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CORRECTIVE ACTION PLAN

330 Chicago Avenue
Oak Park, Illinois

IEMA Incident No. 971663
LPC No. 0312255051
ETS Project No. 21-0780B

Prepared for:

Hargobind, Inc.
330 W. Chicago Avenue
Oak Park, Illinois 60302

Prepared by:

ETS Environmental & Associates, LLC
204 Dearborn Court, Suite 124
Geneva, IL 60134
(630) 513-4710

August 7, 2025

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Illinois Environmental Prot

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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 - 57.19). 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, fictitious, or fraudulent material statement or representation, orally or in writing, to the Agency, or to a unit of local government to which the Agency has delegated authority under subsection (r) of Section 4 of this Act, related to or required by this Act, a regulation adopted under this Act, any federal law or regulation for which the Agency has responsibility, or any permit,term, or condition thereof, commits a Class 4 felony, and each such statement or writing shall be considered a separate Class 4 felony. A person who, after being convicted under paragraph 415 ILCS 5/44 (h)(8), violates paragraph 415 ILCS 5/44 (h)(8) a second or subsequent time, commits a Class 3 felony. (415 ILCS 5/44). 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): 971663 IEPA LPC# (10-digit): 0312255051

Site Name: GoLo Gas Station

Site Address (Not a P.O. Box): 330 Chicago Avenue

City: Oak Park County: Cook ZIP Code: 60302

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
5. This Corrective Action Plan is submitted pursuant to:
   - ○ a. 35 Ill. Adm. Code 731.166
   - ○ b. 35 Ill. Adm. Code 732.404
   - ◉ c. 35 Ill. Adm. Code 734.335

C. Proposed Methods of Remediation

1. Soil: Tier 2 Remediation Objectives, Highway Authority Agreements
2. Groundwater: Groundwater Ordinance

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;

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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;
    c. maps showing area covered by barriers and institutional controls;
    d. copies of the complete application(s) for planned Highway Authority Agreement(s); and
    e. draft groundwater ordinance(s) and Environmental Land Use 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 eac 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 remediatio 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 obtainec 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) hav 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 $\leq$ 2.0 or $\geq$ 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 Hargobind, Inc.
Contact Mr. Hardeep Singh
Address 100 W. Chicago Avenue
City Oak Park
State Illinois
Zip Code 60302
Phone
Email hargobindinc@gmail.com
Signature
Date 8/19/2025

Consultant

Company ETS Environmental & Associates, LLC
Contact R. Todd McCollister, PE
Address 204 Dearborn Court, Suite 124
City Geneva
State Illinois
Zip Code 60134
Phone 630-513-4710 ext. 311
Email ToddM@ets-environmental.com
Signature
Date 08/26/2025

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 Jeffrey R. Wienhoff
Company ETS Environmental & Associates, LLC
Address 204 Dearborn Court, Suite 124
City Geneva
State Illinois
Zip Code 60134
Phone 217-726-7569
Ill. Registration No. 062-058441
License Expiration Date November 30, 2025
Signature
Date 8/13/25

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

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

0312255051 - Cook County
GoLo Gas Station
Incident # 971663
LUST TECH FILE

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August 7, 2025

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Appendix B	Hydraulic Gradient Calculations
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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)

This Site is subject to 734, therefore additional information requested can be found in the SICR.

Provide the following:

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

   Please see the Site Investigation Completion Report (SICR), dated June 5, 2023 for detailed information pertaining to the extents of soil and groundwater impact. Illinois Environmental Protection Agency (IEPA) correspondence dated October 11, 2023, which approved the SICR is included in **Appendix A.**

   To summarize, after Early Action, as well as Stage 1, Stage 2, and Stage 3 Site Investigation activities it has been determined that the petroleum impact has been delineated. The location of the Site is depicted on **Figure 1.** The general layout of the Site, site features, as well as sample locations (soil borings and monitoring wells) are depicted on **Figure 2.**

   Soil Delineation:

   The soil impact has been delineated on-Site by the following sample locations:

   North:

   B-3, B-4, and B-9

   East:

   B-9, B-10, and B-11

   South:

   B-12, B-13, and B-14

   West:

   SB-1, SB-2, and SB-3

   The soil boring locations and extent of soil impacts are depicted on **Figure 3.** The soil sample analytical results are summarized in **Table 1.**

   Groundwater Delineation:

   During investigative activities five (5) 2-inch monitoring wells (MW-1 through MW-5) were installed on-Site. Five (5) temporary monitoring wells (SB-1, SB-2, TMW-1, TMW-2, and TMW-3) were installed off-Site, TMW-1 and TMW-2 to the east, TMW-3 to the south, and SB-1 and SB-2 to the west of the Site. Groundwater samples collected from the aforementioned monitoring wells were submitted for laboratory analysis of Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), and Methyl tert-butyl ether (MTBE). The

groundwater impact has been physically delineated on-Site and off-Site by the following locations:

North:

MW-2 and TMW-1

East:

TMW-1 and TMW-2

South:

TMW-3

West:

SB-1 and SB-2

The monitoring well locations and extent of groundwater impacts are depicted on **Figure 4**. Generalized geologic cross sections of the Site are depicted on **Figure 5** and **Figure 6**. The groundwater sample analytical results are summarized in **Table 2**.

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

Analytical results are summarized in the Tables section of this report. Analytical laboratory reports, chain-of-custody forms, and laboratory certifications were provided in the Site Investigation Completion Report as well as previous reports.

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

Tables comparing analytical results of soil and groundwater samples collected to date to applicable remediation objectives are located in the Tables section of this report.

4. **Boring logs;**

Boring logs associated with the Site Investigation activities are located in previous reports.

5. **Monitoring well logs; and**

Monitoring well logs associated with Site Investigation activities are located in previous reports.

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.**

Refer to the Figures section of this report.

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;**

   This Corrective Action Plan (CAP) consists of managing the remaining impact in place using pathway exclusion (see below). Soil and groundwater within the right-of-way of Ridgeland Avenue and Chicago Avenue will be addressed through use of Highway Authority Agreements (HAAs) with the Illinois Department of Transportation (IDOT) and the Village of Oak Park. Soil and groundwater impacts that exceed Class I Groundwater Ingestion remediation objectives (ROs) as well as the modeled extent of impacts will be addressed by relying on the Village of Oak Park groundwater Ordinance No. 2001-0-107.

   b. **The scope of the problems to be addressed by the proposed corrective action; and**

   Impacted soil has been identified and delineated at the Site and will be managed in place using pathway evaluation and exclusion by using the Village of Oak Park groundwater ordinance and HAAs to address soil and groundwater impacts in the right-of-way of Ridgeland Avenue and Chicago Avenue.

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

   Immediately following approval of the CAP, HAAs will be negotiated for the right-of-way(s) of Ridgeland Avenue and Chicago Avenue with the appropriate entities. Once the necessary institutional controls have been executed, a Corrective Action Completion Report (CACR) will be prepared and submitted. Following issuance of the NFR letter, the monitoring wells at the Site will be abandoned.

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

   Soil and groundwater remediation objectives (ROs) were obtained from 35 Ill. Adm. Code, Part 742, *Tiered Approach to Corrective Action Objectives* (*TACO*) and compared to Tier 1 Residential, Industrial/Commercial, and Construction Worker ROs for soil and Tier 1, Class I ROs for groundwater. Site specific Tier 2 ROs were developed, and on-Site soil impacts exceeding Tier 1 ROs were evaluated using these objectives.

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

   a. **The feasibility of implementing the remedial technologies;**

   This Corrective Action Plan does not propose any physical soil or groundwater remediation as part of corrective action activities. Identified impacts will be managed in place through pathway exclusion.

b. Whether the remedial technologies will perform satisfactorily and reliably until the remediation objectives are achieved; and

No physical soil or groundwater remediation is being proposed as part of this Corrective Action Plan. Proposed activities will consist of developing Tier 2 ROs and managing impacts in place.

c. A schedule of when the technologies are expected to achieve the applicable remediation objectives;

Immediately following approval of the CAP, HAAs will be negotiated for the right-of-way(s) of Ridgeland Avenue and Chicago Avenue with the appropriate entities. Once the necessary institutional controls have been executed, a CACR will be prepared and submitted. Following issuance of the NFR letter, the monitoring wells at the Site will be abandoned.

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;

Physical soil remediation is not required and confirmation sampling is not being proposed. See below for a full pathway evaluation.

5. A description of the current and proposed future use of the site;

The Site is currently owned by Hargobind, Inc. and consists of one (1) parcel of land identified by Parcel Index Numbers (PIN) 16-05-321-016-0000 that encompasses approximately 0.14-acres of commercial land that is located within a mixed commercial and residential area. The Site currently operates as an active gasoline station and is anticipated to continue operating as an active gasoline station for the foreseeable future.

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

The use of institutional controls is discussed below in the pathway evaluation.

a. an assessment of their long-term reliability;

See below.

b. operation and maintenance plans; and

See below.

c. maps showing area covered by barriers and institutional controls;

See below.

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;**

   Please refer to previous plans/reports for locations of community supply wells and other potable wells and the setback zones for each well. It should be noted that the site is not located within 200 feet of a private well and predicted extent of impact modeling did not extend into well setback areas.

   b. **Maps showing regulated recharge areas and well head protection areas;**

   Regulated recharge areas and wellhead protection areas are not located within 0.5 miles of the site. Please refer to previous plans/reports for locations of community supply wells and other potable wells and the setback zones for each well.

   c. **Maps(s) showing the current extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;**

   Please see exposure pathway evaluation discussion below and the figures attached to this report.

   d. **Map(s) showing the modeled extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;**

   Please see exposure pathway evaluation discussion below and the figures attached to this report.

   e. **Tables listing the setback zone for each community water supply well and other potable water supply wells;**

   Please refer to the discussion, figures and tables provided in the 45-Day Report dated October 7, 1997 and the SICR dated September 21, 2023. A potable water well survey is documented within the 45-Day Report dated October 7, 1997, which identified five water wells located within one mile of the Site, the closest of which is approximately 0.5 miles from the Site. Due to the age of the potable water well survey, ETS accessed the IEPA's online Source Water Assessment Program (SWAP) database to identify the locations of source water resources potentially affected by the release. ETS confirmed that no private water supply wells or non-community water supply wells are located within 200 feet of the Site; community water supply wells (CWS) are located within 2,500 feet of the Site; nor is the Site located within any wellhead protection areas or any regulated recharge areas.

   Additionally, the Site is subject to the Village of Oak Park Ordinance No. 2001-0-107, which prohibits the potable use of groundwater occurring within the municipal boundaries as a potable source.

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**

ETS utilized the IEPA SWAP database and historical information obtained in the previously referenced reports.

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 included information obtained as a result of the survey (certification of this plan satisfies this requirement);**

Please refer to the SICR for the Professional Engineer Certification, which includes the receptor survey information.

8. **Appendices:**

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

Please refer to the figure, tables, and appendices contained within this report.

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

Please refer to previous reports for boring and well logs as no new soil borings or monitoring wells have been advanced or installed. See the Tables section for the summarized analytical results and previous reports for the laboratory analytical reports and laboratory certifications.

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

Please refer to the Figures section of this report for site maps.

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

Not applicable at this time.

11. **A description of bench/pilot studies;**

Pilot or bench studies are not proposed.

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

No physical remediation is proposed as part of corrective action activities. The proposed method of addressing soil impact consists of developing Tier 2 ROs that will be used in conjunction with pathway evaluation and exclusion as well as reliance on institutional controls.

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

a. The equations used;

Please see pathway evaluation below.

b. A discussion of how input variables were determined;

Please see pathway evaluation below.

c. Map(s) depicting distances used in equations; and

Please see pathway evaluation below.

d. Calculations; and

Please see pathway evaluation below.

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 established 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.

Alternative technologies are not being proposed at this time.

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;**

      A default value of 6,000 mg/kg for soils within the top meter and 2,000 mg/kg for soils below one meter of the surface were used. The analytical results of all soil samples collected during the site investigation did not exceed the soil attenuation capacity.

   b. **Soil saturation limit will not be exceeded for any organic contaminants;**

      The analytical results of all soil samples collected to date were compared to the TACO Tier 1 default soil saturation (C_{sat}) values as presented in 742 Appendix A, Table A. Review of the analytical data indicates no concentrations of any organic contaminants of concern exceed their respective C_{sat} values.

   c. **Contaminated soils do not exhibit any of reactivity characteristics of hazardous waste per 35 Ill. Adm. Code 721.123;**

      The COCs for this site do not exhibit any reactivity characteristics of hazardous waste based on a review of 35 IAC 721.123 subsection a) 1 through 8, and subsection b).

   d. **Contaminated soils do not exhibit a pH of $\leq$ 2.0 or $\geq$ 12.5; and**

      Based on the soils encountered during site investigation activities and since the contaminants of concern are associated with unleaded gasoline, it is unlikely for soils on-Site to exhibit corrosive or caustic characteristics.

   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 wastes per 35 Ill. Adm. Code 721.124**

      None of the constituents above are COCs at the Site; therefore, this section does not apply.

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

   Groundwater Classification

   The Site groundwater was classified as Class I groundwater based on the following criteria:

   - Hydraulic conductivity: 4.112×10^{-6} centimeters per second (cm/s), based on aquifer testing performed on monitoring well MW-3 on September 8, 2021. Refer to the SICR for the hydraulic conductivity calculations.

Illinois Environmental Protection Agency

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

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Leaking Underground Storage Tank Program
Corrective Action Plan

A. Site Identification

IEMA Incident # (6- or 8-digit): 971663 IEPA LPC# (10-digit): 0312255051

Site Name: GoLo Gas Station

Site Address (Not a P.O. Box): 330 Chicago Avenue

City: Oak Park County: Cook ZIP Code: 60302

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
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5. This Corrective Action Plan is submitted pursuant to:
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   - ○ b. 35 Ill. Adm. Code 732.404
   - ◉ c. 35 Ill. Adm. Code 734.335

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    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) hav 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 $\leq$ 2.0 or $\geq$ 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 Hargobind, Inc.
Contact Mr. Hardeep Singh
Address 100 W. Chicago Avenue
City Oak Park
State Illinois
Zip Code 60302
Phone
Email hargobindinc@gmail.com

Signature
Date

Consultant

Company ETS Environmental & Associates, LLC
Contact R. Todd McCollister, PE
Address 204 Dearborn Court, Suite 124
City Geneva
State Illinois
Zip Code 60134
Phone 630-513-4710 ext. 311
Email ToddM@ets-environmental.com

Signature
Date

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 Jeffrey R. Wienhoff
Company ETS Environmental & Associates, LLC
Address 204 Dearborn Court, Suite 124
City Geneva
State Illinois
Zip Code 60134
Phone 217-726-7569
Ill. Registration No. 062-058441
License Expiration Date November 30, 2025

Signature
Date 11/13/25

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

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

CORRECTIVE ACTION PLAN

330 Chicago Avenue
Oak Park, Illinois

IEMA Incident No. 971663
LPC No. 0312255051
ETS Project No. 21-0780B

Prepared for:

Hargobind, Inc.
330 W. Chicago Avenue
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Prepared by:

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August 7, 2025

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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)

This Site is subject to 734, therefore additional information requested can be found in the SICR.

Provide the following:

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

   Please see the Site Investigation Completion Report (SICR), dated June 5, 2023 for detailed information pertaining to the extents of soil and groundwater impact. Illinois Environmental Protection Agency (IEPA) correspondence dated October 11, 2023, which approved the SICR is included in **Appendix A.**

   To summarize, after Early Action, as well as Stage 1, Stage 2, and Stage 3 Site Investigation activities it has been determined that the petroleum impact has been delineated. The location of the Site is depicted on **Figure 1.** The general layout of the Site, site features, as well as sample locations (soil borings and monitoring wells) are depicted on **Figure 2.**

   Soil Delineation:

   The soil impact has been delineated on-Site by the following sample locations:

   North:

   B-3, B-4, and B-9

   East:

   B-9, B-10, and B-11

   South:

   B-12, B-13, and B-14

   West:

   SB-1, SB-2, and SB-3

   The soil boring locations and extent of soil impacts are depicted on **Figure 3.** The soil sample analytical results are summarized in **Table 1.**

   Groundwater Delineation:

   During investigative activities five (5) 2-inch monitoring wells (MW-1 through MW-5) were installed on-Site. Five (5) temporary monitoring wells (SB-1, SB-2, TMW-1, TMW-2, and TMW-3) were installed off-Site, TMW-1 and TMW-2 to the east, TMW-3 to the south, and SB-1 and SB-2 to the west of the Site. Groundwater samples collected from the aforementioned monitoring wells were submitted for laboratory analysis of Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), and Methyl tert-butyl ether (MTBE). The

groundwater impact has been physically delineated on-Site and off-Site by the following locations:

North:

MW-2 and TMW-1

East:

TMW-1 and TMW-2

South:

TMW-3

West:

SB-1 and SB-2

The monitoring well locations and extent of groundwater impacts are depicted on **Figure 4**. Generalized geologic cross sections of the Site are depicted on **Figure 5** and **Figure 6**. The groundwater sample analytical results are summarized in **Table 2**.

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

Analytical results are summarized in the Tables section of this report. Analytical laboratory reports, chain-of-custody forms, and laboratory certifications were provided in the Site Investigation Completion Report as well as previous reports.

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

Tables comparing analytical results of soil and groundwater samples collected to date to applicable remediation objectives are located in the Tables section of this report.

4. **Boring logs;**

Boring logs associated with the Site Investigation activities are located in previous reports.

5. **Monitoring well logs; and**

Monitoring well logs associated with Site Investigation activities are located in previous reports.

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.**

Refer to the Figures section of this report.

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;**

      This Corrective Action Plan (CAP) consists of managing the remaining impact in place using pathway exclusion (see below). Soil and groundwater within the right-of-way of Ridgeland Avenue and Chicago Avenue will be addressed through use of Highway Authority Agreements (HAAs) with the Illinois Department of Transportation (IDOT) and the Village of Oak Park. Soil and groundwater impacts that exceed Class I Groundwater Ingestion remediation objectives (ROs) as well as the modeled extent of impacts will be addressed by relying on the Village of Oak Park groundwater Ordinance No. 2001-0-107.

   b. **The scope of the problems to be addressed by the proposed corrective action; and**

      Impacted soil has been identified and delineated at the Site and will be managed in place using pathway evaluation and exclusion by using the Village of Oak Park groundwater ordinance and HAAs to address soil and groundwater impacts in the right-of-way of Ridgeland Avenue and Chicago Avenue.

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

      Immediately following approval of the CAP, HAAs will be negotiated for the right-of-way(s) of Ridgeland Avenue and Chicago Avenue with the appropriate entities. Once the necessary institutional controls have been executed, a Corrective Action Completion Report (CACR) will be prepared and submitted. Following issuance of the NFR letter, the monitoring wells at the Site will be abandoned.

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

   Soil and groundwater remediation objectives (ROs) were obtained from 35 Ill. Adm. Code, Part 742, *Tiered Approach to Corrective Action Objectives* (*TACO*) and compared to Tier 1 Residential, Industrial/Commercial, and Construction Worker ROs for soil and Tier 1, Class I ROs for groundwater. Site specific Tier 2 ROs were developed, and on-Site soil impacts exceeding Tier 1 ROs were evaluated using these objectives.

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

   a. **The feasibility of implementing the remedial technologies;**

      This Corrective Action Plan does not propose any physical soil or groundwater remediation as part of corrective action activities. Identified impacts will be managed in place through pathway exclusion.

b. Whether the remedial technologies will perform satisfactorily and reliably until the remediation objectives are achieved; and

No physical soil or groundwater remediation is being proposed as part of this Corrective Action Plan. Proposed activities will consist of developing Tier 2 ROs and managing impacts in place.

c. A schedule of when the technologies are expected to achieve the applicable remediation objectives;

Immediately following approval of the CAP, HAAs will be negotiated for the right-of-way(s) of Ridgeland Avenue and Chicago Avenue with the appropriate entities. Once the necessary institutional controls have been executed, a CACR will be prepared and submitted. Following issuance of the NFR letter, the monitoring wells at the Site will be abandoned.

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;

Physical soil remediation is not required and confirmation sampling is not being proposed. See below for a full pathway evaluation.

5. A description of the current and proposed future use of the site;

The Site is currently owned by Hargobind, Inc. and consists of one (1) parcel of land identified by Parcel Index Numbers (PIN) 16-05-321-016-0000 that encompasses approximately 0.14-acres of commercial land that is located within a mixed commercial and residential area. The Site currently operates as an active gasoline station and is anticipated to continue operating as an active gasoline station for the foreseeable future.

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

The use of institutional controls is discussed below in the pathway evaluation.

a. an assessment of their long-term reliability;

See below.

b. operation and maintenance plans; and

See below.

c. maps showing area covered by barriers and institutional controls;

See below.

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;**

      Please refer to previous plans/reports for locations of community supply wells and other potable wells and the setback zones for each well. It should be noted that the site is not located within 200 feet of a private well and predicted extent of impact modeling did not extend into well setback areas.

   b. **Maps showing regulated recharge areas and well head protection areas;**

      Regulated recharge areas and wellhead protection areas are not located within 0.5 miles of the site. Please refer to previous plans/reports for locations of community supply wells and other potable wells and the setback zones for each well.

   c. **Maps(s) showing the current extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;**

      Please see exposure pathway evaluation discussion below and the figures attached to this report.

   d. **Map(s) showing the modeled extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;**

      Please see exposure pathway evaluation discussion below and the figures attached to this report.

   e. **Tables listing the setback zone for each community water supply well and other potable water supply wells;**

      Please refer to the discussion, figures and tables provided in the 45-Day Report dated October 7, 1997 and the SICR dated September 21, 2023. A potable water well survey is documented within the 45-Day Report dated October 7, 1997, which identified five water wells located within one mile of the Site, the closest of which is approximately 0.5 miles from the Site. Due to the age of the potable water well survey, ETS accessed the IEPA's online Source Water Assessment Program (SWAP) database to identify the locations of source water resources potentially affected by the release. ETS confirmed that no private water supply wells or non-community water supply wells are located within 200 feet of the Site; community water supply wells (CWS) are located within 2,500 feet of the Site; nor is the Site located within any wellhead protection areas or any regulated recharge areas.

      Additionally, the Site is subject to the Village of Oak Park Ordinance No. 2001-0-107, which prohibits the potable use of groundwater occurring within the municipal boundaries as a potable source.

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**

ETS utilized the IEPA SWAP database and historical information obtained in the previously referenced reports.

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 included information obtained as a result of the survey (certification of this plan satisfies this requirement);**

Please refer to the SICR for the Professional Engineer Certification, which includes the receptor survey information.

8. **Appendices:**

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

Please refer to the figure, tables, and appendices contained within this report.

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

Please refer to previous reports for boring and well logs as no new soil borings or monitoring wells have been advanced or installed. See the Tables section for the summarized analytical results and previous reports for the laboratory analytical reports and laboratory certifications.

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

Please refer to the Figures section of this report for site maps.

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

Not applicable at this time.

11. **A description of bench/pilot studies;**

Pilot or bench studies are not proposed.

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

No physical remediation is proposed as part of corrective action activities. The proposed method of addressing soil impact consists of developing Tier 2 ROs that will be used in conjunction with pathway evaluation and exclusion as well as reliance on institutional controls.

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

a. The equations used;

Please see pathway evaluation below.

b. A discussion of how input variables were determined;

Please see pathway evaluation below.

c. Map(s) depicting distances used in equations; and

Please see pathway evaluation below.

d. Calculations; and

Please see pathway evaluation below.

