

**THE CITY OF BLUE ISLAND
COOK COUNTY, ILLINOIS**

**RESOLUTION
NUMBER 2024- 018**

**A RESOLUTION OF THE CITY OF BLUE ISLAND, COOK COUNTY, ILLINOIS,
DESIGNATING THE DEPUTY CITY ADMINISTRATOR AS THE AUTHORIZED
REPRESENTATIVE TO SIGN HIGHWAY AUTHORITY AGREEMENT FOR
ENVIRONMENTAL REMEDIATION AT 12548 S. WESTERN AVENUE**

**FRED BILOTTO, Mayor
RAEANN CANTELO-ZYLMAN, City Clerk
JAIRO FRAUSTO, City Treasurer**

**DEXTER JOHNSON
LUIZ MONTOYA
NANCY RITA
BILL FAHRENWALD
GABRIEL McGEE
CANDACE CARR
JOSH ROLL**

Alderman

RESOLUTION NUMBER 2024-018

**A RESOLUTION OF THE CITY OF BLUE ISLAND, COOK COUNTY, ILLINOIS,
DESIGNATING THE DEPUTY CITY ADMINISTRATOR AS THE AUTHORIZED
REPRESENTATIVE TO SIGN HIGHWAY AUTHORITY AGREEMENT FOR
ENVIRONMENTAL REMEDIATION AT 12548 S. WESTERN AVENUE**

WHEREAS, the City of Blue Island, Cook County, Illinois (the “City”) is a duly organized and existing City created under the provisions of the laws of the State of Illinois and operating under the provisions of the Illinois Municipal Code, and all laws amendatory thereof and supplementary thereto, with full powers to enact ordinances and adopt resolutions for the benefits of the residents of the City; and

WHEREAS, the City, pursuant to 65 ILCS 5/2-3-8, is empowered to make all agreements and contracts and to undertake other acts as necessary in the exercise of its statutory powers; and

WHEREAS, the City of Blue Island must submit an application and associated documentation to the Illinois Department of Transportation (IDOT) in support of executing a Highway Authority Agreement (HAA) for the right-of-way adjoining the Property located at 12548 S. Western Avenue;

WHEREAS, IDOT requires a resolution signed by the Mayor and Aldermen of the City indicating that the Deputy City Administrator has authority to sign the Highway Authority Agreement, attached hereto as **Exhibit A**, on behalf of the City; and

WHEREAS, the Mayor and Aldermen of the City of Blue Island deem it advisable and in the best interests of the health, safety and welfare of the residents of the City to authorize the Deputy City Administrator to be a signatory for the HAA on behalf of the City.

NOW, THEREFORE, BE IT RESOLVED by the Mayor and the Aldermen of the City of Blue Island, Cook County, Illinois as follows:

Section 1. That the above recitals and legislative findings are found to be true and correct and are hereby incorporated herein and made a part hereof, as if fully set forth in their entirety.

Section 2. The Deputy City Administrator is hereby authorized and directed to execute on behalf of the City of Blue Island the HAA Agreement, attached hereto as **Exhibit A**, and to execute all other documents related to the Project at 12548 S. Western as may be approved and required.

Section 3. If any section, paragraph, clause or provision of this Resolution shall be held invalid, the invalidity thereof shall not affect any other provision of this Resolution.

Section 4. All ordinances, resolutions, motions or orders in conflict with this Resolution are hereby repealed to the extent of such conflict.

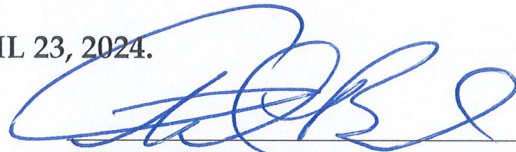
Section 5. This Resolution shall be in full force and effect immediately upon its passage, approval, and publication as required by law.

(Left intentionally blank)

ADOPTED this 23RD day of APRIL, 2024, pursuant to roll call as follows:

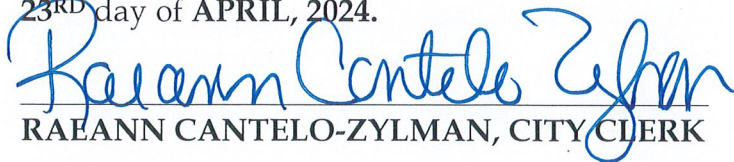
	YES	NO	ABSENT	PRESENT	ABSTAIN
Alderman JOHNSON	X				
Alderman FAHRENWALD	X				
Alderman RITA	X				
Alderman MONTOYA			X		
Alderman MCGEE	X				
Alderman CARR	X				
Alderman ROLL	X				
Mayor BILOTTO					
	6		1		

APPROVED by the Mayor on APRIL 23, 2024.



FRED BILOTTO
MAYOR OF THE CITY OF BLUE ISLAND,
COUNTY OF COOK AND STATE OF ILLINOIS

ATTESTED and Filed in my office this
23RD day of APRIL, 2024.



RAEANN CANTELO-ZYLMAN, CITY CLERK

STATE OF ILLINOIS)
)
COUNTY OF COOK) ss.

CERTIFICATION

I, RAEANN CANTELO-ZYLMAN, DO HEREBY CERTIFY THAT I am the duly elected City Clerk of the City of Blue Island, Illinois, as such City Clerk, I am the keeper of the minutes and records of the Proceedings of the City Council of the said City and have in my custody the RESOLUTIONS and BOOKS of the records of said City.

I DO FURTHER CERTIFY that the attached and foregoing is a true and correct copy of the certain **RESOLUTION: A RESOLUTION OF THE CITY OF BLUE ISLAND, COOK COUNTY, ILLINOIS, DESIGNATING THE DEPUTY CITY ADMINISTRATOR AS THE AUTHORIZED REPRESENTATIVE TO SIGN HIGHWAY AUTHORITY AGREEMENT FOR ENVIRONMENTAL REMEDIATION AT 12548 S. WESTERN AVE.**

RESOLUTION NO. 2024-018 which was adopted at a regular meeting of the City Council of the City of Blue Island, Illinois held on the **23RD of April, 2024**; that at said meeting **6** Alderman were present; that at said meeting, on motion duly made and seconded that the Resolution did pass and on the roll being called the vote of each Aldermen present on the question of the passage of said Resolution was duly and separately taken by Ayes and Nays and their names and votes recorded in the minutes of **6** Alderman voted Aye and **0** Alderman voted Nay and **0** Alderman voted Abstain and **1** Alderman Absent.

I DO FURTHER CERTIFY that the original Resolution which the foregoing is a true copy, is entrusted to my care for safe keeping, and that I am the lawful keeper of the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Corporate Seal of the City of Blue Island aforesaid, at the said City in the County and State aforesaid, this **23RD** day of **April, 2024**.

CORPORATE SEAL



City Clerk

Exhibit A
Highway Authority Agreement



April 12, 2024

Office of Chief Counsel
Illinois Department of Transportation
2300 S. Dirksen Parkway, Room 313
Springfield, Illinois 62764

**Re: Application for Highway Authority Agreement for South Western Avenue
12548 South Western Avenue
Blue Island, Illinois 60406
LPC 0310245063**

Dear Office of Chief Counsel:

On behalf of the City of Blue Island (the Applicant), **Weaver Consultants Group North Central, LLC (WCG)** is herein submitting the enclosed application and associated documentation to the Illinois Department of Transportation (IDOT) in support of executing a Highway Authority Agreement (HAA) for the right-of-way adjoining the above-referenced property (the Property) to the east. The Applicant is seeking closure for Illinois Environmental Protection Agency (IEPA) Leaking Underground Storage Tank (LUST) incident numbers 921229 and 20021765. As a condition of closure, the Applicant is seeking to execute an HAA with the owner of South Western Avenue to address impacts exceeding Tier 1 Soil Remediation Objectives (SROs) and Groundwater Remediation Objectives (GROs) extending from the Property into the South Western Avenue right-of-way. According to our review of applicable records, IDOT is listed as the owner of South Western Avenue.

As presented in the Corrective Action Plan (CAP) prepared by WCG dated **April 12, 2024**, soil and groundwater impacts on the Property have been characterized to extend off-site to the east. Therefore, the proposed HAA addresses soil and groundwater impacts extending into the South Western Avenue right-of-way. In accordance with IEPA regulations 35 IAC 742.1020, WCG has enclosed the required figures and analytical summary tables as attachments to the HAA.

Please note that based on the S18/S28/R26 fate and transport modeling conducted for the Property, impacts in soil and groundwater did not model beyond the Property boundaries. As noted on the figures, given the extensive amount of data collected at the Property, not all data

J:\PROJ\CTS\3400\3499\3896 - CODE COUNTY\JUL - ARPA\ARL\ND\H\H\12548 S WESTERN - BLUE ISLAND\FILES\HAA\03 WESTERN HAA\COVER\111111.DOC

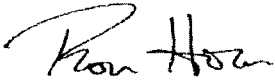
points are depicted; therefore, the modeled extents of impacts within the Property boundaries have also not been shown on the applicable figures.

