ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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PAT QUINN, GOVERNOR

217/524-3300

April 6, 2011

CERTIFIED MAIL
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7009 3410 0002 3808 0304

Recd 4/8/11

Shell Oil Products US
Attn: Mr. Kevin Dyer
17 Junction Drive
PMB #399
Glen Carbon, Illinois 62034

WRB Refining LLC Wood River Refinery
Attn: Mr. David Dunn
900 South Central Avenue
P.O. Box 76
Roxana, Illinois 62084

Re: 1191150002 -- Madison County
Equilon
ILD080012305
Log No. B-43R-CA-9
RCRA Permit
Permit CA

Dear Mr. Dyer and Mr. Dunn:

This is in response to a March 29, 2011 submittal made on your behalf by Robert B. Billman, URS regarding certain aspects of an investigation/remediation effort being conducted near the west property line of the North property of the WRB Refining, LLC Wood River Refinery in Roxana, Illinois. The suspected sources of the contamination being addressed in this effort are: (1) contaminated groundwater and free product near the afore-mentioned west property line; and (2) a 1986 benzene release from an underground pipe near the intersection of Illinois Route 111 and Rand Avenue. A drawing showing the general location of the area being addressed is attached to this letter.

The Equilon Enterprises facility which is the subject of this letter has been assigned Illinois EPA Identification Number 1191150002 and has a RCRA permit. This facility is physically located at the WRB Refining, LLC Wood River Refinery in Roxana, Illinois (refinery); the Illinois EPA Identification Number for the refinery itself and its operations is 1190905013. Equilon Enterprises, d/b/a/ Shell Oil Products US, is the operator for Site Number 1191150002 as it has contractual responsibilities to carry out certain remedial activities at the refinery, including those required by a RCRA permit (Log No. B-43R and associated modifications); Equilon and its corporate predecessors actually owned and operated the refinery until 2000.

Equilon has been addressing the contamination along the western boundary of the North Property of the refinery as part of the groundwater monitoring/remediation program required by the afore-mentioned RCRA permit. The contamination associated with the 1986 benzene was found during investigations conducted in the area in 2006 and 2007. In addition to carrying out the approved groundwater monitoring/remediation program for the refinery, Equilon has focused additional investigative and some remedial efforts in these areas since 2007.

One of the exposure routes of potential concern associated with the contamination along/near the western boundary of the refinery and the contamination associated with the benzene release is indoor inhalation. Specifically, the petroleum-related contaminants in the groundwater and possibly existing in free liquid form could volatilize and the contaminated vapors could then migrate into any buildings located within the area of concern. As such, in addition to addressing contaminated soil, groundwater and free product beneath the area of concern, Illinois EPA has been requiring Equilon to properly address any contaminated soil vapors beneath the area of concern.

A plan to conduct an initial soil vapor investigation within the area of concern was approved by Illinois EPA on May 12, 2009; a report documenting the results of this investigation was approved by Illinois EPA on August 5, 2010. The results of this investigation found relatively high levels of contaminated soil vapors at several locations beneath the area of concern, including locations within five to ten feet below the ground surface. Among other things, Illinois EPA's August 5, 2010 letter required that a work plan be submitted which describes procedures to be carried out in determining if contaminated vapors could or have migrated into several homes located near the western boundary of the North Property of the WRR Refining facility.

Equilon submitted a workplan to conduct an investigation of potential contaminated vapor migration into the homes of concern on September 20, 2010; this workplan was approved by Illinois EPA with conditions and modifications on November 15, 2010. This workplan also contained a very conceptual proposal for installing a soil vapor extraction system with the area of concern to control/remove the contaminated vapors present in the subsurface beneath the area of concern. Illinois EPA's letter indicated that a workplan to conduct a pilot scale test for this system should be submitted for review and approval, as such a test would provide the information necessary to design a full-scale SVE system; such a plan was approved by Illinois EPA on March 16, 2011.

During the course of preparing for the in-home investigation, it became apparent that the workplan approved November 15, 2010 needed to be modified some to adequately describe all the efforts which would go into conducting that investigation. Mr. Billman's March 29, 2011 submittal included such a modified workplan. While Illinois EPA does not agree with several of the statements made in the submittal, the proposed efforts in the work plan are hereby approved subject to the following conditions and modifications:

1. Where there are conflicts between this letter and the submitted work plan, the terms and conditions of this letter shall prevail.

2. The State of Illinois has regulations regarding the development of soil and groundwater remediation objectives (see 35 Ill. Adm. Code 742). The requirements of these regulations must be met in developing remediation objectives for this project.