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 established 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.

Alternative technologies are not being proposed at this time.

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;**

   A default value of 6,000 mg/kg for soils within the top meter and 2,000 mg/kg for soils below one meter of the surface were used. The analytical results of all soil samples collected during the site investigation did not exceed the soil attenuation capacity.

   b. **Soil saturation limit will not be exceeded for any organic contaminants;**

   The analytical results of all soil samples collected to date were compared to the TACO Tier 1 default soil saturation (C_{sat}) values as presented in 742 Appendix A, Table A. Review of the analytical data indicates no concentrations of any organic contaminants of concern exceed their respective C_{sat} values.

   c. **Contaminated soils do not exhibit any of reactivity characteristics of hazardous waste per 35 Ill. Adm. Code 721.123;**

   The COCs for this site do not exhibit any reactivity characteristics of hazardous waste based on a review of 35 IAC 721.123 subsection a) 1 through 8, and subsection b).

   d. **Contaminated soils do not exhibit a pH of ≤ 2.0 or ≥ 12.5; and**

   Based on the soils encountered during site investigation activities and since the contaminants of concern are associated with unleaded gasoline, it is unlikely for soils on-Site to exhibit corrosive or caustic characteristics.

   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 wastes per 35 Ill. Adm. Code 721.124**

   None of the constituents above are COCs at the Site; therefore, this section does not apply.

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

   Groundwater Classification

   The Site groundwater was classified as Class I groundwater based on the following criteria:

   - Hydraulic conductivity: 4.112×10^{-6} centimeters per second (cm/s), based on aquifer testing performed on monitoring well MW-3 on September 8, 2021. Refer to the SICR for the hydraulic conductivity calculations.

- Based on the results of hydraulic gradient calculations groundwater appears to flow in an easterly direction. Groundwater elevations from the gauging event that was performed on July 3, 2025 and groundwater flow direction are depicted on **Figure 7**.

- Hydraulic gradient: 0.04735 ft/ft calculated using monitoring well locations MW-1 through MW-5. Data that was used in the calculations was from a monitoring well survey and gauging event that was performed on July 3, 2025. Groundwater elevation data is included in **Table 3**. The hydraulic gradient calculations are included in **Appendix B**.

For the purposes of this project, ETS assumes groundwater at the Site meets Class I criteria as defined within 35 IAC Part 620: *Groundwater Quality*.

Soil Ingestion Exposure Route

Tier 1 Evaluation

The soil sample analytical results were compared to the IEPA Tier 1 Soil ROs for the Soil Ingestion Exposure Route. None of the collected soil samples had concentrations of BTEX or MTBE exceeding the most stringent Tier 1 SROs for the Soil Ingestion Exposure Route. No further evaluation of the Soil Ingestion Exposure Route will be performed.

Construction Worker Soil Ingestion Exposure Route

The soil sample analytical results were compared to the IEPA Tier 1 SROs for the Construction Worker Ingestion Exposure Route. None of the collected soil samples had concentrations of BTEX or MTBE exceeding the most stringent Tier 1 SROs for the Construction Worker Ingestion Exposure Route. No further evaluation of the Construction Worker Soil Ingestion Exposure Route will be performed.

Soil Inhalation Exposure Route

Tier 1 Evaluation

The soil sample analytical results were compared to the IEPA Tier 1 SROs for the Soil Inhalation Exposure Route. Benzene was identified in multiple soil samples exceeding Tier 1 Soil Inhalation ROs and are summarized in the table below:

Sample Location	Sample Depth	Date	Contaminant of Concern	Residential Soil Inhalation SROs (mg/kg)	Commercial Soil Inhalation SROs (mg/kg)	Sample Result (mg/kg)
A-3-1	2'	2/11/2016	Benzene	0.8	1.6	0.947
A-3-2	8'	2/11/2016	Benzene	0.8	1.6	2.16
A-4-1	2'	2/11/2016	Benzene	0.8	1.6	2.56
A-4-2	8'	2/11/2016	Benzene	0.8	1.6	1.13
A-4-3	12'	2/11/2016	Benzene	0.8	1.6	5.03
B-1	4'	9/2/2021	Benzene	0.8	1.6	1.18
B-1	6'	9/2/2021	Benzene	0.8	1.6	2.47
B-5	4'	9/2/2021	Benzene	0.8	1.6	1.01
B-5	6'	9/2/2021	Benzene	0.8	1.6	5.33
B-5	10.5'	9/2/2021	Benzene	0.8	1.6	4.63

Sample Location	Sample Depth	Date	Contaminant of Concern	Residential Soil Inhalation SROs (mg/kg)	Commercial Soil Inhalation SROs (mg/kg)	Sample Result (mg/kg)
B-6	4'	9/3/2021	Benzene	0.8	1.6	0.933
B-8	6'	9/3/2021	Benzene	0.8	1.6	1.42

Tier 2 Evaluation

Equation S6 (Residential & Industrial/Commercial Remediation Objectives for Carcinogenic Contaminants) was used to calculate Tier 2 Soil Inhalation SROs for Residential and Commercial properties. The table below summarizes the results:

Sample Location	Sample Depth	Date	Contaminant of Concern	Tier 2 Residential Soil Inhalation SROs (mg/kg)	Tier 2 Commercial Soil Inhalation SROs (mg/kg)	Sample Result (mg/kg)
A-3-1	2'	2/11/2016	Benzene	9.5	18.1	0.947
A-3-2	8'	2/11/2016	Benzene	9.5	18.1	2.16
A-4-1	2'	2/11/2016	Benzene	9.5	18.1	2.56
A-4-2	8'	2/11/2016	Benzene	9.5	18.1	1.13
A-4-3	12'	2/11/2016	Benzene	9.5	18.1	5.03
B-1	4'	9/2/2021	Benzene	9.5	18.1	1.18
B-1	6'	9/2/2021	Benzene	9.5	18.1	2.47
B-5	4'	9/2/2021	Benzene	9.5	18.1	1.01
B-5	6'	9/2/2021	Benzene	9.5	18.1	5.33
B-5	10.5'	9/2/2021	Benzene	9.5	18.1	4.63
B-6	4'	9/3/2021	Benzene	9.5	18.1	0.933
B-8	6'	9/3/2021	Benzene	9.5	18.1	1.42

Red = Exceeds Tier 2 Residential Soil Inhalation RO

Based on the results of the Tier 2 calculations, all of the identified exceedances are less than the calculated Tier 2 Soil Inhalation ROs for Benzene. ETS proposes to rely on the Tier 2 SROs to address the Benzene exceedances on-Site. The Tier 2 calculations are included in **Appendix C**.

Construction Worker Inhalation Exposure Route

Tier 1 Evaluation

The soil sample analytical results were compared to the IEPA Tier 1 SROs for the Construction Worker Soil Inhalation Exposure Route. One or more of the contaminates of concern (BTEX or MTBE) were identified in soil samples exceeding Tier 1 Construction Worker Soil Inhalation ROs and are summarized in the table below:

Sample Location	Sample Depth	Date	Contaminant of Concern	Construction Worker Inhalation SROs (mg/kg)	Sample Result (mg/Kg)
A-3-2	8'	2/11/2016	Total Xylenes	5.6	9.67
A-4-1	2'	2/11/2016	Benzene	2.2	2.56
A-4-3	12'	2/11/2016	Benzene	2.2	5.03
			Total Xylenes	5.6	44.9
B-1	6'	9/2/2021	Benzene	2.2	2.47
B-5	6'	9/2/2021	Benzene	2.2	5.33

Sample Location	Sample Depth	Date	Contaminant of Concern	Construction Worker Inhalation SROs (mg/kg)	Sample Result (mg/Kg)
B-5	10.5'	9/2/2021	Benzene	2.2	4.63
B-6	4'	9/3/2021	Total Xylenes	5.6	10.1

Tier 2 Evaluation

Equation S7 (Remediation Objectives for Carcinogenic Contaminants – Construction Worker) and Equation S5 (Remediation Objectives for Noncarcinogenic Contaminants – Construction Worker) was used to calculate a Tier 2 Soil Inhalation ROs for construction worker populations. The table below summarizes the results:

Sample Location	Sample Depth	Date	Contaminant of Concern	Tier 2 Construction Worker Inhalation SROs (mg/kg)	Sample Result (mg/Kg)
A-3-2	8'	2/11/2016	Total Xylenes	249	9.67
A-4-1	2'	2/11/2016	Benzene	25.5	2.56
A-4-3	12'	2/11/2016	Benzene	25.5	5.03
			Total Xylenes	249	44.9
B-1	6'	9/2/2021	Benzene	25.5	2.47
B-5	6'	9/2/2021	Benzene	25.5	5.33
B-5	10.5'	9/2/2021	Benzene	25.5	4.63
B-6	4'	9/3/2021	Total Xylenes	249	10.1

Red = Exceeds Tier 2 Construction Worker Soil Inhalation RO

Based on the results of the Tier 2 calculations all of the identified soil exceedances are less than the Tier 2 ROs for the Construction Worker Soil Inhalation Exposure Route. The Tier 2 calculations are included in **Appendix C**.

Soil Component to the Groundwater Ingestion Exposure Route

Tier 1 Evaluation

The soil sample analytical results were compared to the IEPA Tier 1 SROs for the Soil Component of the Class I Groundwater Ingestion Exposure Route. One or more of the contaminates of concern (BTEX and MTBE) were identified in soil samples exceeding Tier 1 Soil Component of Class I Groundwater Ingestion ROs and are summarized in the table below:

Sample Location	Sample Depth	Date	Contaminant of Concern	Soil Component of Class I Groundwater Ingestion SROs (mg/Kg)	Sample Result (mg/Kg)
A-3-1	2'	2/11/2016	Benzene	0.03	0.947
			Ethylbenzene	13	27.7
A-3-2	8'	2/11/2016	Benzene	0.03	2.16
A-4-1	2'	2/11/2016	Benzene	0.03	2.56
A-4-2	8'	2/11/2016	Benzene	0.03	1.13
A-4-3	12'	2/11/2016	Benzene	0.03	5.03
B-1	4'	9/2/2021	Benzene	0.03	1.18
B-1	6'	9/2/2021	Benzene	0.03	2.47
			Ethylbenzene	13	35.2
B-2	3'	9/3/2021	Benzene	0.03	0.298
B-5	4'	9/2/2021	Benzene	0.03	1.01
B-5	6'	9/2/2021	Benzene	0.03	5.33

Sample Location	Sample Depth	Date	Contaminant of Concern	Soil Component of Class I Groundwater Ingestion SROs (mg/Kg)	Sample Result (mg/Kg)
B-5	10.5'	9/2/2021	Benzene	0.03	4.63
B-6	4'	9/3/2021	Benzene	0.03	0.933
			Ethylbenzene	13	17.2
B-6	8'	9/3/2021	Benzene	0.03	0.0554
B-7	4'	9/2/2021	Benzene	0.03	0.215
B-7	8'	9/2/2021	Benzene	0.03	0.05
B-8	4.5'	9/2/2021	Benzene	0.03	0.66
B-8	6'	9/3/2021	Benzene	0.03	1.42

Tier 2 Evaluation

Equation S28 was used to calculate the potential leachate concentration for each sample location exceeding the Tier 1 Class I SROs. The potential leachate concentrations, based on S28 equation, are summarized in the table below:

Sample Location	Sample Depth	Contaminant of Concern	Groundwater Ingestion Class I ROs (mg/L)	Potential Leachate Concentration (mg/L)
A-3-1	2'	Benzene	0.005	0.023
		Ethylbenzene	0.7	0.7
A-3-2	8'	Benzene	0.005	0.052
A-4-1	2'	Benzene	0.005	0.061
A-4-2	8'	Benzene	0.005	0.027
A-4-3	12'	Benzene	0.005	0.120
B-1	4'	Benzene	0.005	0.028
B-1	6'	Benzene	0.005	0.059
		Ethylbenzene	0.7	0.8
B-2	3'	Benzene	0.005	0.007
B-5	4'	Benzene	0.005	0.024
B-5	6'	Benzene	0.005	0.128
B-5	10.5'	Benzene	0.005	0.111
B-6	4'	Benzene	0.005	0.022
		Ethylbenzene	0.7	0.4
B-6	8'	Benzene	0.005	0.001
B-7	4'	Benzene	0.005	0.005
B-7	8'	Benzene	0.005	0.001
B-8	4.5'	Benzene	0.005	0.016
B-8	6'	Benzene	0.005	0.034

Red = Exceeds Class I Groundwater Ingestion RO

As indicated in the above table, fifteen (15) soil sample locations had predicted leachate concentrations exceeding Class I Groundwater Remediation Objectives (GROs). Additional evaluation of these exceedances was performed using Equation R26 to determine the maximum extent of impact (see below). The remaining sample locations had predicted leachate concentrations that were less than Class I GROs and further evaluation of these locations will not be performed.

Sample Location	Sample Depth	Contaminant of Concern	Distance to Compliance	Concentration at Distance (mg/L)
A-3-1	2'	Benzene	3-feet	0.005
A-3-2	8'	Benzene	5-feet	0.005
A-4-1	2'	Benzene	5.5-feet	0.005

Sample Location	Sample Depth	Contaminant of Concern	Distance to Compliance	Concentration at Distance (mg/L)
A-4-2	8'	Benzene	3.5-feet	0.005
A-4-3	12'	Benzene	7-feet	0.005
B-1	4'	Benzene	3.5-feet	0.005
B-1	6'	Benzene	5.25-feet	0.005
		Ethylbenzene	0.04-feet	0.7
B-2	3'	Benzene	0.6-feet	0.005
B-5	4'	Benzene	3-feet	0.005
B-5	6'	Benzene	7.5-feet	0.005
B-5	10.5'	Benzene	7-feet	0.005
B-6	4'	Benzene	2.75-feet	0.005
B-8	4.5'	Benzene	2.25-feet	0.005
B-8	6'	Benzene	4-feet	0.005

Based on the results of the R26 calculations, the maximum distance to meet compliance with Class I GROs is 7.5-feet from soil sample location B-5 6'. On-Site soil impacts as well as the modeled extent of impacts will be addressed by relying on the Village of Oak Park groundwater Ordinance No. 2001-0-107. The maximum predicted extent of impacts is depicted on **Figure 8**. The Tier 2 calculations are included in **Appendix C**.

Groundwater Component of the Groundwater Ingestion Exposure Route

Tier 1 Evaluation

The groundwater analytical results were compared to the Tier 1 Class I GROs. The following groundwater samples had concentrations of one or more of the contaminates of concern exceeding Class I GROs and are summarized below:

Sample Location	Date	Contaminant of Concern	Groundwater Ingestion Class I ROs (mg/L)	Sample Result (mg/L)
MW-1	9/8/2021	Benzene	0.005	0.0548
MW-4	9/8/2021	Benzene	0.005	0.0078
MW-5	9/8/2021	Benzene	0.005	0.0205

No other Groundwater samples had concentrations of BTEX or MTBE exceeding the Tier 1 Class I GROs. Further evaluation of the identified exceedances will be provided below. The Class I groundwater exceedances are depicted on **Figure 4**.

Tier 2 Evaluation

Equation R26 was used to calculate the maximum predicted extent of groundwater impacts exceeding Class I GROs. The results of the calculations are summarized below:

Sample Location	Date	Contaminant of Concern	Distance to Compliance	Concentration at Distance (mg/L)
MW-1	9/8/2021	Benzene	5-feet	0.005
MW-4	9/8/2021	Benzene	0.75-feet	0.005
MW-5	9/8/2021	Benzene	2.75-feet	0.005

Based on the results of the R26 calculations, the maximum distance to meet compliance with Class I GROs is 5-feet from monitoring well location MW-1. It is important to note the MW-1 location was resampled in 2021 with concentrations lower than previously reported. The identified groundwater exceedances and the extent of modeled groundwater impacts will be addressed by relying on the Village of Oak Park Groundwater Ordinance No. 2001-0-107. The maximum predicted extent of impacts is depicted on **Figure 8**.

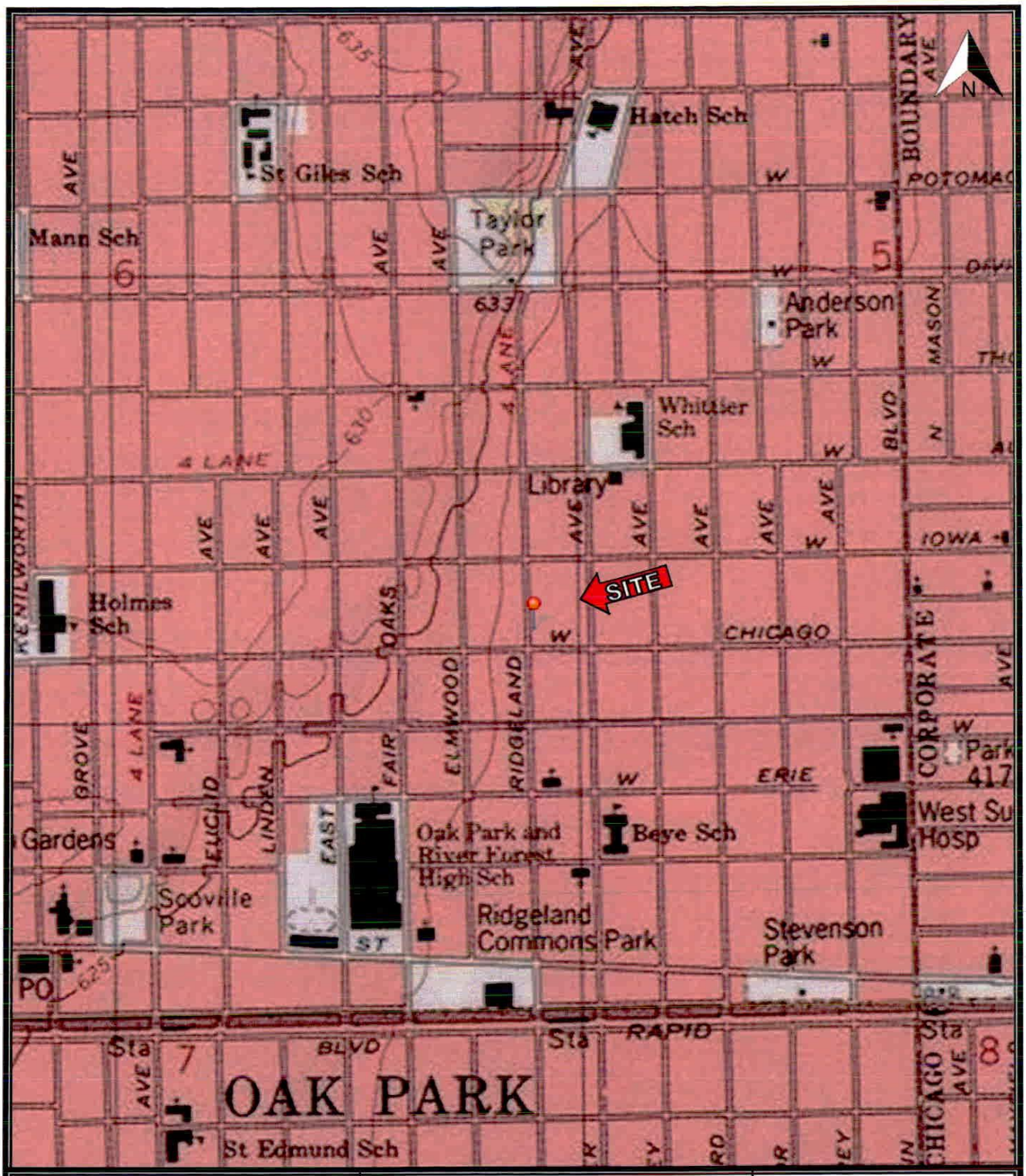
Groundwater Indoor Inhalation Exposure Route

The groundwater analytical results were compared to the IEPA Tier 1 GROs for the Indoor Inhalation Exposure Route. None of the collected groundwater samples had concentrations of BTEX or MTBE exceeding the most stringent Tier 1 GROs for the Indoor Inhalation Exposure Route. No further evaluation of the Groundwater Indoor Inhalation Exposure Route will be performed.

Conclusions

Based on the results of Tier 2 calculations above, the exposure pathways will be excluded by the following institutional controls: HAAs and the Village of Oak Park Groundwater Ordinance No. 2001-0-107. Upon completion of proposed activities, a Corrective Action Completion Report (CACR) will be prepared and submitted for IEPA review and approval. The locations of the HAA areas are depicted on **Figure 9**. A draft HAA for the Village of Oak Park that includes an area within the right-of-way of Chicago Avenue is included in **Appendix D**. A copy of the Village of Oak Park groundwater Ordinance No. 2001-0-107 is included in **Appendix E**. The proposed costs associated with this CAP are included in **Appendix F**.

