



Illinois Environmental Protection Agency

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

RCRA Permit Application Form (LPC-PA23)

[View Instructions](#)

This form must be used for any permit application for a hazardous waste management facility regulated in accordance with RCRA, Subtitle C, including all requests to modify an existing permit. One original and three (3) copies, of all permit applications must be submitted. Attach the original and appropriate number of copies of a cover letter, any necessary plans, specifications, reports, forms, (e.g., corrective action certification form), and any other certifications etc. to fully support and describe the activities or modifications being proposed. Attach sufficient information to demonstrate compliance with all applicable regulatory requirements. Applications without this form will be deemed incomplete. Please refer to the RCRA checklist and decision guide documents for further guidance. For RCRA corrective action, this form should only be used if requesting an actual modification to a RCRA permit. A RCRA Corrective Action Certification form should be used in all other instances.

Note: Permit applications which are hand-delivered to the Bureau of Land, Permit Section must be delivered to 1021 North Grand Avenue East between the hours of 8:30 a.m. to 5:00 p.m., Monday through Friday (excluding State holidays).

Please type or print all information legibly.

I. Site Identification

Site # (Illinois EPA): 1191150002 USEPA ID Number: ILD080012305
Site Name: Equilon Enterprises LLC d/b/a Shell Oil Products US (SOPUS)
Physical Site Location (street, road, etc.): 900 South Central Avenue
City: Roxana Zip Code: 62084 County: Madison
Existing RCRA Permit (if applicable): B-43R

II. Owner/Operator Identification

Owner Information

Name: WRB Refining LP
Mailing Address:

2331 City West Blvd
Houston, TX 77042

Contact Name: Tom Morgan
Phone #: 618-255-2142
Email: thomas.r.morgan@p66.com

Operator Information

Name: Equilon Enterprises LLC d/b/a SOPUS
Mailing Address:

150 North Dairy Ashford
Building A, 5th Floor
Houston, TX 77079

Contact Name: Dan Kirk
Phone #: 281.544.9796
Email: dan.kirk@shell.com

A 39(i) certification must be submitted with information concerning the following persons or entities:

- the owner of the business entity applying for the permit;
- the operator of the business entity applying for the permit;
- each employee or officer of the owner or operator who signed the permit application or has managerial authority at the site; and
- any additional owner, operator, or officer or employee of the owner or operator from whom a certification is requested by the Illinois EPA, including any officer or employee who will be responsible for overseeing or implementing regulated activities governed by the permit.

III. Permit Application Identification

Application Type

- | | | |
|--|--|---|
| <input type="checkbox"/> New Part B Permit | <input type="checkbox"/> Class 1 Modification | <input type="checkbox"/> Remedial Action Plan Permit (RAPP) |
| <input type="checkbox"/> Part B Permit Renewal | <input checked="" type="checkbox"/> Class 1* (prior approval required) Modification | <input type="checkbox"/> Sig RAPP Modification |
| | <input type="checkbox"/> Class 2 Modification | <input type="checkbox"/> Non Sig RAPP Modification |
| | <input type="checkbox"/> Class 3 Modification | <input type="checkbox"/> Major UIC Modification |
| | <input type="checkbox"/> Additional information to supplement UIC Class I application Log Number | <input type="checkbox"/> Minor UIC Modification |
-

This Application Involves

- | | | | |
|---|---|--------------------------------------|---------------------------------------|
| <input type="checkbox"/> Storage | <input type="checkbox"/> Treatment | <input type="checkbox"/> Disposal | <input type="checkbox"/> Incineration |
| <input checked="" type="checkbox"/> Groundwater | <input checked="" type="checkbox"/> Corrective Action | <input type="checkbox"/> UIC Class I | <input type="checkbox"/> UIC Class V |

Description of This Permit Request: (Include a brief narrative description here.)

Response to Condition V.D.3. of the 12/20/2019 Modified Permit requesting installation of a new groundwater monitoring well (B-43R-M-29).

IV. SIGNATURES

Original signatures required. Signature stamps or applications transmitted electronically or by facsimile are not acceptable. All applications shall be signed by the person in accordance with 35 IAC 702.126(a).

Please check the box of the appropriate certification.

Owner

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons that manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Alternative owner certification. For remedial action plans (RAPs) permit under Subpart H of 35 IAC 703, the owner may choose to make the following certification instead of the certification above.

Based on my knowledge of the conditions of the property described in the RAP and my inquiry of the person or persons that manage the system referenced in the operator's certification, or those persons directly responsible for gathering the information, the information submitted is, upon information and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner Name (Printed or Typed): Gerald Knoyle

Owner Signature: *Gerald Knoyle* Date: 10/8/2020

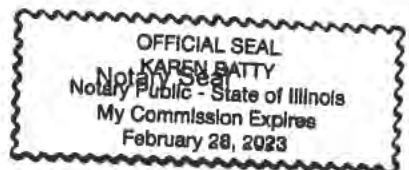
Title: Refinery Manager

Notary (Required for both owner and operator signatures)

Subscribed and Sworn before me this 8th day of October 2020

Notary Signature: *Karen Battys*

My commission expires on: February 28, 2023



Operator

I certify under penalty of law that this document and all attachment were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons that manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information.

Operator Name (Printed or Typed): Dan Kirk

Operator Signature: *D. T. Kirk* Date: 9-17-20

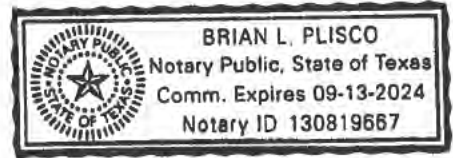
Title: Principal Program Manager



Notary (Required for both owner and operator signatures)

Subscribed and Sworn before me this 17th day of September 2020

Notary Signature: *[Signature]*



My commission expires on: 09/13/2024

Notary Seal

Engineer

I certify under penalty of law that this document and all attachment were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons that manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information.

Engineer Name (Print or Type): NOT APPLICABLE

Engineer Signature: _____

Illinois License No.: _____

Expiration Date of License: _____

Engineer Phone No. _____

Email: _____

Engineer Address:

Engineer Seal

All information submitted as part of the Application is available to the public except when specifically designated by the Applicant to be treated confidentially as a trade secret or secret process in accordance with Section 7(a) of the Environmental Protection Act, applicable Rules and Regulations of the Illinois Pollution Control Board and applicable Illinois EPA rules and guidelines.

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))

Instructions for RCRA Permit Application Form LPC-PA23

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The following instructions are designed to aid in the completion of the RCRA Permit Application Form LPCPA23. If you have additional questions regarding the form, or the informational requirements, please contact the Illinois EPA Bureau of Land (BOL) Permit Section at 217-524-3300.

This form must be used for any permit application for a hazardous waste management facility regulated in accordance with RCRA, Subtitle C, including all requests to modify an existing permit. If an application has already been submitted to the Agency, a completed RCRA Permit Application Form must accompany all additional information that is submitted to the agency for that application. An example of "additional information" would be a response to verbal or written comments from the Agency. For RCRA corrective action, this form should only be used if requesting an actual modification to a RCRA permit. A RCRA Corrective Action Certification form should be used in all other instances.

I. Site Identification

Enter all of the required information in the space provided. If you do not have an Illinois or USEPA identification number, call the Illinois EPA BOL Waste Reduction and Compliance Section at 217-785-8604 to obtain these numbers prior to completing the form.

II. Owner/Operator Identification

The terms "owner" and "operator" are defined at 35 IAC 720.110 and 702.110. If the facility has the same owner and operator, you may type in "same" under operator information. Also, if the contact person for an application is different from the owner or operator (i.e. the consultant), please indicate this in the cover letter for the application.

III. Permit Application Identification

Indicate both the type of application and the kind of waste management involved. For instance, if the application involves more than one type of waste management, check all applicable options.

IV. Signatures

The signatory requirements for permit applicants are identified at 35 IAC 702.126 and 702.151. If the facility has the same owner and operator, you may type in "same" under operator information.

Notary Public: A notary public's signature and stamp are required for both the owner and operator signatures on the form.

Engineer Certification: A professional engineer that is licensed in the State of Illinois must certify all technical information provided in a permit application. 35 IAC 703.182 describes the types of information that must be certified by a professional engineer.



Illinois Environmental Protection Agency

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39(i) Certification for Operating a Waste Management Facility

Pursuant to 415 ILCS 5/39(i), prior to issuing any RCRA permit, or any permit for a waste storage site, sanitary landfill, waste disposal site, waste transfer station, waste treatment facility, waste incinerator, clean construction or demolition debris fill operation, or used tire storage site, the Illinois EPA must conduct an evaluation of the prospective owner's or operator's prior experience in waste management operations, clean construction or demolition debris fill operations, and tire storage site management. As part of that evaluation please complete and submit this form with your permit application.

This form may be completed online and saved locally before printing, signing and submitting it to the Illinois EPA at the address below. If the form is completed manually, please type or print clearly.

Illinois Environmental Protection Agency
Division of Land Pollution Control - #33
39(i) Certification
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

I. Applicant Information

Site Name Equilon Enterprises LLC d/b/a Shell Oil Products US IEPA BOL No.: 1191150002

Site Address 900 South Central Avenue

City: Roxana State: IL Zip Code: 62084

Permit Numbers (if applicable): B-43R

Owner

Owner Name: WRB Refining LP

Street Address: 2331 City West Blvd

City: Houston State: TX Zip: 77042

Operator

Operator Name: Equilon Enterprises LLC dba SOPUS

Street Address: 150 N Dairy Ashford, Bldg A, 5th Floor

City: Houston State: TX Zip: 77079

Is this 39(i) certification for the owner or the operator?

Owner Operator Owner and operator are the same entity

II. Officers and Employees with Site Responsibility

Unless the owner and operator are the same entity, a separate 39(i) form must be submitted for both the owner and operator. Persons operating under the authority of the owner should be listed on the owner's 39(i) form and persons operating under authority of the operator should be listed on the operator's 39(i) form.

A. Officers: List the name and title of all officers of the owner or operator that will have personal involvement or active participation in the operation or management of the site or facility for which the application is submitted.

Name	Title
Dan Kirk	Principal Program Manager

B. Employees: List the name and title of each employee of the owner or operator that will have personal involvement or active participation in the overall operation or management of the site or facility for which the application is submitted (e.g. site managers, site engineers, and other persons who direct or control the overall day-to-day management of the operation, but not persons whose duties are exclusively limited to equipment operation, labor, or similar non-managerial functions).

Name	Title
Wendy Pennington	AECOM, Project Manager
Bob Billman	AECOM, Project Manager

III. Owner, Operator, Officer, and Employee Information

A. Prior Conduct Identification

The applicant must answer each of the following questions for every owner or operator, and for any officer or employee identified under Section II. If the answer to any of the following questions is affirmative, the applicant must complete an Attachment A for each person for whom the answer is affirmative and include a copy of each final administrative or judicial determination that required an affirmative response. If the information for each owner, operator, officer, and employee has not changed since the applicant's last submission of a 39(i) certification, the applicant can skip to Section III(C), below.