WCG has included the modeling tables prepared for the Property as attachments to the HAA. These tables include modeling conducted by Green Wave Consultants, LLC as part of an April 4, 2022 CAP, as well as modeling conducted by WCG as part of the April 12, 2024 CAP. Although the initial round of modeling indicated a potential for methyl-tert-butyl ether (MTBE) to migrate off-site, the IEPA provided a degradation constant for MTBE, and the subsequent modeling indicated MTBE does not migrate outside of the Property boundaries.

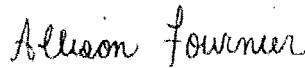
We trust the above and enclosed meets your needs at this time. If you should have any questions or comments, please feel free to contact us at (312) 922-1030.

Sincerely,

Weaver Consultants Group North Central, LLC



Ron Horan, CPG, CHMM
Senior Project Geologist



Allison Fournier
Senior Project Manager

Enclosures: Application for Highway Authority Agreement
S18/S26 and R26 Modeling Tables
Highway Authority Agreement



Requirements generally: Any Applicant requesting that the State of Illinois enter into a Highway Authority Agreement shall submit to the State of Illinois, Department of Transportation (IDOT) the following:

Applicant Information

Applicant*: City of Blue Island
Business Address: 13051 Greenwood Avenue, Blue Island, IL 60406
Telephone: 708-396-7066
E-Mail Address: mpatoska@cityofblueisland.org

*(UST Owner/Operator, Remediation Applicant, etc.)

Regulatory Program: UST SRP Other, please describe _____

The Applicant is doing business as (please check one):

Individual(s) Partnership Corporation Trust or Estate
 Limited Liability Company (LLC) Government entity Other _____

Operator (if different): _____
Address: _____

Individual Signing Agreement or Name and Title of Person Authorized to Sign for Applicant:

Mark Patoska Deputy City Administrator
Name Title

Name and Title of Person Authorized to Sign for Operator (if different):

Name Title

Applicant's Attorney (optional)

Name: _____
Address: _____

Telephone: _____
Email: _____

Environmental Consultant

Company: Weaver Consultants Group
Project Mgr.: Ron Horan, PG
Address: 35 E Wacker Drive, Suite 1250
Chicago, IL 60601
Telephone: 312-922-1030
Email: rhoran@wcgrp.com

Street Address and Description of Property Adjacent to the Impacted Right-of-Way

Property Name or Description: Bulk Petroleum #1774

Nearest Cross Street and/or Intersection Quadrant: South Western Avenue and West Lewis Street

Street Address: 12548 South Western Avenue

City: Blue Island State: IL Zip: 60406 County: Cook

Right-of-Way(s) under State of Illinois jurisdiction requiring Agreement

Highway Number: _____

Street Name (if any): South Western Avenue

Note: If Groundwater restricted by ordinance, IDOT requires Groundwater impact information and a copy of the ordinance for review.

Regulatory Information:

IEMA Incident Number(s): 921229 and 20021765

LPC Number: 0310245063

IEPA Project Manager: Jacob Sherell

Person(s) named in agreement for notification purposes

Company Name: Weaver Consultants Group

Attn: Ron Horan

Address: 35 E Wacker Drive, Suite 1250

Chicago, IL 60601

rhoran@wcgrp.com

Nature and Extent of Potential Contamination Impact Information – For Exhibit A, B and C

The Closure Report/Closure Response Letter will document the nature and extent of impact in the right-of-way.

Exhibit A:

SOIL: Refer to **Exhibit A-1 – Approximate Extent of Tier 1 Soil Component of Groundwater Ingestion and/or Outdoor Inhalation Impacts**

GROUNDWATER: Refer to **Exhibit A-2 – Approximate Extent of Tier 1 Groundwater Ingestion Impacts**

Exhibit B: Exhibit B-1 - Soil Analytical Summary and Exhibit B-2 - Groundwater Analytical Summary -

Exhibit C: HAA Area Map - Area Covered by Highway Authority Agreement

Attachments (On 8 ½ x 11 paper):

- Figure 1 Estimated Soil Impact Scaled Map – For use in Exhibit A
- Figure 2 Estimated Groundwater Impact Scaled Map – For use in Exhibit A
- Figure 3 Proposed Highway Agreement Area Scaled Map – For use in Exhibit C
- Tables Keyed to Figures 1 and 2 Showing Sampling Results – For use in Exhibit B
- Closure or Corrective Action Completion Report (if available 1 copy)
- S18/S28 and R26 modeling for Soil and Groundwater
- Location map. A broader view of the area of the HAA for identification purposes.
- Evidence of signature authority for all non-individual applicants.

IMPORTANT NOTICE

The IDOT Highway Authority Agreement requires the signatory to accept liability for future costs related to the contamination or modeled potential contamination of State of Illinois property under the jurisdiction of IDOT identified in the HAA. It also requires the acceptance of defense and indemnification of IDOT for claims against IDOT related the area identified in the HAA. Please review the model agreement for specific terms.

In some cases IDOT has already incurred costs related to the contaminated area being remediated by the Applicant. Pursuant to Section 57.12 of the Environmental Protection Act, notwithstanding any other provision or rule of law the Owner, Operator or both of an underground storage tank are liable to the State for costs of investigation, corrective and preventative action incurred as the result of an underground storage tank. Part of IDOT's review of HAA applications includes a search for these costs. The liability of the Applicant must be made current by payment of the identified costs before IDOT will execute an HAA. The costs incurred by IDOT during design and construction of roadways are not intended as remediation but proper management of environmental risks pursuant to IDOT's obligations to comply with environmental laws and regulations. As such these costs are most often not reimbursable through the LUST Fund.

I, Mark Patoska as Applicant

hereby verify that the information and data provided herein and attached are accurate and the most current available and that any new information will be timely supplemented.

Signature

Date

IDOT contact for more information and submittals:

Office of Chief Counsel
RE: Highway Authority Agreement
2300 S. Dirksen Parkway, Room 313
Springfield, IL 62764

Phone: (312) 793-1549 or (217) 782-3215
Email: DOT.HAAAPP@illinois.gov

Note: Initial information may be submitted via Email in PDF format (preferred) or mail hard copies.



Illinois Environmental Protection Agency

1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276 • (217) 782-3397

Leaking Underground Storage Tank Program SSL Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 921229 & 20021765 EPA LPC # (10-digit): 0310245063
 Site Name: Former Bulk Petroleum #1774
 Site Address (not a P.O. Box): 12548 South Western Avenue
 City: Blue Island County: Cook Zip Code: 60406
 Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: S12, S17, S29): S29/S18: Soil Leaching to Groundwater
 Contact Information for Individual Who Performed Calculations: Shawn D. Wolfe, Senior Project Manager
Green Wave Consulting, LLC (217) 726-7569
 Land Use: Not Applicable USDA Soil Type: Clay
 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	Units	Symbol	Units
AT (ingestion) =	yr	d ₃	m
AT (inhalation) =	yr	d ₄	3.9624 m
AT _c =	70 yr	D _A	cm ² /s
BW =	kg	D ₁	cm ² /s
C _{so} =	mg/kg	D ₂	cm ² /s
C _m =	see page 3 mg/L	DF	20 unitless
d	m	ED (ingestion of carcinogens)	yr

The Agency is authorized to require this information under Section 4 and Title XVI of the Environmental Protection Act (415 ILCS 5/4, 5/67 - 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 5/4(2)). 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).

SSL Input Parameters for Use with Tier 2 Calculations

Incident #: 921229 & 20021765

Chemical: _____

BIEX/M _____

Land Use: Not Applicable

Symbol	Units	Symbol	Units
ED (inhalation of carcinogens) =	yr	K _d	cm ² /g or L/kg
ED (ingestion of noncarcinogens) =	yr	K _o	m/yr
ED (inhalation of noncarcinogens) =	yr	L	m
ED (ingestion of groundwater) =	yr	PEF	m ³ /kg
ED _{so}	70 yr	PEF'	m ³ /kg
EF	d/yr	O/C (V/F equations)	(g/m ² -s)/(kg/m ²)
F(x)	0.194 unitless	O/C (PEF equations)	(g/m ² -s)/(kg/m ²)
f _{so}	g/g	RIC	mg/m ³
GW _{so}	see page 3 mg/L	RID _o	mg/(kg-d)
H	unitless	S	mg/L
i	m/m	SF _o	(mg/kg-d) ⁻¹
I	0.3 m/yr	T	s
I _{so}	0.18 m/yr	T _{so}	yr
I _{so-d}	114 (mg-yr)/(kg-d)	THO	unitless
IR _{so}	mg/d	TR	1.0E-06 unitless
IR _{so}	L/d	U _m	m/s
K	m/yr	URF	(µg/m ³) ⁻¹
K _d (non-ionizing organics)	cm ² /g or L/kg	U ₁	m/s
K _d (ionizing organics)	cm ² /g or L/kg	V	unitless
K _d (inorganics)	cm ² /g or L/kg	VF	m ³ /kg