FIGURES



ETS ENVIRONMENTAL & ASSOCIATES, LLC

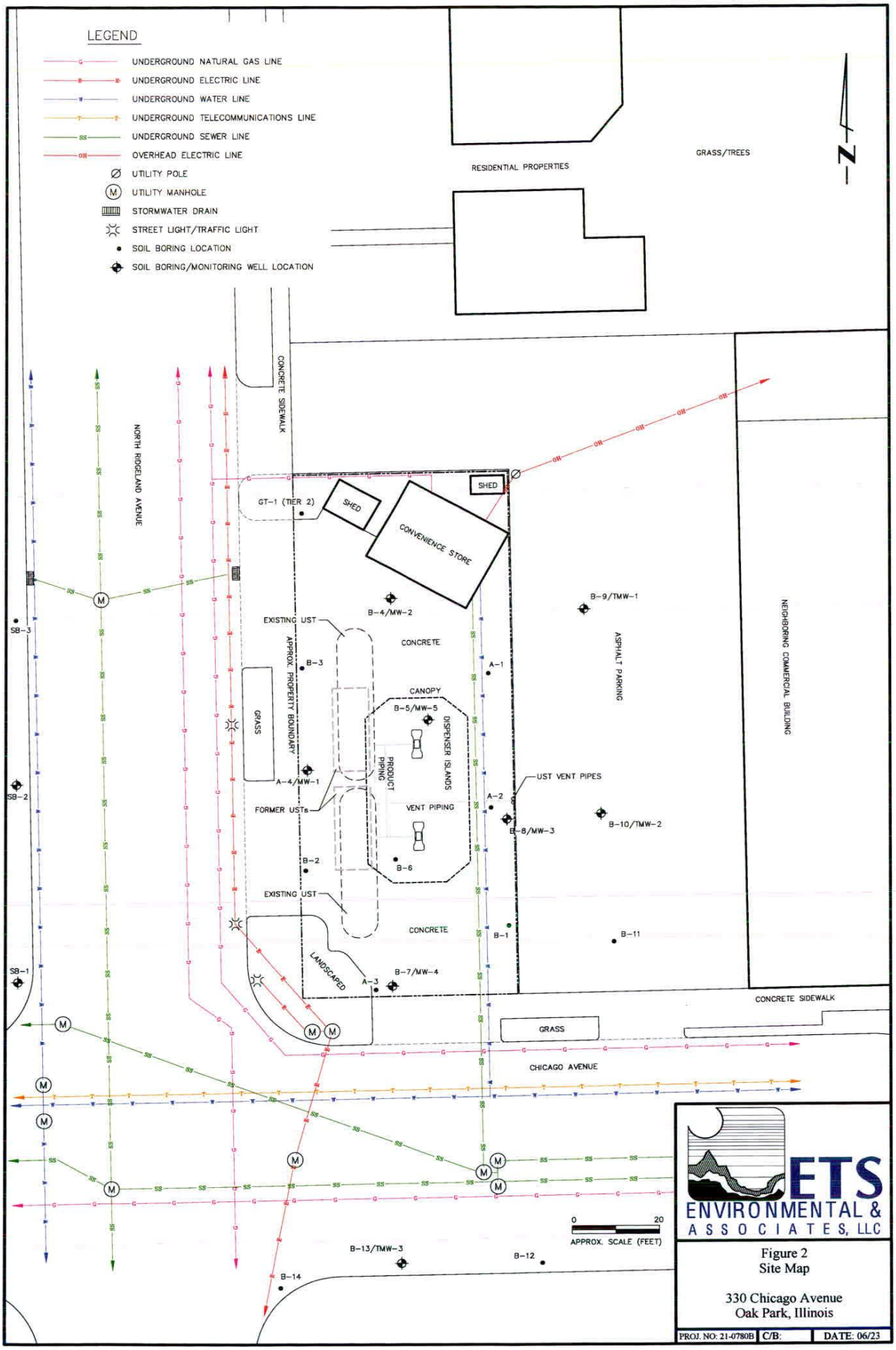
FIGURE 1

SITE LOCATION MAP

330 WEST CHICAGO AVENUE
OAK PARK, ILLINOIS

APPROXIMATE SCALE
0.2mi

MAP DATE
2013



ETS ENVIRONMENTAL & ASSOCIATES, LLC

Figure 2
Site Map

330 Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780B	C/B:	DATE: 06/23

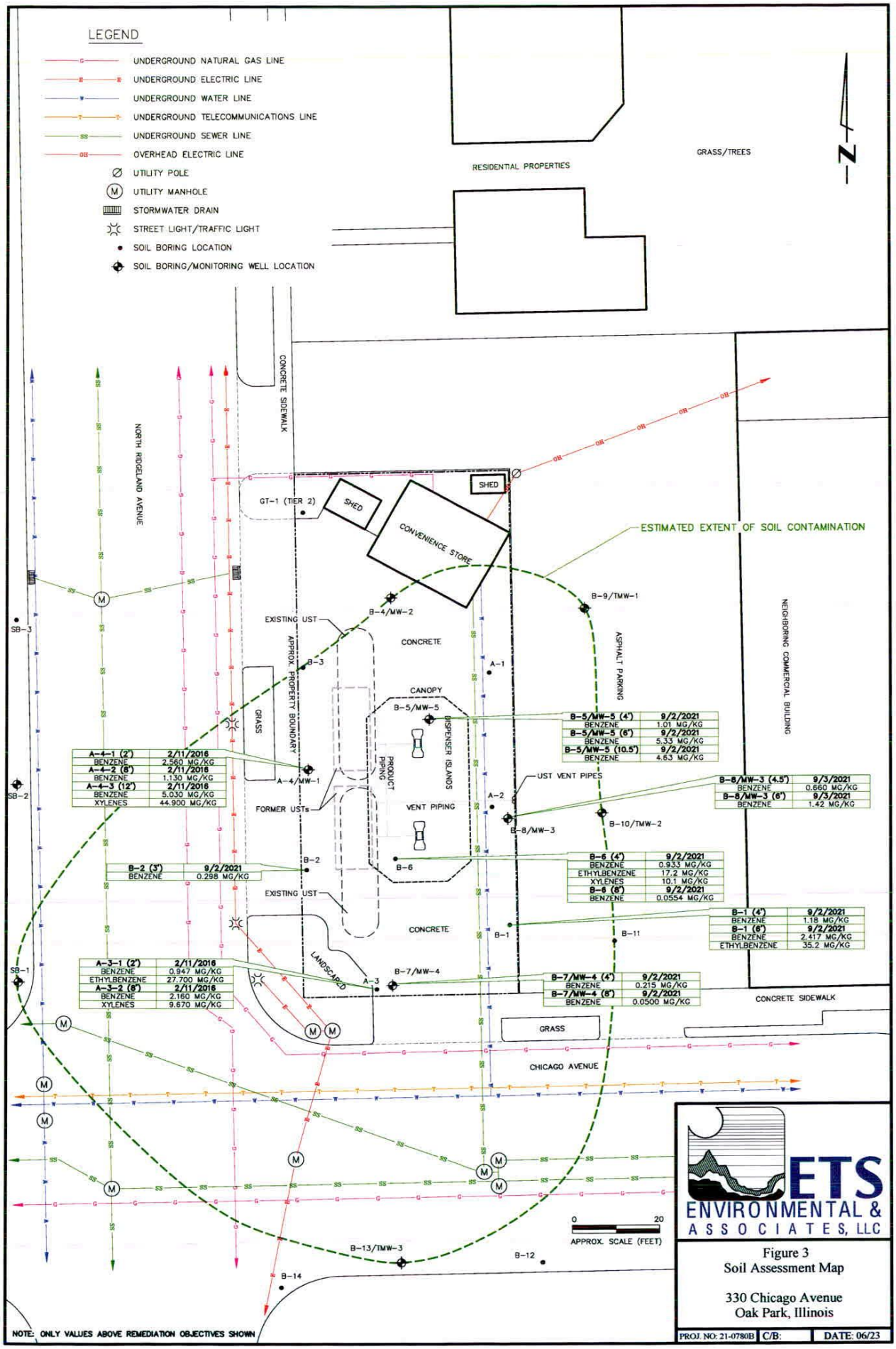


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Figure 3
Soil Assessment Map

330 Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780B	C/B:	DATE: 06/23

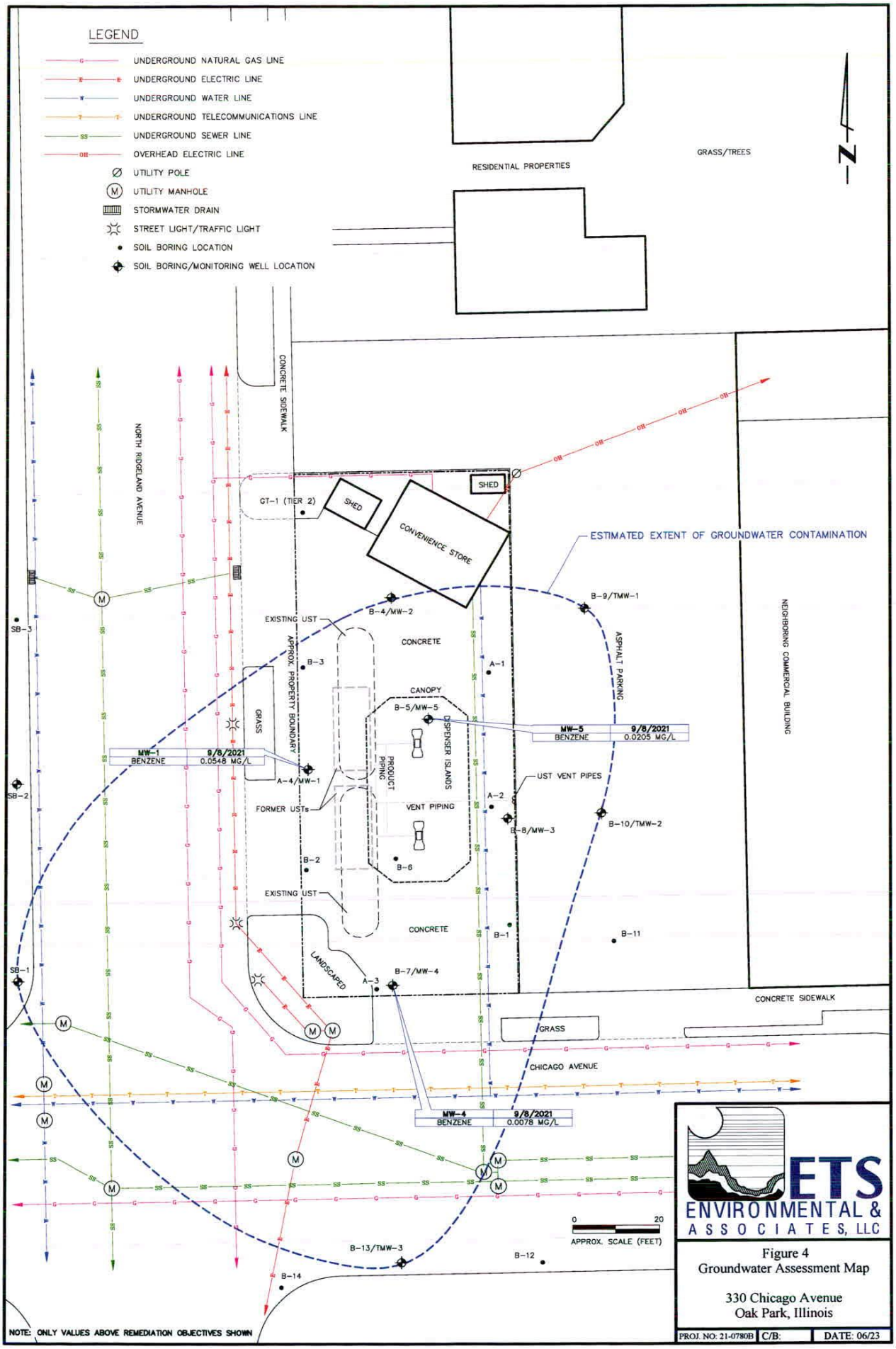

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Figure 4
Groundwater Assessment Map

330 Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780B	C/B:	DATE: 06/23

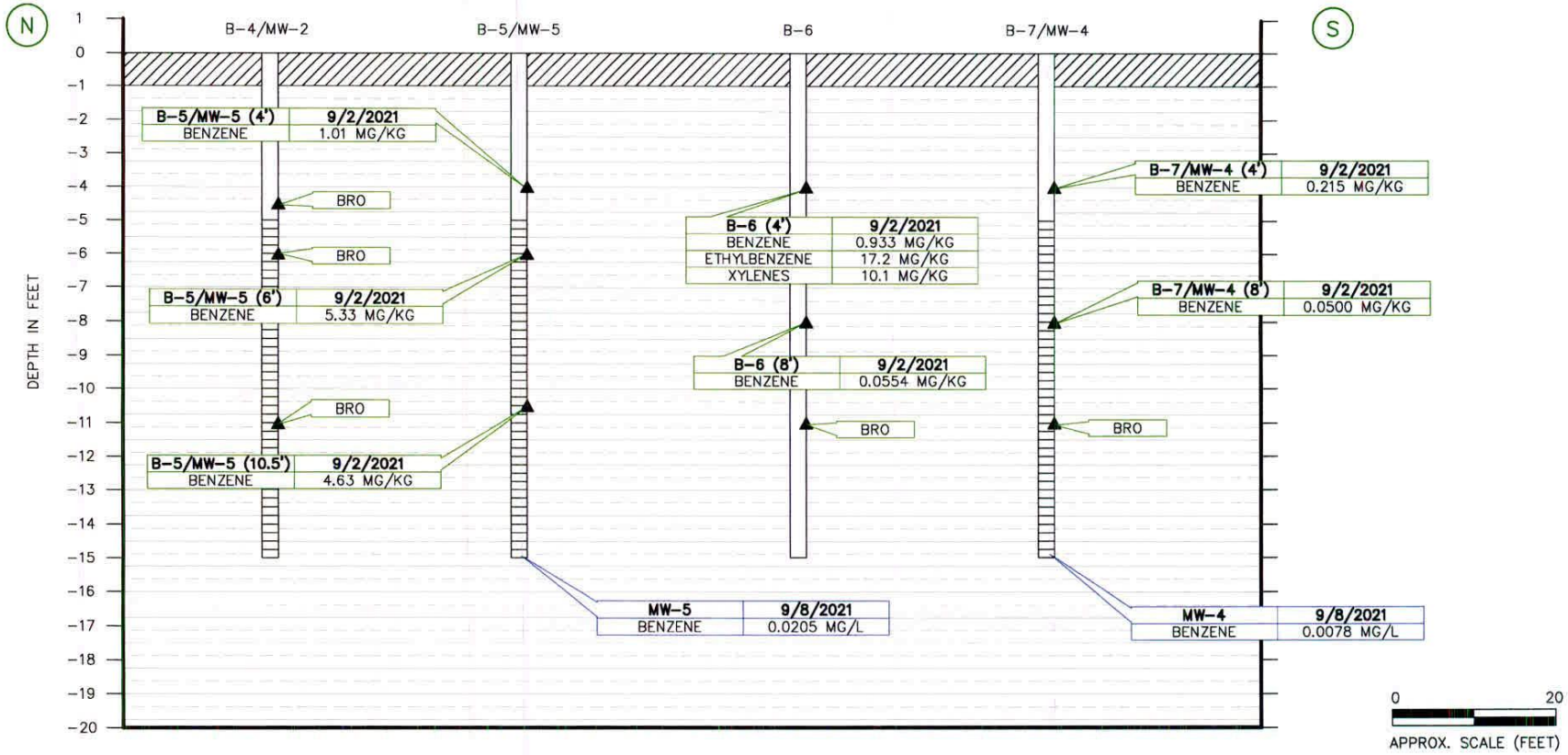

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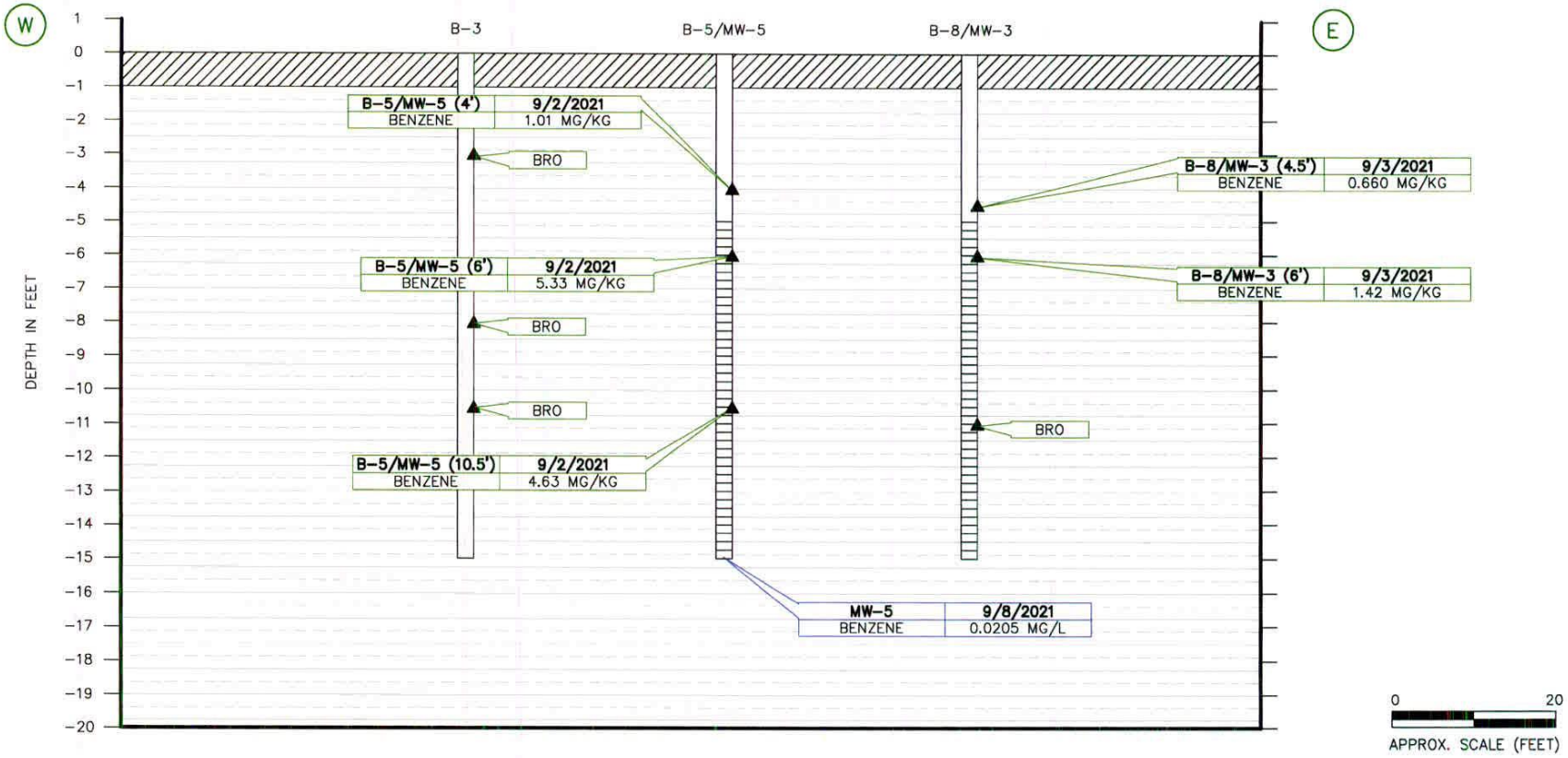
Figure 5
Geologic Cross Section Map
(North - South)
330 West Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780A	C/B:	DATE: 09/21



CONCRETE (UNDERLAIN BY SAND AND GRAVEL FILL)

SILTY CLAY

▲ SOIL SAMPLE LOCATION

SOIL ANALYTICAL RESULT

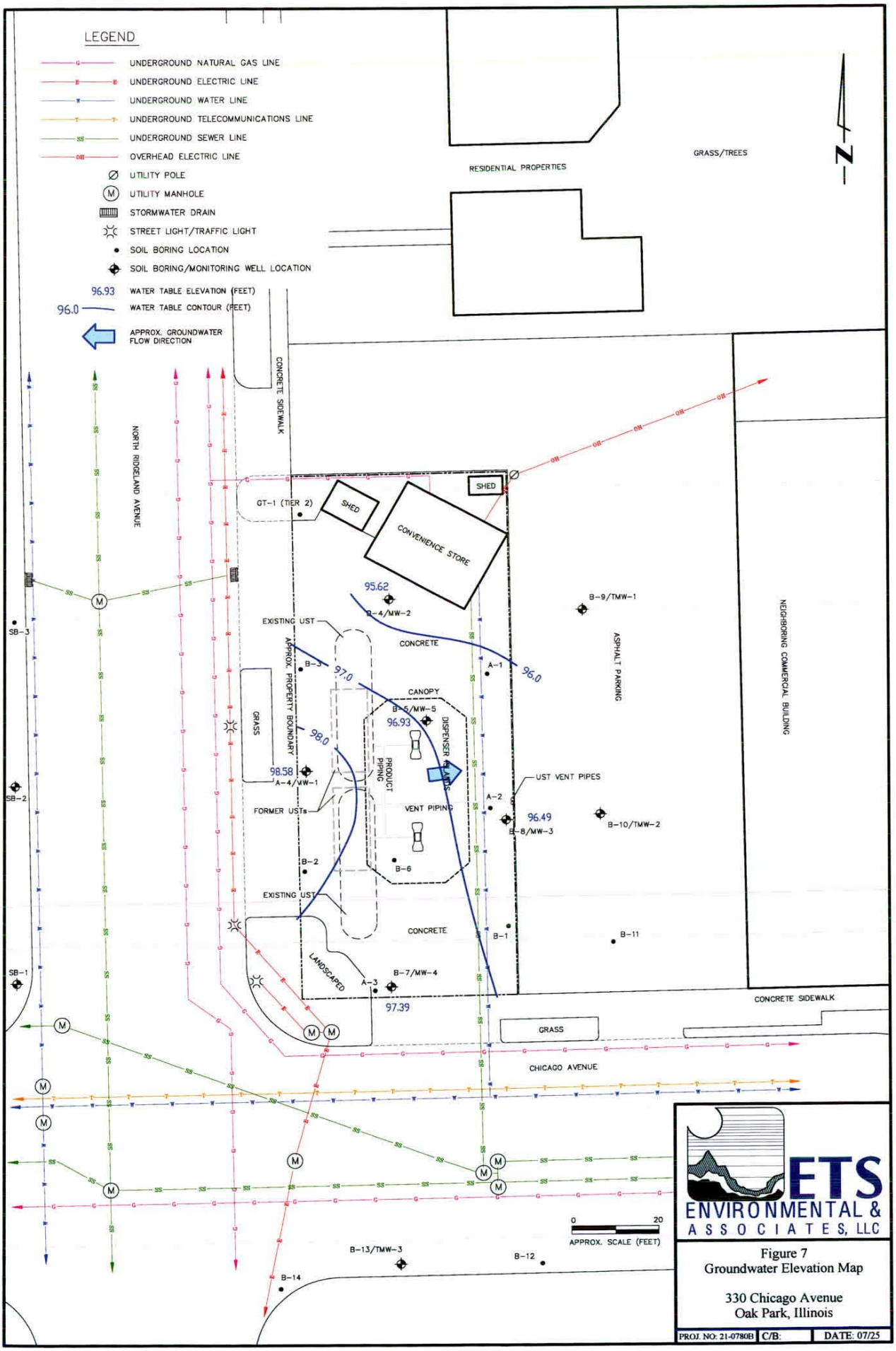
GROUNDWATER ANALYTICAL RESULT

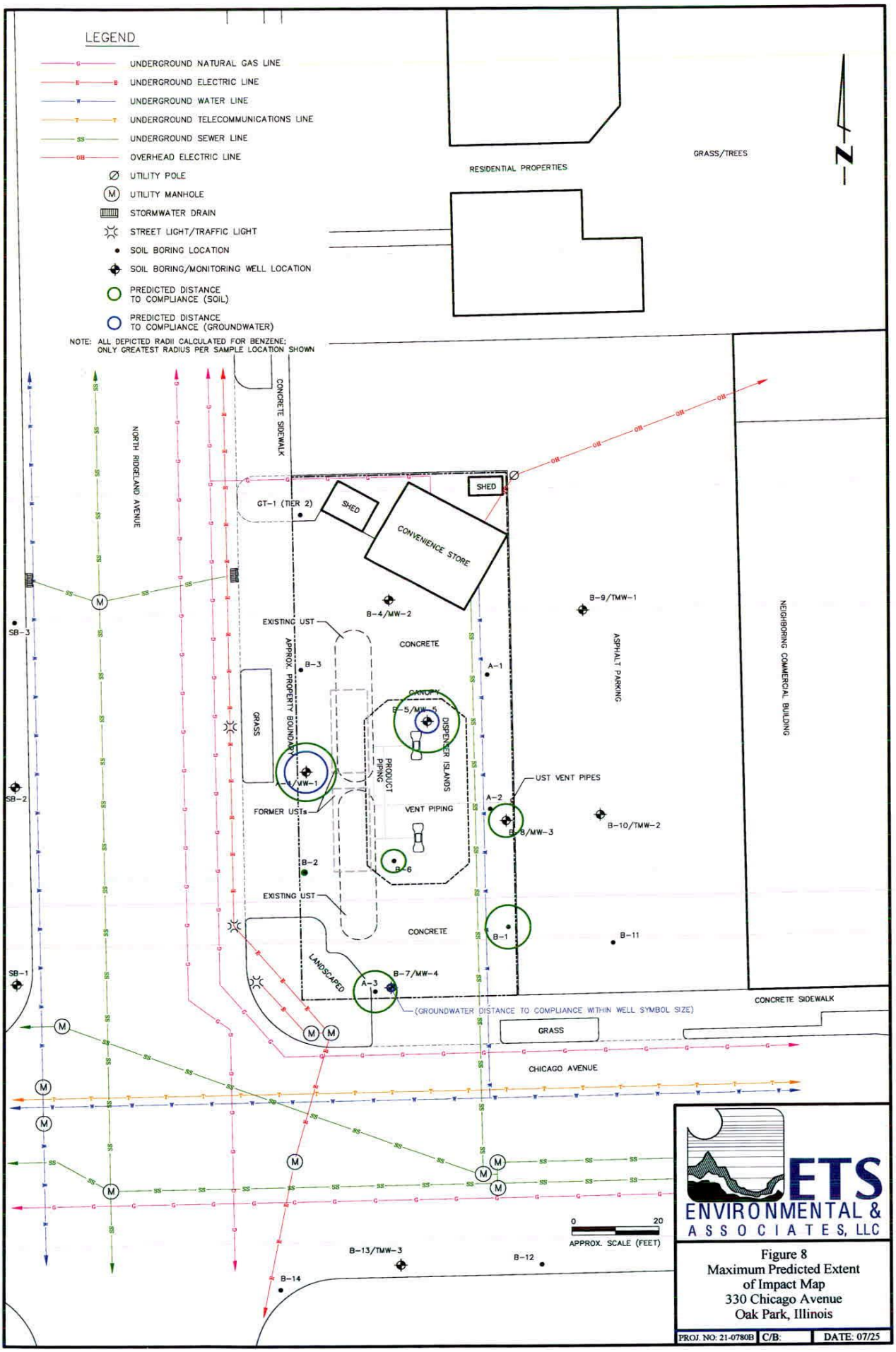
BRO BELOW REMEDIATION OBJECTIVES

ETS ENVIRONMENTAL & ASSOCIATES, LLC

Figure 6
Geologic Cross Section Map
(West - East)
330 West Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780A	C/B:	DATE: 09/21