- 1) Has there been a finding that any person named in Section II violated federal, State, or local laws, regulations, standards, or ordinances in the operation of one or more waste management facilities or sites, clean construction or demolition debris fill operation facilities or sites, or tire storage sites? Yes
 No
- 2) Has any person named in Section II ever been convicted in this or another State of any crime which is a felony under the laws of this State, or convicted of a felony in a federal court; or convicted in this or another state or federal court of any of the following crimes: forgery, official misconduct, bribery, perjury, or knowingly submitting false information under any environmental law, regulation, or permit term or condition? Yes
 No
- 3) Has there been a finding against any person named in Section II of gross carelessness or incompetence in handling, storing, processing, transporting or disposing of waste, clean construction or demolition debris, or used or waste tires, or a finding of gross carelessness or incompetence in using clean construction or demolition debris as fill? Yes
 No

B. Pending Proceedings

The applicant must answer each of the following questions for every owner or operator, and for any officer or employee identified in Section II. If the answer to any of the following questions is affirmative, the applicant must complete an Attachment A for each person for whom the answer is affirmative and provide information identified in Attachment A regarding the pending proceeding.

- 1. Is there any proceeding currently pending against any person named in Section II that could result in a conviction or finding described in subsection A, above? Yes
 No
- 2. Is there any proceeding currently pending against any person named in Section II that could result in the reversal of a conviction or finding described in subsection A, above? Yes
 No

C. Prior Application Information

If (i) the applicant has previously submitted the Attachments required pursuant to subsections A and B above and (ii) the Attachments previously submitted are still complete, true, and correct, then the applicant does not need to include Attachments with this submission if the following box is checked:

By checking this box, I affirm that the Attachments previously submitted are still complete, true, and correct and wish to incorporate them into this Certification.

If the above box is checked, identify the application that contains the previously submitted Attachments that are complete, true, and correct.

RCRA Post-Closure Permit Renewal Application, EPA ID No. ILD080012305, Log No. B-43R2

Authorization for Release of Information

This Certification must be signed by an officer of the applicant.

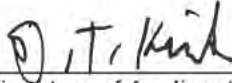
The undersigned authorizes any representative of the Illinois Environmental Protection Agency bearing this release to obtain any information from the Illinois State Police pertaining to the criminal records of the applicant and hereby directs the Illinois State Police to release such information upon request of the bearer. The undersigned authorizes a review of and full disclosure of all records, or any part thereof, concerning the applicant's criminal records by and to a duly authorized agent of the Illinois Environmental Protection Agency, whether the records are of public, private, or confidential nature. The intent of this authorization is to give consent for full and complete disclosure of the applicant's criminal records.

The undersigned fully understands that any information which is developed directly or indirectly, in whole or in part, as a result of this authorization will be considered in determining whether a permit shall be issued by the Illinois Environmental Protection Agency under the Environmental Protection Act [415 ILCS 5]. The undersigned further agrees to release the Illinois State Police and the Illinois Environmental Protection Agency, its agents and designees under this release, from any and all liability which may be incurred as a result of compliance with this authorization for release of information.

Certification Statements

I certify under penalty of law that the information submitted, including information on any Attachments submitted as part of or incorporated into this Certification, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

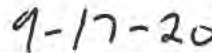
Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))



Signature of Applicant Officer

Dan Kirk

Printed Name



Date

Principal Program Manager

Title





Illinois Environmental Protection Agency

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39(i) Certification for Operating a Waste Management Facility

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This form may be completed online and saved locally before printing, signing and submitting it to the Illinois EPA at the address below. If the form is completed manually, please type or print clearly.

Illinois Environmental Protection Agency
Division of Land Pollution Control - #33
39(i) Certification
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

I. Applicant Information

Site Name Equilon Enterprises LLC d/b/a Shell Oil Products US IEPA BOL No.: 1191150002

Site Address 900 South Central Avenue

City: Roxana State: IL Zip Code: 62084

Permit Numbers (if applicable): B-43R

Owner

Owner Name: WRB Refining LP

Street Address: 2331 City West Blvd

City: Houston State: TX Zip: 77042

Operator

Operator Name: Equilon Enterprises LLC dba SOPUS

Street Address: 150 N Dairy Ashford, Bldg A, 5th Floor

City: Houston State: TX Zip: 77079

Is this 39(i) certification for the owner or the operator?

Owner Operator Owner and operator are the same entity

II. Officers and Employees with Site Responsibility

Unless the owner and operator are the same entity, a separate 39(i) form must be submitted for both the owner and operator. Persons operating under the authority of the owner should be listed on the owner's 39(i) form and persons operating under authority of the operator should be listed on the operator's 39(i) form.

A. Officers: List the name and title of all officers of the owner or operator that will have personal involvement or active participation in the operation or management of the site or facility for which the application is submitted.

Name	Title
Gerald Knoyle	Refinery Manager

B. Employees: List the name and title of each employee of the owner or operator that will have personal involvement or active participation in the overall operation or management of the site or facility for which the application is submitted (e.g. site managers, site engineers, and other persons who direct or control the overall day-to-day management of the operation, but not persons whose duties are exclusively limited to equipment operation, labor, or similar non-managerial functions).

Name	Title
Thomas Morgan	Environmental Director

III. Owner, Operator, Officer, and Employee Information

A. Prior Conduct Identification

The applicant must answer each of the following questions for every owner or operator, and for any officer or employee identified under Section II. If the answer to any of the following questions is affirmative, the applicant must complete an Attachment A for each person for whom the answer is affirmative and include a copy of each final administrative or judicial determination that required an affirmative response. If the information for each owner, operator, officer, and employee has not changed since the applicant's last submission of a 39(i) certification, the applicant can skip to Section III(C), below.

- 1) Has there been a finding that any person named in Section II violated federal, State, or local laws, regulations, standards, or ordinances in the operation of one or more waste management facilities or sites, clean construction or demolition debris fill operation facilities or sites, or tire storage sites? Yes
 No
- 2) Has any person named in Section II ever been convicted in this or another State of any crime which is a felony under the laws of this State, or convicted of a felony in a federal court; or convicted in this or another state or federal court of any of the following crimes: forgery, official misconduct, bribery, perjury, or knowingly submitting false information under any environmental law, regulation, or permit term or condition? Yes
 No
- 3) Has there been a finding against any person named in Section II of gross carelessness or incompetence in handling, storing, processing, transporting or disposing of waste, clean construction or demolition debris, or used or waste tires, or a finding of gross carelessness or incompetence in using clean construction or demolition debris as fill? Yes
 No

B. Pending Proceedings

The applicant must answer each of the following questions for every owner or operator, and for any officer or employee identified in Section II. If the answer to any of the following questions is affirmative, the applicant must complete an Attachment A for each person for whom the answer is affirmative and provide information identified in Attachment A regarding the pending proceeding.

- 1. Is there any proceeding currently pending against any person named in Section II that could result in a conviction or finding described in subsection A, above? Yes
 No
- 2. Is there any proceeding currently pending against any person named in Section II that could result in the reversal of a conviction or finding described in subsection A, above? Yes
 No

C. Prior Application Information

If (i) the applicant has previously submitted the Attachments required pursuant to subsections A and B above and (ii) the Attachments previously submitted are still complete, true, and correct, then the applicant does not need to include Attachments with this submission if the following box is checked:

By checking this box, I affirm that the Attachments previously submitted are still complete, true, and correct and wish to incorporate them into this Certification.

If the above box is checked, identify the application that contains the previously submitted Attachments that are complete, true, and correct.

RCRA Post-Closure Permit Renewal Application, EPA ID No. ILD080012305, Log No. B-43R2

Authorization for Release of Information

This Certification must be signed by an officer of the applicant.

The undersigned authorizes any representative of the Illinois Environmental Protection Agency bearing this release to obtain any information from the Illinois State Police pertaining to the criminal records of the applicant and hereby directs the Illinois State Police to release such information upon request of the bearer. The undersigned authorizes a review of and full disclosure of all records, or any part thereof, concerning the applicant's criminal records by and to a duly authorized agent of the Illinois Environmental Protection Agency, whether the records are of public, private, or confidential nature. The intent of this authorization is to give consent for full and complete disclosure of the applicant's criminal records.

The undersigned fully understands that any information which is developed directly or indirectly, in whole or in part, as a result of this authorization will be considered in determining whether a permit shall be issued by the Illinois Environmental Protection Agency under the Environmental Protection Act [415 ILCS 5]. The undersigned further agrees to release the Illinois State Police and the Illinois Environmental Protection Agency, its agents and designees under this release, from any and all liability which may be incurred as a result of compliance with this authorization for release of information.

Certification Statements

I certify under penalty of law that the information submitted, including information on any Attachments submitted as part of or incorporated into this Certification, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))



Signature of Applicant Officer

Gerald Knoble

Printed Name



Date

Refinery Manager

Title

October 12, 2020

Mr. Kenneth E. Smith, PE
Manager, Permit Section
Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
Springfield, IL 62794

**Class 1* Permit Modification Request –
Response to Condition 4.b. in Attachment A and Condition V.D.3. of the 12/20/2019 IEPA Letter with Modified Permit
Equilon Enterprises LLC d/b/a Shell Oil Products US
Roxana, Illinois
1191150002 - Madison County (ILD080012305)
Log No. B-43R-M-29**

Dear Mr. Smith,

AECOM Technical Services, Inc. (AECOM), on behalf of Equilon Enterprises LLC d/b/a Shell Oil Products US (SOPUS), is providing this letter in response to the Illinois Environmental Protection Agency's (IEPA's) December 20, 2019 letter. In that letter, the IEPA approved several modification requests submitted between February 22, 2015 and January 29, 2018 for the RCRA Hazardous Waste Post-Closure Permit (Permit) for the Wood River Refinery (WRR) and included a modified Permit. The IEPA also included a condition requesting the installation of new groundwater monitoring well, to be added to the Roxana Interim Groundwater Monitoring Program.

Condition 4.b. in Attachment A of the IEPA December 20, 2019 letter and Condition V.D.3. of the enclosed modified Permit requested the installation of new groundwater monitoring well, to be added to the Roxana Interim Groundwater Monitoring Program, to "intercept potential groundwater contamination observed in the B-level well, P-93B".

For reference purposes, "A" level wells were screened across the water table at the time of installation. "B", "C" and "D" level wells are distributed throughout the rest of the Main Sand aquifer, and not with respect to a particular soil unit.

The most recent submittal reviewed by and included in the IEPA December 20, 2019 letter was a Permit Modification request dated January 30, 2018. Since January 2018, additional information has been collected at the Roxana Public Works Yard (PWY) to refine the Conceptual Site Model (CSM). This work was conducted by AECOM in June and July 2019 and included collecting groundwater samples from multiple depths (groundwater profiling (GWP)) at locations throughout the PWY as depicted on **Figure 1** enclosed with this letter. **Table 1** provides a summary of the groundwater sample depths and elevations at these locations.

The groundwater samples from the Public Works Yard 2019 data collection were analyzed for the same compounds as in the Roxana Interim Groundwater Program. Benzene was found to be the main constituent of concern of the detections during this investigation. The modeled benzene results for groundwater samples are shown in cross section view in **Figures 2a, 2b, 2c, 2d, and 2e**.

