ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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PAT QUINN, GOVERNOR

217/524-3300

June 16, 2011

CERTIFIED MAIL
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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 Nos. B-43R-CA-1; CA-3; CA-5; CA-6; CA-7; CA-8; CA-10; CA-11; and PS11-032
Received: September 22, 2010; November 24, 2010; January 3, 2011; January 18, 2011; February 14, 2011; March 16, 2011; March 7, 2011; April 15, 2011; May 3, 2011
RCRA Permit
Permit CA

Dear Mr. Dyer and Mr. Dunn:

This is in response to multiple documents submitted on behalf of Shell Oil Products US (SOPUS) by URS Corporation (URS), with regards to the WRB Refining, LLC Wood River Refinery (WRR) in Roxana, Illinois. These submittals were prepared in response to investigative activities associated with corrective action efforts for contaminated groundwater and free product (a.k.a. free phase hydrocarbons) within the Village of Roxana, and along the west fence line of the North Property WRR, and portions of the WRR near the Roxana Public Works Yard. The ten (10) subject submittals have been reviewed as they relate to: (1) the groundwater monitoring and reporting for the Village of Roxana investigations; (2) simultaneous notifications of a loss of groundwater control required by the Hazardous Waste Management RCRA Post-Closure Renewal Permit (Permit), and the discovery of free product off-site at ROST-PZ-4, located approximately at the intersection of Third Street and Chaffer Street in Roxana, Illinois; and (3) the adequacy of ongoing delineation and investigation activities in the area. A drawing showing the general location of this area is attached to this letter.

The subsurface investigations conducted to date have nearly delineated the dissolved hydrocarbon plumes in groundwater within the uppermost aquifer, approximately forty (40) feet below the ground surface. The facility has an approved interim groundwater monitoring program and is required to sample and gauge all associated investigation wells on a quarterly basis, and submit quarterly reports for the well network established within the August 5, 2010 Illinois EPA letter (Log Nos. B-43-CA-16 and CA-18).

ROST-PZ-4 was installed in the Summer 2009, and periodic gauging conducted since its installation did not detect free product until January 31, 2011. The detection of free product was concurrent with the loss of the groundwater gradient control and reduced pumping at the WRR. Since that time, ROST-PZ-4 has been gauged on a weekly basis and product measurements have ranged from 0.04 ft to 0.00 ft. The facility has initiated higher pumping rates in efforts to regain control of contaminants.

A review of the groundwater portions of the subject submittals, has determined that the proposals addressing investigative activities associated with corrective action efforts in the vicinity of the WRR can be approved, with the following conditions and modifications:

1. The Groundwater Corrective Action Program is not adequate, in its current state, to protect human health and the environment along the majority of the west fence line of the North Property of the WRR and within the Village of Roxana. The fence line improvements to the system include: (1) installation of a skimmer system at existing wells along the west fence line to remove LNAPL; and (2) repairs to pumping well W-76 and installation of a new pumping well W-86 to shift the emphasis to strengthening the cone of depression at the interior of the North Property. The Illinois EPA can approve these proposals with the following conditions and modifications:

    a. The facility is required to remove product to the maximum extent practicable. If the facility determines the skimming pumps are no longer effective, yet product remains, then another form of product removal must be proposed to the Illinois EPA for review and approval, prior to removing a skimmer pump.

    b. The Illinois EPA can approve using transmissivity to help determine whether skimmer pumps are an appropriate method for product removal. However, the operation of these pumps cannot be based strictly on predetermined transmissivity values if product continues to be removed and a better alternative is not available.

    c. The emphasis for strengthening the cone of depression at the interior of the North Property does not alleviate the requirement to address groundwater contamination within the Village of Roxana, as required by 35 Ill. Adm. Code 724.201(c), and Condition 1.d below.

    d. The facility must also propose a system for removal of groundwater within the upper portion of the main aquifer, where the most significant groundwater contamination exists along the west fence line of the North Property of the WRR and in the vicinity of the Roxana Public Works Yard. Therefore, the facility must combine the skimmer system and groundwater removal from the shallow portion of the uppermost aquifer into a dual phase extraction system. The system must focus on removal of contaminants and enhance the current efforts to maintain an inward hydraulic gradient.

i. Information submitted to date is not adequate to satisfy Condition 15 of the August 5, 2010 Illinois EPA letter (Log Nos. B-43-CA-16 and CA-18). Therefore, the proposal for the dual phase extraction system must be developed in accordance with Condition 15 and the guidance in Attachment C of the August 5, 2010 Illinois EPA letter, "Required Contents of a Conceptual Design Report", to address contamination along the west fence line and the groundwater contamination in the vicinity of the Roxana Public Works Yard.

ii. Existing Water Production Wells at the WRR are screened deep within the aquifer, while the contaminant plume remains much closer to the water table. Therefore, the addition of a shallow pumping system is appropriate.

iii. This proposal must be submitted within sixty (60) days for Illinois EPA review and approval.

e. Regarding the facility's interpretation of cross-section B-B' within the subject submittal dated March 4, 2011, the Illinois EPA concurs that the gradient was inward in January and February 2011; however, the LNAPL plume was not controlled even with an inward gradient, which reinforces the need for modification to the program as required by Condition 1.d above.

f. The new pumping well and associated details for W-86 must be submitted as a Class 1* modification request for incorporation into Condition IV.D.2 of the Permit, and in accordance with Condition IV.K.2 of the Permit within ninety (90) days of installation of the well. The wells must be installed in accordance with Condition IV.D of the RCRA Permit.

2. The loss of groundwater control demonstrates that reinstating the minimum pumping rate of 3,000 gpm is necessary at the Water Production Wells listed in Condition IV.D.2 of the Permit, and a request to incorporate this language into the Permit must be submitted as a Class 1* modification request in accordance with Condition IV.K.2 within forty-five (45) days of this letter.