LEGEND
UNDERGROUND NATURAL GAS LINE
UNDERGROUND ELECTRIC LINE
UNDERGROUND WATER LINE
UNDERGROUND TELECOMMUNICATIONS LINE
UNDERGROUND SEWER LINE
OVERHEAD ELECTRIC LINE
UTILITY POLE
UTILITY MANHOLE
STORMWATER DRAIN
STREET LIGHT/TRAFFIC LIGHT
SOIL BORING LOCATION
SOIL BORING/MONITORING WELL LOCATION
96.93 WATER TABLE ELEVATION (FEET)
96.0 WATER TABLE CONTOUR (FEET)
APPROX. GROUNDWATER FLOW DIRECTION
N
RESIDENTIAL PROPERTIES
GRASS/TREES
CONCRETE SIDEWALK
NORTH RIDGELAND AVENUE
GT-1 (TIER 2)
SHED
SHED
CONVENIENCE STORE
95.62
B-4/MW-2
B-9/TMW-1
EXISTING UST
CONCRETE
ASPHALT PARKING
NEIGHBORING COMMERCIAL BUILDING
SB-3
APPROX. PROPERTY BOUNDARY
B-3
97.0
A-1
96.0
CANOPY
B-5/MW-5
96.93
DISPENSER ISLANDS
GRASS
98.0
98.58
A-4/MW-1
PRODUCT PIPING
UST VENT PIPES
SB-2
FORMER USTs
VENT PIPING
A-2
96.49
B-8/MW-3
B-10/TMW-2
B-2
B-6
EXISTING UST
CONCRETE
B-1
B-11
SB-1
LANDSCAPED
A-3
B-7/MW-4
97.39
CONCRETE SIDEWALK
GRASS
CHICAGO AVENUE
0
20
APPROX. SCALE (FEET)
B-13/TMW-3
B-12
B-14
ETS
ENVIRONMENTAL &
ASSOCIATES, LLC
Figure 7
Groundwater Elevation Map
330 Chicago Avenue
Oak Park, Illinois
PROJ. NO: 21-0780B
C/B:
DATE: 07/25



ETS ENVIRONMENTAL & ASSOCIATES, LLC

Figure 8
Maximum Predicted Extent of Impact Map
330 Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780B	C/B:	DATE: 07/25

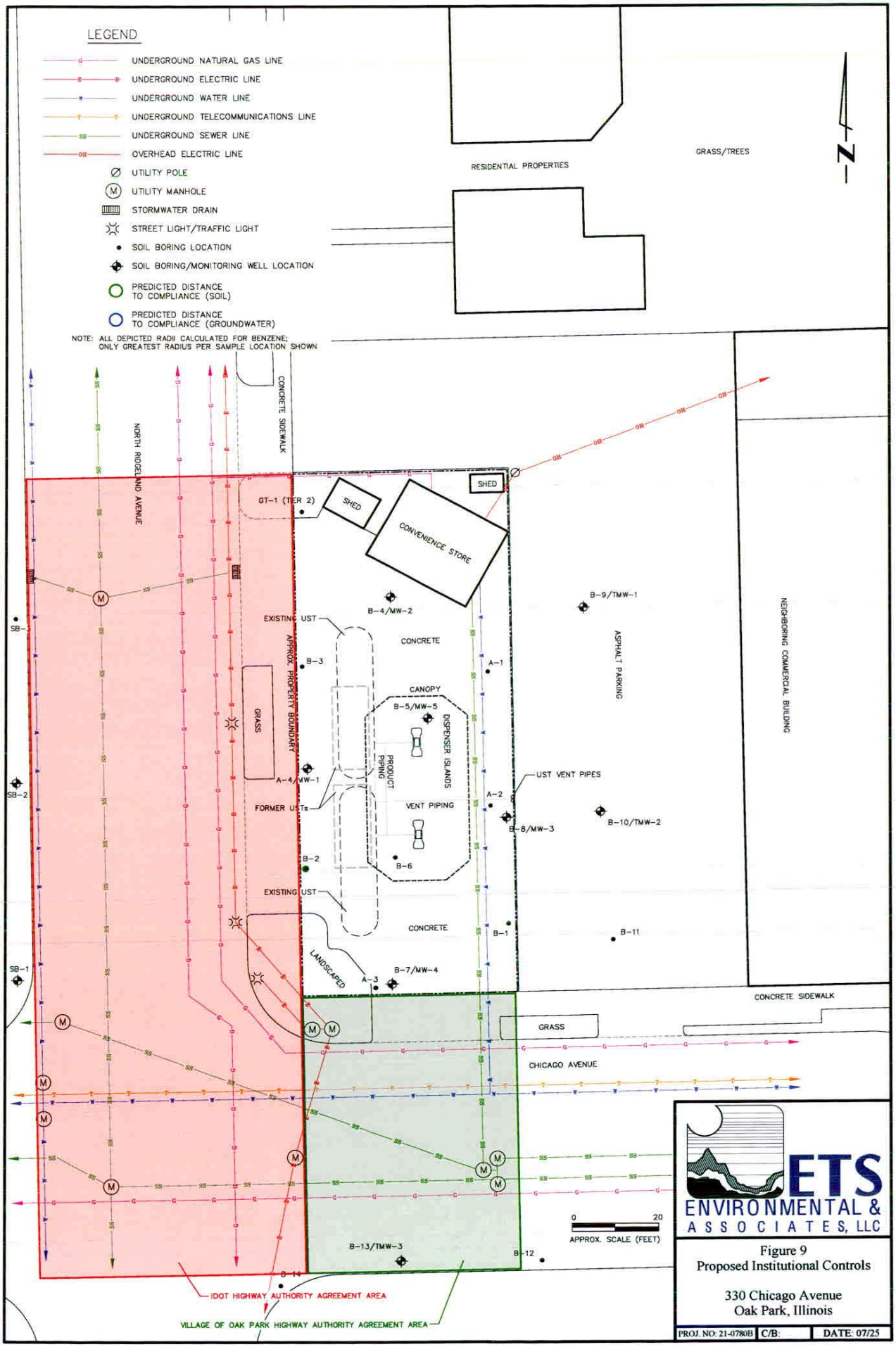


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Figure 9
Proposed Institutional Controls

330 Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780B	C/B:	DATE: 07/25

TABLES

Table 1

Soil BTEX/MTBE Analytical Results
330 Chicago Avenue
Oak Park, Illinois
Project No. 21-0780B

SAMPLE ID	DATE	DEPTH (FEET)	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
A-1-1	02/11/16	2'	<0.005	<0.005	<0.005	<0.005	<0.005
A-1-2	02/11/16	8'	<0.005	<0.005	<0.005	<0.005	<0.005
A-1-3	02/11/16	12'	<0.005	<0.005	<0.005	<0.005	<0.005
A-2-1	02/11/16	2'	0.0122	<0.005	<0.005	<0.005	<0.005
A-2-2	02/11/16	7.5'	<0.005	<0.005	<0.005	<0.005	<0.005
A-2-3	02/11/16	12.5'	<0.005	<0.005	<0.005	<0.005	<0.005
A-3-1	02/11/16	2'	0.947 [1,2,6]	<0.005	27.7 [1,2]	0.591	<0.32
A-3-2	02/11/16	8'	2.16 [1,2,6,7]	<0.005	3.78	9.67 [8]	<0.32
A-3-3	02/11/16	12'	0.0056	<0.005	<0.005	0.0075	<0.005
A-4-1	02/11/16	2'	2.56 [1,2,6,7,8]	0.573	2.58	2.88	<0.32
A-4-2	02/11/16	8'	1.13 [1,2,6]	<0.005	<0.5	<0.500	<0.32
A-4-3	02/11/16	12'	5.03 [1,2,6,7,8]	<0.005	10.2	44.9 [8]	<0.32
B-1	09/02/21	4'	1.18 [1,2,6]	<0.5	1.61	<0.5	<0.32
B-1	09/02/21	6'	2.47 [1,2,6,7,8]	<0.5	35.2 [1,2]	0.78	<0.32
B-1	09/02/21	11'	0.0126	<0.005	0.0659	0.0212	<0.005
B-2	09/03/21	3'	0.298 [1,2]	0.373	1.3	0.74	<0.32
B-2	09/03/21	5.5'	0.0128	0.0057	<0.005	0.0114	<0.005
B-2	09/03/21	10.5'	<0.005	<0.005	<0.005	<0.005	<0.005
B-3	09/02/21	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-3	09/02/21	8'	<0.005	<0.005	<0.005	<0.005	<0.005
B-3	09/02/21	10.5'	<0.005	<0.005	<0.005	<0.005	<0.005
B-4/MW-2	09/02/21	4.5'	<0.005	<0.005	<0.005	<0.005	<0.005
B-4/MW-2	09/02/21	6'	<0.005	<0.005	<0.005	0.0102	<0.005
B-4/MW-2	09/02/21	11'	<0.005	<0.005	<0.005	<0.005	<0.005
B-5/MW-5	09/02/21	4'	1.01 [1,2,6]	<0.5	0.863	<0.5	<0.32
B-5/MW-5	09/02/21	6'	5.33 [1,2,6,7,8]	<0.5	2.59	2.39	<0.32
B-5/MW-5	09/02/21	10.5'	4.63 [1,2,6,7,8]	<0.5	2.71	1.8	<0.32
B-6	09/03/21	4'	0.933 [1,2,6]	<0.5	17.2 [1]	10.1 [8]	<0.32
B-6	09/03/21	8'	0.0554 [1]	<0.005	<0.005	<0.005	<0.005
B-6	09/03/21	11'	<0.005	<0.005	<0.005	<0.005	<0.005
SOIL COMPONENT TO GROUNDWATER INGESTION	**CLASS I**		**0.03**	**12**	**13**	**150**	**0.32**
	CLASS II		**0.17**	**29**	**19**	**150**	**0.32**
INGESTION REMEDIATION OBJECTIVES	**RESIDENTIAL**		**12**	**16,000**	**7,800**	**16,000**	**780**
	COMMERCIAL		**100**	**410,000**	**200,000**	**410,000**	**20,000**
	CONSTRUCTION		**2,300**	**410,000**	**20,000**	**41,000**	**2,000**
INHALATION REMEDIATION OBJECTIVES	**RESIDENTIAL**		**0.8**	**650**	**400**	**320**	**8,800**
	COMMERCIAL		**1.6**	**650**	**400**	**320**	**8,800**
	CONSTRUCTION		**2.2**	**42**	**58**	**5.6**	**140**

1-Class I Soil Component to Groundwater Remediation Objective exceeded

2-Class II Soil Component to Groundwater Remediation Objective exceeded

3-Residential Ingestion Remediation Objective exceeded

4-Commercial Ingestion Remediation Objective exceeded

5-Construction Worker Ingestion Remediation Objective exceeded

6-Residential Inhalation Remediation Objective exceeded

7-Commercial Inhalation Remediation Objective Exceeded

8-Construction Worker Inhalation Remediation Objective exceeded

Results in mg/kg

ETS ENVIRONMENTAL & ASSOCIATES, LLC

Soil BTEX/MTBE Analytical Results
330 Chicago Avenue
Oak Park, Illinois
Project No. 21-0780B

SAMPLE ID	DATE	DEPTH (FEET)	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
B-7/MW-4	09/02/21	4'	**0.215** [1,2]	**1.12**	**1.46**	**1.45**	<0.32
B-7/MW-4	09/02/21	8'	**0.05** [1]	<0.005	<0.005	<0.005	<0.005
B-7/MW-4	09/02/21	11'	**0.0057**	**0.0056**	<0.005	**0.0125**	<0.005
B-8/MW-3	09/03/21	4.5'	**0.66** [1,2]	<0.5	**0.744**	<0.5	<0.32
B-8/MW-3	09/03/21	6'	**1.42** [1,2,6]	<0.5	<0.5	<0.5	<0.32
B-8/MW-3	09/03/21	11'	<0.005	<0.005	<0.005	<0.005	<0.005
GT-1	09/02/21	8'	<0.005	<0.005	<0.005	<0.005	<0.005
SB-1	08/16/22	4.5'	<0.005	<0.005	<0.005	<0.005	<0.005
SB-2	08/16/22	3'	<0.005	<0.005	<0.005	<0.005	<0.005
SB-3	08/16/22	3.5'	<0.005	<0.005	<0.005	<0.005	<0.005
B-9	02/02/23	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-9	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-9	02/02/23	13'	<0.005	<0.005	<0.005	<0.005	<0.005
B-10	02/02/23	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-10	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-10	02/02/23	13'	<0.005	<0.005	<0.005	<0.005	<0.005
B-11	02/02/23	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-11	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-11	02/02/23	13'	<0.005	<0.005	<0.005	<0.005	<0.005
B-12	02/02/23	4'	<0.005	<0.005	<0.005	<0.005	<0.005
B-12	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-12	02/02/23	11'	<0.005	<0.005	<0.005	<0.005	<0.005
B-13	02/02/23	4'	<0.005	<0.005	<0.005	<0.005	<0.005
B-13	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-13	02/02/23	14'	<0.005	<0.005	<0.005	<0.005	<0.005
B-14	02/02/23	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-14	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-14	02/02/23	12'	<0.005	<0.005	<0.005	<0.005	<0.005
SOIL COMPONENT TO GROUNDWATER INGESTION	**CLASS I**		**0.03**	**12**	**13**	**150**	**0.32**
	CLASS II		**0.17**	**29**	**19**	**150**	**0.32**
INGESTION REMEDIATION OBJECTIVES	**RESIDENTIAL**		**12**	**16,000**	**7,800**	**16,000**	**780**
	COMMERCIAL		**100**	**410,000**	**200,000**	**410,000**	**20,000**
	CONSTRUCTION		**2,300**	**410,000**	**20,000**	**41,000**	**2,000**
INHALATION REMEDIATION OBJECTIVES	**RESIDENTIAL**		**0.8**	**650**	**400**	**320**	**8,800**
	COMMERCIAL		**1.6**	**650**	**400**	**320**	**8,800**
	CONSTRUCTION		**2.2**	**42**	**58**	**5.6**	**140**

Results in mg/kg

1-Class I Soil Component to Groundwater Remediation Objective exceeded
2-Class II Soil Component to Groundwater Remediation Objective exceeded
3-Residential Ingestion Remediation Objective exceeded
4-Commercial Ingestion Remediation Objective exceeded
5-Construction Worker Ingestion Remediation Objective exceeded
6-Residential Inhalation Remediation Objective exceeded
7-Commercial Inhalation Remediation Objective Exceeded
8-Construction Worker Inhalation Remediation Objective exceeded

ETS ENVIRONMENTAL & ASSOCIATES, LLC

Groundwater BTEX/MTBE Analytical Results
330 Chicago Avenue
Oak Park, Illinois
Project No. 21-0780A

SAMPLE ID	DATE	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
MW-1	03/09/16	**0.4430** [1,2]	**0.0292**	**0.0121**	**0.0237**	<0.005
MW-1	09/08/21	**0.0548** [1,2]	<0.005	<0.005	**0.0076**	<0.005
MW-2	09/08/21	<0.005	<0.005	<0.005	<0.005	<0.005
MW-3	09/08/21	<0.005	<0.005	<0.005	<0.005	<0.005
MW-4	09/08/21	**0.0078** [1]	<0.005	<0.005	<0.005	<0.005
MW-5	09/08/21	**0.0205** [1]	<0.005	<0.005	<0.005	<0.005
SB-1	8/16/2022	<0.005	<0.005	<0.005	<0.005	<0.005
SB-2	8/16/2022	<0.005	<0.005	<0.005	<0.005	<0.005
TMW-1	02/02/23	<0.005	<0.005	<0.005	<0.005	<0.005
TMW-2	02/02/23	<0.005	<0.005	<0.005	<0.005	<0.005
TMW-3	02/02/23	<0.005	<0.005	<0.005	<0.005	<0.005
GROUNDWATER REMEDIATION OBJECTIVES	**CLASS I**	**0.005**	**1**	**0.7**	**10**	**0.07**
	CLASS II	**0.025**	**2.5**	**1**	**10**	**0.07**
GROUNDWATER INDOOR INHALATION	**Residential**	**0.11**	**530**	**0.37**	**30**	**1,900**
	Commercial	**0.41**	**530**	**1.4**	**93**	**6,800**

Units in mg/L

1 = Class I Remediation Objectives exceeded
2 = Class II Remediation Objectives exceeded
3 = Residential GW Indoor Inhalation Objectives exceeded
4 = Commercial GW Indoor Inhalation Objectives exceeded
* This site has been evaluated based on Class I Remediation Objectives

ETS ENVIRONMENTAL & ASSOCIATES, LLC

Table 3

Groundwater Elevation Data
330 Chicago Avenue
Oak Park, Illinois
Project No. 21-0780A

WELL ID	TOP OF CASING ELEVATION (FEET)	DEPTH TO BOTTOM OF WELL (FEET BTOC)	DEPTH TO GROUNDWATER (FEET BTOC)	GROUNDWATER ELEVATION (FEET)
MW-1	100.00	15.24	1.41	98.59
MW-2	100.44	15.41	4.82	95.62
MW-3	100.46	15.09	3.97	96.49
MW-4	100.19	15.15	2.80	97.39
MW-5	100.52	15.42	3.59	96.93

BTOC = Below the top of casing

Groundwater gauging performed on July 3, 2025

ETS ENVIRONMENTAL & ASSOCIATES, LLC

APPENDIX A

IEPA Correspondence dated October 11, 2023

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
7022 1670 0001 4381 8815

OCT 11 2023

Hardeep Singh
Hargobind, Inc.
330 Chicago Avenue
Oak Park, IL 60302

Re: 0312255051 -- Cook County
Oak Park/GoLo Gas Station
330 Chicago Avenue
Leaking UST Incident 971663
Leaking UST Technical File

Dear Mr. Singh:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Site Investigation Completion Report (report) submitted for the above-referenced incident. This report, dated June 5, 2023, was received by the Illinois EPA on June 14, 2023. 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 Illinois EPA has determined that the requirements of Title XVI of the Act have been satisfied (Sections 57.7(a)(5) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(a)). Therefore, the report is approved.

Pursuant to Sections 57.7(b)(2) and (3) and 57.12(c) and (d) of the Act and 35 Ill. Adm. Code 734.100, 734.125, and 734.335(a), the Illinois EPA requires submittal of a Corrective Action Plan and budget within 30 days from the date of this letter 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

IEPA
Division of Records Management
Releasable

OCT 27 2023

Reviewer: SSD

Please note that the Illinois EPA does not require the submission of a budget if the owner or operator does not intend to seek payment from the Underground Storage Tank Fund.

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 the undersigned at (217) 558-8138 or at frank.tapocik@illinois.gov.

