881830	0.09327	x e	5	+	-0.4199	x	0.474840	x	0.881830	= 0.00479
WC-1	0.215092	0.497869	2.84778	x e	5	+	-0.8345	x	0.215092	x	0.497869	= 0.00487
WC-3	0.290915	0.641083	0.66848	x e	5	+	-0.6524	x	0.290915	x	0.641083	= 0.00478

S & S Infinite Group, Inc. - DBA Downtown 66 *2016-1089*

R-28 Calculations
BENZENE MATH FOR R-28 MODELING OF GROUNDWATER (Attachment A)

Sample Location	GW Value	Conversion: 1 foot = 30.48 cm		R-16: $\alpha_x = 0.10 * X$				R-17: $\alpha_y = \alpha_x / 3$					R-18: $\alpha_z = \alpha_x / 20$					"Term 1" = [X / (2 * α_x)]							"Term 2" = [1 - SQRT[1 + (4 * λ * α_x) / (U)]]												
		X (ft)	X (cm)	0.1	x	X (cm)	α_x (cm)	α_x (cm)	/	3	=	α_y (cm)	α_x (cm)	/	20	=	α_z (cm)	X	/	2	x	α_x	=	"Term 1"	1	-	SQRT[	1	+(	4	x	λ	x	α_x	)/	U	]= "Term 2"

Sample Location	$\beta_1 = S_y / (4 * SQRT[\alpha_y * X])$											$\beta_2 = S_z / (2 * SQRT[\alpha_z * X])$										ERF(β_1)	ERF(β_2)	$C_{00} = C_{source} \times e^{("Term 1" + "Term 2")} \times erf(\beta_1) \times erf(\beta_2)$									
																						Section 742 APPENDIX C: Table G									
	S_y	/(	4	x	SQRT	(	α_y	x	X	))=	β_1	S_z	/(	2	x SQRT	(	α_z	x	X	))=	β_2			C_{source}	x e	("Term 1"	"Term 2")	x	ERF(β_1)	x	ERF(β_2) = mg/L

S & S Infinite Group, Inc. - DBA Downtown 66 2016-1089

Math for R-26 Calculations

TOLUENE MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_w = (soil contamination at modeling point) / (Equation S-17)					$GW_{obj} = C_s / DF$					Conversion: 1 foot = 30.48 cm	
					C_s	C_s	/	DF	=	GW_{obj} (mg/L)	X (ft)	X (cm)
SB-A	104	/	2.205	=	47.158	47.158	/	20.000	=	2.35792	2	60.96
backfill 3	29.6	/	2.205	=	13.472	13.472	/	20.000	=	0.67110		
WC-1	611	/	2.205	=	277.056	277.056	/	20.000	=	13.85280	7	213.36
WC-3	161	/	2.205	=	73.005	73.005	/	20.000	=	3.65025	4	121.92

Sample Location	R-16: $a_x = 0.10 * X$					R-17: $a_y = a_x / 3$					R-18: $a_z = a_x / 20$				
	0.1	x	X (cm)		a_x (cm)	a_x (cm)	/	3	=	a_y (cm)	a_x (cm)	/	20	=	a_z (cm)
SB-A	0.1	x	60.96	=	6.096	6.096	/	3	=	2.032	6.096	/	20	=	0.3048
backfill 3															
WC-1	0.1	x	213.36	=	21.336	21.336	/	3	=	7.112	21.336	/	20	=	1.0668
WC-3	0.1	x	121.92	=	12.192	12.192	/	3	=	4.064	12.192	/	20	=	0.6096

Sample Location	"Term 1" = [X / (2 * a_x)]							"Term 2" = (1 - SQRT[1 + (4 * λ * a_x) / (U)])												
	X	/	2	x	a_x	=	"Term 1"	1	-	SQRT[	1	+(	4	x	λ	x	a_x	)/	U	]= "Term 2"
SB-A	60.96	/	2	x	6.096	=	5	1	-	SQRT[	1	+(	4	x	0.011	x	6.096	)/	0.69120	]= -0.1782
backfill 3																				
WC-1	213.36	/	2	x	21.336	=	5	1	-	SQRT[	1	+(	4	x	0.011	x	21.336	)/	0.69120	]= -0.5358
WC-3	121.92	/	2	x	12.192	=	5	1	-	SQRT[	1	+(	4	x	0.011	x	12.192	)/	0.69120	]= -0.3327

Sample Location	$\beta_1 = S_w / (4 * SQRT[a_y * X])$										$\beta_2 = S_d / (2 * SQRT[a_z * X])$									
	S_w	/(	4	x	SQRT	(	a_y	x	X	))=	β_1	S_d	/(	2	x	SQRT	(	a_z	x	X	))= β_2
SB-A	640.08	/(	4	x	SQRT	(	2.032	x	60.96	))=	14.37772	304.8	/(	2	x	SQRT	(	0.3048	x	60.96	))= 35.35534
backfill 3																				
WC-1	640.08	/(	4	x	SQRT	(	7.112	x	213.36	))=	4.10782	304.8	/(	2	x	SQRT	(	1.0668	x	213.36	))= 10.10153
WC-3	640.08	/(	4	x	SQRT	(	4.064	x	121.92	))=	7.18888	304.8	/(	2	x	SQRT	(	0.6096	x	121.92	))= 17.67767

Sample Location	ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 + Term 2)} \times erf(\beta_1) \times erf(\beta_2)$									
	Section 742 APPENDIX C: Table G		C_{source}	x e	("Term 1"	+	"Term 2")	x ERF(β_1)		x ERF(β_2)	=	mg/L
SB-A	1.000000	1.000000	2.35792	x e	5	+	-0.1782	x	1.000000	x 1.000000	=	0.86763
backfill 3			0.67110									
WC-1	1.000000	1.000000	13.85280	x e	5	+	-0.5358	x	1.000000	x 1.000000	=	0.85150
WC-3	1.000000	1.000000	3.65025	x e	5	+	-0.3327	x	1.000000	x 1.000000	=	0.63160

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Math for R-28 Calculations

ETHYLBENZENE MATH FOR VERTICAL SOIL MODELING AND R-29 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_s = (soil contamination at modeling point) / (Equation S-17)					$GW_{sat} = C_s / DF$					Conversion: 1 foot = 30.48 cm	
					C_s	C_s	/	DF	=	GW_{sat} (mg/L)	X (ft)	X (cm)
SB-A	51.3	/	4.411	=	11.629	11.629	/	20.000	=	0.58147		
WC-1	146	/	4.411	=	33.097	33.097	/	20.000	=	1.65487	8	243.84
WC-3	45.8	/	4.411	=	10.383	10.383	/	20.000	=	0.51913		

Sample Location	R-16: $\alpha_x = 0.10 * X$					R-17: $\alpha_y = \alpha_x / 3$					R-18: $\alpha_z = \alpha_x / 20$				
	0.1	x	X (cm)	=	α_x (cm)	α_x (cm)	/	3	=	α_y (cm)	α_x (cm)	/	20	=	α_z (cm)
SB-A															
WC-1	0.1	x	243.84	=	24.384	24.384	/	3	=	8.128	24.384	/	20	=	1.2192
WC-3															

Sample Location	"Term 1" = [X / (2 * α_x)]							"Term 2" = {1 - SQRT[1 + (4 * λ * α_x) / (U)]}												
	X	/	2	x	α_x	=	"Term 1"	1	-	SQRT [	1	+ (	4	x	λ	x	α_x	) /	U	] =	"Term 2"
SB-A																					
WC-1	243.84	/	2	x	24.384	=	5	1	-	SQRT [	1	+ (	4	x	0.003	x	24.384	) /	0.69170	] =	-0.1830
WC-3																					

Sample Location	$\beta_1 = S_w / (4 * SQRT[\alpha_y * X])$											$\beta_2 = S_d / (2 * SQRT[\alpha_z * X])$										
	S_w	/ (	4	x	SQRT	(	α_y	x	X	)) =	β_1	S_d	/ (	2	x	SQRT	(	α_z	x	X	)) =	β_2
SB-A																						
WC-1	640.08	/ (	4	x	SQRT	(	8.128	x	243.84	)) =	3.53443	304.8	/ (	2	x	SQRT	(	1.2192	x	243.84	)) =	8.83883
WC-3																						

Sample Location	ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 + Term 2)} \times erf(\beta_1) \times erf(\beta_2)$									
	Section 742 APPENDIX C: Table G		C_{source}	x e	("Term 1"	+	"Term 2")	x ERF(β_1)		x ERF(β_2)	=	mg/L
SB-A			0.58147									
WC-1	1.000000	1.000000	1.65487	x e	5	+	-0.1830	x	1.000000	x 1.000000	=	0.63037
WC-3			0.51913									

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Math for R-26 Calculations

TOTAL XYLENES MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_u = (soil contamination at modeling point) / (Equation S-17)					$GW_{obj} = C_u / DF$					Conversion: 1 foot = 30.48 cm		R-16: $\alpha_x = 0.10 \cdot X$				R-17: $\alpha_y = \alpha_x / 3$					R-18: $\alpha_z = \alpha_x / 20$					"Term 1" = $[X / (2 \cdot \alpha_x)]$							"Term 2" = $(1 - SQRT[1 + (4 \cdot \lambda \cdot \alpha_x) / (U)])$													
					C_u	C_u	/	DF	=	GW_{obj} (mg/L)	X (ft)	X (cm)	0.1	x	X (cm)	α_x (cm)	α_x (cm)	/	3	=	α_y (cm)	α_x (cm)	/	20	=	α_z (cm)	X	/	2	x	α_x	=	"Term 1"	1	-	SQRT[	1	+(	4	x	λ	x	α_x	)/	U	]= "Term 2"
SB-A	450	/	5.469	=	82.277	82.277	/	20.000	=	4.11385																																				
backfill 3	39	/	5.469	=	7.131	7.131	/	20.000	=	0.35653																																				
WC-1	616	/	5.469	=	149.198	149.198	/	20.000	=	7.45978																																				
WC-3	258	/	5.469	=	47.172	47.172	/	20.000	=	2.35861																																				

Sample Location	$\beta_1 = S_w / (4 \cdot SQRT[\alpha_y \cdot X])$										$\beta_2 = S_d / (2 \cdot SQRT[\alpha_z \cdot X])$										ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 + Term 2)} \times erf(\beta_1) \times erf(\beta_2)$							
	S_w	/(	4	x	SQRT	(	α_y	x	X	))=	β_1	S_d	/(	2	x	SQRT	(	α_z	x	X	))=	β_2	Section 742 APPENDIX C: Table G		C_{source}	x e	("Term 1" + "Term 2")	x ERF(β_1)	x ERF(β_2)	=	mg/L
SB-A																									4.11385						
backfill 3																									0.35653						
WC-1																									7.45978						
WC-3																									2.35861						

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Math for R-29 Calculations

NAPTHALENE MATH FOR VERTICAL SOIL MODELING AND R-28 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_w = (soil contamination at modeling point) / (Equation S-17)				C_w	$GW_{std} = C_w / DF$				GW_{std} (mg/L)	Conversion: 1 foot = 30.48 cm X (ft)	X (cm)
					C_w	C_w	/	DF	=	GW_{std} (mg/L)	X (ft)	X (cm)
11	80.9	/	6.844	=	11.821	11.821	/	20.000	=	0.59105	14	426.72
WC-1	2.44	/	6.844	=	0.357	0.357	/	20.000	=	0.01783		

Sample Location	R-18: $a_x = 0.10 * X$					R-17: $a_y = a_x / 3$					R-18: $a_z = a_x / 20$				
	0.1	x	X (cm)	=	a_x (cm)	a_x (cm)	/	3	=	a_y (cm)	a_x (cm)	/	20	=	a_z (cm)
11	0.1	x	426.72	=	42.672	42.672	/	3	=	14.224	42.672	/	20	=	2.1336
WC-1															

Sample Location	"Term 1" = (X / (2 * a_x))							"Term 2" = (1 - SQRT(1 + (4 * λ * a_x) / (U)))													
	X	/	2	x	a_x	=	"Term 1"	1	-	SQRT(	1	+(	4	x	λ	x	a_x	)/	U	)=	"Term 2"
11	426.72	/	2	x	42.672	=	5	1	-	SQRT(	1	+(	4	x	0.0027	x	42.672	)/	0.69120	)=	-0.2910
WC-1																					

Sample Location	$\beta_1 = S_w / (4 * SQRT(a_y * X))$											$\beta_2 = S_z / (2 * SQRT(a_z * X))$										
	S_w	/(	4	x	SQRT	(	a_y	x	X	))=	β_1	S_z	/(	2	x	SQRT	(	a_z	x	X	))=	β_2
11	640.08	/(	4	x	SQRT	(	14.224	x	426.72	))=	2.05396	304.8	/(	2	x	SQRT	(	2.1336	x	426.72	))=	5.05078
WC-1																						

Sample Location	ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 + Term 2)} \times erf(\beta_1) \times erf(\beta_2)$										
	Section 742.APPENDIX C: Table G		C_{source}	x e	("Term 1"	+	"Term 2")	x	ERF(β_1)	x	ERF(β_2)	=	mg/L
11	0.998324	1.000000	0.59105	x e	5	+	-0.2910	x	0.998324	x	1.000000	=	0.13743
WC-1			0.01783										

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Math for R-26 Calculations

BENZO(a)PYRENE MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_s = (soil contamination at modeling point) / (Equation S-17)					$GW_{obj} = C_w / DF$					Conversion: 1 foot = 30.48 cm	
					C_w	C_w	/	DF	=	GW_{obj} (mg/L)	X (ft)	X (cm)
SB-4 (2-4')	0.545	/	13872.043	=	0.000	0.000	/	20.000	=	0.00000		
SB-5(2-4')	0.745	/	13872.043	=	0.000	0.000	/	20.000	=	0.00000		
SB-14(2-4')	0.379	/	13872.043	=	0.000	0.000	/	20.000	=	0.00000		
24	0.153	/	13872.043	=	0.000	0.000	/	20.000	=	0.00000		

Sample Location	R-18: $\alpha_x = 0.10 * X$				R-17: $\alpha_y = \alpha_x / 3$					R-18: $\alpha_z = \alpha_x / 20$				
	0.1	x	X (cm)	α_x (cm)	α_x (cm)	/	3	=	α_y (cm)	α_x (cm)	/	20	=	α_z (cm)
SB-4 (2-4')														
SB-5(2-4')														
SB-14(2-4')														
24														

Sample Location	"Term 1" = (X / (2 * α_x))							"Term 2" = (1 - SQRT(1 + (4 * λ * α_x) / (U)))													
	X	/	2	x	α_x	=	"Term 1"	1	-	SQRT(	1	+(	4	x	λ	x	α_x	)/	U	)=	"Term 2"
SB-4 (2-4')																					
SB-5(2-4')																					
SB-14(2-4')																					
24																					

Sample Location	$\beta_1 = S_w / (4 * SQRT(\alpha_y * X))$										$\beta_2 = S_d / (2 * SQRT(\alpha_z * X))$									
	S_w	/(	4	x	SQRT	(	α_y	x	X	))=	β_1	S_d	/(	2	x	SQRT	(	α_z	x	X	))= β_2
SB-4 (2-4')																					
SB-5(2-4')																					
SB-14(2-4')																					
24																					

Sample Location	ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 + Term 2)} \times erf(\beta_1) \times erf(\beta_2)$						
	Section 742 APPENDIX C: Table G		C_{source}	x e	("Term 1" + "Term 2")	x ERF(β_1)	x ERF(β_2)	=	mg/L
SB-4 (2-4')			0.00000						
SB-5(2-4')			0.00000						
SB-14(2-4')			0.00000						
24			0.00000						

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Math for R-26 Calculations

Dibenzo(a,h)Anthracene MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_s = (soil contamination at modeling point) / (Equation S-17)				$GW_{obj} = C_s / DF$					Conversion: 1 foot = 30.48 cm		R-16: $a_x = 0.10 * X^1$				R-17: $a_y = a_x / 3$					R-18: $a_z = a_x / 20$					"Term 1" = {X / (2 * a_x)}							"Term 2" = {1 - SQRT[1 + (4 * λ * a_x) / (U)]}													
				C_s	C_s	/ DF		=	GW_{obj} (mg/L)	X (ft)	X (cm)	0.1	x	X (cm)	a_x (cm)	a_x (cm)	/	3	=	a_y (cm)	a_x (cm)	/	20	=	a_z (cm)	X	/	2	x	a_x	=	"Term 1"	1	-	SQRT[	1	+(	4	x	λ	x	a_x	)/	U	]= "Term 2"
SB-5(2-4')	0.115	/ 51680.043	=	0.000	0.000	/	20.000	=	0.00000																																				

Sample Location	$\beta_1 = S_w / (4 * SQRT[a_y * X])$										$\beta_2 = S_d / (2 * SQRT[a_z * X])$										ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{("Term 1" + "Term 2")} \times erf(\beta_1) \times erf(\beta_2)$									
	S_w	/(	4	x	SQRT	(	a_y	x	X	))=	β_1	S_d	/(	2	x	SQRT	(	a_z	x	X	))=	β_2	Section 742.APPENDIX C: Table G		C_{source}	x e	("Term 1"	+	"Term 2")	x ERF(β_1)	x ERF(β_2)	= mg/L
SB-5(2-4')																									0.00000							

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Math for R-26 Calculations

Benz[a]Anthracene MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_w = (soil contamination at modeling point) / (Equation S-17)			$GW_{std} = C_w / DF$			Conversion: 1 foot = 30.48 cm		R-16: $\alpha_x = 0.10 * X$		R-17: $\alpha_y = \alpha_x / 3$		R-18: $\alpha_z = \alpha_x / 20$		"Term 1" = $(X / (2 * \alpha_x))$		"Term 2" = $(1 - SQRT[1 + (4 * \lambda * \alpha_x) / (U)])$	
		/	= C_w	C_w	/ DF	= GW_{std} (mg/L)	X (ft)	X (cm)	0.1 x X (cm)	α_x (cm)	α_x (cm) / 3	= α_y (cm)	α_x (cm) / 20	= α_z (cm)	X / 2 x α_x	= "Term 1"	1 - SQRT[1 + (4 x λ x α_x) / U]	= "Term 2"
SB-8(2-4')	0.559	/ 5412.843	= 0.000	0.000	/ 20.000	= 0.00001												

Sample Location	$\beta_1 = S_w / (4 * SQRT[\alpha_y * X])$		$\beta_2 = S_z / (2 * SQRT[\alpha_z * X])$		ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 \times Term 2)} \times erf(\beta_1) \times erf(\beta_2)$	
	S_w / (4 x SQRT (α_y x X))	= β_1	S_z / (2 x SQRT (α_z x X))	= β_2	Section 742 APPENDIX C: Table G		C_{source} x e ("Term 1" * "Term 2") x ERF(β_1) x ERF(β_2)	= mg/L
SB-8(2-4')							0.00001	

Tier 2 Industrial/Commercial Calculations for Benzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Version: 4/25/2016

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->		–		USDA Soil Classification:	Sand		
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g:	0.000

2.150	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)		feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific; 8.64E+00 cm/d; 3.15E+03 cm/yr; Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)		feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
0.005	GW_{obj} - Groundwater Remediation Objective Class 1			0.025 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
70	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
0.055	SF_o -Oral Slope Factor			Benzene = 0.055
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
1800	S - Solubility in Water			Benzene = 1750
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
70	AT_c -Average Time for Carcinogens			70
7.80E-06	URF - Inhalation Unit Risk Factor			Benzene =7.8×10^{-6}
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation fo Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval			Residential = 9.5×10^{8}; Industrial/Commercial = 7.9×10^{8}; Construction Worker = 3.6×10^{6}
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26			30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28			70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28			0.18
0.088	D_i - Diffusivity in Air			Benzene = 0.088
0.23	H' - Henry's Law Constant			Benzene = 0.228
1.02E-05	D_w - Diffusivity in Water			Benzene = 9.8×10^{-6}
50	K_{oc} - Organic Carbon Partition Coefficient			Benzene = 58.9

Industrial/Commercial Ingestion Tier II Benzene Objective

$$S\text{-}3 = \frac{TR \times BW \times AT_c \times 365}{Sf_o \times 10^{-6} \times EF \times ED \times IRsoil} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{0.055 \times 1.00E\text{-}06 \times 250 \times 25 \times 50} = \frac{1.8E{+}00}{1.72E\text{-}02} = 104.058 \text{ mg/kg}$$

Construction Worker Ingestion Tier II Benzene Objective

$$S\text{-}3 = \frac{TR \times BW \times AT_c \times 365}{Sf_o \times 10^{-6} \times EF \times IRsoil} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{0.055 \times 1.00E\text{-}06 \times 30 \times 480} = \frac{1.8E{+}00}{7.92E\text{-}04} = 2258.21 \text{ mg/kg}$$

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Tier 2 Industrial/Commercial Calculations for Benzene

S & S Infinite Group, Inc. - DBA Downtown 66

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Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}6 = \frac{TR \times ATc \times 365}{URF \times 1000 \times EF \times ED \times 1/VF} = \frac{1.0E\text{-}06 \times 70 \times 365}{7.80E\text{-}06 \times 1000 \times 250 \times 25 \times (1/\ 7.07E{+}03)} = \frac{0.02555}{6.90E\text{-}03} = 3.704 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}7 = \frac{TR \times ATc \times 365}{URF \times 1000 \times EF \times ED \times 1/VF'} = \frac{1.0E\text{-}06 \times 70 \times 365}{7.80E\text{-}06 \times 1000 \times 30 \times 1 \times (1/\ 4.77E{+}01)} = \frac{0.02555}{4.90E\text{-}03} = 5.209 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 1.98E\text{-}04 \times 7.90E{+}08)^{1/2} \times 0.0001}{(2 \times 2.15 \times 1.98E\text{-}04)} = \frac{6.0104}{0.0009} = 7067.4376$$

Construction Worker

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 1.98E\text{-}04 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 1.98E\text{-}04)} = \frac{0.4057}{0.0009} = 477.0893$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$S\text{-}9 = VF' = \frac{VF}{10} = \frac{477.0893}{10} = 47.7089$$

Equation for Derivation of Apparent Diffusivity

$$S\text{-}10 = D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.088 \times 0.230) + (0.0004 \times 1.02E\text{-}05)}{0.0404} \times \frac{1}{(2.15 \times 0.68) + 0.09 + (0.109 \times 0.230)} = 1.98E\text{-}04$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$S\text{-}17 = C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b}\right] = 0.1 \times \left[0.68 + \frac{(0.092 + 0.109 \times 0.230)}{2.15}\right] = 0.073 \text{ mg/kg}$$

000180

Tier 2 Industrial/Commercial Calculations for Benzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Target Soil Leachate Concentration (Class 1)

S-18 = $C_w = DF \times GW_{obj} = 20.00 \times 0.005 = 0.1$

Soil-Water Partition Coefficient

S-19 = $K_d = K_{oc} \times f_{oc} = 50.00 \times 0.014 = 0.68$

Water-Filled Porosity

S-20 = $\Theta_w = \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w = 0.20 - 0.09 = 0.1090$

Dilution Factor

S-22 = $DF = 1 + \frac{K \times i \times d}{I \times L} = \frac{31.54 \times 0.0200 \times 3.884}{0.300 \quad 12.192} + 1 = 1.6697$

GW Ingestion

S-23 = $\frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{0.055 \times 1.000 \times 250 \times 25} = \frac{1.8E+00}{343.75} = 0.0052$ mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s} = 1 - \frac{2.15}{2.69} = 0.2007$

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\frac{(-L \times I)}{(K \times i \times d_a)}\right]$

$= (0.0112 \times 12.192^2)^{0.5} + 3.048 \times \left[1 - \exp\left(\frac{-12.192 \times 0.3}{31.536 \times 0.0200 \times 3.048}\right)\right] = 3.884$ m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \Theta a)] = \frac{1800}{2.15} \times \{(0.68 \times 2.15) + 0.092 + (0.230 \times 0.109)\} = 1{,}322.01$ mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b} = \frac{3.704 \times 0.230 \times 2.150 \times 1000}{2.300E\text{-}01 \times 0.109 + 0.092 + 0.680 \times 2.150} = 1{,}159.96$ mg/m^3

000181

Tier 2 Industrial/Commercial Calculations for Toluene

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18
Version: 4/25/2016

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->	--	USDA Soil Classification: Sand
Organic Matter (%) -->	0	FOC % (0.58 conversion) --> 0.000	Organic Matter (mg/kg) 0	FOC mg/kg (0.58 conversion) 0.000; foc conversion to g/g: 0.000
2.150	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24 or R23)
0.02	i - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)		feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific; 8.64E+00 cm/d; 3.15E+03 cm/yr; Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)		feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
1.000	GW_{obj} - Groundwater Remediation Objective Class 1			2.5 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
15	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
530	S - Solubility in Water			Toluene = 526
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval			Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26			30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28			70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28			0.18
0.087	D_i - Diffusivity in Air			Toluene = 0.087
0.271	H' - Henry's Law Constant			Toluene = 0.272
8.60E-06	D_w - Diffusivity in Water			Toluene = 8.6 x 10^{-6}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation			Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation			Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient			1
5	RfC - Inhalation Reference Concentration			Chronic = 5; Subchronic = 5
0.8	RfD_o - Oral Reference Dose			Chronic = 0.08; Subchronic = 0.8
158.00	K_{oc} - Organic Carbon Partition Coefficient			Toluene = 182

Industrial/Commercial Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/\ 0.8 \times 250 \times 25 \times 50} = \frac{638750}{0.390625} = 1635200 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/\ 0.8 \times 30 \times 1 \times 480} = \frac{2938.25}{0.018} = 163236 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/\ 5 \times 1/\ 11347.37618} = \frac{9125}{0.110158} = 82835.846 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/\ 5 \times 1/\ 76.60077386} = \frac{41.975}{0.078328} = 535.886 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 7.67E\text{-}05 \times 7.90E\text{+}08)^{1/2} \times 0.0001}{(2 \times 2.15 \times 7.67E\text{-}05)} = \frac{3.7434}{3.30E\text{-}04} = 11347.3762$$

000182

Tier 2 Industrial/Commercial Calculations for Toluene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Construction Worker

$$\text{S-8} = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 7.67E\text{-}05 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 7.67E\text{-}05)} = \frac{0.2527}{3.30E\text{-}04} = 766.0077$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$\text{S-9} = \quad VF' = \frac{VF}{10} = \frac{766.0077}{10} = 76.6008$$

Equation for Derivation of Apparent Diffusivity

$$\text{S-10} = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.087 \times 0.271) + (0.0004 \times 8.60E\text{-}06)}{0.0404} \times \frac{1}{(2.15 \times 2.1488) + 0.09 + (0.109 \times 0.271)} = 7.67E\text{-}05$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$\text{S-17} = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b} \right] = 20 \times \left[2.1488 + \frac{(0.092 + 0.109 \times 0.271)}{2.15} \right] = 44.107 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

$$\text{S-18} = \quad C_w = DF \times GW_{obj} = 20.00 \times 1.000 = 20$$

Soil-Water Partition Coefficient

$$\text{S-19} = \quad K_d = K_{oc} \times f_{oc} = 158.00 \times 0.014 = 2.1488$$

Water-Filled Porosity

$$\text{S-20} = \quad \Theta_w = \eta \times \frac{I}{K_s}^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000} \right]^{0.090} = 0.0917$$

000183

Tier 2 Industrial/Commercial Calculations for Toluene

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w$ = 0.20 - 0.09 = 0.1090

Dilution Factor

S-22 = $DF = 1 + \frac{K \times i \times d}{I \times L}$ = $\frac{31.54}{0.300} \times \frac{0.0200}{12.192} \times 3.884$ + 1 = 1.6697

GW Ingestion

S-23 = $\frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED}$ = $\frac{1.0E\text{-}06 \times 15 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25}$ = $\frac{0.0E{+}00}{0}$ = #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s}$ = $1 - \frac{2.15}{2.69}$ = 0.2007

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\frac{(-L \times I)}{(K \times i \times d_a)}\right]$

= (0.0112 x 12.192 $^2)^{0.5}$ +

3.048 x[1 - exp ($\frac{-12.192 \times 0.3}{31.536 \times 0.0200 \times 3.048}$)] = 3.884 m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)]$ = $\frac{530}{2.15}$ x [(2.1488 x 2.15) + 0.092 + (0.271 x 0.109)] = 1,168.82 mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b}$ = $\frac{535.886 \times 0.271 \times 2.150 \times 1000}{2.710E\text{-}01 \times 0.109 + 0.092 + 2.149 \times 2.150}$ = 65,851.91 mg/m^3

000184

Tier 2 Industrial/Commercial Calculations for Ethylbenzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Version: 4/25/2016

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->	--
USDA Soil Classification:	Sand		
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000
Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000
foc conversion to g/g:	0.000		

2.150	ρ_b - Dry Soil Bulk Density		1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density		2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109* Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092* Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201* Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient		Site Specific
0.014	foc - Total Organic Carbon (g/g)		Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670* Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884 Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)	feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec = 1.00E-04	Site Specific 8.64E+00 cm/d 3.15E+03 cm/yr Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)	feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)	feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)		0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity		See Table K for Input Values
0.700	GW_{obj} - Groundwater Remediation Objective Class 1		1 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20		See Table K for Input Values
70	BW - Body Weight		Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens		114
50	IR_{soil} -Soil Ingestion Rate		Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate		Residential = 2; Industrial/Commercial = 1
170	S - Solubility in Water		Ethylbenzene = 169
1.0E-06	TR - Target Cancer Risk		Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency		Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens		Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source		Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval		Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26		30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28		70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28		0.18
0.075	D_i - Diffusivity in Air		Ethylbenzene = 0.075
0.324	H' - Henry's Law Constant		Ethylbenzene = 0.323
7.80E-06	D_w - Diffusivity in Water		Ethylbenzene = 7.8 x 10^{-6}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation		Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation		Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient		1
[redacted] 1 [redacted]	RfC - Inhalation Reference Concentration		Chronic = 1; Subchronic = 9 [redacted]
[redacted] 0.1 [redacted]	RfD_o - Oral Reference Dose		Chronic = 0.1; Subchronic = 0.05 [redacted]
320.00	K_{oc} - Organic Carbon Partition Coefficient		Ethylbenzene = 363

Industrial/Commercial Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$\text{S-1} = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/\ 0.1 \times 250 \times 25 \times 50} = \frac{638750}{3.125} = 204400 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$\text{S-1} = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/\ 0.05 \times 30 \times 1 \times 480} = \frac{2938.25}{0.288} = 10202 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$\text{S-4} = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/\ 1 \times 1/\ 15808.27272} = \frac{9125}{0.395363} = 23080 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

Inhalation Non-Carcinogenic Construction Worker

$$\text{S-5} = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/\ 9 \times 1/\ 106.7141782} = \frac{41.975}{0.031236} = 1343.798 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

RESIDENTIAL OR COMMERCIAL

$$\text{S-8} = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{\left(3.14 \times 3.95E\text{-}05 \times 7.90E\text{+}08\right)^{1/2} \times 0.0001}{\left(2 \times 2.15 \times 3.95E\text{-}05\right)} = \frac{2.6871}{1.70E\text{-}04} = 15808.2727$$

000185

Tier 2 Industrial/Commercial Calculations for Ethylbenzene

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

Construction Worker

S-8 = $VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{\left(\frac{3.14 \times 3.95E-05 \times 3.60E+06}{2 \times 2.15 \times 3.95E-05}\right)^{1/2} \times 0.0001}{} = \frac{0.1814}{1.70E-04} = 1067.1418$

Equation for Derivation of Volatilization Factor - Construction Worker

S-9 = $VF' = \frac{VF}{10} = \frac{1067.1418}{10} = 106.7142$

Equation for Derivation of Apparent Diffusivity

S-10 = $D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$

$= \frac{(6.23E-04 \times 0.075 \times 0.324) + (0.0004 \times 7.80E-06)}{0.0404} \times \frac{1}{(2.15 \times 4.352) + 0.09 + (0.109 \times 0.324)} = 3.95E-05$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

S-17 = $C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b}\right] = 14 \times \left[4.352 + \frac{(0.092 + 0.109 \times 0.324)}{2.15}\right] = 61.757$ mg/kg

Target Soil Leachate Concentration (Class 1)

S-18 = $C_w = DF \times GW_{obj} = 20.00 \times 0.700 = 14$

Soil-Water Partition Coefficient

S-19 = $K_d = K_{oc} \times f_{oc} = 320.00 \times 0.014 = 4.352$

Water-Filled Porosity

S-20 = $\Theta_w = \eta \times \frac{I}{K_s}^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$

000186

Tier 2 Industrial/Commercial Calculations for Ethylbenzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w = 0.20 - 0.09 = 0.1090$

Dilution Factor

S-22 = $DF = 1 + \dfrac{K \times I \times d}{I \times L} = \dfrac{31.54 \times 0.0200 \times 3.884}{0.300 \quad 12.192} + 1 = 1.6697$

GW Ingestion

S-23 = $\dfrac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED} = \dfrac{1.0E\text{-}06 \times 70 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25} = \dfrac{0.0E{+}00}{0} = \#DIV/0!$ mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \dfrac{\rho_b}{\rho_s} = 1 - \dfrac{2.15}{2.69} = 0.2007$

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\left(\dfrac{(-L \times I)}{(K \times I \times d_a)}\right)\right]$

$= (0.0112 \times 12.192\ ^2)^{0.5} +$

$3.048 \times \left[1 - \exp\left(\dfrac{(-12.192 \times 0.3)}{(31.536 \times 0.0200 \times 3.048)}\right)\right] = 3.884$ m

Soil Saturation Limit

S-29 = $C_{sat} = \dfrac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)] = \dfrac{170}{2.15} \times [(4.352 \times 2.15) + 0.092 + (0.324 \times 0.109)] = 749.91$ mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \dfrac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b} = \dfrac{749.907 \times 0.324 \times 2.150 \times 1000}{3.240E\text{-}01 \times 0.109 + 0.092 + 4.352 \times 2.150} = 55{,}080.00$ mg/m^3

000187

Tier 2 Industrial/Commercial Calculations for Total Xylenes

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Version: 4/25/2016

Input Values

Holcomb's Bulk Density --> 0	Converted Value to be used in calculation sheet -->	--	USDA Soil Classification:	Sand
Organic Matter (%) --> 0	FOC % (0.58 conversion) --> 0.000	Organic Matter (mg/kg) 0	FOC mg/kg (0.58 conversion) 0.000	foc conversion to g/g: 0.000

Value	Parameter			Notes
2.150	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	0.109	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	0.092	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	0.201	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	I - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	1.670	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)		feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific 8.64E+00 cm/d 3.15E+03 cm/yr Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)		feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
10.000	GW_{obj} - Groundwater Remediation Objective Class 1			10 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
70	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
110	S - Solubility in Water			Total Xylenes = 186
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval			Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26			30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28			70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28			0.18
0.074	D_i - Diffusivity in Air			Total Xylenes = 0.072
0.271	H' - Henry's Law Constant			Total Xylenes = 0.25
9.23E-06	D_w - Diffusivity in Water			Total Xylenes = 9.34 x 10^{-6}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation			Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation			Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient			1
0.1	RfC - Inhalation Reference Concentration			Chronic = 0.1; Subchronic = 0.4
0.2	RfD_o - Oral Reference Dose			Chronic = 0.2; Subchronic = 0.4
398.00	K_{oc} - Organic Carbon Partition Coefficient			Total Xylenes = 260

Industrial/Commercial Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/0.2 \times 250 \times 25 \times 50} = \frac{638750}{1.5625} = 408800 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/0.4 \times 30 \times 1 \times 480} = \frac{2938.25}{0.036} = 81618 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/0.1 \times 1/19441.48884} = \frac{9125}{3.214774369} = 2838.457 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/0.4 \times 1/131.2403032} = \frac{41.975}{0.571470792} = 73.451 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 2.61E\text{-}05 \times 7.90E{+}08)^{1/2} \times 0.0001}{(2 \times 2.15 \times 2.61E\text{-}05)} = \frac{2.1849}{1.12E\text{-}04} = 19441.4888$$

Tier 2 Industrial/Commercial Calculations for Total Xylenes

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

Construction Worker

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 2.61E\text{-}05 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 2.61E\text{-}05)} = \frac{0.1475}{1.12E\text{-}04} = 1312.4030$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$S\text{-}9 = \quad VF' = \frac{VF}{10} = \frac{1312.4030}{10} = 131.2403$$

Equation for Derivation of Apparent Diffusivity

$$S\text{-}10 = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.074 \times 0.271) + (0.0004 \times 9.23E\text{-}06)}{0.0404} \times \frac{1}{(2.15 \times 5.4128) + 0.09 + (0.109 \times 0.271)} = 2.61E\text{-}05$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$S\text{-}17 = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b} \right] = 200 \times \left[5.4128 + \frac{(0.092 + 0.109 \times 0.271)}{2.15} \right] = 1093.866 \text{ mg/kg}$$

Tier 2 Soil Component of GW Ingestion Objective cannot exceed Soil Saturation Limit

Target Soil Leachate Concentration (Class 1)

$$S\text{-}18 = \quad C_w = DF \times GW_{obj} = 20.00 \times 10.000 = 200$$

Soil-Water Partition Coefficient

$$S\text{-}19 = \quad K_d = K_{oc} \times f_{oc} = 398.00 \times 0.014 = 5.4128$$

Water-Filled Porosity

$$S\text{-}20 = \quad \Theta_w = \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$$

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Tier 2 Industrial/Commercial Calculations for Total Xylenes

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w$ = 0.20 - 0.09 = 0.1090

Dilution Factor

S-22 = $DF = 1 + \frac{K \times i \times d}{I \times L}$ = $\frac{31.54 \times 0.0200 \times 3.884}{0.300 \quad 12.192}$ + 1 = 1.6697

GW Ingestion

S-23 = $\frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED}$ = $\frac{1.0E\text{-}06 \times 70 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25}$ = $\frac{0.0E+00}{0}$ = #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s}$ = $1 - \frac{2.15}{2.69}$ = 0.2007

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\frac{(-L \times I)}{(K \times i \times d_a)}\right]$

= (0.0112 x 12.192 $^2)^{0.5}$ +

3.048 x $\left[1 - \exp\left(\frac{-12.192}{31.536} \times \frac{0.3}{0.0200} \times \frac{)}{3.048}\right)\right]$ = 3.884 m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)]$ = $\frac{110}{2.15}$ x [(5.4128 x 2.15) + 0.092 + (0.271 x 0.109)] = 601.63 mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b}$ = $\frac{73.451 \times 0.271 \times 2.150 \times 1000}{2.710E\text{-}01 \times 0.109 + 0.092 + 5.413 \times 2.150}$ = 3,639.42 mg/m^3

000190

Tier 2 Industrial/Commercial Calculations for Naphthalene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Version: 4/25/2018

Input Values

Holcomb's Bulk Density --> 0	Converted Value to be used in calculation sheet --> --	USDA Soil Classification: Sand	
Organic Matter (%) --> 0	FOC % (0.58 conversion) --> 0.000	Organic Matter (mg/kg) 0	FOC mg/kg (0.58 conversion) 0.000; foc conversion to g/g: 0.000
2.150	ρ_b - Dry Soil Bulk Density		1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density		2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109* Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092* Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201* Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient		Site Specific
0.014	foc - Total Organic Carbon (g/g)		Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor		If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)		2; or calculated value
3.048	d_s - Depth of source (m)	feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec = 1.00E-04	Site Specific; 8.64E+00 cm/d; 3.15E+03 cm/yr; Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)	feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)	feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)		0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity		See Table K for Input Values
0.140	GW_{obj} - Groundwater Remediation Objective Class 1		0.22 : GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20		See Table K for Input Values
70	BW - Body Weight		Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens		114
50	IR_{soil} -Soil Ingestion Rate		Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate		Residential = 2; Industrial/Commercial = 1
31	S - Solubility in Water		Naphthalene = 31
1.0E-06	TR - Target Cancer Risk		Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency		Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens		Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source		Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval		Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26		30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28		70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28		0.18
0.059	D_i - Diffusivity in Air		Naphthalene = 0.059
0.0198	H' - Henry's Law Constant		Naphthalene = 0.0198
7.50E-06	D_w - Diffusivity in Water		Naphthalene = 7.5 x 10^{-6}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation		Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation		Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient		1
0.003	RfC - Inhalation Reference Concentration		Chronic = 0.003; Subchronic = 0.003
0.020	RfD_o - Oral Reference Dose		Chronic = 0.02; Subchronic = 0.6
500.00	K_{oc} - Organic Carbon Partition Coefficient		Naphthalene = 2,000

Industrial/Commercial Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/\ 0.02 \times 250 \times 25 \times 50} = \frac{638750}{15.625} = 40880 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/\ 0.6 \times 30 \times 1 \times 480} = \frac{2938.25}{0.024} = 122427 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/\ 0.003 \times 1/\ 89649.24924} = \frac{9125}{23.23871} = 392.664 \text{ mg/kg}$$

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/\ 0.003 \times 1/\ 605.1797139} = \frac{41.975}{16.52402} = 2.540 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{\left(3.14 \times 1.23E\text{-}06 \times 7.90E{+}08\right)^{1/2} \times 0.0001}{\left(2 \times 2.15 \times 1.23E\text{-}06\right)} = \frac{0.4738}{5.29E\text{-}06} = 89649.2492$$

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Tier 2 Industrial/Commercial Calculations for Naphthalene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Construction Worker

S-8 = $$VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \left(\frac{3.14 \times 1.23E\text{-}06 \times 3.60E{+}06}{2 \times 2.15 \times 1.23E\text{-}06} \right)^{1/2} \times 0.0001 = \frac{0.0320}{5.29E\text{-}06} = 6051.7971$$

Equation for Derivation of Volatilization Factor - Construction Worker

S-9 = $$VF' = \frac{VF}{10} = \frac{6051.7971}{10} = 605.1797$$

Equation for Derivation of Apparent Diffusivity

S-10 = $$D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.059 \times 0.020) + (0.0004 \times 7.50E\text{-}06)}{0.0404} \times \frac{1}{(2.15 \times 6.8) + 0.09 + (0.109 \times 0.020)} = 1.23E\text{-}06$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

S-17 = $$C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b} \right] = 2.8 \times \left[6.8 + \frac{(0.092 + 0.109 \times 0.020)}{2.15} \right] = 19.163 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

S-18 = $$C_w = DF \times GW_{obj} = 20.00 \times 0.140 = 2.8$$

Soil-Water Partition Coefficient

S-19 = $$K_d = K_{oc} \times f_{oc} = 500.00 \times 0.014 = 6.8$$

Water-Filled Porosity

S-20 = $$\Theta_w = \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000} \right]^{0.090} = 0.0917$$

000192

Tier 2 Industrial/Commercial Calculations for Naphthalene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w$ = 0.20 - 0.09 = 0.1090

Dilution Factor

S-22 = $DF = 1 + \frac{K \times I \times d}{I \times L}$ = $\frac{31.54}{0.300} \times \frac{0.0200}{12.192} \times 3.884$ + 1 = 1.6697

GW Ingestion

S-23 = $\frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED}$ = $\frac{1.0E\text{-}06 \times 70 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25}$ = $\frac{0.0E+00}{0}$ = #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s}$ = $1 - \frac{2.15}{2.69}$ = 0.2007

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\frac{(-L \times I)}{(K \times I \times d_a)}\right]$

= (0.0112 x 12.192 $^2)^{0.5}$ +

3.048 x [1 - exp ($\frac{-12.192}{31.536}$ x $\frac{0.3}{0.0200}$ x 3.048)] = 3.884 m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)]$ = $\frac{31}{2.15}$ x [(6.8 x 2.15) + 0.092 + (0.020 x 0.109)] = 212.16 mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b}$ = $\frac{2.540 \times 0.020 \times 2.150 \times 1000}{1.980E\text{-}02 \times 0.109 + 0.092 + 6.800 \times 2.150}$ = 7.35 mg/m^3

000193

Tier 2 Industrial/Commercial Calculations for MTBE

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18
Version: 4/25/2016

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->	–	USDA Soil Classification:	Sand		
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g:	0.000

2.150	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL & Θ_T - RBCA: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)		feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific | 8.64E+00 cm/d | 3.15E+03 cm/yr | Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)		feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
0.070	GW_{obj} - Groundwater Remediation Objective Class 1			0.07 | GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
70	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
51000	S - Solubility in Water			MTBE = 51,000
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval			Residential = 9.5×10^8; Industrial/Commercial = 7.9×10^8; Construction Worker = 3.6×10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26			30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28			70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28			0.18
0.102	D_i - Diffusivity in Air			MTBE = 0.102
0.0241	H' - Henry's Law Constant			MTBE = 0.0241
1.10E-05	D_w - Diffusivity in Water			MTBE = 1.1×10^{-5}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation			Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation			Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient			1
3	RfC - Inhalation Reference Concentration			Chronic = 3; Subchronic = 2.5
0.01	RfD_o - Oral Reference Dose			Chronic = 0.01; Subchronic = 0.1
11.50	K_{oc} - Organic Carbon Partition Coefficient			MTBE = 11.5

Residential Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/ \; 0.01 \times 250 \times 25 \times 50} = \frac{638750}{31.25} = 20440 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/ \; 0.1 \times 30 \times 1 \times 480} = \frac{2938.25}{0.144} = 20405 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/ \; 3 \times 1/ \; 10581.56779} = \frac{9125}{0.196883} = 46347.267 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/ \; 2.5 \times 1/ \; 71.43116339} = \frac{41.975}{0.167994} = 249.860 \text{ mg/kg}$$

000194

Tier 2 Industrial/Commercial Calculations for MTBE

S & S Infinite Group, Inc. - DBA Downtown 66

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RESIDENTIAL OR COMMERCIAL

$$\text{S-8} = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \left(\frac{3.14 \times 8.82\text{E-}05 \times 7.90\text{E+}08}{2 \times 2.15 \times 8.82\text{E-}05} \right)^{1/2} \times 0.0001 = \frac{4.0143}{3.79\text{E-}04} = 10581.5678$$

Construction Worker

$$\text{S-8} = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \left(\frac{3.14 \times 8.82\text{E-}05 \times 3.60\text{E+}06}{2 \times 2.15 \times 8.82\text{E-}05} \right)^{1/2} \times 0.0001 = \frac{0.2710}{3.79\text{E-}04} = 714.3116$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$\text{S-9} = \quad VF' = \frac{VF}{10} = \frac{714.3116}{10} = 71.4312$$

Equation for Derivation of Apparent Diffusivity

$$\text{S-10} = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23\text{E-}04 \times 0.102 \times 0.024) + (0.0004 \times 1.10\text{E-}05)}{0.0404} \times \frac{1}{(2.15 \times 0.1564) + 0.09 + (0.109 \times 0.024)} = 8.82\text{E-}05$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$\text{S-17} = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{pb} \right] = 1.4 \times \left[0.1564 + \frac{(0.092 + 0.109 \times 0.024)}{2.15} \right] = 0.281 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

$$\text{S-18} = \quad C_w = DF \times GW_{obj} = 20.00 \times 0.070 = 1.4$$

Soil-Water Partition Coefficient

$$\text{S-19} = \quad K_d = K_{oc} \times f_{oc} = 11.50 \times 0.014 = 0.1564$$

000195

Tier 2 Industrial/Commercial Calculations for MTBE

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Water-Filled Porosity

S-20 = $\Theta_w = \eta \times \left(\frac{I}{K_s}\right)^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w = 0.20 - 0.09 = 0.1090$

Dilution Factor

S-22 = $DF = 1 + \frac{K \times i \times d}{I \times L} = \frac{31.54 \times 0.0200 \times 3.884}{0.300 \times 12.192} + 1 = 1.6697$

GW Ingestion

S-23 = $\frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED} = \frac{1.0E\text{-}06 \times 70 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25} = \frac{0.0E+00}{0} =$ #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s} = 1 - \frac{2.15}{2.69} = 0.2007$

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\left(\frac{(-L \times I)}{(K \times i \times d_a)}\right)\right]$

$= (0.0112 \times 12.192^2)^{0.5} +$

$3.048 \times \left[1 - \exp\left(\frac{(-12.192 \times 0.3)}{(31.536 \times 0.0200 \times 3.048)}\right)\right] = 3.884$ m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)] = \frac{51000}{2.15} \times [(0.1564 \times 2.15) + 0.092 + (0.024 \times 0.109)] = 10{,}221.04$ mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b} = \frac{249.860 \times 0.024 \times 2.150 \times 1000}{0.024 \times 0.109 + 0.092 + 0.156 \times 2.150} = 30{,}046.19$ mg/m^3

000196

Tier 2 Industrial/Commercial Calculations for Benzo[a]pyrene

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18
Version: 4/25/2016

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->		-	USDA Soil Classification:	Sand		
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g: 0.000

2.15	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	I - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.593*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
4.468	d - Mixing Zone (m)	4.468	Value from S-25	2; or calculated value
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific | 8.64E+00 cm/d | 3.15E+03 cm/yr | Use cm/d for R15, R19, & R26. cm/yr for R24
15.850	L - Source Length Parallel to Groundwater Flow (m)		feet = 52	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
0.005	GW_{obj} - Groundwater Remediation Objective Class 1			0.025 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
70	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
7.3	SF_o -Oral Slop Factor			Benzo[a]Pyrene = 7.3
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
0.00162	S - Solubility in Water			Benzo[a]pyrene = 0.00162
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
70	AT_c -Average Time for Carcinogens			70
1.10E-03	URF - Inhalation Unit Risk Factor			Benzo[a]pyrene =8.8 x 10^{-2}
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation fo Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
85.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81
9.50E+08	T - Exposure Interval			Residential = 9.5 x10^{8}; Industrial/Commercial = 7.9 x 10^{8}; Construction Worker = 3.6 x 10^{6}
0.043	D_i - Diffusivity in Air			Benzo[a]pyrene = 0.043
4.63E-05	H' - Henry's Law Constant			Benzo[a]pyrene = 4.63 x 10^{-5}
9.00E-06	D_w - Diffusivity in Water			Benzo[a]pyrene = 9.00 x 10^{-6}
1020000	K_{oc} - Organic Carbon Partition Coefficient			Benzo[a]pyrene = 1,020,000