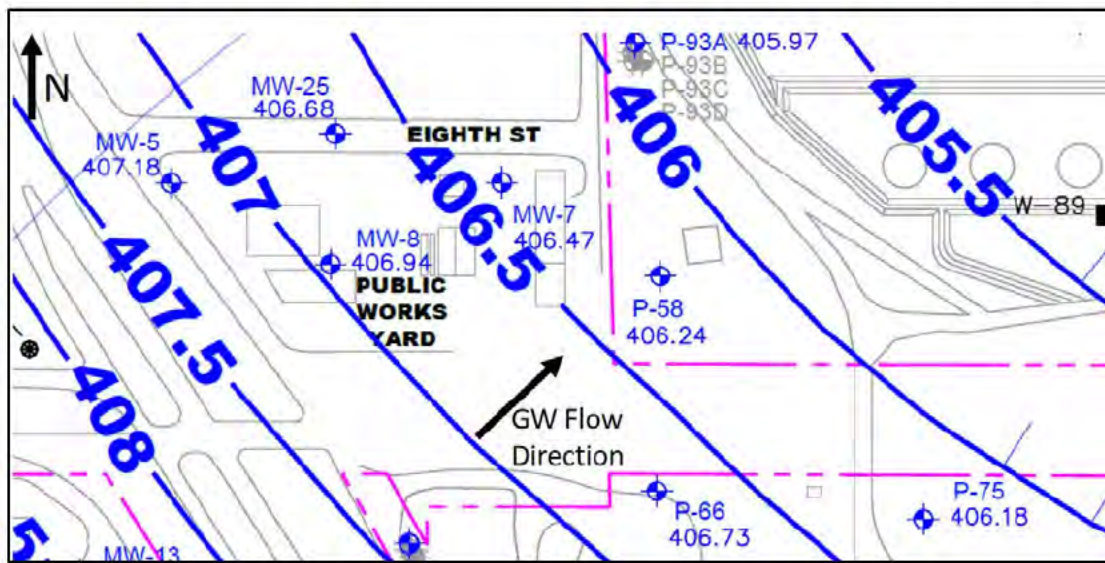
The following groundwater monitoring wells, among others throughout Roxana and WRR, are sampled each quarter as part of the Roxana Interim Groundwater Monitoring Program (Roxana Program). **Figure 1** shows the location of these monitoring wells. **Table 1** provides a summary of the screened intervals, sample depths and elevations for these groundwater monitoring wells.

<u>North Property</u>	<u>Village of Roxana</u>	<u>West Property</u>	<u>Main Property</u>
P-58*	MW-5*	MW-13*	MW-6A
P-93A	MW-7*	P-114R*	MW-6B
P-93B	MW-8*		MW-6C
P-93C	MW-23*		MW-6D
P-93D	MW-25*		P-66*

* A-level well

The PWY GWP activities were performed during the same timeframe as the 3rd quarter 2019 (3Q19) quarterly groundwater sampling event. GWP samples were collected at approximately 10-foot intervals and/or as indicated by field observations during other investigation activities (e.g., CPT/DyeLIF); some of the depths sampled coincidentally corresponded to screened elevations in the A-, B- and C- level wells at the MW-6 and P-93 well clusters. The benzene concentrations observed during the 3Q19 and GWP groundwater sampling activities are presented on **Figure 3** along with groundwater elevation contours from the 3Q19 groundwater gauging event.

Groundwater occurs at approximately elevation 407 North American Vertical Datum (NAVD 88), based on the 3Q19 measurement in monitoring well MW-8 in the western portion of the PWY. Groundwater in this area is controlled by the water production system pumping at the WRR (minimum 3,000 gallons per minute daily average), which creates an aggregate cone of depression and resultant hydraulic gradient directed toward the pumping centers. The following figure, excerpted from Figure 3b in the 3Q19 quarterly report for the Roxana Interim Groundwater Monitoring Program, shows typical groundwater flow directions, with flow inward toward the WRR pumping wells (e.g., W-89).



Groundwater elevations observed in 3Q19 were unusually high, influenced in part by above-average precipitation in the first half of 2019 and flood conditions in the Mississippi River. From 2010 through 3Q19 the groundwater elevation in the vicinity of the PWY has ranged from approximately 399 to 407 feet NAVD 88, with flow inward toward the WRR pumping wells.

The highest groundwater benzene concentrations occur from the groundwater surface to a depth of approximately 54 feet below ground surface (bgs). Below the 54-foot depth bgs, concentrations were predominantly less than 1 mg/L during the 2019 data collection; an exception to this was observed in the northeastern portion of the PWY where, likely as a result of the WRR pumping, concentrations up to 1,200 mg/L were detected to a depth of about 71 feet bgs. Based on groundwater analytical data, benzene concentrations are lowest in the western portion of the Public Works Yard. For reference, the 3Q19 benzene concentrations from the P-93 well cluster are listed below:

<u>Well ID</u>	<u>Benzene Concentration (mg/L)</u>
P-93A	10
P-93B	170 / 220 *
P-93C	<0.001
P-93D	0.0012

* Indicates duplicate sample collected and analyzed

Prior to the installation of the MW-6 well cluster (south of the PWY) and monitoring well MW-13 (southwest of the PWY), GWP activities were performed at these two well locations (GWP-22 and GWP-27, respectively) in September and October 2010. This was during the same timeframe as the 4th quarter 2010 (4Q10) quarterly groundwater sampling event. Prior to the installation of monitoring well MW-23 (west of PWY), GWP activities were performed at this well location (GWP-28) in October 2012. Various depths sampled during the 2010 and 2012 GWP events correspond to screened elevations in the A-, B-, C- and D- levels wells at the P-93 well cluster and to PWY GWP sample depths. The benzene concentrations observed during the GWP and 4Q10 groundwater sampling activities are presented on **Figure 4** along with groundwater elevation contours from the 4Q10 groundwater gauging event.

Conclusions

Data has been collected over the course of the past decade. A review of data from historic (2010 and 2012) and more recent (3Q19) GWP and quarterly groundwater sampling events indicates benzene concentrations are highest at depths that coincide with the A- level and B- level well depths. Benzene concentrations are currently highest in the eastern half of the PWY and extending into the WRR due to 20+ years of groundwater capture. The groundwater in this area, WRR Main and North Properties, is captured within the water production system radius of influence. Benzene concentrations decrease to the west and south (upgradient) of the PWY. Benzene concentrations observed at MW-13 (located to the west and upgradient of the P-93 well cluster and PWY), on the West Property and in the A- and B- level wells at the MW-6 well cluster (located to the south and upgradient of the P-93 well cluster and PWY) are below 0.005 mg/L and/or non-detect. A thermal treatment system is currently being designed for the PWY with the objective of accelerating the reduction of hydrocarbons in targeted areas. Dissolved concentrations outside the thermal treatment zone will continue to improve. The need for additional groundwater monitoring will be assessed as part of the design process.

Based on the review of these data and information, the B- level impact observed in P-93B has been delineated to the west, and as such, installation of a new groundwater monitoring well for the Roxana Program does not appear to be necessary at this time, and as such is not proposed. It is requested that Condition V.D.3. be removed from the Permit. As previously mentioned however, additional monitoring may be proposed as part of the thermal treatment effort.

If you have any questions concerning this request, please contact Dan Kirk, SOPUS Principal Program Manager, at 832-337-8276 or dan.kirk@shell.com, or me at 314-452-8929 or wendy.pennington@aecom.com.

Sincerely,



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Enclosures: LPC-PA23 Form
39i Certifications for owner and operator
Table 1 Monitoring Well Construction & Groundwater Profiling Sample Summary
Figure 1 Investigation Locations Map
Figure 2a through 2e Cross Sections A-A' through E-E' Benzene in Groundwater
Figure 3 Benzene Concentrations – 3Q19
Figure 4 Benzene Concentrations – 4Q10

cc: Dan Kirk, SOPUS (electronic)
Thomas Morgan, P66 (electronic)
Amy Butler, IEPA, Springfield
Gina Search, IEPA Collinsville
Repository (Roxana website and Roxana Public Library)
Project File

TABLE 1
MONITORING WELL CONSTRUCTION & GROUNDWATER PROFILING SAMPLE SUMMARY

Monitoring Well Identification	Screened Interval (ft btoc)		Screen Length (ft)	Screened Interval Elevation (ft MSL) ¹		Pump Intake / Sample Depth (ft btoc)	Pump Intake / Sample Depth (ft bgs)	Pump Intake / Sample Depth (ft MSL) ¹
A- LEVEL (elevation >386)								
MW-5	33.97	43.97	10	396.01	386.01	38.97	39.29	391.01
MW-6A	33.85	43.85	10	398.48	388.48	38.85	39.48	393.48
MW-7	42.92	52.92	10	400.39	390.39	47.92	48.31	395.39
MW-8	33.60	43.60	10	400.83	390.83	38.60	38.87	395.83
MW-13	24.80	34.80	10	405.50	395.50	29.80	30.33	400.50
MW-23	29.02	39.02	10	402.55	392.55	34.02	34.02	397.55
MW-25	35.59	45.59	10	402.94	392.94	40.59	41.11	397.94
P-114R	23.01	33.01	10	406.47	396.47	28.01	28.35	401.47
P-58	40.21	65.21	25	404.95	379.95	52.71	51.37	392.45
P-66	34.72	59.72	25	402.28	377.28	47.22	47.39	389.78
P-93A	43.07	53.07	10	402.30	392.30	48.07	47.53	397.30
PD-01			4				34.0	400.75
			4				44.0	390.75
PD-02			4				44.0	399.82
			4				50.0	393.82
PD-03			4				45.0	399.64
			4				50.0	394.64
			4				55.0	389.64
PD-04			4				35.0	399.47
			4				41.0	393.47
			4				43.0	391.47
PD-05			4				42.0	393.49
			4				48.0	387.49
PD-07			4				45.0	398.52
			4				50.0	393.52
			4				55.0	388.52
PD-08			4				35.0	399.73
			4				41.0	393.73
			4				46.0	388.73
PD-09			4				35.0	400.67
			4				40.0	395.67
			4				45.0	390.67
PD-11			4				35.0	401.41
			4				37.0	399.41
			4				43.0	393.41
			4				50.0	386.41
PD-12			4				35.0	389.27
PD-13			4				40.0	396.25
			4				46.0	390.25
			4				50.0	386.25
PD-14			4				40.0	402.57
			4				45.0	397.57
			4				50.0	392.57
			4				53.0	389.57
PD-17			4				45.0	398.91
			4				50.0	393.91
GWP-27			4				28.5	402.30
			4				36.5	394.30
GWP-28			4				40.0	389.02
B- LEVEL (elevation 365 - 385)								
MW-6B	64.05	69.05	5	368.32	363.32	66.55	67.04	365.82
P-93B	74.78	76.78	2	371.74	369.74	75.78	75.96	370.74
PD-01			4				53.0	381.75
PD-01			4				60.0	374.75
			4				69.0	365.75
PD-02			4				59.0	384.82
			4				65.0	378.82
			4				70.0	373.82
			4				74.5	369.32
PD-03			4				60.0	384.64
			4				65.0	379.64
			4				71.0	373.64

**TABLE 1
MONITORING WELL CONSTRUCTION & GROUNDWATER PROFILING SAMPLE SUMMARY**




Monitoring Well Identification	Screened Interval (ft btoc)		Screen Length (ft)	Screened Interval Elevation (ft MSL) ¹		Pump Intake / Sample Depth (ft btoc)	Pump Intake / Sample Depth (ft bgs)	Pump Intake / Sample Depth (ft MSL) ¹
PD-04			4				50.0	384.47
			4				53.0	381.47
			4				60.0	374.47
			4				70.0	364.47
PD-05			4				54.0	381.49
			4				62.0	373.49
PD-08			4				70.0	365.49
			4				52.0	382.73
			4				57.0	377.73
PD-09			4				62.0	372.73
			4				54.0	381.67
			4				60.0	375.67
PD-11			4				70.0	365.67
			4				56.0	380.41
			4				60.0	376.41
PD-12			4				66.7	369.71
			4				45.0	379.27
			4				50.0	374.27
			4				55.0	369.27
PD-13			4				60.0	364.27
			4				59.0	377.25
			4				65.0	371.25
PD-14			4				70.0	366.25
			4				60.0	382.57
			4				70.0	372.57
GWP-22			4				78.5	364.07
GWP-28			4				61.0	371.80
C- LEVEL (elevation 340 - 360)								
MW-6C	84.95	89.95	5	347.23	342.23	87.45	88.10	344.73
P-93C	92.88	97.88	5	353.67	348.67	95.38	93.64	351.17
PD-01			4				75.0	359.75
			4				80.0	354.75
PD-04			4				80.0	354.47
PD-05			4				80.0	355.49
PD-08			4				70.0	364.73
			4				80.0	354.73
PD-09			4				80.0	355.67
PD-12			4				70.0	354.27
			4				73.0	351.27
PD-13			4				80.0	356.25
GWP-22			4				81.0	351.80
GWP-28			4				80.0	369.02
D- LEVEL (elevation >325)								
MW-6D	104.72	109.72	5	327.34	322.34	107.22	107.75	324.84
P-93D	125.75	127.75	2	321.22	319.22	126.75	124.50	320.22
GWP-22			4				112.0	320.80

NOTES:

1) Elevations are referenced to the 1988 North American Vertical Datum (NAVD88).