3. Illinois EPA has developed proposed regulations for the indoor inhalation exposure route and has filed them with the Illinois Pollution Control Board (Docket No. R-11-009). These proposed regulations are amendments to 35 Ill. Adm. Code 742 and shall be used in addressing the indoor inhalation exposure route and in developing soil vapor remediation objectives for this project.

4. To be able to use a Tier 1 soil vapor remediation objective which is based only on the movement of soil vapors through the subsurface via diffusion, an institutional control meeting the requirements of 35 Ill. Adm. Code 742 must be established which ensures no building, existing or potential, is constructed within five feet of the source of the contamination (see for example proposed 35 Ill. Adm. Code 742.505(b)(2) and 35 Ill. Adm. Code 742.515(b)). In addition, unless an institutional control meeting the requirements of 35 Ill. Adm. Code 742 is established to restrict future use of a facility to industrial/commercial activities, then remediation objectives must be developed based upon a residential use scenario (see 35 Ill. Adm. Code 742.1000).

   Given that neither type of institutional control has been established on any property associated with this project, the following Tier 1 soil gas remediation objectives are applicable for those contaminants of concern listed in the proposed indoor inhalation exposure route regulations:

Contaminant	Tier 1 RO (mg/m^3)
Benzene	0.37
1,4-Dioxane	0.22
Ethylbenzene	1,400
Toluene	6,200
m-Xylene	140
o-Xylene	120
p-Xylene	130

5. As indicated in Illinois EPA's August 5, 2010 letter, soil vapor samples must continue to be collected/analyzed on a quarterly basis at all installed vapor monitoring points. To allow for a representative depiction of the overall distribution of contaminated soil vapors beneath the area of concern, the second quarter 2011 sampling event must occur during

the time period that the in-home investigation being approved herein occurs. If possible, this event should occur as soon as possible to the middle of this time period.

6. The potential for vapor intrusion must be evaluated at the following residences and/or buildings within the area identified in Attachment A (if access to a residence listed below is not granted by the owner of the property, then the alternate residences which must be evaluated are also listed below):

7. If the evaluations conducted in accordance with this letter indicate that vapor intrusion is a problem or potential problem at any residence/building, then appropriate action subject to Illinois EPA review and approval, must be taken to mitigate the problem. In addition, the boundaries of the area being evaluated must be expanded to address residences/buildings adjacent to the structure where vapor intrusion is found to be a problem or potential problem.

8. Illinois EPA and the Illinois Department of Public Health (IDPH) must be given the opportunity to actively participate in all aspects of the evaluations and any corrective measures made at each residence/building addressed in accordance with the provisions of this letter. The contact person for Illinois EPA is Gina Search (telephone number

618/346-5120; e-mail address Gina.Search@illinois.gov); the contact person for the IDPH is David Webb (telephone number 618/656-6680); e-mail address David.R.Webb@illinois.gov.

9. Once an access agreement has been obtained, a detailed walk-through assessment of the residence/building must be conducted using the form in Appendix B of the workplan. If the residence does not have a basement, then the "Walk-Through Inspection Worksheet" contained in Appendix B should depict the general layout of the first floor of the residence/ building in question.

10. At each residence/building to be evaluated:

    a. The air within the first floor and basement/crawl space must be:

        (1) Field screened using an FID and an LEL meter. In addition, the level of methane in the air must be determined;

        (2) Sampled over a 24-hour period using a Summa Cannister and analyzed in accordance with Conditions 13 and 14 below.

    b. Sub-slab soil vapor sampling points must be installed at three locations in the basements unless condition warrant otherwise so that they extend beneath the basement floor or other concrete floor associated with the residence/building. Installation of these points must be carried out in accordance with procedures. Samples from each point must:

        (1) first be field screened using an FID and an LEL meter. In addition, the level of methane in the air must be determined.

        (2) be collected over a 2-hour period using a Summa Cannister and analyzed in accordance with Conditions 15 and 16 below.

11. The indoor air within the first floor and basement/crawl space of a residence/building shall be field screened before any other field work required by Condition 10 above is conducted.

    a. If a reading of 1% LEL or greater is detected or if an FID reading of 200 ppm or greater is detected, then the resident/occupant must be offered alternative housing until these levels are mitigated in accordance with plans and procedures approved by Illinois EPA. Illinois EPA and IDPH must be immediately notified of such an

occurrence and the scope of the evaluation effort must be expanded to neighboring properties.

b. If the combustible gas level is 10% or above, the building must be evacuated and the local fire department notified.

12. If a given residence only has a crawl space, then the sampling/analysis effort required by Condition 10 must be expanded to also include the next backup residence identified in Condition 6 above.

