



# 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

217-524-3301

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MAY 05 2023

Shell Oil Products US  
Attn: Leroy Bealer  
128 East Center Street  
Nazareth, PA 18064

1191150002 – Madison County  
Equilon Enterprises LLC dba Shell Oil Products US  
ILD080012305  
Log No. B-43R-CA-109  
RCRA Permit  
Permit Approval

Mr. Leroy Bealer,

This is in response to the following submittals prepared and submitted to Illinois EPA by AECOM on behalf of Shell Oil Products US (SOPUS), regarding corrective action activities at the Public Works Yard (PWY) in the Village of Roxana. These documents were submitted as a response to Illinois EPA's letter dated August 22, 2022 responding to the submittal (B-43R-CA-107) which was addressing certain aspects of the Corrective Action requirements of the RCRA Post-Closure Permit for the above-referenced facility (Log No. B-43R):

1. A document entitled "Request for Extension – Roxana PWY SEE – Final Design Report and Construction Work Plan" dated October 14, 2022, and received on October 17, 2022 (Log No. B-43R-CA-109). This extension request was approved at a technical meeting held at Illinois EPA on September 21, 2022.
2. Additional information to Submittal No. 1 above entitled, "Old Public Works Yard Steam Enhanced Extraction – Response to 8/22/22 Letter and Final Design Report and Construction Work Plan" dated December 16, 2022, and received on December 19, 2022. The document was submitted to satisfy the requirements of Phase II of the Corrective Measures Program (CMP).
3. Additional information to Submittal No. 2 above entitled "Additional Information to Log No. B-43R-CA-109 (PWY SEE – Response to 8/22/22 Letter & Final Design Report and Construction Work Plan)" dated January 30, 2022, and received on February 01, 2023. The document was submitted to provide additional information requested by Illinois EPA at a technical meeting held on January 05, 2023.

2125 S. First Street, Champaign, IL 61820 (217) 278-5800  
1101 Eastport Plaza Dr., Suite 100, Collinsville, IL 62234 (618) 346-5120  
9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000  
595 S. State Street, Elgin, IL 60123 (847) 608-3131

2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200  
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022  
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

The contamination present within the Village of Roxana, Illinois, is required to be addressed in accordance with the corrective action section of the facility's aforementioned RCRA Permit. As part of the remediation efforts conducted within the Village, a Soil Vapor Extraction (SVE) system has been installed and operated to reduce subsurface vapors originating from elevated concentrations of benzene and other volatile organic compounds (VOCs).

These VOCs are present in groundwater and soil at the PWY, and the subject submittal provides the Final Design Report and Construction Work Plan (FDRCWP) for in-situ thermal remediation (ISTR), specifically Steam Enhanced Extraction (SEE), to reduce and remediate benzene as well as other VOCs present in the treatment targeted zone (TTZ) of SEE at the PWY. A site layout map of the PWY area is attached to this letter.

Illinois EPA has reviewed the subject submittals and hereby approves them subject to the following conditions and modifications.

1. SOPUS must increase the number of post-SEE sampling locations to match the pre-SEE sampling. The post-SEE sampling locations have decreased to twelve (12) locations compared to the thirty one (31) pre-SEE sampling locations. Collecting samples from a similar number of sampling locations both prior to and after SEE would provide more accurate information on the effectiveness of the SEE system as well as a better understanding of the extent of remaining contamination in the PWY.
2. SOPUS must utilize a USEPA approved collection and sampling method to analyze kerosene, which is a primary contaminant on site since USEPA Method 8260B and USEPA Method 8015 are not able to detect kerosene.
3. USEPA Method 8015 must be used for analyzing gasoline and diesel-range organics during post-SEE sampling as well, since the subject work plan limits the sampling to pre-SEE.
4. The attachment describing the Mann-Kendall analysis suggests a minimum five years of monthly data for a monotonic trend analysis. Considering that this SEE project is estimated only for about a six month period, SOPUS must provide a better understanding and information to the Agency on how the utilized Mann-Kendall analysis would be accurate enough to dictate shutdown of SEE.
5. Condition 4.g, of Illinois EPA's August 22, 2022 letter states that a visual representation must be provided presenting the diminishing returns. This condition was not satisfied since the requested diagrams were not included in the submittal. Therefore as agreed upon during the January 5, 2023, Technical Meeting between SOPUS and Illinois EPA, these requested diagrams must be provided in the monthly progress reports. In addition, SOPUS must still provide the mass removal plots and diminishing returns figures as stated in the response on the submittal.