IL 532-2860
LPC 045 32018

SSL Input Parameters for Use with Tier 2 Calculations

Incident #: 921229 & 20021765 Chemical: BIE/XM Land Use: Not Applicable

Symbol	Units	Symbol	Units
V _F	m ³ /kg	θ _v	L _{soil} /L _{soil}
V _{F_{ML}}	m ³ /kg	ρ _s	= 1.721985 kg/L or g/cm ³
V _{F_{MU}}	m ³ /kg	ρ _s	= g/cm ³
η	L _{soil} /L _{soil}	ρ _w	= 1 g/cm ³
θ _v	L _{soil} /L _{soil}	1/(2b*3)	= unless

Source Area Concentration Values: (mg/kg)

S1	mg/kg	S2	mg/kg	S3	mg/kg	S4	mg/kg	S5	mg/kg	S6	mg/kg	S7	mg/kg	S17	mg/kg	S28	mg/kg	S29	mg/kg
----	-------	----	-------	----	-------	----	-------	----	-------	----	-------	----	-------	-----	-------	-----	-------	-----	-------

Equation	Units	Target Soil Leachate Concentration (C _w) (mg/L)
S1 =	mg/kg	see modeling spreadsheet
S2 =	mg/kg	see modeling spreadsheet
S3 =	mg/kg	see modeling spreadsheet
S4 =	mg/kg	see modeling spreadsheet
S5 =	mg/kg	see modeling spreadsheet
S6 =	mg/kg	see modeling spreadsheet
S7 =	mg/kg	see modeling spreadsheet
S17 =	mg/kg	see modeling spreadsheet
S28 =	mg/kg	see modeling spreadsheet
S29 =	mg/kg	see modeling spreadsheet

Soil to Groundwater Leachate Potential (GWobj): (mg/L)

B-100 (2-4) B = 0.010; (10-11.5) M = 0.13	B-11 (5-7) B = 0.020; (2-4) E = 1.8	SB-103 (3-5) B = 0.008
B-300 (4.5-7) B = 0.014	B-12 (6-9) B = 0.355; (2-4) E = 4.4; X = 14	SB-104 (2-5) B = 0.100; E = 0.8
B-600 (6.5-7) B = 0.087	B-13 (6-9) B = 0.149	SB-108 (5-7) B = 0.005
B-1000 (7-2) B = 0.009	B-14 (6-9) B = 0.311	SB-109 (3-5) B = 0.005
B-1200 (7-2.5) B = 0.045	B-15 (5-7) B = 0.061; B-16 (6-10) B = 0.135	SB-110 (3-5) B = 0.018
B-1300 (7-2.5) B = 0.045	B-22 (6-9) B = 0.050; B-23 (6-9) B = 0.050	SB-111 (5-6) B = 0.018
B-1500 (7-3) B = 0.015	B-24 (4-6) B = 0.189; (2-4) E = 0.3	SB-112 (5-7) B = 0.050
B-1 (2-4) B = 0.001	SB-101 (5-7) B = 0.027	SB-113 (3-5) B = 0.031
B-2 (2-4) B = 0.001	SB-102 (5-7) B = 0.022	SB-114 (5-7) B = 0.120
B-4 (4-5) B = 0.003		

POTENTIAL DISSOLVED HYDROCARBON CONCENTRATION
RESULTING FROM SOIL LEACHING
SSL EQUATIONS S28 & S18

Exposure Pathway: Soil Component of Groundwater Ingestion
 GW Classification: Class I
 Site Name: GSD Petroleum, LLC (former Bulk Petroleum #1774)
 Site Location: Blue Island, Illinois
 LUST Incident Number(s): 921229 & 20021765

SSL Equation S28
 Remediation Objective SRO =
 (milligrams per kilogram, mg/kg)

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

Bulk Density (ρ_b) = 1.721985 g/cm³
 Depth of Source (d_s) = 3.9624 m
 Infiltration Rate (I_{M-L}) = 0.18 m/yr
 Exposure Duration (ED_{M-L}) = 70 year
 Dilution Factor (DF) = 20 unitless

SSL Equation S18
 Target Soil Leachate Concentration C_w =
 (milligrams per liter, mg/L)

$$DF \cdot GW_{obj}$$

Sample ID	Sample Depth	Analyte	Soil Concentration (SRO - mg/kg)	Target Soil Leachate Concentration (C_w - mg/L)	Potential Soil Leachate Concentration (GW_{obj} - mg/L)
#2	8'	Benzene	2.70	1.46211286	0.073
#4	7'	Benzene	0.450	0.24368548	0.012
B-100	2'-4'	Benzene	0.360	0.19494838	0.010
	10'-11.5'	MTBE	4.70	2.54515943	0.13
B-300	4.5'-5'	Benzene	0.530	0.28700734	0.014
B-600	6.5'-7'	Benzene	3.20	1.73287451	0.087
B-1000	0'-2'	Benzene	0.320	0.17328745	0.009
B-1200	0'-2.5'	Benzene	1.70	0.92058958	0.046
B-1300	0'-2.5'	Benzene	2.70	1.46211286	0.073
		MTBE	3.20	1.73287451	0.09
B-1500	7'-8'	Benzene	0.550	0.29783781	0.015
B-2	2'-4'	Benzene	6.68	3.61737553	0.181
B-4	4'-5'	Benzene	0.233	0.12617492	0.006
MW-11	2'-4'	Benzene	6.79	3.67694309	0.184
B-11	5'-6'	Benzene	0.722	0.39097981	0.020
	2'-4'	Ethylbenzene	64.8	35.09070873	1.8
B-12	6'-8'	Benzene	13.1	7.09395501	0.355
	2'-4'	Ethylbenzene	163	88.26829511	4.4
		Total Xylenes	516	279.42601395	14.0
B-13	6'-8'	Benzene	5.50	2.97837806	0.149
B-14	6'-8'	Benzene	11.5	6.22751775	0.311
B-15	5'-7'	Benzene	2.27	1.22925785	0.061
B-16	8'-10'	Benzene	4.99	2.70220118	0.135
B-22	6'-8'	Benzene	1.1011	0.59627129	0.030
B-23	6'-8'	Benzene	1.8328	0.99250387	0.050
B-24	4'-6'	Benzene	6.9812	3.78048234	0.189
	2'-4'	Ethylbenzene	32.1267	17.39735605	0.9
SB-101	5'-7'	Benzene	0.995	0.53881567	0.027
SB-102	5'-7'	Benzene	2.30	1.24550355	0.062
SB-103	3'-5'	Benzene	2.97	1.60832415	0.080
SB-104	3'-5'	Benzene	4.01	2.17150836	0.109
		Ethylbenzene	28.4	15.37926123	0.8
SB-108	5'-7'	Benzene	0.324	0.17545354	0.009
SB-109	3'-5'	Benzene	0.202	0.10938770	0.0055
SB-110	3'-5'	Benzene	0.656	0.35523927	0.018
SB-111	5'-6'	Benzene	0.720	0.38989676	0.019
SB-112	5'-7'	Benzene	1.85	1.00181807	0.050
SB-113	3'-5'	Benzene	1.14	0.61733654	0.031
SB-114	5'-7'	Benzene	4.45	2.40977861	0.120



Illinois Environmental Protection Agency

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

The Illinois EPA is authorized to require that information under Section 1 and Title XVI of the Environmental Protection Act (415 ILCS 5/1-1, 5/16-1) before releasing the information. Any person who knowingly makes a false, deceptive, or fraudulent material statement, entry or is guilty of a violation of the Illinois EPA Chemicals & Class 4 Entry, A second or subsequent offense after conviction is a Class 3 Felony (115 ILCS 5/0-1) and 5/1-10. This form has been approved by the Farm Management Center.

Leaking Underground Storage Tank Program RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 921229 & 20021765 IEPA LFC # (10-digit): 0310245063

Site Name: Former Bulk Petroleum #1774

Site Address (not a P.O. Box): 12548 South Western Avenue

City: Blue Island County: Cook Zip Code: 60406

Leaking UST Technical File

B. Tier 2 Calculation Information

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

Contact Information for Individual Who Performed Calculations: Shawn D. Wolfe

Senior Project Manager: Green Wave Consulting LLC 217-726-7569

Land Use: Not Applicable Soil Type: Not Applicable

Groundwater: Class I Class II

Mass Limit: Yes No If Yes, then Specify Average: 0.5 1 2 5 10 30

Result from S17/S28 used in R26? Yes No Specify Cause from S17/S28 _____ 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 _{cause}	= See Page 3 mg/L	D _{soil}	= cm ² /s
C ₁₀	= Varies, See Model Sheet mg/L	ED	= yr
C ₁₀ /C _{cause}	= unless	EF	= d/yr