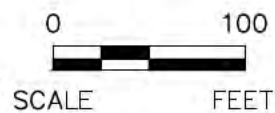
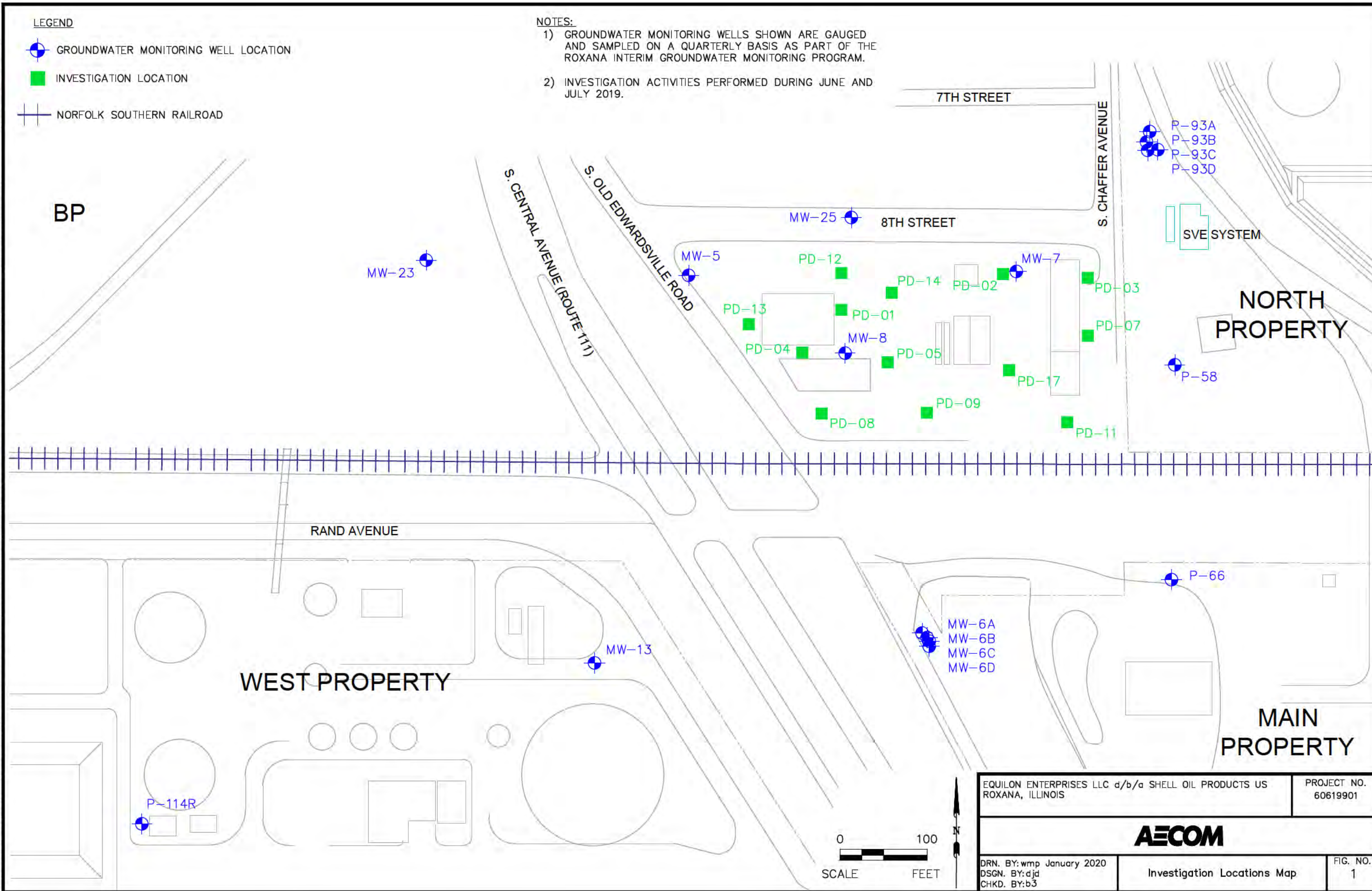
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LEGEND

-  GROUNDWATER MONITORING WELL LOCATION
-  INVESTIGATION LOCATION
-  NORFOLK SOUTHERN RAILROAD

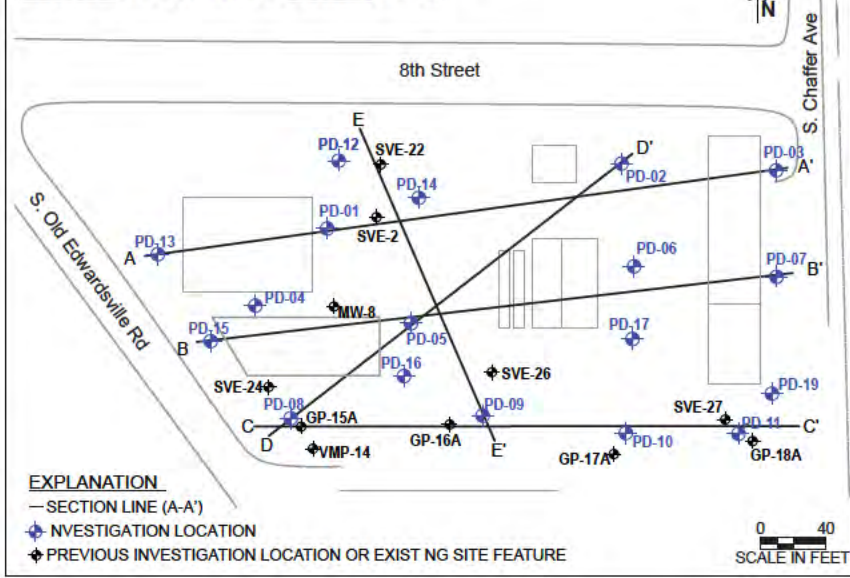
NOTES:

- 1) GROUNDWATER MONITORING WELLS SHOWN ARE GAUGED AND SAMPLED ON A QUARTERLY BASIS AS PART OF THE ROXANA INTERIM GROUNDWATER MONITORING PROGRAM.
- 2) INVESTIGATION ACTIVITIES PERFORMED DURING JUNE AND JULY 2019.

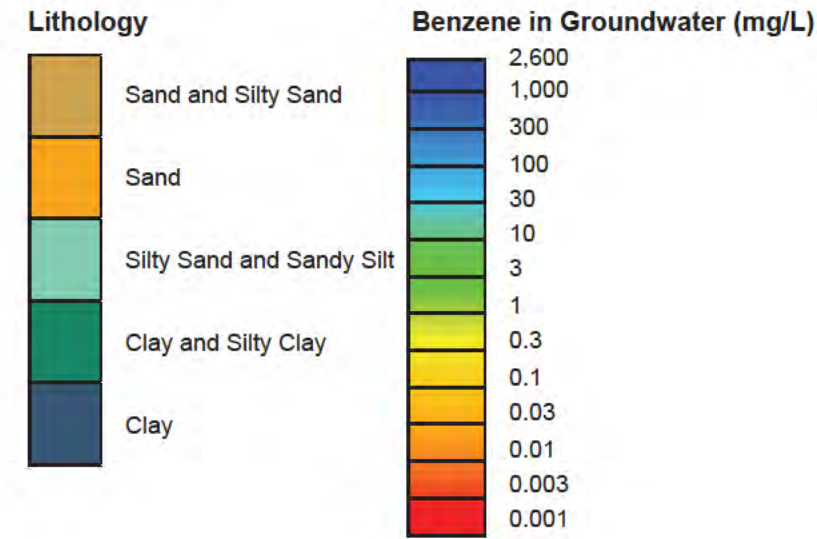


EQUILON ENTERPRISES LLC d/b/a SHELL OIL PRODUCTS US ROXANA, ILLINOIS		PROJECT NO. 60619901
AECOM		
DRN. BY:wmp January 2020 DSGN. BY:djd CHKD. BY:b3	Investigation Locations Map	FIG. NO. 1