Industrial/Commercial Ingestion Tier II Objective

$$S\text{-}3 = \frac{TR \times BW \times AT_c \times 365}{Sf_o \times 10^{-6} \times EF \times ED \times IRsoil} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{7.300 \times 1.00E\text{-}06 \times 250 \times 25 \times 50} = \frac{1.8E{+}00}{2.28E{+}00} = 0.784 \text{ mg/kg}$$

Construction Worker Ingestion Tier II Objective

$$S\text{-}3 = \frac{TR \times BW \times AT_c \times 365}{Sf_o \times 10^{-6} \times EF \times IRsoil} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{7.300 \times 1.00E\text{-}06 \times 30 \times 480} = \frac{1.8E{+}00}{1.05E\text{-}01} = 17.01 \text{ mg/kg}$$

Industrial/Commercial Inhalation Tier II Objective

$$S\text{-}6 = \frac{TR \times ATc \times 365}{URF \times 1000 \times EF \times ED \times 1/VF} = \frac{1.0E\text{-}06 \times 70 \times 365}{1.10E\text{-}03 \times 1000 \times 250 \times 25 \times (1/\ 5.68E{+}07)} = \frac{0.02555}{1.21E\text{-}04} = 2.11E{+}02 \text{ mg/kg}$$

000197

Tier 2 Industrial/Commercial Calculations for Benzo[a]pyrene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Construction Worker Inhalation Tier II Objective

$$S\text{-}7 = \frac{TR \times ATc \times 365}{URF \times 1000 \times EF \times ED \times 1/VF'} = \frac{1.0E\text{-}06 \times 70 \times 365}{1.10E\text{-}03 \times 1000 \times 30 \times 1 \times (1/\ 3.50E{+}05)} = \frac{0.02555}{9.43E\text{-}05} = 2.71E{+}02 \text{ mg/kg}$$

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$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 3.68E\text{-}12 \times 9.50E{+}08)^{1/2} \times 0.0001}{(2 \times 2.15 \times 3.68E\text{-}12)} = \frac{0.0009}{1.58E\text{-}11} = 56844975.3174$$

Construction Worker

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 3.68E\text{-}12 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 3.68E\text{-}12)} = \frac{0.0001}{1.58E\text{-}11} = 3.50E{+}06$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$S\text{-}9 = \quad VF' = \frac{VF}{10} = \frac{3499302.8460}{10} = 349930.2846$$

Equation for Derivation of Apparent Diffusivity

$$S\text{-}10 = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.043 \times 0.000) + (0.0004 \times 9.00E\text{-}06)}{0.0404} \times \frac{1}{(2.15 \times 13872) + 0.09 + (0.109 \times 4.63E\text{-}05)} = 3.68E\text{-}12$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$S\text{-}17 = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b}\right] = 0.1 \times \left[13872 + \frac{(0.092 + 0.109 \times 4.63E\text{-}05)}{2.15}\right] = 1387.204 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

$$S\text{-}18 = \quad C_w = \quad DF \times GW_{obj} = 20.00 \times 0.005 = 0.1$$

Soil-Water Partition Coefficient

$$S\text{-}19 = \quad K_d = \quad K_{oc} \times f_{oc} = 1.02E{+}06 \times 0.014 = 13872$$

Water-Filled Porosity

$$S\text{-}20 = \quad \Theta_w = \quad \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$$

Tier 2 Industrial/Commercial Calculations for Benzo[a]pyrene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Air-Filled Porosity

$$S\text{-}21 = \quad \Theta_a = \eta - \Theta_w \quad = 0.20 - 0.09 \quad = 0.1090$$

Dilution Factor

$$S\text{-}22 = \quad DF = 1 + \frac{K \times I \times d}{I \times L} = \frac{31.54 \times 0.0200 \times 4.468}{0.300 \quad 15.850} + 1 \quad = 1.5927$$

GW Ingestion

$$S\text{-}23 = \frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{7.300 \times 1.000 \times 250 \times 25} = \frac{1.8E{+}00}{45625} = 0.0000 \text{ mg/L}$$

Total Soil Porosity

$$S\text{-}24 = \quad \eta = 1 - \frac{\rho_b}{\rho_s} = 1 - \frac{2.15}{2.69} = 0.2007$$

Estimation of Mixing Zone Depth

$$S\text{-}25 = \quad d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\frac{(-L \times I)}{(K \times I \times d_a)}\right]$$

$$= (0.0112 \times 15.850\ ^2)^{0.5} +$$

$$3.048 \times \left[1 - \exp\left(\frac{-15.850 \times 0.3}{31.536 \times 0.0200 \times 3.048}\right)\right] = 4.468 \text{ m}$$

Soil Saturation Limit

$$S\text{-}29 = \quad C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)] = \frac{1.62E\text{-}03}{2.15} \times [(13872 \times 2.15) + 0.092 + (4.63E\text{-}05 \times 0.109)] = 22.47 \text{ mg/kg}$$

Soil Gas Outdoor Inhalation

$$S\text{-}30 = \quad ROs\,g = \frac{ROsoil \times H \times pb \times 1000}{H' \times \Theta a + \Theta w + Kd \times pb} = \frac{22.473 \times 4.630E\text{-}05 \times 2.150 \times 1000}{4.630E\text{-}05 \times 0.109 + 0.092 + 13872.000 \times 2.150} = 0.00008 \text{ mg/m}^3$$

LEAKING UST TECHNICAL REVIEW NOTES

Reviewed by: Scott McGill
Date Reviewed: June 4, 2018

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

Document(s) Reviewed:

This document consists of a corrective action plan and budget dated March 19, 2018 and received by the Illinois EPA on March 20, 2018 and prepared by CW3M Company, Inc. This plan and budget were prepared in accordance with the 734 requirements and summarized as follows:

General Site Information:

Site subject to: 734

IEMA date(s): «IEMA_Date»	Payment from the Fund? (Y/N/unknown): yes
UST system removed? (Y/N): yes	OSFM Fac. ID #: 20161089
Encountered groundwater? (Y/N/unknown): yes	SWAP mapping and evaluation completion date: June 4, 2018
Free product? (Y/N/unknown): no	Site placement correct in SWAP? (Y/N): yes
Current/past land use: vacant lot	Inspection Required? (Date/Plan): no
Size & product of USTs: 1-6,000 diesel fuel, 2-10,000 gasoline, 2-350 gasoline, 1-560 diesel and 1-560 used oil	
Is site located in EJ area? yes	Is investigation of indoor inhalation exposure route required? no
Has enough sampling been completed to perform a Right-to-Know Evaluation? yes	PLA Checklist Complete? Yes

Corrective Action Plan/Budget Review Notes:

The owner/operator propose a corrective action plan consisting of a Tier 2 evaluation and institutional controls. It should be noted that groundwater was not encountered during early action activities. The proposed institutional controls consist of a worker caution, Industrial/Commercial land use restriction and groundwater use restriction. The location of the worker caution is depicted in Drawing: 0006. The owner/operator propose 4 additional on-site soil borings to determine if additional soil should be removed from the site. The soil borings are depicted in Drawing: 0004A. 3 of the 4 borings will be advanced to a depth of 20 feet. The other soil boring will be advanced to a depth of 20 feet to determine the vertical extent of contamination. Soil samples will be collected at 5-foot intervals and the results will be evaluated for the BTEX, MTBE and PNA constituents. The results will be used to determine the depth of the excavation. Soil excavation activities will be submitted in an amendment to the corrective action plan. Also, a potable well is located on-site and the owner/operator will address abandonment of the well in an amendment to the corrective action plan. Previous analytical soil results are summarized in tables included in Appendix F. The Tier 2 calculations are included in Appendix G.

The corrective action plan budget proposal is included in Appendix D. This amount includes costs in the amount of $28,643.22. This amount includes costs for advancement of 4 soil borings to a depth of 20 feet including soil sampling for the BTEX, MTBE and PNA constituents, personnel costs and material costs. The following personnel costs lack supporting documentation and should be cut from the budget:

1. Costs in the amount of $5,056.00 associated with a Senior Project Manager for 40 hours to complete corrective action design, report development and IEPA correspondence.,
2. Costs in the amount of $2,022.40 associated with a Senior Project Manager for 16 hours to complete TACO Tier 2 calculations, development of cleanup objectives and groundwater modeling.,
3. Costs in the amount of $3,033.00 associated with a Senior Project Manager for 24 hours to complete budget preparation and data evaluation.,
4. Costs in the amount of $2,085.30 associated with a Senior Accountant Technician for 30 hours to complete reimbursement preparation forms. And
5. Costs in the amount of $1,779.84 associated with a Geologist III to complete reimbursement development, inputs, contractor invoicing and evaluation with budget.

The following cuts should be made to the material costs: Copy costs in the amount of $165.00, PID rental at $129.00/day and measuring wheel at $24.00/day.

Illinois EPA Decision:

The proposed corrective action plan should be approved however the budget proposal should be modified based on the aforementioned cuts to the budget. The owner/operator should submit an amended corrective action plan to address additional soil excavation activities at the site and abandonment of the potable well.

Response Due:

An amended corrective action plan should be submitted to the Illinois EPA.

LPC 1430650114 - Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

Right-to-Know Evaluation

The Bureau of Land site identified above has been reviewed. A check mark next to any one of the following criteria indicates further evaluation of the site is necessary.

CRITERIA:

☐ Groundwater contamination is measured or modeled to exceed, within the setback zone or regulated recharge area of a potable Community Water Supply (CWS) well, or setback zone of a private well or non-CWS well, either TACO Tier 1 groundwater remediation objectives under Part 742, Appendix B, Table E or Class I groundwater standards under Part 620; or ☐ Five or fewer properties ☐ More than five properties

☐ Measured off-site groundwater contamination from volatile chemicals from the site where a release occurred poses a threat of indoor inhalation exposure above appropriate Tier 1 remediation objectives for the current use of the site; or ☐ Five or fewer properties ☐ More than five properties

☐ Soil contamination exceeding applicable remediation objectives for the soil component of the groundwater ingestion route is modeled to exceed, within the setback zone or regulated recharge area of a potable Community Water Supply (CWS) well, or setback zone of a private well or non-CWS well, either TACO Tier 1 groundwater remediation objectives under Part 742, Appendix B, Table E or Class I groundwater standards under Part 620; or ☐ Five or fewer properties ☐ More than five properties

☐ Contaminated soil is measured off-site to exceed the appropriate Tier 1 remediation objectives based on the current use of the off-site property; or ☐ Five or fewer properties ☐ More than five properties

☐ Measured off-site soil gas contamination from the site where the release occurred poses a threat of exposure above the appropriate Tier 1 remediation objectives for the current use of the site: or ☐ Five or fewer properties ☐ More than five properties

☐ BOL refers a matter to the Division of Legal Counsel for enforcement under Section 43(a) of the Act; or

☐ BOL refers a site to the Division of Legal Counsel for issuance of a seal order under Section 34(a) of the Act.

Comments:

☐ At least one of the above criteria is met and the above-identified site must be further evaluated.

☐ Insufficient information submitted to make an adequate RTK decision.

x None of the above criteria are met and the above-identified site does not warrant any further evaluation.

Project Manager Signature: Scott McGill Date: 5/11/18

VI Incomplete Pathway Checklist

Reviewed by: Scott McGill
Date Reviewed: June 4, 2018

File Heading: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

SECTION 1

☐ Yes x No ☐ N/A — Is there free product exceeding one-eighth of an inch in depth as measured in a groundwater monitoring well?

☐ Yes x No ☐ N/A — Do laboratory analytical results indicate concentrations of indicator contaminants as a result of the release from the UST that exceed the soil saturation (C_{sat}) limit as determined at 35 Ill. Adm. Code 742.220?

☐ Yes x No ☐ N/A — Is there contaminated groundwater (i.e., based upon laboratory analytical results [actual measured concentrations], levels of indicator contaminants as a result of the release from the UST that exceed Tier 1, Class I groundwater remediation objectives for the groundwater component of the groundwater ingestion route at 35 Ill. Adm. Code 742.Appendix B.Table E)?

If "No" or "N/A" is checked for all three of the above questions, continue with the final question (in Section 4) of this checklist.

If "Yes" is checked for any one or more of the three questions above, continue with the questions in Section 2 to assess the potential for PVI.

SECTION 2

☐ Yes ☐ No ☐ N/A — Is there an interval of at least five feet of uncontaminated soil between contaminated groundwater and the lowest point of an overlying receptor (building basement, foundation, slab, or crawl space) or ground surface if there is no overlying receptor?

☐ Yes ☐ No ☐ N/A — Is there an interval of at least 15 feet of uncontaminated soil between C_{sat} soil or free product in a groundwater monitoring well and the lowest point of an overlying receptor (building basement, foundation, slab, or crawl space) or ground surface if there is no overlying receptor?

If "No" is checked for either or both of the above two questions, investigation of PVI (via the indoor inhalation exposure route in accordance with Part 742) is required. Continue with

Sections 3 and 4 for informational purposes only, then go to the Conclusion section and **check the box indicating that investigation of PVI is required**.

If "Yes" is checked for either or both of the above two questions, continue with the question(s) in Section 3 to assess the potential for PVI.

SECTION 3

☐ Yes ☐ No Are there natural or man-made pathways that may allow migration of vapors to indoor receptors?

If "No" is checked, continue with the question in Section 4 to assess the potential for PVI.

If "Yes" is checked, continue with the following question.

☐ Yes ☐ No Has the UST owner or operator provided a 20-Day Certification?

Continue with the question in Section 4 to assess the potential for PVI.

SECTION 4

☐ Yes x No Are there petroleum vapors in buildings as a result of the release from the UST?

If "No" is checked, soil gas sampling is not required. Investigation of PVI (via the indoor inhalation exposure route in accordance with Part 742) is not required.

If "Yes" is checked, investigation of PVI (via the indoor inhalation exposure route in accordance with Part 742) is required.

CONCLUSION

Based upon the results of the current review and the Illinois EPA site-specific Tier 3 evaluation:

☐ Investigation of PVI (via the indoor inhalation exposure route in accordance with Part 742) is required.

x Investigation of PVI is not required.

McGill, Scott

From: McGill, Scott
Sent: Friday, June 01, 2018 11:25 AM
To: 'vince@cwmcompany.com'
Cc: Kuhlman, Eric
Subject: RE: S & S Infinite Group, Inc., Incident No. 20161089

Vince,

Please provide supporting documentation for the following personnel costs within a week. Thanks in advance:

1. Costs in the amount of $5,056.00 associated with a Senior Project Manager for 40 hours to complete corrective action design, report development and IEPA correspondence.,
2. Costs in the amount of $2,022.40 associated with a Senior Project Manager for 16 hours to complete TACO Tier 2 calculations, development of cleanup objectives and groundwater modeling.,
3. Costs in the amount of $3,033.00 associated with a Senior Project Manager for 24 hours to complete budget preparation and data evaluation.,
4. Costs in the amount of $2,085.30 associated with a Senior Accountant Technician for 30 hours to complete reimbursement preparation forms. And
5. Costs in the amount of $1,779.84 associated with a Geologist III to complete reimbursement development, inputs, contractor invoicing and evaluation with budget.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
BRUCE RAUNER, GOVERNOR ALEC MESSINA, DIRECTOR

217/524-3300

CERTIFIED MAIL

7017 2680 0001 0213 3807

JUN 20 2018

S & S Infinite Group, Inc.
Attn: Syed Muneeb
400 North East Adams Street
Peoria, IL 61603

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

Dear Mr. Muneeb:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Corrective Action Plan (plan) submitted for the above-referenced incident. This plan, dated March 19, 2018, was received by the Illinois EPA on March 20, 2018. Citations in this letter are from the Environmental Protection Act (415 ILCS 5) (Act) and Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code).

Pursuant to Sections 57.7(b)(2) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(a), the plan is approved. The activities proposed in the plan are appropriate to demonstrate compliance with Title XVI of the Act. Please note that all activities associated with the remediation of this release proposed in the plan must be executed in accordance with all applicable regulatory and statutory requirements, including compliance with the proper permits.

In addition, the budget is modified pursuant to Sections 57.7(b)(3) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(b). Based on the modifications listed in Section 2 of Attachment A, the amounts listed in Section 1 of Attachment A have been approved. Please note that the costs must be incurred in accordance with the approved plan. Be aware that the amount of payment from the Fund may be limited by Sections 57.7(c), 57.8(d), 57.8(e), and 57.8(g) of the Act, as well as 35 Ill. Adm. Code 734.630 and 734.655.

Further, pursuant to 35 Ill. Adm. Code 734.145, it is required that the Illinois EPA be notified of field activities prior to the date the field activities take place. This notice must include a description of the field activities to be conducted; the name of the person conducting the activities; and the date, time, and place the activities will be conducted and shall be made to EPA.FieldNotifications@illinois.gov. This notification of field activities must be provided at least two weeks prior to the scheduled field activities.

Pursuant to Sections 57.7(b)(5) and 57.12(c) and (d) of the Act and 35 Ill. Adm. Code 734.100 and 734.125, the Illinois EPA requires that a Corrective Action Plan that achieves compliance with applicable remediation objectives be submitted within 30 days after completion of the plan to:

Illinois Environmental Protection Agency
Bureau of Land - #24
Leaking Underground Storage Tank Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276

Please submit all correspondence in duplicate and include the Re: block shown at the beginning of this letter.

An underground storage tank system owner or operator may appeal this decision to the Illinois Pollution Control Board. Appeal rights are attached.

If you have any questions or need further assistance, please contact Scott McGill at (217) 524-5137.

Sincerely,

Eric A. Kuhlman

Eric A. Kuhlman
Acting Unit Manager
Leaking Underground Storage Tank Section
Division of Remediation Management
Bureau of Land

Attachment: Attachment A
Appeal Rights

c: Carol L. Rowe, CWM Company, Inc. (electronic copy)
BOL File

Attachment A

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

SECTION 1

As a result of Illinois EPA's modification(s) in Section 2 of this Attachment A, the following amounts are approved:

$1,820.00	Drilling and Monitoring Well Costs
$4,434.28	Analytical Costs
$0.00	Remediation and Disposal Costs
$0.00	UST Removal and Abandonment Costs
$0.00	Paving, Demolition, and Well Abandonment Costs
$7,944.90	Consulting Personnel Costs
$149.50	Consultant's Materials Costs

Handling charges will be determined at the time a billing package is reviewed by the Illinois EPA. The amount of allowable handling charges will be determined in accordance with Section 57.1(a) of the Environmental Protection Act (Act) and 35 Illinois Administrative Code (35 Ill. Adm. Code) 734.635.

SECTION 2

1. $165.00 for costs for copy charges, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). Since there is no supporting documentation of costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

   Pursuant to 35 III. Adm. Code 734.850(b) costs associated with activities that do not have a maximum payment amount set forth pursuant to 35 Ill. Adm. Code 734 Subpart H must be determined on a site-specific basis and the owner/operator must demonstrate to the Illinois EPA the amounts sought for reimbursement are reasonable. The owner/operator has not provided sufficient documentation to support the rate requested for copy charges and/or the quantity of copies requested pursuant to 35 Ill. Adm. Code 734.505(a). The documentation was either not provided or fails to provide sufficient information for the Illinois EPA to make a site-specific reasonableness determination.

In addition, without supporting documentation the rate and/or the quantity of copies requested are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd). It should be noted, the Illinois EPA only requires technical correspondence be submitted in duplicate and only an original for reimbursement correspondence.

2. $129.00 for costs for PID, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). Since there is no supporting documentation of costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

   Pursuant to 35 Ill. Adm. Code 734.850(b) costs associated with activities that do not have a maximum payment amount set forth pursuant to 35 Ill. Adm. Code 734 Subpart H must be determined on a site specific basis and the owner/operator must demonstrate to the Agency the amounts sought for reimbursement are reasonable. The Agency has requested additional documentation to support the rate requested for a PID pursuant to 35 Ill. Adm. Code 734.505(a). The documentation was either not provided or fails to provide sufficient information for the Agency to make a site specific reasonableness determination.

   In addition, without supporting documentation for the rate requested the PID costs are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd).

3. $24.00 for indirect corrective action costs for a measuring wheel charged as direct costs. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(v). In addition, such costs are not approved pursuant to 35 Ill. Adm. Code 734.630(dd) and Section 57.7(c)(3) of the Act because they are not reasonable.

4. Personnel Lacking Supporting Documentation

   $5,056.00 for costs for personnel hours requested under the Senior Project Manager title, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). As there is no supporting documentation for the requested costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o) because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

The Illinois EPA has requested additional documentation to support the personnel hours requested as noted above pursuant to 35 Ill. Adm. Code 734.505(a). The documentation was either not provided or fails to provide sufficient information for the Illinois EPA to make a task-specific reasonableness determination. Without supporting documentation, the personnel hours for Senior Project Manager are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd). In addition, the request appears to be for activities and related services or materials that are unnecessary. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(aa).

Costs in the amount of $5,056.00 associated with a Senior Project Manager for 40 hours to complete corrective action design, report development and IEPA correspondence lack supporting documentation and these costs are not reasonable as submitted.

5 Personnel Lacking Supporting Documentation

$2,022.40 for costs for personnel hours requested under the Senior Project Manager title, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). As there is no supporting documentation for the requested costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o) because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

The Illinois EPA has requested additional documentation to support the personnel hours requested as noted above pursuant to 35 Ill. Adm. Code 734.505(a). The documentation was either not provided or fails to provide sufficient information for the Illinois EPA to make a task-specific reasonableness determination. Without supporting documentation, the personnel hours for Senior Project Manager are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd). In addition, the request appears to be for activities and related services or materials that are unnecessary. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(aa).

Costs in the amount of $2,022.40 associated with a Senior Project Manager for 16 hours to complete TACO Tier 2 calculations, development of cleanup objectives and groundwater modeling lack supporting documentation and these costs are not reasonable as submitted.

6. Personnel Lacking Supporting Documentation

$3,033.00 for costs for personnel hours requested under the Senior Project Manager title, which lack supporting documentation. Such costs are ineligible for payment from the

Fund pursuant to 35 Ill. Adm. Code 734.630(cc). As there is no supporting documentation for the requested costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o) because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

The Illinois EPA has requested additional documentation to support the personnel hours requested as noted above pursuant to 35 Ill. Adm. Code 734.505(a). The documentation was either not provided or fails to provide sufficient information for the Illinois EPA to make a task-specific reasonableness determination. Without supporting documentation, the personnel hours for Senior Project Manager are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd). In addition, the request appears to be for activities and related services or materials that are unnecessary. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(aa).

Costs in the amount of $3,033.00 associated with a Senior Project Manager for 24 hours to complete budget preparation and data evaluation lack supporting documentation and these costs are not reasonable as submitted.

7. Personnel Lacking Supporting Documentation

$2,085.30 for costs for personnel hours requested under the Senior Accountant Technician title, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). As there is no supporting documentation for the requested costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o) because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

The Illinois EPA has requested additional documentation to support the personnel hours requested as noted above pursuant to 35 Ill. Adm. Code 734.505(a). The documentation was either not provided or fails to provide sufficient information for the Illinois EPA to make a task-specific reasonableness determination. Without supporting documentation, the personnel hours for Senior Accountant Technician are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd). In addition, the request appears to be for activities and related services or materials that are unnecessary. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(aa).

Costs in the amount of $2,085.30 associated with a Senior Accountant Technician for 30 hours to complete reimbursement preparation forms lack supporting documentation and these costs are not reasonable as submitted.

8. Personnel Lacking Supporting Documentation

$1,779.84 for costs for personnel hours requested under the Geologist III title, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). As there is no supporting documentation for the requested costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o) because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

The Illinois EPA has requested additional documentation to support the personnel hours requested as noted above pursuant to 35 Ill. Adm. Code 734.505(a). The documentation was either not provided or fails to provide sufficient information for the Illinois EPA to make a task-specific reasonableness determination. Without supporting documentation, the personnel hours for Geologist III are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd). In addition, the request appears to be for activities and related services or materials that are unnecessary. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(aa).

Costs in the amount of $1,779.84 associated with a Geologist III for 16 hours to complete reimbursement development, inputs, contractor invoicing and evaluation with budget lack supporting documentation and these costs are not reasonable as submitted.

Appeal Rights

An underground storage tank owner or operator may appeal this final decision to the Illinois Pollution Control Board pursuant to Sections 40 and 57.7(c)(4) of the Act by filing a petition for a hearing within 35 days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed 90 days by written notice from the owner or operator and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the filing of an appeal, please contact:

John Therriault, Assistant Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, IL 60601
312/814-3620

For information regarding the filing of an extension, please contact:

Illinois Environmental Protection Agency
Division of Legal Counsel
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276
217/782-5544

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

24

McGill

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CW³M Comp[any]
Environmental Consulting Ser[vices]
701 W. South Grand Avenue
Springfield, IL 62704
Phone: (217) 522-8001
Fax: (217) 522-8009

November 12, 2018

RECEIVED
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PERMIT SECTION

Mr. Scott McGill, Project Manager
LUST Section, Bureau of Land
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794-9276

RE: **LPC #1430650114—Peoria County**
S & S Infinite Group, Inc. - Peoria
400 North East Adams Street
Incident Number: 2016-1089
LUST Technical Reports—Amended Corrective Action Plan

Dear Mr. McGill:

Enclosed, please find the Amended Corrective Action Plan (CAP) for the above-referenced site for Incident Number 2016-1089. This CAP includes the actions necessary to address the contamination from the 2016-1089 incident that were not included in the CAP previously approved for the 2014-0963 incident. Once the activities required to address the contamination over Tier 2 Clean-up Objectives found in the 2016-1089 incident are completed, a Corrective Action Completion Report combining the incidents will be prepared and submitted.

If you have any questions or require additional information, please contact Mr. Vince Smith or me at (217) 522-8001.

Sincerely,

Carol Rowe, P.G.
Senior Environmental Geologist

EPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
MAR 08 2019
REVIEWER JRM

xc: Mr. Syed Muneeb, *S & S Infinite Group, Inc. / Downtown 66*
Mr. William T. Sinnott, *CW³M Company, Inc.*

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CORRECTIVE ACTION PLAN & BUDGET AMENDMENT

S&S INFINITE GROUP, INC./ DBA-DOWNTOWN 66

PEORIA, ILLINOIS
LPC #1430560114 — Peoria County
Incident Number 2016-1089

Submitted to:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
Leaking Underground Storage Tank Section, Bureau of Land
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Prepared by:
CW³M COMPANY, INC.

701 South Grand Avenue West
Springfield, Illinois
(217) 522-8001

400 West Jackson, Suite C
Marion, Illinois
(618) 997-2238

November 2018

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ACRONYMS AND ABBREVIATIONS

BETX	Benzene, ethylbenzene, toluene, total xylenes
CACR	Corrective Action Completion Report
CAP	Corrective Action Plan
CA6	Coarse Aggregate 6
Csat	Soil saturation limit
CUO	Clean-up Objective
CW³M	CW³M Company, Inc.
CWS	Community Water Supply
IEMA	Illinois Emergency Management Agency
IEPA	Illinois Environmental Protection Agency
Ill. Adm. Code	Illinois Administrative Code
ISGS	Illinois State Geological Survey
ISWS	Illinois State Water Survey
LUST	Leaking Underground Storage Tank
MTBE	Methyl tert-butyl ether
NFR	No Further Action Report
OSFM	Illinois Office of the State Fire Marshal
PNA	Polynuclear Aromatic Hydrocarbon
SICR	Site Investigation Completion Report
SWAP	Source Water Assessment Program
TACO	Tiered Approach to Corrective Action Objectives
UST	Underground Storage Tank

1. SITE HISTORY/EXECUTIVE SUMMARY

1.1 GENERAL

This Amended Corrective Action Plan (CAP) and Budget has been prepared in accordance with the requirements of the 35 Illinois Administrative Code (Ill. Adm. Code) 734. The Illinois Environmental Protection Agency (IEPA) Corrective Action Plan Form is included in this document as Appendix A.

Mr. Syed Muneeb, owner of the underground storage tanks (USTs) at the site, known as S&S Infinite Group, in Peoria, Illinois reported a release to the Illinois Emergency Management Agency (IEMA). Incident Number 2016-1089 was assigned to the notification on November 21, 2016. Mr. Syed Muneeb ultimately requested CW³M Company, Inc. (CW³M) to proceed with the reporting and early action requirements in accordance with 35 Ill. Adm. Code § 734.

The 20-Day Certification was submitted to the IEPA on December 2, 2016 (CW³M, 2016). A 45-Day Extension Request was submitted to the IEPA on December 20, 2016 (CW³M, 2016a) and was approved on December 28, 2016 (IEPA, 2016). A 45-Day Report was submitted to the IEPA on January 19, 2017 (CW³M, 2017) and was approved on January 26, 2017 (IEPA, 2017). A 45-Day Report Addendum was then submitted to the IEPA on February 10, 2017 (CW³M, 2017a) and was approved on May 17, 2017 (IEPA, 2017a). A Site Investigation Completion Report (SICR) was submitted to the IEPA on October 10, 2017 (CW³M, 2017b) and was approved February 2, 2018 (IEPA, 2018a). A CAP was submitted to the IEPA on March 20, 2018 (CW³M, 2018) and approved on June 20, 2018 (IEPA, 2018b). A previous incident had occurred on site, 2014-0963, and had a CAP to address the contamination from its incident was submitted July 2, 2015 (Marlin, 2015), and approved on July 21, 2015 (IEPA, 2015).

This report is certified by an Illinois Licensed Professional Engineer. The geological investigation and site investigation was performed under the direction of an Illinois Licensed Professional Geologist and completed in accordance with the Professional Geologist Licensing Act and its Rules for Administration.

1.2 SITE LOCATION

The site, known as S & S Infinite Group, Inc. / DBA – Downtown 66 is located at 400 North East Adams Street, Peoria, Peoria County, Illinois 61603. The site is located in the NE ¼ of the NE ¼ of the NE ¼ of Section 9, Township 8 North of the Centralia Baseline and Range 8 East of the Fourth Principal Meridian.

1.3 UNDERGROUND STORAGE TANK INFORMATION

A permit for the removal of seven USTs was approved by the Office of the State Fire Marshal (OSFM) on December 12, 2016 (OSFM, 2016). Tank removal activities were conducted by CW³M personnel on January 3, 2017 through January 5, 2017. OSFM Tank Specialist Jim Coffey was on site to oversee the removal of the USTs.

CW³M personnel were on site from January 4, 2017 through January 6, 2017, and January 9, 2017 through January 12, 2017 to complete early action activities, including removal of contaminated backfill material and replacement of clean fill to the UST excavation area. As the OSFM Field Specialists have been instructed not to make the official determination of the release in the field, the source of release has been determined in consult with the OSFM Field Specialist using the best professional judgment of the condition of tank, piping, and soil conditions.

Tank 1: This fiberglass UST was abandoned in place in 2014 as part of a separate incident. Its details are listed on the next page in Table 1-1.

Tank 2: This fiberglass UST was abandoned in place in 2014 as part of a separate incident. Its details are listed on the next page in Table 1-1.

Tank 3: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this fiberglass UST was a result of piping leaks and overfilling.

Tank 4: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this steel UST was a result of tank leaks as this tank had visual holes.

Tank 5: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this steel UST was a result of tank leaks as this tank had visual holes.

Tank 6: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this steel UST was a result of tank leaks as this tank showed signs of pitting.

Tank 7: OSFM Tank Specialist Jim Coffey in conjunction with CW³M personnel determined the release from this steel UST was a result of tank leaks as this tank showed signs of pitting.

Table 1-1. Underground Storage Tank Summary

Tank Number	Tank Volume	Tank Contents	Incident Number	Release Information	Current Status

	(gallons)				
1	6,000	Diesel	2014-0963	Unknown	Removed 1/5/17
2	10,000	Gasoline	2014-0963	Unknown	Removed 1/5/17
3	10,000	Gasoline	2016-1089	Overfilling/Piping Leaks	Removed 1/4/17
4	350	Gasoline	2016-1089	Tank Leaks	Removed 1/3/17
5	350	Gasoline	2016-1089	Tank Leaks	Removed 1/3/17
6	560	Diesel	2016-1089	Tank Leaks	Removed 1/3/17
7	560	Used Oil	2016-1089	Tank Leaks	Removed 1/3/17

1.4 EARLY ACTION SUMMARY

Samples were collected for every 20 feet of the excavation walls. Floor samples were obtained at the base of the tanks at a depth of around 12 feet. Samples for the piping trench of tank 3 were also taken every 20 feet at a depth of approximately 3 feet. Because tanks 1 and 2 were previously associated with Incident Number 2014-0963, the soil in the tank pit containing tanks 1, 2, and 3 was known to be contaminated. For this reason, the only samples taken from this pit were at the floor of tank 3 as well as the surrounding walls. The soil removed during the excavation of these three tanks was returned to the excavation after sampling had been completed.

All early action soil samples were collected and analyzed for benzene, ethylbenzene, toluene and total xylenes (BETX) and methyl tert-butyl ether (MTBE) contaminants. The wall samples and floor samples associated with tanks 4 through 7 were additionally analyzed for Polynuclear Aromatic Hydrocarbon (PNA) contaminants, due to the contents of the tanks. The floor of the used oil tank 7 was also sampled for used oil parameters. As previously stated, all tanks and product piping were removed. A total of 365.72 tons (243.81 cubic yards) of contaminated backfill was removed and taken to Indian Creek Landfill in Hopedale, Illinois for disposal. Analytical results and a map of the contaminants can be found in Appendix F and Appendix B, respectively. These activities were documented in the 45-Day Report (CW³M, 2017) and the 45-Day Report Addendum (CW³M, 2017a).

1.5 SITE INVESTIGATION SUMMARY

On July 26, 2017 CW³M personnel were on site to conduct Stage 1 investigation activities. Two soil borings (24 and 25) were drilled and sampled, with boring 24 to a depth of 25 feet and boring 25 to a depth of 20 feet. Soil boring 24 was intended to be converted to a monitoring well to determine if contaminants from sample 11 had been in contact with groundwater. When no water was reached by 25 feet only soil samples were obtained. Since a groundwater investigation could not be performed, SB-24 was advanced to define the vertical extent of soil contamination. Once the groundwater level was determined to be lower than 25 feet, no more wells were attempted. Soil boring 25 was drilled to determine the horizontal extent of contamination from sample 11. Benzo(a) pyrene was exceeded at sample 24 but below Clean-up Objectives (CUOs) at sample 25A and B.

One reason for the large change in groundwater level elevation from this incident, below 25 feet, and the previous incident, at around 13 feet, could be due to the site's location and unusually dry summer. The site is very near the Illinois River which could have huge changes in the groundwater level from changes in the river. Soil samples were analyzed for BETX, MTBE, and PNA indicator parameters. Laboratory analytical results and a table summarizing the results are included in Appendix F, while soil boring logs are included in Appendix E. At the end of Stage 1 investigation, the soil plume was fully defined on site and groundwater was not encountered. The site investigation activities were documented in the SICR (CW³M, 2017b).

2. REMEDIATION OBJECTIVES

2.1 DETERMINATION OF CLEAN-UP OBJECTIVES

In accordance with 35 Ill. Adm. Code 734.410, remediation objectives will be determined in accordance with 35 Ill. Adm. Code § 742. During the previous incident on this site #2014-0963 a Tiered Approach to Corrective Action Objectives (TACO) sample was taken as part of the CAP for that incident. For this incident the site specific physical parameters that were presented in the CAP for incident 2014-0963 (Marlin, 2015) are being used for incident 2016-1089.

The parameters that have been determined are:

Soil bulk density (r_b), 2.15 g/cm³
Soil particle density (r_s) 2.69 g/cm³
Moisture content (w), 9.4%
Organic carbon content (f_{oc}) .0136 g/g
Hydraulic Conductivity 8.64 cm/day = 1.00 X 10^{-4} cm/sec

For the previous incident groundwater was encountered during drilling but never encountered after drilling. For the 2016-1089 incident, groundwater was not encountered. Since no groundwater was found, the assumed hydraulic gradient is 0.02.

2.2 SOIL AND GROUNDWATER OBJECTIVES

The soil objectives are listed for the site below in tabular format. With the TACO Tier 2 CUOs calculated, an industrial / commercial use restriction will be placed on the property and a groundwater ordinance will be placed on the site and the affected offsite properties. The calculations and the modeling of the existing contamination from incident 2016-1089 are included in Appendix G. The TACO inputs for plume width and length are shown on Drawing 0010 in Appendix B.

Table 2-1. Soil Remediation Objectives

Parameter	TACO Residential Tier 1 Clean-up Objective (mg/kg)	TACO Industrial / Commercial Tier 2 Clean-up Objective (mg/kg)
Benzene	0.03	3.70
Ethylbenzene	13.0	749.91
Toluene	12.0	535.89
Total Xylenes	5.6	73.45
Methyl tert-butyl ether	0.32	249.86
Acenaphthene	570	-
Acenapthylene	30	-
Anthracene	12,000	-
Benzo(a)anthracene	0.9	-
Benzo(a)pyrene	0.09	0.784
Benzo(b)flouranthene	0.9	-
Benzo(g,h,i)perylene	160	-
Benzo(k)flouranthene	9	-
Chrysene	88	-
Dibenzo(a,h)anthracene	0.09	-
Flouranthene	3,100	-
Fluorene	560	-
Indeno(1,2,3-c,d)pyrene	0.9	-
Naphthalene	1.8	2.54
Phenanthrene	280	-
Pyrene	2,300	-

3. CORRECTIVE ACTION PLAN

The following CAP Amendment and Budget has been prepared by CW³M Company, Inc., as their recommendation for the most appropriate and economical approach to the remediation of the contamination at the S & S Infinite Group, Inc. / DBA – Downtown 66 in Peoria, Illinois.

Based upon the analytical data from the soil samples collected on-site, it is apparent that soil contamination above the TACO Tier 2 calculated CUOs soil saturation limit was found on site for the current incident at sample location WC-1. The WC-1 sample is included because soil was not removed during early action from the tank pit from which these samples were taken. Soil contamination is confined to the site, and no groundwater contamination was found. All site investigation details were presented in the SICR (CW³M, 2017b).

Soil sample WC-1 exceeds the TACO Tier 2 soil saturation limit for total xylenes, so remediation must occur at that location. Sample WC-3 also has exceedances for industrial / commercial inhalation and construction worker inhalation CUOs. From the results of the soil samples proposed in the last CAP the soil contamination has been defined horizontally and vertically. The soil borings from the previous CAP show that while there is soil contamination at SB-26, SB-28, and SB-29, all the contamination is under Tier 2 CUOs. The areas around WC-1 and WC-3 are being proposed to be excavated to a depth of 10 feet due the two samples being taken at 7.5 feet and the results from SB-27 showing the ten to fifteen-foot zone beneath WC-1 below the CUOs. Drawing 0007 depicts the limits and total volume of the proposed excavation.

After the excavation is completed the excavation walls and floor will be sampled to re-evaluate the need for instituting any additional restrictions on site. The migration conditions for soil to groundwater contamination will be addressed as previously stated with a groundwater ordinance to address groundwater contamination at the S&S Infinite property and surrounding properties. Two samples are being proposed to be obtained from the floor of the excavation, and six wall samples are proposed with 2 from each of the northern and southern walls and 1 from each of the eastern and western walls. These samples are to determine if contamination over Tier 2 CUOs has spread past the border of the proposed excavation area. This sampling arrangement is proposed so that samples are obtained from a spacing no more than twenty feet apart.

A waste characterization sample will be drilled and sampled with the proposed excavation area to determine parameters for disposal of the contaminated soil. The contaminate soil will be excavated by use of a trackhoe (e.g., caterpillar 322 or equivalent). A backhoe or endloader will be employed for loading contaminated soil onto trucks. The loader will also be used to place clean backfill. Sloping or benching will be conducted where necessary to protect excavation walls. The excavated area will be capped with six inches of CA6 (Coarse Aggregate 6). The area for excavation is shown on Drawing 0007 in Appendix B.

Table 3-1. Estimated Excavation Limits

Description	Disposal	Sq. Feet	Depth	Bulking	Cu. Yds.
Excavation	Landfill	1853	0' – 10'	1.05	721
TOTALS					721

CW³M Company, Inc. personnel will be on-site during all remediation activities to perform contractor coordination and scheduling, maintenance of manifests, and all required technical documentation, sample collection and oversight of work for compliance with the approved CAP.

At the close of each day, if the excavation remains open, the excavation area will be scraped clean, shored up and protected from access with use of caution fences and barricades. Should excavation activities cause a dust control or nuisance problem, measures such as wetting will be employed to mitigate fugitive dust. Throughout the excavation, the access truck paths will be scraped clean to prevent tracking of soil onto the street. Should tracking still occur, the street or highway will also be scraped clean.

A safe distance will be maintained near structures (e.g., sidewalks, roadways, utilities and/or property boundaries) and, where weak soils are encountered, by sloping the excavation at a 1:1 slope. Should excavation walls begin to collapse, measures will be taken to secure them, and they will be benched back until a stable wall slope is achieved.

Soil to groundwater modeling in accordance with 35 Ill. Adm. Code § 742 has been conducted, and shows groundwater contamination could travel upwards of 64 feet in any direction for the remaining contamination after the excavation is complete. Since groundwater was never found at the site it is unclear which direction groundwater flows in so flow in all directions will be assumed.

With the removal of the highly contaminated soil in the area of Tank 1, the remaining contamination found at the site would model onto off site properties. To address the potential CW³M proposes a groundwater ordinance for the affected properties and the affected right-of-ways of North East Adams Street and Spalding Avenue. The only additional restriction required would be a construction worker caution in the area of early action sample 11.

The attached Budget includes the preparation of this report, as well as the preparation of the CACR. The recording of the No Further Remediation (NFR) letter is also included in the proposed budget.

3.1 CURRENT AND PROJECTED USES OF THE SITE

The site is located near downtown Peoria and is surrounded by both commercial properties and townhomes; the site lies a few blocks north of Peoria Lake/Illinois River. Currently, the site is closed and there are no known plans on it for the future until such time as environmental issues are resolved. The likely usage would be commercial or industrial.

3.2 INSTITUTIONAL CONTROLS PROPOSED

The site has public water and after the investigation of water well 74200, it is not within the setback of any known potable well, so a groundwater ordinance is being proposed for the all the affected properties. A Tier 2 Industrial-Commercial use restriction will be imposed on the site. The only additional restriction required would be a construction worker caution in the area of early action sample 11. Since an excavation is proposed to eliminate all contaminated soil above Tier 2 CUOs in the area around WC-1 and WC-3, sampling of the floor and wall of the excavation will be conducted to further determine the need for restrictions on the site.

3.3 WATER SUPPLY WELL SURVEY

A survey of water supply wells for the purpose of identifying and locating all community water supply (CWS) wells within 2,500 feet of the UST system and all potable water supply wells within 200 feet of the UST system has been completed. The Illinois State Water Survey (ISWS), the Illinois State Geological Survey (ISGS) and the IEPA Division of Public Water Supplies were contacted via the Source Water Assessment Program (SWAP) online.

The ISGS, ISWS, and IEPA Division of Public Water Supplies were accessed online on October 6, 2016 (EPA.STATE.IL.US, 2016). The response indicated that twenty ISGS wells are located within 2,500 feet of the site. The site is within the setback of 2 of the potable wells listed on Table 3-1. Well 43700 is described as an engineering well in the listing. Well 74200 was described as a water well installed by a creamery. CW³M has contacted the current owner of the former creamery site, who stated that only city provided water was used at the facility, and they did not believe that the well still existed. On August 23, 2018, a letter was sent to the Peoria Public Health Department requesting any information on the water well. On August 29, 2018, a reply was received stating that they had no records of the water well. Documentation of the correspondence sent and received are included in Appendix H. On September 4, 2018, CW³M personnel went to the creamery site to check for the presence of the water well but found no evidence of the well. With the investigation of the well yielding no verification of the well it has been determined that the well no longer exist or is no longer able to be used.

Table 3-2. Water Supply Well Information

Well ID	Type	Distance From USTs (*feet*)	Depth (*feet*)	Setback Zone (*feet*)
73600	ISGS	2,300	98	200
74900	ISGS	2,250	70	200
74600	ISGS	1,929	90	200
73800	ISGS	1,623	67	200
73100	ISGS	1,477	62	200
74100	ISGS	823	87	200
75000	ISGS	854	877	200
48100	ISGS	746	29	200
75200	ISGS	731	47	200
41600	ISGS	1,710	36	200
44600	ISGS	1,240	37	200
44100	ISGS	1,240	37	200
44700	ISGS	855	44	200
43700	ISGS	140	36	200
45100	ISGS	253	51	200
74200	ISGS	185	73	200
43500	ISGS	463	42	200
40500	ISGS	2,283	34	200
99700	ISGS	2,070	71	200
44300	ISGS	900	36	200

3.4 CLOSURE

Upon approval of the CAP and Budget and implementation of the proposed activities, the excavation wall and floor samples will be evaluated to determine the need for using additional restrictions or additional remediation on site, if warranted. Once all CAP activities conclude, a Corrective Action Completion Report (CACR) for both incidents at the site will be submitted to the IEPA. The closure report will be accompanied by a certification from an Illinois Registered Professional Engineer.

4.0 REFERENCES

City-Data.com, 2016. Peoria, Illinois, www.city-data.com, accessed December 28, 2016.

CW³M, 2016. CW³M Company, Inc., *20-Day Certification,* S&S Infinite Group, Peoria, Illinois, December 2, 2016.

CW³M, 2016a. CW³M Company, Inc., *Early Action Extension Request,* S&S Infinite Group, Peoria, Illinois, December 20, 2016.

CW³M, 2017. CW³M Company, Inc., *45 Day Report,* S&S Infinite Group, Peoria, Illinois, January 19, 2017.

CW³M, 2017a. CW³M Company, Inc., *45 Day Report Addendum,* S&S Infinite Group, Peoria, Illinois, February 10, 2017.

CW³M, 2017b. CW³M Company, Inc., *Site Investigation Completion Report,* S&S Infinite Group, Peoria, Illinois, October, 10, 2017.

CW³M, 2018. CW³M Company, Inc., *Corrective Action Plan and Budget,* S&S Infinite Group, Peoria, Illinois, March 20, 2018.

EPA.STATE.IL.US, 2016. Source Water Assessment Program, *Water Well Survey Map* *www.maps.epa.state.il.us*, accessed October 6, 2016.

IEPA, 2015. Illinois Environmental Protection Agency, *Corrective Action Plan Correspondence (2014-0963)*, S&S Infinite Group, Peoria, Illinois, July 21, 2015.

IEPA, 2016. Illinois Environmental Protection Agency, *Early Action Extension Report Correspondence*, S&S Infinite Group, Peoria, Illinois, December 28, 2016.

IEPA 2017. Illinois Environmental Protection Agency, *45 Day Report Correspondence*, S&S Infinite Group, January 26, 2017.

IEPA 2017a. Illinois Environmental Protection Agency, *45 Day Correspondence*, May 17, 2017.

IEPA, 2018a. Illinois Environmental Protection Agency, *Site Investigation Completion Report Correspondence*. S&S Infinite Group. February 2, 2018.

IEPA, 2018b. Illinois Environmental Protection Agency, *Corrective Action Plan and Budget Correspondence*. S&S Infinite Group. June 20, 2018.

Marlin, 2015. Marlin Environmental, *Corrective Action Plan (2014-0963)*, S&S Infinite Group, Peoria, Illinois, July 2, 2015.

OSFM, 2016. Illinois Office of the State Fire Marshal, Permit for Removal of Underground Storage Tanks(s), S&S Infinite Group, Peoria, Illinois, December 12, 2016.

APPENDIX A

CORRECTIVE ACTION PLAN FORM

Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

The Agency is authorized to require this information under Section 4 and Title XVI of the Environmental Protection Act (415 ILCS 5/4, 5/57 – 57.17). Failure to disclose this information may result in a civil penalty of not to exceed $50,000.00 for the violation and an additional civil penalty of not to exceed $10,000.00 for each day during which the violation continues (415 ILCS 5/42). Any person who knowingly makes a false material statement or representation, orally or in writing, in any label, manifest, record, report, permit, or license, or other document filed, maintained or used for the purpose of compliance with Title XVI commits a Class 4 felony. Any second or subsequent offense after conviction hereunder is a Class 3 felony (415 ILCS 5/44 and 57.17). This form has been approved by the Forms Management Center.

Leaking Underground Storage Tank Program
Corrective Action Plan

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A. Site Identification

IEMA Incident # (6- or 8-digit): 20161089 IEPA LPC# (10-digit): 1430560114

Site Name: S&S Infinite Group, Inc./ DBA- Downtown 66

Site Address (Not a P.O. Box): 400 North East Adams Street

City: Peoria County: Peoria ZIP Code: 61603

B. Site Information

1. Will the owner or operator seek reimbursement from the Underground Storage Tank Fund? ☑ Yes ☐ No
2. If yes, is the budget attached? ☑ Yes ☐ No
3. Is this an amended plan? ☐ Yes ☑ No
4. Identify the material(s) released: Gasoline, Diesel Fuel, Used Oil
5. This Corrective Action Plan is submitted pursuant to:
   a. 35 Ill. Adm. Code 731.166 ☐
      The material released was:
      -petroleum ☐
      -hazardous substance (see Environmental Protection Act Section 3.215) ☐
   b. 35 Ill. Adm. Code 732.404 ☐
   c. 35 Ill. Adm. Code 734.335 ☑

C. Proposed Methods of Remediation

1. Soil Tier 2 Industrial/Commercial CUOs, Construction Worker Caution, future excavation
2. Groundwater Groundwater use restriction, Highway Authority Agreement

D. Soil and Groundwater Investigation Results

(for incidents subject to 35 Ill. Adm. Code 731 only or 732 that were classified using Method One or Two, if not previously provided)

Provide the following:

1. Description of investigation activities performed to define the extents of soil and/or groundwater contamination;
2. Analytical results, chain-of-custody forms, and laboratory certifications;
3. Tables comparing analytical results to applicable remediation objectives;

4. Boring logs;
5. Monitoring well logs; and
6. Site maps meeting the requirements of 35 Ill. Adm. Code 732.110(a) or 734.440 and showing:
   a. Soil sample locations;
   b. Monitoring well locations; and
   c. Plumes of soil and groundwater contamination.