13. One of the most critical tasks to be carried out in this effort is the collection of representative samples of the soil gas present beneath the basement/concrete floor of the building/residence. The procedures in Standard Operating Procedure 47 in Appendix C shall be followed in collecting these samples, subject to the following conditions and modifications:

a. A sufficient amount of time and care must be taken to ensure the modeling clay placed around the top of the sampling tube is adequately compressed and formed into an adequate seal. The general efforts and observations made in creating this seal at each location must be documented in the field notes for this project.

b. A total of 150 ml of air must be slowly purged from each sampling point before the actual sub-slab slab is collected in a 1 liter canister; to ensure a ? air sample is collected. The reasons for this are: (1) As the actual air sample will only be collected at 6.7 ml/min, the sampling tube will not have a very long radius of influence; and (2) the sampling port is actually located just above the backfill located beneath the concrete floor and not directly in the backfill.

14. If the field screening results conducted in a residence/buildings exceeds certain baseline criteria, then: (1) the summa canisters associated with the residence/building must be analyzed on an expedited basis; (2) the Illinois EPA and the Illinois Department of Public Health need to be notified within one hour after the results are obtained; and (3) an assessment must be conducted of the home to determine what mitigation measures should be taken at the residence/building. In addition, access must be requested at all adjoining properties to the property in question and the screening efforts described above must be carried out. The "baseline" criteria which would initiate this acceleration of the overall process approved by this letter are:

a. An indoor air FID reading from the first floor or basement/crawl space greater than 20 ppm; or

b. An indoor air LEL from the first floor or basement/crawl space greater than non-detect; or

c. Any subsurface gas FID reading greater than 500 ppm; or

d. Any subsurface gas LEL greater than 1%.

15. If a subslab FID result exceeds 500 ppm, then the boundaries of the area being evaluated must be expanded to address residences/buildings adjacent to the structure where vapor intrusion was found to be a potential problem.

16. The samples collected by summa canisters must be analyzed for the following petroleum hydrocarbons (the required detection limits which must be achieved during the analysis of the samples):

Compound	**Laboratory Detection Limit for Indoor Air (in $\mu g/m^3$)**	**Laboratory Detection Limit for Sub-slab Air (in $\mu g/m^3$)**
n-Hexane	350	3,500
Benzene	5	50
Toluene	150	1,500
Ethylbenzene	10	100
Total Xylenes; m-, p-xylene; o-xylene	100	1,000
Total Trimethylbenzenes; 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene	3	30
Total Petroleum Hydrocarbons (gas phase) (TPH-g)	100	1,000
n-Propylbenzene	500	5,000
Isopentane	50	500
n-Butane	50	500
Cyclohexane	50	500
2,2,4-Trimethylpentane	50	500
1,4-Dioxane	50	500
Methane (ASTM D-1946)	0.005 %	0.05 %

17. Collection and analysis of all required samples must be carried out in accordance with the procedures approved by Illinois EPA on May 12, 2009 and/or other procedures which have been established by USEPA or Illinois.

18. An ambient air sample must be collected each day air samples are obtained within a residence/building. This sample must be collected and analyzed in general accordance with the procedures used to collect the in-home samples. The sample collection device must be placed in the residential area being evaluated but away from streets. The actual location of the ambient air sample collection device shall be a field decision approved by one of the representatives of the State of Illinois identified in Condition 8 above.

19. As there are several persons involved with this evaluation, a daily report must be generated and distributed at the end of each day which summarizes the investigation work completed that day and the work to be carried out the next day. In addition, this report must contain a running summary of the evaluation/ investigation efforts completed to date. For each residence/building, this summary must include the following:

    a. Date initial contact is scheduled

    b. Date of initial contact

    c. Indication of whether access agreement has been obtained

    d. Date investigation work at location scheduled to begin

    e. Actual date investigation work begins

    f. Results of all field screening efforts

    g. Date last subsurface gas monitoring port is installed

    h. Date investigation work is completed;

    i. Date last summa canister sent to the lab for analysis

    j. Date last set of summa canister analytical results received from lab

    k. Any additional comments which help to describe the status of the evaluation/investigation efforts being conducted at each home

These daily reports must be sent via e-mail to Gina Search and David Webb at the e-mail addresses listed above as well as to Jim Moore of Illinois EPA at James.K.Moore@illinois.gov.