6. The Illinois EPA can approve the proposal for additional groundwater profiling near MW-25 to be conducted during installation of the SVPs along Eighth Street, and for this data to be used in determining whether additional profiling will be performed near MW-4 as a step-out location. However, the data evaluation and determination must be presented for Illinois EPA review and approval for a final determination to be made. While the initial screened intervals for wells MW-25 and MW-4 were based on profiling data at those locations when they were installed, the purpose of requiring profiling to deeper extents is to ensure deeper contaminants are not present. This determination is based on the data collected as part of the SEE workplan at the former PWY, the proximity of those wells to the former PWY, and the residential setting of MW-25 and MW-4.
- a. The well screen intervals for MW-25, MW-4, and well P-93B are provided below for reference. Well P-93B has been included as this well has a deeper screened interval and has shown elevated concentrations for years at the western boundary of the refinery property.

Groundwater Monitoring Wells and Screened Intervals	
MW-25	MW-4
402.76 - 392.76 ft MSL (35.59 - 45.59 ft bgs)	396.25 - 386.25 ft MSL (45.06 - 55.06 ft bgs)

Ft MSL = feet above mean sea level

Ft bgs = feet below ground surface

- b. The benzene contamination at PD-01, PD-12, PD-14, PD-02, and PD-03 was previously reported in the previously submitted document entitled, “Steam Enhanced Extraction System at the Roxana Public Works Yard” dated January 31, 2022. The benzene at these locations was observed at elevations below the screened interval of MW-25.

The table below summarizes the screened intervals for MW-25 and the sampling locations mentioned above where benzene exceeded the Class I Groundwater Quality Standards (GQS).

Sampling Location Intervals (in ft MSL) Exceeding Benzene Class I GQS (0.005 mg/L)					
MW-25	PD-01	PD-12	PD-14	PD-02	PD-03
Well Screen 402.76 - 392.76	394 - 379	391 - 380	403 - 381	400 - 391	394 - 373

Ft MSL = feet above mean sea level

7. Based on the information provided in the subject submittal, additional SEE treatment is needed in the vicinity of GP-17 to address contamination identified at 45 ft and 57 ft bgs with benzene concentrations of 1,560 mg/kg and 178 mg/kg, respectively.
8. SOPUS must evaluate site conditions following SEE treatment to determine whether additional remediation is needed for groundwater within the Village. This evaluation must be provided when reporting confirmation sampling and proposing next steps.
9. Condition 6. of Illinois EPA's August 22, 2022 letter requested that additional data must be collected during the installation phase drilling. This information must be submitted to the Agency prior to or at the beginning of SEE commencement.
10. SOPUS must conduct sampling and analysis for Total Petroleum Hydrocarbon (TPH) content for all hydrocarbon ranges at all pre-SEE sampling locations for all soil sampling depths. TPH data must be included in the SEE Construction Completion Report as well as the post-SEE Shutdown and Completion Report.
11. The 5% trigger at the Steam Vapor Monitoring points (SVPs) must not exceed the residential indoor air inhalation limits as defined in 35 IAC 742, for any VOCs. During initial sampling to establish a baseline, if the baseline value or the 5% trigger will result in an exceedance of the indoor air inhalation limit, SOPUS must notify the Agency immediately, and provide an alternative plan and remediation action to avoid exposure of residents.
  - a. If baseline values exceed indoor air inhalation limits, SOPUS must notify Illinois EPA Permit Section and Field Operations Section in Collinsville, within 24 hours of discovery and necessary action must be taken accordingly.
12. SOPUS must propose an alternative to exceedance of TO-15 results as the trigger to make adjustments to the SEE system. Considering that the steel canister TO-15 method will have a turnaround time of 10 days from sample collection to data availability, this risks the residents to prolonged exposure to VOCs. This proposal must be submitted to the Agency as a Corrective Action Modification Request prior to commencement of SEE.
13. Illinois EPA acknowledges the complexity involved with hot sampling and therefore, would not require SOPUS to conduct hot sampling at this time.
14. Additional sampling must be conducted to at least 50 feet bgs and within 5ft of GP-17. This sampling will serve as a confirmatory sample to ensure, there is no contamination in this area since historical numbers from GP-17 shows significant contamination compared to the 2019 sampling results from PD-10.