E. Technical Information - Corrective Action Plan

Provide the following:

1. Executive summary identifying the objectives of the corrective action plan and the technical approach to be utilized to meet such objectives;
   a. The major components (e.g., treatment, containment, removal) of the corrective action plan;
   b. The scope of the problems to be addressed by the proposed corrective action; and
   c. A schedule for implementation and completion of the plan;
2. Identification of the remediation objectives proposed for the site;
3. A description of the remedial technologies selected:
   a. The feasibility of implementing the remedial technologies;
   b. Whether the remedial technologies will perform satisfactorily and reliably until the remediation objectives are achieved; and
   c. A schedule of when the technologies are expected to achieve the applicable remediation objectives;
4. A confirmation sampling plan that describes how the effectiveness of the corrective action activities will be monitored during their implementation and after their completion;
5. A description of the current and projected future uses of the site;
6. A description of engineered barriers or institutional controls that will be relied upon to achieve remediation objectives:
   a. an assessment of their long-term reliability;
   b. operating and maintenance plans; and
   c. maps showing area covered by barriers and institutional controls;
7. The water supply well survey:
   a. Map(s) showing locations of community water supply wells and other potable wells and the setback zone for each well;
   b. Map(s) showing regulated recharge areas and wellhead protection areas;
   c. Map(s) showing the current extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;
   d. Map(s) showing the modeled extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;
   e. Tables listing the setback zone for each community water supply well and other potable water supply wells;
   f. A narrative identifying each entity contacted to identify potable water supply wells, the name and title of each person contacted, and any field observations associated with any wells identified; and
   g. A certification from a Licensed Professional Engineer or Licensed Professional Geologist that the survey was conducted in accordance with the requirements and that documentation submitted includes information obtained as a result of the survey (certification of this plan satisfies this requirement);

8. Appendices:
   a. References and data sources report that are organized; and
   b. Field logs, well logs, and reports of laboratory analyses;
9. Site map(s) meeting the requirements of 35 Ill. Adm. Code 732.110(a) or 734.440;
10. Engineering design specifications, diagrams, schematics, calculations, manufacturer's specifications, etc.;
11. A description of bench/pilot studies;
12. Cost comparison between proposed method of remediation and other methods of remediation;
13. For the proposed Tier 2 or 3 remediation objectives, provide the following:
   a. The equations used;
   b. A discussion of how input variables were determined;
   c. Map(s) depicting distances used in equations; and
   d. Calculations; and
14. Provide documentation to demonstrate the following for alternative technologies:
   a. The proposed alternative technology has a substantial likelihood of successfully achieving compliance with all applicable regulations and remediation objectives;
   b. The proposed alternative technology will not adversely affect human health and safety or the environment;
   c. The owner or operator will obtain all Illinois EPA permits necessary to legally authorize use of the alternative technology;
   d. The owner or operator will implement a program to monitor whether the requirements of subsection (14)(a) have been met;
   e. Within one year from the date of Illinois EPA approval, the owner or operator will provide to the Illinois EPA monitoring program results establishing whether the proposed alternative technology will successfully achieve compliance with the requirements of subsection (14)(a); and
   f. Demonstration that the cost of alternative technology will not exceed the cost of conventional technology and is not substantially higher than at least two other alternative technologies, if available and technically feasible.

F. Exposure Pathway Exclusion

Provide the following:

1. A description of the tests to be performed in determining whether the following requirements will be met:
   a. Attenuation capacity of the soil will not be exceeded for any of the organic contaminants;
   b. Soil saturation limit will not be exceeded for any of the organic contaminants;
   c. Contaminated soils do not exhibit any of the reactivity characteristics of hazardous waste per 35 Ill. Adm. Code 721.123;
   d. Contaminated soils do not exhibit a pH ≤ 2.0 or ≥ 12.5; and
   e. Contaminated soils which contain arsenic, barium, cadmium, chromium, lead, mercury, or selenium (or their associated salts) do not exhibit any of the toxicity characteristics of hazardous waste per 35 Ill. Adm. Code 721.124.
2. A discussion of how any exposure pathways are to be excluded.

G. Signatures

All plans, budgets, and reports must be signed by the owner or operator and list the owner's or operator's full name, address, and telephone number.

UST Owner or Operator

Name S & S Infinite Group, Inc.

Contact Syed Muneeb

Address 400 North East Adams Street

City Peoria

State Illinois

Zip Code 61603

Phone (309) 453-2280

Signature

Date 11/3/18

Consultant

Company CWM Company, Inc.

Contact Carol L. Rowe, P.G.

Address 701 W. South Grand Avenue

City Springfield

State Illinois

Zip Code 62704

Phone (217) 522-8001

Signature

Date November 13, 2018

Email: cwm@cwmcompany.com

I certify under penalty of law that all activities that are the subject of this plan were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in this plan has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 731, 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

Licensed Professional Engineer or Geologist

Name Vince E. Smith, P.E.

Company CWM Comapny, Inc.

Address 701 W. South Grand Avenue

City Springfield

State Illinois

Zip Code 62704

Phone (217) 522-8001

Ill. Registration No. 062-046118

License Expiration Date 11/30/19

Signature

Date 11/12/18

L.P.E. or L.P.G. Seal

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APPENDIX B

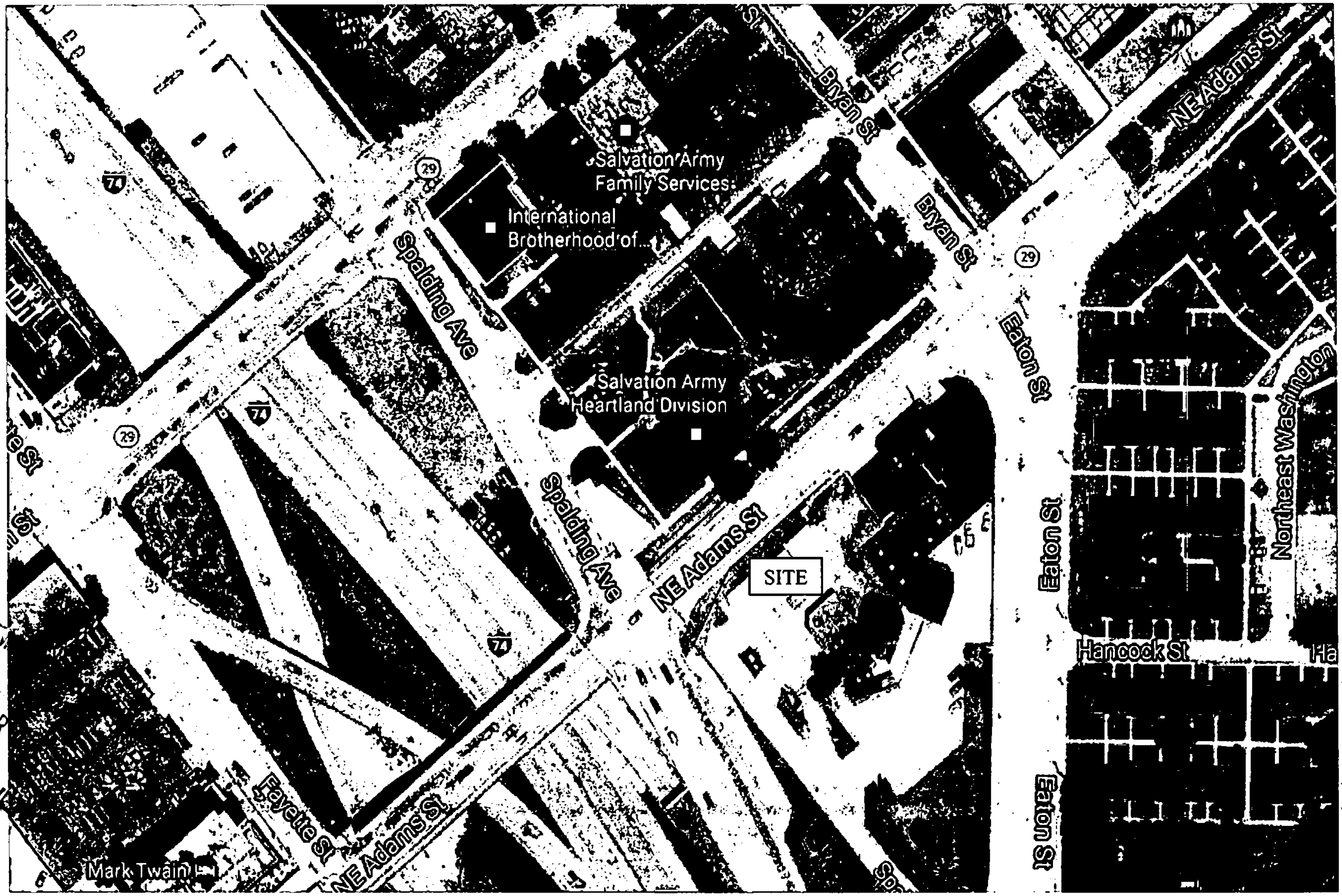
SITE MAPS AND ILLUSTRATIONS

CORRECTIVE ACTION PLAN AMENDMENT

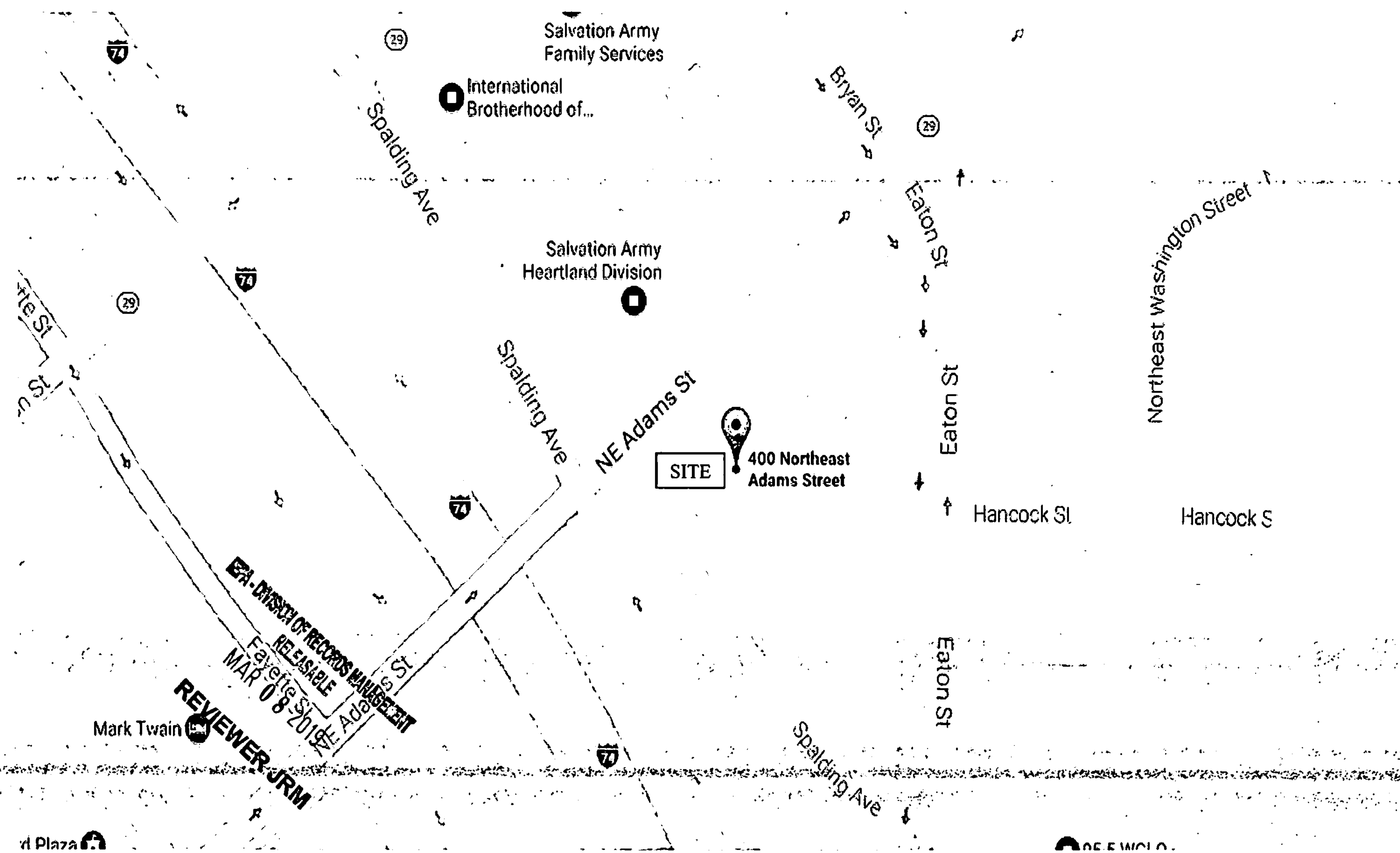
S&S Infinite Group
Peoria, Illinois

INDEX OF DRAWINGS

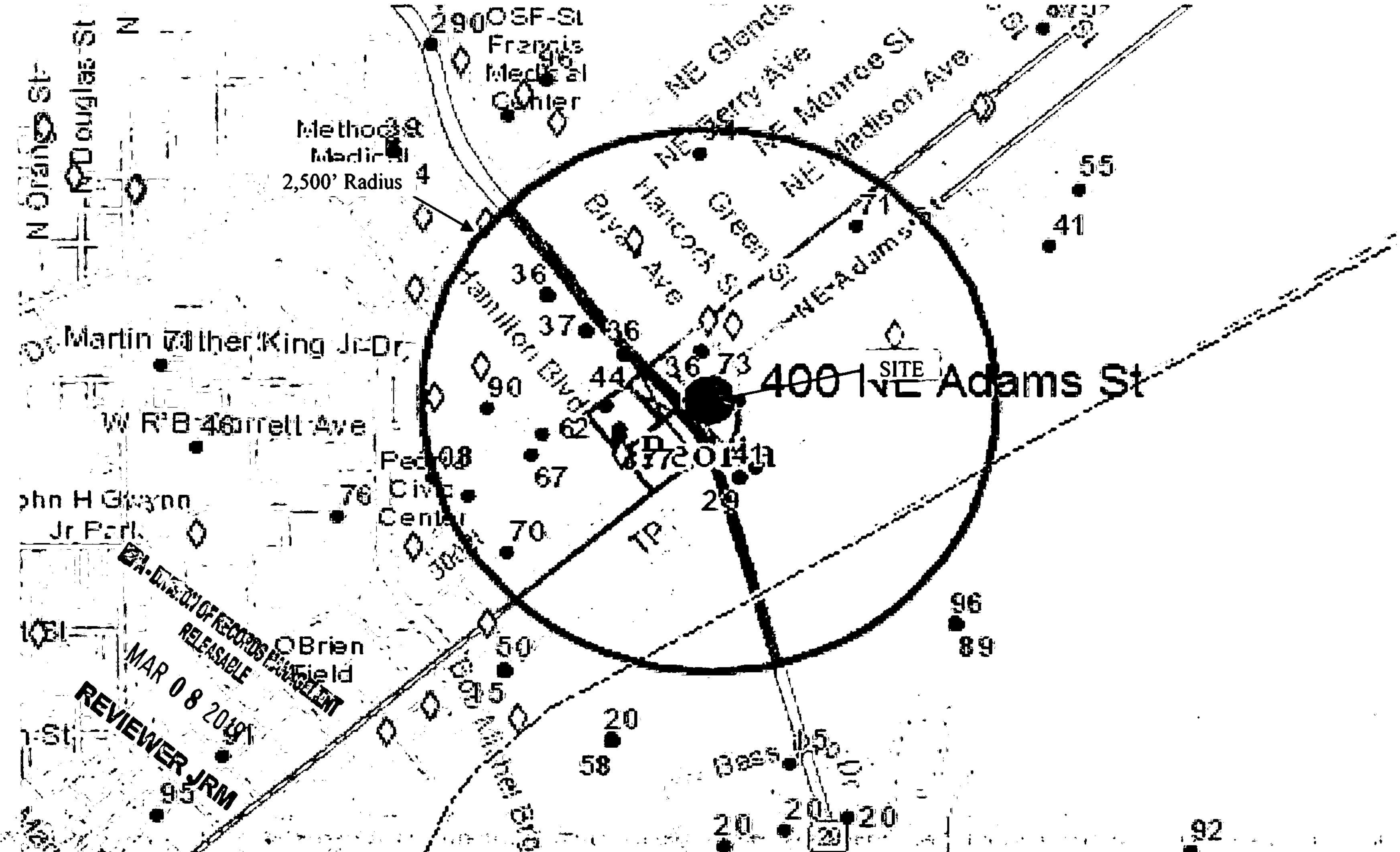
Drawing Number	Description
0001A	Site Location Map
0001B	Surrounding Populations Map
0001C	Water Supply Well Map
0002	Site Map
0003A	Early Action Excavation Map
0003B	Early Action Sample Location Map
0004	Soil Boring Location Map
0005A	Soil Contamination Values Map (0-5 feet)
0005B	Soil Contamination Values Map (5-10 feet)
0005C	Soil Contamination Values Map (10-15 feet)
0005D	Soil Contamination Values Map (15-20 feet)
0006	Soil Contamination Plume Map
0007	Proposed Excavation Area Map
0008	Proposed Construction Worker Caution Zone Map
0009	Proposed Groundwater Ordinance Map
0010	TACO Parameters Map
0011	TACO Modeling Map
0012	Highway Authority Agreement Map



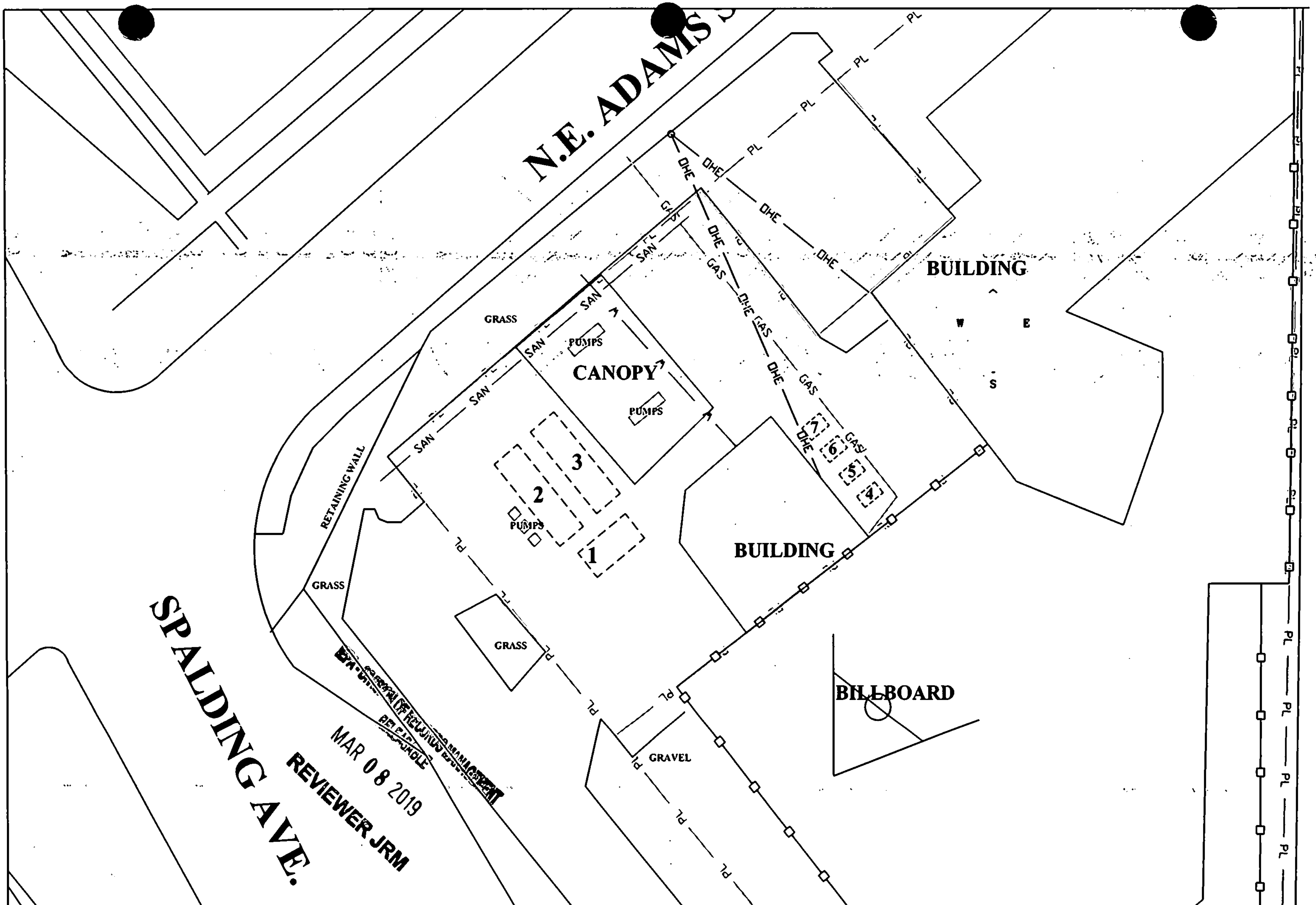
CW³M Company, Inc. 701 South Grand Avenue West Springfield, IL 62704 (217)-522-8001	**Surrounding Populations Map** 400 North East Adams Street Peoria, Illinois	Drawn By: MJS Reviewed By: CLR Drawing 0001B SP.doc



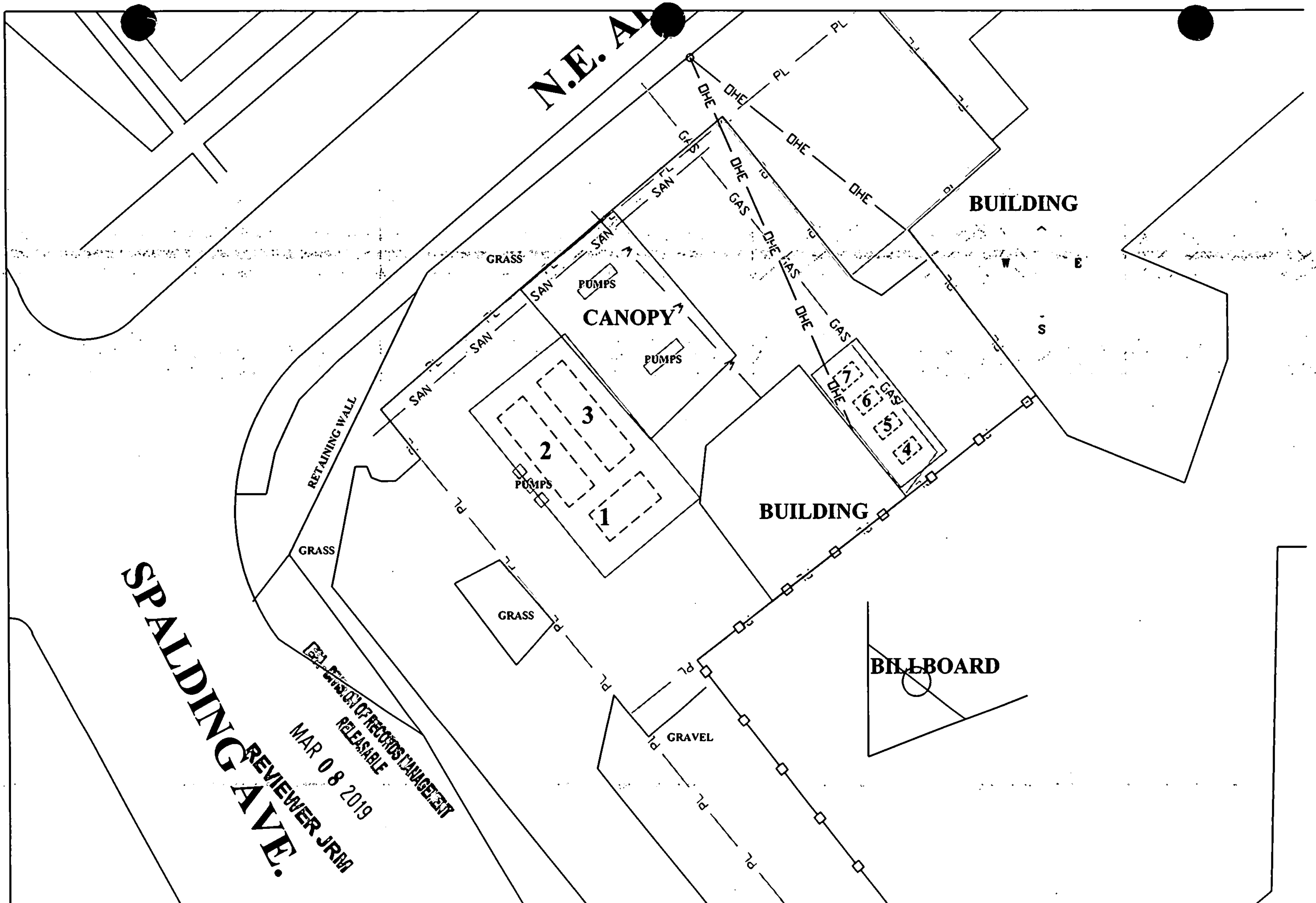
CW^{3}M Company, Inc. 701 South Grand Avenue West Springfield, IL 62704 (217)-522-8001	**Site Location Map** 400 North East Adams Street Peoria, Illinois	Drawn By: MJS Reviewed By: CLR Drawing 0001A SiteMap.doc



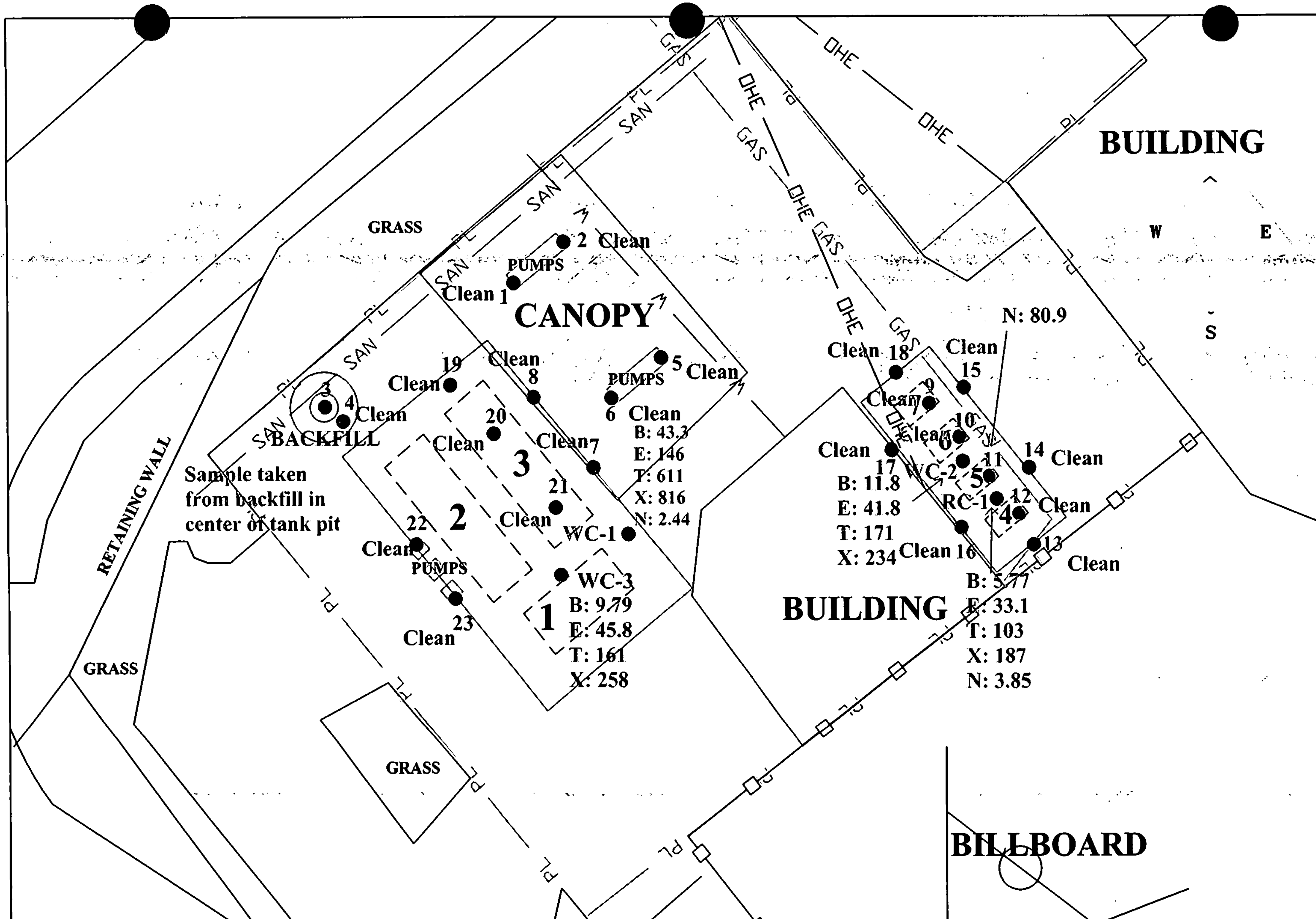
CW[3]M Company, Inc. 701 South Grand Avenue West Springfield, IL 62704 (217)-522-8001	**Water Supply Well Map** 400 North East Adams Street Peoria, Illinois	Drawn By: MJS Reviewed By: CLR Drawing: 0001C Wellmap.doc



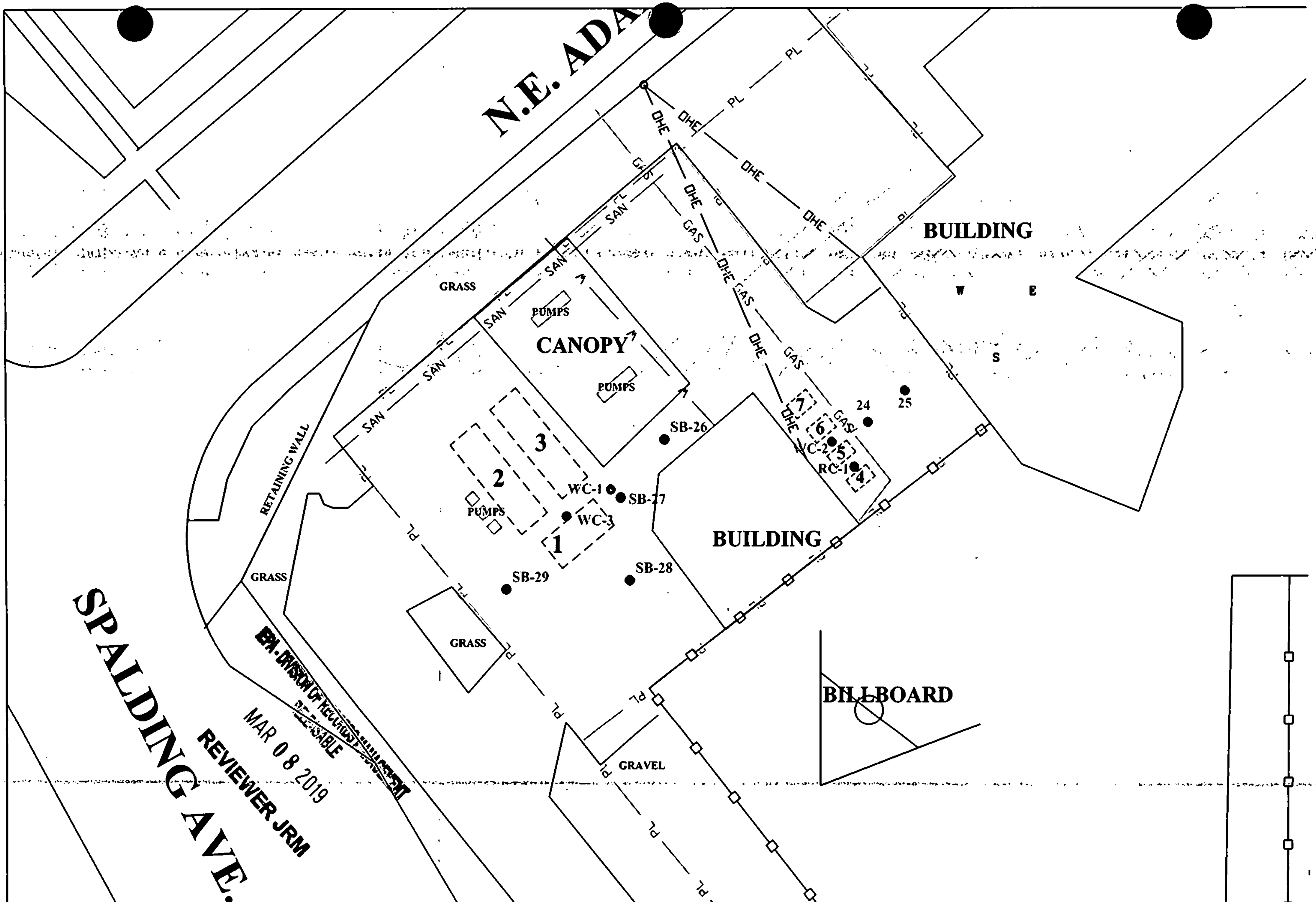
CW^{3}M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SITE MAP	DATE: 1/12/17 REVISED DATE: SCALE 1"=30' DRAWING 0002	DRAWN BY: MJS REVISED BY: REVIEWED BY: CLR SITE.DWG



CWM COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	EARLY ACTION EXCAVATION MAP	DATE: 1/12/17 REVISED DATE: SCALE 1"=30' DRAWING: 0003A	DRAWN BY: MJS REVISED BY: REVIEWED BY: CLR EAEXC.DWG

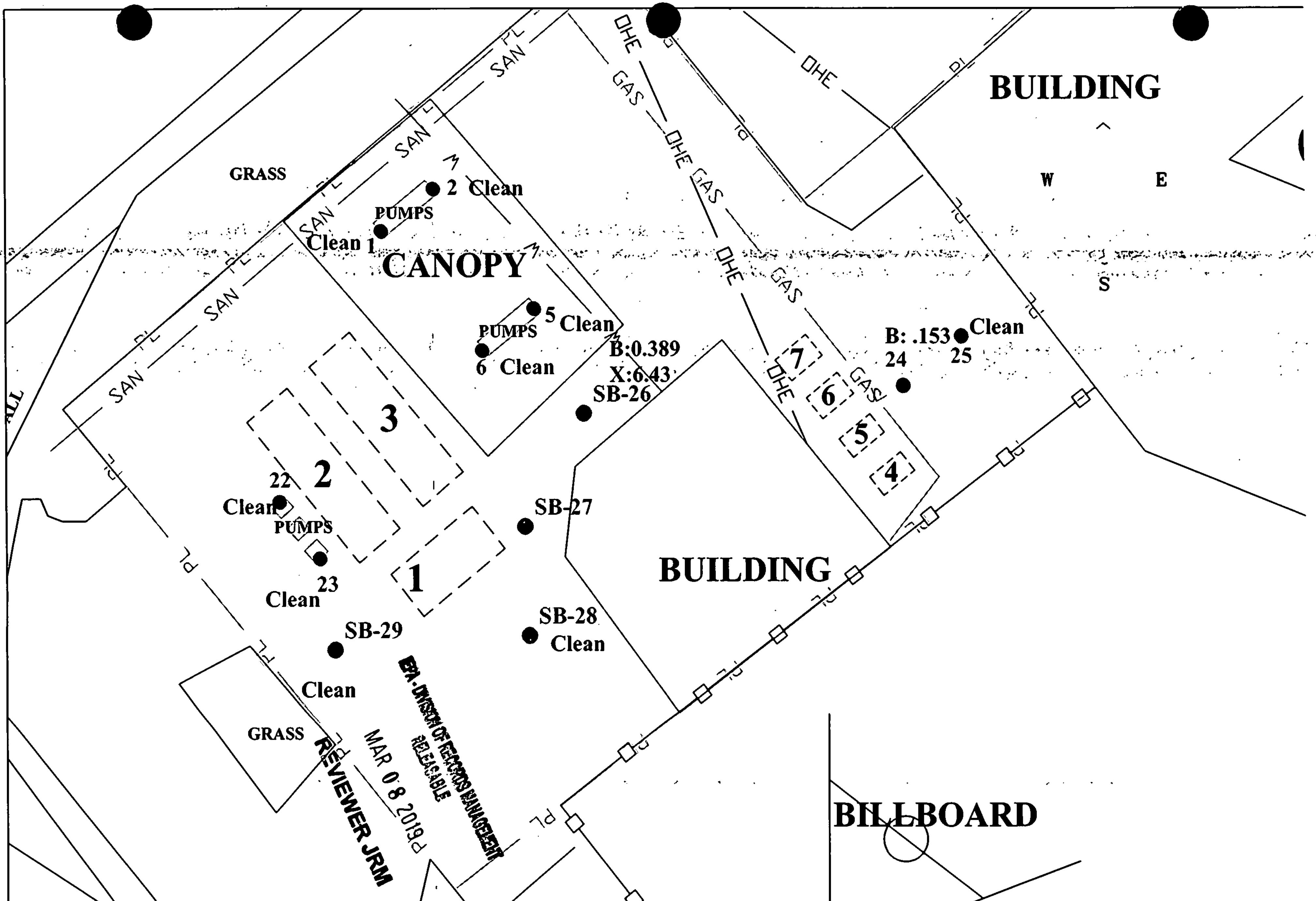


CWM COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, LLC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	EARLY ACTION SAMPLE LOCATION MAP	DATE: 2/7/17 REVISED DATE: SCALE 1"=30' DRAWING: 0003B	DRAWN BY: MJS REVISED BY: REVIEWED BY: CLR EAVAL.DWG

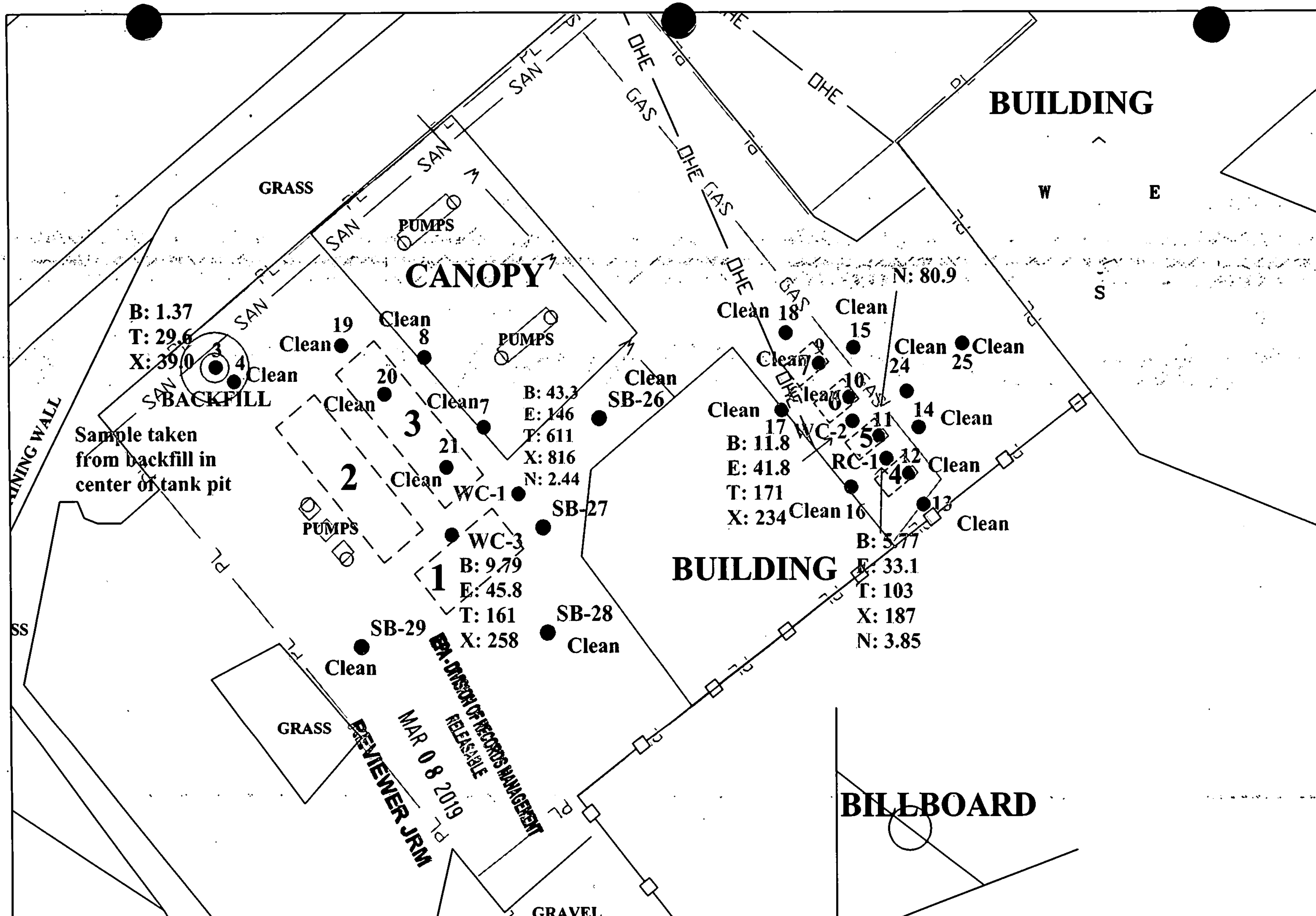


CWM COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL BORING LOCATION MAP	DATE: 1/12/17 REVISED DATE: SCALE 1"=30' DRAWING: 0004	DRAWN BY: MJS REVISED BY: REVIEWED BY: CLR SBLOC.DWG

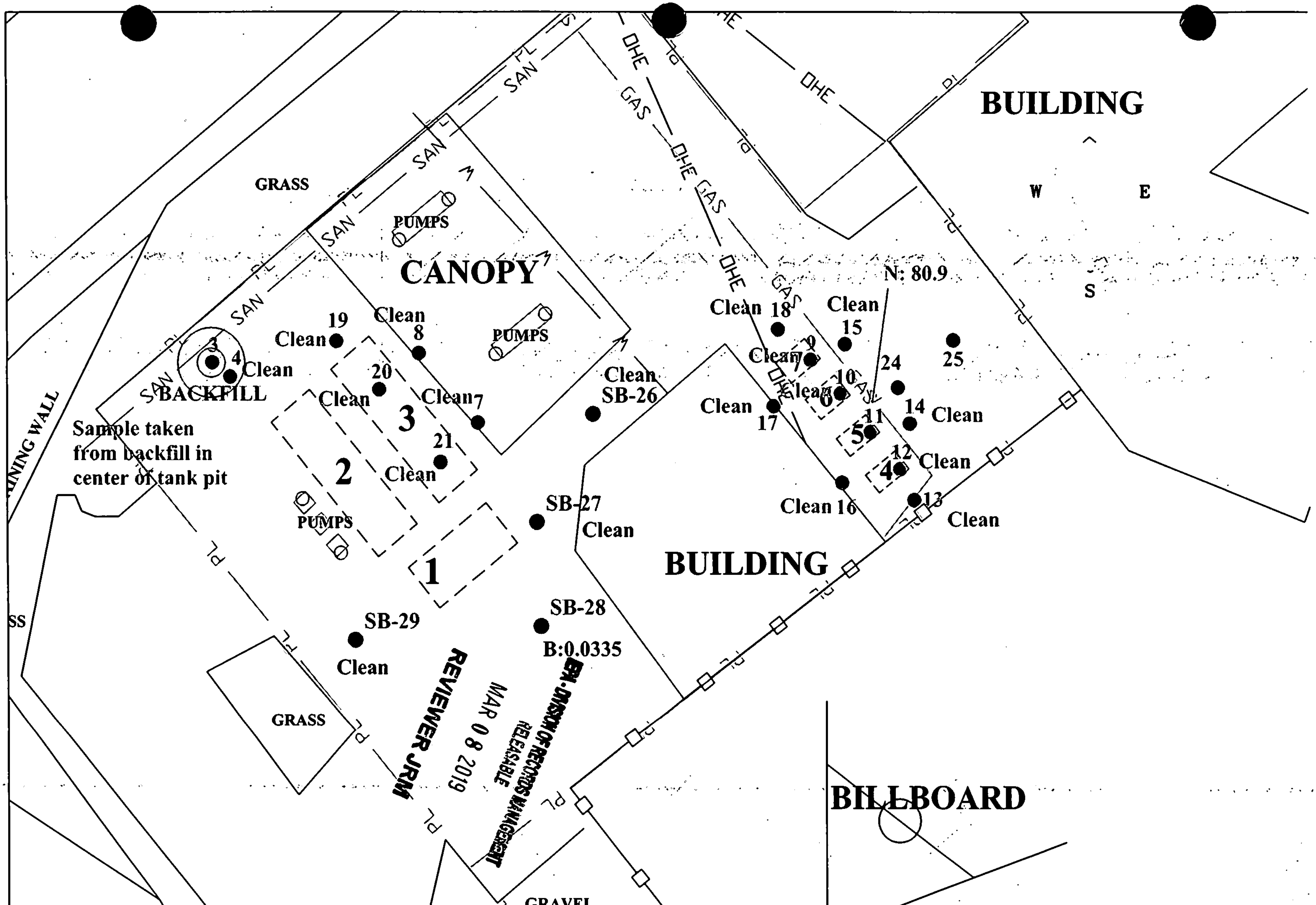
000244



CWM COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, LLC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL CONTAMINATION VALUES MAP (0-5 FEET)	DATE: 7/25/17 REVISED DATE: 9/18/2018 SCALE 1"=40' DRAWING: 0005A	DRAWN BY: MTK REVISED BY: MTK REVIEWED BY: CLR SOILCON0-5.DWG

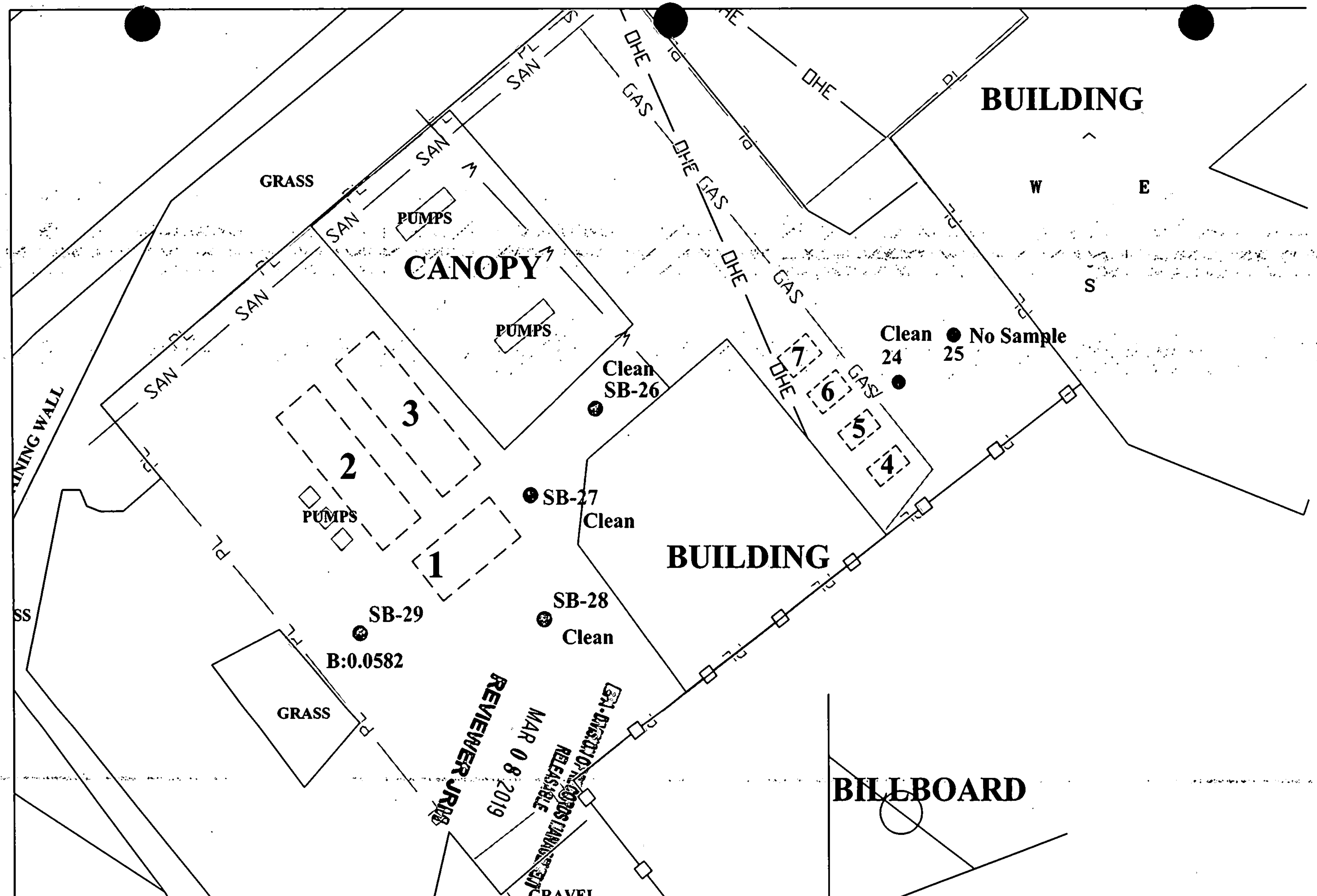


CW3M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL CONTAMINATION VALUE MAP (5-10 feet)	DATE: 7/25/17 REVISED DATE: 9/18/2018 SCALE 1"=30' DRAWING: 0005B	DRAWN BY: MTK REVISED BY: MTK REVIEWED BY: CLR SOILVAL.DWG