IL 532-2961 RBCA Input Parameters
LPC 646 907 1 of 3

Incident #: 921229 & 20021765

Chemical: _____

Benzene & MTBE

Land Use: _____

Not Applicable

Symbol	Unit	Symbol	Unit
erf	= unitless	RAF _g (P/Ns)	= 0.05 unitless
f _{oc}	= g/g	RAF _g (organics)	= 0 unitless
GW _{comp}	= mg/L	RAF _o	= 1.0 unitless
GW _{source}	= mg/L	RBSL _{car}	= µg/m ³
H'	= cm ³ water/cm ³ air	RBSL _{nc} (noncarcinogenic)	= µg/m ³
i	= 0.01498 cm/yr	RFD _o	= mg/kg-d
i	= 30 cm/yr	RFD _g	= mg/kg-d
IR _{air}	= 20 m ³ /d	SA	= 3,160 cm ² /d
IR _{soil}	= mg/d	S _g	= 200 cm
IR _w	= L/d	S _u	= 5,822 cm
K	= 0.08024832 cm ² for R15, R19, R26; cm/yr for R24	SF ₁	= (mg/kg-d) ⁻¹
K _{oc}	= cm ² /g or L/kg	SF _g	= (mg/kg-d) ⁻¹
K ₁ (non-ionizing organics)	= cm ² water/food	THQ	= 1 unitless
K ₁ (ionizing organics)	= cm ² water/food	TR	= unitless
K ₂ (inorganics)	= cm ² water/food	U	= cm/d
L _a	= 100 cm	U _{1g}	= 225 cm/s
LF _{soil}	= (mg/L _{soil}) / (mg/kg _{soil})	U _{gw}	= cm/yr
M	= 0.5 mg/cm ²	VF _g	= kg/m ³
Pe	= 6.9 · 10 ⁻¹⁴ g/cm ² -s	VF _{soil}	= (mg/m ³ air)/(mg/kg _{soil}) or kg/m ³
RAF _g	= 0.5 unitless	VF _{soil}	= kg/m ³

RBCA Input Parameters
2 of 3

Incident #: 921229 & 20021785 Chemical: Benzene & MTBE Land Use: Not Applicable

Symbol	Unit	Symbol	Unit
W	cm	θ_{ss}	$cm^2 \mu / cm^2 \mu$
w	g_{solid}/g_{soil}	θ_{ss}	cm^3_{solid}/cm^3_{soil}
X	See Below cm	θ_r	0.36 cm^3/cm^3_{soil}
α_1	cm	λ	Varies, See Model Sheet d^1
α_2	cm	n	3.1416
α_3	cm	ρ_s	g/cm^3
α_4	200 cm	ρ_w	1 g/cm^3
α_5	200 cm	τ	$9.46 \cdot 10^9$ s

Source Values (mg/L):

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

Maximum Predicted Extent of Groundwater Impact (X): (feet from point source)		
MW-2 Benzene = 0.0156 MW-3 Benzene = 0.0217 MW-4 Benzene = 0.0190 MTBE = 0.0927	MW-10 Benzene = 0.0414 MW-11 Benzene = 0.0323 MW-14 Benzene = 0.0106 MW-15 Benzene = 0.747	MW-101 MTBE = 0.164 MW-1500 Benzene = 0.0110
MW-2 Benzene = 0.18 MW-3 Benzene = 0.21 MW-4 Benzene = 0.19 MTBE = 58.4	MW-10 Benzene = 0.32 MW-11 Benzene = 0.27 MW-14 Benzene = 0.10 MW-15 Benzene = 0.92	MW-101 MTBE = 117 MW-1500 Benzene = 0.11

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

Exposure Pathway: Groundwater Component of Groundwater Ingestion
 GW Classification: Class I

Site Location: GSD Petroleum, LLC (former Bulk Petroleum #1774)
 Bite Island, Illinois

LUST Incident Number(s): 921229 & 20021765

Aquifer hydraulic conductivity (K)= 9.288E-07 cm/sec = 0.08024832 cm/day

Hydraulic gradient (i)= 0.01498 m/m

Total soil porosity (theta T)= 0.36 cm³/cm³

Source width perpendicular to GW flow direction in horizontal plane (Sw)= 191 ft = 5.822 cm

Source width perpendicular to GW flow direction in vertical plane (Sd)= 6.56 ft = 200 cm

Distance to Compliance with Tier 1, Class I GROs

Sample ID	Sample Date	Analyte	Concentration (mg/L)	X (feet)	Cx (mg/L)
MW-2	09/08/2021	Benzene	0.0156	0.16	0.00481
MW-3	09/08/2021	Benzene	0.0217	0.21	0.00484
MW-4	09/08/2021	MTBE	0.0190	0.19	0.00482
		MTBE	0.0927	56.4	0.0700
MW-10	09/08/2021	Benzene	0.0414	0.32	0.00477
MW-11	09/08/2021	Benzene	0.0323	0.27	0.00498
MW-14	09/08/2021	Benzene	0.0106	0.10	0.00494
MW-15	09/08/2021	Benzene	0.747	0.92	0.00489
MW-100	07/16/2014	MTBE	0.164	117	0.0696
MW-1500	07/16/2014	Benzene	0.0110	0.11	0.00478
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!

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

(assuming complete mixing)

Analyte	Class I GRO	Class II GRO	First order degradation constant (λ)
Benzene	0.005	0.025	0.000900
Toluene	1	2.5	0.0110
Ethylbenzene	0.7	1	0.00300
Total Xylenes	10	10	0.00190
MTBE	0.07	0.07	0
Acenaphthene	0.42	2.1	0.00340
Anthracene	2.1	10.5	0.000750
Benzof(a)anthracene	0.00013	0.00065	0.000510
Benzof(b)pyrene	0.0002	0.002	0.000650
Benzof(k)fluoranthene	0.00018	0.0009	0.000570
Chrysene	0.00017	0.00085	0.000160
Dibenzof(a,h)anthracene	0.0015	0.0075	0.000350
Fluoranthene	0.0003	0.0015	0.000370
Fluorene	0.28	1.4	0.000190
Indeno(1,2,3-c,d)pyrene	0.00043	0.00215	0.000691
Naphthalene	0.14	0.22	0.000470
Pyrene	0.21	1.05	0.000270
Lead	0.0075	0.1	0.000180



Illinois Environmental Protection Agency

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

The Illinois EPA is authorized to require this information under Section 4 and Title XXV of the Environmental Protection Act (415 ILCS 600.0/57-67.1). Failure to disclose this information may result in a civil penalty under 415 ILCS 600.0/57-67.1. This form has been approved by the Illinois EPA pursuant to 415 ILCS 600.0/57-67.1. A second or independent review after completion is a Class 3 Safety and 415 ILCS 600.0/57-67.1. This form has been approved by the Illinois EPA pursuant to 415 ILCS 600.0/57-67.1. A second or independent review after completion is a Class 3 Safety and 415 ILCS 600.0/57-67.1.

Leaking Underground Storage Tank Program RBGA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 921229 & 20021765 IEPALPC # (10-digit): 0310245063
Site Name: Former Bulk Petroleum #1774
Site Address (not a P.O. Box): 12548 South Western Avenue
City: Blue Island County: Cook Zip Code: 60406
Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26: Soil Leaching
Contact Information for Individual who Performed Calculations: Shawn D. Wolfe
Senior Project Manager: Green Wave Consulting LLC 217-726-7569
Land Use: Not Applicable Soil Type: Not Applicable
Groundwater: Class I Class II

Mass Limit: Yes No If Yes, then Specify Acreage: 0.5 1 2 5 10 30
Result from S17/S28 used in R26? Yes No Specify Cause from S17/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 _{at} =	cm ² /s
BW = 70	kg	D _{water} =	cm ² /s
C _{source} =	See Page 3 mg/L	D _{st} =	cm ² /s
C _{ro} =	See Model Sheet mg/L	ED =	yr
C _{pl/C_{source}} =	unless	EF =	dyr

IL 532-2891
LPC 946 807

RBGA Input Parameters
1 of 3

Incident #: 921229 & 20021765 Chemical: _____ Land Use: Not Applicable

Symbol	Unit	Symbol	Unit
ert	unless	RAF ₂ (PNAs)	0.05 unless
I _{oc} =	g/g	RAF ₂ (inorganics)	0 unless
GW _{comp} =	mg/L	RAF ₂ = 1.0	unless
GW _{source} =	mg/L	RBSL _{ca} (carcinogenic)	µg/m ³
H ¹ =	cm ³ water/cm ³ soil	RBSL _{nc} (noncarcinogenic)	µg/m ³
I = 0.01498	cm/yr	RID ₁ =	mg/kg-d
I = 30	cm/yr	RID ₂ =	mg/kg-d
IR _{at} = 20	m ³ /d	SA = 3.160	cm ² /d
IR _{sub} =	mg/d	S _a = 200	cm
IR _{so} =	L/d	S _w = 7.102	cm
K = 0.08024832	cm ² for R15, R16, R26: cm/yr for R24	SF ₁ =	(mg/kg-d) ⁻¹
K _{oc} =	cm ² /g or L/kg	SF ₂ =	(mg/kg-d) ⁻¹
k ₁ (non-identifying organics) =	cm ² water/ft ² soil	THQ = 1	unless
k ₁ (ionizing organics) =	cm ² water/ft ² soil	TR =	unless
k ₁ (inorganics) =	cm ² water/ft ² soil	U =	cm/d
L ₁ = 100	cm	U _u = 225	cm/s
LF _{so} =	(mg/L _{water}) / (mg/L _{soil})	U _w =	cm/yr
M = 0.5	mg/cm ²	VF ₂ =	kg/m ³
Pe = 6.9 · 10 ⁻¹⁴	g/cm ² -s	VF ₃ =	(mg/m ³ soil)/(mg/kgsoil) or kg/m ³
RAF ₁ = 0.5	unless	VF _{so} =	kg/m ³