Sincerely,

Frank Tapocik
Project Manager
Leaking Underground Storage Tank Section
Bureau of Land

c: R. Todd McCollister, ETS Environmental & Associates, LLC (electronic copy), ToddM@ets-environmental.com
BOL File

APPENDIX B

Hydraulic Gradient Calculations

EPA United States Environmental Protection Agency

EPA On-line Tools for Site Assessment Calculation

Hydraulic Gradient -- Magnitude and Direction

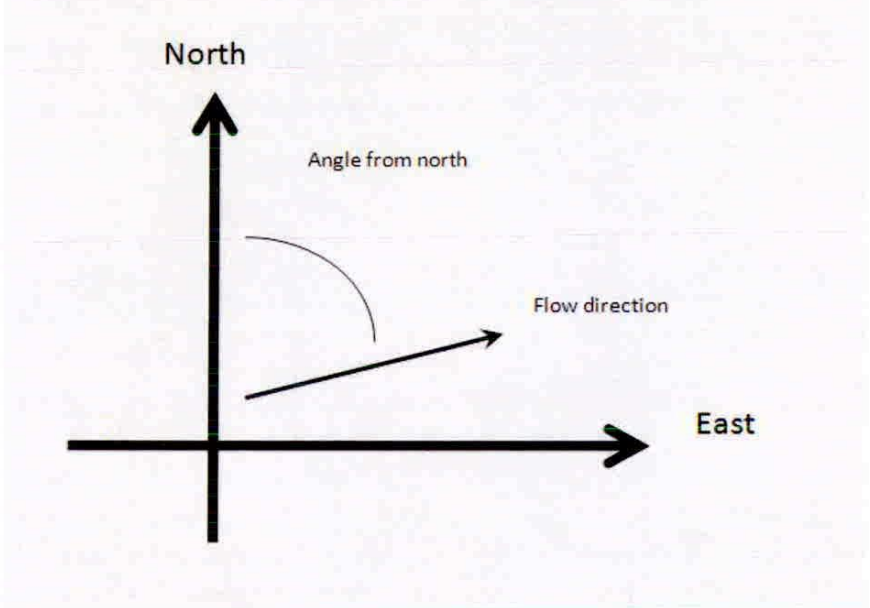
Gradient Calculation from fitting a plane to as many as thirty points

$a\,x_1 + b\,y_1 + c = h_1$
$a\,x_2 + b\,y_2 + c = h_2$
$a\,x_3 + b\,y_3 + c = h_3$
. . .
$a\,x_{30} + b\,y_{30} + c = h_{30}$

where (x_i,y_i) are the coordinates of the well and
h_i is the head

i = 1,2,3, ... , 30
The coefficients a, b, and c are calculated by a least-squares fitting of the the data to a plane

The gradient is calculated from the square root of $(a^2 + b^2)$ and the angle from the arctangent of a/b or b/a depending on the quadrant



Inputs

Example Data Set 1 | Example Data Set 2 | Calculate | Clear
Save Data | Recall Data | Go Back

Site Name: Hargobind, Inc.
Date: 7/3/2025 Current Date
Calculation basis: Head
Coordinates: ft

I.D.	x-coordinate	y-coordinate	head ft
1) MW-1	3	55	98.59
2) MW-2	22	96	95.62
3) MW-3	48	42	96.49
4) MW-4	21	3	97.39
5) MW-5	30	67	96.93
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			
16)			

17)
18)
19)
20)
21)
22)
23)
24)
25)
26)
27)
28)
29)
30)

Results

Number of Points Used in Calculation	5
Max. Difference Between Head Values	0.9053
Gradient Magnitude (i)	0.04735
Flow direction as degrees from North (positive y axis)	69.35
Coefficient of Determination (R^2)	0.651

WCMS

Last updated on 8/31/2021

APPENDIX C

Tier 2 Calculation Spreadsheets

EQUATIONS S20, S21 & S24 FOR DERIVATION OF TOTAL SOIL POROSITY, WATER-FILLED SOIL POROSITY & AIR-FILLED SOIL POROSITY

Site Name
GoLo Gas Station

S24 - Equation for Derivation of Total Soil Porosity, η (L_{pore}/L_{soil})

$$\eta = 1 - \frac{\rho_b}{\rho_s}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
ρ_b	Dry Soil Bulk Density	g/cm^3	Site-Specific Value
ρ_s	Soil Particle Density	g/cm^3	Site-Specific Value

INPUT PARAMETERS FOR η

ρ_b= 1.65 g/cm^3
ρ_s= 2.45 g/cm^3

η= 0.33 L_{pore}/L_{soil}

S20 - Equation for Derivation of Water-Filled Soil Porosity, θ_w (L_{water}/L_{soil})

$$\theta_w = \eta \cdot \left(\frac{I}{K_s}\right)^{1/(2b+3)}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
η	Total Soil Porosity	L_{pore}/L_{soil}	Calculated Value Equation S24 in TACO
I	Infiltration Rate	m/yr	0.3
Soil Texture	USDA Soil Texture Classification	----	Site-Specific Value Appendix C, Illust. C
K_s	Saturated Hydraulic Conductivity	m/yr	Site-Specific Value Appendix C, Table K
1/(2b+3)	Exponential in Equation S20	unitless	Site-Specific Value Appendix C, Table K

Ks Values	
Sand	1,830
Loamy Sand	540
Sandy Loam	230
Silt Loam	120
Loam	60
Sandy Loam Clay	40
Silt Clay Loam	13
Clay Loam	20
Sandy Clay	10
Silt Clay	8

1/(2b+3) Values	
Sand	0.090
Loamy Sand	0.085
Sandy Loam	0.080
Silt Loam	0.074
Loam	0.073
Sandy Loam Clay	0.058
Silt Clay Loam	0.054
Clay Loam	0.050
Sandy Clay	0.042
Silt Clay	0.042

INPUT PARAMETERS FOR θ_w

Soil Texture= Silt Clay
η= 0.33 L_{pore}/L_{soil}
K_s= 8 m/yr
I= 0.3 m/yr
1/(2b+3)= 0.042

θ_w= 0.28 L_{water}/L_{soil}

S21 - Equation for Derivation of Air-Filled Soil Porosity, θ_a (L_{air}/L_{soil})

$$\theta_a = \eta - \theta_w$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
η	Total Soil Porosity	L_{pore}/L_{soil}	Calculated Value Equation S24 in TACO
θ_w	Water-Filled Soil Porosity	L_{water}/L_{soil}	Calculated Value Equation S20 in TACO

INPUT PARAMETERS FOR θ_a

η= 0.33 g/cm^3
θ_w= 0.28 g/cm^3

θ_a= 0.04 L_{air}/L_{soil}

EQUATION S10 FOR DERIVATION OF APPARENT DIFFUSIVITY (D_A)

Site Name
GoLo Gas Station

S10 - Equation for Derivation of Apparent Diffusivity, D_A (cm^2/s)

$$D_A = \frac{\left(\theta_a^{3.33} \cdot D_i \cdot H'\right) + \left(\theta_w^{3.33}\right) \cdot D_w)}{\eta^2} \cdot \frac{1}{(\rho_b \cdot K_d) + \theta_w + (\theta_a \cdot H')}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
θ_a	Air-Filled Soil Porosity	L_{air}/L_{soil}	Gravel = 0.05 Sand = 0.14 Silt - 0.24 Clay = 0.19, or Calculated Value
θ_w	Water-Filled Soil Porosity	L_{water}/L_{soil}	Gravel = 0.20 Sand = 0.18 Silt = 0.16 Clay = 0.17, or Calculated Value
D_i	Diffusivity in Air	cm^2/s	Chemical-Specific Benzene = 0.0880
D_w	Diffusivity in Water	cm^2/s	Chemical-Specific Benzene = 0.0000102
H'	Henry's Law Constant	unitless	Chemical-Specific Benzene = 0.230
η	Total Soil Porosity	L_{pore}/L_{soil}	Calculated Value Equation S24 in TACO
ρ_b	Dry Soil Bulk Density	g/cm^3	Site-Specific Value
K_d	Soil-Water Partition Coefficient	cm^3/g	Calculated Value Equation S19 in TACO

S24 - Total Soil Porosity (L_{pore}/L_{soil}) $\quad \eta = 1 - \frac{\rho_b}{\rho_s}$

S19 - Soil Water Partition Coefficient (cm^3/g) $\quad K_d = K_{oc} \cdot f_{oc}$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
ρ_b	Dry Soil Bulk Density	g/cm^3	Site-Specific Value
ρ_s	Soil Particle Density	g/cm^3	Site-Specific Value
K_{oc}	Organic Carbon Partition Coefficient	cm^3/g	Chemical-Specific Benzene = 50.0
f_{oc}	Organic Carbon Content of Soil	g/g	Site-Specific Value

INPUT PARAMETERS FOR η

ρ_b=	1.65	g/cm^3
ρ_s=	2.45	g/cm^3
η=	0.33	L_{pore}/L_{soil}

INPUT PARAMTERS FOR K_d

K_{oc}=	50.0	cm^3/g
f_{oc}=	0.002	g/g
K_d=	0.10	cm^3/g

INPUT PARAMETER VALUES FOR DERIVATION OF APPARENT DIFFUSIVITY, D_A (cm^2/s)

θ_a=	0.04	L_{air}/L_{soil}
θ_w=	0.28	L_{water}/L_{soil}
D_i=	0.0880	cm^2/s
D_w=	0.0000102	cm^2/s
H'=	0.230	
η=	0.33	g/cm^3
ρ_b=	1.65	g/cm^3
K_d=	0.10	m^3/kg

D_A= 1.40E-05 cm^2/s

BENZENE

EQUATION S10 FOR DERIVATION OF APPARENT DIFFUSIVITY (D_A)

Site Name
GoLo Gas Station

S10 - Equation for Derivation of Apparent Diffusivity, D_A (cm^2/s)

$$D_A = \frac{\left(\theta_a^{3.33} \cdot D_i \cdot H'\right) + \left(\theta_w^{3.33}\right) \cdot D_w)}{\eta^2} \cdot \frac{1}{(\rho_b \cdot K_d) + \theta_w + (\theta_a \cdot H')}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
θ_a	Air-Filled Soil Porosity	L_{air}/L_{soil}	Gravel = 0.05 Sand = 0.14 Silt - 0.24 Clay = 0.19, or Calculated Value
θ_w	Water-Filled Soil Porosity	L_{water}/L_{soil}	Gravel = 0.20 Sand = 0.18 Silt = 0.16 Clay = 0.17, or Calculated Value
D_i	Diffusivity in Air	cm^2/s	Chemical-Specific Total Xylenes = 0.0735
D_w	Diffusivity in Water	cm^2/s	Chemical-Specific Total Xylenes = 0.00000923
H'	Henry's Law Constant	unitless	Chemical-Specific Total Xylenes = 0.271
η	Total Soil Porosity	L_{pore}/L_{soil}	Calculated Value Equation S24 in TACO
ρ_b	Dry Soil Bulk Density	g/cm^3	Site-Specific Value
K_d	Soil-Water Partition Coefficient	cm^3/g	Calculated Value Equation S19 in TACO

S24 - Total Soil Porosity (L_{pore}/L_{soil})

$$\eta = 1 - \frac{\rho_b}{\rho_s}$$

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

$$K_d = K_{oc} \cdot f_{oc}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
ρ_b	Dry Soil Bulk Density	g/cm^3	Site-Specific Value
ρ_s	Soil Particle Density	g/cm^3	Site-Specific Value
K_{oc}	Organic Carbon Partition Coefficient	cm^3/g	Chemical-Specific Total Xylenes = 398
f_{oc}	Organic Carbon Content of Soil	g/g	Site-Specific Value

INPUT PARAMETERS FOR η

ρ_b=	1.65	g/cm^3
ρ_s=	2.45	g/cm^3
η=	0.33	L_{pore}/L_{soil}

INPUT PARAMTERS FOR K_d

K_{oc}=	398	cm^3/g
f_{oc}=	0.002	g/g
K_d=	0.80	cm^3/g

INPUT PARAMETER VALUES FOR DERIVATION OF APPARENT DIFFUSIVITY, D_A (cm^2/s)

θ_a=	0.04	L_{air}/L_{soil}
θ_w=	0.28	L_{water}/L_{soil}
D_i=	0.0735	cm^2/s
D_w=	0.00000923	cm^2/s
H'=	0.271	
η=	0.33	g/cm^3
ρ_b=	1.65	g/cm^3
K_d=	0.80	m^3/kg

D_A= 3.85E-06 cm^2/s

TOTAL XYLENES

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): 971663 IEPA LPC # (10-digit): 0312255051

Site Name: GoLo Gas Station

Site Address (not a P.O. Box): 300 Chicago Avenue

City: Oak Park County: Cook Zip Code: 60302

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: Noel Wubbena

noelw@ets-environmental.com

Land Use: Res., Ind./Com. & Const. Worker Soil Type: Silt 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			Unit	Symbol			Unit
AT (ingestion)	=		yr	d_a	=		m
AT (inhalation)	=		yr	d_s	=		m
AT_c	=	70	yr	D_A	=	0.000014	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 #: 971663 Chemical: Benzene Land Use: Res., Ind./Com., CW

Symbol			Unit
ED (inhalation of carcinogens)	=	see page 3	yr
ED (ingestion of noncarcinogens)	=		yr
ED (inhalation of noncarcinogens)	=		yr
ED (ingestion of groundwater)	=		yr
ED_{M-L}	=	70	yr
EF	=	see page 3	d/yr
F(x)	=	0.194	unitless
f_{oc}	=		g/g
GW_{obj}	=		mg/L
H'	=		unitless
i	=		m/m
I	=	0.3	m/yr
I_{M-L}	=	0.18	m/yr
$IF_{soil-adj}$	=	114	(mg-yr)/(kg-d)
IR_{soil}	=		mg/d
IR_w	=		L/d
K	=		m/yr
K_d (non-ionizing organics)	=		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

Symbol			Unit
K_{oc}	=		cm^3/g or L/kg
K_s	=		m/yr
L	=		m
PEF	=		m^3/kg
PEF'	=		m^3/kg
Q/C (VF equations)	=	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
RfD_o	=		mg/(kg-d)
S	=		mg/L
SF_o	=		$(mg/kg\text{-}d)^{-1}$
T	=		s
T_{M-L}	=	30	yr
THQ	=	1	unitless
TR	=	0.000001	unitless
U_m	=	4.69	m/s
URF	=	see page 3	$(\mu g/m^3)^{-1}$
U_t	=	11.32	kg/m^3
V	=		unitless
VF	=	34,613	m^3/kg

Incident #: 971663 Chemical: Benzene Land Use: Res., Ind./Com., CW

Symbol			Unit
VF'	=	234	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	=	1.65	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) Residential	Solution to Equation S6: (mg/kg) Industrial/Commercial	Solution to Equation S7: (mg/kg) Construction Worker
Benzene = 9.5	**Benzene = 18.1**	**Benzene = 25.5**

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

Site Name
GoLo Gas Station

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

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

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

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

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	$(\mu g/m^3)^{-1}$	$7.8x10^{-6}$ benzene
VF	VOLATILIZATION FACTOR	m^3/kg	REFER TO EQ. S8& S9 WITHIN TACO

S8- Volatilization Factor for the Inhalation Exposure Route - Residential, Industrial/Commercial (m^3/kg)

$$VF = \frac{Q}{C} \cdot \frac{(3.14 \cdot D_A \cdot T)^{1/2}}{2 \cdot \rho_b \cdot D_A} \cdot 10^{-4}$$

S9 - Volatilization Factor for the Inhalation Exposure Route - Construction Worker (m^3/kg)

$$VF' = \frac{VF}{10}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
D_A	APPARENT DIFFUSIVITY	cm^2/s	CALCULATED VALUE
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	EXPOSURE INTERVAL	S	RESIDENTIAL $9.5*10^8$ INDUS/COMM. $7.9*10^8$ CONST WRKR $3.6*10^6$

INPUT PARAMETERS FOR VF RES/INDUS/COM PROP

D_A=	1.40E-05	cm^2/s
Pb=	1.65	g/cm^3
Q/C=	68.81	$(g/m^2\text{-}s)/(kg/m^3)$ (Residential)
Q/C=	85.81	$(g/m^2\text{-}s)/(kg/m^3)$ (Industrial/Commercial)
T =	9.5E+08	s (Residential)
T =	7.9E+08	s (Industrial / Commercial)
VF=	30,437	m^3/kg (Residential)
VF=	34,613	m^3/kg (Industrial/Commercial)

INPUT PARAMTERS FOR VF' CONSTRUCTION WORKER

D_A=	1.40E-05	cm^2/s
Pb=	1.65	g/cm^3
Q/C=	85.81	$(g/m^2\text{-}s)/(kg/m^3)$
T=	3.6E+06	s
VF'=	234	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=	30436.89	m^3/kg (Residential)
VF=	34612.93	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'=	233.66	m^3/kg

Residential Inhalation Remediation Objective (S6) = 9.5 mg/kg

Construction Worker Inhalation Remediation Objective (S7) = 25.5 mg/kg

Industrial/Commercial Inhalation Remediation Objective (S6) = 18.1 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 (Residential Inhalation) =	**9.5 mg/kg**
Soil Remediation Objective (Industrial/Commercial Inhalation) =	**18.1 mg/kg**
Soil Remediation Objective (Construction Worker Inhalation) =	**25.5 mg/kg**

BENZENE

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): 971663 IEPA LPC # (10-digit): 0312255051

Site Name: GoLo Gas Station

Site Address (not a P.O. Box): 300 Chicago Avenue

City: Oak Park County: Cook Zip Code: 60302

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: Noel Wubbena

noelw@ets-environmental.com

Land Use: Indust/Com & Const Worker Soil Type: Silt 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			Unit	Symbol			Unit
AT (ingestion)	=		yr	d_a	=		m
AT (inhalation)	=	see page 3	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 #: 971663 Chemical: Xylenes Land Use: CW

Symbol			Unit
ED (inhalation of carcinogens)	=		yr
ED (ingestion of noncarcinogens)	=		yr
ED (inhalation of noncarcinogens)	=	see page 3	yr
ED (ingestion of groundwater)	=		yr
ED_{M-L}	=	70	yr
EF	=	see page 3	d/yr
F(x)	=	0.194	unitless
f_{oc}	=		g/g
GW_{obj}	=		mg/L
H'	=		unitless
i	=		m/m
I	=	0.3	m/yr
I_{M-L}	=	0.18	m/yr
$IF_{soil-adj}$	=	114	(mg-yr)/(kg-d)
IR_{soil}	=		mg/d
IR_w	=		L/d
K	=		m/yr
K_d (non-ionizing organics)	=		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

Symbol			Unit
K_{oc}	=		cm^3/g or L/kg
K_s	=		m/yr
L	=		m
PEF	=		m^3/kg
PEF'	=		m^3/kg
Q/C (VF equations)	=	85.81	$(g/m^2\text{-}s)/(kg/m^3)$
Q/C (PEF equations)	=		$(g/m^2\text{-}s)/(kg/m^3)$
RfC	=	see page 3	mg/m^3
RfD_o	=		mg/(kg-d)
S	=		mg/L
SF_o	=		$(mg/kg\text{-}d)^{-1}$
T	=		s
T_{M-L}	=	30	yr
THQ	=	1	unitless
TR	=		unitless
U_m	=	4.69	m/s
URF	=		$(\mu g/m^3)^{-1}$
U_t	=	11.32	kg/m^3
V	=		unitless
VF	=		m^3/kg

Incident #: 971663 Chemical: Xylenes Land Use: CW

Symbol			Unit
VF'	=	446	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	=	1.65	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)

Construction Worker = 0.115

Exposure Frequency (EF): (days/year)

Construction Worker = 30

Exposure Duration (ED): (years)

Construction Worker = 1

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

Total Xylenes - chronic = 0.1
Total Xylenes - subchronic = 0.4

Solution to Equation S4: (mg/kg) Residential	Solution to Equation S4: (mg/kg) Industrial/Commercial	Solution to Equation S5: (mg/kg) Construction Worker
		Total Xylenes = 249 *** = Soil Saturation Limit**

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

Site Name
GoLo Gas Station

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

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

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

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

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	VOLATILIZATION FACTOR	m^3/kg	REFER TO EQ. S8& S9 WITHIN TACO

S8- Volatilization Factor for the Inhalation Exposure Route - Residential, Industrial/Commercial (m^3/kg)

$$VF = \frac{Q}{C} \cdot \frac{(3.14 \cdot D_A \cdot T)^{1/2}}{2 \cdot \rho_b \cdot D_A} \cdot 10^{-4}$$

S9 - Volatilization Factor for the Inhalation Exposure Route - Construction Worker (m^3/kg)

$$VF' = \frac{VF}{10}$$

SYMBOL	PARAMETER	UNITS	PARAMETER VALUES
D_A	APPARENT DIFFUSIVITY	cm^2/s	CALCULATED VALUE
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-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	EXPOSURE INTERVAL	S	RESIDENTIAL $9.5*10^8$ INDUS/COMM. $7.9*10^8$ CONST WRKR $3.6*10^6$

INPUT PARAMETERS FOR VF RES/INDUS/COM PROP

D_A=	3.85E-06	cm^2/s
Pb=	1.65	g/cm^3
Q/C=	68.81	(g/m^2-s)/(kg/m^3) (Residential)
Q/C=	85.81	(g/m^2-s)/(kg/m^3) (Industrial/Commercial)
T =	9.5E+08	s (Residential)
T =	7.9E+08	s (Industrial / Commercial)
VF=	58,041	m^3/kg (Residential)
VF=	66,004	m^3/kg (Industrial/Commercial)

INPUT PARAMTERS FOR CONSTRUCTION WORKER

D_A=	3.85E-06	cm^2/s
Pb=	1.65	g/cm^3
Q/C=	85.81	(g/m^2-s)/(kg/m^3)
T=	3.6E+06	s
VF'=	446	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=	58,041	m^3/kg (Residential)
VF=	66,004	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'=	446	m^3/kg

Residential Inhalation Remediation Objective (S4) = 6,052.8 mg/kg

Industrial/Commercial Inhalation Remediation Objective (S4) = 9,636.6 mg/kg

Construction Worker Inhalation Remediation Objective (S5) = 249.4 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) =	**283 mg/kg**	**Tier 2 Csat Value**
Soil Remediation Objective (Industrial/Commercial Inhalation) =	**283 mg/kg**	**Tier 2 Csat Value**
Soil Remediation Objective (Construction Worker Inhalation) =	**249 mg/kg**	**Tier 2 Csat Value**

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

Soil Remediation Objective (Residential Inhalation) =	**320 mg/kg**
Soil Remediation Objective (Industrial/Commercial Inhalation) =	**320 mg/kg**
Soil Remediation Objective (Construction Worker Inhalation) =	**249 mg/kg**

TOTAL XYLENES

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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): 971663 IEPA LPC # (10-digit): 0312255051

Site Name: GoLo Gas Station

Site Address (not a P.O. Box): 300 Chicago Avenue

City: Oak Park County: Cook Zip Code: 60302

Leaking UST Technical File

B. Tier 2 Calculation Information

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

Contact Information for Individual Who Performed Calculations: Noel Wubbena

noelw@ets-environmental.com

Land Use: not applicable Soil Type: Silt 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			Unit	Symbol			Unit
AT (ingestion)	=		yr	d_a	=		m
AT (inhalation)	=		yr	d_s	=	3.6576	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 #: 971663 Chemical: Ben. & Ethyl. 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}	=		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
$IF_{soil-adj}$	=	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 #: 971663 Chemical: Ben. & Ethyl. 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	=	1.65	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)

A-3-1 (2') Benzene: 0.947
A-3-1 (2') Ethylbenzene: 27.7
A-3-2 (8') Benzene: 2.16
A-4-1 (2') Benzene: 2.56
A-4-2 (8') Benzene: 1.13
A-4-3 (12') Benzene: 5.03
B-1 (4') Benzene: 1.18
B-1 (6') Benzene: 2.47
B-1 (6') Ethylbenzene: 35.2
B-2 (3') Benzene: 0.298
B-5 (4') Benzene: 1.01
B-5 (6') Benzene: 5.33
B-5 (10.5') Benzene: 4.63
B-6 (4') Benzene: 0.933
B-6 (4') Ethylbenzene: 17.2
B-6 (8') Benzene: 0.0554
B-7 (4') Benzene: 0.215
B-7 (8') Benzene: 0.05
B-8 (4.5') Benzene: 0.66
B-8 (6') Benzene: 1.42

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

A-3-1 (2') Benzene: 0.023
A-3-1 (2') Ethylbenzene: 0.7
A-3-2 (8') Benzene: 0.052
A-4-1 (2') Benzene: 0.061
A-4-2 (8') Benzene: 0.027
A-4-3 (12') Benzene: 0.120
B-1 (4') Benzene: 0.028
B-1 (6') Benzene: 0.059
B-1 (6') Ethylbenzene: 0.8
B-2 (3') Benzene: 0.007
B-5 (4') Benzene: 0.024
B-5 (6') Benzene: 0.128
B-5 (10.5') Benzene: 0.111
B-6 (4') Benzene: 0.022
B-6 (4') Ethylbenzene: 0.4
B-6 (8') Benzene: 0.001
B-7 (4') Benzene: 0.005
B-7 (8') Benzene: 0.001
B-8 (4.5') Benzene: 0.016
B-8 (6') Benzene: 0.034

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	**A-3-1**
		Sample Depth (feet):	**2'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**0.947**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	0.947
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.453585943
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.022679297
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.023**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *No*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	A-3-1
		Sample Depth (feet):	2'
LUST Incident Number(s):	971663	**Analyte:**	Ethylbenzene
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	27.7

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	27.700
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	13.267508571
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.663375429
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Ethylbenzene / 0.7 / 1	**0.7**

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? ***No***

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? ***No***

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**A-3-2** **8'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**2.16**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	2.160
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	1.034578286
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.051728914
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Benzene / 0.005 / 0.025	**0.052**

Soil to Groundwater Potential Leachate Concentration vs.
IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**A-4-I** **2'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**2.56**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	2.560
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	1.226166857
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.061308343
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.061**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**A-4-2** **8'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**1.13**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	1.130
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.541237714
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.027061886
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.027**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	A-4-3
		Sample Depth (feet):	12'
LUST Incident Number(s):	971663	**Analyte:**	Benzene
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	5.03

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	5.030
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	2.409226286
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.120461314
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.120**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	**B-1**
		Sample Depth (feet):	**4'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**1.18**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	1.180
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.565186286
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.028259314
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Benzene / 0.005 / 0.025	**0.028**

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**B-1** **6'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway: **Groundwater Classification:**	Soil Component of Groundwater Ingestion Class I	**Soil Concentration in mg/kg:**	**2.47**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	2.470
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	1.183059429
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.059152971
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Benzene / 0.005 / 0.025	**0.059**