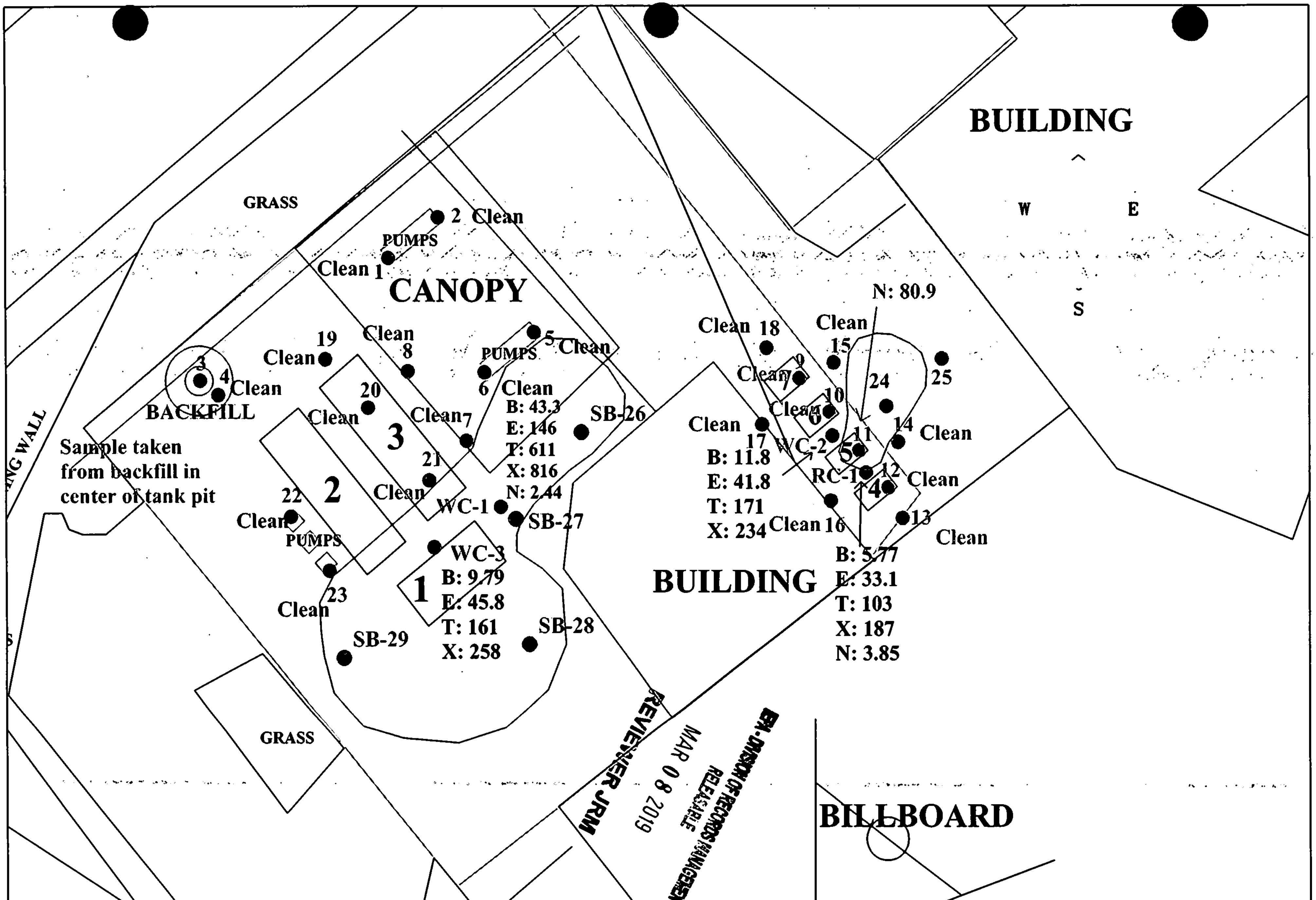
CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL CONTAMINATION VALUE MAP (10-15 feet)	DATE: 7/25/17 REVISED DATE: 9/18/2018 SCALE 1"=30' DRAWING: 0005C	DRAWN BY: MTK REVISED BY: MTK REVIEWED BY: CLR SOILVAL.DWG

000247



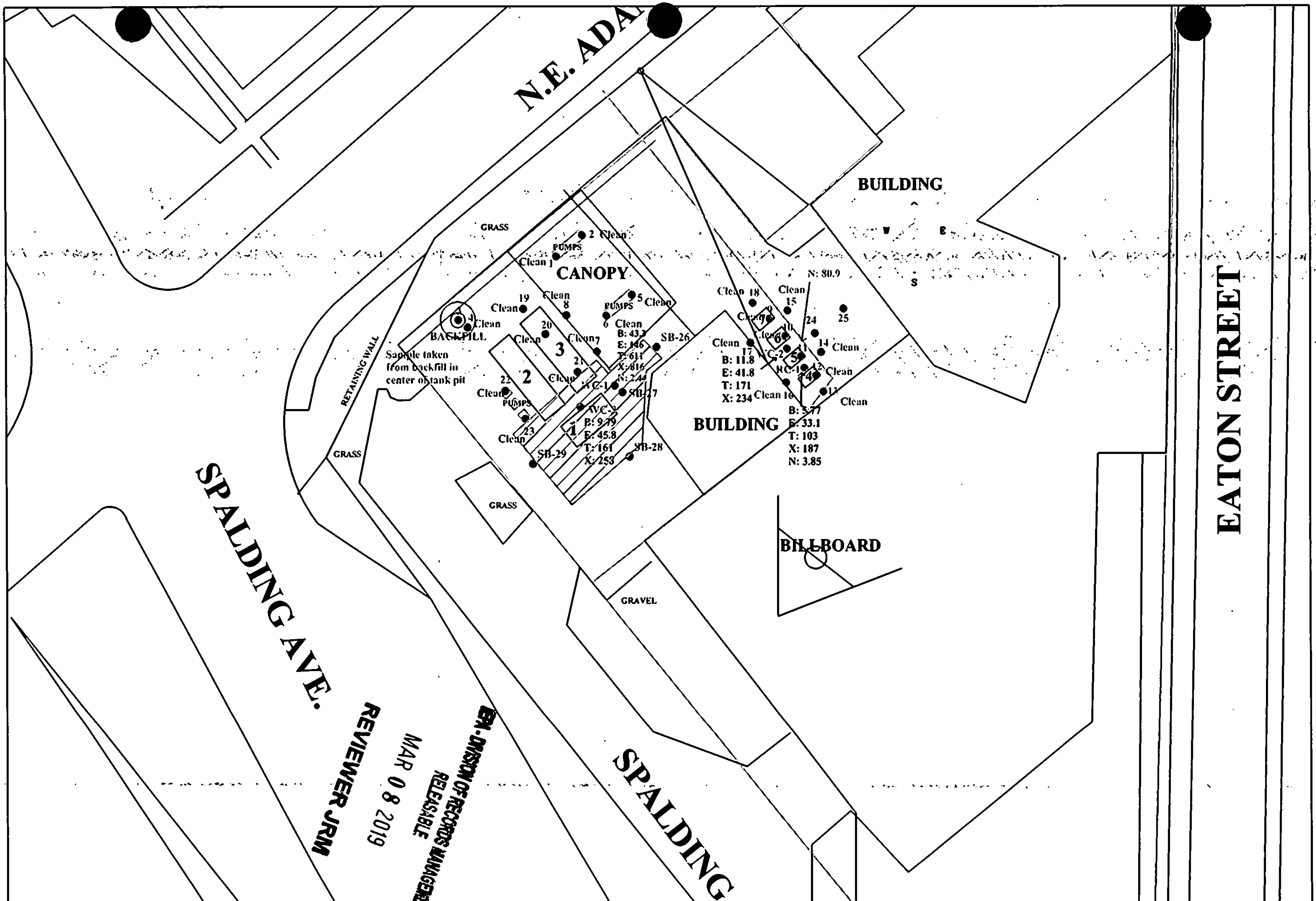
CWM COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL CONTAMINATION VALUE MAP (15-20 feet)	DATE: 7/25/17 REVISED DATE: 9/18/2018 SCALE 1"=30' DRAWING: 0005D	DRAWN BY: MTK REVISED BY: MTK REVIEWED BY: CLR SOILVAL.DWG

000248

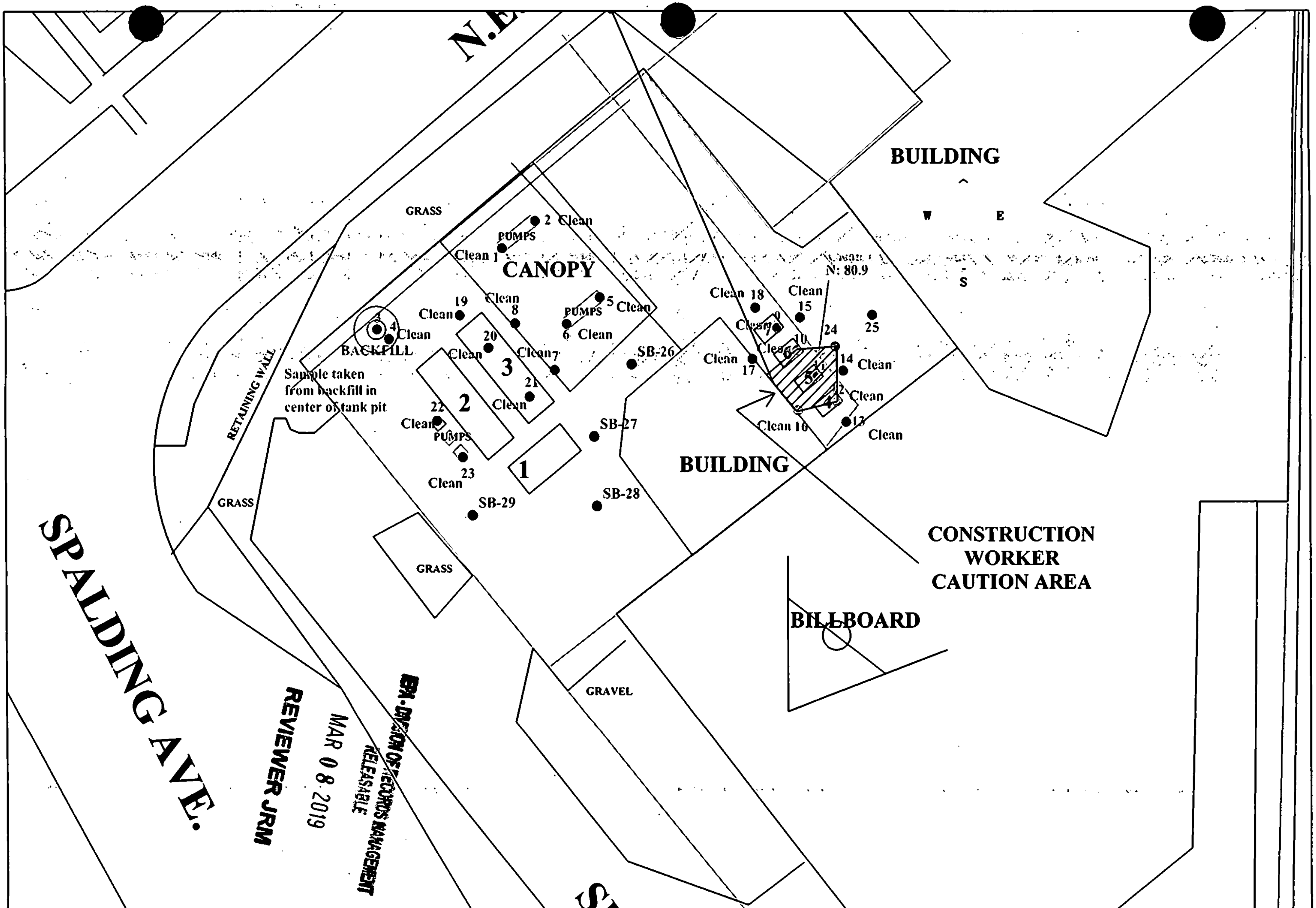


CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	SOIL CONTAMINATION PLUME MAP 2016-1089	DATE: 7/25/17 REVISED DATE: 9/18/2018 SCALE 1"=30' DRAWING: 0006	DRAWN BY: MTK REVISED BY: MTK REVIEWED BY: CLR SOILPLU.DWG

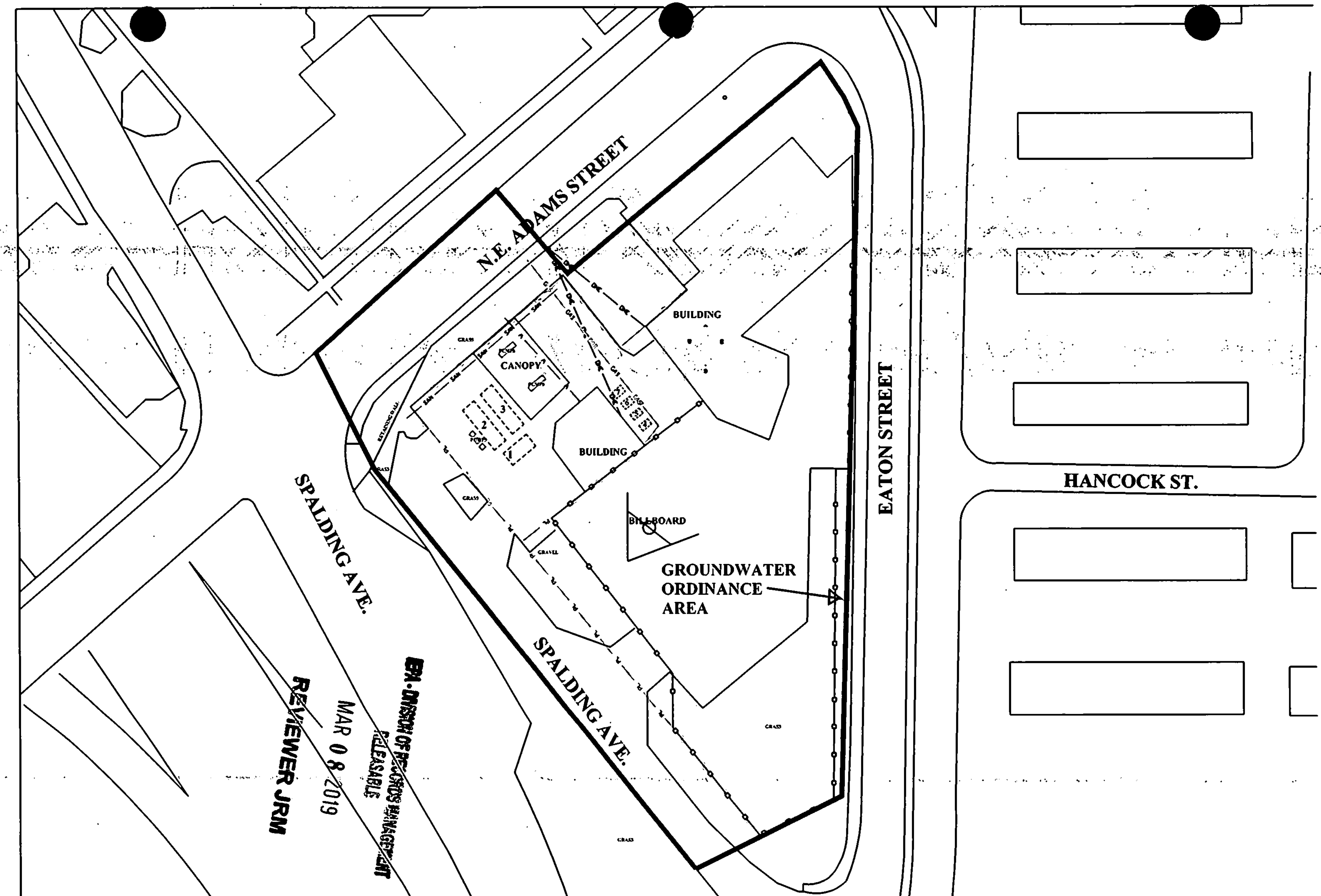
000249



CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	PROPOSED EXCAVATION AREA MAP	DATE: 2/22/18 REVISED DATE: 9/18/2018 SCALE 1"=30' DRAWING: 0007	DRAWN BY: MTK REVISED BY: MTK REVIEWED BY: CLR SOILPLU.DWG

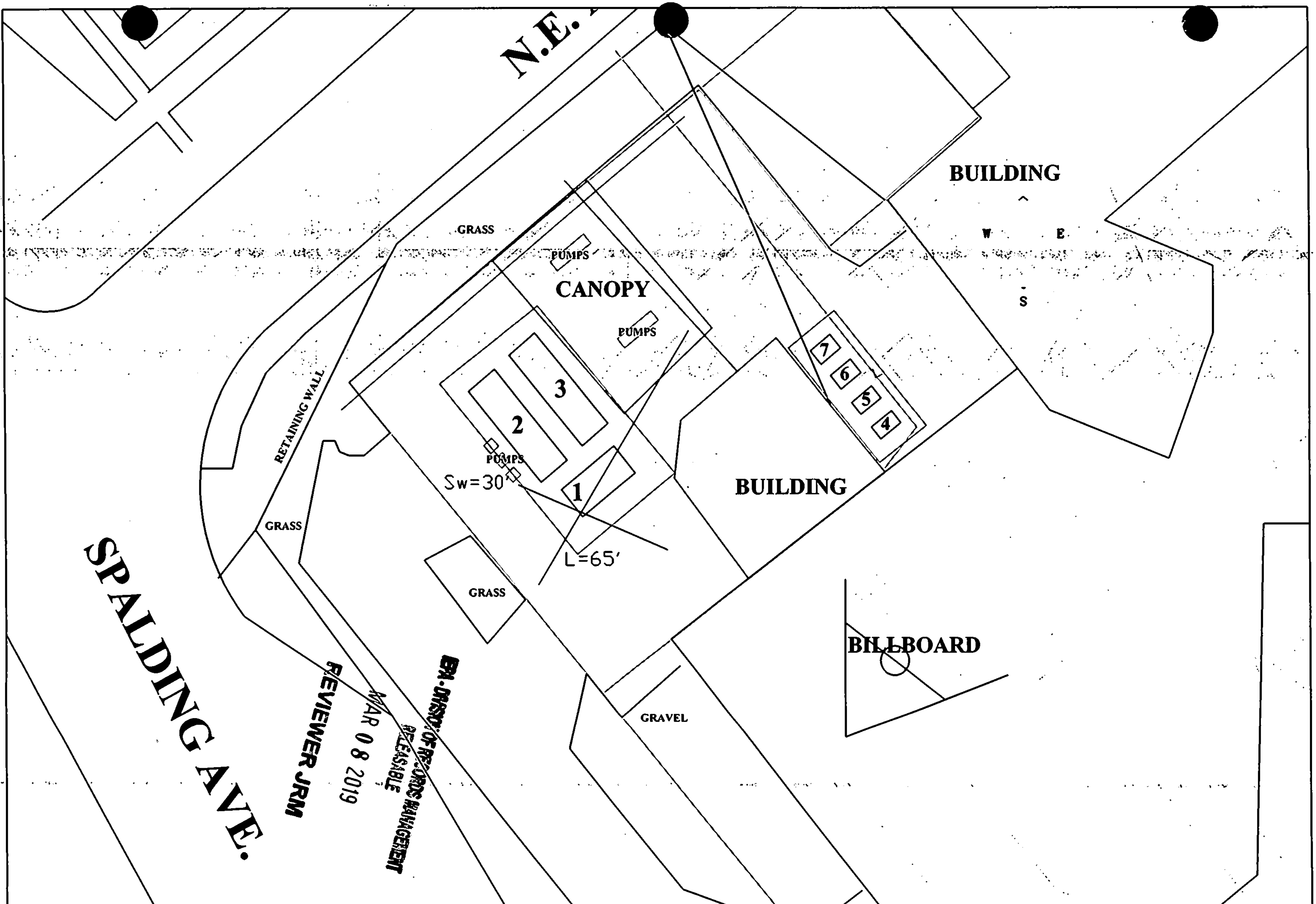


CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	CONSTRUCTION WORKER CAUTION AREA MAP	DATE: 3/14/18 REVISED DATE: SCALE 1"=30' DRAWING: 0008	DRAWN BY: VES REVISED BY: REVIEWED BY: CLR CWCAUTION.DWG

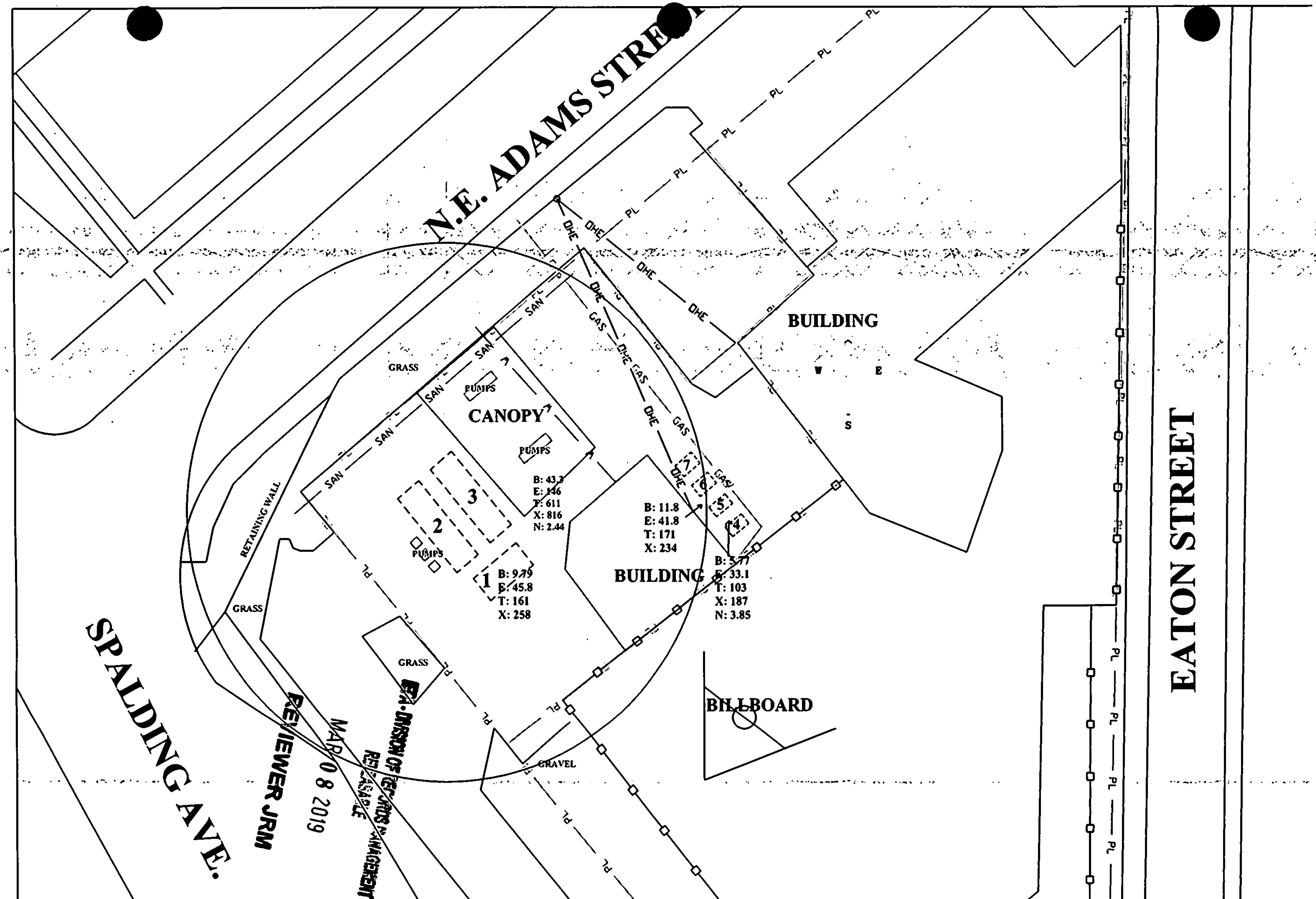


CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	PROPOSED GROUNDWATER ORDINANCE MAP	DATE: 9/24/2018 REVISED DATE: SCALE 1"=60' DRAWING 0009	DRAWN BY: MTK REVISED BY: REVIEWED BY: CLR GWRESTR.DOC

000252



CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	TACO PARAMETER MAP	DATE: 3/14/18 REVISED DATE: SCALE 1"=30' DRAWING: 0010	DRAWN BY: VES REVISED BY: REVIEWED BY: CLR TACO.DWG



CW³M COMPANY, INC. 701 W. SOUTH GRAND SPRINGFIELD, IL. 62704 (217) 522-8001	S&S INFINITE GROUP, INC. PEORIA, ILLINOIS INCIDENT #2016-1089 PEORIA COUNTY	TACO MODELING MAP	DATE: 9/24/2018 REVISED DATE: SCALE 1"=30' DRAWING 0011	DRAWN BY: MTK REVISED BY: REVIEWED BY: CLR TACOMODEL.DOC

000254

APPENDIX C

OSFM ELIGIBILITY DETERMINATION

CORRECTIVE ACTION PLAN AMENDMENT
S&S Infinite Group
Peoria, Illinois

Office of the Illinois
State Fire Marshal

2/15/2017

S and S Infinite Group Incorporated
400 North East Adams Street
Peoria, IL 616034202

In Re: Facility No. 3010480
IEMA Incident No. 20161089
Downtown 66
400 North East Adams Street
Peoria, Peoria, IL 616034202

Dear Applicant:

The Reimbursement Eligibility and Deductible Application received on February 15, 2017 for the above referenced occurrence has been reviewed. The following determinations have been made based upon this review.

It has been determined that you are eligible to seek payment of costs in excess of $5,000. The costs must be in response to the occurrence referenced above and associated with the following tanks:

Eligible Tanks

Tank 3 10000 gallon Gasoline
Tank 4 350 gallon Gasoline
Tank 5 350 gallon Gasoline
Tank 6 560 gallon Diesel Fuel
Tank 7 560 gallon Used Oil

You must contact the Illinois Environmental Protection Agency to receive a packet of Agency billing forms for submitting your request for payment.

An owner or operator is eligible to access the Underground Storage Tank Fund if the eligibility requirements are satisfied:

1. Neither the owner nor the operator is the United States Government,

2. The tank does not contain fuel which is exempt from the Motor Fuel Tax Law,

3. The costs were incurred as a result of a confirmed release of any of the following substances:

   "Fuel", as defined in Section 1.19 of the Motor Fuel Tax Law

   Aviation fuel

   Heating oil

   Kerosene

   Used oil, which has been refined from crude oil used in a motor vehicle, as defined in Section 1.3 of the Motor Fuel Tax Law.

4. The owner or operator registered the tank and paid all fees in accordance with the statutory and regulatory requirements of the Gasoline Storage Act.

5. The owner or operator notified the Illinois Emergency Management Agency of a confirmed release, the costs were incurred after the notification and the costs were a result of a release of a substance listed in this Section. Costs of corrective action or indemnification incurred before providing that notification shall not be eligible for payment.

6. The costs have not already been paid to the owner or operator under a private insurance policy, other written agreement, or court order.

7. The costs were associated with "corrective action".

This constitutes the final decision as it relates to your eligibility and the set deductible. We reserve the right to change the deductible determination should additional information that would change the determination become available. An underground storage tank owner or operator may appeal the decision to the Illinois Pollution Control Board (Board), pursuant to Section 57.9 (c) (2). An owner or operator who seeks to appeal the decision shall file a petition for a hearing before the Board within 35 days of the date of issuance of the final decision, (35 Illinois Administrative Code 105.504(b)).

For information regarding the filing of an appeal, please contact:

Clerk
Illinois Pollution Control Board
State of Illinois Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601
(312) 814-3620

The following tanks are also listed for this site:

Tank 1 6000 gallon Diesel Fuel
Tank 2 10000 gallon Gasoline

Your application indicates that there has not been a release from these tanks under this incident number. You may be eligible to seek payment of corrective action costs associated with these tanks if it is determined that there has been a release from one or more of these tanks. Once it is determined that there has been a release from one or more of these tanks you may submit a separate application for an eligibility determination to seek corrective action costs associated with this/these tanks.

If you have any questions, please contact our Office at (217) 785-1020.

Sincerely,

Deanne Lock

Division of Petroleum and Chemical Safety

APPENDIX D

CORRECTIVE ACTION PLAN BUDGET AND CERTIFICATION

CORRECTIVE ACTION PLAN AMENDMENT
S&S Infinite Group
Peoria, Illinois

Owner/Operator and Licensed Professional Engineer/Geologist Budget Certification Form

I hereby certify that I intend to seek payment from the UST Fund for costs incurred while performing corrective action activities for Leaking UST incident 2016-1089. I further certify that the costs set forth in this budget are for necessary activities and are reasonable and accurate to the best of my knowledge and belief. I also certify that the costs included in this budget are not for corrective action in excess of the minimum requirements of 415 ILCS 5/57, no costs are included in this budget that are not described in the corrective action plan, and no costs exceed Subpart H: Maximum Payment Amounts, Appendix D Sample Handling and Analysis amounts, and Appendix E Personnel Titles and Rates of 35 Ill. Adm. Code 732 or 734. I further certify that costs ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 732.606 or 734.630 are not included in the budget proposal or amendment. Such ineligible costs include but are not limited to:

- Costs associated with ineligible tanks.
- Costs associated with site restoration (e.g., pump islands, canopies).
- Costs associated with utility replacement (e.g., sewers, electrical, telephone, etc.).
- Costs incurred prior to IEMA notification.
- Costs associated with planned tank pulls.
- Legal fees or costs.
- Costs incurred prior to July 28, 1989.
- Costs associated with installation of new USTs or the repair of existing USTs.

Owner/Operator: S & S Infinite Group, Inc.

RECEIVED
NOV 13 2018
IEPA/BOL

Authorized Representative: Syed Muneeb Title: Agent

Signature: Date: 11/3/18

Subscribed and sworn to before me the 3rd day of November 2018

(Notary Public) Seal:

CAROL L ROWE
Official Seal
Notary Public - State of Illinois
My Commission Expires Mar 18, 2021

In addition, I certify under penalty of law that all activities that are the subject of this plan, budget, or report were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan, budget, or report and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in the plan, budget, or report has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

L.P.E./L.P.G.: Vince E. Smith L.P.E./L.P.G. Seal:

L.P.E./L.P.G. Signature: Date: 11/1/18

Subscribed and sworn to before me the 13th day of November 2018

(Notary Public) Seal:

CAROL L ROWE
Official Seal
Notary Public - State of Illinois
My Commission Expires Mar 18, 2021

The Illinois EPA is authorized to require this information under 415 ILCS 5/1. Disclosure of this information is required. Failure to do so may result in the delay or denial of any budget or payment requested hereunder.

Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

General Information for the Budget and Billing Forms

LPC #: 1430650114 County: Peoria

City: Peoria Site Name: S & S Infinite Group, Inc.

Site Address: 400 NE Adams Street

IEMA Incident No.: 2016-1089

IEMA Notification Date: 11/21/2016

Date this form was prepared: Mar 9, 2018

This form is being submitted as a (check one, if applicable):

☐ Budget Proposal

☒ Budget Amendment (Budget amendments must include only the costs over the previous budget.)

☐ Billing Package

Please provide the name(s) and date(s) of report(s) documenting the costs requested:

Name(s):

Date(s):

RECEIVED
NOV 13 2018
IEPA/BOL

This package is being submitted for the site activities indicated below:

35 Ill. Adm. Code 734:

☐ Early Action

☐ Free Product Removal after Early Action

☐ Site Investigation .... Stage 1: ☐ Stage 2: ☐ Stage 3: ☐

☒ Corrective Action Actual Costs

35 Ill. Adm. Code 732:

☐ Early Action

☐ Free Product Removal after Early Action

☐ Site Classification

☐ Low Priority Corrective Action

☐ High Priority Corrective Action

35 Ill. Adm. Code 731:

☐ Site Investigation

☐ Corrective Action

IL 532 -2825
LPC 630 Rev. 1/ 2007

General Information for the Budget and Billing Forms

The following address will be used as the mailing address for checks and any final determination letters regarding payment from the Fund.

Pay to the order of: S&S Infinite Group

Send in care of: CWM Company, Inc.

Address: P.O. Box 571

City: Carlinville State: IL Zip: 62626

The payee is the: Owner ☒ Operator ☐ (Check one or both.)

Signature of the owner or operator of the UST(s) (required)

W-9 must be submitted.
Click here to print off a W-9 Form.

Number of petroleum USTs in Illinois presently owned or operated by the owner or operator; any subsidiary, parent or joint stock company of the owner or operator; and any company owned by any parent, subsidiary or joint stock company of the owner or operator:

Fewer than 101: ☒ 101 or more: ☐

Number of USTs at the site: 7 (Number of USTs includes USTs presently at the site and USTs that have been removed.)

Number of incidents reported to IEMA for this site: 2

Incident Numbers assigned to the site due to releases from USTs: 20140963 20161089

Please list all tanks that have ever been located at the site and tanks that are presently located at the site.

Product Stored in UST	Size (gallons)	Did UST have a release?	Incident No.	Type of Release Tank Leak / Overfill / Piping Leak
Diesel	6,000	Yes ☒ No ☐	20140963	Overfill
Gasoline	10,000	Yes ☒ No ☐	20140963	Overfill
Gasoline	10,000	Yes ☒ No ☐	20161089	Overfill
Gasoline	350	Yes ☒ No ☐	20161089	Tank Leak
Gasoline	350	Yes ☒ No ☐	20161089	Tank Leak
Used Oil	560	Yes ☒ No ☐	20161089	Tank Leak
Used Oil	560	Yes ☒ No ☐	20161089	Tank Leak
		Yes ☐ No ☐		
		Yes ☐ No ☐		

Add More Rows Undo Last Add

Budget Summary

Choose the applicable regulation: ◉ 734 ○ 732

734	Free Product	Stage 1 Site Investigation	Stage 2 Site Investigation	Stage 3 Site Investigation	Corrective Action
					Proposed
Drilling and Monitoring Well Costs Form	$	$	$	$	$ 1,547.20
Analytical Costs Form	$	$	$	$	$ 2,918.98
Remediation and Disposal Costs Form	$	$	$	$	$ 71,580.88
UST Removal and Abandonment Costs Form	$	$	$	$	$
Paving, Demolition, and Well Abandonment Costs Form	$	$	$	$	$
Consulting Personnel Costs Form	$	$	$	$	$ 29,749.77
Consultant's Materials Costs Form	$	$	$	$	$ 806.50
Handling Charges Form	Handling charges will be determined at the time a billing package is submitted to the Illinois EPA. The amount of allowable handling charges will be determined in accordance with the Handling Charges Form.				
Total	$	$	$	$	$ 106,603.33

Drilling and Monitoring Well Costs Form

1. Drilling

Number of Borings to Be Drilled	Type HSA/PUSH/ Injection	Depth (feet) of Each Boring	Total Feet Drilled	Reason for Drilling
1	PUSH	10.00	10.00	Waste Characterization Parameters

☒ Subpart H minimum payment amount applies.

	Total Feet	Rate per Foot ($)	Total Cost ($)
Total Feet via HSA:		29.65	
Total Feet via PUSH:	10.00	23.21	232.10
Total Feet for Injection via PUSH:		19.34	
		Total Drilling Costs:	1,547.20

2. Monitoring / Recovery Wells

Number of Wells	Type of Well HSA / PUSH / 4" or 6" Recovery / 8" Recovery	Diameter of Well (inches)	Depth of Well (feet)	Total Feet of Wells to Be Installed ($)

Well Installation	Total Feet	Rate per Foot ($)	Total Cost ($)
Total Feet via HSA:			
Total Feet via PUSH:			
Total Feet of 4" or 6" Recovery:			
Total Feet of 8" or Greater Recovery:			
		Total Well Costs:	

Total Drilling and Monitoring Well Costs:	$1,547.20

Analytical Costs Form

Laboratory Analysis	Number of Samples		Cost ($) per Analysis		Total per Parameter
Chemical Analysis					
BETX Soil with MTBE EPA 8260	9	X	109.59	=	$986.31
BETX Water with MTBE EPA 8260		X		=	
COD (Chemical Oxygen Demand)		X		=	
Corrosivity		X		=	
Flash Point or Ignitability Analysis EPA 1010	1	X	42.54	=	$42.54
Fraction Organic Carbon Content (f_{oc}) ASTM-D 2974-00		X		=	
Fat, Oil, & Grease (FOG)		X		=	
LUST Pollutants Soil - analysis must include volatile, base/ neutral, polynuclear aromatics and metals list in Section 732. Appendix B and 734.Appendix B		X		=	
Dissolved Oxygen (DO)		X		=	
Paint Filter (Free Liquids)	1	X	18.05	=	$18.05
PCB / Pesticides (combination)		X		=	
PCBs		X		=	
Pesticides		X		=	
pH	1	X	18.05	=	$18.05
Phenol		X		=	
Polynuclear Aromatics PNA, or PAH SOIL EPA 8270	8	X	195.98	=	$1,567.84
Polynuclear Aromatics PNA, or PAH WATER EPA 8270		X		=	
Reactivity		X		=	
SVOC - Soil (Semi-Volatile Organic Compounds)		X		=	
SVOC - Water (Semi-Volatile Organic Compounds)		X		=	
TKN (Total Kjeldahl) "nitrogen"		X		=	
TPH (Total Petroleum Hydrocarbons)		X		=	
VOC (Volatile Organic Compounds) - Soil (Non-Aqueous)		X		=	
VOC (Volatile Organic Compounds) - Water		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
Geo-Technical Analysis					
Soil Bulk Density (p_b) ASTM D2937-94		X		=	
Ex-situ Hydraulic Conductivity / Permeability		X		=	
Moisture Content (w) ASTM D2216-92 / D4643-93		X		=	
Porosity		X		=	
Rock Hydraulic Conductivity Ex-situ		X		=	
Sieve / Particle Size Analysis ASTM D422-63 / D1140-54		X		=	
Soil Classification ASTM D2488-90 / D2487-90		X		=	
Soil Particle Density (p_s) ASTM D854-92		X		=	
		X		=	
		X		=	
		X		=	

Analytical Costs Form

Metals Analysis					
Soil preparation fee for Metals TCLP Soil (one fee per soil sample)		X		=	
Soil preparation fee for Metals Total Soil (one fee per soil sample)	1	X	20.62	=	$20.62
Water preparation fee for Metals Water (one fee per water sample)		X		=	
Arsenic TCLP Soil		X		=	
Arsenic Total Soil		X		=	
Arsenic Water		X		=	
Barium TCLP Soil		X		=	
Barium Total Soil		X		=	
Barium Water		X		=	
Cadmium TCLP Soil		X		=	
Cadmium Total Soil		X		=	
Cadmium Water		X		=	
Chromium TCLP Soil		X		=	
Chromium Total Soil		X		=	
Chromium Water		X		=	
Cyanide TCLP Soil		X		=	
Cyanide Total Soil		X		=	
Cyanide Water		X		=	
Iron TCLP Soil		X		=	
Iron Total Soil		X		=	
Iron Water		X		=	
Lead TCLP Soil	1	X	20.62	=	$20.62
Lead Total Soil		X		=	
Lead Water		X		=	
Mercury TCLP Soil		X		=	
Mercury Total Soil		X		=	
Mercury Water		X		=	
Selenium TCLP Soil		X		=	
Selenium Total Soil		X		=	
Selenium Water		X		=	
Silver TCLP Soil		X		=	
Silver Total Soil		X		=	
Silver Water		X		=	
Metals TCLP Soil (a combination of all metals) RCRA		X		=	
Metals Total Soil (a combination of all metals) RCRA		X		=	
Metals Water (a combination of all metals) RCRA		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
Other					
EnCore® Sampler, purge-and-trap sampler, or equivalent sampling device	9	X	12.89	=	$116.01
Sample Shipping per sampling event[1]	2	X	64.47	=	$128.94

[1]A sampling event, at a minimum, is all samples (soil and groundwater) collected in a calendar day.

Total Analytical Costs: $ 2,918.98

Remediation and Disposal Costs Form

A. Conventional Technology

Excavation, Transportation, and Disposal of contaminated soil and/or the 4-foot backfill material removal during early action activities:

Number of Cubic Yards	Cost per Cubic Yard ($)	Total Cost
721.00	73.49	$52,986.29

Backfilling the Excavation:

Number of Cubic Yards	Cost per Cubic Yard ($)	Total Cost
721.00	25.79	$18,594.59

Overburden Removal and Return:

Number of Cubic Yards	Cost per Cubic Yard ($)	Total Cost

B. Alternative Technology

Alternative Technology Selected:	
Number of Cubic Yards of Soil to Be Remediated	
Total Non-Consulting Personnel Costs Summary Sheet ($)	
Total Remediation Materials Costs Summary Sheet ($)	
Total Cost of the System	

Remediation and Disposal Costs Form

C. Groundwater Remediation and/or Free Product Removal System

Total Non-Consulting Personnel Costs Summary Sheet ($)	
Total Remediation Materials Costs Summary Sheet ($)	
Total Cost of the System	

D. Groundwater and/or Free Product Removal and Disposal

☐ Subpart H minimum payment amount applies.

Number of Gallons	Cost per Gallon ($)	Total Cost ($)

E. Drum Disposal

☐ Subpart H minimum payment amount applies.

Number of Drums of Solid Waste	Cost per Drum ($)	Total Cost ($)
Number of Drums of Liquid Waste	Cost per Drum ($)	Total Cost ($)
Total Drum Disposal Costs		

Total Remediation and Disposal Costs:	$71,580.88

Consulting Personnel Costs Form

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Project Manager	40.00	126.40	$5,056.00
CCAP	Amended Corrective Action Design / Report Development / IEPA Correspondence			
	Senior Prof. Engineer	2.00	164.33	$328.66
CCAP	Report Review and Certification			
	Senior Draftperson/CAD	6.00	75.83	$454.98
CCAP	Drafting and Editing Maps for Report			
	Senior Admin. Assistant	3.00	56.88	$170.64
CCAP	Report Compilation, Assembly, and Distribution			
	Senior Project Manager	10.00	126.40	$1,264.00
TACO 2 or 3	TACO Tier 2 Calculations / Development of CUOs / GW Modeling			

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Project Manager	14.00	126.40	$1,769.60
CCAP-Budget	Budget Preparation / Data Evaluation			
	Senior Prof. Engineer	2.00	164.33	$328.66
CCAP-Budget	Budget Review & Certification			
	Senior Draftperson/CAD	8.00	77.35	$618.80
ELUC	Drafting Maps for Groundwater Ordinance			
	Senior Admin. Assistant	5.00	58.02	$290.10
ELUC	Groundwater Ordinance Notification / Correspondence			
	Engineer III	24.00	128.93	$3,094.32
ELUC	Groudwater Ordinance Development / Correspondence with City / Meeting			
	Senior Project Manager	10.00	128.93	~~$1,289.30~~
ELUC	Groundwater Ordinance Negotiation Development / Correspondence / Notifications			

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Project Manager	8.00	128.93	$1,031.44
CCA-Field	Scheduling Waste Characterization Drilling/Excavation Preparation/Landfill Authoization/Corr.			
	Engineer III	6.00	128.93	$773.58
CCA-Field	Drilling Waste Characterization			
	Senior Admin. Assistant	2.00	58.02	$116.04
CCA-Field	JULIE/Client Notification for Waste Characterization Drilling/Excavation/Analytical			
	Senior Project Manager	8.00	128.03	$1,024.24
CCA-Field	Field Documentation			
	Engineer III	36.00	128.93	$4,641.48
CCA-Field	Excavation Disposal and Backfill Oversight/Sampling/Field Reports			
	Senior Draftperson/CAD	5.00	77.35	$386.75
CCA-Field	Drafting/Documentation/Excavation/Sampling/Results			
	Senior Project Manager	6.00	128.93	$773.58
CCA-Field	Analytical Results / Tablulation			
	Engineer III	8.00	128.93	$1,031.44
CCA-Field	Waste Characterization Sampling / Field Reports / Sample Coordination			

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Prof. Engineer	6.00	164.33	$985.98
CA-Pay	Reimbursement Review and Certification			
	Senior Acct. Technician	30.00	69.51	$2,085.30
CA-Pay	Reimbursement Prepartion Form (min 2 claims)			
	Senior Admin. Assistant	8.00	56.88	$455.04
CA-Pay	Reimbursement Compilation, Assembly, and Distribution			
	Geologist III	16.00	111.24	~~$1,779.84~~
CA-Pay	Reimbursement Development / Inputs / Contractor Invoicing / Evalution with Budget			

LACK SUPP. — Handling

*Refer to the applicable Maximum Payment Amounts document.