CROSS SECTION LOCATION MAP

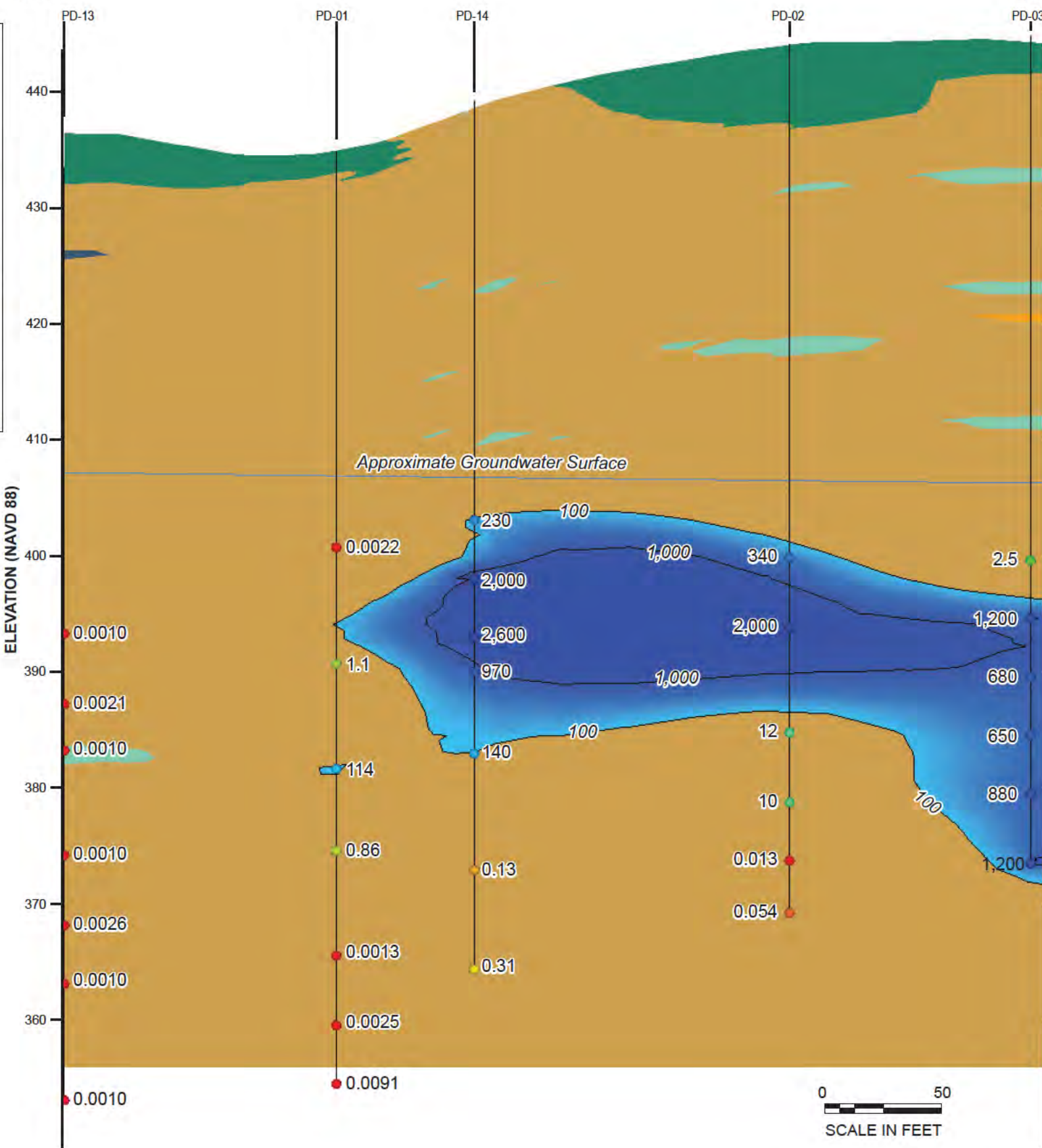


EXPLANATION



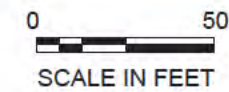
A WEST

A' EAST



NOTES

- NAVD 88 North American Vertical Datum
mg/L milligrams per liter
- 1. Lithology and concentrations of benzene in groundwater were modeled using CTECH's Earth Volumetric Studio (EVS), version 2019.2;
- 2. Contour lines are in orders of magnitude, starting at 100 mg/L.
- 3. Modeled lithology was based on CPT data collected at 18 locations on June 10 - June 20, 2019, except the upper 10 feet, which was based on hand auger logs.
- 4. Benzene in groundwater was modeled using EVS' Krig Statistics method. The dataset includes predesign concentrations of benzene in groundwater at the site, as well as concentrations from the 3Q19 Roxana Interim Groundwater Monitoring Program.
- 5. Locations within 15 feet were projected onto the cross section line.
- 6. The approximate groundwater surface was modeled using gauging data from the 3Q19 Roxana Interim Groundwater Monitoring Program.

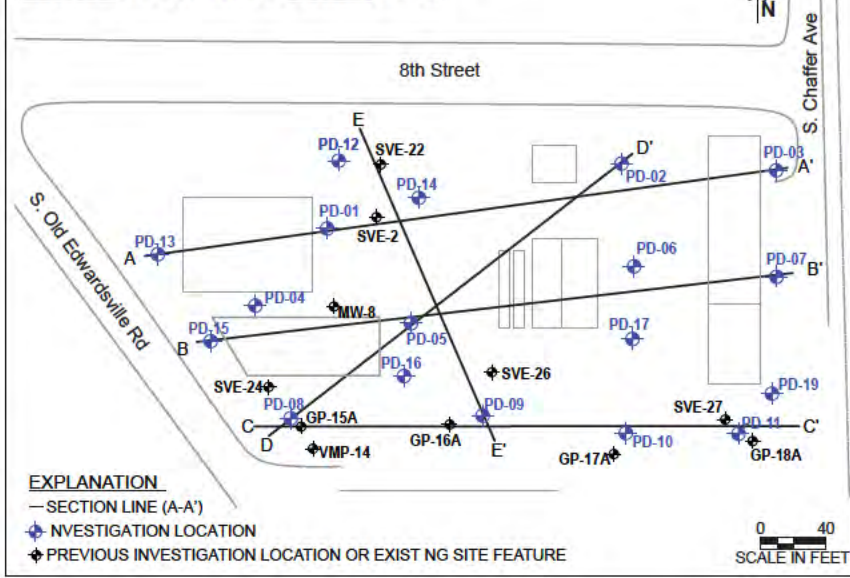


EQUILON ENTERPRISES LLC d/b/a SHELL OIL PRODUCTS US ROXANA, ILLINOIS	PROJECT NO. 60619901
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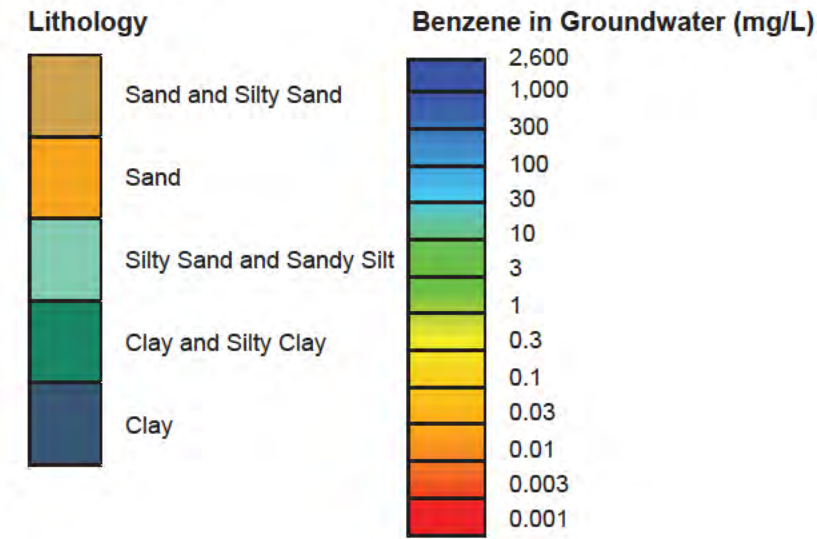
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CROSS SECTION A-A' BENZENE IN GROUNDWATER	FIG. NO. 2a
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CROSS SECTION LOCATION MAP

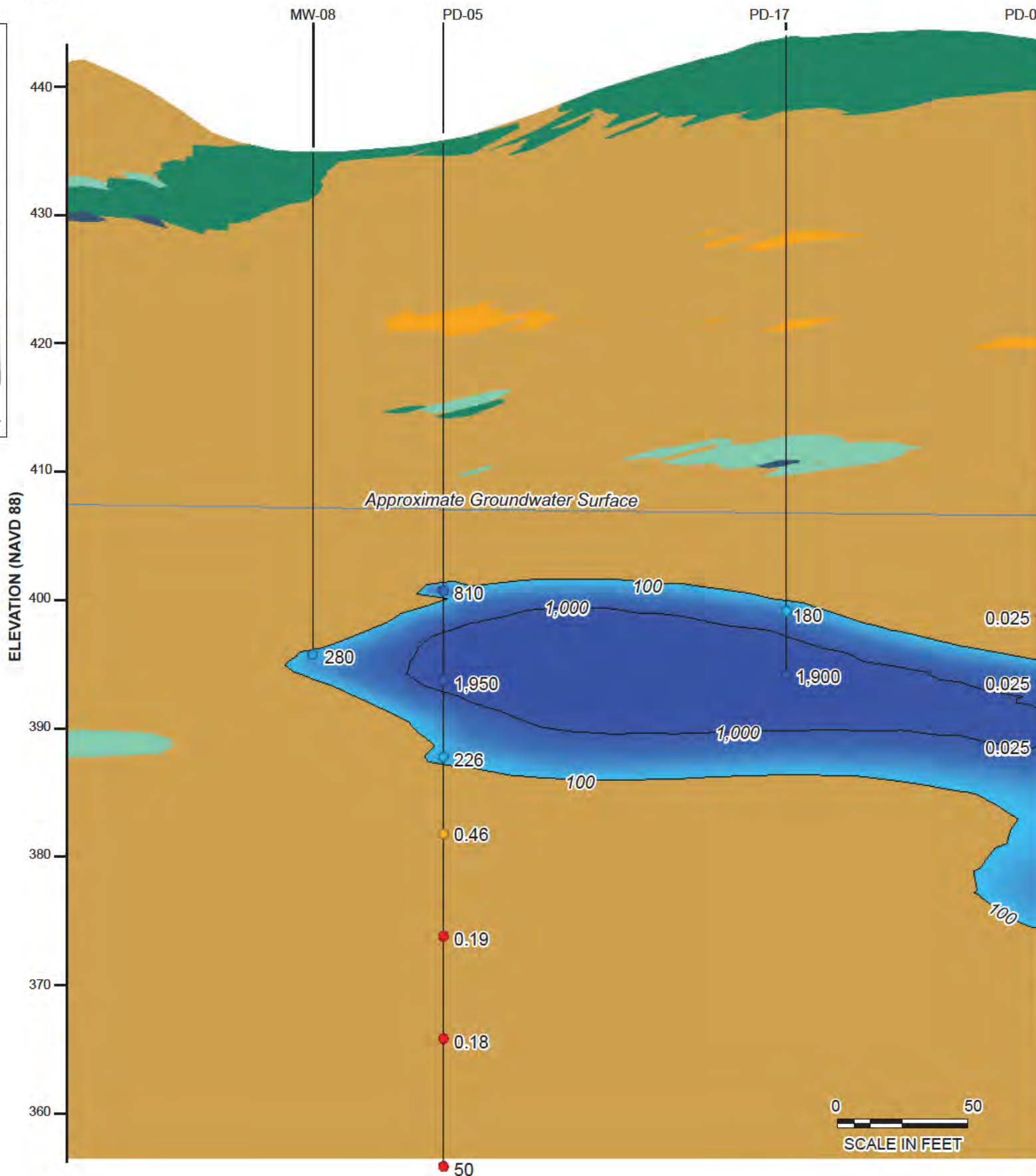


EXPLANATION



B WEST

B' EAST



NOTES

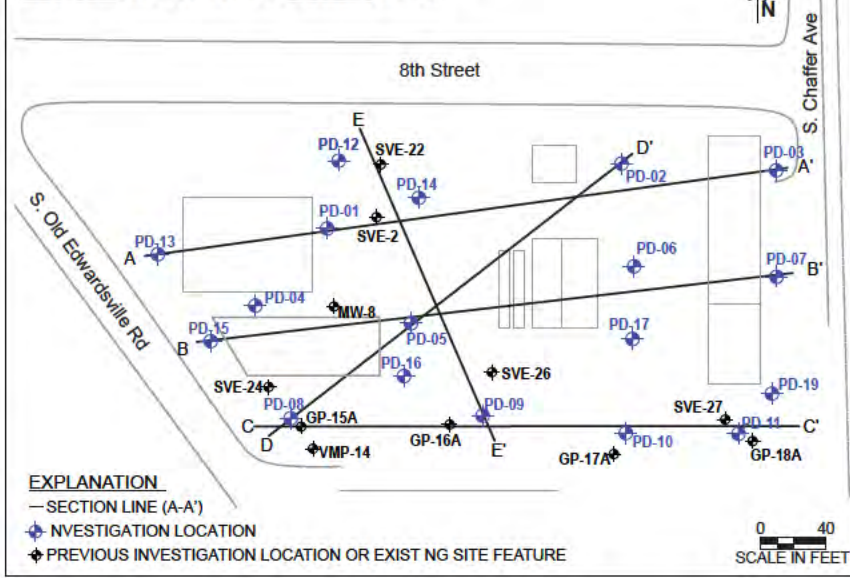
- 1. Lithology and concentrations of benzene in groundwater were modeled using CTECH's Earth Volumetric Studio (EVS), version 2019.2;
- 2. Contour lines are in orders of magnitude, starting at 100 mg/L.
- 3. Modeled lithology was based on CPT data collected at 18 locations on June 10 - June 20, 2019, except the upper 10 feet, which was based on hand auger logs.
- 4. Benzene in groundwater was modeled using EVS' Krig Statistics method. The dataset includes predesign concentrations of benzene in groundwater at the site, as well as concentrations from the 3Q19 Roxana Interim Groundwater Monitoring Program.
- 5. Locations within 15 feet were projected onto the cross section line.
- 6. The approximate groundwater surface was modeled using gauging data from the 3Q19 Roxana Interim Groundwater Monitoring Program.
- 7. Groundwater profiling was not completed at PD-06, PD-15 or PD-16.