RBGA Input Parameters
2 of 3

Symbol	Unit	Symbol	Unit
W	cm	ρ_{na}	cm^3_{water}/cm^3_{soil}
W	$\frac{g_{water}}{g_{soil}}$	ρ_{na}	cm^3_{water}/cm^3_{soil}
X	cm	θ_r	cm^3/cm^3_{soil}
α_x	cm	λ	Varies, See Model Sheet d^{-1}
α_y	cm	n	3.1416
α_z	cm	ρ_p	g/cm^3
δ_{zs}	cm	ρ_w	g/cm^3
δ_{pw}	cm	τ	s

Concentration Values (mg/L):

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

Maximum Predicted Extent of Groundwater Impact (X): (feet from point source)		
#2 (R) B = 0.42 #4 (T) B = 0.10 B-100 (Z-4) B = 0.09: (10'-1.5') M = 0.1 B-300 (4.5'-7) B = 0.14 B-600 (8.5'-7) B = 0.45 B-1000 (0'-2) B = 0.08 B-1200 (0'-2.5) B = 0.22 B-1500 (0'-2.5) B = 0.42: M = 53.7	B-1500 (Z-4) B = 0.15 B-2 (Z-4) B = 0.50 B-4 (Z-4) B = 0.03 MW-11 (Z-4) B = 0.00 B-11 (S-7) B = 0.20: (Z-4) E = 0.04 9.1E (S-7) B = 0.74: (Z-4) E = 0.08 X = 0.03 B-13 (S-7) B = 0.59 B-14 (S-7) B = 0.72 B-15 (S-7) B = 0.39	B-18 (S-10) B = 0.54 B-22 (S-7) B = 0.28 B-23 (S-7) B = 0.25 B-24 (S-7) B = 0.01: (Z-4) E = 0.01 SB-102 (S-7) B = 0.24 SB-103 (Z-5) B = 0.44 SB-104 (Z-5) B = 0.50; E = 0.01

RBGA Input Parameters
3 of 3

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

Exposure Pathway: Soil Component of Groundwater Ingestion
 GW Classification: Class I
 Site Location: GSD Petroleum, LLC (former Bulk Petroleum #1774)
 Blue Island, Illinois
 LUST Incident Number(s): 921229 & 20021765

Aquifer hydraulic conductivity (K)_a = 9.288E-07 cm/sec = 0.08024832 cm/day
 Hydraulic gradient (β)_a = 0.01499
 Total soil porosity (theta T)_a = 0.38 cm³/cm³
 Source width perpendicular to GW flow direction in horizontal plane (Sw)_a = 233 ft = 7.102 cm
 Source width perpendicular to GW flow direction in vertical plane (Sd)_a = 6.56 ft = 200 cm

Distance to Compliance with Tier 1, Class I GROs

Sample ID	Sample Depth	Analyte	Concentration (mg/L)	X (feet)	C _t (mg/L)
#2	8'-0"	Benzene	0.072	0.42	0.00484
#4	7'-0"	Benzene	0.012	0.10	0.00359
B-100	2'-4"	Benzene	0.010	0.09	0.00501
	10'-11.5"	MTBE	0.13	89.1	0.0700
B-300	4'-5.5"	Benzene	0.014	0.14	0.00494
B-600	6'-5.7"	Benzene	0.087	0.45	0.00492
B-1000	0'-2.2"	Benzene	0.009	0.08	0.00485
B-1200	0'-2.5"	Benzene	0.046	0.33	0.00500
B-1300	0'-2.5"	MTBE	0.073	0.42	0.00484
B-1500	7'-8"	MTBE	0.09	53.7	0.0700
B-2	2'-4"	Benzene	0.181	0.60	0.00485
B-4	4'-5"	Benzene	0.006	0.03	0.00472
B-15	5'-7"	Benzene	0.061	0.39	0.00475
B-16	8'-10"	Benzene	0.135	0.54	0.00484
B-22	6'-8"	Benzene	0.030	0.26	0.00492
B-23	6'-8"	Benzene	0.050	0.35	0.00486
B-24	4'-6"	Benzene	0.189	0.61	0.00483
	2'-4"	Ethylbenzene	0.9	0.01	0.689
	2'-4"	Ethylbenzene	0.027	0.24	0.00300
SB-101	5'-7"	Benzene	0.062	0.39	0.00483
SB-102	3'-5"	Benzene	0.080	0.44	0.00477
SB-103	3'-5"	Benzene	0.109	0.50	0.00477
SB-104	3'-5"	Benzene	0.109	0.50	0.00477
		Ethylbenzene	0.8	0.01	0.613
SB-108	5'-7"	Benzene	0.009	0.08	0.00485
SB-109	3'-5"	Benzene	0.0055	0.02	0.00468
SB-110	3'-5"	Benzene	0.018	0.18	0.00487
SB-111	5'-6"	Benzene	0.019	0.19	0.00487
SB-112	5'-7"	Benzene	0.050	0.35	0.00486
SB-113	3'-5"	Benzene	0.031	0.27	0.00478
SB-114	5'-7"	Benzene	0.120	0.51	0.00499

Porosity
Gravel=0.35
Sand=0.32
Silt=0.40
Clay=0.36
Default=0.43

(Assuming complete mixing)

Analyte	Class I GRO	Class II GRO	First order degradation constant (λ)
Benzene	0.605	0.025	0.000990
Toluene	1	2.5	0.0110
Ethylbenzene	0.7	1	0.00300
Total Xylenes	10	10	0.00190
MTBE	0.07	0.07	0
Acenaphthene	0.42	2.1	0.00340
Anthracene	2.1	10.5	0.000750
Benzofluoranthene	0.00013	0.00065	0.000510
Benzodipylene	0.0002	0.002	0.000650
Benzofluoranthene	0.00018	0.0009	0.000650
Benzofluoranthene	0.00017	0.00085	0.000650
Chrysene	0.00015	0.00075	0.000350
Dibenzofluoranthene	0.0003	0.0015	0.000370
Fluoranthene	0.28	1.4	0.000190
Fluorene	0.28	1.4	0.000691
Indeno(1,2,3-cd)pyrene	0.00043	0.00215	0.000470
Naphthalene	0.14	0.22	0.00270
Pyrene	0.21	1.05	0.000180
total	0.0075	0.1	0

Table 3
S18/S28 Calculations
12548 South Western Avenue
Blue Island, Illinois

Sample ID	Parameter	Concentration of Constituent Observed in Soil	Target Soil Leachate Concentration	Potential Soil Leachate Concentration
		Soil Concentration (SRQ) mg/kg	C_w mg/L	C_w mg/L
B-100 (10-11.5')	MTBE	4.700	2.5452	0.1273
B-1300 (0-2.5')	MTBE	3.200	1.7329	0.0866
SB-116 (2-4')	Ethylbenzene	141.000	76.3548	3.8177
SB-116 (4-5')	Ethylbenzene	155.000	83.9361	4.1968
SB-116 (2-4')	Benzene	0.863	0.4673	0.0234
SB-116 (5-8')	Benzene	3.220	1.7437	0.0872
SB-116 (8-10')	Benzene	2.740	1.4838	0.0742
SB-121 (5-8')	Benzene	0.766	0.4148	0.0207
SB-122 (5-8')	Benzene	0.273	0.1478	0.0074

Equation S28: Mass-Limit Remediation Objective for the Soil Component of the Groundwater Ingestion Exposure Route (mg/kg)

$$C_w = \frac{(C_w \cdot I_{M-L} \cdot ED_{M-L})}{P_b \cdot d_s}$$

$$C_w = DF \cdot GW_{obj}$$

Equation S18: Target Soil Leachate Concentration

Variables		
P_b	Soil Bulk Density (Measured in sample ST-1/B-28)	g soil/cm ³ soil
d_s	Depth of Source (site-specific vertical thickness of contamination)	m
DF	Dilution Factor	unitless
I_{M-L}	Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28	m/yr
ED_{M-L}	Exposure Duration for Migration to Groundwater Mass-Limit Equation S28	year

Notes:

SSL Equations derived from 35 IAC 742 Appendix C, Table A.