Total of Consulting Personnel Costs	$29,749.77

Consultant's Materials Costs Form

Materials, Equipment, or Field Purchase		Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	**Description/Justification**				
Postage		3.00	7.50	/each	$22.50
CCAP	Report/ Forms/ Distribution				
Postage		4.00	7.50	/each	$30.00
CA-Pay	Reimbursement Distribution / Forms				
Postage		4.00	7.50	/each	$30.00
ELUC	Groundwater ordinance, groundwater ordinance notifications				
Mileage		600.00	.54	/mile	$324.00
CCA-Field	Four Round Trips from Springfield Office to Site (1 Drilling, 3 Excavation)				

Materials, Equipment, or Field Purchase	Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	Description/Justification			
PID Rental	4.00	75.00	/day	$300.00
CCA-Field	Detect VOC Levels in Soil Samples			
Sampling Supplies	4.00	25.00	/day	$100.00
CCA-Field	Disposable Latex Gloves, Bags, Sampling Supplies			

Total of Consultant Materials Costs	$806.50

APPENDIX E

BORE LOGS

CORRECTIVE ACTION PLAN AMENDMENT

S&S Infinite Group

Peoria, Illinois

Illinois Environmental Protection Agency

CW[ ]M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	BOREHOLE NUMBER: WC-1
SITE NAME: S & S Infinite Group	BORING LOCATION: 15' N of the NW corner of building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	RIG TYPE: Truck mounted drill rig
DATE/TIME STARTED: 11/21/16 3:00 PM	DRILLING/SAMPLE METHOD: Push
DATE/TIME FINISHED: 11/21/16 3:10 PM	BACKFILL: Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
0.5–1	Top soil	OH		0			
1–5	Backfill		95%	0	Grab	WC-1 2.5'	
4				0			
5–10				132			Odor and Discoloration
8			100%	1178	Grab	WC-1 7.5'	BETX, MTBE, PNAs WC Parameters
9.5				1178			
10	End of Boring 10'						
11–15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID reading above water table

Manway / Surface Elevation:

Groundwater Depth While Drilling: N/A	**Auger Depth:** 10'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	MDR

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

Page 1 of 1

INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** WC-2
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 20' S & 5' E of the NE corner of building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 11/21/16 3:10 PM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 11/21/16 3:20 PM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
0.5	Top soil	OH		0			
1							
1	Backfill						
2							
2.5			90%	0	Grab	WC-2 2.5'	
3							
4							
4.5				22			
5							
5.5							Odor and Discoloration
6				560			
7							
7.5			95%	1178	Grab	WC-2 7.5'	BETX, MTBE, PNAs WC Parameters
8							
9							
9.5				992			
10	End of Boring 10'						
11							
12							
13							
14							
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID reading above water table

Manway / Surface Elevation:

Groundwater Depth While Drilling: N/A	**Auger Depth:** 10'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	MDR

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	BOREHOLE NUMBER: WC-3
SITE NAME: S & S Infinite Group	BORING LOCATION: 15' N & 12' W of the NW corner of building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	RIG TYPE: Truck mounted drill rig
DATE/TIME STARTED: 12/16/16 8:55 PM	DRILLING/SAMPLE METHOD: Push
DATE/TIME FINISHED: 12/16/16 9:10 PM	BACKFILL: Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
0–1	Top soil	OH		0			
1–5	Backfill		90%	0	Grab	WC-3 2.5'	
5–10			95%	125			Odor and Discoloration
				1178	Grab	WC-3 5-10'	BETX, MTBE, WC Parameters
				806			
10	End of Boring 10'						

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section with highest degree of contamination in WC-1, WC-2, and PID

EOB 20' Dry Sand

Manway / Surface Elevation:

Groundwater Depth While Drilling: N/A	**Auger Depth:** 10'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	MDR

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Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

[illegible]T INCIDENT #: 2016-1089	BOREHOLE NUMBER: SB-24
SITE NAME: S & S Infinite Group	BORING LOCATION: 15' E and 25' N of the NW corner of the building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	RIG TYPE: Truck mounted drill rig
DATE/TIME STARTED: 7/26/17 8:00 AM	DRILLING/SAMPLE METHOD: Push
DATE/TIME FINISHED: 7/26/17 8:30 AM	BACKFILL: Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
	Gravel/Sand Backfill	OH					No odor or discoloration
1				0			
	Brown/Black Silty Clay	CL					
2							
			90%	0	Grab	SB-24A 2.5'	BETX, MTBE, PNA
3							
4				0			
5						SB-24B 5.0'	BETX, MTBE, PNA
	Sand: Med-Large Grained	SP		11			Slight Odor and Discoloration
6							
				2			
7							
			80%	0	Grab	SB-24C 7.5'	BETX, MTBE, PNA
8							
9							
				0			
10							
11							
12							
			90%	0	Grab	SB-24D 12.5'	BETX, MTBE, PNA
13							
14				0			
	Brown fine-grained and coarse-grained sand	SP					
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section were sampled at the highest PID reading or in the center of the sample

The soil boring log continues on page 2

Manway / Surface Elevation:

Groundwater Depth While Drilling: none	Auger Depth: 25'	Driller: AEDC
Groundwater Depth After Drilling:	Rotary Depth:	Geologist: GTR/MTK

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

LUST INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-24
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' E and 25' N of the NW corner of the building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 7/26/17 8:00 AM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 7/26/17 8:30 AM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
15							
	Sand: Med-Large Grained	SP					
16				0			
17							
			90%	0	Grab	SB-24E 17.5'	BETX, MTBE, PNA
18							
19				0			
20							
21							
				0			
23			90%	0	Grab	SB-24F 22.5'	BETX, MTBE, PNA
24							
25							
	End of Boring						
26							
27							
28							
29							
30							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section were sampled at the highest PID reading or in the center of the sample

EOB 25' Dry Sand

Manway / Surface Elevation:

Groundwater Depth While Drilling: None	**Auger Depth:** 25'	**Driller:** AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:** GTR/MTK

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-25
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' E and 5' N of the NW corner of the Building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 7/26/17 8:30 AM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 7/26/17 8:50 AM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
0–1	Gravel/Sand Backfill	OH					No odor or discoloration
1				0			
1–10	Brown/Black Silty Clay	CL					
2.5			80%	0	Grab		
4				0			
6.5				0			
7.5			80%	0	Grab		
9.5				0			
10–15	Sand: Med-Large Grained	SP					
12.5			80%	0	Grab	SB-25A 12.5'	BETX, MTBE, PNA
14				0			
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section were sampled at the highest PID reading or in the center of the sample
The soil boring log continues on page 2

Manway / Surface Elevation:

Groundwater Depth While Drilling: None	**Auger Depth:** 20'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	GTR/MTK

Illinois Environmental Protection Agency

CW M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-25
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 15' E and 5' N of the NW corner of the Building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 7/26/17 8:30 AM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 7/26/17 8:50 AM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
15							
	Sand: Med-Large Grained	SP					
16				0			
17							
			90%	0	Grab	SB-25B 17.5'	BETX, MTBE, PNA
18							
19				0			
20							
	End of Boring 20'						
21							
23							
24							
25							
26							
27							
28							
29							
30							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Composite of 5' section were sampled at the highest PID reading or in the center of the sample

EOB 20' Dry Sand

Manway / Surface Elevation:

Groundwater Depth While Drilling: None	**Auger Depth:** 20'	**Driller:** AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:** GTR/MTK

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-26
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 11' N and 21' W of the NE corner of the Building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 8/2/2018 12:00 PM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 8/2/2018 12:25 PM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
0–1	Top Soil	OH					No odor or discoloration
1				0			
1–6	Dark brown silty clay	CL					
2.5			90%	30	Grab	SB-26A	BETX, MTBE, PNA
4				0			
6				0			
6–12	Brown sand	SW					
7.5			95%	0	Grab	SB-26B	BETX, MTBE, PNA
9.5				0			
11				0			
12–15	Light brown sand	SW	90%	0	Grab	SB-26C	BETX, MTBE, PNA
14				0			
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID per 5' interval or center if 0 PID

Manway / Surface Elevation:

Groundwater Depth While Drilling: ~19'	**Auger Depth:** 20'	**Driller:** AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:** MJS/GTR

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	BOREHOLE NUMBER: SB-26
SITE NAME: S & S Infinite Group	BORING LOCATION: 11' N and 21' W of the NE corner of the Building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	RIG TYPE: Truck mounted drill rig
DATE/TIME STARTED: 8/2/2018 12:00 PM	DRILLING/SAMPLE METHOD: Push
DATE/TIME FINISHED: 8/2/2018 12:25 PM	BACKFILL: Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
15							
		SP					
16				0			
17							
			90%	0	Grab	SB-26D	BETX, MTBE, PNA
18							
19				0			
							Wet
20							
	End of Boring 20'						
21							
23							
24							
25							
26							
27							
28							
29							
30							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID per 5' interval

Manway / Surface Elevation:

Groundwater Depth While Drilling: ~19'	Auger Depth: 20'	Driller: AEDC
Groundwater Depth After Drilling:	Rotary Depth:	Geologist: MJS/GTR

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	BOREHOLE NUMBER: SB-27
SITE NAME: S & S Infinite Group	BORING LOCATION: 1' N and 43' W of the NE corner of the Building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	RIG TYPE: Truck mounted drill rig
DATE/TIME STARTED: 8/2/2018 12:25 PM	DRILLING/SAMPLE METHOD: Push
DATE/TIME FINISHED: 8/2/2018 12:45 PM	BACKFILL: Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
	Top Soil	OM					No odor or discoloration throughout
1				0			
	Dark brown silty clay	CL					
2							
			90%	0	Grab		
3							
4				0			
5							
	Brown sand	SW					
6				0			
7							
			90%	0	Grab		
8							
9							
				0			
10							
11				0			
12							
	Light brown sand	SW	90%	0	Grab	SB-27C	BETX, MTBE, PNA
13							
14				0			
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID per 5' interval or center if 0 PID/ Samples taken only from 10-15' and 15-20' per IEPA request

Manway / Surface Elevation:

Groundwater Depth While Drilling: ~18'	**Auger Depth:** 20'	**Driller:** AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:** MJS/GTR

Illinois Environmental Protection Agency

CWM COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	BOREHOLE NUMBER: SB-27
SITE NAME: S & S Infinite Group	BORING LOCATION: 1' N and 43' W of the NE corner of the Building
SITE ADDRESS: 400 North East Adams Street Peoria, IL 61603	RIG TYPE: Truck mounted drill rig
DATE/TIME STARTED: 8/2/2018 12:25 PM	DRILLING/SAMPLE METHOD: Push
DATE/TIME FINISHED: 8/2/2018 12:45 PM	BACKFILL: Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
15	Light brown sand	SW					
16				0			
17			95%	0	Grab	SB-27D	BETX, MTBE, PNA
18							Wet
19				0			
20	End of Boring 20'						
21							
23							
24							
25							
26							
27							
28							
29							
30							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID per 5' interval

Manway / Surface Elevation:

Groundwater Depth While Drilling: ~18'	**Auger Depth:** 20'	**Driller:** AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:** MJS/GTR

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-28
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 12' S and 62' W of the NE corner of the Building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 8/2/2018 12:45 PM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 8/2/2018 1:05 PM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
	Top Soil	OM					No odor or discoloration
1				0	Grab		
	Dark brown sandy clay	CL					
2			90%	0	Grab	SB-28A	BETX, MTBE, PNA
3							
4				0	Grab		
5	Brown sand	SW					
6				0	Grab		
			90%	0	Grab	SB-28B	BETX, MTBE, PNA
8							
9				0	Grab		
10							
11				0	Grab		
12	Light brown sand	SW	90%	0	Grab	SB-28C	BETX, MTBE, PNA
13							
14				0	Grab		
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID per 5' interval or center if 0 PID

Manway / Surface Elevation:

Groundwater Depth While Drilling: ~18'	**Auger Depth:** 20'	**Driller:**	AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:**	MJS/GTR

Illinois Environmental Protection Agency

CW³M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-28
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 12' S and 62' W of the NE corner of the Building
SITE ADDRESS: 400 North East Adams Street Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 8/2/2018 12:45 PM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 8/2/2018 1:05 PM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
15	Light brown sand	SW		0			
16							
17				0			
			90%				
18							Stong odor
	Black sand	SW		433	Grab	SB-28D	BETX, MTBE, PNA
19							Wet
20							
	End of Boring 20'						
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID per 5' interval or center if 0 PID

Manway / Surface Elevation:

Groundwater Depth While Drilling: ~18'	**Auger Depth:** 20'	**Driller:** AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:** MJS/GTR

Illinois Environmental Protection Agency	CW³M COMPANY, INC. DRILLING BOREHOLE LOG
	Page 1 of 2
INCIDENT #: 2016-1089	BOREHOLE NUMBER: SB-29
SITE NAME: S & S Infinite Group	BORING LOCATION: 5' N and 80' W of the NE corner of the Building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	RIG TYPE: Truck mounted drill rig
DATE/TIME STARTED: 8/2/2018 1:05 PM	DRILLING/SAMPLE METHOD: Push
DATE/TIME FINISHED: 8/2/2018 1:25 PM	BACKFILL: Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
0	Concrete						
	Top Soil	OM					No odor or discoloration
1				0	Grab		throughout
	Dark brown silty clay	CL					
2							
			85%	0	Grab	SB-29A	BETX, MTBE, PNA
3							
4				0	Grab		
	Brown sand	SW					
5							
6				0	Grab		
	Light brown sand	SW					
			90%	0	Grab		
8							
9							Slight odor and discoloartion
				50	Grab	SB-29B	BETX, MTBE, PNA
10							
11				0	Grab		
12							
			95%	0	Grab	SB-29C	BETX, MTBE, PNA
13							
14				0	Grab		
15							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID per 5' interval or center if 0 PID

Manway / Surface Elevation:

Groundwater Depth While Drilling: ~18'	Auger Depth: 20'	Driller:	AEDC
Groundwater Depth After Drilling:	Rotary Depth:	Geologist:	MJS/GTR

Illinois Environmental Protection Agency

CW[3]M COMPANY, INC.
DRILLING BOREHOLE LOG

INCIDENT #: 2016-1089	**BOREHOLE NUMBER:** SB-29
SITE NAME: S & S Infinite Group	**BORING LOCATION:** 5' N and 80' W of the NE corner of the Building
SITE ADDRESS: 400 North East Adams Street, Peoria, IL 61603	**RIG TYPE:** Truck mounted drill rig
DATE/TIME STARTED: 8/2/2018 1:05 PM	**DRILLING/SAMPLE METHOD:** Push
DATE/TIME FINISHED: 8/2/2018 1:25 PM	**BACKFILL:** Grout / Concrete

DEPTH (FEET)	SOIL AND ROCK DESCRIPTION	USCS CLASS	Sample Recovery	PID (ppm)	Sample Type	SAMPLE NUMBER	REMARKS: (Odor, Color, Moisture, Penetrometer, etc.)
15	Light brown sand	SW					
				0	Grab		
16							
17							
			90%	0	Grab	SB-28D	BETX, MTBE, PNA
18							
							Wet
19				0	Grab		
20							
	End of Boring 20'						
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Stratification lines are approximate, in-situ transition between soil types may be gradual.

NOTES: Sampled at location of highest PID per 5' interval or center if 0 PID

Manway / Surface Elevation:

Groundwater Depth While Drilling: ~18'	**Auger Depth:** 20'	**Driller:** AEDC
Groundwater Depth After Drilling:	**Rotary Depth:**	**Geologist:** MJS/GTR

APPENDIX F

ANALYTICAL RESULTS

CORRECTIVE ACTION PLAN AMENDMENT

S&S Infinite Group

Peoria, Illinois

S and S Infinite Group, Inc.
Site Assessment Data

Release Confirmation/Waste Characterization

	Location	WC-1	WC-2	WC-3	RC-1
	Date	11/21/2016	11/21/2016	12/16/2016	1/3/2017
	Depth				
Parameter	Tier I CUO				
Benzene	0.03	43.3	11.8	9.79	5.77
Ethylbenzene	13.0	146.0	41.8	45.8	33.1
Toluene	12.0	611.	171.	161.	103.
Total Xylenes	5.6	816.	234.	258.	187.
MTBE	0.32	ND	ND	ND	ND
Acenaphthene	570	ND	ND		ND
Acenaphthylene	30	ND	ND		ND
Anthracene	12,000	ND	ND		ND
Benzo(a)anthracene	0.9	ND	ND		ND
Benzo(a)pyrene	0.09	ND	ND		ND
Benzo(b)flouranthene	0.9	ND	ND		ND
Benzo(g,h,i)perylene	160	ND	ND		ND
Benzo(k)flouranthene	9	ND	ND		ND
Chrysene	88	ND	ND		ND
Dibenzo(a,h)anthracene	0.09	ND	ND		ND
Flouranthene	3,100	0.061	ND		ND
Fluorene	560	ND	ND		ND
Indeno(1,2,3-c,d)pyrene	0.9	ND	ND		ND
Napthalene	1.8	2.44	0.343		3.85
Phenanthrene	280	0.09	ND		0.09
Pyrene	2,300	0.066	ND		ND
Numbers not bold indicate actual quantities, but are below the TACO Tier 1 Most Stringent Soil Cle					
BOLD & SHADING -- Exceeds the TACO Tier 1 Most Stringent Soil Clean-up Objective.					
ND -- Not Detected					

S and S Infinite Group, Inc.
Site Assessment Data

Early Action - Soil

	Location	1	2	3	4	5	6	7
	Date	1/5/2017	1/5/2017	1/5/2017	1/5/2017	1/6/2017	1/6/2017	1/6/2017
	Depth	3'	3'	Backfill	Backfill	3'	3'	7'
Parameter	Tier I CUO							
Benzene	0.03	ND	ND	1.37	ND	ND	ND	ND
Ethylbenzene	13.0	ND	ND	7.18	ND	ND	ND	ND
Toluene	12.0	ND	ND	29.6	ND	ND	ND	ND
Total Xylenes	5.6	ND	ND	39.	ND	ND	ND	ND
MTBE	0.32	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	570							
Acenaphthylene	30							
Anthracene	12,000							
Benzo(a)anthracene	0.9							
Benzo(a)pyrene	0.09							
Benzo(b)flouranthene	0.9							
Benzo(g,h,i)perylene	160							
Benzo(k)flouranthene	9							
Chrysene	88							
Dibenzo(a,h)anthracene	0.09							
Flouranthene	3,100							
Fluorene	560							
Indeno(1,2,3-c,d)pyrene	0.9							
Napthalene	1.8							
Phenanthrene	280							
Pyrene	2,300							
Numbers not bold indicate actual quantities, but are below the TACO Tier 1 Most Stringent Soil Clean-up Objective.								
BOLD & SHADING -- Exceeds the TACO Tier 1 Most Stringent Soil Clean-up Objective.								
ND -- Not Detected								

S and S Infinite Group, Inc.
Site Assessment Data

Early Action - Soil

	Location	8	9	10	11	12	13	14	15	16	17
	Date	1/6/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017	1/9/2017
	Depth	7'	11'	11'	11'	11'	7'	7'	7'	7'	7'
Parameter	Tier I CUO										
Benzene	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	13.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	12.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	5.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	570		ND	ND	0.121	ND	ND	ND	ND	ND	ND
Acenaphthylene	30		ND	ND	0.165	ND	ND	ND	ND	ND	ND
Anthracene	12,000		ND	ND	0.063	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.9		ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.09		ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)flouranthene	0.9		ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	160		ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)flouranthene	9		ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	88		ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.09		ND	ND	ND	ND	ND	ND	ND	ND	ND
Flouranthene	3,100		ND	ND	0.131	ND	ND	ND	ND	ND	ND
Fluorene	560		ND	ND	0.237	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	0.9		ND	ND	ND	ND	ND	ND	ND	ND	ND
Napthalene	1.8		ND	ND	**80.9**	0.146	ND	ND	ND	ND	ND
Phenanthrene	280		ND	ND	0.657	ND	ND	ND	ND	ND	ND
Pyrene	2,300		ND	ND	0.167	ND	ND	ND	ND	ND	ND
Numbers not bold indicate actual quantities, bu											
BOLD & SHADING -- Exceeds the TACO Ti											
ND -- Not Detected											

S and S Infinite Group, Inc.
Site Assessment Data

Early Action - Soil

	Location	18	19	20	21	22	23
	Date	1/9/2017	1/10/2017	1/10/2017	1/10/2017	1/10/2017	1/10/2017
	Depth	7'	7'	13'	13'	3'	3'
Parameter	Tier I CUO						
Benzene	0.03	ND	ND	0.0263	ND	ND	ND
Ethylbenzene	13.0	ND	ND	ND	ND	ND	ND
Toluene	12.0	ND	ND	0.132	ND	ND	ND
Total Xylenes	5.6	ND	ND	0.133	ND	ND	ND
MTBE	0.32	ND	ND	ND	ND	ND	ND
Acenaphthene	570	ND					
Acenaphthylene	30	ND					
Anthracene	12,000	ND					
Benzo(a)anthracene	0.9	ND					
Benzo(a)pyrene	0.09	ND					
Benzo(b)flouranthene	0.9	ND					
Benzo(g,h,i)perylene	160	ND					
Benzo(k)flouranthene	9	ND					
Chrysene	88	ND					
Dibenzo(a,h)anthracene	0.09	ND					
Flouranthene	3,100	ND					
Fluorene	560	ND					
Indeno(1,2,3-c,d)pyrene	0.9	ND					
Napthalene	1.8	ND					
Phenanthrene	280	ND					
Pyrene	2,300	ND					
Numbers not bold indicate actual quantities, bu							
BOLD & SHADING -- Exceeds the TACO Ti							
ND -- Not Detected							

S and S In[illegible] Group, Inc.
Site Assessment Data

Stage 1 - Soil

	Location	24A	24B	24C	24D	24E	24F	25A	25B
	Date	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017
	Depth	2.5	5	7.5	12.5	17.5	22.5	12.5	17.5
Parameter	**TEIR I CUO**								
Benzene	**0.03**	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**13.0**	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**12.0**	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	**5.6**	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	**0.32**	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**570**	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	**30**	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**12,000**	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	**0.9**	0.125	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	**0.09**	**0.153**	ND	ND	ND	ND	ND	ND	ND
Benzo(b)flouranthene	**0.9**	0.228	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	**160**	0.115	ND	ND	ND	ND	ND	ND	ND
Benzo(k)flouranthene	**9**	0.0771	ND	ND	ND	ND	ND	ND	ND
Chrysene	**88**	0.199	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	**0.09**	ND	ND	ND	ND	ND	ND	ND	ND
Flouranthene	**3,100**	0.307	ND	ND	ND	ND	ND	ND	0.0506
Fluorene	**560**	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	**0.9**	0.102	ND	ND	ND	ND	ND	ND	ND
Napthalene	**1.8**	ND	ND	ND	ND	ND	0.333	ND	ND
Phenanthrene	**280**	0.162	ND	ND	ND	ND	ND	ND	ND
Pyrene	**2,300**	0.285	ND	ND	ND	ND	ND	ND	0.043

Numbers not bold indicate actual quantities, but are below the TACO Tier 1 Most Stringent Soil Clean-up Objective.
BOLD & SHADING -- Exceeds the TACO Tier 1 Most Stringent Soil Clean-up Objective.
ND -- Not Detected

S and S In[illegible] Group, Inc.
Site Assessment Data

Stage 1 - Soil

Location		24A	24B	24C	24D	24E	24F	25A	25B
	Date	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017
	Depth	2.5	5	7.5	12.5	17.5	22.5	12.5	17.5
Parameter	**TEIR I CUO**								
Benzene	**0.03**	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**13.0**	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**12.0**	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	**5.6**	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	**0.32**	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**570**	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	**30**	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**12,000**	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	**0.9**	0.125	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	**0.09**	**0.153**	ND	ND	ND	ND	ND	ND	ND
Benzo(b)flouranthene	**0.9**	0.228	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	**160**	0.115	ND	ND	ND	ND	ND	ND	ND
Benzo(k)flouranthene	**9**	0.0771	ND	ND	ND	ND	ND	ND	ND
Chrysene	**88**	0.199	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	**0.09**	ND	ND	ND	ND	ND	ND	ND	ND
Flouranthene	**3,100**	0.307	ND	ND	ND	ND	ND	ND	0.0506
Fluorene	**560**	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	**0.9**	0.102	ND	ND	ND	ND	ND	ND	ND
Napthalene	**1.8**	ND	ND	ND	ND	ND	0.333	ND	ND
Phenanthrene	**280**	0.162	ND	ND	ND	ND	ND	ND	ND
Pyrene	**2,300**	0.285	ND	ND	ND	ND	ND	ND	0.043

Numbers not bold indicate actual quantities, but are below the TACO Tier 1 Most Stringent Soil Clean-up Objective.

BOLD & SHADING -- Exceeds the TACO Tier 1 Most Stringent Soil Clean-up Objective.

ND -- Not Detected

S and S In[illegible] Group, Inc.
Site Assessment Data

CAP- Soil

Parameter	Location	SB-26A	SB-26B	SB-26C	SB-26D	SB-27C	SB-27D	SB-28A	SB-28B	SB-28C	SB-28D
	Date	8/2/2018	8/2/2018	8/2/2018	8/2/2018	8/2/2018	8/2/2018	8/2/2018	8/2/2018	8/2/2018	8/2/2018
	Depth	2.5'	7.5'	12.5'	17.5'	12.5'	17.5'	2.5'	7.5'	12.5'	18'
	TEIR I CUO										
Benzene	**0.03**	**0.389**	ND	ND	ND	ND	ND	ND	ND	**0.0335**	0.0195
Ethylbenzene	**13.0**	1.01	ND	ND	ND	ND	ND	ND	ND	ND	0.106
Toluene	**12.0**	4.44	0.0637	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	**5.6**	**6.43**	ND	ND	ND	ND	ND	ND	ND	ND	0.114
MTBE	**0.32**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**570**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	**30**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**12,000**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	**0.9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	**0.09**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)flouranthene	**0.9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	**160**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)flouranthene	**9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	**88**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	**0.09**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Flouranthene	**3,100**	ND	ND	ND	ND	ND	ND	ND	0.0485	ND	ND
Fluorene	**560**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	**0.9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Napthalene	**1.8**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	**280**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	**2,300**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Numbers not bold indicate actual quantities, but are below the TACO Tier 1 Most Stringent Soil Clean-up Objective.
BOLD & SHADING -- Exceeds the TACO Tier 1 Most Stringent Soil Clean-up Objective.
ND -- Not Detected

S and S Inf[illegible] Group, Inc.
Site Assessment Data

CAP- Soil

SB-29A	SB-29B	SB-29C	SB-29D
8/2/2018	8/2/2018	8/2/2018	8/2/2018
2.5'	9'	12.5'	17.5'
0.0168	ND	ND	**0.0582**
ND	ND	ND	ND
ND	ND	ND	0.12
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND

SUBURBAN LABORATORIES, Inc.

1950 S. Batavia Ave., Suite 150 Geneva, Illinois 60134
Tel. (708) 544-3260 • Toll Free (800) 783-LABS
Fax (708) 544-8587
www.suburbanlabs.com

August 15, 2018

Carol Rowe
CWM Company, Inc
701 West South Grand
Springfield, IL 62704

Workorder: 1808461

RECEIVED
AUG 15 2018
CR

TEL: (217) 522-8001
FAX: (217) 522-8009
RE: S and S Infinite Peoria

Dear Carol Rowe:

Suburban Laboratories, Inc. received 14 sample(s) on 8/6/2018 for the analyses presented in the following report.

All data for the associated quality control (QC) met EPA, method, or internal laboratory specifications except where noted in the case narrative. If you are comparing these results to external QC specifications or compliance limits and have any questions, please contact us.

This final report of laboratory analysis consists of this cover letter, case narrative, analytical report, dates report, and any accompanying documentation including, but not limited to, chain of custody records, raw data, and letters of explanation or reliance. This report may not be reproduced, except in full, without the prior written approval of Suburban Laboratories, Inc.

If you have any questions regarding these test results, please call me at (708) 544-3260.

Sincerely,

Keith Sinon

Keith Sinon
Project Manager
708-544-3260 ext 212
keith@suburbanlabs.com

Suburban Laboratories, Inc.
1950 S. Batavia Ave., Suite 150, Geneva, IL 60134 (708) 544-3260

Case Narrative

Client: CWM Company, Inc
Project: S and S Infinite Peoria
WorkOrder: **1808461**
Temperature of samples upon receipt at SLI: **2 C**

Date: August 15, 2018
PO #:
QC Level:
Chain of Custody #: 128334

General Comments:
- All results reported in wet weight unless otherwise indicated. (dry = Dry Weight)
- Sample results relate only to the analytes of interest tested and to sample as received by the laboratory.
- Environmental compliance sample results meet the requirements of 35 IAC Part 186 unless otherwise indicated.
- Waste water analysis follows the rules set forth in 40 CFR part 136 except where otherwise noted.
- Accreditation by the State of Illinois is not an endorsement or a guarantee of the validity of data generated.
- For more information about the laboratories' scope of accreditation, please contact us at (708) 544-3260 or the Agency at (217) 782-6455.
- All radiological results are reported to the 95% confidence level.

Abbreviations:
- Reporting Limit: The concentration at which an analyte can be routinely detected on a day to day basis, and which also meets regulatory and client needs.
- Quantitation Limit: The lowest concentration at which results can be accurately quantitated.
- J: The analyte was positively identified above our Method Detection Limit and is considered detectable and usable; however, the associated numerical value is the approximate concentration of the analyte in the sample.
- ATC: Automatic Temperature Correction. - TNTC: Too Numerous To Count
- TIC: Tentatively Identified Compound (GCMS library search identification, concentration estimated to nearest internal standard).
- SS (Surrogate Standard): Quality control compound added to the sample by the lab.

Method References:
For a complete list of method references please contact us.
- E: USEPA Reference methods
- SW: USEPA, Test Methods for Evaluating Solid Waste (SW-846)
- M: Standard Methods for the Examination of Water and Wastewater
- USP: Latest version of United States Pharmacopeia

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Workorder Specific Comments:

Suburban Laboratories, Inc.

1950 S. Batavia Ave., Suite 150, Geneva, IL 60134 (708) 544-3260

Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-26 A
Lab ID: 1808461-001
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 12:10 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	0.389	0.0138		mg/Kg-dry	46.210721	08/07/2018 10:56 AM	R99069
Ethylbenzene	1.01	0.0553		mg/Kg-dry	46.210721	08/07/2018 10:56 AM	R99069
m,p-Xylene	4.80	0.111		mg/Kg-dry	46.210721	08/07/2018 10:56 AM	R99069
Methyl tert-butyl ether	ND	0.0553		mg/Kg-dry	46.210721	08/07/2018 10:56 AM	R99069
o-Xylene	1.63	0.0553		mg/Kg-dry	46.210721	08/07/2018 10:56 AM	R99069
Total Xylenes	6.43	0.111		mg/Kg-dry	46.210721	08/07/2018 10:56 AM	R99069
Toluene	4.44	0.0553		mg/Kg-dry	46.210721	08/07/2018 10:56 AM	R99069
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	100	80-130		%Rec	46.210721	08/07/2018 10:56 AM	R99069
SS: Dibromofluoromethane	90.7	76.1-120		%Rec	46.210721	08/07/2018 10:56 AM	R99069
SS: Toluene-d8	100	85-115		%Rec	46.210721	08/07/2018 10:56 AM	R99069
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Acenaphthylene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Anthracene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Benzo(a)anthracene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Benzo(a)pyrene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Benzo(b)fluoranthene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Benzo(g,h,i)perylene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Benzo(k)fluoranthene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Chrysene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Dibenzo(a,h)anthracene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Fluoranthene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Fluorene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Naphthalene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Phenanthrene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Pyrene	ND	0.0470		mg/Kg-dry	1	08/11/2018 2:36 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	94.2	72.1-138		%Rec	1	08/11/2018 2:36 AM	53979
SS: 4-Terphenyl-d14	116	45.3-152		%Rec	1	08/11/2018 2:36 AM	53979
SS: Nitrobenzene-d5	99.3	62.6-144		%Rec	1	08/11/2018 2:36 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	17	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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1950 S. Batavia Ave., Suite 150, Geneva, IL 60134 (708) 544-3260

Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-26 B
Lab ID: 1808461-002
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 12:15 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0129		mg/Kg-dry	45.307091	08/07/2018 11:22 AM	R99069
Ethylbenzene	ND	0.0518		mg/Kg-dry	45.307091	08/07/2018 11:22 AM	R99069
m,p-Xylene	ND	0.104		mg/Kg-dry	45.307091	08/07/2018 11:22 AM	R99069
Methyl tert-butyl ether	ND	0.0518		mg/Kg-dry	45.307091	08/07/2018 11:22 AM	R99069
o-Xylene	ND	0.0518		mg/Kg-dry	45.307091	08/07/2018 11:22 AM	R99069
Total Xylenes	ND	0.104		mg/Kg-dry	45.307091	08/07/2018 11:22 AM	R99069
Toluene	0.0637	0.0518		mg/Kg-dry	45.307091	08/07/2018 11:22 AM	R99069
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	100	80-130		%Rec	45.307091	08/07/2018 11:22 AM	R99069
SS: Dibromofluoromethane	87.7	76.1-120		%Rec	45.307091	08/07/2018 11:22 AM	R99069
SS: Toluene-d8	98.8	85-115		%Rec	45.307091	08/07/2018 11:22 AM	R99069
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Acenaphthylene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Anthracene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Benzo(a)anthracene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Benzo(a)pyrene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Benzo(b)fluoranthene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Benzo(g,h,i)perylene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Benzo(k)fluoranthene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Chrysene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Dibenzo(a,h)anthracene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Fluoranthene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Fluorene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Naphthalene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Phenanthrene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Pyrene	ND	0.0450		mg/Kg-dry	1	08/10/2018 11:51 PM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	94.6	72.1-138		%Rec	1	08/10/2018 11:51 PM	53979
SS: 4-Terphenyl-d14	116	45.3-152		%Rec	1	08/10/2018 11:51 PM	53979
SS: Nitrobenzene-d5	97.2	62.6-144		%Rec	1	08/10/2018 11:51 PM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	13	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

Created: 8/15/2018 5:58:56 PM

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-26 C
Lab ID: 1808461-003
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 12:20 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0147		mg/Kg-dry	55.819769	08/07/2018 1:13 PM	R99069
Ethylbenzene	ND	0.0589		mg/Kg-dry	55.819769	08/07/2018 1:13 PM	R99069
m,p-Xylene	ND	0.118		mg/Kg-dry	55.819769	08/07/2018 1:13 PM	R99069
Methyl tert-butyl ether	ND	0.0589		mg/Kg-dry	55.819769	08/07/2018 1:13 PM	R99069
o-Xylene	ND	0.0589		mg/Kg-dry	55.819769	08/07/2018 1:13 PM	R99069
Total Xylenes	ND	0.118		mg/Kg-dry	55.819769	08/07/2018 1:13 PM	R99069
Toluene	ND	0.0589		mg/Kg-dry	55.819769	08/07/2018 1:13 PM	R99069
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	100	80-130		%Rec	55.819769	08/07/2018 1:13 PM	R99069
SS: Dibromofluoromethane	87.1	76.1-120		%Rec	55.819769	08/07/2018 1:13 PM	R99069
SS: Toluene-d8	97.6	85-115		%Rec	55.819769	08/07/2018 1:13 PM	R99069
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Acenaphthylene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Anthracene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Benzo(a)anthracene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Benzo(a)pyrene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Benzo(b)fluoranthene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Benzo(g,h,i)perylene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Benzo(k)fluoranthene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Chrysene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Dibenzo(a,h)anthracene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Fluoranthene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Fluorene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Naphthalene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Phenanthrene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Pyrene	ND	0.0415		mg/Kg-dry	1	08/11/2018 12:32 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	95.6	72.1-138		%Rec	1	08/11/2018 12:32 AM	53979
SS: 4-Terphenyl-d14	124	45.3-152		%Rec	1	08/11/2018 12:32 AM	53979
SS: Nitrobenzene-d5	95.0	62.6-144		%Rec	1	08/11/2018 12:32 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	5.2	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria
Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-26 D
Lab ID: 1808461-004
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 12:25 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0381		mg/Kg-dry	144.89394	08/07/2018 1:39 PM	R99069
Ethylbenzene	ND	0.152		mg/Kg-dry	144.89394	08/07/2018 1:39 PM	R99069
m,p-Xylene	ND	0.305		mg/Kg-dry	144.89394	08/07/2018 1:39 PM	R99069
Methyl tert-butyl ether	ND	0.152		mg/Kg-dry	144.89394	08/07/2018 1:39 PM	R99069
o-Xylene	ND	0.152		mg/Kg-dry	144.89394	08/07/2018 1:39 PM	R99069
Total Xylenes	ND	0.305		mg/Kg-dry	144.89394	08/07/2018 1:39 PM	R99069
Toluene	ND	0.152		mg/Kg-dry	144.89394	08/07/2018 1:39 PM	R99069
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	101	80-130		%Rec	144.89394	08/07/2018 1:39 PM	R99069
SS: Dibromofluoromethane	86.4	76.1-120		%Rec	144.89394	08/07/2018 1:39 PM	R99069
SS: Toluene-d8	98.8	85-115		%Rec	144.89394	08/07/2018 1:39 PM	R99069
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Acenaphthylene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Anthracene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Benzo(a)anthracene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Benzo(a)pyrene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Benzo(b)fluoranthene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Benzo(g,h,i)perylene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Benzo(k)fluoranthene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Chrysene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Dibenzo(a,h)anthracene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Fluoranthene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Fluorene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Naphthalene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Phenanthrene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Pyrene	ND	0.0416		mg/Kg-dry	1	08/11/2018 1:13 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	97.5	72.1-138		%Rec	1	08/11/2018 1:13 AM	53979
SS: 4-Terphenyl-d14	126	45.3-152		%Rec	1	08/11/2018 1:13 AM	53979
SS: Nitrobenzene-d5	96.4	62.6-144		%Rec	1	08/11/2018 1:13 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	5.0	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria
Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-27 C
Lab ID: 1808461-005
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 12:40 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0134		mg/Kg-dry	51.499670	08/07/2018 2:04 PM	R99069
Ethylbenzene	ND	0.0536		mg/Kg-dry	51.499670	08/07/2018 2:04 PM	R99069
m,p-Xylene	ND	0.107		mg/Kg-dry	51.499670	08/07/2018 2:04 PM	R99069
Methyl tert-butyl ether	ND	0.0536		mg/Kg-dry	51.499670	08/07/2018 2:04 PM	R99069
o-Xylene	ND	0.0536		mg/Kg-dry	51.499670	08/07/2018 2:04 PM	R99069
Total Xylenes	ND	0.107		mg/Kg-dry	51.499670	08/07/2018 2:04 PM	R99069
Toluene	ND	0.0536		mg/Kg-dry	51.499670	08/07/2018 2:04 PM	R99069
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	101	80-130		%Rec	51.499670	08/07/2018 2:04 PM	R99069
SS: Dibromofluoromethane	86.8	76.1-120		%Rec	51.499670	08/07/2018 2:04 PM	R99069
SS: Toluene-d8	101	85-115		%Rec	51.499670	08/07/2018 2:04 PM	R99069
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Acenaphthylene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Anthracene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Benzo(a)anthracene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Benzo(a)pyrene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Benzo(b)fluoranthene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Benzo(g,h,i)perylene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Benzo(k)fluoranthene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Chrysene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Dibenzo(a,h)anthracene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Fluoranthene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Fluorene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Naphthalene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Phenanthrene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Pyrene	ND	0.0409		mg/Kg-dry	1	08/11/2018 1:54 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	103	72.1-138		%Rec	1	08/11/2018 1:54 AM	53979
SS: 4-Terphenyl-d14	126	45.3-152		%Rec	1	08/11/2018 1:54 AM	53979
SS: Nitrobenzene-d5	97.3	62.6-144		%Rec	1	08/11/2018 1:54 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	3.8	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

Suburban Laboratories, Inc.

1950 S. Batavia Ave., Suite 150, Geneva, IL 60134 (708) 544-3260

Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-27 D
Lab ID: 1808461-006
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 12:45 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0121		mg/Kg-dry	45.442978	08/07/2018 3:21 PM	R99069
Ethylbenzene	ND	0.0485		mg/Kg-dry	45.442978	08/07/2018 3:21 PM	R99069
m,p-Xylene	ND	0.0970		mg/Kg-dry	45.442978	08/07/2018 3:21 PM	R99069
Methyl tert-butyl ether	ND	0.0485		mg/Kg-dry	45.442978	08/07/2018 3:21 PM	R99069
o-Xylene	ND	0.0485		mg/Kg-dry	45.442978	08/07/2018 3:21 PM	R99069
Total Xylenes	ND	0.0970		mg/Kg-dry	45.442978	08/07/2018 3:21 PM	R99069
Toluene	ND	0.0485		mg/Kg-dry	45.442978	08/07/2018 3:21 PM	R99069
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	101	80-130		%Rec	45.442978	08/07/2018 3:21 PM	R99069
SS: Dibromofluoromethane	87.5	76.1-120		%Rec	45.442978	08/07/2018 3:21 PM	R99069
SS: Toluene-d8	98.5	85-115		%Rec	45.442978	08/07/2018 3:21 PM	R99069
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Acenaphthylene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Anthracene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Benzo(a)anthracene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Benzo(a)pyrene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Benzo(b)fluoranthene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Benzo(g,h,i)perylene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Benzo(k)fluoranthene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Chrysene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Dibenzo(a,h)anthracene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Fluoranthene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Fluorene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Naphthalene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Phenanthrene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Pyrene	ND	0.0420		mg/Kg-dry	1	08/11/2018 2:34 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	103	72.1-138		%Rec	1	08/11/2018 2:34 AM	53979
SS: 4-Terphenyl-d14	121	45.3-152		%Rec	1	08/11/2018 2:34 AM	53979
SS: Nitrobenzene-d5	95.4	62.6-144		%Rec	1	08/11/2018 2:34 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	6.3	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-28 A
Lab ID: 1808461-007
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 12:55 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0174		mg/Kg-dry	65.034729	08/07/2018 3:47 PM	R99069
Ethylbenzene	ND	0.0696		mg/Kg-dry	65.034729	08/07/2018 3:47 PM	R99069
m,p-Xylene	ND	0.139		mg/Kg-dry	65.034729	08/07/2018 3:47 PM	R99069
Methyl tert-butyl ether	ND	0.0696		mg/Kg-dry	65.034729	08/07/2018 3:47 PM	R99069
o-Xylene	ND	0.0696		mg/Kg-dry	65.034729	08/07/2018 3:47 PM	R99069
Total Xylenes	ND	0.139		mg/Kg-dry	65.034729	08/07/2018 3:47 PM	R99069
Toluene	ND	0.0696		mg/Kg-dry	65.034729	08/07/2018 3:47 PM	R99069
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	100	80-130		%Rec	65.034729	08/07/2018 3:47 PM	R99069
SS: Dibromofluoromethane	86.3	76.1-120		%Rec	65.034729	08/07/2018 3:47 PM	R99069
SS: Toluene-d8	101	85-115		%Rec	65.034729	08/07/2018 3:47 PM	R99069
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Acenaphthylene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Anthracene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Benzo(a)anthracene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Benzo(a)pyrene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Benzo(b)fluoranthene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Benzo(g,h,i)perylene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Benzo(k)fluoranthene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Chrysene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Dibenzo(a,h)anthracene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Fluoranthene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Fluorene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Naphthalene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Phenanthrene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Pyrene	ND	0.0423		mg/Kg-dry	1	08/11/2018 3:15 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	101	72.1-138		%Rec	1	08/11/2018 3:15 AM	53979
SS: 4-Terphenyl-d14	124	45.3-152		%Rec	1	08/11/2018 3:15 AM	53979
SS: Nitrobenzene-d5	98.1	62.6-144		%Rec	1	08/11/2018 3:15 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	6.5	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-28 B
Lab ID: 1808461-008
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 1:00 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0146		mg/Kg-dry	52.525422	08/07/2018 4:12 PM	R99069
Ethylbenzene	ND	0.0584		mg/Kg-dry	52.525422	08/07/2018 4:12 PM	R99069
m,p-Xylene	ND	0.117		mg/Kg-dry	52.525422	08/07/2018 4:12 PM	R99069
Methyl tert-butyl ether	ND	0.0584		mg/Kg-dry	52.525422	08/07/2018 4:12 PM	R99069
o-Xylene	ND	0.0584		mg/Kg-dry	52.525422	08/07/2018 4:12 PM	R99069
Total Xylenes	ND	0.117		mg/Kg-dry	52.525422	08/07/2018 4:12 PM	R99069
Toluene	ND	0.0584		mg/Kg-dry	52.525422	08/07/2018 4:12 PM	R99069
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	102	80-130		%Rec	52.525422	08/07/2018 4:12 PM	R99069
SS: Dibromofluoromethane	87.3	76.1-120		%Rec	52.525422	08/07/2018 4:12 PM	R99069
SS: Toluene-d8	101	85-115		%Rec	52.525422	08/07/2018 4:12 PM	R99069
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Acenaphthylene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Anthracene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Benzo(a)anthracene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Benzo(a)pyrene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Benzo(b)fluoranthene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Benzo(g,h,i)perylene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Benzo(k)fluoranthene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Chrysene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Dibenzo(a,h)anthracene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Fluoranthene	0.0485	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Fluorene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Naphthalene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Phenanthrene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Pyrene	ND	0.0441		mg/Kg-dry	1	08/11/2018 3:56 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	102	72.1-138		%Rec	1	08/11/2018 3:56 AM	53979
SS: 4-Terphenyl-d14	123	45.3-152		%Rec	1	08/11/2018 3:56 AM	53979
SS: Nitrobenzene-d5	96.5	62.6-144		%Rec	1	08/11/2018 3:56 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	10	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria
Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-28 C
Lab ID: 1808461-009
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 1:05 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	0.0335	0.0144		mg/Kg-dry	53.64922	08/08/2018 1:55 AM	R99074
Ethylbenzene	ND	0.0578		mg/Kg-dry	53.64922	08/08/2018 1:55 AM	R99074
m,p-Xylene	ND	0.116		mg/Kg-dry	53.64922	08/08/2018 1:55 AM	R99074
Methyl tert-butyl ether	ND	0.0578		mg/Kg-dry	53.64922	08/08/2018 1:55 AM	R99074
o-Xylene	ND	0.0578		mg/Kg-dry	53.64922	08/08/2018 1:55 AM	R99074
Total Xylenes	ND	0.116		mg/Kg-dry	53.64922	08/08/2018 1:55 AM	R99074
Toluene	ND	0.0578		mg/Kg-dry	53.64922	08/08/2018 1:55 AM	R99074
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	101	80-130		%Rec	53.64922	08/08/2018 1:55 AM	R99074
SS: Dibromofluoromethane	88.7	76.1-120		%Rec	53.64922	08/08/2018 1:55 AM	R99074
SS: Toluene-d8	98.8	85-115		%Rec	53.64922	08/08/2018 1:55 AM	R99074
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Acenaphthylene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Anthracene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Benzo(a)anthracene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Benzo(a)pyrene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Benzo(b)fluoranthene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Benzo(g,h,i)perylene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Benzo(k)fluoranthene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Chrysene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Dibenzo(a,h)anthracene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Fluoranthene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Fluorene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Naphthalene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Phenanthrene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Pyrene	ND	0.0429		mg/Kg-dry	1	08/11/2018 4:36 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	103	72.1-138		%Rec	1	08/11/2018 4:36 AM	53979
SS: 4-Terphenyl-d14	121	45.3-152		%Rec	1	08/11/2018 4:36 AM	53979
SS: Nitrobenzene-d5	98.4	62.6-144		%Rec	1	08/11/2018 4:36 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	7.1	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-28 D
Lab ID: 1808461-010
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 1:10 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	0.0195	0.0129		mg/Kg-dry	43.535804	08/08/2018 2:20 AM	R99074
Ethylbenzene	0.106	0.0514		mg/Kg-dry	43.535804	08/08/2018 2:20 AM	R99074
m,p-Xylene	0.114	0.103		mg/Kg-dry	43.535804	08/08/2018 2:20 AM	R99074
Methyl tert-butyl ether	ND	0.0514		mg/Kg-dry	43.535804	08/08/2018 2:20 AM	R99074
o-Xylene	ND	0.0514		mg/Kg-dry	43.535804	08/08/2018 2:20 AM	R99074
Total Xylenes	0.114	0.103		mg/Kg-dry	43.535804	08/08/2018 2:20 AM	R99074
Toluene	ND	0.0514		mg/Kg-dry	43.535804	08/08/2018 2:20 AM	R99074
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	104	80-130		%Rec	43.535804	08/08/2018 2:20 AM	R99074
SS: Dibromofluoromethane	89.4	76.1-120		%Rec	43.535804	08/08/2018 2:20 AM	R99074
SS: Toluene-d8	98.6	85-115		%Rec	43.535804	08/08/2018 2:20 AM	R99074
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Acenaphthylene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Anthracene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Benzo(a)anthracene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Benzo(a)pyrene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Benzo(b)fluoranthene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Benzo(g,h,i)perylene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Benzo(k)fluoranthene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Chrysene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Dibenzo(a,h)anthracene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Fluoranthene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Fluorene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Naphthalene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Phenanthrene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Pyrene	ND	0.0467		mg/Kg-dry	1	08/14/2018 11:15 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	86.4	72.1-138		%Rec	1	08/14/2018 11:15 AM	53979
SS: 4-Terphenyl-d14	114	45.3-152		%Rec	1	08/14/2018 11:15 AM	53979
SS: Nitrobenzene-d5	97.7	62.6-144		%Rec	1	08/14/2018 11:15 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	15	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria
Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-29 A
Lab ID: 1808461-011
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 1:15 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	0.0168	0.0145		mg/Kg-dry	51.3938	08/08/2018 2:46 AM	R99074
Ethylbenzene	ND	0.0579		mg/Kg-dry	51.3938	08/08/2018 2:46 AM	R99074
m,p-Xylene	ND	0.116		mg/Kg-dry	51.3938	08/08/2018 2:46 AM	R99074
Methyl tert-butyl ether	ND	0.0579		mg/Kg-dry	51.3938	08/08/2018 2:46 AM	R99074
o-Xylene	ND	0.0579		mg/Kg-dry	51.3938	08/08/2018 2:46 AM	R99074
Total Xylenes	ND	0.116		mg/Kg-dry	51.3938	08/08/2018 2:46 AM	R99074
Toluene	ND	0.0579		mg/Kg-dry	51.3938	08/08/2018 2:46 AM	R99074
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	101	80-130		%Rec	51.3938	08/08/2018 2:46 AM	R99074
SS: Dibromofluoromethane	88.0	76.1-120		%Rec	51.3938	08/08/2018 2:46 AM	R99074
SS: Toluene-d8	98.7	85-115		%Rec	51.3938	08/08/2018 2:46 AM	R99074
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Acenaphthylene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Anthracene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Benzo(a)anthracene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Benzo(a)pyrene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Benzo(b)fluoranthene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Benzo(g,h,i)perylene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Benzo(k)fluoranthene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Chrysene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Dibenzo(a,h)anthracene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Fluoranthene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Fluorene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Naphthalene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Phenanthrene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Pyrene	ND	0.0449		mg/Kg-dry	1	08/14/2018 11:57 AM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	93.3	72.1-138		%Rec	1	08/14/2018 11:57 AM	53979
SS: 4-Terphenyl-d14	127	45.3-152		%Rec	1	08/14/2018 11:57 AM	53979
SS: Nitrobenzene-d5	89.8	62.6-144		%Rec	1	08/14/2018 11:57 AM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	11	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

Created: 8/15/2018 5:58:59 PM

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Suburban Laboratories, Inc.

1950 S. Batavia Ave., Suite 150, Geneva, IL 60134 (708) 544-3260

Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-29 B
Lab ID: 1808461-012
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 1:20 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0142		mg/Kg-dry	54.459112	08/08/2018 3:11 AM	R99074
Ethylbenzene	ND	0.0570		mg/Kg-dry	54.459112	08/08/2018 3:11 AM	R99074
m,p-Xylene	ND	0.114		mg/Kg-dry	54.459112	08/08/2018 3:11 AM	R99074
Methyl tert-butyl ether	ND	0.0570		mg/Kg-dry	54.459112	08/08/2018 3:11 AM	R99074
o-Xylene	ND	0.0570		mg/Kg-dry	54.459112	08/08/2018 3:11 AM	R99074
Total Xylenes	ND	0.114		mg/Kg-dry	54.459112	08/08/2018 3:11 AM	R99074
Toluene	ND	0.0570		mg/Kg-dry	54.459112	08/08/2018 3:11 AM	R99074
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	102	80-130		%Rec	54.459112	08/08/2018 3:11 AM	R99074
SS: Dibromofluoromethane	88.7	76.1-120		%Rec	54.459112	08/08/2018 3:11 AM	R99074
SS: Toluene-d8	99.8	85-115		%Rec	54.459112	08/08/2018 3:11 AM	R99074
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Acenaphthylene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Anthracene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Benzo(a)anthracene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Benzo(a)pyrene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Benzo(b)fluoranthene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Benzo(g,h,i)perylene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Benzo(k)fluoranthene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Chrysene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Dibenzo(a,h)anthracene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Fluoranthene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Fluorene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Naphthalene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Phenanthrene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Pyrene	ND	0.0412		mg/Kg-dry	1	08/14/2018 12:41 PM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	101	72.1-138		%Rec	1	08/14/2018 12:41 PM	53979
SS: 4-Terphenyl-d14	126	45.3-152		%Rec	1	08/14/2018 12:41 PM	53979
SS: Nitrobenzene-d5	92.6	62.6-144		%Rec	1	08/14/2018 12:41 PM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	4.5	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Suburban Laboratories, Inc.