EQUILON ENTERPRISES LLC d/b/a SHELL OIL PRODUCTS US ROXANA, ILLINOIS	PROJECT NO. 60619901
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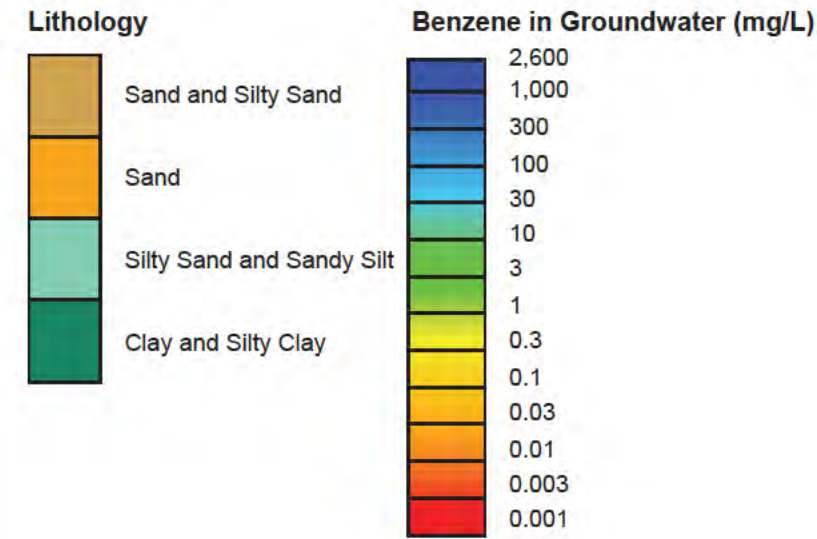
AECOM

CROSS SECTION B-B' BENZENE IN GROUNDWATER	FIG. NO. 2b
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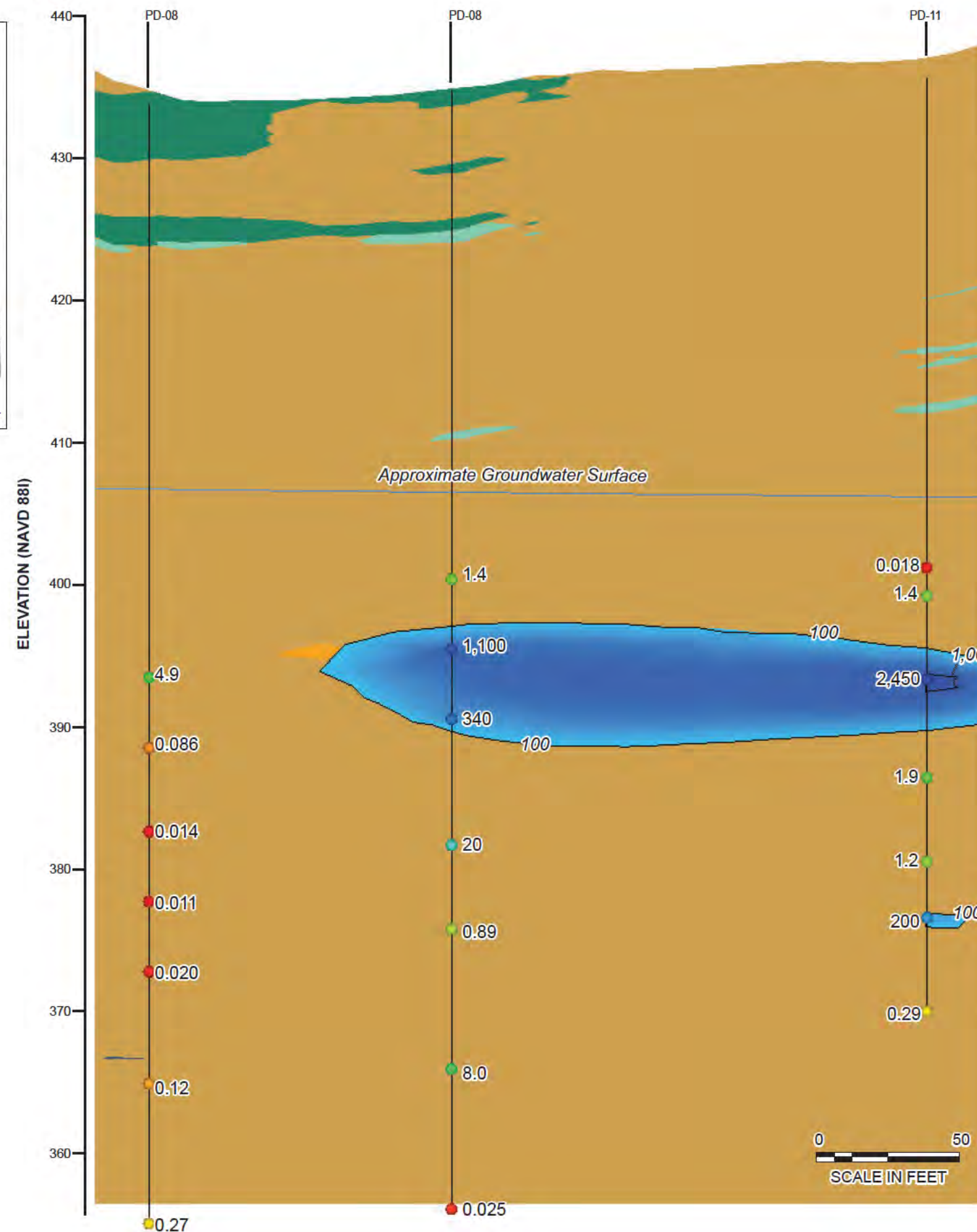
CROSS SECTION LOCATION MAP



EXPLANATION



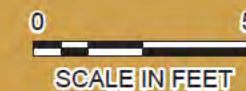
C WEST



C' EAST

NOTES

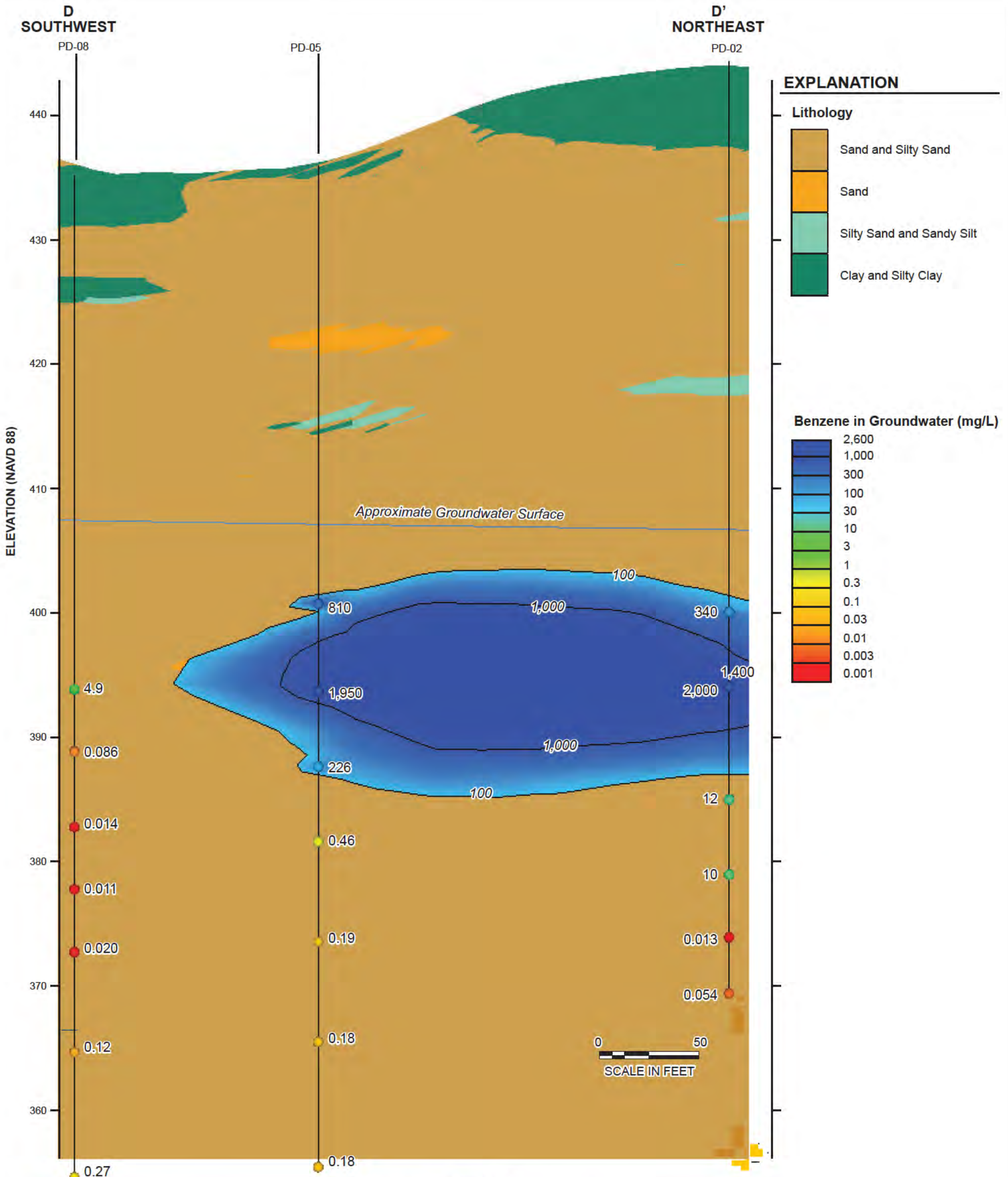
- NAVD 88 North American Vertical Datum
mg/L milligrams per liter
- Lithology and concentrations of benzene in groundwater were modeled using CTECH's Earth Volumetric Studio (EVS), version 2019.2;
 - Contour lines are in orders of magnitude, starting at 100 mg/L.
 - Modeled lithology was based on CPT data collected at 18 locations on June 10 - June 20, 2019, except the upper 10 feet, which was based on hand auger logs.
 - Benzene in groundwater was modeled using EVS' Krig Statistics method. The dataset includes predesign concentrations of benzene in groundwater at the site, as well as concentrations from the 3Q19 Roxana Interim Groundwater Monitoring Program.
 - Locations within 15 feet were projected onto the cross section line.
 - The approximate groundwater surface was modeled using gauging data from the 3Q19 Roxana Interim Groundwater Monitoring Program.