Table 4
 R26 Calculations
 12548 South Western Avenue
 Blue Island, Illinois

Sample ID	MTBE	Ethylbenzene	Benzene	MTBE	Ethylbenzene	Benzene	MTBE	Ethylbenzene	Benzene	MTBE	Ethylbenzene	Benzene
B-100 (10-1-57)	MTBE	0.1273	9.63E-04	7.102	200	22.86	7.62					
B-1300 (0-2-57)	MTBE	0.0866	9.63E-04	7.102	200	14.63	4.88					
SB-116 (2-47)	Ethylbenzene	3.8177	3.00E-03	7.102	200	96.01	32.00					
SB-116 (4-57)	Ethylbenzene	4.1968	3.00E-03	7.102	200	96.01	32.00					
SB-116 (2-47)	Benzene	0.0234	9.00E-04	7.102	200	96.01	32.00					
SB-116 (5-87)	Benzene	0.0872	9.00E-04	7.102	200	96.01	32.00					
SB-116 (8-107)	Benzene	0.0742	9.00E-04	7.102	200	96.01	32.00					
SB-121 (5-87)	Benzene	0.0207	9.00E-04	7.102	200	8.23	2.74					
SB-122 (5-87)	Benzene	0.0074	9.00E-04	7.102	200	7.32	2.44					
MW-4	MTBE	0.0927	9.63E-04	5.822	200	7.32	2.44					
Sample ID	MTBE	1.14	0.36	3.34E-03	229	0.07	8.2360E-11					
B-1300 (0-2-57)	MTBE	0.73	0.36	3.34E-03	146	0.07	8.4712E-09					
SB-116 (2-47)	Ethylbenzene	4.80	0.36	3.34E-03	960	0.70	2.2035E-38					
SB-116 (4-57)	Ethylbenzene	4.80	0.36	3.34E-03	960	0.70	2.4223E-38					
SB-116 (2-47)	Benzene	4.80	0.36	3.34E-03	960	0.005	2.1115E-22					
SB-116 (5-87)	Benzene	4.80	0.36	3.34E-03	960	0.005	7.8782E-22					
SB-116 (8-107)	Benzene	4.80	0.36	3.34E-03	960	0.005	6.7038E-22					
SB-121 (5-87)	Benzene	0.41	0.36	3.34E-03	82	0.005	4.6289E-07					
SB-122 (5-87)	Benzene	0.37	0.36	3.34E-03	73	0.005	3.6899E-07					
MW-4	MTBE	0.37	0.36	3.34E-03	73	0.07	2.9330E-06					

Equation R26

$$C_{(X)} = \left[\frac{X}{24K} \right] \cdot \left[1 - \sqrt{1 + \frac{4i \cdot \alpha X}{U}} \right] \cdot e^{i \cdot f} \cdot \left[\frac{S_{Hydraulic}}{4 \cdot \sqrt{\alpha_y \cdot X}} \right] \cdot e^{i \cdot f} \cdot \left[\frac{S_{Dispersion}}{2 \cdot \sqrt{\alpha_z \cdot X}} \right]$$

Variables
 K Hydraulic Conductivity (Site-Specific)
 i Hydraulic Gradient (Site-Specific)
 cm/day
 mm
 0.080
 0.07498

Notes:
 RBCA Equations derived from 35 IAC 742 Appendix C, Table C.

HIGHWAY AUTHORITY AGREEMENT

This Agreement is entered into this **[DAY] day of [MONTH], 2024** pursuant to 35 Ill. Adm. Code 742.1020 by and between (1) the City of Blue Island (“Property Owner”) and (2) the Illinois Department of Transportation (“Highway Authority”), collectively known as the “Parties.”

WHEREAS, the Property Owner is the owner or operator of one or more leaking underground storage tanks presently or formerly located at 12548 South Western Avenue, Blue Island, Illinois (“the Site”);

WHEREAS, as a result of one or more releases of contaminants from the above referenced underground storage tanks, soil and/or groundwater contamination at the Site exceeds the Tier 1 residential remediation objectives of 35 Ill. Adm. Code 742;

WHEREAS, the soil and/or groundwater contamination exceeding Tier 1 residential remediation objectives extends or may extend into the Highway Authority’s right-of-way adjacent to the Site;

WHEREAS, the Property Owner is conducting corrective action in response to the Releases;

WHEREAS, the Parties desire to prevent groundwater beneath the Highway Authority’s right-of-way that exceeds Tier 1 residential remediation objectives from use as a supply of potable or domestic water and to limit access to soil within the right-of-way that exceeds Tier 1 residential remediation objectives so that human health and the environment are protected during and after any access;

NOW, THEREFORE, the Parties agree as follows:

1. The recitals set forth above are incorporated by reference as if fully set forth herein.
2. The Illinois Emergency Management Agency has assigned incident numbers 921229 and 20021765 to the Releases.
3. Attached as Exhibit A-1 and Exhibit A-2 are scaled maps that show the Site and surrounding area as well as the delineated current and estimated future extent of soil and groundwater contamination above the applicable Tier 1 residential remediation objectives as a result of the Releases.
4. Attached as Exhibit B-1 and Exhibit B-2 are tables that list each contaminant of concern that exceeds its Tier 1 residential remediation objective and its concentrations within the zone where Tier 1 residential remediation objectives are exceeded. The locations of the concentrations listed in Exhibit B-1 are identified on the map in Exhibit A-1 and the locations of the concentrations

listed in Exhibit B-2 are identified on the map in Exhibit A-2.

5. Attached as Exhibit C is a scaled map prepared by the Property Owner showing the area of the Highway Authority's right-of-way that is governed by this agreement ("Right-of-Way"). Because Exhibit C is not a surveyed plat, the Right-of-Way boundary may be an approximation of the actual Right-of-Way lines.
6. The Highway Authority stipulates it has jurisdiction over the Right-of-Way that gives it sole control over the use of the groundwater and access to the soil located within or beneath the Right-of-Way.
7. The Highway Authority agrees to prohibit within the Right-of-Way all potable and domestic uses of groundwater exceeding Tier 1 residential remediation objectives.
8. The Highway Authority further agrees to limit access by itself and others to soil within the Right-of-Way exceeding Tier 1 residential remediation objectives. Access shall be allowed only if human health (including worker safety) and the environment are protected during and after any access. The Highway Authority may construct, reconstruct, improve, repair, maintain and operate a highway upon the Right-of-Way, or allow others to do the same by permit. In addition, the Highway Authority and others using or working in the Right-of-Way under permit have the right to remove soil or groundwater from the Right-of-Way and dispose of the same in accordance with applicable environmental laws and regulations. The Highway Authority agrees to issue all permits for work in the Right-of-Way, and make all existing permits for work in the Right-of-Way, subject to the following or a substantially similar condition:
 - As a condition of this permit the permittee shall request the office issuing this permit to identify sites in the Right-of-Way where a Highway Authority Memorandum of Agreement governs access to soil that exceeds the Tier 1 residential remediation objectives of 35 Ill. Adm. Code 742.
 - The permittee shall take all measures necessary to protect human health (including worker safety) and the environment during and after any access to such soil.
9. This agreement shall be referenced in the Agency's no further remediation determination issued for the Releases.
10. The Agency shall be notified of any transfer of jurisdiction over the Right-of-Way at least 30 days prior to the date the transfer takes effect. This agreement shall be null and void upon the transfer unless the transferee agrees to be bound by this agreement as if the transferee were an original party to this agreement.

The transferee's agreement to be bound by the terms of this agreement shall be memorialized at the time of transfer in a writing ("Rider") that references this Highway Authority Memorandum of Agreement and is signed by the Highway Authority, or subsequent transferor, and the transferee.

11. This agreement shall become effective on the date the Agency issues a no further remediation determination for the Releases. It shall remain effective until the Right-of-Way is demonstrated to be suitable for unrestricted use and the Agency issues a new no further remediation determination to reflect there is no longer a need for this agreement, or until the agreement is otherwise terminated or voided.
12. In addition to any other remedies that may be available, the Agency may bring suit to enforce the terms of this agreement or may, in its sole discretion, declare this agreement null and void if the Highway Authority or a transferee violates any term of this agreement. The Highway Authority or transferee shall be notified in writing of any such declaration.
13. This agreement shall be null and void if a court of competent jurisdiction strikes down any part or provision of the agreement.
14. This agreement supersedes any prior written or oral agreements or understandings between the Parties on the subject matter addressed herein. It may be altered, modified or amended only upon the written consent and agreement of the Parties.
15. Any notices or other correspondence regarding this agreement shall be sent to the Parties at following addresses:
 - Illinois Environmental Protection Agency
Bureau of Land, Division of Remediation Management
P.O. Box 19276
Springfield, IL 62974-9276
 - Illinois Department of Transportation
Hanley Building
2300 S. Dirksen Parkway
Springfield, IL 62764

IN WITNESS WHEREOF, the Parties have caused this agreement to be signed by their duly authorized representatives.