1950 S. Batavia Ave., Suite 150, Geneva, IL 60134 (708) 544-3260

Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria

Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-29 C
Lab ID: 1808461-013
Date Received: 08/06/2018 11:40 AM

Matrix: SOIL
Collection Date: 08/02/2018 1:25 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	ND	0.0148		mg/Kg-dry	57.004743	08/08/2018 3:36 AM	R99074
Ethylbenzene	ND	0.0593		mg/Kg-dry	57.004743	08/08/2018 3:36 AM	R99074
m,p-Xylene	ND	0.119		mg/Kg-dry	57.004743	08/08/2018 3:36 AM	R99074
Methyl tert-butyl ether	ND	0.0593		mg/Kg-dry	57.004743	08/08/2018 3:36 AM	R99074
o-Xylene	ND	0.0593		mg/Kg-dry	57.004743	08/08/2018 3:36 AM	R99074
Total Xylenes	ND	0.119		mg/Kg-dry	57.004743	08/08/2018 3:36 AM	R99074
Toluene	ND	0.0593		mg/Kg-dry	57.004743	08/08/2018 3:36 AM	R99074
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	101	80-130		%Rec	57.004743	08/08/2018 3:36 AM	R99074
SS: Dibromofluoromethane	88.8	76.1-120		%Rec	57.004743	08/08/2018 3:36 AM	R99074
SS: Toluene-d8	99.2	85-115		%Rec	57.004743	08/08/2018 3:36 AM	R99074
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Acenaphthylene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Anthracene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Benzo(a)anthracene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Benzo(a)pyrene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Benzo(b)fluoranthene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Benzo(g,h,i)perylene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Benzo(k)fluoranthene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Chrysene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Dibenzo(a,h)anthracene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Fluoranthene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Fluorene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Naphthalene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Phenanthrene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Pyrene	ND	0.0416		mg/Kg-dry	1	08/14/2018 1:24 PM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	97.9	72.1-138		%Rec	1	08/14/2018 1:24 PM	53979
SS: 4-Terphenyl-d14	111	45.3-152		%Rec	1	08/14/2018 1:24 PM	53979
SS: Nitrobenzene-d5	92.3	62.6-144		%Rec	1	08/14/2018 1:24 PM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	3.9	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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Laboratory Results

Client ID: CWM Company, Inc
Project Name: S and S Infinite Peoria
Report Date: August 15, 2018
Workorder: 1808461

Client Sample ID: SB-29 D
Lab ID: 1808461-014
Date Received: 08/06/2018 11:40 AM
Matrix: SOIL
Collection Date: 08/02/2018 1:30 PM

Parameter	Result	Report Limit	Qual.	Units	Dilution Factor	Date Analyzed	Batch ID
VOLATILE ORGANIC COMPOUNDS		Method: EPA-8260B-Rev 2, Dec-96				Analyst: SJ	
Benzene	0.0582	0.0189		mg/Kg-dry	71.865927	08/10/2018 1:40 PM	R99226
Ethylbenzene	ND	0.0756		mg/Kg-dry	71.865927	08/10/2018 1:40 PM	R99226
m,p-Xylene	ND	0.151		mg/Kg-dry	71.865927	08/10/2018 1:40 PM	R99226
Methyl tert-butyl ether	ND	0.0756		mg/Kg-dry	71.865927	08/10/2018 1:40 PM	R99226
o-Xylene	ND	0.0756		mg/Kg-dry	71.865927	08/10/2018 1:40 PM	R99226
Total Xylenes	ND	0.151		mg/Kg-dry	71.865927	08/10/2018 1:40 PM	R99226
Toluene	0.120	0.0756		mg/Kg-dry	71.865927	08/10/2018 1:40 PM	R99226
Internal Quality Control Compounds							
SS: 4-Bromofluorobenzene	101	80-130		%Rec	71.865927	08/10/2018 1:40 PM	R99226
SS: Dibromofluoromethane	90.4	76.1-120		%Rec	71.865927	08/10/2018 1:40 PM	R99226
SS: Toluene-d8	99.2	85-115		%Rec	71.865927	08/10/2018 1:40 PM	R99226
SEMIVOLATILE ORGANICS, BY GCMS SIM		Method: EPA-8270C-Rev 3, Dec-96				Analyst: KH	
Acenaphthene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Acenaphthylene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Anthracene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Benzo(a)anthracene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Benzo(a)pyrene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Benzo(b)fluoranthene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Benzo(g,h,i)perylene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Benzo(k)fluoranthene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Chrysene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Dibenzo(a,h)anthracene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Fluoranthene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Fluorene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Indeno(1,2,3-cd)pyrene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Naphthalene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Phenanthrene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Pyrene	ND	0.0416		mg/Kg-dry	1	08/14/2018 2:09 PM	53979
Internal Quality Control Compounds							
SS: 2-Fluorobiphenyl	98.4	72.1-138		%Rec	1	08/14/2018 2:09 PM	53979
SS: 4-Terphenyl-d14	126	45.3-152		%Rec	1	08/14/2018 2:09 PM	53979
SS: Nitrobenzene-d5	92.6	62.6-144		%Rec	1	08/14/2018 2:09 PM	53979
PERCENT MOISTURE		Method: ASTM-D2216-Rev 2005				Analyst: amo	
Percent Moisture	4.9	1.0	c	wt%	1	08/06/2018 5:41 PM	R99016

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PREP DATES REPORT

Client: CWM Company, Inc
Project: S and S Infinite Peoria
Report Date: August 15, 2018
Lab Order: 1808461

Sample ID	Collection Date	Batch ID	Prep Method	Prep Test Name	TCLP Date	Prep Date
1808461-001A	8/2/2018 12:10:00 P	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-001B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-002A	8/2/2018 12:15:00 P	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-002B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-003A	8/2/2018 12:20:00 P	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-003B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-004A	8/2/2018 12:25:00 P	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-004B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-005A	8/2/2018 12:40:00 P	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-005B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-006A	8/2/2018 12:45:00 P	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-006B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-007A	8/2/2018 12:55:00 P	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-007B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-008A	8/2/2018 1:00:00 PM	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-008B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-009A	8/2/2018 1:05:00 PM	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-009B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-010A	8/2/2018 1:10:00 PM	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-010B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-011A	8/2/2018 1:15:00 PM	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-011B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-012A	8/2/2018 1:20:00 PM	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-012B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-013A	8/2/2018 1:25:00 PM	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-013B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018
1808461-014A	8/2/2018 1:30:00 PM	53971	5035PR	CLOSED SYSTEM P&T VOC Prep		8/7/2018
1808461-014B		53979	3550SIM_B	SOLID PREP SONICATION: BNA		8/7/2018

Created: 8/15/2018 5:59:01 PM

Suburban Laboratories, Inc.
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Qualifier Definitions

WO#: **1808461**
Date: **8/15/2018**

Qualifiers:

*/x	Value exceeds Maximum Contaminant Level
B	Analyte detected in the associated Method Blank
C	Value is below Minimum Concentration Limit
c	Analyte not in SLI scope of accreditation
E	Estimated, detected above quantitation range
G	Refer to case narrative page for specific comments
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limit (QL)
N	Tentatively identified compounds
ND	Not Detected at the Reporting Limit
P	Present
Q	Accreditation is not available from Wisconsin
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
T	Analyte detected in sample trip blank
V	EPA requires field analysis/filtration. Lab analysis would be considered past hold time.

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SUBURBAN LABORATORIES, Inc.

1950 S. Batavia Ave., Ste 150, Geneva, IL 60134 Tel. 708.544.3260 Fax: 708.544.8587 Toll Free: 800.783.LABS www.suburbanlabs.com

CHAIN OF CUSTODY RECORD # 128334

Company Name: CWM Company, Inc.
Company Address: 701 S. Grand Ave. W.
City: Springfield State: IL Zip: 62704
Phone: (217) 522-8001 / Fax: 8009 ☐ Fax Report
Email Address: cwm@cwmcompany.com Final Report will be emailed
Project ID / Location: S&S Infinite / Peoria
Project Manager (Report to): Carol L. Rowe
Sample Collector(s) Name: MJS / GTR

TURNAROUND TIME REQUESTED
☒ Normal ☐ RUSH* *Additional Rush Charges Approved.
*Date & Time Needed: ______
Normal TAT is specified on the price quotation or fee schedule. Rush work must be pre-approved and additional charges apply.
Specify Regulatory Program: (Required) ☐ None/Info Only
☒ LUST ☐ SRP ☐ SDWA
☐ 503 Sludge ☐ NPDES ☐ MWRDGC
☐ Disposal ☐ Other* *Please specify in comment section below.

ANALYSIS & METHOD REQUESTED
Enter an "X" in box below for request
BETX/MTBE, PNAs

Page 1 of 2
PO No.
Shipping Method
Reporting Level (at additional charge) 1 2 3 4

LAB USE ONLY
SLI ORDER No. 1808461
Sample containers supplied by customer? ☐ Yes
Temperature of Received Samples: 2 °C
Samples received the same day as collection? ☐ Yes

	SAMPLE IDENTIFICATION *Use One Line Per Preservation & Container Type*	COLLECTION DATE	TIME	MATRIX	GRAB/ COMP.	CONTAINERS Qty	SIZE & TYPE	PRESERVATIVE	BETX/MTBE	PNAs	R	Condition	Split	LAB #
1	SB-26 A	8/2/18	12:10	S	G	3/1	40mL/4oz.	MeOH/None	X	X				1
2	SB-26 B	/ /	12:15											2
3	SB-26 C	/ /	12:20											3
4	SB-26 D	/ /	12:25											4
5	SB-27C	/ /	12:40											5
6	SB-27 D	/	12:45											6
7	SB-28 A	/	12:55											7
8	SB-28 B	/	1:00											8
9	SB-28 C	/	1:05											9
10	SB-28 D	/	1:10											10
11	SB-29 A	/	1:15											11
12	SB-29 B	/	1:20											12

MATRIX: Drinking Water (DW), Soil (S), Waste Water (WW), Surface Water (SW), Ground Water (GW), Solid Waste (WA), Sludge (U), Wipe (P) CONTAINER: 2oz, 4oz, 8oz, 40ml Vial, 500ml, Liter (L), Tube, Glass (G), Plastic (P) PRESERVATIVE: H_2SO_4, HCl, HNO_3, Methanol (MeOH) NaOH, Sodium Bisulfate (NaB), NaThio

COMMENTS & SPECIAL INSTRUCTIONS:

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CONDITION CODES
1. Improper/damaged container/cap
2. Improper preservation
3. Insufficient sample volume
4. Headspace/air bubbles for VOCs
5. Received past holding time
6. Received frozen
7. Label conflicts with COC

1. Relinquished By	Date	2. Relinquished By	Date	3. Relinquished By	Date	4. Relinquished By	Date
[signature]	8/2/18	[signature]	8/6/18	[signature]	8/6/18		
Received By: [signature] ☒ Ice present	Time: 5:00 PM	Received By: [signature] ☒ Ice present	Time: 8:30 AM	Received By: [signature] ☐ Ice present	Time: 11:40 am	Received By ☐ Ice present	Time

Submission of samples subject to Terms and Conditions on back. Rev. 07/20/08 White-Original, Pink-Sampler Copy

SUBURBAN LABORATORIES, Inc.
1950 S. Batavia Ave., Ste 150, Geneva, IL 60134 Tel. 708.544.3260 Fax: 708.544.8587 Toll Free: 800.783.LABS www.suburbanlabs.com

CHAIN OF CUSTODY RECORD # 133385

Company Name: CWM Company, Inc.
Company Address: 701 S. Grand Ave. W.
City: Springfield State: IL Zip: 62704
Phone: (217) 522-8001 / Fax: 8009 ☐ Fax Report
Email Address: cwm@cwmcompany.com Final Report will be emailed
Project ID / Location: S & S Infinite / Peoria
Project Manager (Report to): Carol L. Rowe
Sample Collector(s) Name: MJS / GTR

TURNAROUND TIME REQUESTED
☒ Normal ☐ RUSH* *Additional Rush Charges Approved.
*Date & Time Needed:
Normal TAT is specified on the price quotation or fee schedule. Rush work must be pre-approved and additional charges apply.

Specify Regulatory Program: (Required) ☐ None/Info Only
☒ LUST ☐ SRP ☐ SDWA
☐ 503 Sludge ☐ NPDES ☐ MWRDGC
☐ Disposal ☐ Other* *Please specify in comment section below.

ANALYSIS & METHOD REQUESTED
Enter an "X" in box below for request
BETX/MTBE, PNAs

Page 2 of 2
PO No.
Shipping Method
Reporting Level (at additional charge) 1 2 3 4

LAB USE ONLY
SLI ORDER No. 1808461
Sample containers supplied by customer? ☐ Yes
Temperature of Received Samples: 2 °C
Samples received the same day as collection? ☐ Yes

	SAMPLE IDENTIFICATION *Use One Line Per Preservation & Container Type*	COLLECTION DATE	COLLECTION TIME	MATRIX	GRAB/COMP.	CONTAINERS Qty	SIZE & TYPE	PRESERVATIVE	BETX/MTBE	PNAs	R	Condition	Split	LAB #
1	SB-29C	8/2/18	1:25	S	G	3/1	40ml/4oz.	MeOH/None	X	X				13
2	SB-29D	↓	1:30	↓	↓	↓	↓	↓	↓	↓				14
3		/ /												
4		/ /												
5		/ /												
6		/ /												
7		/ /												
8		/ /												
9		/ /												
10		/ /												
11		/ /												
12		/ /												

MATRIX: Drinking Water (DW), Soil (S), Waste Water (WW), Surface Water(SW), Ground Water (GW), Solid Waste (WA), Sludge (U), Wipe (P) CONTAINER: 2oz, 4oz, 8oz, 40ml Vial, 500ml, Liter (L), Tube, Glass (G), Plastic (P) PRESERVATIVE: H_2SO_4, HCl, HNO_3, Methanol (MeOH) NaOH, Sodium Bisulfate (NaB), NaThio

COMMENTS & SPECIAL INSTRUCTIONS:

RECEIVED AUG 15 2018 CR

CONDITION CODES
1. Improper/damaged container/cap
2. Improper preservation
3. Insufficient sample volume
4. Headspace/air bubbles for VOCs
5. Received past holding time
6. Received frozen
7. Label conflicts with COC

1. Relinquished By	Date	2. Relinquished By	Date	3. Relinquished By	Date	4. Relinquished By	Date
[signature]	8/2/18	[signature]	8/6/18	[signature]	8/6/18		
Received By: [signature] ☒ Ice present	Time 5:00 PM	Received By: [signature] ☒ Ice present	Time 8:30 AM	Received By: [signature] ☐ Ice present	Time 11:40am	Received By ☐ Ice present	Time

Submission of samples subject to Terms and Conditions on back. Rev. 07/20/08 White-Original, Pink-Sampler Copy

Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

The Agency is authorized to require this information under Section 4 and Title XVI of the Environmental Protection Act (415 ILCS 5/4, 5/57 – 57.17). Failure to disclose this information may result in a civil penalty of not to exceed $50,000.00 for the violation and an additional civil penalty of not to exceed $10,000.00 for each day during which the violation continues (415 ILCS 5/42). Any person who knowingly makes a false material statement or representation, orally or in writing, in any label, manifest, record, report, permit, or license, or other document filed, maintained or used for the purpose of compliance with Title XVI commits a Class 4 felony. Any second or subsequent offense after conviction hereunder is a Class 3 felony (415 ILCS 5/44 and 57.17). This form has been approved by the Forms Management Center.

Leaking Underground Storage Tank Program
Laboratory Certification for Chemical Analysis

A. Site Identification

IEMA Incident # (6- or 8-digit): 20161089 IEPA LPC# (10-digit): 1430650114

Site Name: S & S Infinite Group, Inc.

Site Address (Not a P.O. Box): 400 North East Adams Street

City: Peoria County: Peoria ZIP Code: 61603

Leaking UST Technical File

B. Sample Collector

I certify that:

1. Appropriate sampling equipment/methods were utilized to obtain representative samples. MJS (Initial)
2. Chain-of-custody procedures were followed in the field. MJS (Initial)
3. Sample integrity was maintained by proper preservation. MJS (Initial)
4. All samples were properly labeled. MJS (Initial)

RECEIVED
AUG 23 2018

C. Laboratory Representative

I certify that:

1. Proper chain-of-custody procedures were followed as documented on the chain-of-custody forms 258 (Initial)
2. Sample integrity was maintained by proper preservation. 258 (Initial)
3. All samples were properly labeled. 258 (Initial)
4. Quality assurance/quality control procedures were established and carried out. 258 (Initial)
5. Sample holding times were not exceeded. 258 (Initial)

6. SW-846 Analytical Laboratory Procedure (USEPA) methods were used for the analyses.

JLS (Initial)

7. An accredited lab performed quantitative analysis using test methods identified in 35 IAC 186.180 (for samples collected on or after January 1, 2003).

JLS (Initial)

D. Signatures

I hereby affirm that all information contained in this form is true and accurate to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sample Collector		Laboratory Representative	
Name	Matthew Saladino	Name	Keith Simon
Title	Environmental Engineer	Title	Project Manager
Company	CWM Company, Inc.	Company	Suburban Laboratories, Inc.
Address	701 South Grand Ave. West	Address	1950 S. Batavia Ave Ste 150
City	Springfield	City	Geneva
State	IL	State	IL
Zip Code	62704	Zip Code	60134
Phone	217-522-8001	Phone	708-544-3260
Signature	[signature]	Signature	[signature]
Date	8/2/18	Date	8/15/18

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RH

APPENDIX G

TACO CALCULATIONS

CORRECTIVE ACTION PLAN AMENDMENT
S&S Infinite Group
Peoria, Illinois

R-26 Input/Summary Sheet

Version: 4/25/2016

IEMA Incident # (6 or 8 digit)	2016-1089
IEPA LPC # (10 digit)	1430560114
Site Name:	S & S Infinite Group, Inc. - DBA Downtown 66
Site Address:	400 North East Adams
City:	Peoria
County:	Peoria
Zip Code:	61603
SSL Equations Used:	S5,6,7,8,9,10,17,18,19,20,21,22,24
RBCA Equations Used:	R-1, R-2, R3
Contact Information for Individual who Performed Calculat	CWM Company, Inc.,
Land Use:	Residential & Construction Worker
Objective from S17 used in R26:	No
Groundwater:	Class 1
Standard or Mass Limit Equations:	Standard Equations — If Mass Limit, then Specifiy Acres:
Square Feet of Plume for Mass Limit Eq.:	0.00 — < use this # above
Date Data is Entered:	February 20, 2018

Entry	Description		
	Holcomb Bulk Density (pcf), or	Shelby Tube Location:	
2.15	Dry Soil Bulk Density (g/cm^3 or kg/L): 1.5, or Gravel =2.0, Sand = 1.8, Silt = 1.6, Clay = 1.7, or site specific		
2.69	ρs - Soil Particle Density	Reference	
0.201	Total Soil Porosity	0.201	0.201
0.092	Water Filled Porosity	0.092	0.092
0.109	Air Filled Porosity	0.109	0.109
0.250	θ_T - Total Soil Porosity (RBCA)	0.43 or, Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36	
0.094	w - Average Soil Moisture Content	0.1, or Subsurface Soil (top 1m) = 0.1; Subsurface Soil (below 1 m) =0.2; or Site Specific	
Sand	USDA Soil Classification (Pick from List)		Entry
0.01360	Fractional Organic Carbon (foc) in g/g	Organic Matter (%):	
		Organic Matter (mg/kg):	
		Total Organic Carbon (g/g):	0.0136

1.00E-04	Average Hydraulic Conductivity (cm/sec)	Well Name
1.00E-04	Falling Hydraulic Conductivity (cm/sec)	Unknown
	Rising Hydraulic Conductivity (cm/sec)	
0.02000	Hydraulic Gradient (0.02 for sites with no groundwater)	Meters
10	d_a - Aquifer Thickness (ft)	3.048 m
10	d_s - Depth of Source (ft) (Vertical Thickness of Contamination)	3.048 m
	X - Distance along the centerline of the groundwater plume emanating to setback zone or surface water from the source in the direction of groundwater flow (ft) (RBCA)	0 cm
65	L - Source Length Parallel to Groundwater Flow (ft)	19.812 m
30	Sw: Source Width -horizontal plane (ft) (RBCA)	914.4 cm

Hydraulic Gradient Calculations

MW-3	1.02
MW-11	1.00
Distance:	1

Surface Water

$C_{(x)}$ - Concentration of Contaminant in groundwater at distance X from the source (mg/L)

	Benzene	MTBE
	Toluene	
	Ethylbenzene	
	Total Xylenes	

Chemicals of Concern

Benzene	Naphthalene	[redacted]
Toluene	[redacted]	Chrysene
Ethylbenzene	[redacted]	Benzo(k)fluoranthene
Total Xylenes	[redacted]	Indeno(1,2,3-cd)pyrene
MTBE		

☐ Mass Limit Equations

☑ Inhalation Equations

SSL Equations Needed

☑ Groundwater Ingestion Equations

☑ Csat Equations

☐ Fugitive Dust Equations

☑ Ingestion Equations

Text discussion for "I", L, d_a, d_s, S_w, S_d	
Hydraulic Gradient	The **Hydraulic Gradient (*i*)** was determined from an onsite survey of each of the groundwater monitoring wells. The riser elevations were determined and the depth to groundwater was noted in each well. This data was used to generate a potentiometric flow map with contour lines which show potentiometric head. A corresponding flow line, perpendicular to the contour lines, was determined between two known points of groundwater elevation. The hydraulic gradient was determined by the difference in elevation divided by the length of flow between the points.
Source Length	The **Source Length Parallel to Groundwater Flow (L)** was determined from the site map and analytical results. A value of 45.1104 m was used to encompass the length of contamination parallel to groundwater flow. This value is the distance between soil borings BH-1 and BH-2.
Aquifer Thickness	The **Aquifer Thickness (d_a)** is a site specific value determined by the length of the monitoring well screen. The Aquifer Thickness value used in the modeling equations was 3.048 meters.
Depth of Source	The **Depth of Source (d_s)** was determined from the analytical results and soil boring logs. A value of 3.048 m was used to encompass the vertical thickness of contamination based upon a clean soil sample at BH-1A, "hot" samples at BH-2B and BH-2C, and a clean soil sample at BH-2D. Thus the vertical thickness of soil contamination has been determined to be 3.048 m.
Source Width	**The source width perpendicular to groundwater flow direction in the Horizontal Plane (S_w)** was determined from the site map and analytical results. A value of 3566.16 cm was used to encompass the width of contamination in the horizontal plane. This value is the distance between clean wells MW-4 and and MW-6.
Source Depth	**The source width perpendicular to groundwater flow direction in the Vertical Plane (S_d)** was determined from the soil boring logs and analytical results. A value of 304.8 cm was used to encompass the width of contamination in the vertical plane based on the depths of contamination present and the PID readings from the bore logs.
Distance (X)	

BENZENE								
Soil Exceedances					Groundwater Exceedances			
Location	Soil Concentration (mg/kg)	X (ft)	Gw_{obj} (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)
backfill 3	1.37	70	0.093	0.0049				
WC-1	43.3	159	2.948	0.0049				
WC-3	9.79	117	0.666	0.0049				
SB-26A	0.389	43	0.026	0.0048				
SB-28C	0.0335		0.002					
SB-29D	0.0582		0.004					

Toluene								
Soil Exceedances					Groundwater Exceedances			
Location	Soil Concentration (mg/kg)	X (ft)	Gw_{obj} (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)
backfill 3	29.6		0.671					
WC-1	611	7	13.853	0.9515				
WC-3	161	4	3.650	0.6916				

Ethylbenzene								
Soil Exceedances					Groundwater Exceedances			
Location	Soil Concentration (mg/kg)	X (ft)	Gw_{obj} (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)
WC-1	146	8	1.655	0.6304				
WC-3	45.8		0.519					

Total Xylenes

Soil Exceedances					Groundwater Exceedances			
Location	Soil Concentration (mg/kg)	X (ft)	Gw_{obj} (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)
backfill 3	39		0.357					
WC-1	816		7.460					
WC-3	258		2.359					
SB-26A	6.43		0.059					

MTBE

Soil Exceedances					Groundwater Exceedances			
Location	Soil Concentration (mg/kg)	X (ft)	Gw_{obj} (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)

Naphthalene								
Soil Exceedances					Groundwater Exceedances			
Location	Soil Concentration (mg/kg)	X (ft)	Gw_{obj} (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)
11	80.9	14	0.591046384	0.1379				
WC-1	2.44		0.018					

Benzo[a]pyrene								
Soil Exceedances					Groundwater Exceedances			
Location	Soil Concentration (mg/kg)	X (ft)	Gw_{obj} (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)
SB-24A	0.153		0.000000551					

S & S Infinite Group, Inc. - DBA Downtown 66				
GROUNDWATER CLEAN-UP OBJECTIVES				
(mg/L)				
	Most Stringent	Class I	Class II	ADLs
Parameter	CUO	GW	GW	(U)
Benzene	**0.005**	**0.005**	0.025	<0.002
Ethylbenzene	**0.7**	**0.7**	1	<0.002
MTBE	**0.07**	**0.07**	**0.07**	<0.005
Toluene	**1.0**	**1.0**	2.5	<0.002
Total Xylenes	**10.0**	**10.0**	**10.0**	<0.005
Acenaphthene	**0.42**	**0.42**	2.1	<0.018
Acenaphthylene^	**0.21**	**0.21**	1.05	<0.010
Anthracene	**2.1**	**2.1**	10.5	<0.0066
Benzo(a)anthracene	**0.00013**	**0.00013**	0.00065	<0.00013
Benzo(a)pyrene	**0.0002**	**0.0002**	0.002	<0.0002
Benzo(b)fluoranthene	**0.00018**	**0.00018**	0.0009	<0.00018
Benzo(g,h,i)perylene^	**0.21**	**0.21**	1.05	<0.00076
Benzo(k)fluoranthene	**0.00017**	**0.00017**	0.00085	<0.00017
Chrysene	**0.0015**	**0.0015**	0.0075	<0.0015
Dibenz(a,h)anthracene	**0.0003**	**0.0003**	0.0015	<0.0003
Fluoranthene	**0.28**	**0.28**	1.4	<0.0021
Fluorene	**0.28**	**0.28**	1.4	<0.0021
Indeno(1,2,3-cd)pyrene	**0.00043**	**0.00043**	0.00215	<0.00043
Naphthalene	**0.14**	**0.14**	0.22	<0.010
Phenanthrene^	**0.21**	**0.21**	1.05	<0.0064
Pyrene	**0.21**	**0.21**	1.05	<0.0027
^Temporary Objectives from additional tables -- 10/1/04				
Updated 12/20/04				

Summary of Tier 2 Calculations
S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089
02/20/18

Table 3

Tier 1 Objectives

		Benzene		Toluene		Ethylbenzene		Total Xylenes		Naphthalene		MTBE	
Residential	Ingestion	12	mg/kg	16,000	mg/kg	7,800	mg/kg	16,000	mg/kg	1,600	mg/kg	780	mg/kg
	Inhalation	0.8	mg/kg	650	mg/kg	400	mg/kg	320	mg/kg	170	mg/kg	8,800	mg/kg
	Migration Class 1	0.03	mg/kg	12	mg/kg	13	mg/kg	150	mg/kg	12	mg/kg	0.32	mg/kg
	Migration Class 2	0.17	mg/kg	29	mg/kg	19	mg/kg	150	mg/kg	18	mg/kg	0.32	mg/kg
Industrial/Commercial	Ingestion	100	mg/kg	410,000	mg/kg	200,000	mg/kg	410,000	mg/kg	41,000	mg/kg	20,000	mg/kg
	Inhalation	1.60	mg/kg	650	mg/kg	400	mg/kg	320	mg/kg	270	mg/kg	8,800	mg/kg
Construction Worker	Ingestion	2,300	mg/kg	410,000	mg/kg	20,000	mg/kg	41,000	mg/kg	4,100	mg/kg	2,000	mg/kg
	Inhalation	2.20	mg/kg	42	mg/kg	58	mg/kg	5.6	mg/kg	1.80	mg/kg	140	mg/kg
Soil Saturation		580	mg/kg	290	mg/kg	150	mg/kg	110	mg/kg	212.16	mg/kg	8,400	mg/kg

Tier 2 SSL Objectives

		Benzene	Equation	Toluene	Equation	Ethylbenzene	Equation	Total Xylenes	Equation	Naphthalene	Equation	MTBE	
Residential	Ingestion	11.64	S-2	6,257	S-1	7,821	S-1	15,643	S-1	1,564	S-1	782.1	S-1
	Inhalation	1.94	S-6	52,029.80	S-4	14,496.77	S-4	1,782.86	S-4	246.63	S-4	29,111.06	S-4
	Migration Mass-Limit Class 1	0.19	S-28	38.45	S-28	26.92	S-28	384.54	S-28	5.38	S-28	2.69	S-28
	Migration Class 1	0.073	S-17	44.11	S-17	61.76	S-17	1,093.87	S-17	19.16	S-17	0.28	S-17
Industrial-Commercial	Ingestion	104.06	S-2	1,635,200	S-1	204,400	S-1	408,800	S-1	40,880	S-1	20,440	S-1
	Inhalation	3.70	S-6	82,835.85	S-4	23,080.08	S-4	2,838.46	S-4	392.66	S-4	46,347.27	S-4
	Migration Mass-Limit Class 1	0.19	S-28	38.45	S-28	26.92	S-28	384.54	S-28	5.38	S-28	2.69	S-28
	Migration Class 1	0.073	S-17	44.11	S-17	61.76	S-17	1,093.87	S-17	19.16	S-17	0.28	S-17
Construction Worker	Ingestion	2,258.21	S-3	163,236	S-1	10,202	S-1	81,618	S-1	122,427	S-1	20,405	S-1
	Inhalation	5.21	S-7	535.89	S-5	1,343.80	S-5	73.45	S-5	2.54	S-5	249.86	S-5
Soil Saturation		1,322.01	S-29	1,168.82	S-29	749.91	S-29	601.63	S-29	212.16	S-29	10,221.04	S-29

all values are in mg/kg

Site Specific Value cannot exceed Soil Saturation Limit, otherwise Tier 2 Inhalation or Tier 2 Migration objectives are the Soil Saturation objective

Groundwater Contaminate Concentration Exceedances at Surface Water or Set Back Zone (mg/L)

	Benzene	Equation	Toluene	Equation	Ethylbenzene	Equation	Total Xylenes	Equation	Naphthalene	Equation	MTBE	
Result	#DIV/0!	R-26	#DIV/0!	R-26	#DIV/0!	R-26	#DIV/0!	R-26			#DIV/0!	R-26
Surface Water Objective	0.86		0.6		0.014		0.36					

Version: 4/25/2016

S & S Infinite Group, Inc. - DBA Downtown 66   2016-1089

Math for R-26 Calculations
BENZENE MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_s = (soil contamination at modeling point) / (Equation S-17)					$GW_{obj} = C_s$ / DF					Conversion: 1 foot = 30.48 cm	
					C_w	C_w	/	DF	=	GW_{obj} (mg/L)	X (ft)	X (cm)
backfill 3	1.37	/	0.734	=	1.865	1.865	/	20.000	=	0.09327	70	2133.6
WC-1	43.3	/	0.734	=	58.956	58.956	/	20.000	=	2.94778	159	4846.32
WC-3	9.79	/	0.734	=	13.330	13.330	/	20.000	=	0.66648	117	3566.16
SB-26A	0.389	/	0.734	=	0.530	0.530	/	20.000	=	0.02648	43	1310.64
SB-28C	0.0335	/	0.734	=	0.046	0.046	/	20.000	=	0.00228		
SB-29D	0.0582	/	0.734	=	0.079	0.079	/	20.000	=	0.00396		

Sample Location	R-16: a_x = 0.10 * X					R-17: $a_y = a_x$ / 3					R-18: $a_z = a_x$ / 20				
	0.1	x	X (cm)	=	a_x (cm)	a_x (cm)	/	3	=	a_y (cm)	a_x (cm)	/	20	=	a_z (cm)
backfill 3	0.1	x	2133.6	=	213.36	213.36	/	3	=	71.12	213.36	/	20	=	10.668
WC-1	0.1	x	4846.32	=	484.632	484.632	/	3	=	161.544	484.632	/	20	=	24.2316
WC-3	0.1	x	3566.16	=	356.616	356.616	/	3	=	118.872	356.616	/	20	=	17.8308
SB-26A	0.1	x	1310.64	=	131.064	131.064	/	3	=	43.688	131.064	/	20	=	6.5532

Sample Location	"Term 1" = (X / (2 * a_x))							"Term 2" = (1 - SQRT[1 + (4 * λ * a_x) / (U)])													
	X	/	2	x	a_x	=	"Term 1"	1	-	SQRT[	1	+(	4	x	λ	x	a_x	)/	U	]=	"Term 2"
backfill 3	2133.6	/	2	x	213.36	=	5	1	-	SQRT[	1	+(	4	x	0.0009	x	213.36	)/	0.69120	]=	-0.4530
WC-1	4846.32	/	2	x	484.632	=	5	1	-	SQRT[	1	+(	4	x	0.0009	x	484.632	)/	0.69120	]=	-0.8773
WC-3	3566.16	/	2	x	356.616	=	5	1	-	SQRT[	1	+(	4	x	0.0009	x	356.616	)/	0.69120	]=	-0.6304
SB-26A	1310.64	/	2	x	131.064	=	5	1	-	SQRT[	1	+(	4	x	0.0009	x	131.064	)/	0.69120	]=	-0.2972

Sample Location	$β_1 = S_w$ / (4 * SQRT[a_y * X])											$β_2 = S_d$ / (2 * SQRT[a_z * X])										
	S_w	/(	4	x	SQRT	(	a_y	x	X	))=	$β_1$	S_d	/(	2	x	SQRT	(	a_z	x	X	))=	$β_2$
backfill 3	914.4	/(	4	x	SQRT	(	71.12	x	2133.6	))=	0.68885	304.8	/(	2	x	SQRT	(	10.668	x	2133.6	))=	1.01016
WC-1	914.4	/(	4	x	SQRT	(	161.544	x	4846.32	))=	0.25839	304.8	/(	2	x	SQRT	(	24.2316	x	4846.32	))=	0.44472
WC-3	914.4	/(	4	x	SQRT	(	118.872	x	3566.16	))=	0.35110	304.8	/(	2	x	SQRT	(	17.8308	x	3566.16	))=	0.60439
SB-26A	914.4	/(	4	x	SQRT	(	43.688	x	1310.64	))=	0.65533	304.8	/(	2	x	SQRT	(	6.5532	x	1310.64	))=	1.84443
SB-28C																						
SB-29D																						

Sample Location	ERF($β_1$)	ERF($β_2$)	$C_{(x)} = C_{source}$ x $e^{(Term 1 + Term 2)}$ x erf($β_1$) x erf($β_2$)									
	Section 742 APPENDIX C: Table G		C_{source}	x e	("Term 1"	+	"Term 2")	x ERF($β_1$)		x ERF($β_2$)	=	mg/L
backfill 3	0.593419	0.845873	0.09327	x e	5	+	-0.4530	x	0.593419	x 0.845873	=	0.00487
WC-1	0.285169	0.470608	2.94778	x e	5	+	-0.8773	x	0.285169	x 0.470608	=	0.00492
WC-3	0.380484	0.607283	0.66648	x e	5	+	-0.6304	x	0.380484	x 0.607283	=	0.00488
SB-26A	0.823318	0.979959	0.02648	x e	5	+	-0.2972	x	0.823318	x 0.979959	=	0.00484
SB-28C			0.00228									
SB-29D			0.00396									

S & S Infinite Group, Inc. - DBA Downtown 66 2016-1089

Math for R-29 Calculations

TOLUENE MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_n = (soil contamination at modeling point) / (Equation S-17)	C_n	$GW_{mn} = C_n / DF$: C_n / DF	GW_{mn} (mg/L)	Conversion: 1 foot = 30.48 cm X (ft)	X (cm)	R-16: $a_x = 0.10 \cdot X$: 0.1 x X (cm)	a_x (cm)	R-17: $a_y = a_x / 3$: a_x (cm) / 3	a_y (cm)	R-18: $a_z = a_x / 20$: a_x (cm) / 20	a_z (cm)	"Term 1" = [X / (2 * a_x)]: X / 2 x a_x	"Term 1"	"Term 2" = (1 - SQRT[1 + (4 * λ * a_x) / (U)]): 1 - SQRT[1 +(4 x λ x a_x)/ U]	"Term 2"
backfill 3	29.6 / 2.205	13.422	13.422 / 20.000	0.67110												
WC-1	611 / 2.205	277.056	277.056 / 20.000	13.85280	7	213.36	0.1 x 213.36	21.336	21.336 / 3	7.112	21.336 / 20	1.0668	213.36 / 2 x 21.336	5	1 - SQRT[1 +(4 x 0.011 x 21.336)/ 0.69120]	-0.6356
WC-3	161 / 2.205	73.005	73.005 / 20.000	3.65025	4	121.92	0.1 x 121.92	12.192	12.192 / 3	4.064	12.192 / 20	0.6096	121.92 / 2 x 12.192	5	1 - SQRT[1 +(4 x 0.011 x 12.192)/ 0.69120]	-0.3327

Sample Location	$\beta_1 = S_w / (4 * SQRT[a_y * X])$: S_w /(4 x SQRT (a_y x X))	β_1	$\beta_2 = S_d / (2 * SQRT[a_z * X])$: S_d /(2 x SQRT (a_z x X))	β_2	ERF(β_1) Section 742 APPENDIX C: Table G	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 \times Term 2)} \times erf(\beta_1) \times erf(\beta_2)$: C_{source} x e ("Term 1" x "Term 2") x ERF(β_1) x ERF(β_2)	mg/L
backfill 3							0.67110	
WC-1	914.4 /(4 x SQRT (7.112 x 213.36))	6.88848	304.8 /(2 x SQRT (1.0668 x 213.36))	10.10153	1.000000	1.000000	13.85280 x e (5 x -0.6356) x 1.000000 x 1.000000	0.85150
WC-3	914.4 /(4 x SQRT (4.064 x 121.92))	10.26360	304.8 /(2 x SQRT (0.6096 x 121.92))	17.67767	1.000000	1.000000	3.65025 x e (5 x -0.3327) x 1.000000 x 1.000000	0.69160

S & S Infinite Group, Inc. - DBA Downtown 66 2016-1089

Math for R-28 Calculations

ETHYLBENZENE MATH FOR VERTICAL SOIL MODELING AND R-28 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_w = (soil contamination at modeling point) / (Equation S-17)							$GW_m = C_w / DF$					Conversion: 1 foot = 30.48 cm		R-16: $\alpha_x = 0.10 * X$					R-17: $\alpha_y = \alpha_x / 3$					R-18: $\alpha_z = \alpha_x / 20$					"Term 1" = [X / (2 * α_x)]							"Term 2" = (1 - SQRT[1 + (4 * λ * α_x) / (U)])														
							C_w	C_w	/	DF	=	GW_m (mg/L)	X (ft)	X (cm)	0.1	x	X (cm)	=	α_x (cm)	α_x (cm)	/	3	=	α_y (cm)	α_x (cm)	/	20	=	α_z (cm)	X	/	2	x	α_x	=	"Term 1"	1	-	SQRT[	1	+(	4	x	λ	x	α_x	)/	U	]=	"Term 2"
WC-1	146	/	4.411	=	33.097			33.097	/	20.000	=	1.65487	8	243.84	0.1	x	243.84	=	24.384	24.384	/	3	=	8.128	24.384	/	20	=	1.2192	243.84	/	2	x	24.384	=	5	1	-	SQRT[	1	+(	4	x	0.003	x	24.384	)/	0.69120	]=	-0.1930
WC-3	45.6	/	4.411	=	10.383			10.383	/	20.000	=	0.51913																																						

Sample Location	$\beta_1 = S_w / (4 * SQRT[\alpha_y * X])$												$\beta_2 = S_d / (2 * SQRT[\alpha_z * X])$												ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 + Term 2)} \times erf(\beta_1) \times erf(\beta_2)$										
	S_w	/(	4	x	SQRT	(	α_y	x	X	))=	β_1		S_d	/(	2	x	SQRT	(	α_z	x	X	))=	β_2		Section 742.APPENDIX C: Table G		C_{source}	x e	("Term 1"	+	"Term 2")	x ERF(β_1)	x ERF(β_2)	=	mg/L	
WC-1	914.4	/(	4	x	SQRT	(	8.128	x	243.84	))=	5.13490		304.8	/(	2	x	SQRT	(	1.2192	x	243.84	))=	8.83883		1.000000	1.000000	1.65487	x e	5	x	-0.1930	x 1.000000	x 1.000000	=	0.63037	
WC-3																											0.51913									

S & S Infinite Group, Inc. - DBA Downtown 66   2016-1089

Math for R-28 Calculations

TOTAL XYLENES MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_s = (soil contamination at modeling point) / (Equation S-17)				C_s	$GW_{mt} = C_s / DF$: C_s	/ DF		= GW_{mt} (mg/L)	Conversion: 1 foot = 30.48 cm X (ft)	X (cm)	R-16: $a_x = 0.10 * X$ (0.1 x X (cm) = a_x (cm))	R-17: $a_y = a_x / 3$ (a_x (cm) / 3 = a_y (cm))	R-18: $a_z = a_x / 20$ (a_x (cm) / 20 = a_z (cm))	"Term 1" = [X / (2 * a_x)] (X / 2 x a_x = "Term 1")	"Term 2" = (1 - SQRT[1 + (4 * λ * a_x) / (U)]) (1 - SQRT[1 + (4 x λ x a_x)/ U]= "Term 2")
backfill 3	39	/	5.469	=	7.131	7.131	/	20.000	= 0.35653							
WC-1	818	/	5.469	=	149.198	149.198	/	20.000	= 7.45978							
WC-3	258	/	5.469	=	47.172	47.172	/	20.000	= 2.35861							
SB-26A	6.43	/	5.469	=	1.176	1.176	/	20.000	= 0.05878							

Sample Location	$\beta_1 = S_z / (4 * SQRT[a_z * X])$ (S_z /(4 x SQRT (a_z x X))= β_1)	$\beta_2 = S_y / (2 * SQRT[a_y * X])$ (S_y /(2 x SQRT (a_y x X))= β_2)	ERF(β_1) Section 742 APPENDIX C: Table G	ERF(β_2)	$C_{(x)} = C_{source}$ x $e^{(Term 1 * Term 2)}$ x erf(β_1) x erf(β_2) (C_{source} x e ("Term 1" * "Term 2") x ERF(β_1) x ERF(β_2) = mg/L)
backfill 3					0.35653
WC-1					7.45978
WC-3					2.35881
SB-26A					0.05878

S & S Infinite Group, Inc. - DBA Downtown 66 2016-1089

Math for R-26 Calculations

NAPTHALENE MATH FOR VERTICAL SOIL MODELING AND R-26 MODELING OF VERTICAL MODELED SOIL (Attachment A)

Sample Location	C_w = (soil contamination at modeling point) / (Equation S-17)				C_w	$GW_{obj} = C_w / DF$					Conversion: 1 foot = 30.48 cm	
					C_w	C_w	/	DF	=	GW_{obj} (mg/L)	X (ft)	X (cm)
11	80.9	/	6.844	=	11.821	11.821	/	20.000	=	0.59105	14	426.72
WC-1	2.44	/	6.844	=	0.357	0.357	/	20.000	=	0.01783		

Sample Location	R-16: $a_x = 0.10 * X$					R-17: $a_y = a_x / 3$					R-18: $a_z = a_x / 20$				
	0.1	x	X (cm)	=	a_x (cm)	a_x (cm)	/	3	=	a_y (cm)	a_x (cm)	/	20	=	a_z (cm)
11	0.1	x	426.72	=	42.672	42.672	/	3	=	14.224	42.672	/	20	=	2.1336
WC-1															

Sample Location	"Term 1" = [X / (2 * a_x)]							"Term 2" = [1 - SQRT[1 + (4 * λ * a_x) / (U)]]												
	X	/	2	x	a_x	=	"Term 1"	1	-	SQRT[	1	+(	4	x	λ	x	a_x	)/	U	]= "Term 2"
11	426.72	/	2	x	42.672	=	5	1	-	SQRT[	1	+(	4	x	0.0027	x	42.672	)/	0.69120	]= -0.2910
WC-1																				

Sample Location	$\beta_1 = S_w / (4 * SQRT(a_y * X))$											$\beta_2 = S_d / (2 * SQRT(a_z * X))$										
	S_w	/(	4	x	SQRT	(	a_y	x	X	))=	β_1	S_d	/(	2	x	SQRT	(	a_z	x	X	))=	β_2
11	914.4	/(	4	x	SQRT	(	14.224	x	426.72	))=	2.83423	304.8	/(	2	x	SQRT	(	2.1336	x	426.72	))=	5.05076
WC-1																						

Sample Location	ERF(β_1)	ERF(β_2)	$C_{(x)} = C_{source} \times e^{(Term 1 + Term 2)} \times erf(\beta_1) \times erf(\beta_2)$							
	Section 742 APPENDIX C: Table G		C_{source}	x e	("Term 1" + "Term 2")		x ERF(β_1)	x ERF(β_2)	=	mg/L
11	0.999987	1.000000	0.59105	x e	5	+ -0.2910	x 0.999987	x 1.000000	=	0.13793
WC-1			0.01783							

Illinois Enviromental Protection Agency
Leaking Underground Storage Tank Program
SSL Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 2016-1089 IEPA LPC # (10-digit): 1430560114

Site Name: S & S Infinite Group, Inc. - DBA Downtown 66

Site Address (not a P.O. Box): 400 North East Adams

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: S12,S17,S28): S5,6,7,8,9,10,17,18,19,20,21,22,24

Contact Information for Individual Who Performed Calculations:

CWM Company, Inc.,

Land Use: Residential Soil Type: Sand

Groundwater: [X] Class I [ ] Class II

Mass Limit: [ ] Yes [X] No If Yes, then Specify Acreage:

- Mass Limit Acreage other than defaults must always be rounded up.
- Failure to use site-specific parameters where allowed could affect payment from the UST Fund
- Maps depicting source width, plume dimensions, distance, etc. must also be submitted.
- Inputs must be submitted in the designated unit.