Soil to Groundwater Potential Leachate Concentration vs.
IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	**B-1**
		Sample Depth (feet):	**6'**
LUST Incident Number(s):	971663	**Analyte:**	**Ethylbenzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**35.2**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	35.200
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	16.859794286
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.842989714
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Ethylbenzene / 0.7 / 1	**0.8**

Soil to Groundwater Potential Leachate Concentration vs.
IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *No*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	**B-2**
		Sample Depth (feet):	**3'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**0.298**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	0.298
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.142733486
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.007136674
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.007**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *No*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**B-5** **4'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway: **Groundwater Classification:**	Soil Component of Groundwater Ingestion Class I	**Soil Concentration in mg/kg:**	**1.01**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	1.010
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.483761143
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.024188057
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Benzene / 0.005 / 0.025	**0.024**

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *No*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	**B-5**
		Sample Depth (feet):	**6'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**5.33**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	5.330
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	2.552917714
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.127645886
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Benzene / 0.005 / 0.025	**0.128**

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	**B-5**
		Sample Depth (feet):	**10.5'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**4.63**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	4.630
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	2.217637714
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.110881886
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.111**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**B-6** **4'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway: **Groundwater Classification:**	Soil Component of Groundwater Ingestion Class I	**Soil Concentration in mg/kg:**	**0.933**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	0.933
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.446880343
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.022344017
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.022**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *No*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	**B-6**
		Sample Depth (feet):	**4'**
LUST Incident Number(s):	971663	**Analyte:**	**Ethylbenzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**17.2**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	17.200
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	8.238308571
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.411915429
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.4**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Ethylbenzene	0.7	1

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? ***No***

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? ***No***

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:**	**B-6**
		Sample Depth (feet):	**8'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Soil Concentration in mg/kg:**	**0.0554**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	0.055
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.026535017
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.001326751
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Benzene / 0.005 / 0.025	**0.001**

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? ***No***

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? ***No***

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**B-7** **4'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway: **Groundwater Classification:**	Soil Component of Groundwater Ingestion Class I	**Soil Concentration in mg/kg:**	**0.215**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	0.215
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.102978857
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.005148943
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration** **IEPA TACO Tier 1 Groundwater Remediation Objectives** Analyte / Class I / Class II Benzene / 0.005 / 0.025	**0.005**

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? ***Yes***

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? ***No***

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**B-7** **8'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway: **Groundwater Classification:**	Soil Component of Groundwater Ingestion Class I	**Soil Concentration in mg/kg:**	**0.05**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	0.050
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.023948571
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.001197429
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.001**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? ***No***

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? ***No***

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**B-8** **4.5'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway: **Groundwater Classification:**	Soil Component of Groundwater Ingestion Class I	**Soil Concentration in mg/kg:**	**0.66**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	0.660
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.316121143
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.015806057
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.016**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *No*

SOIL TO GROUNDWATER POTENTIAL LEACHATE CONCENTRATION
MASS-LIMIT REMEDIATION OBJECTIVE FOR SOIL COMPONENT OF THE GROUNDWATER INGESTION EXPOSURE ROUTE
SSL EQUATIONS S28 & S18

Site Details		Sample Details	
Site Name & Location:	GoLo Gas Station Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	**B-8** **6'**
LUST Incident Number(s):	971663	**Analyte:**	**Benzene**
Exposure Pathway: **Groundwater Classification:**	Soil Component of Groundwater Ingestion Class I	**Soil Concentration in mg/kg:**	**1.42**

SSL Equation S28

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

(milligrams per kilogram, mg/kg)

SSL Equation S18

Target Soil Leachate Concentration C_w = $DF \bullet GW_{obj}$

(milligrams per liter, mg/L)

Model Parameters Inputs:

Symbol	Unit	Parameter	Values
R.O.	mg/kg	Soil Concentration at Point Source	1.420
I_{M-L}	m/yr	Infiltration Rate	0.18
ED_{M-L}	year	Exposure Duration for Eq S28	70
ρ_b	g/cm^3	Dry Soil Bulk Density	1.65
d_s	m	Depth of Source	3.6576
DF	unitless	Dilution Factor	20

Model Calculated Outputs:

C_w	mg//L	Target Soil Leachate Concentration	0.680139429
GW_{obj}	mg/L	Soil to Groundwater Potential Leachate Concentration	0.034006971
GW_{obj}	**mg/L**	**Soil to Groundwater Potential Leachate Concentration**	**0.034**

IEPA TACO Tier 1 Groundwater Remediation Objectives

Analyte	Class I	Class II
Benzene	0.005	0.025

Soil to Groundwater Potential Leachate Concentration vs. IEPA TACO Tier 1 Groundwater Remediation Objective

Will leach above IEPA TACO Tier 1 GRO for Class I Groundwater? *Yes*

Will leach above IEPA TACO Tier 1 GRO for Class II Groundwater? *Yes*

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
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 971663 IEPA LPC # (10-digit): 0312255051

Site Name: GoLo Gas Station

Site Address (not a P.O. Box): 300 Chicago Avenue

City: Oak Park County: Cook Zip Code: 60302

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: Noel Wubbena

noelw@ets-environmental.com

Land Use: Not Applicable Soil Type: Silty Clay

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
$C_{(x)}$	=	0.005	mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 971663 Chemical: Benzene Land Use: Not Applicable

Symbol			Unit
erf	=		unitless
f_{oc}	=		g/g
GW_{comp}	=		mg/L
GW_{source}	=		mg/L
H'	=		cm^3_{water}/cm^3_{air}
i	=	0.0474	cm/cm
I	=	30	cm/yr
IR_{air}	=	20	m^3/d
IR_{soil}	=		mg/d
IR_w	=		L/d
K	=	0.355	cm/d for R15, R19, R26; cm/yr for R24
K_{oc}	=		cm^3/g or L/kg
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}
k_s (inorganics)	=		cm^3_{water}/g_{soil}
L_s	=	100	cm
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$
M	=	0.5	mg/cm^2
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s
RAF_d	=	0.5	unitless

Symbol			Unit
RAF_d (PNAs)	=	0.05	unitless
RAF_d (inorganics)	=	0	unitless
RAF_0	=	1.0	unitless
$RBSL_{air}$ (carcinogenic)	=		$\mu g/m^3$
$RBSL_{air}$ (noncarcinogenic)	=		$\mu g/m^3$
RfD_i	=		mg/kg-d
RfD_o	=		mg/kg-d
SA	=	3,160	cm^2/d
S_d	=	200	cm
S_w	=	4,937.76	cm
SF_i	=		$(mg/kg\text{-}d)^{-1}$
SF_o	=		$(mg/kg\text{-}d)^{-1}$
THQ	=	1	unitless
TR	=		unitless
U	=		cm/d
U_{air}	=	225	cm/s
U_{gw}	=		cm/yr
VF_p	=		kg/m^3
VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil}$) or kg/m^3
VF_{ss}	=		kg/m^3

Incident #: 971663 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	=	0.36	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)

A-3-1 (2') Benzene: 0.023
A-3-2 (8') Benzene: 0.052
A-4-1 (2') Benzene: 0.061
A-4-2 (8') Benzene: 0.027
A-4-3 (12') Benzene: 0.120
B-1 (4') Benzene: 0.028
B-1 (6') Benzene: 0.059
B-2 (3') Benzene: 0.007
B-5 (4') Benzene: 0.024
B-5 (6') Benzene: 0.128
B-5 (10.5') Benzene: 0.111
B-6 (4') Benzene: 0.022
B-8 (4.5') Benzene: 0.016
B-8 (6') Benzene: 0.034

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

A-3-1 (2') Benzene: 3-feet
A-3-2 (8') Benzene: 5-feet
A-4-1 (2') Benzene: 5.5-feet
A-4-2 (8') Benzene: 3.5-feet
A-4-3 (12') Benzene: 7-feet
B-1 (4') Benzene: 3.5-feet
B-1 (6') Benzene: 5.25-feet
B-2 (3') Benzene: 0.6-feet
B-5 (4') Benzene: 3-feet
B-5 (6') Benzene: 7.5-feet
B-5 (10.5') Benzene: 7-feet

B-6 (4') Benzene: 2.75-feet
B-8 (4.5') Benzene: 2.25-feet
B-8 (6') Benzene: 4-feet

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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): 971663 IEPA LPC # (10-digit): 0312255051

Site Name: GoLo Gas Station

Site Address (not a P.O. Box): 300 Chicago Avenue

City: Oak Park County: Cook Zip Code: 60302

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: Noel Wubbena

noelw@ets-environmental.com

Land Use: Not Applicable Soil Type: Silty Clay

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
$C_{(x)}$	=	0.7	mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 971663 Chemical: Ethylbenzene Land Use: Not Applicable

Symbol			Unit
erf	=		unitless
f_{oc}	=		g/g
GW_{comp}	=		mg/L
GW_{source}	=		mg/L
H'	=		cm^3_{water}/cm^3_{air}
i	=	0.0474	cm/cm
I	=	30	cm/yr
IR_{air}	=	20	m^3/d
IR_{soil}	=		mg/d
IR_w	=		L/d
K	=	0.355	cm/d for R15, R19, R26; cm/yr for R24
K_{oc}	=		cm^3/g or L/kg
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}
k_s (inorganics)	=		cm^3_{water}/g_{soil}
L_s	=	100	cm
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$
M	=	0.5	mg/cm^2
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s
RAF_d	=	0.5	unitless

Symbol			Unit
RAF_d (PNAs)	=	0.05	unitless
RAF_d (inorganics)	=	0	unitless
RAF_0	=	1.0	unitless
$RBSL_{air}$ (carcinogenic)	=		$\mu g/m^3$
$RBSL_{air}$ (noncarcinogenic)	=		$\mu g/m^3$
RfD_i	=		mg/kg-d
RfD_o	=		mg/kg-d
SA	=	3,160	cm^2/d
S_d	=	200	cm
S_w	=	4,937.76	cm
SF_i	=		$(mg/kg\text{-}d)^{-1}$
SF_o	=		$(mg/kg\text{-}d)^{-1}$
THQ	=	1	unitless
TR	=		unitless
U	=		cm/d
U_{air}	=	225	cm/s
U_{gw}	=		cm/yr
VF_p	=		kg/m^3
VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil}$ or kg/m^3
VF_{ss}	=		kg/m^3

Incident #: 971663 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	=	0.36	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)

B-1 (6') Ethylbenzene: 0.8

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

B-1 (6') Ethylbenzene: 0.04-feet

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	A-3-1
		Sample Depth (feet):	2'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.023	mg/L			
Distance along centerline of the plume coming from the source (X)=	**3.00**	ft	=	91.44	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	=	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m			
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	=	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	9.144	cm
Transverse dispersivity	Ay=	3.048	cm
Vertical dispersivity	Az=	0.4572	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	73.94254526	
Sd/(2*SQRT(Az*X))	C=	15.47856744	
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=	73.94254526	Actual C value=	15.47856744
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	73.94254526	15.47856744
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=	0.039646481	0.164727252
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	A-3-2
		Sample Depth (feet):	8'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.052	mg/L		
Distance along centerline of the plume coming from the source (X)=	5.00	ft	= 152.40	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	= 0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	= 4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	15.24	cm
Transverse dispersivity	Ay=	5.08	cm
Vertical dispersivity	Az=	0.762	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	44.36552716	
Sd/(2*SQRT(Az*X))	C=	9.287140464	
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=	44.36552716	Actual C value=	9.287140464
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	44.36552716	9.287140464
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=	0.064375948	0.24737874
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	A-4-1 2'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.061	mg/L		
Distance along centerline of the plume coming from the source (X)=	**5.50**	ft =	167.64	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec =	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft =	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	16.764	cm
Transverse dispersivity	Ay=	5.588	cm
Vertical dispersivity	Az=	0.8382	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	40.33229742	
Sd/(2*SQRT(Az*X))	C=	8.442854967	
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=	40.33229742	Actual C value=	8.442854967
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	40.33229742	8.442854967
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=	0.07036059	0.265547533
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	A-4-2
		Sample Depth (feet):	8'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.027	mg/L		
Distance along centerline of the plume coming from the source (X)=	**3.50**	ft	= 106.68	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	= 0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	= 4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	10.668	cm
Transverse dispersivity	Ay=	3.556	cm
Vertical dispersivity	Az=	0.5334	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	63.37932451	
Sd/(2*SQRT(Az*X))	C=	13.26734352	
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=	63.37932451	Actual C value=	13.26734352
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	63.37932451	13.26734352
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=	0.045950598	0.187046518
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	A-4-3
		Sample Depth (feet):	12'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.120	mg/L		
Distance along centerline of the plume coming from the source (X)=	**7.00**	ft =	213.36	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec =	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft =	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	21.336	cm
Transverse dispersivity	Ay=	7.112	cm
Vertical dispersivity	Az=	1.0668	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	31.68966226	
Sd/(2*SQRT(Az*X))	C=	6.63367176	
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=	31.68966226	Actual C value=	6.63367176
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	31.68966226	6.63367176
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=	0.087863801	0.315146062
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-1
		Sample Depth (feet):	4'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.028	mg/L			
Distance along centerline of the plume coming from the source (X)=	3.50	ft	=	106.68	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	=	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m			
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	=	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	10.668	cm
Transverse dispersivity	Ay=	3.556	cm
Vertical dispersivity	Az=	0.5334	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	63.37932451	
Sd/(2*SQRT(Az*X))	C=	13.26734352	
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=	63.37932451	Actual C value=	13.26734352
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	63.37932451	13.26734352
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=	0.045950598	0.187046518
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-1
		Sample Depth (feet):	6'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.059	mg/L		
Distance along centerline of the plume coming from the source (X)=	5.25	ft	= 160.02	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	= 0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	= 4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	16.002	cm
Transverse dispersivity	Ay=	5.334	cm
Vertical dispersivity	Az=	0.8001	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	42.25288301	
Sd/(2*SQRT(Az*X))	C=	8.84489568	
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=	42.25288301	Actual C value=	8.84489568
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	42.25288301	8.84489568
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=	0.06737787	0.256574128
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-1
		Sample Depth (feet):	6'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Ethylbenzene

Concentration at the source (C_{source})=	0.8	mg/L		
Distance along centerline of the plume coming from the source (X)=	**0.04**	ft	= 1.22	cm
First order degradation constant (λ)=	0.003	/day	if ethylbenzene, lambda=0.003/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	= 0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	= 4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	0.12192	cm
Transverse dispersivity	Ay=	0.04064	cm
Vertical dispersivity	Az=	0.006096	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	5545.690895	
Sd/(2*SQRT(Az*X))	C=	1160.892558	
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=	5545.690895	Actual C value=	1160.892558
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=	5545.690895	1160.892558
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=	0.00055014	0.00262262
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-2
		Sample Depth (feet):	3'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.007	mg/L		
Distance along centerline of the plume coming from the source (X)=	**0.60**	ft	= 18.29	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	= 0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	= 4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	1.8288	cm
Transverse dispersivity	Ay=	0.6096	cm
Vertical dispersivity	Az=	0.09144	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	369.7127263	
Sd/(2*SQRT(Az*X))	C=	77.3928372	
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=	369.7127263	Actual C value=	77.3928372
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	369.7127263	77.3928372
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=	0.008189029	0.037946049
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-5
		Sample Depth (feet):	4'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.024	mg/L		
Distance along centerline of the plume coming from the source (X)=	**3.00**	ft =	91.44	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec =	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft =	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	9.144	cm
Transverse dispersivity	Ay=	3.048	cm
Vertical dispersivity	Az=	0.4572	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	73.94254526	
Sd/(2*SQRT(Az*X))	C=	15.47856744	
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=	73.94254526	Actual C value=	15.47856744
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	73.94254526	15.47856744
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=	0.039646481	0.164727252
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:** **Sample Depth (feet):**	B-5 6'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.128	mg/L			
Distance along centerline of the plume coming from the source (X)=	7.50	ft	=	228.60	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	=	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m			
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	=	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	22.86	cm
Transverse dispersivity	Ay=	7.62	cm
Vertical dispersivity	Az=	1.143	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	29.57701811	
Sd/(2*SQRT(Az*X))	C=	6.191426976	
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=	29.57701811	Actual C value=	6.191426976
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	29.57701811	6.191426976
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=	0.093552652	0.330223032
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-5
		Sample Depth (feet):	10.5'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.111	mg/L			
Distance along centerline of the plume coming from the source (X)=	7.00	ft	=	213.36	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	=	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m			
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	=	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	21.336	cm
Transverse dispersivity	Ay=	7.112	cm
Vertical dispersivity	Az=	1.0668	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	31.68966226	
Sd/(2*SQRT(Az*X))	C=	6.63367176	
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=	31.68966226	Actual C value=	6.63367176
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	31.68966226	6.63367176
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=	0.087863801	0.315146062
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-6
		Sample Depth (feet):	4'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.022	mg/L			
Distance along centerline of the plume coming from the source (X)=	**2.75**	ft	=	83.82	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	=	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m			
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	=	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	8.382	cm
Transverse dispersivity	Ay=	2.794	cm
Vertical dispersivity	Az=	0.4191	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	80.66459483	
Sd/(2*SQRT(Az*X))	C=	16.88570993	
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=	80.66459483	Actual C value=	16.88570993
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	80.66459483	16.88570993
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=	0.036463077	0.153101649
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-8
		Sample Depth (feet):	4.5'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

IEMA Incident # (6- or 8-digit): 971663 IEPA LPC # (10-digit): 0312255051

Distance along centerline of the plume coming from the source (X)=	**2.25**	ft	=	68.58	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	=	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m			
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	=	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	6.858	cm
Transverse dispersivity	Ay=	2.286	cm
Vertical dispersivity	Az=	0.3429	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	98.59006035	
Sd/(2*SQRT(Az*X))	C=	20.63808992	
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=	98.59006035	Actual C value=	20.63808992
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	98.59006035	20.63808992
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=	0.030032532	0.128851789
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	B-8
		Sample Depth (feet):	6'
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.034	mg/L		
Distance along centerline of the plume coming from the source (X)=	**4.00**	ft =	121.92	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec =	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft =	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	12.192	cm
Transverse dispersivity	Ay=	4.064	cm
Vertical dispersivity	Az=	0.6096	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	55.45690895	
Sd/(2*SQRT(Az*X))	C=	11.60892558	
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=	55.45690895	Actual C value=	11.60892558
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	55.45690895	11.60892558
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=	0.052172489	0.208204043
erf(x)=	1	1

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
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 971663 IEPA LPC # (10-digit): 0312255051

Site Name: GoLo Gas Station

Site Address (not a P.O. Box): 300 Chicago Avenue

City: Oak Park County: Cook Zip Code: 60302

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: Noel Wubbena

noelw@ets-environmental.com

Land Use: Not Applicable Soil Type: Silty Clay

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
$C_{(x)}$	=	0.005	mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 971663 Chemical: Benzene Land Use: Not Applicable

Symbol			Unit
erf	=		unitless
f_{oc}	=		g/g
GW_{comp}	=		mg/L
GW_{source}	=		mg/L
H'	=		cm^3_{water}/cm^3_{air}
i	=	0.0474	cm/cm
I	=	30	cm/yr
IR_{air}	=	20	m^3/d
IR_{soil}	=		mg/d
IR_w	=		L/d
K	=	0.355	cm/d for R15, R19, R26; cm/yr for R24
K_{oc}	=		cm^3/g or L/kg
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}
k_s (inorganics)	=		cm^3_{water}/g_{soil}
L_s	=	100	cm
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$
M	=	0.5	mg/cm^2
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s
RAF_d	=	0.5	unitless

Symbol			Unit
RAF_d (PNAs)	=	0.05	unitless
RAF_d (inorganics)	=	0	unitless
RAF_0	=	1.0	unitless
$RBSL_{air}$ (carcinogenic)	=		$\mu g/m^3$
$RBSL_{air}$ (noncarcinogenic)	=		$\mu g/m^3$
RfD_i	=		mg/kg-d
RfD_o	=		mg/kg-d
SA	=	3,160	cm^2/d
S_d	=	200	cm
S_w	=	4,937.76	cm
SF_i	=		$(mg/kg\text{-}d)^{-1}$
SF_o	=		$(mg/kg\text{-}d)^{-1}$
THQ	=	1	unitless
TR	=		unitless
U	=		cm/d
U_{air}	=	225	cm/s
U_{gw}	=		cm/yr
VF_p	=		kg/m^3
VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m^3
VF_{ss}	=		kg/m^3

Incident #: 971663 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	=	0.36	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)

MW-1 Benzene: 0.0548
MW-4 Benzene: 0.0078
MW-5 Benzene: 0.0205

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

MW-1 Benzene: 5-feet
MW-4 Benzene: 0.75-feet
MW-5 Benzene: 2.75-feet

4. Attached as Exhibit B is a table(s) prepared by the Owner/Operator that lists each contaminant of concern that exceeds its Tier 1 residential remediation objective. Its Tier 1 residential remediation objective

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	MW-1
		Sample Depth (feet):	---
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.0548	mg/L			
Distance along centerline of the plume coming from the source (X)=	**5.00**	ft	=	152.40	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	=	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m			
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	=	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	15.24	cm
Transverse dispersivity	Ay=	5.08	cm
Vertical dispersivity	Az=	0.762	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	44.36552716	
Sd/(2*SQRT(Az*X))	C=	9.287140464	
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=	44.36552716	Actual C value=	9.287140464
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	44.36552716	9.287140464
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=	0.064375948	0.24737874
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	MW-4
		Sample Depth (feet):	---
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.0078	mg/L		
Distance along centerline of the plume coming from the source (X)=	**0.75**	ft =	22.86	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec =	0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft =	4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	2.286	cm
Transverse dispersivity	Ay=	0.762	cm
Vertical dispersivity	Az=	0.1143	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	295.7701811	
Sd/(2*SQRT(Az*X))	C=	61.91426976	
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=	295.7701811	Actual C value=	61.91426976
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	295.7701811	61.91426976
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=	0.010215373	0.04698682
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

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

Site Details		Sample Details	
Site Name & Location:	330 Chicago Avenue Oak Park, Illinois	**Sample Location:**	MW-5
		Sample Depth (feet):	---
LUST Incident Number(s):	971663		
Exposure Pathway:	Soil Component of Groundwater Ingestion		
Groundwater Classification:	Class I	**Analyte:**	Benzene

Concentration at the source (C_{source})=	0.0205	mg/L		
Distance along centerline of the plume coming from the source (X)=	2.75	ft	= 83.82	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	4.112E-06	cm/sec	= 0.355	cm/day
Hydraulic gradient (i)=	0.0474	m/m		
Total soil porosity (θ_T)=	0.36	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162	ft	= 4,937.76	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.57	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=	8.382	cm
Transverse dispersivity	Ay=	2.794	cm
Vertical dispersivity	Az=	0.4191	cm
Specific discharge	U=	0.046728768	cm/day
Sw/(4*SQRT(Ay*X))	B=	80.66459483	
Sd/(2*SQRT(Az*X))	C=	16.88570993	
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=	80.66459483	Actual C value=	16.88570993
Automatic calculations : Actual erf(B)	1	Actual erf(C)=	1

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=	80.66459483	16.88570993
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=	0.036463077	0.153101649
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

APPENDIX D

Draft Highway Authority Agreements

Illinois Environmental Protection Agency

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

HIGHWAY AUTHORITY AGREEMENT

This Agreement is entered into this ____ day of _____ , 20___ pursuant to 35 Ill. Adm. Code 742.1020 by and between the (1) Hargobind, Inc. ("Property Owner") [*or, in the case of a petroleum leaking underground storage tank (UST), the owner/operator of the tank ("Owner/Operator")*] and (2) Village of Oak Park [*Name of Entity in Control of the Right-of-Way*] ("Highway Authority"), collectively known as the "Parties."