EQUILON ENTERPRISES LLC d/b/a SHELL OIL PRODUCTS US ROXANA, ILLINOIS	PROJECT NO. 60619901
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CROSS SECTION C-C' BENZENE IN GROUNDWATER	FIG. NO. 2c
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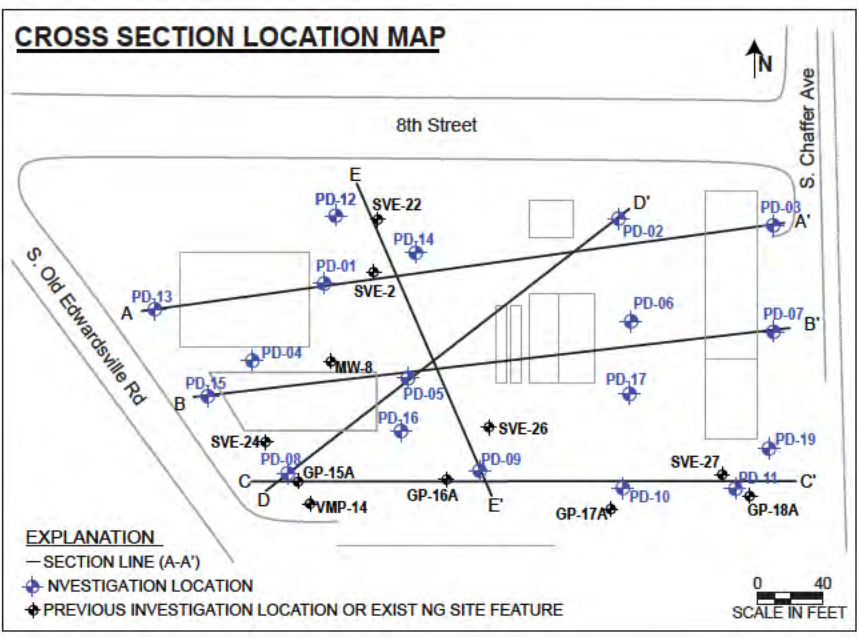
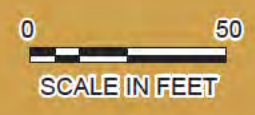
EXPLANATION

Lithology

[Light Brown]	Sand and Silty Sand
[Orange]	Sand
[Light Green]	Silty Sand and Sandy Silt
[Dark Green]	Clay and Silty Clay

Benzene in Groundwater (mg/L)

[Dark Blue]	2,600
[Blue]	1,000
[Light Blue]	300
[Cyan]	100
[Teal]	30
[Green]	10
[Light Green]	3
[Yellow-Green]	1
[Yellow]	0.3
[Orange-Yellow]	0.1
[Orange]	0.03
[Red-Orange]	0.01
[Red]	0.003
[Dark Red]	0.001



NOTES

NAVD 88 North American Vertical Datum
mg/L milligrams per liter

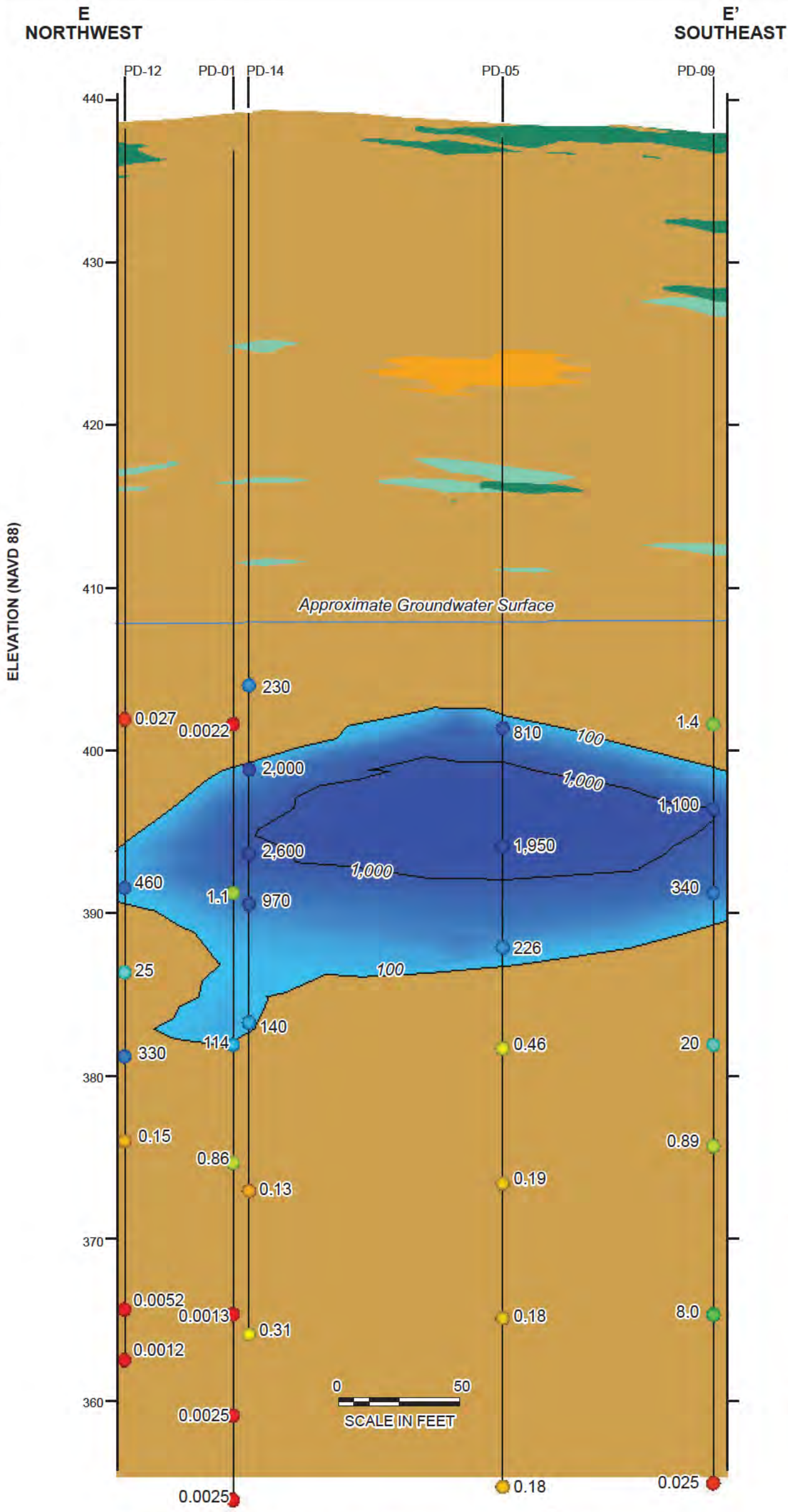
- Lithology and concentrations of benzene in groundwater were modeled using CTECH's Earth Volumetric Studio (EVS), version 2019.2;
- Contour lines are in orders of magnitude, starting at 100 mg/L.
- Modeled lithology is based on CPT data collected at 18 locations on June 10 - June 20, 2019, except the upper 10 feet, which was based on hand auger logs.
- Benzene in groundwater was modeled using EVS' Krig Statistics method. The dataset includes predesign concentrations of benzene in groundwater at the site, as well as concentrations from the 3Q19 Roxana Interim Groundwater Monitoring Program.
- Locations within 15 feet were projected on to the cross section line.
- The approximate groundwater surface was modeled using gauging data from the 3Q19 Roxana Interim Groundwater Monitoring Program.

EQUILON ENTERPRISES LLC d/b/a SHELL OILS PRODUCTS US ROXANA, ILLINOIS	PROJECT NO. 60619901
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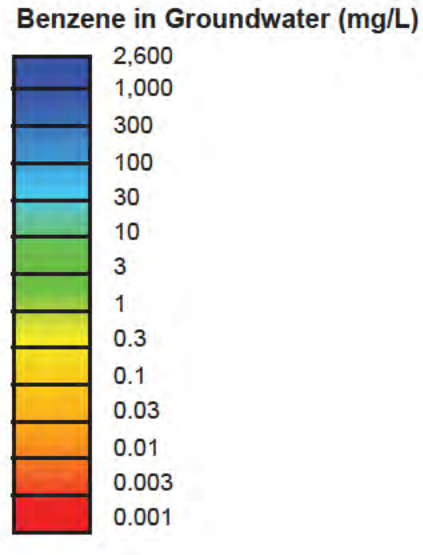
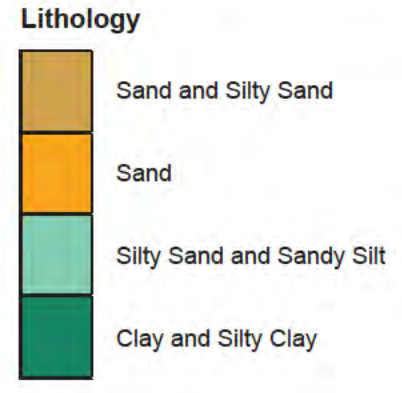


CROSS SECTION D-D' BENZENE IN GROUNDWATER	FIG. NO. 2d
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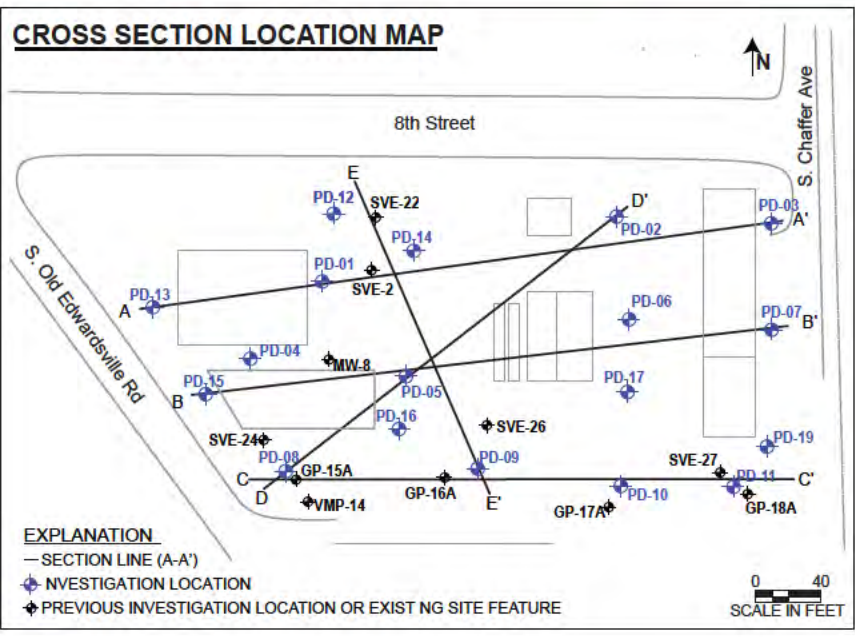