AT (ingestion)	=	Residential = 6	yr
		Con. Worker = 0.115	yr
AT (inhalation)	=	Residential = 30	yr
		Con. Worker = 0.115	yr
AT_c	=	70	yr
BW	=	Res. (NonCarcinogen) = 15	kg
		Res. (Carcinogen) = 70	kg
		Con. Worker = 70	kg
C_{sat}	=	Benzene = 1322.012	mg/kg
		Toluene = 1168.824	mg/kg
		Ethylbenzene = 749.906	mg/kg
		Total Xylenes = 601.626	mg/kg
		MTBE = 10221.038	mg/kg
		Naphthalene = 212.157	mg/kg
			mg/kg
			mg/kg
			mg/kg
			mg/kg

d_a	=	3.048	m
d_s	=	3.048	m
DA	=	Benzene = 0.000197775126141909	cm^2/s
		Toluene = 7.67193169192489E-05	cm^2/s
		Ethylbenzene = 3.95299980402237E-05	cm^2/s
		Xylenes = 2.61358477517448E-05	cm^2/s
		MTBE = 8.82257978856706E-05	cm^2/s
		Naphthalene = 1.22914273421043E-06	cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s

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C_w	=	Benzene = 0.1	mg/L
		Toluene = 20	mg/L
		Ethylbenzene = 61.757	mg/L
		Total Xylenes = 1093.865	mg/L
		MTBE = 0.28	mg/L
		Naphthalene = 19.162	mg/L
			mg/L
			mg/L
			mg/L
			mg/L
d	=	3.883	m
ED (inhalation of carcinogens)	=	Residential = 30	yr
		Con. Worker = 1	yr
ED (ingestion of noncarcinogens)	=	Residential = 6	yr
		Con. Worker = 1	yr
ED (inhalation of noncarcinogens)	=	Residential = 30	yr
		Con. Worker = 1	yr
ED (ingestion of groundwater)	=	Residential = 30	yr
		Con. Worker = 1	yr
ED_{M-L}	=	70	yr
EF	=	Residential = 350	d/yr
		Con. Worker = 30	d/yr
F(x)	=	0.194	unitless
f_{oc}	=	0.0136	g/g
GW_{obj}	=	Benzene = 0.005	mg/L
		Toluene = 1	mg/L
		Ethylbenzene = 0.7	mg/L
		Total Xylenes = 10	mg/L
		MTBE = 0.07	mg/L
		Naphthalene = 0.14	mg/L
			mg/L
			mg/L
			mg/L
			mg/L
H'	=	Benzene = 0.23	unitless
		Toluene = 0.271	unitless
		Ethylbenzene = 0.324	unitless
		Total Xylenes = 0.271	unitless
		MTBE = 0.0241	unitless
		Naphthalene = 0.0198	unitless
			unitless
			unitless
			unitless
			unitless
i	=	0.02	m/m
I	=	0.3	m/yr
I_{M-L}	=	0.18	m/yr
$IF_{soil-adj}$	=	114	(mg-yr)/(kg-d)
IR_{soil}	=	Residential = 200	mg/d
		Con. Worker = 480	mg/d

D_i	=	Benzene = 0.088	cm^2/s
		Toluene = 0.087	cm^2/s
		Ethylbenzene = 0.075	cm^2/s
		Total Xylenes = 0.0735	cm^2/s
		MTBE = 0.102	cm^2/s
		Naphthalene = 0.0000075	cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
D_w	=	Benzene = 0.0000102	cm^2/s
		Toluene = 0.0000086	cm^2/s
		Ethylbenzene = 0.0000078	cm^2/s
		Total Xylenes = 0.00000923	cm^2/s
		MTBE = 0.000011	cm^2/s
		Naphthalene = 0.0000075	cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
			cm^2/s
DF	=	1.669686986	unitless
ED (ingestion of carcinogens	=		yr
		Con. Worker = 1	yr
K_{oc}	=	Benzene = 50	cm^3/g or L/kg
		Toluene = 158	cm^3/g or L/kg
		Ethylbenzene = 320	cm^3/g or L/kg
		Total Xylenes = 398	cm^3/g or L/kg
		MTBE = 11.5	cm^3/g or L/kg
		Naphthalene = 500	cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
K_s	=	1830	m/yr
L	=	12.192	m
PEF	=		m^3/kg
PEF'	=		m^3/kg
Q/C (VF equations)	=	Residential = 68.81	$(g/m^2\text{-}s)/(kg/m^3)$
		Con. Worker = 85.81	$(g/m^2\text{-}s)/(kg/m^3)$
Q/C (PEF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$

RfC (mg/m^3)		Chronic	Subchronic
Benzene	=	0.03	0.08
Toluene	=	5	5
Ethylbenzene	=	1	9
Total Xylenes	=	0.1	0.4
MTBE	=	3	2.5
Naphthalene	=	0.003	0.003
	=		NA
	=		NA
	=		NA
	=		NA

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IR_w	=	Residential = 2	L/d
K	=	31.536	m/yr
K_d(non-ionizing organcis)	=	Benzene = 0.68	cm^3/g or L/kg
		Toluene = 2.1488	cm^3/g or L/kg
		Ethylbenzene = 4.352	cm^3/g or L/kg
		Total Xylenes = 5.4128	cm^3/g or L/kg
		MTBE = 0.1564	cm^3/g or L/kg
		Naphthalene = 6.8	cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
			cm^3/g or L/kg
K_d (ionizing organics)	=		cm^3/g or L/kg
K_d (inorganics)	=		cm^3/g or L/kg
VF'	=	Benzene = 477.089	m^3/kg
		Toluene = 766.007	m^3/kg
		Ethylbenzene = 1067.141	m^3/kg
		Total Xylenes = 1312.403	m^3/kg
		MTBE = 714.311	m^3/kg
		Naphthalene = 6051.797	m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
VM_{M-L}	=	#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
VF'_{M-L}	=	#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
		#VALUE!	m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
η	=	0.201	L_{pore}/L_{soil}
θ_a	=	0.109	L_{air}/L_{soil}

RfD_o mg/(kg-d)		Chronic	Subchronic
Benzene	=	0.004	0.012
Toluene	=	0.08	0.8
Ethylbenzene	=	0.1	0.05
Total Xylenes	=	0.2	0.4
MTBE	=	0.01	0.1
Naphthalene	=	0.02	0.6
	=		0.6
	=		NA
	=		NA
	=		NA
S	=	Benzene = 1800	mg/L
		Toluene = 530	mg/L
		Ethylbenzene = 170	mg/L
		Total Xylenes = 110	mg/L
		MTBE = 51000	mg/L
		Naphthalene = 31	mg/L
			mg/L
			mg/L
			mg/L
			mg/L
SF_o	=	Benzene = 0.055	$(mg/kg\text{-}d)^{-1}$
		Toluene = NA	$(mg/kg\text{-}d)^{-1}$
		Ethylbenzene = 0.011	$(mg/kg\text{-}d)^{-1}$
		Total Xylenes = NA	$(mg/kg\text{-}d)^{-1}$
		MTBE = NA	$(mg/kg\text{-}d)^{-1}$
		Naphthalene = NA	$(mg/kg\text{-}d)^{-1}$
			$(mg/kg\text{-}d)^{-1}$
			$(mg/kg\text{-}d)^{-1}$
			$(mg/kg\text{-}d)^{-1}$
			$(mg/kg\text{-}d)^{-1}$
T	=	Residential = 9.5E08	s
		Con. Worker = 3.6×10^6	s
T_{M-L}	=	30	yr
THQ	=	1	unitless
TR	=	1.00E-06	unitless
U_m	=	4.69	m/s
URF	=	Benzene = 7.8×10^{-6}	$(\mu g/m^3)^{-1}$
U_t	=	11.32	m/s
V	=	0.5	unitless
VF	=	Benzene = 6214.753	m^3/kg
		Toluene = 9978.318	m^3/kg
		Ethylbenzene = 13901.009	m^3/kg
		Total Xylenes = 17095.878	m^3/kg
		MTBE = 9304.904	m^3/kg
		Naphthalene = 78833.093	m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg
			m^3/kg

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θ_w	=	0.092	L_{water}/L_{soil}
ρ_b	=	2.15	kg/l or g/cm^3
ρ_s	=	2.69	g/cm^3
ρ_w	=	1	g/cm^3
1/(2b+3)	=	0.09	unitless

Illinois Enviromental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 2016-1089 IEPA LPC # (10-digit): 1430560114

Site Name: S & S Infinite Group, Inc. - DBA Downtown 66

Site Address (not a P.O. Box): 400 North East Adams

City: Peoria County: Peoria Zip Code: 61603

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12,R14,R26): R16, R17, R18,R19, R21, R22, R23, R24,R26

Contact Information for Individual Who Performed Calculations:

CWM Company, Inc.,

Land Use: Residential Soil Type: Sand

Groundwater: [X] Class I [ ] Class II

Mass Limit: [ ] Yes [X] No If Yes, then Specify Acreage: ______

Objective from S17 used in R26? [ ] Yes [X] No

If Yes, then Specify C_{source} from S17 See Attached mg/L.

- Mass Limit Acreage other than defaults must always be rounded up.
- Failure to use site-specific parameters where allowed could affect payment from the UST Fund
- Maps depicting source width, plume dimensions, distance, etc. must also be submitted.
- Inputs must be submitted in the designated unit.

AT_c	=	70	yr
AT_n	=	Residential = 30 Con. Worker = 0.115	yr yr
BW	=	70	yr
C_{source}	=	See Attached	mg/L
$C_{(x)}$	=	See Attached	mg/L
d	=	100	cm

D^{air}	=	See Attached	cm^2/s
D^{water}	=	See Attached	cm^2/s
D_s^{eff}	=	See Attached	cm^2/s
ED	=	Residential = 30 Con. Worker = 1	yr yr
EF	=	Residential = 350 Con. Worker = 30	d/yr d/yr

erf	=	See Attached	unitless
f_{oc}	=	0.0136	g/g
GW_{comp}	=	See Attached	mg/L
GW_{source}	=	See Attached	mg/L
H'	=	See Attached	$cm3_{water}/cm^3_{air}$
i	=	0.02	cm/cm
I	=	30	cm/yr
IR_{air}	=	20	m^3/d
IR_{soil}	=	Residential = 100 Con. Worker = 480	mg/d mg/d
IR_w	=	Residential = 2	L/d
K	=	8.640 3153.600	cm/d cm/yr
K_{oc}	=	See Attached	cm^3/g or L/kg
k_s (non-ionizing organics)	=	See Attached	cm^3_{water}/g_{soil}
k_s (ionizing organics)	=	Not Applicable	cm^3_{water}/g_{soil}
k_s (inorganics)	=	Not Applicable	cm^3_{water}/g_{soil}
L_s	=	100	cm
LF_{sw}	=	See Attached	$(mg/L_{water})/(mg/kg_{soil})$
M	=	0.5	mg/cm^2
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s
RAF_d	=	0.5	unitless
α_x	=	See Attached	cm
α_y	=	See Attached	cm
α_z	=	See Attached	cm
λ	=	See Attached	d^{-1}
π	=	3.1416	
τ	=	$9.46 \cdot 10^8$	s

RAF_d (PNAs)	=	0.05	unitless
RAF_d (inorganics)	=	0	unitless
RAF_o	=	1	unitless
$RBSL_{air}$ (carcinogenic)	=	See Attached	$\mu g/m^3$
$RBSL_{air}$ (noncarcinogenic)	=	See Attached	$\mu g/m^3$
RfD_i	=	See Attached	mg/kg-d
SA	=	3,160	cm^2/d
S_d	=	200.0	cm
S_w	=	640.1	cm
SF_i	=	See Attached	$(mg/kg\text{-}d)^{-1}$
SF_o	=	See Attached	$(mg/kg\text{-}d)^{-1}$
THQ	=	1	unitless
TR	=	1.00E-06	unitless
U	=	0.6912	cm/d
U_{air}	=	225	cm/s
U_{gw}	=	3153.620	cm/y
VF_p	=	3.97133E-12	kg/m^3
VF_{samb}	=	See Attached	$(mg/m^3_{air})/(mg/kg_{soil})$ or kg/m^3
VF_{ss}	=	See Attached	kg/m3
W	=		cm
w	=	0.094	g_{water}/g_{soil}
δ_{air}	=	200	cm
δ_{gw}	=	200	cm
θ_{as}	=	0.0479	cm^3_{air}/cm^3_{soil}
θ_{ws}	=	0.2021	cm^3_{water}/cm^3_{soil}
θ_T	=	0.25	cm^3/cm^3_{soil}
ρ_b	=	2.15	g/cm^3
ρ_w	=	1	g/cm^3

	H'	λ	Koc
Benzene	0.23	0.0009	50
Toluene	0.271	0.011	158
Ethylbenzene	0.324	0.003	320
Total Xylenes	0.271	0.0019	398
MTBE	0.0241	0	11.5
Naphthalene	0.0198	0.0027	500

Benzene R26 Modeled Groundwater from Vertical Modeled Soils

Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
backfill 3	0.093	0.005	1950.72	195.072	65.024	9.7536	0.47483982	0.88182975
WC-1	2.948	0.005	4541.52	454.152	151.384	22.7076	0.21509171	0.49786925
WC-3	0.666	0.005	3322.32	332.232	110.744	16.6116	0.29091523	0.64108327
SB-26A	0.026	0.005	1158.24	115.824	38.608	5.7912	0.71545561	0.99150109
SB-28C	0.002							
SB-29D	0.004							

Benzene R26 Modeled Groundwater

Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

Toluene R26 Modeled Groundwater from Vertical Modeled Soils								
Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
backfill 3	0.6711							
WC-1	13.8528	0.9515	213.36	21.336	7.112	1.0668	0.99999999	1
WC-3	3.6502	0.6916	121.92	12.192	4.064	0.6096	1	1

Toluene R26 Modeled Groundwater							
Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

Ethylbenzene R26 Modeled Groundwater from Vertical Modeled Soils								
Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$
WC-1	1.6549	0.6304	243.84	24.384	8.128	1.2192	0.99999963	1
WC-3	0.5191							

Ethylbenzene R26 Modeled Groundwater							
Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	$\sqrt{[\alpha_y \cdot X]}$	$\sqrt{[\alpha_z \cdot X]}$

Total Xylenes R26 Modeled Groundwater from Vertical Modeled Soils								
Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w/(4 \cdot \sqrt{\alpha_y \cdot X})$	erf: $S_w/(2 \cdot \sqrt{\alpha_z \cdot X})$
backfill 3	0.3565							
WC-1	7.4598							
WC-3	2.3586							
SB-26A	0.0588							

Total Xylenes R26 Modeled Groundwater							
Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w/(4 \cdot \sqrt{\alpha_y \cdot X})$	erf: $S_w/(2 \cdot \sqrt{\alpha_z \cdot X})$

MTBE R26 Modeled Groundwater from Vertical Modeled Soils								
Location	C_{source} from S17 (mg/L)	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

MTBE R26 Modeled Groundwater							
Location	C(x) (mg/L)	X (cm)	α_x (cm)	α_y (cm)	α_z (cm)	erf: $S_w / (4 \cdot \sqrt{[\alpha_y \cdot X]})$	erf: $S_w / (2 \cdot \sqrt{[\alpha_z \cdot X]})$

Tier 2 Industrial/Commercial Calculations for Benzene

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->		--	USDA Soil Classification:	Sand		
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g: 0.000

2.150	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)		feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific | 8.64E+00 cm/d | 3.15E+03 cm/yr | Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)		feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
0.005	GW_{obj} - Groundwater Remediation Objective Class 1			0.025 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
70	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
0.055	SF_o -Oral Slope Factor			Benzene = 0.055
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
1800	S - Solubility in Water			Benzene = 1750
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
70	AT_c -Average Time for Carcinogens			70
7.80E-06	URF - Inhalation Unit Risk Factor			Benzene =7.8 x 10^{-6} [redacted]
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation fo Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval			Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26			30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28			70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28			0.18
0.088	D_i - Diffusivity in Air			Benzene = 0.088
0.23	H' - Henry's Law Constant			Benzene = 0.228
1.02E-05	D_w - Diffusivity in Water			Benzene = 9.8 x 10^{-6}
50	K_{oc} - Organic Carbon Partition Coefficient			Benzene = 58.9

Industrial/Commercial Ingestion Tier II Benzene Objective

$$S\text{-}3 = \frac{TR \times BW \times AT_c \times 365}{Sf_o \times 10^{-6} \times EF \times ED \times IRsoil} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{0.055 \times 1.00E\text{-}06 \times 250 \times 25 \times 50} = \frac{1.8E+00}{1.72E\text{-}02} = 104.058 \text{ mg/kg}$$

Construction Worker Ingestion Tier II Benzene Objective

$$S\text{-}3 = \frac{TR \times BW \times AT_c \times 365}{Sf_o \times 10^{-6} \times EF \times IRsoil} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{0.055 \times 1.00E\text{-}06 \times 30 \times 480} = \frac{1.8E+00}{7.92E\text{-}04} = 2258.21 \text{ mg/kg}$$

Tier 2 Industrial/Commercial Calculations for Benzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}6 = \frac{TR \times ATc \times 365}{URF \times 1000 \times EF \times ED \times 1/VF} = \frac{1.0E\text{-}06 \times 70 \times 365}{7.80E\text{-}06 \times 1000 \times 250 \times 25 \times (1/\ 7.07E{+}03)} = \frac{0.02555}{6.90E\text{-}03} = 3.704 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}7 = \frac{TR \times ATc \times 365}{URF \times 1000 \times EF \times ED \times 1/VF'} = \frac{1.0E\text{-}06 \times 70 \times 365}{7.80E\text{-}06 \times 1000 \times 30 \times 1 \times (1/\ 4.77E{+}01)} = \frac{0.02555}{4.90E\text{-}03} = 5.209 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 1.98E\text{-}04 \times 7.90E{+}08)^{1/2} \times 0.0001}{(2 \times 2.15 \times 1.98E\text{-}04)} = \frac{6.0104}{0.0009} = 7067.4376$$

Construction Worker

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 1.98E\text{-}04 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 1.98E\text{-}04)} = \frac{0.4057}{0.0009} = 477.0893$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$S\text{-}9 = VF' = \frac{VF}{10} = \frac{477.0893}{10} = 47.7089$$

Equation for Derivation of Apparent Diffusivity

$$S\text{-}10 = D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.088 \times 0.230) + (0.0004 \times 1.02E\text{-}05)}{0.0404} \times \frac{1}{(2.15 \times 0.68) + 0.09 + (0.109 \times 0.230)} = 1.98E\text{-}04$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$S\text{-}17 = C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b} \right] = 0.1 \times \left[0.68 + \frac{(0.092 + 0.109 \times 0.230)}{2.15} \right] = 0.073 \text{ mg/kg}$$

Tier 2 Industrial/Commercial Calculations for Benzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Target Soil Leachate Concentration (Class 1)

S-18 = $C_w = DF \times GW_{obj}$ = 20.00 X 0.005 = 0.1

Soil-Water Partition Coefficient

S-19 = $K_d = K_{oc} \times f_{oc}$ = 50.00 X 0.014 = 0.68

Water-Filled Porosity

S-20 = $\Theta_w = \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)}$ = $0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090}$ = 0.0917

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w$ = 0.20 - 0.09 = 0.1090

Dilution Factor

S-22 = $DF = 1 + \frac{K \times i \times d}{I \times L}$ = $\frac{31.54 \times 0.0200 \times 3.884}{0.300 \quad 12.192} + 1$ = 1.6697

GW Ingestion

S-23 = $\frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED}$ = $\frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{0.055 \times 1.000 \times 250 \times 25}$ = $\frac{1.8E+00}{343.75}$ = 0.0052 mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s}$ = $1 - \frac{2.15}{2.69}$ = 0.2007

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a \left[1 - \exp\frac{(-L \times I)}{(K \times i \times d_a)}\right]$

= $(0.0112 \times 12.192^2)^{0.5} + 3.048 \times \left[1 - \exp\frac{(-12.192 \times 0.3)}{(31.536 \times 0.0200 \times 3.048)}\right]$ = 3.884 m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)]$ = $\frac{1800}{2.15} \times [(0.68 \times 2.15) + 0.092 + (0.230 \times 0.109)]$ = 1,322.01 mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b}$ = $\frac{3.704 \times 0.230 \times 2.150 \times 1000}{2.300E\text{-}01 \times 0.109 + 0.092 + 0.680 \times 2.150}$ = 1,159.96 mg/m^3

Tier 2 Industrial/Commercial Calculations for Toluene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->	--	USDA Soil Classification:	Sand		
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g: 0.000

2.150	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24 or R23)
0.02	i - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)		feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific | 8.64E+00 cm/d | 3.15E+03 cm/yr | Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)		feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
1.000	GW_{obj} - Groundwater Remediation Objective Class 1			2.5 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
15	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
530	S - Solubility in Water			Toluene = 526
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval			Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26			30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28			70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28			0.18
0.087	D_i - Diffusivity in Air			Toluene = 0.087
0.271	H' - Henry's Law Constant			Toluene = 0.272
8.60E-06	D_w - Diffusivity in Water			Toluene = 8.6 x 10^{-6}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation			Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation			Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient			1
5	RfC - Inhalation Reference Concentration			Chronic = 5; Subchronic = 5
0.8	RfD_o - Oral Reference Dose			Chronic = 0.08; Subchronic = 0.8
158.00	K_{oc} - Organic Carbon Partition Coefficient			Toluene = 182

Industrial/Commercial Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/0.8 \times 250 \times 25 \times 50} = \frac{638750}{0.390625} = 1635200 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/0.8 \times 30 \times 1 \times 480} = \frac{2938.25}{0.018} = 163236 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/5 \times 1/11347.37618} = \frac{9125}{0.110158} = 82835.846 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/5 \times 1/76.60077386} = \frac{41.975}{0.078328} = 535.886 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \left(\frac{3.14 \times 7.67E\text{-}05 \times 7.90E{+}08}{2 \times 2.15 \times 7.67E\text{-}05}\right)^{1/2} \times 0.0001 = \frac{3.7434}{3.30E\text{-}04} = 11347.3762$$

Tier 2 Industrial/Commercial Calculations for Toluene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Construction Worker

$$\text{S-8} = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 7.67E\text{-}05 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 7.67E\text{-}05)} = \frac{0.2527}{3.30E\text{-}04} = 766.0077$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$\text{S-9} = \quad VF' = \frac{VF}{10} = \frac{766.0077}{10} = 76.6008$$

Equation for Derivation of Apparent Diffusivity

$$\text{S-10} = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.087 \times 0.271) + (0.0004 \times 8.60E\text{-}06)}{0.0404} \times \frac{1}{(2.15 \times 2.1488) + 0.09 + (0.109 \times 0.271)} = 7.67E\text{-}05$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$\text{S-17} = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b} \right] = 20 \times \left[2.1488 + \frac{(0.092 + 0.109 \times 0.271)}{2.15} \right] = 44.107 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

$$\text{S-18} = \quad C_w = DF \times GW_{obj} = 20.00 \times 1.000 = 20$$

Soil-Water Partition Coefficient

$$\text{S-19} = \quad K_d = K_{oc} \times f_{oc} = 158.00 \times 0.014 = 2.1488$$

Water-Filled Porosity

$$\text{S-20} = \quad \Theta_w = \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.000} = 0.0917$$

Tier 2 Industrial/Commercial Calculations for Toluene

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w$ = 0.20 - 0.09 = 0.1090

Dilution Factor

S-22 = $DF = 1 + \frac{K \times I \times d}{I \times L}$ = $\frac{31.54 \times 0.0200 \times 3.884}{0.300 \times 12.192}$ + 1 = 1.6697

GW Ingestion

S-23 = $\frac{TR \times BW \times AL_c \times 365}{SF_o \times IR_w \times EF \times ED}$ = $\frac{1.0E\text{-}06 \times 15 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25}$ = $\frac{0.0E+00}{0}$ = #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s}$ = $1 - \frac{2.15}{2.69}$ = 0.2007

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\frac{(-L \times I)}{(K \times I \times d_a)}\right]$

= (0.0112 x 12.192 $^2)^{0.5}$ +

3.048 x [1 - exp ($\frac{-12.192 \times 0.3}{31.536 \times 0.0200 \times 3.048}$)] = 3.884 m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)]$ = $\frac{530}{2.15}$ x [(2.1488 x 2.15) + 0.092 + (0.271 x 0.109)] = 1,168.82 mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b}$ = $\frac{535.886 \times 0.271 \times 2.150 \times 1000}{2.710E\text{-}01 \times 0.109 + 0.092 + 2.149 \times 2.150}$ = 65,851.91 mg/m^3

Tier 2 Industrial/Commercial Calculations for Ethylbenzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->	-	USDA Soil Classification: Sand
Organic Matter (%) -->	0	FOC % (0.58 conversion) --> 0.000	Organic Matter (mg/kg) 0	FOC mg/kg (0.58 conversion) 0.000; foc conversion to g/g: 0.000

2.150	ρ_b - Dry Soil Bulk Density		1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density		2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109* Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092* Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201* Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient		Site Specific
0.014	foc - Total Organic Carbon (g/g)		Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670* Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884 Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)	feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec = 1.00E-04	Site Specific 8.64E+00 cm/d 3.15E+03 cm/yr Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)	feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)	feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)		0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity		See Table K for Input Values
0.700	GW_{obj} - Groundwater Remediation Objective Class 1		1 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20		See Table K for Input Values
70	BW - Body Weight		Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens		114
50	IR_{soil} -Soil Ingestion Rate		Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate		Residential = 2; Industrial/Commercial = 1
170	S - Solubility in Water		Ethylbenzene = 169
1.0E-06	TR - Target Cancer Risk		Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency		Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens		Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source		Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval		Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26		30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28		70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28		0.18
0.075	D_i - Diffusivity in Air		Ethylbenzene = 0.075
0.324	H' - Henry's Law Constant		Ethylbenzene = 0.323
7.80E-06	D_w - Diffusivity in Water		Ethylbenzene = 7.8 x 10^{-6}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation		Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation		Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient		1
1	RfC - Inhalation Reference Concentration		Chronic = 1; Subchronic = 9
0.1	RfD_o - Oral Reference Dose		Chronic = 0.1; Subchronic = 0.05
320.00	K_{oc} - Organic Carbon Partition Coefficient		Ethylbenzene = 363

Industrial/Commercial Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/\ 0.1 \times 250 \times 25 \times 50} = \frac{638750}{3.125} = 204400 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/\ 0.05 \times 30 \times 1 \times 480} = \frac{2938.25}{0.288} = 10202 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/\ 1 \times 1/\ 15808.27272} = \frac{9125}{0.395363} = 23080 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/\ 9 \times 1/\ 106.7141782} = \frac{41.975}{0.031236} = 1343.798 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \left(\frac{3.14 \times 3.95E\text{-}05 \times 7.90E\text{+}08}{2 \times 2.15 \times 3.95E\text{-}05}\right)^{1/2} \times 0.0001 = \frac{2.6871}{1.70E\text{-}04} = 15808.2727$$

Tier 2 Industrial/Commercial Calculations for Ethylbenzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Construction Worker

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 3.95E\text{-}05 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 3.95E\text{-}05)} = \frac{0.1814}{1.70E\text{-}04} = 1067.1418$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$S\text{-}9 = \quad VF' = \frac{VF}{10} = \frac{1067.1418}{10} = 106.7142$$

Equation for Derivation of Apparent Diffusivity

$$S\text{-}10 = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.075 \times 0.324) + (0.0004 \times 7.80E\text{-}06)}{0.0404} \times \frac{1}{(2.15 \times 4.352) + 0.09 + (0.109 \times 0.324)} = 3.95E\text{-}05$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$S\text{-}17 = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{pb} \right] = 14 \times \left[4.352 + \frac{(0.092 + 0.109 \times 0.324)}{2.15} \right] = 61.757 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

$$S\text{-}18 = \quad C_w = DF \times GW_{obj} = 20.00 \times 0.700 = 14$$

Soil-Water Partition Coefficient

$$S\text{-}19 = \quad K_d = K_{oc} \times f_{oc} = 320.00 \times 0.014 = 4.352$$

Water-Filled Porosity

$$S\text{-}20 = \quad \Theta_w = \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$$

Tier 2 Industrial/Commercial Calculations for Ethylbenzene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w$ = 0.20 - 0.09 = 0.1090

Dilution Factor

S-22 = $DF = 1 + \frac{K \times i \times d}{I \times L}$ = $\frac{31.54 \times 0.0200 \times 3.884}{0.300 \times 12.192}$ + 1 = 1.6697

GW Ingestion

S-23 = $\frac{TR \times BW \times At_c \times 365}{SF_o \times IR_w \times EF \times ED}$ = $\frac{1.0E\text{-}06 \times 70 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25}$ = $\frac{0.0E+00}{0}$ = #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s}$ = $1 - \frac{2.15}{2.69}$ = 0.2007

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\left(\frac{(-L \times I)}{(K \times i \times d_a)}\right)\right]$

= (0.0112 x 12.192 $^2)^{0.5}$ +

3.048 x $\left[1 - \exp\left(\frac{(-12.192 \times 0.3)}{(31.536 \times 0.0200 \times 3.048)}\right)\right]$ = 3.884 m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)]$ = $\frac{170}{2.15}$ x [(4.352 x 2.15) + 0.092 + (0.324 x 0.109)] = 749.91 mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b}$ = $\frac{749.907 \times 0.324 \times 2.150 \times 1000}{3.240E\text{-}01 \times 0.109 + 0.092 + 4.352 \times 2.150}$ = 55,080.00 mg/m^3

Tier 2 Industrial/Commercial Calculations for Total Xylenes

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Version 4/2016

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->	--	USDA Soil Classification:	Sand			
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g: 0.000

2.150	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)		feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific | 8.64E+00 cm/d | 3.15E+03 cm/yr | Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)		feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
10.000	GW_{obj} - Groundwater Remediation Objective Class 1			10 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
70	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
110	S - Solubility in Water			Total Xylenes = 186
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval			Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26			30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28			70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28			0.18
0.074	D_i - Diffusivity in Air			Total Xylenes = 0.072
0.271	H' - Henry's Law Constant			Total Xylenes = 0.25
9.23E-06	D_w - Diffusivity in Water			Total Xylenes = 9.34 x 10^{-6}
25	AT - Average Time for Non-Carcinogens In Ingestion Equation			Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens In Inhalation Equation			Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient			1
0.1	RfC - Inhalation Reference Concentration			Chronic = 0.1; Subchronic = 0.4
0.2	RfD_o - Oral Reference Dose			Chronic = 0.2; Subchronic = 0.4
398.00	K_{oc} - Organic Carbon Partition Coefficient			Total Xylenes = 260

Industrial/Commercial Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/\ 0.2 \times 250 \times 25 \times 50} = \frac{638750}{1.5625} = 408800 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/\ 0.4 \times 30 \times 1 \times 480} = \frac{2938.25}{0.036} = 81618 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/\ 0.1 \times 1/\ 19441.48884} = \frac{9125}{3.214774369} = 2838.457 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/\ 0.4 \times 1/\ 131.2403032} = \frac{41.975}{0.571470792} = 73.451 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 2.61E\text{-}05 \times 7.90E\text{+}08)^{1/2} \times 0.0001}{(2 \times 2.15 \times 2.61E\text{-}05)} = \frac{2.1849}{1.12E\text{-}04} = 19441.4888$$

Tier 2 Industrial/Commercial Calculations for Total Xylenes

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

Construction Worker

S-8 = $VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)}$ = 85.81 $\times \frac{(3.14 \times 2.61E\text{-}05 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 2.61E\text{-}05)}$ = $\frac{0.1475}{1.12E\text{-}04}$ = 1312.4030

Equation for Derivation of Volatilization Factor - Construction Worker

S-9 = $VF' = \frac{VF}{10}$ = $\frac{1312.4030}{10}$ = 131.2403

Equation for Derivation of Apparent Diffusivity

S-10 = $D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$

$= \frac{(6.23E\text{-}04 \times 0.074 \times 0.271) + (0.0004 \times 9.23E\text{-}06)}{0.0404} \times$

$\frac{1}{(2.15 \times 5.4128) + 0.09 + (0.109 \times 0.271)}$ = 2.61E-05

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

S-17 = $C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b} \right]$ = 200 $\times \left[5.4128 + \frac{(0.092 + 0.109 \times 0.271)}{2.15} \right]$ = 1093.866 mg/kg

Tier 2 Soil Component of GW Ingestion Objective cannot exceed Soil Saturation Limit

Target Soil Leachate Concentration (Class 1)

S-18 = $C_w = DF \times GW_{obj}$ = 20.00 x 10.000 = 200

Soil-Water Partition Coefficient

S-19 = $K_d = K_{oc} \times f_{oc}$ = 398.00 x 0.014 = 5.4128

Water-Filled Porosity

S-20 = $\Theta_w = \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)}$ = 0.20 $\times \left[\frac{0.300}{1830.000}\right]^{0.090}$ = 0.0917

Tier 2 Industrial/Commercial Calculations for Total Xylenes

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w$ = 0.20 - 0.09 = 0.1090

Dilution Factor

S-22 = $DF = 1 + \frac{K \times i \times d}{I \times L}$ = $\frac{31.54 \times 0.0200 \times 3.884}{0.300 \times 12.192}$ + 1 = 1.6697

GW Ingestion

S-23 = $\frac{TR \times BW \times At_c \times 365}{SF_o \times IR_w \times EF \times ED}$ = $\frac{1.0E\text{-}06 \times 70 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25}$ = $\frac{0.0E+00}{0}$ = #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s}$ = $1 - \frac{2.15}{2.69}$ = 0.2007

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a \left[1 - \exp \frac{(-L \times I)}{(K \times i \times d_a)} \right]$

= (0.0112 x 12.192 $^2)^{0.5}$ +

3.048 x $\left[1 - \exp \left(\frac{-12.192 \times 0.3}{31.536 \times 0.0200 \times 3.048} \right) \right]$ = 3.884 m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)]$ = $\frac{110}{2.15} \times [(5.4128 \times 2.15) + 0.092 + (0.271 \times 0.109)]$ = 601.63 mg/kg

Soil Gas Outdoor Inhalation

S-30 = $ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b}$ = $\frac{73.451 \times 0.271 \times 2.150 \times 1000}{2.710E\text{-}01 \times 0.109 + 0.092 + 5.413 \times 2.150}$ = 3,639.42 mg/m^3

Tier 2 Industrial/Commercial Calculations for Naphthalene

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->	--	USDA Soil Classification:	Sand		
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g:	0.000

2.150	ρ_b - Dry Soil Bulk Density		1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density		2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109* Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092* Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201* Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient		Site Specific
0.014	foc - Total Organic Carbon (g/g)		Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor		If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)		2; or calculated value
3.048	d_s - Depth of source (m)	feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec = 1.00E-04	Site Specific | 8.64E+00 cm/d | 3.15E+03 cm/yr | Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)	feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)	feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)		0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity		See Table K for Input Values
0.140	GW_{obj} - Groundwater Remediation Objective Class 1		0.22 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20		See Table K for Input Values
70	BW - Body Weight		Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens		114
50	IR_{soil} -Soil Ingestion Rate		Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate		Residential = 2; Industrial/Commercial = 1
31	S - Solubility in Water		Naphthalene = 31
1.0E-06	TR - Target Cancer Risk		Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency		Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens		Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source		Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval		Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26		30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28		70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28		0.18
0.059	D_i - Diffusivity in Air		Naphthalene = 0.059
0.0198	H' - Henry's Law Constant		Naphthalene = 0.0198
7.50E-06	D_w - Diffusivity in Water		Naphthalene = 7.5 x 10^{-6}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation		Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation		Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient		1
0.003	RfC - Inhalation Reference Concentration		Chronic = 0.003; Subchronic = 0.003
0.020	RfD_o - Oral Reference Dose		Chronic = 0.02; Subchronic = 0.6
500.00	K_{oc} - Organic Carbon Partition Coefficient		Naphthalene = 2,000

Industrial/Commercial Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/\ 0.02 \times 250 \times 25 \times 50} = \frac{638750}{15.625} = 40880 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/\ 0.6 \times 30 \times 1 \times 480} = \frac{2938.25}{0.024} = 122427 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/\ 0.003 \times 1/\ 89649.24924} = \frac{9125}{23.23871} = 392.664 \text{ mg/kg}$$

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/\ 0.003 \times 1/\ 605.1797139} = \frac{41.975}{16.52402} = 2.540 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{\left(3.14 \times 1.23E\text{-}06 \times 7.90E{+}08\right)^{1/2} \times 0.0001}{\left(2 \times 2.15 \times 1.23E\text{-}06\right)} = \frac{0.4738}{5.29E\text{-}06} = 89649.2492$$

Tier 2 Industrial/Commercial Calculations for Naphthalene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Construction Worker

$$\text{S-8} = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \left(\frac{3.14 \times 1.23\text{E-}06 \times 3.60\text{E+}06}{2 \times 2.15 \times 1.23\text{E-}06}\right)^{1/2} \times 0.0001 = \frac{0.0320}{5.29\text{E-}06} = 6051.7971$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$\text{S-9} = \quad VF' = \frac{VF}{10} = \frac{6051.7971}{10} = 605.1797$$

Equation for Derivation of Apparent Diffusivity

$$\text{S-10} = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23\text{E-}04 \times 0.059 \times 0.020) + (0.0004 \times 7.50\text{E-}06)}{0.0404} \times \frac{1}{(2.15 \times 6.8) + 0.09 + (0.109 \times 0.020)} = 1.23\text{E-}06$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$\text{S-17} = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b}\right] = 2.8 \times \left[6.8 + \frac{(0.092 + 0.109 \times 0.020)}{2.15}\right] = 19.163 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

$$\text{S-18} = \quad C_w = DF \times GW_{obj} = 20.00 \times 0.140 = 2.8$$

Soil-Water Partition Coefficient

$$\text{S-19} = \quad K_d = K_{oc} \times f_{oc} = 500.00 \times 0.014 = 6.8$$

Water-Filled Porosity

$$\text{S-20} = \quad \Theta_w = \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$$

Tier 2 Industrial/Commercial Calculations for Naphthalene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w$ = 0.20 - 0.09 = 0.1090

Dilution Factor

S-22 = DF = $1 + \dfrac{K \times I \times d}{I \times L}$ = $\dfrac{31.54 \times 0.0200 \times 3.884}{0.300 \times 12.192}$ + 1 = 1.6697

GW Ingestion

S-23 = $\dfrac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED}$ = $\dfrac{1.0E\text{-}06 \times 70 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25}$ = $\dfrac{0.0E{+}00}{0}$ = #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \dfrac{\rho_b}{\rho_s}$ = $1 - \dfrac{2.15}{2.69}$ = 0.2007

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\dfrac{(-L \times I)}{(K \times I \times d_a)}\right]$

= (0.0112 x 12.192 $^2)^{0.5}$ +

3.048 x$\left[1 - \exp\left(\dfrac{-12.192 \times 0.3}{31.536 \times 0.0200 \times 3.048}\right)\right]$ = 3.884 m

Soil Saturation Limit

S-29 = $C_{sat} = \dfrac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)]$ = $\dfrac{31}{2.15}$ x [(6.8 x 2.15) + 0.092 + (0.020 x 0.109)] = 212.16 mg/kg

Soil Gas Outdoor Inhalation

S-30 = ROs g = $\dfrac{\text{ROsoil X H X } \rho b \text{ X } 1000}{\text{H' X } \Theta a + \Theta w + \text{Kd X } \rho b}$ = $\dfrac{2.540 \times 0.020 \times 2.150 \times 1000}{1.980E\text{-}02 \times 0.109 + 0.092 + 6.800 \times 2.150}$ = 7.35 mg/m^3

Tier 2 Industrial/Commercial Calculations for MTBE

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->	--	USDA Soil Classification:	Sand			
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g: 0.000

2.150	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL & Θ_T - RBCA: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
3.048	d_s - Depth of source (m)		feet = 10	Depth of Source (Vertical thickness of contamination)
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific / 8.64E+00 cm/d / 3.15E+03 cm/yr / Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)		feet = 40	Site Specific (m)
3.048	d_a - Aquifer Thickness (m)		feet = 10	Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
0.070	GW_{obj} - Groundwater Remediation Objective Class 1			0.07 / GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
70	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
51000	S - Solubility in Water			MTBE = 51,000
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation for Non-Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
68.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H
7.90E+08	T - Exposure Interval			Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
30	T_{M-L} - Exposure Interval for Mall Limit Volatilization Factor Equation S26			30
70	ED_{M-L} - Exposure Duration for Migration to Groundwater Mass-Limit Equation S28			70
0.18	I_{M-L} - Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28			0.18
0.102	D_i - Diffusivity in Air			MTBE = 0.102
0.0241	H' - Henry's Law Constant			MTBE = 0.0241
1.10E-05	D_w - Diffusivity in Water			MTBE = 1.1 x 10^{-5}
25	AT - Average Time for Non-Carcinogens in Ingestion Equation			Residential = 6; Industrial/Commercial = 25; Construction Worker = 0.115
25	AT - Average Time for Non-Carcinogens in Inhalation Equation			Residential = 30; Industrial/Commercial = 25; Construction Worker = 0.115
1	THQ - Target Hazard Quotient			1
3	RfC - Inhalation Reference Concentration			Chronic = 3; Subchronic = 2.5
0.01	RfD_o - Oral Reference Dose			Chronic = 0.01; Subchronic = 0.1
11.50	K_{oc} - Organic Carbon Partition Coefficient			MTBE = 11.5

Residential Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 25 \times 365}{0.000001 \times 1/0.01 \times 250 \times 25 \times 50} = \frac{638750}{31.25} = 20440 \text{ mg/kg}$$

Construction Worker Ingestion Remediation Objectives for Non-Carcinogenic Contaminants

$$S\text{-}1 = \frac{THQ \times BW \times AT \times 365}{10^{-6} \times (1/RfD_o) \times EF \times ED \times IR_{soil}} = \frac{1 \times 70 \times 0.115 \times 365}{0.000001 \times 1/0.1 \times 30 \times 1 \times 480} = \frac{2938.25}{0.144} = 20405 \text{ mg/kg}$$

Construction Worker Inhalation Tier II Benzene Objective

$$S\text{-}4 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 25 \times 365}{250 \times 25 \times 1/3 \times 1/10581.56779} = \frac{9125}{0.196883} = 46347.267 \text{ mg/kg}$$

Tier 2 Inhalation Objective cannot exceed Soil Saturation Limit

Inhalation Non-Carcinogenic Construction Worker

$$S\text{-}5 = \frac{THQ \times AT \times 365}{EF \times ED \times (1/RfC \times 1/VF)} = \frac{1 \times 0.115 \times 365}{30 \times 1 \times 1/2.5 \times 1/71.43116339} = \frac{41.975}{0.167994} = 249.860 \text{ mg/kg}$$

Tier 2 Industrial/Commercial Calculations for MTBE

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \left(\frac{3.14 \times 8.82E\text{-}05 \times 7.90E\text{+}08}{2 \times 2.15 \times 8.82E\text{-}05} \right)^{1/2} \times 0.0001 = \frac{4.0143}{3.79E\text{-}04} = 10581.5678$$

Construction Worker

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \left(\frac{3.14 \times 8.82E\text{-}05 \times 3.60E\text{+}06}{2 \times 2.15 \times 8.82E\text{-}05} \right)^{1/2} \times 0.0001 = \frac{0.2710}{3.79E\text{-}04} = 714.3116$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$S\text{-}9 = \quad VF' = \frac{VF}{10} = \frac{714.3116}{10} = 71.4312$$

Equation for Derivation of Apparent Diffusivity

$$S\text{-}10 = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.102 \times 0.024) + (0.0004 \times 1.10E\text{-}05)}{0.0404} \times \frac{1}{(2.15 \times 0.1564) + 0.09 + (0.109 \times 0.024)} = 8.82E\text{-}05$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$S\text{-}17 = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b} \right] = 1.4 \times \left[0.1564 + \frac{(0.092 + 0.109 \times 0.024)}{2.15} \right] = 0.281 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

$$S\text{-}18 = \quad C_w = DF \times GW_{obj} = 20.00 \times 0.070 = 1.4$$

Soil-Water Partition Coefficient

$$S\text{-}19 = \quad K_d = K_{oc} \times f_{oc} = 11.50 \times 0.014 = 0.1564$$

Tier 2 Industrial/Commercial Calculations for MTBE

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Water-Filled Porosity

S-20 = $\Theta_w = \eta \times \left(\frac{I}{K_s}\right)^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$

Air-Filled Porosity

S-21 = $\Theta_a = \eta - \Theta_w = 0.20 - 0.09 = 0.1090$

Dilution Factor

S-22 = $DF = 1 + \frac{K \times i \times d}{I \times L} = \frac{31.54}{0.300} \times \frac{0.0200}{12.192} \times 3.884 + 1 = 1.6697$

GW Ingestion

S-23 = $\frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED} = \frac{1.0E\text{-}06 \times 70 \times 0 \times 365}{0.000 \times 1.000 \times 250 \times 25} = \frac{0.0E+00}{0} =$ #DIV/0! mg/L

Total Soil Porosity

S-24 = $\eta = 1 - \frac{\rho_b}{\rho_s} = 1 - \frac{2.15}{2.69} = 0.2007$

Estimation of Mixing Zone Depth

S-25 = $d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\frac{(-L \times I)}{(K \times i \times d_a)}\right]$

$= (0.0112 \times 12.192^2)^{0.5} + 3.048 \times \left[1 - \exp\frac{(-12.192 \times 0.3)}{(31.536 \times 0.0200 \times 3.048)}\right] = 3.884$ m

Soil Saturation Limit

S-29 = $C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)] = \frac{51000}{2.15} \times [(0.1564 \times 2.15) + 0.092 + (0.024 \times 0.109)] = 10{,}221.04$ mg/kg

Soil Gas Outdoor Inhalation

S-30 = $RO_s g = \frac{RO_{soil} \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b} = \frac{249.860 \times 0.024 \times 2.150 \times 1000}{0.024 \times 0.109 + 0.092 + 0.156 \times 2.150} = 30{,}046.19$ mg/m³

Tier 2 Industrial/Commercial Calculations for Benzo[a]pyrene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

SSL	SSL & RBCA
RBCA	IRIS/HEAST

Date Compiled: 02/20/18

Input Values

Holcomb's Bulk Density -->	0	Converted Value to be used in calculation sheet -->		–	USDA Soil Classification:	Sand		
Organic Matter (%) -->	0	FOC % (0.58 conversion) -->	0.000	Organic Matter (mg/kg)	0	FOC mg/kg (0.58 conversion)	0.000	foc conversion to g/g: 0.000

2.15	ρ_b - Dry Soil Bulk Density			1.5 or; Gravel = 2.0; Sand = 1.8; Silt = 1.6; Clay = 1.7; or Site Specific
2.69	ρs - Soil Particle Density			2.65 or; Site Specific
0.109	Θ_a - Air Filled Soil Porosity	*0.109*	Value from S-21	Top 1 meter = 0.28; below 1 meter = 0.13; Gravel = 0.05; Sand = 0.14; Silt =0.24; Clay = 0.19; or Calculated Value (S21)
0.092	Θw - Water Filled Soil Porosity	*0.092*	Value from S-20	Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.18; Silt =0.16; Clay = 0.17; or Calculated Value (S20)
0.201	η - SSL: Total Soil Porosity	*0.201*	Value from S-24	0.43 or; Gravel - 0.25; Sand = 0.32; Silt = 0.40; Clay = 0.36; or Calculated Value (S24)
0.02	i - Hydraulic Gradient			Site Specific
0.014	foc - Total Organic Carbon (g/g)			Surface Soil = 0.006; Subsurface Soil = 0.002; or Site Specific
20.000	DF - Dilution Factor	*1.670*	Value from S-22	If calculated value for DF is less than 20, then 20 default is used, else calculated value is used
3.884	d - Mixing Zone (m)	3.884	Value from S-25	2; or calculated value
31.54	K - Hydraulic Conductivity (m/yr)	cm/sec =	1.00E-04	Site Specific | 8.64E+00 cm/d | 3.15E+03 cm/yr | Use cm/d for R15, R19, & R26. cm/yr for R24
12.192	L - Source Length Parallel to Groundwater Flow (m)	feet = 40		Site Specific (m)
3.048	d_a - Aquifer Thickness (m)	feet = 10		Site Specific (m)
0.3	I - Infiltration Rate (m/yr)			0.3 for Illinois
1830	K_s - Saturated Hydraulic Conductivity			See Table K for Input Values
0.005	GW_{obj} - Groundwater Remediation Objective Class 1			0.025 GW_{obj} - Groundwater Remediation Objective Class 2
0.090	1/(2b+3) - Exponent for S20			See Table K for Input Values
70	BW - Body Weight			Residential = 70 (carcinogenic); 15 (non-carcinogenic); Industrial/Commercial = 70; Construction Worker = 70; RBCA = 70
114	$IF_{soil-adj}$ -Age Adjusted Soil Ingestion Factor for Carcinogens			114
50	IR_{soil} -Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480
7.3	SF_o -Oral Slop Factor			Benzo[a]Pyrene = 7.3
1	IR_w -Daily Water Ingestion Rate			Residential = 2; Industrial/Commercial = 1
0.00162	S - Solubility in Water			Benzo[a]pyrene = 0.00162
1.0E-06	TR - Target Cancer Risk			Residential = 10^{-6}; Industrial/Commercial = 10^{-6}; Construction Worker = 10^{-6} at point of human exposure
70	AT_c -Average Time for Carcinogens			70
1.10E-03	URF - Inhalation Unit Risk Factor			Benzo[a]pyrene =8.8 x 10^{-2}
250	EF - Exposure Frequency			Residential = 350; Industrial/Commercial = 250; Construction Worker = 30
25	ED - Exposure Duration for Inhalation fo Carcinogens			Residential = 30; Industrial/Commercial = 25; Construction Worker = 1
85.81	Q/C - Inverse of the mean concentration at the center of a square source			Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81
9.50E+08	T - Exposure Interval			Residential = 9.5 x10^8; Industrial/Commercial = 7.9 x 10^8; Construction Worker = 3.6 x 10^6
0.043	D_i - Diffusivity in Air			Benzo[a]pyrene = 0.043
4.63E-05	H' - Henry's Law Constant			Benzo[a]pyrene = 4.63 x 10^{-5}
9.00E-06	D_w - Diffusivity in Water			Benzo[a]pyrene = 9.00 x 10^{-6}
1020000	K_{oc} - Organic Carbon Partition Coefficient			Benzo[a]pyrene = 1,020,000

Industrial/Commercial Ingestion Tier II Objective

$$S\text{-}3 = \frac{TR \times BW \times AT_c \times 365}{Sf_o \times 10^{-6} \times EF \times ED \times IRsoil} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{7.300 \times 1.00E\text{-}06 \times 250 \times 25 \times 50} = \frac{1.8E+00}{2.28E+00} = 0.784 \text{ mg/kg}$$

Construction Worker Ingestion Tier II Objective

$$S\text{-}3 = \frac{TR \times BW \times AT_c \times 365}{Sf_o \times 10^{-6} \times EF \times IRsoil} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{7.300 \times 1.00E\text{-}06 \times 30 \times 480} = \frac{1.8E+00}{1.05E\text{-}01} = 17.01 \text{ mg/kg}$$

Industrial/Commercial Inhalation Tier II Objective

$$S\text{-}6 = \frac{TR \times ATc \times 365}{URF \times 1000 \times EF \times ED \times 1/VF} = \frac{1.0E\text{-}06 \times 70 \times 365}{1.10E\text{-}03 \times 1000 \times 250 \times 25 \times (1/5.68E+07)} = \frac{0.02555}{1.21E\text{-}04} = 2.11E+02 \text{ mg/kg}$$

Tier 2 Industrial/Commercial Calculations for Benzo[a]pyrene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Construction Worker Inhalation Tier II Objective

$$S\text{-}7 = \frac{TR \times ATc \times 365}{URF \times 1000 \times EF \times ED \times 1/VF'} = \frac{1.0E\text{-}06 \times 70 \times 365}{1.10E\text{-}03 \times 1000 \times 30 \times 1 / (1/\ 3.50E{+}05)} = \frac{0.02555}{9.43E\text{-}05} = 2.71E{+}02 \text{ mg/kg}$$

RESIDENTIAL OR COMMERCIAL

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 3.68E\text{-}12 \times 9.50E{+}08)^{1/2} \times 0.0001}{(2 \times 2.15 \times 3.68E\text{-}12)} = \frac{0.0009}{1.58E\text{-}11} = 56844975.3174$$

Construction Worker

$$S\text{-}8 = \quad VF = \frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^{-4}}{(2 \times \rho_b \times D_A)} = 85.81 \times \frac{(3.14 \times 3.68E\text{-}12 \times 3.60E{+}06)^{1/2} \times 0.0001}{(2 \times 2.15 \times 3.68E\text{-}12)} = \frac{0.0001}{1.58E\text{-}11} = 3.50E{+}06$$

Equation for Derivation of Volatilization Factor - Construction Worker

$$S\text{-}9 = \quad VF' = \frac{VF}{10} = \frac{3499302.8460}{10} = 349930.2846$$

Equation for Derivation of Apparent Diffusivity

$$S\text{-}10 = \quad D_A = \frac{(\theta_a^{3.33} \times D_i \times H') + (\theta_w^{3.33} \times D_w)}{\eta^2} \times \frac{1}{(\rho_b \times K_d) + \theta_w + (\theta_a \times H')}$$

$$= \frac{(6.23E\text{-}04 \times 0.043 \times 0.000) + (0.0004 \times 9.00E\text{-}06)}{0.0404} \times \frac{1}{(2.15 \times 13872) + 0.09 + (0.109 \times 4.63E\text{-}05)} = 3.68E\text{-}12$$

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)

$$S\text{-}17 = \quad C_w \times \left[K_d + \frac{(\theta_w + \theta_a \times H')}{\rho b} \right] = 0.1 \times \left[13872 + \frac{(0.092 + 0.109 \times 4.63E\text{-}05)}{2.15} \right] = 1387.204 \text{ mg/kg}$$

Target Soil Leachate Concentration (Class 1)

$$S\text{-}18 = \quad C_w = \quad DF \times GW_{obj} = 20.00 \times 0.005 = 0.1$$

Soil-Water Partition Coefficient

$$S\text{-}19 = \quad K_d = \quad K_{oc} \times f_{oc} = 1.02E{+}06 \times 0.014 = 13872$$

Water-Filled Porosity

$$S\text{-}20 = \quad \Theta_w = \quad \eta \times \left[\frac{I}{K_s}\right]^{1/(2b+3)} = 0.20 \times \left[\frac{0.300}{1830.000}\right]^{0.090} = 0.0917$$

Tier 2 Industrial/Commercial Calculations for Benzo[a]pyrene

S & S Infinite Group, Inc. - DBA Downtown 66

2016-1089

Air-Filled Porosity

$$S\text{-}21 = \quad \Theta_a = \eta - \Theta_w = 0.20 - 0.09 = 0.1090$$

Dilution Factor

$$S\text{-}22 = \quad DF = 1 + \frac{K \times i \times d}{I \times L} = \frac{31.54 \times 0.0200 \times 3.884}{0.300 \times 12.192} + 1 = 1.6697$$

GW Ingestion

$$S\text{-}23 = \frac{TR \times BW \times AT_c \times 365}{SF_o \times IR_w \times EF \times ED} = \frac{1.0E\text{-}06 \times 70 \times 70 \times 365}{7.300 \times 1.000 \times 250 \times 25} = \frac{1.8E+00}{45625} = 0.0000 \text{ mg/L}$$

Total Soil Porosity

$$S\text{-}24 = \quad \eta = 1 - \frac{\rho_b}{\rho_s} = 1 - \frac{2.15}{2.69} = 0.2007$$

Estimation of Mixing Zone Depth

$$S\text{-}25 = \quad d = (0.0112 \times L^2)^{0.5} + d_a\left[1 - \exp\frac{(-L \times I)}{(K \times i \times d_a)}\right]$$

$$= (0.0112 \times 12.192^2)^{0.5} + 3.048 \times \left[1 - \exp\left(\frac{-12.192 \times 0.3}{31.536 \times 0.0200 \times 3.048}\right)\right] = 3.884 \text{ m}$$

Soil Saturation Limit

$$S\text{-}29 = \quad C_{sat} = \frac{S}{\rho_b} \times [(K_d \times \rho b) + \Theta w + (H' \times \theta a)] = \frac{1.62E\text{-}03}{2.15} \times [(13872 \times 2.15) + 0.092 + (4.63E\text{-}05 \times 0.109)] = 22.47 \text{ mg/kg}$$

Soil Gas Outdoor Inhalation

$$S\text{-}30 = \quad ROs\,g = \frac{ROsoil \times H \times \rho b \times 1000}{H' \times \Theta a + \Theta w + Kd \times \rho b} = \frac{22.473 \times 4.630E\text{-}05 \times 2.150 \times 1000}{4.630E\text{-}05 \times 0.109 + 0.092 + 13872.000 \times 2.150} = 0.00008 \text{ mg/m}^3$$

S & S Infinite Group, Inc. - DBA Downtown 66
2016-1089

Appendix C - Table K
Parameter Estimates for Calculating Water - Filled Soil Porosity (Ow)

Soil Texture	Saturated Hydraulic Conductivity (Ks) (m/yr)	1/ (2b+3)
Sand	1830	0.09
Loamy Sand	540	0.085
Sandy Loam	230	0.08
Silt Loam	120	0.074
Loam	60	0.073
Sandy Clay Loam	40	0.058
Silt Clay Loam	13	0.054
Clay Loam	20	0.05
Sandy Clay	10	0.042
Silt Clay	8	0.042
Clay	5	0.039

Version: 4/25/2016

APPENDIX H

Water Well Survey Correspondence

CORRECTIVE ACTION PLAN AMENDMENT
S&S Infinite Group
Peoria, Illinois

CW³M Company
Environmental Consulting Services

701 W. South Grand Avenue
Springfield, IL 62704

Phone: (217) 522-8001
Fax: (217) 522-8009

August 21, 2018

Peoria City/County Health Department
2116 North Sheridan Road
Peoria, Illinois 61604

RE: **LPC #1430650114—Peoria County**
S & S Infinite Group, Inc. - Peoria
400 North East Adams Street
Incident Number: 2016-1089
LUST Technical Reports—Site Investigation Completion Report

To whom it may concern:

We at CW³M have been hired by Mr. Syed Muneeb of S&S Infinite Group, Inc. for site assessment and remedial proceedings at their Northeast Adams Street site located at 400 North East Adams Street, Peoria, Illinois, 61603. For us to continue our work at the site we would like to know what is the status of a water well adjacent to the site.