[*Use this paragraph for sites with petroleum leaking underground storage tank(s)*]
WHEREAS, Hargobind, Inc. is the owner or operator of one or more leaking underground storage tanks presently or formerly located at 330 Chicago Avenue, Oak Park, IL ("the Site");

[*Use this paragraph for sites that do not have petroleum leaking USTs*]
WHEREAS, _____ is the owner of the property located at _____ ("the Site");

WHEREAS, as a result of one or more releases of contaminants from the above referenced USTs ("the Release(s)"), 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;

WHEREAS, the Owner/Operator or Property Owner is conducting corrective action in response to the Release(s);

WHEREAS, the Parties desire to prevent groundwater beneath the Highway Authority's right-of-way that exceeds Tier 1 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. [*Use this paragraph if IEMA has issued an incident number*] The Illinois Emergency Management Agency has assigned incident number(s) 971663 to the Release(s).
3. Attached as Exhibit A is a scaled map(s) prepared by the Owner/Operator that shows the Site and surrounding area and delineates the current and estimated future extent of soil and groundwater contamination above the applicable Tier 1 residential remediation objectives as a result of the Release(s). [*Use the following sentence if either soil or groundwater is not contaminated above applicable Tier 1 residential remediation objectives*: _____ is not contaminated above the applicable Tier 1 residential remediation objectives.]
4. Attached as Exhibit B is a table(s) prepared by the Owner/Operator that lists each contaminant of concern that exceeds its Tier 1 residential remediation objective, 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 are identified on the map(s) in Exhibit A.

5. Attached as Exhibit C is a scaled map prepared by the Owner/Operator 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. [*Use this paragraph if samples have not been collected within the Right-of-Way, sampling within the Right-of-Way is not practical, and contamination does not extend beyond the Right-of-Way.*] Because the collection of samples within the Right-of-Way is not practical, the Parties stipulate that, based on modeling, soil and groundwater contamination exceeding Tier 1 residential remediation objectives does not and will not extend beyond the boundaries of the Right-of- Way.

7. 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.

8. The Highway Authority agrees to prohibit within the Right-of-Way all potable and domestic uses of groundwater exceeding Tier 1 residential remediation objectives.

9. 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 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.

10. This agreement shall be referenced in the Agency's no further remediation determination issued for the Release(s).

11. 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 Agreement and is signed by the Highway Authority, or subsequent transferor, and the transferee.

12. This agreement shall become effective on the date the Agency issues a no further remediation determination for the Release(s). 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.

13. 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 any of the Parties or any transferee violates any term of this agreement. The Parties or transferee shall be notified in writing of any such declaration.

14. This agreement shall be null and void if a court of competent jurisdiction strikes down any part or provision of the agreement.

15. 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.

16. Any notices or other correspondence regarding this agreement shall be sent to the Parties at following addresses:

Manager, Division of Remediation Management
Bureau of Land
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, IL 62974-9276

Village of Oak Park
(Contact at Highway Authority)

Address 123 Madison Street

City Oak Park

State Illinois

Zip Code 60302

Property Owner or Owner/Operator

Name Hargobind, Inc.

Address 330 Chicago Avenue

City Oak Park

State Illinois

Zip Code 60302

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

[NAME OF LOCAL GOVERNMENT]

Date: _____ By: _____

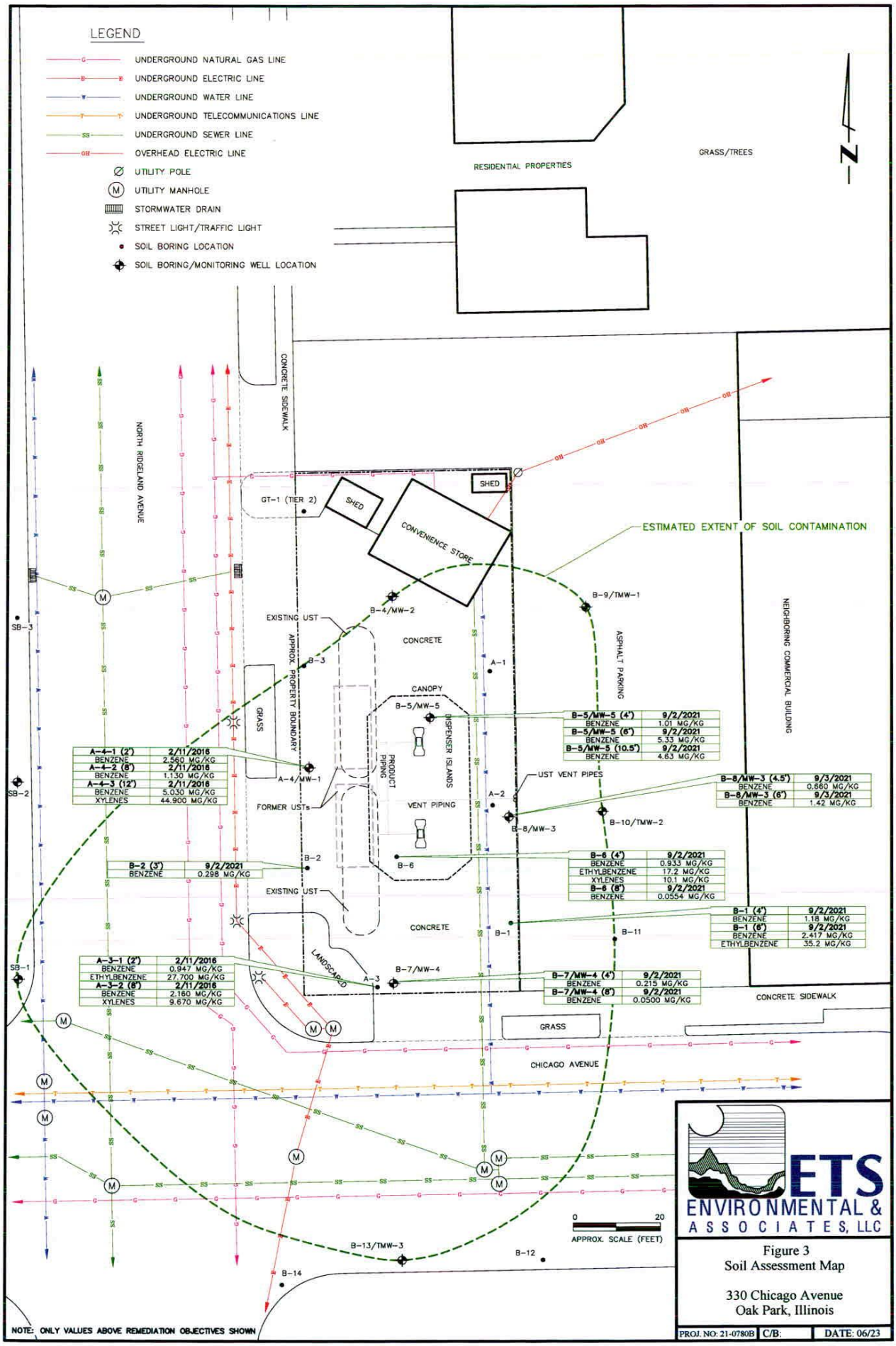
Its: _____

Property Owner or Owner/Operator

Date: _____ By: _____

Title

EXHIBIT A

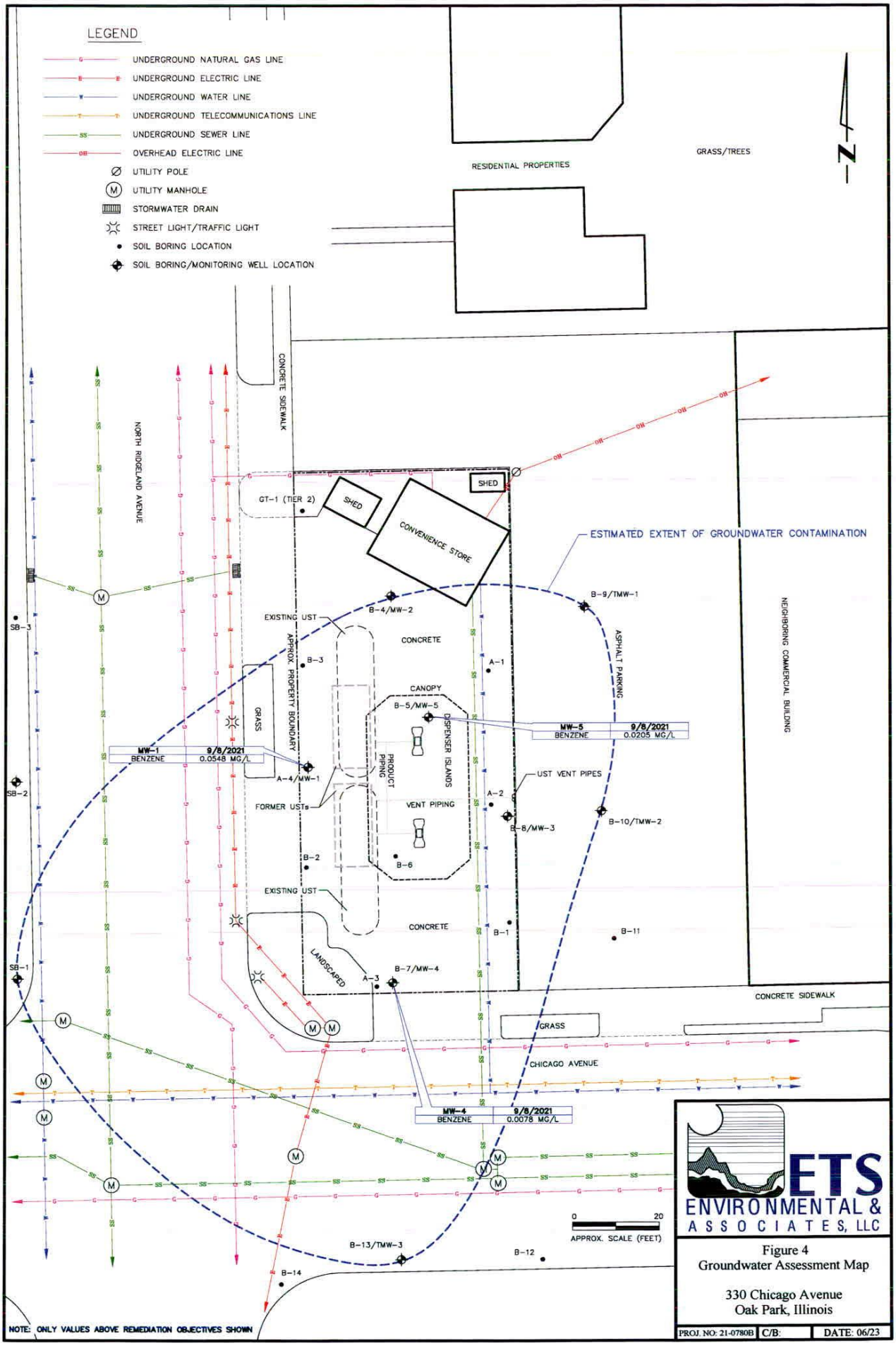


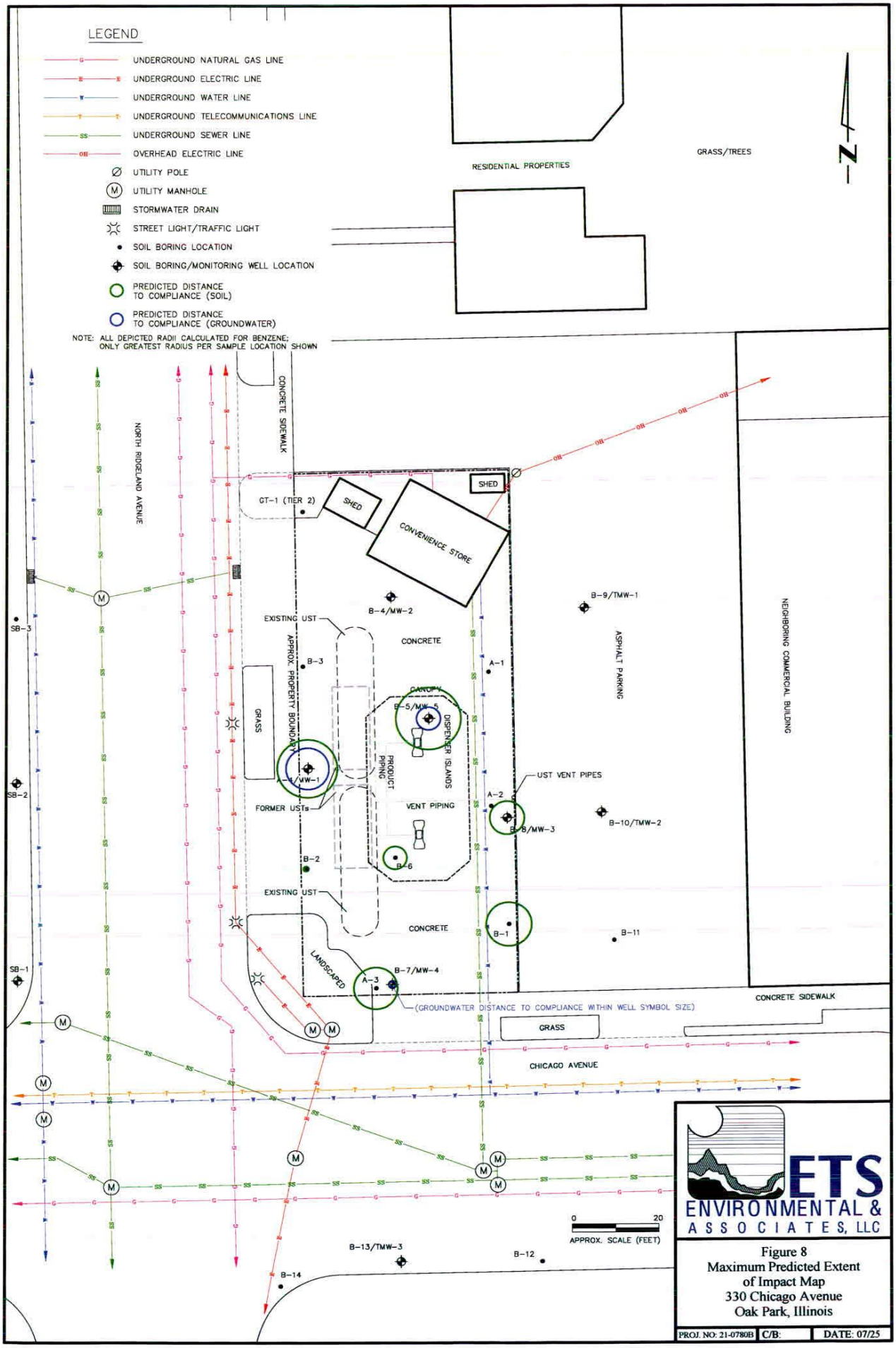
ETS ENVIRONMENTAL & ASSOCIATES, LLC

Figure 3
Soil Assessment Map

330 Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780B	C/B:	DATE: 06/23


LEGEND
UNDERGROUND NATURAL GAS LINE
UNDERGROUND ELECTRIC LINE
UNDERGROUND WATER LINE
UNDERGROUND TELECOMMUNICATIONS LINE
UNDERGROUND SEWER LINE
OVERHEAD ELECTRIC LINE
UTILITY POLE
UTILITY MANHOLE
STORMWATER DRAIN
STREET LIGHT/TRAFFIC LIGHT
SOIL BORING LOCATION
SOIL BORING/MONITORING WELL LOCATION
RESIDENTIAL PROPERTIES
GRASS/TREES
N
CONCRETE SIDEWALK
NORTH RIDGELAND AVENUE
GT-1 (TIER 2)
SHED
SHED
CONVENIENCE STORE
ESTIMATED EXTENT OF GROUNDWATER CONTAMINATION
B-9/TMW-1
B-4/MW-2
EXISTING UST
CONCRETE
ASPHALT PARKING
NEIGHBORING COMMERCIAL BUILDING
SB-3
B-3
A-1
APPROX. PROPERTY BOUNDARY
GRASS
CANOPY
B-5/MW-5
DISPENSER ISLANDS
MW-5 9/8/2021 BENZENE 0.0205 MG/L
MW-1 9/8/2021 BENZENE 0.0548 MG/L
A-4/MW-1
PRODUCT PIPING
UST VENT PIPES
SB-2
FORMER USTs
VENT PIPING
A-2
B-8/MW-3
B-10/TMW-2
B-2
B-6
EXISTING UST
CONCRETE
B-1
B-11
LANDSCAPED
SB-1
A-3
B-7/MW-4
CONCRETE SIDEWALK
GRASS
CHICAGO AVENUE
MW-4 9/8/2021 BENZENE 0.0078 MG/L
0 20
APPROX. SCALE (FEET)
B-13/TMW-3
B-12
B-14
NOTE: ONLY VALUES ABOVE REMEDIATION OBJECTIVES SHOWN
ETS ENVIRONMENTAL & ASSOCIATES, LLC
Figure 4
Groundwater Assessment Map
330 Chicago Avenue
Oak Park, Illinois
PROJ. NO: 21-0780B
C/B:
DATE: 06/23



ETS ENVIRONMENTAL & ASSOCIATES, LLC

Figure 8
Maximum Predicted Extent of Impact Map
330 Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780B	C/B:	DATE: 07/25

EXHIBIT B

Soil BTEX/MTBE Analytical Results
330 Chicago Avenue
Oak Park, Illinois
Project No. 21-0780B

SAMPLE ID	DATE	DEPTH (FEET)	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
A-1-1	02/11/16	2'	<0.005	<0.005	<0.005	<0.005	<0.005
A-1-2	02/11/16	8'	<0.005	<0.005	<0.005	<0.005	<0.005
A-1-3	02/11/16	12'	<0.005	<0.005	<0.005	<0.005	<0.005
A-2-1	02/11/16	2'	0.0122	<0.005	<0.005	<0.005	<0.005
A-2-2	02/11/16	7.5'	<0.005	<0.005	<0.005	<0.005	<0.005
A-2-3	02/11/16	12.5'	<0.005	<0.005	<0.005	<0.005	<0.005
A-3-1	02/11/16	2'	0.947 [1,2,6]	<0.005	27.7 [1,2]	0.591	<0.32
A-3-2	02/11/16	8'	2.16 [1,2,6,7]	<0.005	3.78	9.67 [8]	<0.32
A-3-3	02/11/16	12'	0.0056	<0.005	<0.005	0.0075	<0.005
A-4-1	02/11/16	2'	2.56 [1,2,6,7,8]	0.573	2.58	2.88	<0.32
A-4-2	02/11/16	8'	1.13 [1,2,6]	<0.005	<0.5	<0.500	<0.32
A-4-3	02/11/16	12'	5.03 [1,2,6,7,8]	<0.005	10.2	44.9 [8]	<0.32
B-1	09/02/21	4'	1.18 [1,2,6]	<0.5	1.61	<0.5	<0.32
B-1	09/02/21	6'	2.47 [1,2,6,7,8]	<0.5	35.2 [1,2]	0.78	<0.32
B-1	09/02/21	11'	0.0126	<0.005	0.0659	0.0212	<0.005
B-2	09/03/21	3'	0.298 [1,2]	0.373	1.3	0.74	<0.32
B-2	09/03/21	5.5'	0.0128	0.0057	<0.005	0.0114	<0.005
B-2	09/03/21	10.5'	<0.005	<0.005	<0.005	<0.005	<0.005
B-3	09/02/21	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-3	09/02/21	8'	<0.005	<0.005	<0.005	<0.005	<0.005
B-3	09/02/21	10.5'	<0.005	<0.005	<0.005	<0.005	<0.005
B-4/MW-2	09/02/21	4.5'	<0.005	<0.005	<0.005	<0.005	<0.005
B-4/MW-2	09/02/21	6'	<0.005	<0.005	<0.005	0.0102	<0.005
B-4/MW-2	09/02/21	11'	<0.005	<0.005	<0.005	<0.005	<0.005
B-5/MW-5	09/02/21	4'	1.01 [1,2,6]	<0.5	0.863	<0.5	<0.32
B-5/MW-5	09/02/21	6'	5.33 [1,2,6,7,8]	<0.5	2.59	2.39	<0.32
B-5/MW-5	09/02/21	10.5'	4.63 [1,2,6,7,8]	<0.5	2.71	1.8	<0.32
B-6	09/03/21	4'	0.933 [1,2,6]	<0.5	17.2 [1]	10.1 [8]	<0.32
B-6	09/03/21	8'	0.0554 [1]	<0.005	<0.005	<0.005	<0.005
B-6	09/03/21	11'	<0.005	<0.005	<0.005	<0.005	<0.005
SOIL COMPONENT TO GROUNDWATER INGESTION	**CLASS I**		**0.03**	**12**	**13**	**150**	**0.32**
	CLASS II		**0.17**	**29**	**19**	**150**	**0.32**
	RESIDENTIAL		**12**	**16,000**	**7,800**	**16,000**	**780**
REMEDIATION OBJECTIVES							
	CONSTRUCTION		**2,300**	**410,000**	**20,000**	**41,000**	**2,000**
INHALATION REMEDIATION OBJECTIVES	**RESIDENTIAL**		**0.8**	**650**	**400**	**320**	**8,800**
	COMMERCIAL		**1.6**	**650**	**400**	**320**	**8,800**
	CONSTRUCTION		**2.2**	**42**	**58**	**5.6**	**140**

1-Class I Soil Component to Groundwater Remediation Objective exceeded

2-Class II Soil Component to Groundwater Remediation Objective exceeded

3-Residential Ingestion Remediation Objective exceeded

4-Commercial Ingestion Remediation Objective exceeded

5-Construction Worker Ingestion Remediation Objective exceeded

6-Residential Inhalation Remediation Objective exceeded

7-Commercial Inhalation Remediation Objective Exceeded

8-Construction Worker Inhalation Remediation Objective exceeded

Results in mg/kg

ETS ENVIRONMENTAL & ASSOCIATES, LLC

Soil BTEX/MTBE Analytical Results
330 Chicago Avenue
Oak Park, Illinois
Project No. 21-0780B