EXPLANATION



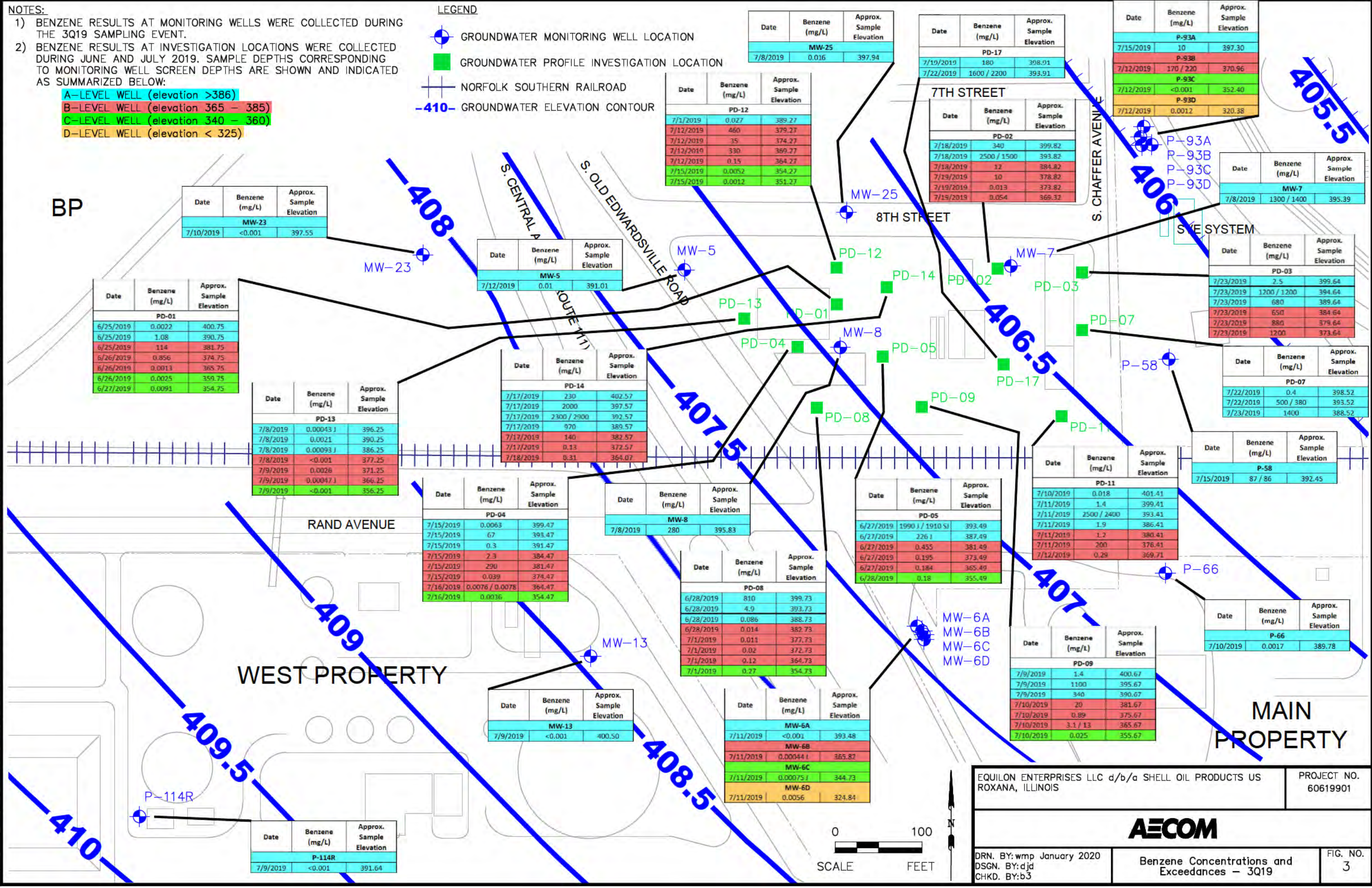
NOTES

- NAVD 88 North American Vertical Datum
 - mg/L milligrams per liter
1. Lithology and concentrations of benzene in groundwater were modeled using CTECH's Earth Volumetric Studio (EVS), version 2019.2;
 2. Contour lines are in orders of magnitude, starting at 100 mg/L.
 3. Modeled lithology was based on CPT data collected at 18 locations on June 10 - June 20, 2019, except the upper 10 feet, which was based on hand auger logs.
 4. Benzene in groundwater was modeled using EVS' Krig Statistics method. The dataset includes predesign concentrations of benzene in groundwater at the site, as well as concentrations from the 3Q19 Roxana Interim Groundwater Monitoring Program.
 5. Locations within 15 feet were projected onto the cross section line.
 6. The approximate groundwater surface was modeled using gauging data from the 3Q19 Roxana Interim Groundwater Monitoring Program.

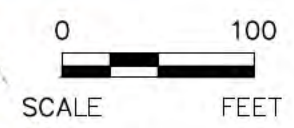


EQUILON ENTERPRISES LLC d/b/a SHELL OIL PRODUCTS US ROXANA, ILLINOIS	PROJECT NO. 60619901
AECOM	
CROSS SECTION E-E' BENZENE IN GROUNDWATER	FIG. NO. 2e

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EQUILON ENTERPRISES LLC d/b/a SHELL OIL PRODUCTS US ROXANA, ILLINOIS		PROJECT NO. 60619901
AECOM		
DRN. BY: wmp January 2020 DSGN. BY: djd CHKD. BY: b3	Benzene Concentrations and Exceedances - 3Q19	FIG. NO. 3



NOTES:

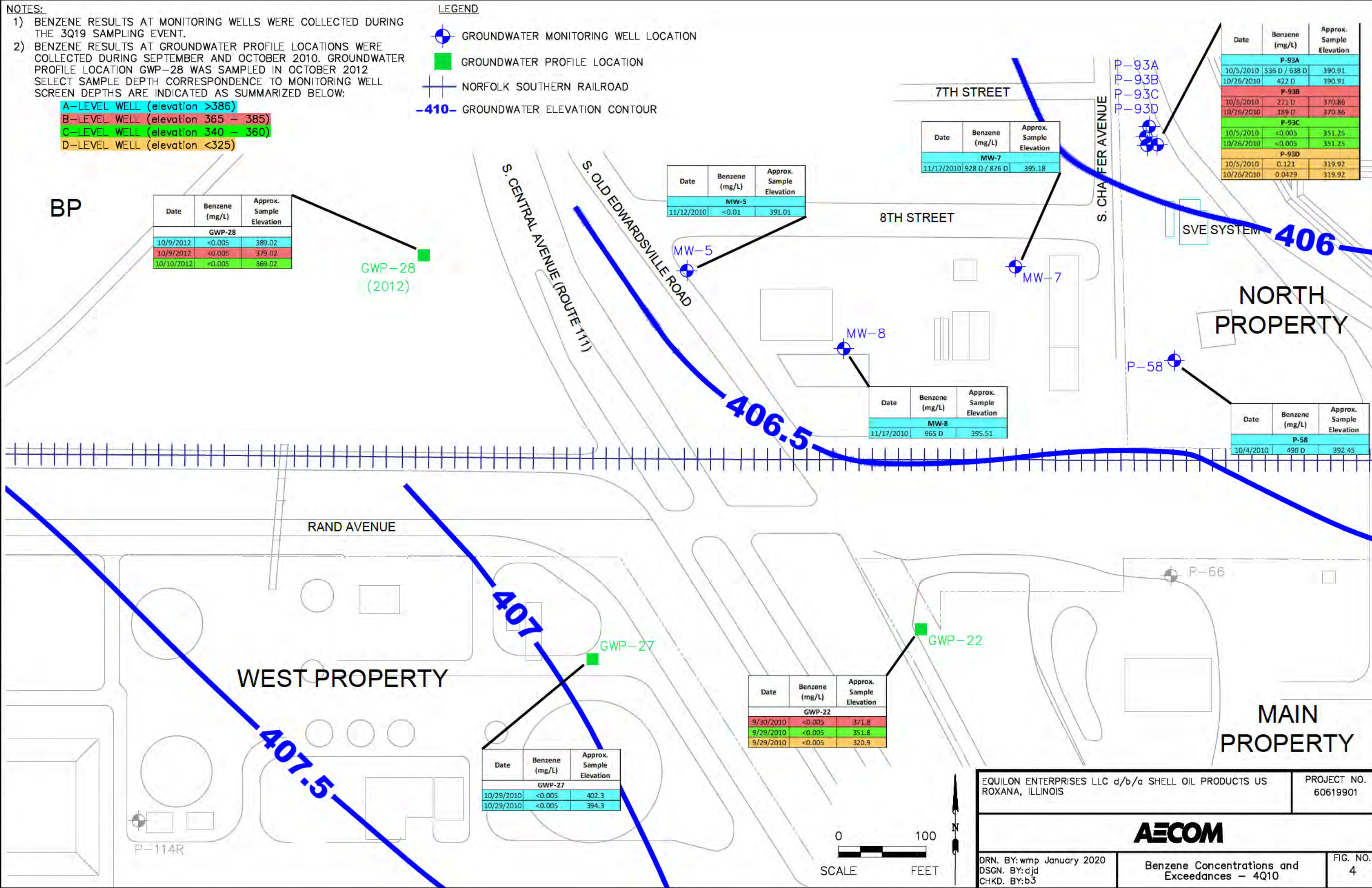
- 1) BENZENE RESULTS AT MONITORING WELLS WERE COLLECTED DURING THE 3Q19 SAMPLING EVENT.
- 2) BENZENE RESULTS AT GROUNDWATER PROFILE LOCATIONS WERE COLLECTED DURING SEPTEMBER AND OCTOBER 2010. GROUNDWATER PROFILE LOCATION GWP-28 WAS SAMPLED IN OCTOBER 2012. SELECT SAMPLE DEPTH CORRESPONDENCE TO MONITORING WELL SCREEN DEPTHS ARE INDICATED AS SUMMARIZED BELOW:

- A-LEVEL WELL (elevation >386)
- B-LEVEL WELL (elevation 365 - 385)
- C-LEVEL WELL (elevation 340 - 360)
- D-LEVEL WELL (elevation <325)

LEGEND

- GROUNDWATER MONITORING WELL LOCATION
- GROUNDWATER PROFILE LOCATION
- NORFOLK SOUTHERN RAILROAD
- 410- GROUNDWATER ELEVATION CONTOUR

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Date	Benzene (mg/L)	Approx. Sample Elevation
GWP-28		
10/9/2012	<0.005	389.02
10/9/2012	<0.005	379.02
10/10/2012	<0.005	369.02

GWP-28
(2012)

Date	Benzene (mg/L)	Approx. Sample Elevation
MW-5		
11/12/2010	<0.01	391.01

MW-5

Date	Benzene (mg/L)	Approx. Sample Elevation
MW-7		
11/17/2010	928 D / 876 D	395.18

MW-7

Date	Benzene (mg/L)	Approx. Sample Elevation
MW-8		
11/17/2010	965 D	395.51

MW-8

Date	Benzene (mg/L)	Approx. Sample Elevation
P-93A		
10/5/2010	536 D / 638 D	390.91
10/26/2010	422 D	390.91
P-93B		
10/5/2010	273 D	370.86
10/26/2010	189 D	370.86
P-93C		
10/5/2010	<0.005	351.25
10/26/2010	<0.005	351.25
P-93D		
10/5/2010	0.121	319.92
10/26/2010	0.0429	319.92

P-93A
P-93B
P-93C
P-93D

Date	Benzene (mg/L)	Approx. Sample Elevation
P-58		
10/4/2010	490 D	392.45

P-58

P-66

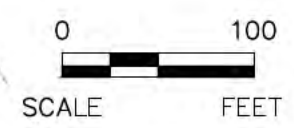
P-114R

Date	Benzene (mg/L)	Approx. Sample Elevation
GWP-27		
10/29/2010	<0.005	402.3
10/29/2010	<0.005	394.3

GWP-27

Date	Benzene (mg/L)	Approx. Sample Elevation
GWP-22		
9/30/2010	<0.005	371.8
9/29/2010	<0.005	351.8
9/29/2010	<0.005	320.9

GWP-22



EQUILON ENTERPRISES LLC d/b/a SHELL OIL PRODUCTS US ROXANA, ILLINOIS		PROJECT NO. 60619901
AECOM		
DRN. BY: wmp January 2020 DSGN. BY: djd CHKD. BY: b3	Benzene Concentrations and Exceedances - 4Q10	FIG. NO. 4