The water well information is as follows
API number #121430074200
Located at 422 North East Adams Street.
Longitude: -89.584916
Latitude: 40.694276
Well Owner: Peoria Creamery Co.

On behalf of S&S Infinite, Inc. we thank you for your assistance. If there is any information about the current status of the well please notify us by email at vince@cwmcompany.com or by mail at 701 South Grand Avenue West, Springfield, Illinois 62704.

If you have any questions or require additional information, please contact Mr. Vince Smith or me at (217) 522-8001.

Sincerely,

Carol Rowe, P.G.
Senior Environmental Geologist

xc: Mr. Syed Muneeb, *S&S Infinite Group, Inc.*
Mr. William T. Sinnott, *CW³M Company, Inc.*

Public Health
Prevent. Promote. Protect.

Peoria City/County
Health Department
Health Protection Division
Environmental Health

August 29, 2018

Carol Rowe, P.G.
701 W South Grand Ave. West
Springfield, IL 62704

RE: ENVIRONMENTAL RECORDS FOR 400 NE ADAMS STREET, PEORIA, ILLINOIS

Dear Carol Rowe:

The Peoria City/County Health Department has reviewed your request for environmental records, documents and files for the property described as 400 NE Adams Street in Peoria, Illinois.

At this time, this Department does not have any environmental records relating to the aforementioned property.

If I can be of any further assistance in this matter, please feel free to contact me. I can be reached at 309-679-6160 Monday through Friday.

Sincerely,

Carey A. Panier

Carey A. Panier, BS, LEHP, REHS/RS
Interim Director of Environmental Health

2116 N. Sheridan Rd. • Peoria, Illinois • 61604 • PH: 309/679-6161
FAX: 309/679-6174 • TDD: 800/526-0844 *(hearing impaired only)* • ***www.pcchd.org***

LEAKING UST TECHNICAL REVIEW NOTES

Reviewed by: Scott McGill
Date Reviewed: January 31, 2019

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

Document(s) Reviewed:

This document consists of an amended corrective action plan and budget dated November 12, 2018 and received by the Illinois EPA on November 13, 2018 and prepared by CW3M Company. This plan and budget were prepared in accordance with the 734 requirements and summarized as follows:

Corrective Action Plan/Budget Review Notes:

The owner and operator submitted an amended corrective action plan to address contamination at the site. The owner and operator submitted an amended corrective action plan consisting of soil excavation and institutional controls. The owner and operator propose to excavate 721 cubic yards of impacted soils to a depth of 10 feet as depicted in Drawing: 0007. The excavated soils are in the vicinity of WC-1 and W-3 consisting of soils above the Tier 2 cleanup objectives. Benzene concentrations exceed the Tier 2 industrial/commercial inhalation and Xylenes exceed the Tier 2 Csat cleanup objectives. The owner and operator also propose institutional controls consisting of a construction worker caution, industrial/commercial land use restriction and groundwater ordinance. It should be noted that soil contamination in the vicinity of WC-2 and RC-1 above the Tier 2 cleanup objectives was previously removed during early action activities. Confirmation samples consisting of 6 side wall and 2 floor samples will be collected after completion of excavation activities. The excavation will be capped with 6 inches of CA6 rock. A waste characterization sample is also proposed at the site.

The amended budget proposal is included in Appendix D in the amount of $106,603.33. This amount includes costs for advancement of a waste characterization sample including analytical soil sampling for the BTEX, MTBE and PNA constituents, excavation and backfilling 721 cubic yards of soil, personnel and material costs.

Illinois EPA Decision:

The amended corrective action plan consisting of soil excavation and backfilling and institutional controls should be approved. The budget proposal should be modified with the following cuts:

1. Costs in the amount of $1,779.84 associated with a Geologist III to complete 16 hours consisting of reimbursement development/inputs/contractor invoicing/evaluation with budget since these costs lack supporting documentation and not reasonable as submitted;

2. $1,289.30 associated with a Senior Project Manager to complete 10 hours for groundwater ordinance negotiation development/correspondence/notification; and
3. $227.49 associated with a Senior Draftperson/CAD to complete 3 hours consisting of drafting and editing maps for report.

A corrective action completion report should be submitted to the Illinois EPA.

Response Due:

A corrective action completion report should be submitted to the Illinois EPA.

LPC #1430650114 - Peoria Co.
Peoria/S&S Infinite Group, Inc
LUST Technical File.

McGill, Scott

From: vince@cwmcompany.com
Sent: Thursday, January 31, 2019 11:54 AM
To: McGill, Scott
Subject: [External] RE:

Scott,

The soil in the vicinity of WC-2 and RC-1 was removed as part of early action. While the tank pit at the northwest corner of the property had no soil removed, the tank pit east of the building was excavated during early action. The floor and wall samples after the excavation indicate the levels of remaining contamination in the area of WC-2 and RC-1. Only sample 11 from early action exceeds the Tier 2 CUOs, which is only for the construction worker inhalation objective for naphthalene. A construction worker caution is being requested for that area.

Let me know if you have any other questions.

Vince E. Smith, P.E.
Sr. Environmental Engineer
CWM Company, Inc.
701 W. South Grand Ave.
Springfield, IL 62704
217-522-8001
Fax 217-522-8009
vince@cwmcompany.com

EPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
MAR 08 2019
REVIEWER JRM

-------- Original Message --------
Subject:
From: "McGill, Scott" <Scott.McGill@Illinois.gov>
Date: Thu, January 31, 2019 10:10 am
To: "vince@cwmcompany.com" <vince@cwmcompany.com>

I was in the process of completing the review of the corrective action plan for S & S Infinite Group, Inc. The plan indicates that 721 cubic yards of soil is being excavated in the vicinity of WC-1 and WC-3 in order to address soil contamination exceeding the Tier 2 cleanup objectives. Soil contamination also exceeds Tier 2 cleanup objectives in the vicinity of WC-2 and RC-1 since Benzene concentrations range from 11.8 to 5.77 mg/kg, respectively, as depicted in Drawing:0003B and the Tier 2 cleanup objective is 3.70 mg/kg. Is there a reason that soil contamination is not being excavated in this area of the site or has that impacted soil already been addressed?

LPC #1430650114 - Peoria Co
Peoria / S&S Infinite Group, INC.
LUST Technical File

McGill, Scott

From: vince@cwmcompany.com
Sent: Monday, February 04, 2019 9:05 AM
To: McGill, Scott
Subject: [External] RE:

Scott,

For the first item, we would be willing to reduce the requested hours from 6 to 3, if that helps with the approval. Additional drafting beyond the SICR was needed to prepare the drawings needed in the two CAP submittals.

For the second item, we would like to point out that we received nothing for preparing the original CAP, other than the time to review and certify it. The 40 hours requested are for the preparation of this submittal, as well as the previous submittal which was approved with modifications. For a site with two unresolved incidents, to review the historical data and incorporate it into a single plan to address both incidents, and prepare two CAP submittals, one of which requests additional excavation, we feel that 40 hours is minimal and nowhere near excessive. In reality, we have already spent more than twice that amount in hours preparing the plans, and know that we will never recover it all.

For the third item, we are willing to accept the elimination of the requested 10 hours for the Senior Project Manager.

Let me know if you have any other questions.

EPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
MAR 08 2019
REVIEWER JRM

Vince E. Smith, P.E.
Sr. Environmental Engineer
CWM Company, Inc.
701 W. South Grand Ave.
Springfield, IL 62704
217-522-8001
Fax 217-522-8009
vince@cwmcompany.com

-------- Original Message --------
Subject:
From: "McGill, Scott" <Scott.McGill@Illinois.gov>
Date: Fri, February 01, 2019 8:48 am
To: "vince@cwmcompany.com" <vince@cwmcompany.com>

Vince,

I'm in the process of reviewing the corrective action plan budget for S & S Infinite Group, Inc, and I need further justification on the following personnel costs:

1. $454.98 associated with 6 hours for a Senior Draftperson/CAD to complete activities consisting of drafting and editing maps for report. 6 hours appears to be excessive for drafting and editing maps for the report.;
2. $5,056.00 associated with 40 hours for a Senior Project Manager to complete activities consisting of amended correction design/report development/IEPA correspondence; and
3. $1,289.30 associated with 10 hours for a Senior Project Manager to complete groundwater ordinance negotiation development/correspondence/notifications. It appears that the

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Engineer III is completing 24 hours for the same work proposed by the Senior Project Manager.

Thanks for your help.

LPC # 1430650114 - Peoria Co.
Peoria / S & S Infinite Group, Inc
LUST Technical File.

McGill, Scott

From:	vince@cwmcompany.com
Sent:	Thursday, February 07, 2019 10:51 AM
To:	McGill, Scott
Subject:	[External] RE:
Attachments:	Amendment cons-personnel-costs - revised.pdf; Amendment consulting-material-costs-summary - revised.pdf

Scott,

We had previously agreed in an email to remove the $1,289.30 for Sr. Project Manager doing groundwater ordinance work. While looking at the proposed budget on this matter, we realized that the CACR preparation costs were not included in the submittal you are looking at, so we have revised the personnel and consultant materials portions of the budget to include the CACR costs, and to include the changes in the personnel costs which we previously agreed to. The attached budget sections replace those same sections previously submitted.

Let me know if you have any questions.

Vince E. Smith, P.E.
Sr. Environmental Engineer
CWM Company, Inc.
701 W. South Grand Ave.
Springfield, IL 62704
217-522-8001
Fax 217-522-8009
vince@cwmcompany.com

-------- Original Message --------
Subject:
From: "McGill, Scott" <Scott.McGill@Illinois.gov>
Date: Thu, February 07, 2019 6:53 am
To: "vince@cwmcompany.com" <vince@cwmcompany.com>

Vince,
The budget proposal for S & S Infinite Group, Inc. included personnel costs in the amount of $1,289.30 associated with a Senior Project Manager consisting of groundwater ordinance negotiation development/correspondence/notifications which lack supporting documentation. Please send me supporting documentation for these costs. Thanks in advance.

Consulting Personnel Costs Form

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	Task			
	Senior Project Manager	40.00	126.40	$5,056.00
CCAP	Amended Corrective Action Design / Report Development / IEPA Correspondence			
	Senior Prof. Engineer	2.00	164.33	$328.66
CCAP	Report Review and Certification			
	Senior Draftperson/CAD	3.00	75.83	$227.49
CCAP	Drafting and Editing Maps for Report			
	Senior Admin. Assistant	3.00	56.88	$170.64
CCAP	Report Compilation, Assembly, and Distribution			
	Senior Project Manager	10.00	126.40	$1,264.00
TACO 2 or 3	TACO Tier 2 Calculations / Development of CUOs / GW Modeling			

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Project Manager	14.00	126.40	$1,769.60
CCAP-Budget	Budget Preparation / Data Evaluation			
	Senior Prof. Engineer	2.00	164.33	$328.66
CCAP-Budget	Budget Review & Certification			
	Senior Draftperson/CAD	8.00	77.35	$618.80
ELUC	Drafting Maps for Groundwater Ordinance			
	Senior Admin. Assistant	5.00	58.02	$290.10
ELUC	Groundwater Ordinance Notification / Correspondence			
	Engineer III	24.00	128.93	$3,094.32
ELUC	Groudwater Ordinance Development / Correspondence with City / Meeting			

Employee Name		Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	Task				
		Senior Project Manager	8.00	128.93	$1,031.44
CCA-Field	Scheduling Waste Characterization Drilling/Excavation Preparation/Landfill Authoization/Corr.				
		Engineer III	6.00	128.93	$773.58
CCA-Field	Drilling Waste Characterization				
		Senior Admin. Assistant	2.00	58.02	$116.04
CCA-Field	JULIE/Client Notification for Waste Characterization Drilling/Excavation/Analytical				
		Senior Project Manager	8.00	128.03	$1,024.24
CCA-Field	Field Documentation				
		Engineer III	36.00	128.93	$4,641.48
CCA-Field	Excavation Disposal and Backfill Oversight/Sampling/Field Reports				
		Senior Draftperson/CAD	5.00	77.35	$386.75
CCA-Field	Drafting/Documentation/Excavation/Sampling/Results				
		Senior Project Manager	6.00	128.93	$773.58
CCA-Field	Analytical Results / Tablulation				
		Engineer III	8.00	128.93	$1,031.44
CCA-Field	Waste Characterization Sampling / Field Reports / Sample Coordination				

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Prof. Engineer	6.00	164.33	$985.98
CA-Pay	Reimbursement Review and Certification			
	Senior Acct. Technician	30.00	69.51	$2,085.30
CA-Pay	Reimbursement Prepartion Form (min 2 claims)			
	Senior Admin. Assistant	8.00	56.88	$455.04
CA-Pay	Reimbursement Compilation, Assembly, and Distribution			
	Geologist III	16.00	111.24	$1,779.84
CA-Pay	Reimbursement Development / Inputs / Contractor Invoicing / Evalution with Budget			
	Senior Project Manager	30.00	128.93	$3,867.90
CACR	Preparation of Corrective Action Completion Report			
	Senior Prof. Engineer	3.00	164.33	$492.99
CACR	Certification of Corrective Action Completion Report			
	Senior Admin. Assistant	2.00	56.88	$113.76
CACR	Assembly and Distribution of Corrective Action Completion Report			

invoicing

*Refer to the applicable Maximum Payment Amounts document.

Total of Consulting Personnel Costs	$32,707.63

Consultant's Materials Costs Form

Materials, Equipment, or Field Purchase		Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	**Description/Justification**				
Postage		3.00	7.50	/each	$22.50
CCAP	Report/ Forms/ Distribution				
Postage		4.00	7.50	/each	$30.00
CA-Pay	Reimbursement Distribution / Forms				
Postage		4.00	7.50	/each	$30.00
ELUC	Groundwater ordinance, groundwater ordinance notifications				
Mileage		600.00	.54	/mile	$324.00
CCA-Field	Four Round Trips from Springfield Office to Site (1 Drilling, 3 Excavation)				

Materials, Equipment, or Field Purchase		Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	**Description/Justification**				
PID Rental		4.00	75.00	/day	$300.00
CCA-Field	Detect VOC Levels in Soil Samples				
Sampling Supplies		4.00	25.00	/day	$100.00
CCA-Field	Disposable Latex Gloves, Bags, Sampling Supplies				
Postage		3.00	7.50	/each	$22.50
CACR	Report/ Forms/ Distribution				

Total of Consultant Materials Costs	$829.00

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR JOHN J. KIM, ACTING DIRECTOR

217/524-3300

CERTIFIED MAIL

7017 2680 0001 0207 7415

FEB 11 2019

S & S Infinite Group, Inc.
Attn: Syed Muneeb
400 North East Adams Street
Peoria, IL 61603

EPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
MAR 25 2019
REVIEWER JRM

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

Dear Syed Muneeb:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Corrective Action Plan (plan) submitted for the above-referenced incident. This plan, dated November 12, 2018, was received by the Illinois EPA on November 13, 2018. On February 7, 2019, revised Consulting Personnel and Material Costs Forms were received which included costs associated with the development of the Corrective Action Completion Report that was omitted in the November 12, 2018 plan. Citations in this letter are from the Environmental Protection Act (415 ILCS 5) (Act) and Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code).

Pursuant to Sections 57.7(b)(2) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(a), the plan is approved. The activities proposed in the plan are appropriate to demonstrate compliance with Title XVI of the Act. Please note that all activities associated with the remediation of this release proposed in the plan must be executed in accordance with all applicable regulatory and statutory requirements, including compliance with the proper permits.

In addition, the budget is modified pursuant to Sections 57.7(b)(3) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(b). Based on the modifications listed in Section 2 of Attachment A, the amounts listed in Section 1 of Attachment A have been approved. Please note that the costs must be incurred in accordance with the approved plan. Be aware that the amount of payment from the Fund may be limited by Sections 57.7(c), 57.8(d), 57.8(e), and 57.8(g) of the Act, as well as 35 Ill. Adm. Code 734.630 and 734.655.

Further, pursuant to 35 Ill. Adm. Code 734.145, it is required that the Illinois EPA be notified of field activities prior to the date the field activities take place. This notice must include a description of the field activities to be conducted; the name of the person conducting the activities; and the date, time, and place the activities will be conducted and shall be made to EPA.FieldNotifications@illinois.gov. This notification of field activities must be provided at least two weeks prior to the scheduled field activities.

Pursuant to Sections 57.7(b)(5) and 57.12(c) and (d) of the Act and 35 Ill. Adm. Code 734.100 and 734.125, the Illinois EPA requires that a Corrective Action Completion Report that achieves compliance with applicable remediation objectives be submitted within 30 days after completion of the plan to:

Illinois Environmental Protection Agency
Bureau of Land - #24
Leaking Underground Storage Tank Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276

Please submit all correspondence in duplicate and include the Re: block shown at the beginning of this letter.

If within four years after the approval of this plan, compliance with the applicable remediation objectives has not been achieved and a Corrective Action Completion Report has not been submitted, the Illinois EPA requires the submission of a status report pursuant to Section 57.7(b)(6) of the Act.

An underground storage tank system owner or operator may appeal this decision to the Illinois Pollution Control Board. Appeal rights are attached.

If you have any questions or need further assistance, please contact Scott McGill at (217) 524-5137.

Sincerely,

Michael T. Lowder
Unit Manager
Leaking Underground Storage Tank Section
Division of Remediation Management
Bureau of Land

Attachments: Attachment A
Appeal Rights

c: Carol L. Rowe, CWM Company, Inc. (electronic copy)
BOL File

Attachment A

Re: LPC #1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident No. 20161089
Leaking UST Technical File

SECTION 1

As a result of Illinois EPA's modification(s) in Section 2 of this Attachment A, the following amounts are approved:

$1,547.20	Drilling and Monitoring Well Costs
$2,918.98	Analytical Costs
$71,580.88	Remediation and Disposal Costs
$0.00	UST Removal and Abandonment Costs
$0.00	Paving, Demolition, and Well Abandonment Costs
$30,927.79	Consulting Personnel Costs
$829.00	Consultant's Materials Costs

Handling charges will be determined at the time a billing package is reviewed by the Illinois EPA. The amount of allowable handling charges will be determined in accordance with Section 57.1(a) of the Environmental Protection Act (Act) and 35 Illinois Administrative Code (35 Ill. Adm. Code) 734.635.

SECTION 2

$1,779.84 for costs for reimbursement development/inputs/contractor invoicing/evaluation and budget, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). Since there is no supporting documentation of costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act. Also, these costs are unreasonable as submitted.

In addition, the above-referenced deduction is for consulting personnel costs associated with the procurement, oversight and payment of subcontractors or field purchases. Such costs are handling charges pursuant to 35 Ill. Adm. Code 734.115. The Corrective Action Budget must not include handling charges pursuant to 35 Ill. Adm. Code 734.335(b).

Appeal Rights

An underground storage tank owner or operator may appeal this final decision to the Illinois Pollution Control Board pursuant to Sections 40 and 57.7(c)(4) of the Act by filing a petition for a hearing within 35 days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed 90 days by written notice from the owner or operator and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the filing of an appeal, please contact:

John Therriault, Assistant Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, IL 60601
312/814-3620

For information regarding the filing of an extension, please contact:

Illinois Environmental Protection Agency
Division of Legal Counsel
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276
217/782-5544

CW³M Company
Environmental Consulting Services

701 W. South Grand Avenue
Springfield, IL 62704

Phone: (217) 522-8001
Fax: (217) 522-8009

August 13, 2019

Mr. Scott McGill, Project Manager
LUST Section, Bureau of Land
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794-9276

RE: LPC #1430650114—Peoria County
S & S Infinite Group, Inc. - Peoria
400 North East Adams Street
Incident Number: 2016-1089
LUST Technical Reports — Corrective Action Plan Budget Amendment

Dear Mr. McGill:

On behalf of S & S Infinite Group, Inc, owner of the USTs at the above referenced site in Peoria, Illinois, we are submitting the attached Corrective Action Plan Budget Amendment. The consulting material costs for the excavation were inadvertently left out of the approved budget, and are being proposed in this submittal. The excavation has been completed; we are waiting on analytical. As soon as available, the remainder of Corrective Action activities will be completed.

If you have any questions or require additional information, please contact Mr. Matthew Saladino or me at (217) 522-8001.

Sincerely,

Carol Rowe, P.G. .
Senior Environmental Geologist

xc: Mr. Syed Muneeb, *S & S Infinite Group, Inc. / Downtown 66*
Mr. William T. Sinnott, *CW³M Company, Inc.*

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Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

General Information for the Budget and Billing Forms

LPC #: 1430650114 County: Peoria

City: Peoria Site Name: S & S Infinite Group, Inc.

Site Address: 400 NE Adams Street

IEMA Incident No.: 2016-1089

IEMA Notification Date: 11/21/2016

Date this form was prepared: 8/9/2019

This form is being submitted as a (check one, if applicable):

- ☐ Budget Proposal
- ☒ Budget Amendment (Budget amendments must include only the costs over the previous budget.)
- ☐ Billing Package

Please provide the name(s) and date(s) of report(s) documenting the costs requested:

Name(s):

Date(s):

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This package is being submitted for the site activities indicated below:

35 Ill. Adm. Code 734:

- ☐ Early Action
- ☐ Free Product Removal after Early Action
- ☐ Site Investigation .... Stage 1: ☐ Stage 2: ☐ Stage 3: ☐
- ☒ Corrective Action Actual Costs

35 Ill. Adm. Code 732:

- ☐ Early Action
- ☐ Free Product Removal after Early Action
- ☐ Site Classification
- ☐ Low Priority Corrective Action
- ☐ High Priority Corrective Action

35 Ill. Adm. Code 731:

- ☐ Site Investigation
- ☐ Corrective Action

General Information for the Budget and Billing Forms

The following address will be used as the mailing address for checks and any final determination letters regarding payment from the Fund.

Pay to the order of: S&S Infinite Group

Send in care of: CWM Company, Inc.

Address: P.O. Box 571

City: Carlinville State: IL Zip: 62626

The payee is the: Owner ☒ Operator ☐ (Check one or both.)

Signature of the owner or operator of the UST(s) (required)

W-9 must be submitted.
Click here to print off a W-9 Form.

Number of petroleum USTs in Illinois presently owned or operated by the owner or operator; any subsidiary, parent or joint stock company of the owner or operator; and any company owned by any parent, subsidiary or joint stock company of the owner or operator:

Fewer than 101: ☒ 101 or more: ☐

Number of USTs at the site: 7 (Number of USTs includes USTs presently at the site and USTs that have been removed.)

Number of incidents reported to IEMA for this site: 2

Incident Numbers assigned to the site due to releases from USTs: 20140963 20161089

Please list all tanks that have ever been located at the site and tanks that are presently located at the site.

Product Stored in UST	Size (gallons)	Did UST have a release?	Incident No.	Type of Release Tank Leak / Overfill / Piping Leak
Diesel	6,000	Yes ☒ No ☐	2014-0963	Overfill
Gasoline	10,000	Yes ☒ No ☐	2014-0963	Overfill
Gasoline	10,000	Yes ☒ No ☐	2016-1089	Overfill
Gasoline	350	Yes ☒ No ☐	2016-1089	Tank Leak
Gasoline	350	Yes ☒ No ☐	2016-1089	Tank Leak
Used Oil	560	Yes ☒ No ☐	2016-1089	Tank Leak
Used Oil	560	Yes ☒ No ☐	2016-1089	Tank Leak
		Yes ☐ No ☐		
		Yes ☐ No ☐		

Add More Rows Undo Last Add

Owner/Operator and Licensed Professional Engineer/Geologist Budget Certification Form

I hereby certify that I intend to seek payment from the UST Fund for costs incurred while performing corrective action activities for Leaking UST incident 2016-1089. I further certify that the costs set forth in this budget are for necessary activities and are reasonable and accurate to the best of my knowledge and belief. I also certify that the costs included in this budget are not for corrective action in excess of the minimum requirements of 415 ILCS 5/57, no costs are included in this budget that are not described in the corrective action plan, and no costs exceed Subpart H: Maximum Payment Amounts, Appendix D Sample Handling and Analysis amounts, and Appendix E Personnel Titles and Rates of 35 Ill. Adm. Code 732 or 734. I further certify that costs ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 732.606 or 734.630 are not included in the budget proposal or amendment. Such ineligible costs include but are not limited to:

Costs associated with ineligible tanks.
Costs associated with site restoration (e.g., pump islands, canopies).
Costs associated with utility replacement (e.g., sewers, electrical, telephone, etc.).
Costs incurred prior to IEMA notification.
Costs associated with planned tank pulls.
Legal fees or costs.
Costs incurred prior to July 28, 1989.
Costs associated with installation of new USTs or the repair of existing USTs.

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Owner/Operator: S & S Infinite Group, Inc. / DBA - Downtown 66

Authorized Representative: Syed Muneeb Title: Owner

Signature: ________ Date: 8/3/19

Subscribed and sworn to before me the 3rd day of August, 2019

________ (Notary Public)

Seal: CAROL L ROWE Official Seal Notary Public - State of Illinois My Commission Expires Mar 18, 2021

In addition, I certify under penalty of law that all activities that are the subject of this plan, budget, or report were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan, budget, or report and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in the plan, budget, or report has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

L.P.E./L.P.G.: Vince E. Smith L.P.E./L.P.G. Seal: VINCE E. SMITH 46118 REGISTERED PROFESSIONAL GEOLOGIST ILLINOIS

L.P.E./L.P.G. Signature: ________ Date: 8/13/19

Subscribed and sworn to before me the 13th day of August 2019

________ (Notary Public)

Seal: CAROL L ROWE Official Seal Notary Public - State of Illinois My Commission Expires Mar 18, 2021

The Illinois EPA is authorized to require this information under 415 ILCS 5/1. Disclosure of this information is required. Failure to do so may result in the delay or denial of any budget or payment requested hereunder.

Budget Summary

Choose the applicable regulation: (•) 734 ( ) 732

734	Free Product	Stage 1 Site Investigation	Stage 2 Site Investigation	Stage 3 Site Investigation	Corrective Action
Drilling and Monitoring Well Costs Form	$	$	$	$	$
Analytical Costs Form	$	$	$	$	$
Remediation and Disposal Costs Form	$	$	$	$	$
UST Removal and Abandonment Costs Form	$	$	$	$	$
Paving, Demolition, and Well Abandonment Costs Form	$	$	$	$	$
Consulting Personnel Costs Form	$	$	$	$	$
Consultant's Materials Costs Form	$	$	$	$	$ 765.00
Handling Charges Form	Handling charges will be determined at the time a billing package is submitted to the Illinois EPA. The amount of allowable handling charges will be determined in accordance with the Handling Charges Form.				
Total	$	$	$	$	$ 765.00

Consultant's Materials Costs Form

Materials, Equipment, or Field Purchase		Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	**Description/Justification**				
PID Rental		3.00	75.00	/day	$225.00
CCA-Field	Detect VOC Levels in Soil Samples				
Sample Supplies		1.00	25.00	/each	$25.00
CCA-Field	Disposable Latex Gloves, Bags, Deionized Water, Twine, Miscellaneous Expenses				
Meals. Incidentals (Tazewell)		3.00	55.00	/day	$165.00
Hotel		2.00	94.00	/each	$188.00
CCA-Field					
Mileage		300.00	.54	/mile	$162.00
CCA-Field	Two Round Trips from Springfield Office to Site (Excavation and Backfill)				

Total of Consultant Materials Costs	$765.00

CW³M Company

Environmental Consulting Services

701 W. South Grand Avenue
Springfield, IL 62704
Phone: (217) 522-8001
8009

1430650114 – Peoria County
S & S Infinite Group, Inc.
Incident # 20161089
Leaking UST Technical File

September 10, 2019

Mr. Scott McGill, Project Manager
LUST Section, Bureau of Land
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794-9276

RE: **LPC #1430650114—Peoria County**
S & S Infinite Group, Inc. - Peoria
400 North East Adams Street
Incident Number: 2016-1089
LUST Technical Reports — Corrective Action Plan Budget Amendment

Dear Mr. McGill:

On behalf of S & S Infinite Group, Inc, owner of the USTs at the above referenced site in Peoria, Illinois, we are submitting the attached Corrective Action Plan Budget Amendment. This includes costs associated with concrete replacement for work done on behalf of both incidents, which has not been included in any budget to date submitted for the incident. We apologize for any inconvenience this may have caused.

The areas requiring concrete replacement are as follows:

- Former western UST field containing tanks 1, 2 and 3: 1,316 sq. ft.*
- Former eastern UST field containing tanks 4, 5, 6, and 7: 518 sq. ft.
- Corrective action excavation area: 1,853 sq. ft.*

*The former western UST field and corrective action excavation area overlap an approximate 526 sq. ft.; therefore, this amount has been removed from the proposed concrete replacement area as follows:

1,316 sq. ft. + 518 sq. ft. + 1,853 sq. ft. – 526 sq ft. = **3,161 sq. ft.**

If you have any questions or require additional information, please contact Mr. Matthew Saladino or me at (217) 522-8001.

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Sincerely,

Carol Rowe, P.G.
Senior Environmental Geologist

xc: Mr. Syed Muneeb, *S & S Infinite Group, Inc. / Downtown 66*
Mr. William T. Sinnott, *CW^{3}M Company, Inc.*

Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

General Information for the Budget and Billing Forms

LPC #: 1430650114 County: Peoria

City: Peoria Site Name: S & S Infinite Group, Inc.

Site Address: 400 NE Adams Street

IEMA Incident No.: 2016-1089 2014-0963

IEMA Notification Date: 11/21/2016

Date this form was prepared: Aug 30, 2019

This form is being submitted as a (check one, if applicable):

☐ Budget Proposal

☒ Budget Amendment (Budget amendments must include only the costs over the previous budget.)

☐ Billing Package

Please provide the name(s) and date(s) of report(s) documenting the costs requested:

Name(s):

Date(s):

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This package is being submitted for the site activities indicated below:

35 Ill. Adm. Code 734:

☐ Early Action

☐ Free Product Removal after Early Action

☐ Site Investigation .... Stage 1: ☐ Stage 2: ☐ Stage 3: ☐

☒ Corrective Action Actual Costs

35 Ill. Adm. Code 732:

☐ Early Action

☐ Free Product Removal after Early Action

☐ Site Classification

☐ Low Priority Corrective Action

☐ High Priority Corrective Action

35 Ill. Adm. Code 731:

☐ Site Investigation

☐ Corrective Action

IL 532 -2825
LPC 630 Rev. 1/ 2007

General Information for the Budget and Billing Forms

The following address will be used as the mailing address for checks and any final determination letters regarding payment from the Fund.

Pay to the order of: S&S Infinite Group

Send in care of: CWM Company, Inc.

Address: P.O. Box 571

City: Carlinville State: IL Zip: 62626

The payee is the: Owner ☒ Operator ☐ (Check one or both.)

Signature of the owner or operator of the UST(s) (required)

W-9 must be submitted.
Click here to print off a W-9 Form.

Number of petroleum USTs in Illinois presently owned or operated by the owner or operator; any subsidiary, parent or joint stock company of the owner or operator; and any company owned by any parent, subsidiary or joint stock company of the owner or operator:

Fewer than 101: ☒ 101 or more: ☐

Number of USTs at the site: 7 (Number of USTs includes USTs presently at the site and USTs that have been removed.)

Number of incidents reported to IEMA for this site: 2

Incident Numbers assigned to the site due to releases from USTs: 20140963 20161089

Please list all tanks that have ever been located at the site and tanks that are presently located at the site.

Product Stored in UST	Size (gallons)	Did UST have a release?	Incident No.	Type of Release Tank Leak / Overfill / Piping Leak
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Gasoline	10,000	Yes ☒ No ☐	20140963	Overfill
Gasoline	10,000	Yes ☒ No ☐	20161089	Overfill
Gasoline	350	Yes ☒ No ☐	20161089	Tank Leak
Gasoline	350	Yes ☒ No ☐	20161089	Tank Leak
Used Oil	560	Yes ☒ No ☐	20161089	Tank Leak
Used Oil	560	Yes ☒ No ☐	20161089	Tank Leak
		Yes ☐ No ☐		
		Yes ☐ No ☐		

Add More Rows Undo Last Add

Owner/Operator and Licensed Professional Engineer/Geologist Budget Certification Form

I hereby certify that I intend to seek payment from the UST Fund for costs incurred while performing corrective action activities for Leaking UST incident 2016-1089. I further certify that the costs set forth in this budget are for necessary activities and are reasonable and accurate to the best of my knowledge and belief. I also certify that the costs included in this budget are not for corrective action in excess of the minimum requirements of 415 ILCS 5/57, no costs are included in this budget that are not described in the corrective action plan, and no costs exceed Subpart H: Maximum Payment Amounts, Appendix D Sample Handling and Analysis amounts, and Appendix E Personnel Titles and Rates of 35 Ill. Adm. Code 732 or 734. I further certify that costs ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 732.606 or 734.630 are not included in the budget proposal or amendment. Such ineligible costs include but are not limited to:

- Costs associated with ineligible tanks.
- Costs associated with site restoration (e.g., pump islands, canopies).
- Costs associated with utility replacement (e.g., sewers, electrical, telephone, etc.).
- Costs incurred prior to IEMA notification.
- Costs associated with planned tank pulls.
- Legal fees or costs.
- Costs incurred prior to July 28, 1989.
- Costs associated with installation of new USTs or the repair of existing USTs.

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SEP 16 2019
IEPA/BOL

Owner/Operator: S & S Infinite Group, Inc.

Authorized Representative: Syed Muneeb Title: Owner

Signature: Date: 9/3/19

Subscribed and sworn to before me the 3rd day of September, 2019.

(Notary Public) Seal

CAROL L ROWE
Official Seal
Notary Public - State of Illinois
My Commission Expires Mar 18, 2021

In addition, I certify under penalty of law that all activities that are the subject of this plan, budget, or report were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan, budget, or report and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in the plan, budget, or report has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

L.P.E./L.P.G.: Vince E. Smith L.P.E./L.P.G. Seal:

VINCE E. SMITH
46118
REGISTERED
PROFESSIONAL
ENGINEER
OF
ILLINOIS

L.P.E./L.P.G. Signature: Date: 9/6/19

Subscribed and sworn to before me the 6th day of September, 2019.

(Notary Public)

CAROL L ROWE
Official Seal
Notary Public - State of Illinois
My Commission Expires Mar 18, 2021

The Illinois EPA is authorized to require this information under 415 ILCS 5/1. Disclosure of this information is required. Failure to do so may result in the delay or denial of any budget or payment requested hereunder.

Budget Summary

Choose the applicable regulation: (●) 734 ( ) 732

734	Free Product	Stage 1 Site Investigation	Stage 2 Site Investigation	Stage 3 Site Investigation	Corrective Action
					Proposed
Drilling and Monitoring Well Costs Form	$	$	$	$	$
Analytical Costs Form	$	$	$	$	$
Remediation and Disposal Costs Form	$	$	$	$	$
UST Removal and Abandonment Costs Form	$	$	$	$	$
Paving, Demolition, and Well Abandonment Costs Form	$	$	$	$	$ 18,144.14
Consulting Personnel Costs Form	$	$	$	$	$ 3,143.08
Consultant's Materials Costs Form	$	$	$	$	$ 162.20
Handling Charges Form	Handling charges will be determined at the time a billing package is submitted to the Illinois EPA. The amount of allowable handling charges will be determined in accordance with the Handling Charges Form.				
Total	$	$	$	$	$ 21,449.42

Paving, Demolition, and Well Abandonment Costs Form

A. Concrete and Asphalt Placement/Replacement

Number of Square Feet	Asphalt or Concrete	Thickness (inches)	Cost ($) per Square Foot	Replacement or Placement for an Engineered Barrier	Total Cost
3,161.00	Concrete	6.00	5.74	Replacement	$18,144.14

Total Concrete and Asphalt Placement/Replacement Costs:	$18,144.14

B. Building Destruction or Dismantling and Canopy Removal

Item to Be Destroyed, Dismantled, or Removed	Unit Cost ($)	Total Cost ($)

Total Building Destruction or Dismantling and Canopy Removal Costs:	

Paving, Demolition, and Well Abandonment Costs Form

C. Well Abandonment

Monitoring Well ID #	Type of Well (HSA / PUSH / Recovery)	Depth of Well (feet)	Cost ($) per Foot	Total Cost

Total Monitoring Well Abandonment Costs:	

Total Paving, Demolition, and Well Abandonment Costs:	**$18,144.14**

Consulting Personnel Costs Form

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Engineer III	6.00	131.51	$789.06
CCAP-Budget	Budget Amendment Inputs			
	Senior Prof. Engineer	2.00	170.97	$341.94
CCAP-Budget	Budget Amendment Review and Certification			
	Senior Admin. Assistant	2.00	59.18	$118.36
CCAP-Budget	Budget Amendment Compilation, Assembly, and Distribution			
	Senior Project Manager	12.00	131.51	$1,578.12 = HC
CCA-Field	Concrete Replacement / Set up / Form Area / Completion / Verification			
	Senior Draftperson/CAD	4.00	78.90	$315.60
CCA-Field	Editing of Maps for Concrete Replacement / Drafting Concrete Location Maps			

*Refer to the applicable Maximum Payment Amounts document.

Total of Consulting Personnel Costs	$3,143.08

000399

Consultant's Materials Costs Form

Materials, Equipment, or Field Purchase	Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	**Description/Justification**			
Mileage	300.00	.53	/mile	$159.00
CCA-Field	2 Round Trips for Concrete Replacement / Layout / Verification			
Postage	2.00	1.60	/each	$3.20
CCAP-Budget	Copies of Budget Amendment			

Total of Consultant Materials Costs	$162.20

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

(217) 524-3300

CERTIFIED MAIL
7018 1830 0000 5289 1517

OCT 22 2019

IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
OCT 25 2019
REVIEWER KA

S & S Infinite Group, Inc.
Attn: Syed Muneeb
10614 North Alex Drive
Peoria, IL 61615

Re: 1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident 20161089
Leaking UST Technical File

Dear Syed Muneeb:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Corrective Action Plan Budget (budget) submitted for the above-referenced incident. This budget, dated August 13, 2019, was received by the Illinois EPA on August 16, 2019. Citations in this letter are from the Environmental Protection Act (415 ILCS 5) (Act) and Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code).

The budget is approved for the amounts listed in Attachment A (Sections 57.7(b)(3) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(b)). Please note that the costs must be incurred in accordance with the approved plan. Be aware that the amount of payment from the Fund may be limited by Sections 57.7(c), 57.8(d), 57.8(e) and 57.8(g) of the Act, as well as 35 Ill. Adm. Code 734.630 and 734.655.

All future correspondence must be submitted to:

Illinois Environmental Protection Agency
Bureau of Land - #24
Leaking Underground Storage Tank Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276

Please submit all correspondence in duplicate and include the Re: block shown at the beginning of this letter.

If you have any questions or need further assistance, please contact Scott McGill at (217) 524-5137.

Sincerely,

Michael T. Lowder
Unit Manager
Leaking Underground Storage Tank Program
Remedial Project Management Section
Bureau of Land

Attachment: Attachment A

KEK
c: Carol Rowe, CW3M Company (electronic copy)
BOL File

Attachment A

Re: 1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident 20161089
Leaking UST Technical File

SECTION 1

The following amounts are approved:

$0.00	Drilling and Monitoring Well Costs
$0.00	Analytical Costs
$0.00	Remediation and Disposal Costs
$0.00	UST Removal and Abandonment Costs
$0.00	Paving, Demolition, and Well Abandonment Costs
$0.00	Consulting Personnel Costs
$765.00	Consultant's Materials Costs

Handling charges will be determined at the time a billing package is reviewed by the Illinois EPA. The amount of allowable handling charges will be determined in accordance with Section 57.1(a) of the Environmental Protection Act and 35 Illinois Administrative Code 734.635.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

(217) 524-3300

CERTIFIED MAIL
7018 1830 0000 5289 1500

OCT 22 2019

S & S Infinite Group, Inc.
Attn: Syed Muneeb
10614 North Alex Drive
Peoria, IL 61615

IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
OCT 25 2019
REVIEWER KAJ

Re: 1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident 20161089
Leaking UST Technical File

Dear Syed Muneeb:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Corrective Action Plan Budget (budget) submitted for the above-referenced incident. This budget, dated September 10, 2019, was received by the Illinois EPA on September 16, 2019. Citations in this letter are from the Environmental Protection Act (415 ILCS 5) (Act) and Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code).

The budget is modified pursuant to Sections 57.7(b)(3) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(b). Based on the modifications listed in Section 2 of Attachment A, the amounts listed in Section 1 of Attachment A are approved. Please note that the costs must be incurred in accordance with the approved plan. Be aware that the amount of payment from the Fund may be limited by Sections 57.7(c), 57.8(d), 57.8(e) and 57.8(g) of the Act, as well as 35 Ill. Adm. Code 734.630 and 734.655..

All future correspondence must be submitted to:

Illinois Environmental Protection Agency
Bureau of Land - #24
Leaking Underground Storage Tank Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276

Please submit all correspondence in duplicate and include the Re: block shown at the beginning of this letter.

An underground storage tank system owner or operator may appeal this decision to the Illinois Pollution Control Board. Appeal rights are attached.

If you have any questions or need further assistance, please contact Scott McGill at (217) 524-5137.

Sincerely,

Michael T. Lowder
Unit Manager
Leaking Underground Storage Tank Program
Remedial Project Management Section
Bureau of Land

Attachment: Attachment A
Appeal Rights

KEK
c: Carol Rowe, CW3M Company (electronic copy)
BOL File

Attachment A

Re: 1430650114 -- Peoria County
Peoria/S & S Infinite Group, Inc.
400 North East Adams Street
Leaking UST Incident 20161089
Leaking UST Technical File

SECTION 1

As a result of Illinois EPA's modification(s) in Section 2 of this Attachment A, the following amounts are approved:

$0.00	Drilling and Monitoring Well Costs
$0.00	Analytical Costs
$0.00	Remediation and Disposal Costs
$0.00	UST Removal and Abandonment Costs
$18,144.14	Paving, Demolition, and Well Abandonment Costs
$0.00	Consulting Personnel Costs
$162.20	Consultant's Materials Costs

Handling charges will be determined at the time a billing package is reviewed by the Illinois EPA. The amount of allowable handling charges will be determined in accordance with Section 57.1(a) of the Environmental Protection Act (Act) and 35 Illinois Administrative Code (35 Ill. Adm. Code) 734.635.

SECTION 2

1. $1,578.12, deduction for consulting personnel costs associated with the procurement, oversight, or payment of subcontracts or field purchases. Pursuant to 35 Ill. Adm. Code 734.115 "Handling Charges" mean administrative, insurance, and interest costs and a reasonable profit for the procurement, oversight, and payment of subcontracts and field purchases. Therefore, these costs are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd) or 734.630(cc). In addition, the Corrective Action Budget must not include handling charges pursuant to 35 Ill. Adm. Code 734.335(b).

   Personnel costs in the amount of $1,578.12, associated with 12 hours for a Senior Project Manager to conduct concrete replacement, set up, form area, completion and verification, are considered handling charges and these costs are not reasonable as submitted.

2. $789.06 deduction for personnel costs, which exceed the minimum requirements necessary to comply with the Act. Costs associated with site investigation and corrective action activities and associated materials or services exceeding the minimum requirements necessary to comply with the Act are not eligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o).
   In addition, these costs are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd).

   Costs in the amount of $789.06, associated with 6 hours for an Engineer III to conduct budget amendment inputs, exceeds the minimum requirements and are not reasonable as submitted.

3. $341.94 deduction for personnel costs, which exceed the minimum requirements necessary to comply with the Act. Costs associated with site investigation and corrective action activities and associated materials or services exceeding the minimum requirements necessary to comply with the Act are not eligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o).

   In addition, these costs are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd).

   Cost in the amount of $341.94, associated with 2 hours for a Senior Professional Engineer to conduct budget amendment review and certification, exceed the minimum requirements and are not reasonable as submitted.

4. $118.36 for costs for personnel costs, which exceed the minimum requirements necessary to comply with the Act. Costs associated with site investigation and corrective action activities and associated materials or services exceeding the minimum requirements necessary to comply with the Act are not eligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o).

   In addition, these costs are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd).

   Costs in the amount of $118.36, associated with 2 hours for a Senior Administrative Assistant to conduct budget amendment compilation, assembly and distribution exceed the minimum requirements and are not reasonable as submitted.

5. $315.60 for costs for personnel cost, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). Since there is no supporting documentation of costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

   In addition, these costs are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35Ill. Adm. Code 734.630(dd)

   Personnel cost in the amount of $315.60, associated with a Senior Draftperson/CAD to conduct editing of maps for concrete replacement and drafting concrete location maps, lack supporting documentation and are not reasonable as submitted.

Appeal Rights

An underground storage tank owner or operator may appeal this final decision to the Illinois Pollution Control Board pursuant to Sections 40 and 57.7(c)(4) of the Act by filing a petition for a hearing within 35 days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed 90 days by written notice from the owner or operator and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the filing of an appeal, please contact:

John Therriault, Assistant Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, IL 60601
312/814-3620

For information regarding the filing of an extension, please contact:

Illinois Environmental Protection Agency
Division of Legal Counsel
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276
217/782-5544