SAMPLE ID	DATE	DEPTH (FEET)	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
B-7/MW-4	09/02/21	4'	**0.215** [1,2]	**1.12**	**1.46**	**1.45**	<0.32
B-7/MW-4	09/02/21	8'	**0.05** [1]	<0.005	<0.005	<0.005	<0.005
B-7/MW-4	09/02/21	11'	**0.0057**	**0.0056**	<0.005	**0.0125**	<0.005
B-8/MW-3	09/03/21	4.5'	**0.66** [1,2]	<0.5	**0.744**	<0.5	<0.32
B-8/MW-3	09/03/21	6'	**1.42** [1,2,6]	<0.5	<0.5	<0.5	<0.32
B-8/MW-3	09/03/21	11'	<0.005	<0.005	<0.005	<0.005	<0.005
GT-1	09/02/21	8'	<0.005	<0.005	<0.005	<0.005	<0.005
SB-1	08/16/22	4.5'	<0.005	<0.005	<0.005	<0.005	<0.005
SB-2	08/16/22	3'	<0.005	<0.005	<0.005	<0.005	<0.005
SB-3	08/16/22	3.5'	<0.005	<0.005	<0.005	<0.005	<0.005
B-9	02/02/23	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-9	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-9	02/02/23	13'	<0.005	<0.005	<0.005	<0.005	<0.005
B-10	02/02/23	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-10	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-10	02/02/23	13'	<0.005	<0.005	<0.005	<0.005	<0.005
B-11	02/02/23	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-11	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-11	02/02/23	13'	<0.005	<0.005	<0.005	<0.005	<0.005
B-12	02/02/23	4'	<0.005	<0.005	<0.005	<0.005	<0.005
B-12	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-12	02/02/23	11'	<0.005	<0.005	<0.005	<0.005	<0.005
B-13	02/02/23	4'	<0.005	<0.005	<0.005	<0.005	<0.005
B-13	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-13	02/02/23	14'	<0.005	<0.005	<0.005	<0.005	<0.005
B-14	02/02/23	3'	<0.005	<0.005	<0.005	<0.005	<0.005
B-14	02/02/23	7'	<0.005	<0.005	<0.005	<0.005	<0.005
B-14	02/02/23	12'	<0.005	<0.005	<0.005	<0.005	<0.005
SOIL COMPONENT TO GROUNDWATER INGESTION	**CLASS I**		**0.03**	**12**	**13**	**150**	**0.32**
	CLASS II		**0.17**	**29**	**19**	**150**	**0.32**
INGESTION REMEDIATION OBJECTIVES	**RESIDENTIAL**		**12**	**16,000**	**7,800**	**16,000**	**780**
	COMMERCIAL		**100**	**410,000**	**200,000**	**410,000**	**20,000**
	CONSTRUCTION		**2,300**	**410,000**	**20,000**	**41,000**	**2,000**
INHALATION REMEDIATION OBJECTIVES	**RESIDENTIAL**		**0.8**	**650**	**400**	**320**	**8,800**
	COMMERCIAL		**1.6**	**650**	**400**	**320**	**8,800**
	CONSTRUCTION		**2.2**	**42**	**58**	**5.6**	**140**

1-Class I Soil Component to Groundwater Remediation Objective exceeded

2-Class II Soil Component to Groundwater Remediation Objective exceeded

3-Residential Ingestion Remediation Objective exceeded

4-Commercial Ingestion Remediation Objective exceeded

5-Construction Worker Ingestion Remediation Objective exceeded

6-Residential Inhalation Remediation Objective exceeded

7-Commercial Inhalation Remediation Objective Exceeded

8-Construction Worker Inhalation Remediation Objective exceeded

Results in mg/kg

ETS ENVIRONMENTAL & ASSOCIATES, LLC

Groundwater BTEX/MTBE Analytical Results
330 Chicago Avenue
Oak Park, Illinois
Project No. 21-0780A

SAMPLE ID	DATE	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
MW-1	03/09/16	**0.4430** [1,2]	**0.0292**	**0.0121**	**0.0237**	<0.005
MW-1	09/08/21	**0.0548** [1,2]	<0.005	<0.005	**0.0076**	<0.005
MW-2	09/08/21	<0.005	<0.005	<0.005	<0.005	<0.005
MW-3	09/08/21	<0.005	<0.005	<0.005	<0.005	<0.005
MW-4	09/08/21	**0.0078** [1]	<0.005	<0.005	<0.005	<0.005
MW-5	09/08/21	**0.0205** [1]	<0.005	<0.005	<0.005	<0.005
SB-1	8/16/2022	<0.005	<0.005	<0.005	<0.005	<0.005
SB-2	8/16/2022	<0.005	<0.005	<0.005	<0.005	<0.005
TMW-1	02/02/23	<0.005	<0.005	<0.005	<0.005	<0.005
TMW-2	02/02/23	<0.005	<0.005	<0.005	<0.005	<0.005
TMW-3	02/02/23	<0.005	<0.005	<0.005	<0.005	<0.005
GROUNDWATER REMEDIATION OBJECTIVES	**CLASS I**	**0.005**	**1**	**0.7**	**10**	**0.07**
	CLASS II	**0.025**	**2.5**	**1**	**10**	**0.07**
GROUNDWATER INDOOR INHALATION	**Residential**	**0.11**	**530**	**0.37**	**30**	**1,900**
	Commercial	**0.41**	**530**	**1.4**	**93**	**6,800**

1 = Class I Remediation Objectives exceeded
2 = Class II Remediation Objectives exceeded
3 = Residential GW Indoor Inhalation Objectives exceeded
4 = Commercial GW Indoor Inhalation Objectives exceeded
* This site has been evaluated based on Class I Remediation Objectives

Units in mg/L

ETS ENVIRONMENTAL & ASSOCIATES, LLC

EXHIBIT C

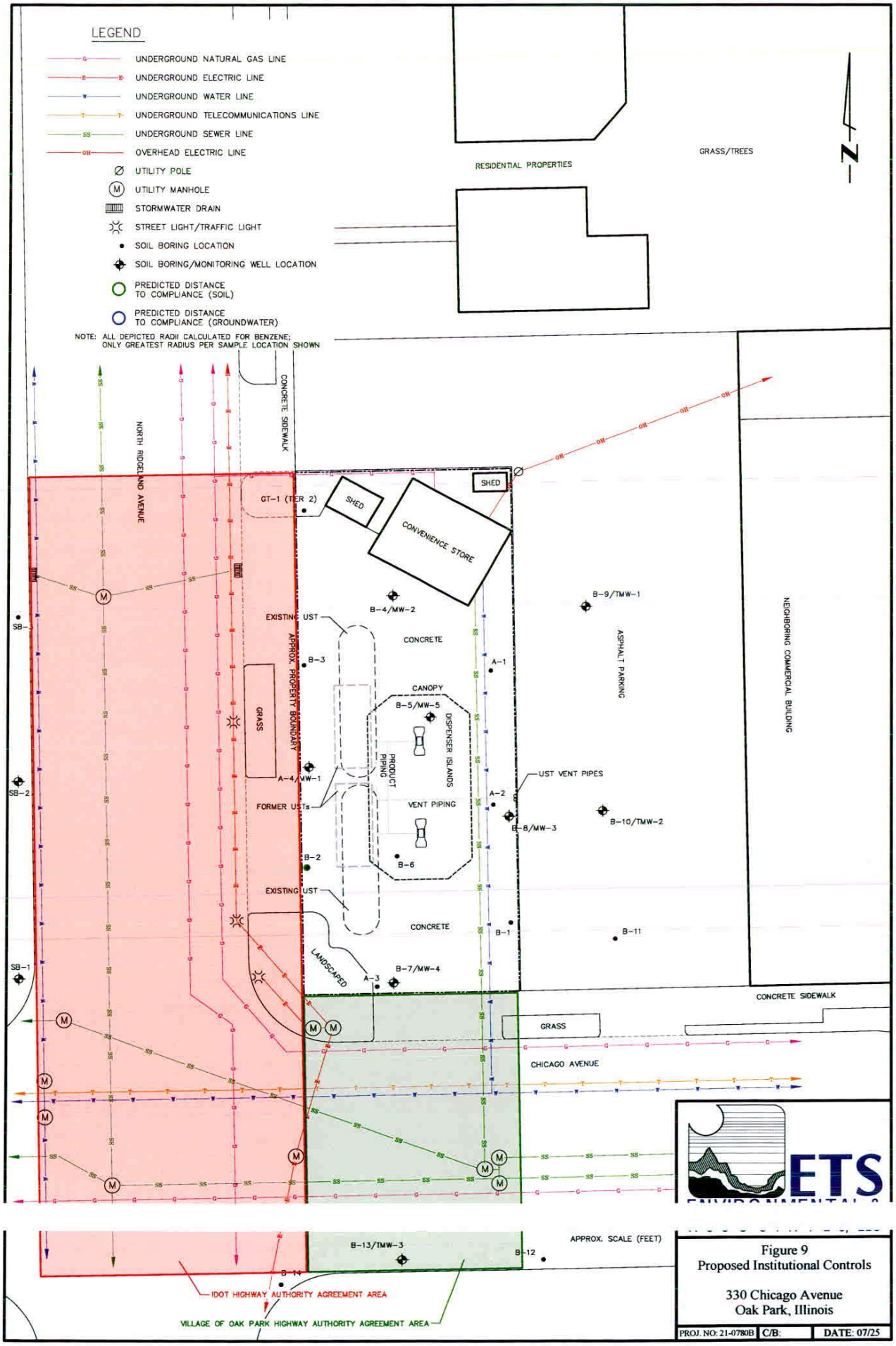


Figure 9
Proposed Institutional Controls

330 Chicago Avenue
Oak Park, Illinois

PROJ. NO: 21-0780B	C/B:	DATE: 07/25

APPENDIX E

Village of Oak Park Ordinance No. 2001-0-107

CLERK'S CERTIFICATE

I, Sandra Sokol, Village Clerk of the Village of Oak Park, in the County of Cook and the State of Illinois, do hereby certify that ORDINANCE #2001-0-107 entitled: An Ordinance Prohibiting The Use Of Groundwater As A Potable Water Supply By The Installation Or Use Of Potable Water Supply Wells Or By Any Other Method was adopted by the Village Board of Trustees on December 3, 2001 and approved by the Village President on December 3, 2001. The ORDINANCE is available for public inspection in the Office of the Village Clerk.

IN WITNESS WHEREOF I have set my hand and affixed the seal of said Village of Oak Park this 11th day of December, 2001.

Sandra Sokol
Sandra Sokol
Village Clerk

by: Kathleen M. Cannon
Kathleen M. Cannon
Deputy Village Clerk

(seal)

AN ORDINANCE PROHIBITING THE USE OF GROUNDWATER AS A POTABLE WATER SUPPLY BY THE INSTALLATION OR USE OF POTABLE WATER SUPPLY WELLS OR BY ANY OTHER METHOD

WHEREAS, various properties throughout the Village of Oak Park, Illinois have been used over a period of time for commercial/industrial purposes or are near properties which have been so used; and

WHEREAS, because of said use, concentrations of certain chemical constituents in the groundwater beneath the Village of Oak Park may exceed Class I groundwater quality standards for potable resource groundwater as set forth in 35 Illinois Administrative Code 620 or Tier 1 residential remediation objectives as set forth in 35 Illinois Administrative Code 742; and

WHERAS, the Village of Oak Park (hereinafter "the Village") desires to limit potential threats to human health from groundwater contamination while facilitating the redevelopment and productive use of properties that are the source of said chemical constituents;

NOW, THEREFORE, BE IT ORDAINED by the President and Board of Trustees of the Village of Oak Park, County of Cook, State of Illinois as follows:

SECTION ONE: ADOPTION OF FINDINGS.

The findings set forth hereinabove are incorporated herein and are made apart hereof.

SECTION TWO: USE OF GROUNDWATER AS A POTABLE WATER SUPPLY PROHIBITED.

The use or attempt to use as a potable water supply, groundwater from within the corporate limits of the Village of Oak Park, by the installation or drilling of wells or by

any other method is hereby prohibited, including at points of withdrawal by the Village of Oak Park.

SECTION THREE: VILLAGE PROHIBITION.

Except for the provisions contained in Section Four, all restrictions contained in this Ordinance shall be binding upon the Village of Oak Park, Illinois.

SECTION FOUR: PENALTIES.

Any person violating the provisions of this ordinance shall be subject to a fine of up to $500.00 for each violation.

SECTION FIVE: DEFINITIONS.

"Person" is any individual, partnership, co-partnership, firm, company, limited liability company, corporation, association, joint stock company, trust, estate, political subdivision, or any other legal entity, or their legal representatives, agents, or assigns.

"Potable water" is any water used for human or domestic consumption, including, but not limited to, water used for drinking, bathing, swimming, washing dishes, or preparing foods.

SECTION SIX: REPEALER.

All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed insofar as they are in conflict with this ordinance.

SECTION SEVEN: SEVERABILITY.

If any provision of this ordinance or its application to any person or under any circumstances is adjudged invalid, such adjudication shall not affect the validity of the ordinance as a whole or of any portion not adjudged invalid.

SECTION EIGHT: EFFECTIVE DATE.

THIS ORDINANCE shall be in full force and effect from and after its passage, approval and publication as required by law.

ADOPTED this 3rd day of December, 2001, pursuant to a roll call vote as follows:

AYES: Trustees Carpenter, Ebner, Gockel, Hodge-West, Kostopulos and Turner and President Trapani

NAYS: None

ABSENT: None

APPROVED by me this 3rd day of December, 2001.

Village President

ATTEST:

Village Clerk

BY: Deputy Village Clerk

APPENDIX F

Corrective Action Plan Budget

Illinois Environmental Protection Agency

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

General Information for the Budget and Billing Forms

LPC #: 0312255051 **County:** Cook

City: Oak Park **Site Name:** GoLo Gas Station

Site Address: 330 W. Chicago Avenue

Date this form was prepared: Aug 7, 2025

List all IEMA Incident numbers associated with this package:

971663

List all other incidents associated with this site that are not associated with this package:

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

◯ Billing Package

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

⊘ Budget Proposal

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

Name(s): Corrective Action Plan

Date(s): Aug 7, 2025

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

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 for this package.

Pay to the order of: Hargobind, Inc.

Send in care of: Mr. Hardeep Singh

Address: 330 W. Chicago Avenue

City: Oak Park State: IL Zip: 60302

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

SIGN HERE

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

8/19/2025
Date

Hardeep Singh

Printed name of the owner or operator of the UST(s) (required)

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

Email: hargobindinc@gmail.com

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: ○

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
Gasoline	7,500	Yes ☑ No ○	971663	Tank Leak
Gasoline	7,500	Yes ☑ No ○	971663	Tank Leak
Gasoline	12,000	Yes ○ No ☑		
Gasoline	12,000	Yes ○ No ☑		
		Yes ○ No ○		
		Yes ○ No ○		
		Yes ○ No ○		

Form **W-9**
(Rev. March 2024)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give form to the requester. Do not send to the IRS.

Before you begin. For guidance related to the purpose of Form W-9, see *Purpose of Form*, below.

Print or type. See *Specific Instructions* on page 3.

1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.)

Hargobind Inc

2 Business name/disregarded entity name, if different from above.

3a Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor ☐ C corporation ☑ S corporation ☐ Partnership ☐ Trust/estate

☐ LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) . . . . .

Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner.

☐ Other (see instructions)

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any)

Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any)

(Applies to accounts maintained outside the United States.)

3b If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification, and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions . . . . . ☐

5 Address (number, street, and apt. or suite no.). See instructions.

330 Chicago Ave

6 City, state, and ZIP code

Oak Park, IL, 60302

Requester's name and address (optional)

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. See also *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

2	7	–	2	2	3	7	0	6	0

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and, generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here | **Signature of U.S. person** hps | **Date** 5/27/2025

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

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					0.00
Analytical Costs Form					0.00
Remediation and Disposal Costs Form					0.00
UST Removal and Abandonment Costs Form					0.00
Paving, Demolition, and Well Abandonment Costs Form					1,176.75
Consulting Personnel Costs Form					14,859.00
Consultant's Materials Costs Form					154.00
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					16,189.75

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
		0.00			

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	15.00	15.69	$235.35
MW-2	HSA	15.00	15.69	$235.35
MW-3	HSA	15.00	15.69	$235.35
MW-4	HSA	15.00	15.69	$235.35
MW-5	HSA	15.00	15.69	$235.35

Total Monitoring Well Abandonment Costs:	**$1,176.75**

Total Paving, Demolition, and Well Abandonment Costs:	**$1,176.75**

Consulting Personnel Costs Form

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Project Manager	24.00	156.94	$3,766.56
CCAP	Corrective Action Plan Preparation			
	Senior Project Manager	6.00	156.94	$941.64
CCAP-Budget	Corrective Action Plan Budget Preparation			
	Senior Prof. Engineer	3.00	204.03	$612.09
CCAP	Corrective Action Plan & Budget Review and Certification			
	Senior Acct. Technician	8.00	86.31	$690.48
CA-Pay	Corrective Action Claim Prep: CAP & Budget			
	Senior Prof. Engineer	1.00	204.03	$204.03
CA-Pay	Corrective Action Claim Review and Cert.: CAP & Budget			
	Senior Project Manager	8.00 ~~12.00~~	156.94	~~$1,883.28~~ 1,255.52
HAA	Village of Oak Park Highway Authority Agreement(s) preparation, negotiation, & execution Agreed to			
	Senior Project Manager	24.00	156.94	$3,766.56
CACR	Corrective Action Completion Report Preparation			
	Senior Prof. Engineer	3.00	204.03	$612.09
CACR	Corrective Action Completion Report Review and Certification			
	Senior Acct. Technician	8.00	86.31	$690.48
CA-Pay	Corrective Action Claim Prep: ICs and CACR prep.			

Employee Name	Personnel Title	Hours	Rate* ($)	Total Cost
Remediation Category	**Task**			
	Senior Prof. Engineer	1.00	204.03	$204.03
CA-Pay	Corrective Action Claim Review and Cert.: ICs and CACR prep.			
	Geologist I	6.00	109.85	$659.10
	Re-gauge and survey monitoring wells			
	Geologist III	6.00	138.11	$828.66
	Re-gauge and survey monitoring wells			

*Refer to the applicable Maximum Payment Amounts document.

Total of Consulting Personnel Costs	~~$14,859.00~~ 14,231.24

Consultant's Materials Costs Form

Materials, Equipment, or Field Purchase	Time or Amount Used	Rate ($)	Unit	Total Cost
Remediation Category	**Description/Justification**			
Truck	70.00	0.70	mile	$49.00
CCA-Field	Truck mileage to and from the Site (1 Round Trip)			
Water Level Indicator	1.00	30.00	day	$30.00
CCA-Field	Water Level Indicator Usage			
Survey Equipment	1.00	75.00	day	$75.00
CCA-Field	Survey Equipment for Groundwater Measurement			

Total of Consultant Materials Costs	**$154.00**

Field Environmental Instruments, Inc.

CALL YOUR LOCAL FEI

The user prevented this page from retrieving the location.

ABOUT FEI

HOW TO ORDER

BY MANUFACTURER

Solinst Laser-Marked Water Level Meter

TOOLS

CONTACT AN FEI LOCATION NEAR YOU

Model 101 Specification Sheet

Model 101 w/P7 Probe Specification Sheet

Model 102 Specification Sheet

Operation Manual

Item	Daily	Weekly	Monthly
	Add to Cart	Add to Cart	Add to Cart
Model 102 Laser Marked P4 Probe (0.157"), 100' Tape	$26.25	$61.25	$175
	Add to Cart	Add to Cart	Add to Cart
Model 102 Laser Marked P4 Probe (0.157"), 200' Tape	$30	$70	$200
	Add to Cart	Add to Cart	Add to Cart
Model 102 Laser Marked P4 Probe (0.157"), 300' Tape	$33.75	$78.75	$225

#1 Home Improvement Retailer

Geneva 10PM 60134 W. Geneva 10PM 60134 Shop All Services DIY Log In

Feedback

Hover Image to Zoom

Internet #316821764 Model #57-LM30PKG Rental Category #10 Rental Subcategory #380

Rotary Laser Level Kit Rental

Rental Pricing for Geneva #1921

Exact pricing will be determined at the store.

$54.00	$77.00	$308.00	$924.00
4-Hours	Per Day	Per Week	4 Weeks

Your Deposit will be calculated at checkout. Credit Cards accepted. No Cash.

A **valid identification** is required at pickup.

This tool may require accessories.

For more details, please call your nearest Rental Center.

How To Get It

Your Nearest Rental Center is:

✔ 1 Currently Available **at Geneva #1921**
2111 So Randall Rd, Geneva, IL, 60134

Rental: (630) 262-2920

Check Nearby Stores

Pickup in Store

Feedback

Product Overview

The Self-Leveling Interior/Exterior Rotary Laser Level from DEWALT is accurate to 1/4 in. at 100 ft. and constructed to withstand the abuse of rugged job site conditions. The unit is self-leveling in horizontal mode, and the addition of arrow buttons used for manual leveling in vertical mode are far more intuitive than traditional knobs. Sharp and bright, the beam can be seen up to 100 ft. indoors and can be recognized up to 1200 ft. diameter outdoors with the included detector. The laser also offers a weather-resistant housing for durable and accurate performance

Accuracy: 1/4 In @ 100 Ft

Range: 800 Ft

Dual beam with vertical laydown positioning

Includes Aluminum Tripod, Laser Detector, target, and ceiling mount

Click here for more information on Electronic Recycling Programs

Specifications

Dimensions

Product Height (in.)	13 in
Product Width (in.)	14.5 in

Details

Amperage (A)	0 A
Color Family	Yellow
Cord Length (ft.)	0 ft
Features	No Additional Features

Noise Level (dB)	0
Voltage (V)	0 V
Weight (lb.)	22 lb

How can we improve our product information? Provide feedback.

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Download Our App

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The Company Store · VISSANI · HOME DECORATORS COLLECTION · HAMPTON BAY · HUSKY · lifeproof · lifeproof petproof · GLACIER BAY · EVERBILT · StyleWell · HDX · Vigoro · trafficMASTER · DEFIANT · ecosmart · HOME ACCENTS Holiday · Commercial Electric · powered by HUBSPACE

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Provide Feedback

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 971663. 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: Hargobind, Inc.

Authorized Representative: Hardeep Singh Title: _____

Signature: _____ Date: 8/19/2025

Subscribed and sworn to before me the 19 day of August, 2025.

_____ Seal:
(Notary Public)

JAMIL MATARIYEH
Official Seal
Notary Public - State of Illinois
My Commission Expires Jan 5, 2026

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 5/57, 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.: Jeffrey Wienhoff L.P.E./L.P.G. Seal:

L.P.E./L.P.G. Signature: _____ Date: 8/13/25

Subscribed and sworn to before me the 13 day of August, 2025.

_____ Seal:
(Notary Public)

OFFICIAL SEAL
MICHAEL A. BETTENHAUSEN
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires Oct 6, 2025

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.

0312255051 COOK
Clark Oil & Refining
Lust/

Office of the Illinois
State Fire Marshal

General Office
217-785-0969
FAX
217-782-1062
Divisions
ARSON INVESTIGATION
217-782-6455
BOILER and PRESSURE VESSEL SAFETY
217-782-2696
FIRE PREVENTION
217-785-4714
MANAGEMENT SERVICES
217-782-9889
OFIRS
217-785-1018
PERSONNEL
217-782-1009
PERSONNEL STANDARDS and EDUCATION
217-782-4542
PETROLEUM and CHEMICAL SAFETY
217-785-5878
PUBLIC INFORMATION
217-785-1021
WEB SITE
www.state.il.us/osfm

CERTIFIED MAIL - RECEIPT REQUESTED #Z 760 973 078

January 6, 1998

Clark Refining & Marketing, Inc.
800 Roosevelt Rd
Bldg., E, Suite 200
Glen Ellyn, IL 60137

In Re: Facility No. 2-010026
IEMA Incident No. 97-1663
Clark #993
330 Chicago Ave
Oak Park, COOK CO., IL

Dear Mr. Wolin:

The Reimbursement Eligibility and Deductible Application, received on December 5, 1997 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 $10,000. The costs must be in response to the occurrence referenced above and associated with the following tanks:

Eligible Tanks

Tank 1 7,500 gallon gasoline
Tank 2 7,500 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;

SCREENED

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

"Fuel", as defined in Section 1.10 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 105.102(a) (2)).

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

Dorothy Gunn, 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 12,000 gallon gasoline
Tank 4 12,000 gallon gasoline

Your application indicates that there has not been a release from these tanks. 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 regarding the eligibility or deductibility determinations, please contact our Office at (217)785-1020 or (217)785-5878 between 3:00 - 4:00 p.m.

Sincerely,

William E. Alderson
Acting Director
Division of Petroleum and Chemical Safety

WEA:ct

cc: IEPA
Facility File