Once sampling results have been obtained;

- a. If the results are below the Csat value for benzene (580 mg/kg) and TPH value (2,000 mg/kg), no other action is required.

- b. If the results are higher than the Csat value for benzene (580 mg/kg) or TPH value (2,000 mg/kg), SOPUS must designate the area surrounding the sampling zone as the third treatment area, and necessary steps must be taken to install the steam injection wells, multi-phase extraction (MPE) wells, Sensors etc., and this area must be treated along with Areas A and B. The additional information for this area must be submitted as an addendum to the original submittal including the updated maps, confirmatory samples, updated system specifications etc.
15. SOPUS must explore adding two additional MPE wells to the northern parts of Area A and Area B. These additional MPE wells are required to ensure the capture of all VOCs volatilized and mobilized during SEE in the area closest to the adjacent residential area, provided that it would not interfere in the performance of SEE.
  - a. This condition must be satisfied prior to commencement of SEE, with the installation of the additional MPE wells and a map depicting the updated MPE well locations submitted as an addendum to this submittal.
  - b. If MPE well construction is not ideal, a technical explanation must be provided for such determination.
16. Information required in Conditions 14 and 15 of this letter must be submitted, at a minimum 30 days prior to the commencement of SEE operations.
17. All necessary permits must be obtained from the appropriate local, state, and/or federal agencies, as appropriate for the proposed activities.
18. All soil samples shall be analyzed individually (i.e., no compositing). Analytical procedures shall be conducted in accordance with Test Methods for Evaluating Solid Wastes (SW-846), Third Edition and Finalized Updates. When a SW-846 analytical method is specified, all the chemicals listed in the Quantitation Limits Table for that method shall be reported unless specifically exempted in writing by Illinois EPA.
19. Quality assurance/quality control procedures which meet the requirements of SW-846 must be implemented during all required sampling/analysis efforts.
20. Corrective action efforts at this facility must eventually adequately address all contamination at this site as required in Section V of the facility's permit.
21. All wastes generated as part of this project must be managed in accordance with the requirements of 35 Ill. Adm. Code 721, 722, 723, 728, 808 and 809.
22. Except as modified herein, RCRA corrective action activities at this facility must be carried out in accordance with: (1) 35 Ill. Adm. Code 724 and 742; (2) the facility's RCRA Permit; and (3) Illinois EPA letters regarding such activities.

23. Under the provisions of 29 CFR 1910, cleanup operations must meet the applicable requirements of OSHA's Hazardous Waste Operations and Emergency Response standard. These requirements include hazard communication, medical surveillance, health and safety programs, air monitoring, decontamination, and training. General site workers engaged in activities that expose or potentially expose them to hazardous substances must receive a minimum of 40 hours of safety and health training off site plus a minimum of three days of actual field experience under the direct supervision of a trained experienced supervisor. Managers and supervisors at the cleanup site must have at least an additional eight hours of specialized training on managing hazardous waste operations.

This action shall constitute Illinois EPA's final action on the subject submittal. The applicant may appeal this final decision to the Illinois Pollution Control Board pursuant to Section 40 of the Act by filing a petition for a hearing within thirty-five (35) days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed ninety (90) days by written notice from the applicant and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the request for an extension, please contact:

Illinois Environmental Protection Agency  
Division of Legal Counsel  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, IL 62794-9276  
217/782 5544

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

Illinois Pollution Control Board, Clerk  
State of Illinois Center  
100 West Randolph Street, Suite 11 500  
Chicago, IL 60601  
312/814 3620

Work required by this letter, your submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

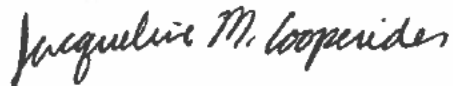
1191150002 – Equilon Enterprises LLC dba Shell Oil Products US

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If you have any questions regarding this letter, please feel free to contact Amy Butler at (217) 558-4716 for specific questions related to groundwater issues. All other questions regarding this letter should be referred to Visal Poornaka at (217) 558-4717.

Sincerely,



Jacqueline M. Cooperider, P.E.

Permit Section Manager

Bureau of Land

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*VP TNH WFW AMB*  
Attachment: Map of proposed remediation areas and sampling locations at the PWY

Cc: Wendy Pennington (electronic copy only)





Attachment: Map of proposed remediation areas and sampling locations at the PWY