20. A report documenting the results of the evaluation conducted in accordance with Conditions 6 and 7 above at a building/residence must be submitted to Illinois EPA and the Illinois Department of Public Health with fourteen days after the summa canister analytical results are received from the laboratory. A separate report must be generated for each building/residence evaluated. Each report must contain:

    a. A general introduction to the overall project and the purpose of the evaluation;

    b. A general description of the efforts carried out in completing the evaluation;

    c. A copy of the Walk-Through Assessment Form and a discussion of the information on the form;

    d. A description of the procedures used to carry out the required indoor air field screening and a presentation/discussion of the results;

    e. A description of the procedures used to carry out the required indoor air sampling/analysis effort and a presentation/discussion of the results;

    f. A description of the procedures used to install the sub-slab sampling ports;

    g. Information similar to that identified in Items 20.d and 20.e above in regard to the sub-slab sampling/analysis effort;

    h. Presentation of the ambient air sampling/analysis effort completed during the day that the in-home sampling event was conducted;

    i. An evaluation of all data collected and a recommendation regarding the next steps to be taken at the building/residence.

21. The data screening levels contained in Section 4.2 of the workplan cannot be approved at this time for the following reasons:

    a. Illinois EPA has been developing remediation objectives for the indoor air inhalation exposure route; the procedures which Illinois EPA has been proposing should be used in the development of remediation objectives for this project.

b. As indicated above, regulations are in effect in Illinois regarding the development of remediation objectives for among other things, RCRA remediation objectives. These regulations must be followed, not guidance developed by various USEPA regional offices.

c. 35 Ill. Adm. Code 742.900 requires that a formal risk assessment meeting the requirements of 35 Ill. Adm. Code 742.915 be conducted if remediation objectives based upon a target cancer risk of more than 1 $x10^{-6}$. The proposed remediation objectives for carcinogens were based on a target can risk of 1 $x10^{-5}$ although no risk assessment was provided.

22. All actions taken to address vapor intrusion problems at any residence/building must be carried out in accordance with plans approved by Illinois EPA.

23. RCRA corrective action activities carried out at the Equilon facility including off-site activities as necessary, must meet the requirements of: (1) 35 Ill. Adm. Code 724.201; (2) the facility's RCRA permit; and (3) Illinois EPA letters regarding such activities.

24. The documents previously submitted by SOPUS regarding this project as well as the requirements of Illinois EPA's previous letters regarding this project are incorporated herein by reference.

25. A completed RCRA Corrective Action certification form must accompany all submittals made to Illinois EPA regarding this project. To allow for a proper review of a submittal, two copies of each submittal should be provided to Illinois EPA along with the original.

26. As indicated in the introductory portion of this letter, Illinois EPA disagrees with several statements contained in the subject workplan. Some of these statements where disagreement lies are addressed in the conditions and modifications made above. However, Illinois EPA must also disagree with the following statements made in the work plan:

a. A statement is made on Page 1-1 that Illinois EPA's August 5, 2010 letter draws parallels between issues in Hartford, Illinois and Roxana, Illinois. Illinois EPA's letter did rely on some of the technical information which has evolved from the work being done in Hartford, but it understands there are differences between the two projects. However, one thing is certain, there are relatively high levels of contaminated vapors in the unsaturated soils beneath the portion of Roxana being investigated and appropriate action must be taken to adequately investigate and remediate this contamination.

b. Contrary to the statements made near the top of Page 2-2, light non-aqueous phase free product was been observed in areas west of the western boundary of the North Property. This free product could be one of several sources of the contaminated vapors in the subsurface in this area.

27. Once all investigative efforts are completed, a comprehensive report must be developed and submitted to Illinois EPA summarizing the work and results conducted in accordance with the provisions of this letter. This report should also contain an evaluation of all data and recommended next steps at each residence/building evaluated.

This letter constitutes Illinois EPA's final decision on the subject submittal. Within 35 days after the date of mailing of the Illinois EPA's final decision, the applicant may petition for a hearing before the Illinois Pollution Control Board to contest the decision of the Illinois EPA, however, the 35-day period for petitioning for a hearing may be extended for a period of time not to exceed 90 days by written notice provided to the Board from the applicant and the Illinois EPA within the 35-day initial appeal period.

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.

If you have any questions regarding this letter, please contact James K. Moore, P.E. at 217/524-3295.

Sincerely,

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

SFN:JKM:bjh\112822s.doc
JKM
Attachment: Site Layout Map

cc: Robert B. Billman, URS
David Webb, IDPH
Michelle Waters, ATSDR

File: P:\ENVIRONMENTAL\SHELL OIL PRODUCT US\B-ROXANA-ROUTE 111\21580000_ROXANA INVESTIGATION & ASSESSMENT\DRAWINGS\FIG 1 SITE LOCATION MAP.DWG Last edited: 09/10/10 @ 12:41 p.m. @ WOO-ST.LOUIS