ILLINOIS DEPARTMENT OF TRANSPORTATION

Date: _____

By: _____

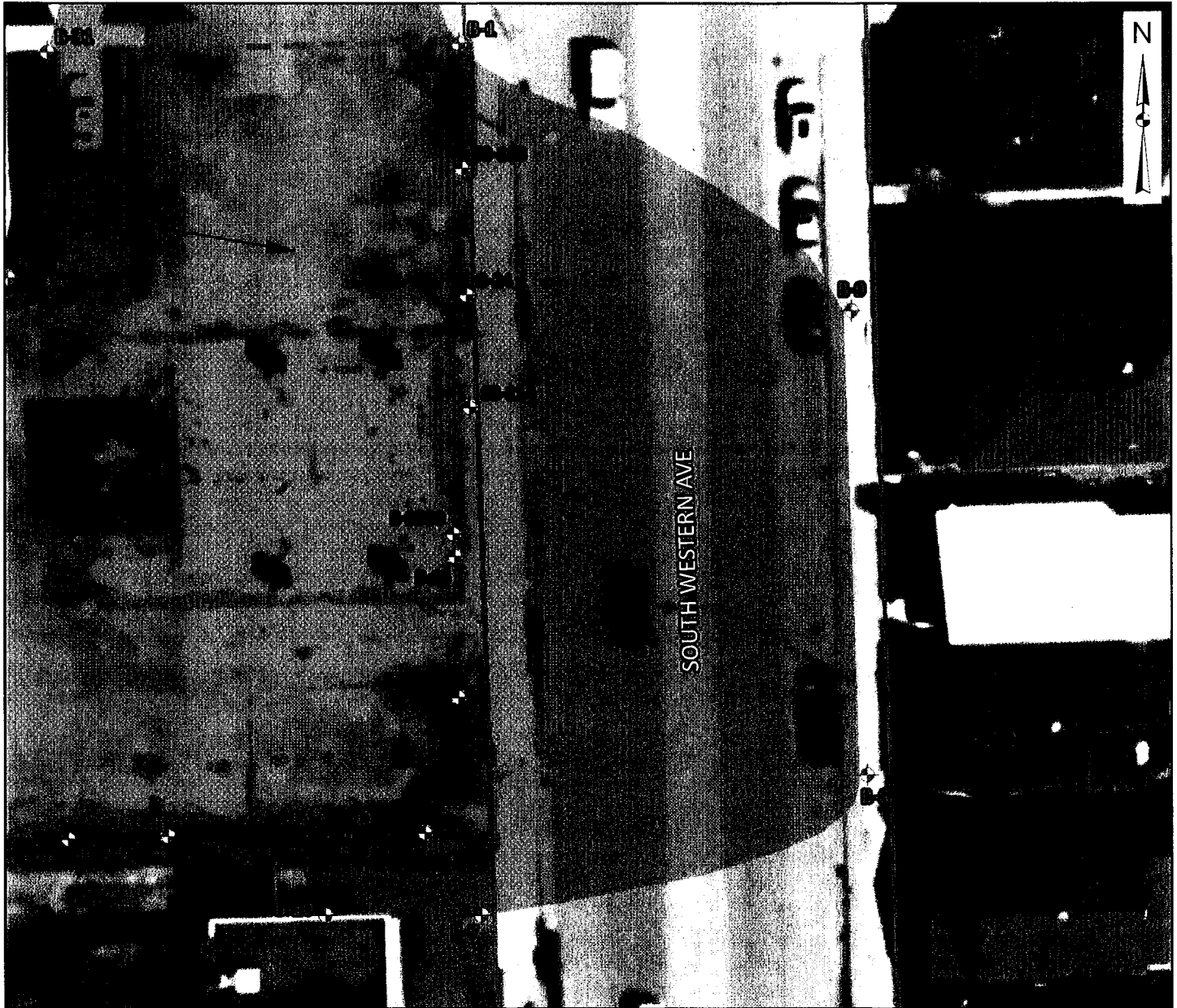
Its: _____

ILLINOIS ENVIRONMENTAL PROTECTION
AGENCY

Date: _____







By: _____

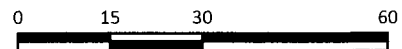
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NOTES:
 - DUE TO THE NUMBER OF SAMPLES COLLECTED AT THE SOURCE LOCATION (12548 SOUTH WESTERN AVENUE) BETWEEN 2004 AND 2022, ONLY SAMPLE LOCATIONS EXCEEDING TIER 1 SROS AT THE SOURCE LOCATION BOUNDARY ARE SHOWN.
 - BASED ON THE R26 FATE AND TRANSPORT MODELING, NO IMPACTS MODELED OUTSIDE OF THE SOURCE LOCATION BOUNDARY.

LEGEND


-  SOURCE LOCATION BOUNDARY
-  RIGHT-OF-WAY BOUNDARY
-  PHYSICALLY DELINEATED EXTENT OF SOIL IMPACTION (EXTENT SHOWN UP TO UNIMPACTED POINT OF COMPLIANCE)
-  GROUNDWATER FLOW DIRECTION (GWC, 2022)
-  APPROXIMATE IMPACTED SOIL PROBE LOCATION (BENZENE, ETHYLBENZENE, TOTAL XYLENES, AND/OR MTBE)
-  APPROXIMATE SOIL PROBE LOCATION (UNIMPACTED POINT OF COMPLIANCE)

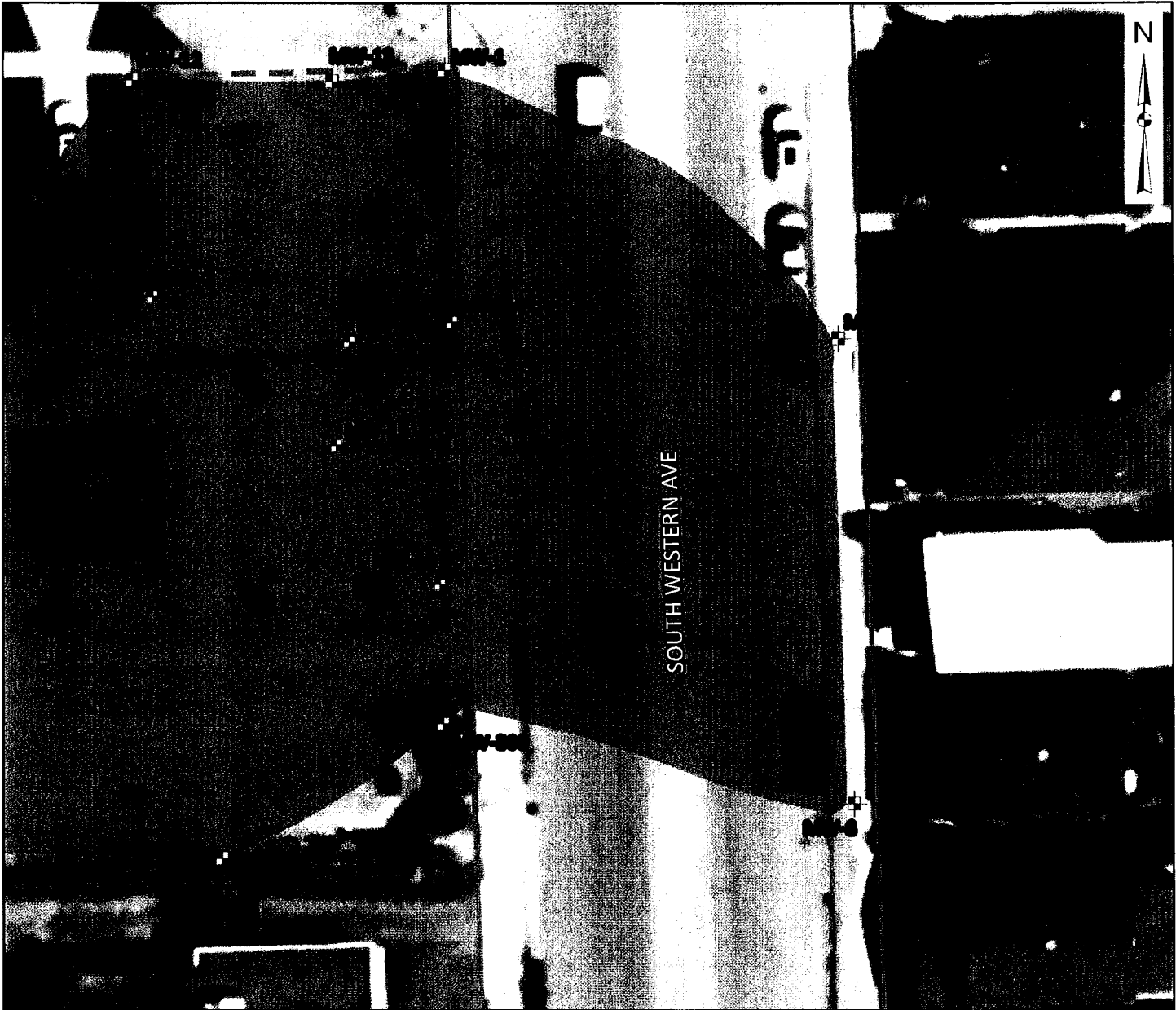


1 inch = 30 feet

Aerial Source: ESRI Online World Imagery,

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<p>PREPARED FOR:</p> <p>CITY OF BLUE ISLAND</p>	<p>APPROXIMATE EXTENT OF TIER 1 SOIL COMPONENT OF GROUNDWATER INGESTION AND/OR OUTDOOR INHALATION IMPACTS SOUTH WESTERN AVENUE ADJOINING 12548 SOUTH WESTERN AVENUE TO THE EAST BLUE ISLAND, ILLINOIS</p>	 <p>CHICAGO, ILLINOIS (773) 922-1030 www.wcgrp.com</p>	<p>DRAWN BY: HC</p> <p>REVIEWED BY: RH</p> <p>DATE: 4/9/2024</p> <p>FILE: 3896-305-0482</p> <p>CAD: 305_IE PA_A-1.mxd</p>
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NOTES:

- DUE TO THE NUMBER OF SAMPLES COLLECTED AT THE SOURCE LOCATION (12548 SOUTH WESTERN AVENUE) BETWEEN 2004 AND 2022, ONLY SAMPLE LOCATIONS EXCEEDING TIER 1 GROS AT THE SOURCE LOCATION BOUNDARY ARE SHOWN.
- BASED ON THE R26 FATE AND TRANSPORT MODELING, NO IMPACTS MODELED OUTSIDE OF THE SOURCE LOCATION BOUNDARY.

LEGEND

SOURCE LOCATION BOUNDARY

RIGHT-OF-WAY BOUNDARY

PHYSICALLY DELINEATED EXTENT OF GROUNDWATER IMPACTION (EXTENT SHOWN UP TO UNIMPACTED POINT OF COMPLIANCE)

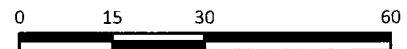
GROUNDWATER FLOW DIRECTION (GWC, 2022)

Aerial Source: ESRI Online World Imagery.

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APPROXIMATE IMPACTED WELL LOCATION (BENZENE AND/OR MTBE)

APPROXIMATE MONITORING WELL LOCATION (UNIMPACTED POINT OF COMPLIANCE)



1 inch = 30 feet

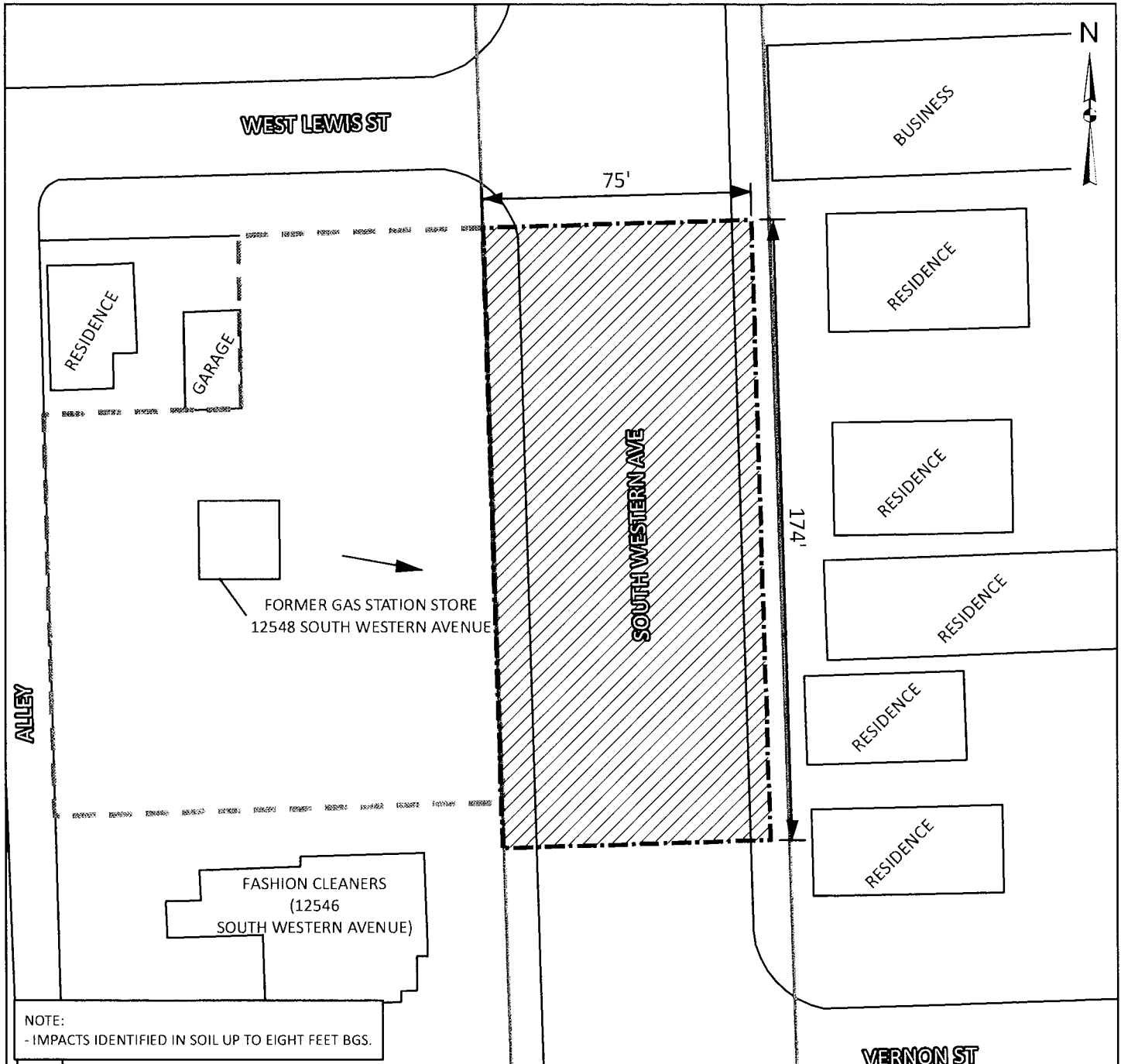
PREPARED FOR: CITY OF BLUE ISLAND	APPROXIMATE EXTENT OF TIER 1 GROUNDWATER INGESTION IMPACTS SOUTH WESTERN AVENUE ADJOINING 12548 SOUTH WESTERN AVENUE TO THE EAST BLUE ISLAND, ILLINOIS	<p>Weaver Consultants Group CHICAGO, ILLINOIS (773) 922-1030 www.wcgrp.com</p>	DRAWN BY: HC
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			EXHIBIT A-2

Exhibit B-2
Groundwater Analytical Summary
 South Western Avenue HAA
 Blue Island, Illinois

Parameter	Units	Groundwater Remediation Objectives ^a		Various Site Investigations ^d 2014 - 2021																			
		Groundwater Component of the Groundwater Ingestion Exposure Route ^b Class 1	Indoor Inhalation Exposure Route ^c Residential	Release Property Boundary Well Locations										Points of Compliance									
				MW-2 9/8/2021	MW-10 9/8/2021	MW-11 9/8/2021	MW-14 9/8/2021	MW-15 9/8/2021	MW-200 7/27/2014	MW-300 7/17/2014	MW-1 9/8/2021	MW-8 9/8/2021	MW-9 9/8/2021	MW-12 9/8/2021	MW-13 9/8/2021								
Benzene	mg/L	0.005	0.11	0.0156	0.0414	0.0323	0.0106	0.747	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Toluene	mg/L	1	530	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	mg/L	0.7	0.37	<0.00500	<0.00500	<0.00500	0.0127	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Xylenes	mg/L	10	30	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.01	<0.01	<0.01	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150
Methyl tert-Butyl Ether	mg/L	0.07	1.900	<0.00500	0.0296	0.026	0.0741	0.4728	<0.005	0.00733	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
0.414				Concentration exceeds the Tier 1 GRO for the Groundwater Ingestion Exposure Route for Class 1 Groundwater.																			
0.747				Concentration exceeds the Tier 1 GRO for the Indoor Inhalation Exposure Route for Residential Properties.																			





Notes:

- ^a Tier 1 Groundwater Remediation Objectives obtained from Tiered Approach to Corrective Action Objectives (TACO), 35 IAC 742 (Effective February 27, 2007).
- ^b Remediation Objectives obtained from 35 IAC 742, Appendix B, Table E: Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Exposure Route.
- ^c Remediation Objectives obtained from 35 IAC 742, Appendix B, Table H: Groundwater Remediation Objectives for the Indoor Inhalation Exposure Route.
- ^d Only analytical data from the most recent sampling events are provided in this table.
- ^e Compliance with the indoor inhalation exposure route demonstrated with soil-gas analytical results as discussed in the 2024 CAP.
- ^f Indicates parameter not detected above laboratory reporting limits.

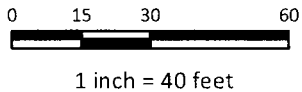



NOTE:
- IMPACTS IDENTIFIED IN SOIL UP TO EIGHT FEET BGS.

LEGEND

-  SOURCE LOCATION BOUNDARY
-  RIGHT-OF-WAY BOUNDARY
-  HAA AREA
-  GROUNDWATER FLOW DIRECTION (GWC, 2022)

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<p>PREPARED FOR:</p> <p>CITY OF BLUE ISLAND</p>	<p>HAA AREA MAP</p> <p>SOUTH WESTERN AVENUE ADJOINING 12548 SOUTH WESTERN AVENUE TO THE EAST BLUE ISLAND, ILLINOIS</p> <p>REUSE OF DOCUMENTS THIS DOCUMENT, AND THE DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WEAVER CONSULTANTS GROUP, AND IS NOT TO BE USED IN WHOLE OR IN PART, WITHOUT THE WRITTEN AUTHORIZATION OF WEAVER CONSULTANTS GROUP.</p>	 <p>Weaver Consultants Group</p> <p>CHICAGO, ILLINOIS (773) 922-1030 www.wcgrp.com</p>	<p>DRAWN BY: HC</p> <p>REVIEWED BY: RH</p> <p>DATE: 4/3/2024</p> <p>FILE: 3896-305-04B2</p> <p>CAD: 305_I-EPA_C.mxd</p> <p>EXHIBIT C</p>
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