3. The facility has not provided Contingency Procedures for the Operation and Maintenance Plan associated with the oil recovery systems, as required by Condition 16 and Attachment D of the August 5, 2010 Illinois EPA letter (Log No. B-43-CA-16 and 18). The facility remains subject to these requirements and must propose a Contingency Procedures for the Operation and Maintenance Plan associated with the oil recovery systems, for Illinois EPA review and approval within sixty (60) days, which includes a minimum of:

a. Contingency Procedures. This portion of this plan will describe the following:

i. System breakdown and operational problems, which may occur.

ii. A contingency plan to continue to remove free product when seasonal fluctuations increases or decrease the water table. If the current system cannot accommodate seasonal fluctuations, then additional work must be proposed.

iii. Alternative procedures that are to be implemented in the event that the free product recovery system suffers complete failure. A gauging event must be conducted following any system breakdown.

b. The Illinois EPA must be notified via telephone (Amy Boley; 217/502-3027 and Gina Search; 618/346-5157), followed by a paper report, documenting the event and actions required to repair the system, and any impacts to the corrective action program associated with:

i. System breakdowns, including any oil recovery well in the system being down for more than three (3) days. If the facility cannot adequately repair the current system, then additional work must be proposed.

ii. Notification is required if the entire system will be shut down for more than eight (8) hours.

iii. The facility must implement alternative procedures to prevent off-site migration of product in the event that the oil recovery system suffers complete failure.

4. The Interim Groundwater Monitoring Program for the Village of Roxana, Illinois, requires modification to the groundwater monitoring well network to better define the contaminants in groundwater and potential free product within the investigation area. The modified network will be defined as follows:

a. The uppermost aquifer will be monitored with the following wells: MW-1 through MW-13, P-55, P-68, T-12, P-74, P-59, P-56, T-6, P-93 A through D, P-58, P-66, MW-6A through 6D, P-114, GWP-23, and GWP-24. If any of these wells are chosen as extraction locations in conjunction with Condition 1 above, the facility must demonstrate that adequate monitoring locations remain or propose additional monitoring locations for Illinois EPA review and approval.

b. Monitoring wells must be installed at GWP-23 and GWP-24, and incorporated into the monitoring network, as required by Condition 4.a above. The wells must be installed in accordance with Condition IV.D of the Permit.

c. The perched groundwater investigation is incomplete. In addition, regardless of the extensiveness of a perched zone, perched areas of groundwater contamination must be addressed. The following wells must be incorporated into the monitoring network to monitor perched groundwater:

i. Monitoring locations P-60-12S, P-60-13S, ROST-7-PZ, ROST-5-PZ, ROST-10-PZ, and ROST-21-PZ. If any of these locations must be reinstalled to accommodate sampling equipment, the facility must do so in accordance with Condition IV.D of the Permit.

ii. The facility must include ROST-5-PZ and ROST-10-PZ within the program for at least one year before the determination is made that these wells are dry.

iii. The "step-out" location from ROST-21-PZ, identified as GP-13, is too far from ROST-21-PZ to be considered adequate for monitoring the extent of a potential perched zone. Based on the distances of other "step-out" investigation locations completed during prior phases of the investigation area, a new "step-out" piezometer must be installed at the approximate mid-point of the block on Fifth Street in Roxana, Illinois, generally aligned with MW-1, ROST-7-PZ, and ROST-3-PZ.

iv. Detailed reporting for the perched zone must be included within all quarterly reporting described in Condition 4 below. In addition, within the next quarterly report, the facility must provide a minimum of: (1) cross-sections that incorporate the perched monitoring locations; and (2) isopach maps for the less permeable silts and clays within the area, to be based on a review of the ROST/CPT data collected to date and any other available boring logs. The data used to create these maps must at least encompass the area from S. Central Avenue (including P-54) to the west, First Street to the north, the refinery's west property data points the south, and as far west as P-61 into the North Property interior. These maps must include any available information that depicts less permeable units, regardless of the depth or thickness. Of particular concern is the possible zone that may extend from the P-60 area west into the Village of Roxana, as product has been detected in the at the ROST-4-PZ area.

5. At a minimum, the following additional information must be included within all groundwater reporting submitted to the Illinois EPA for the WRR and the Interim Groundwater Monitoring Program for the Village of Roxana:

a. The facility must depict both the dissolved and free product plumes. Isoconcentration maps must be created, as well as spider diagrams depicting site-wide contamination.

b. Reduce the groundwater and product contour interval to 0.50 ft contours to better demonstrate an inward gradient and define the free product plume, respectively. The groundwater elevations and product measurements must be depicted at each well used to create the maps. Any measured product must be depicted on product maps.

c. Geologic cross-sections must be constructed which depict: (1) the dissolved contamination; (2) screened intervals of the monitoring wells, production wells, and oil recovery wells; and (3) groundwater and product elevations, within each cross-section.

d. Utilize nested well sets across the site to evaluate the individual zones via discussions and maps in order to better delineate the zone or zones where the vertical and horizontal extent of free product and dissolved contamination exists.

6. The Illinois EPA has determined that the six (6) proposed investigative wells for free product delineation and potential product removal activities in the ROST-PZ-4 area are approved, with the following conditions and modifications listed in conditions 6 through 14 below. These Conditions 5 through 14 were e-mailed to SOPUS on March 25, 2011, to continue field investigative efforts and implement product removal in a timely manner.

7. Based on the constituents previously detected in groundwater, all wells must be analyzed for volatile organic carbons (VOCs) and semivolatile organic carbons (SVOCs) if product is not encountered in a well. Groundwater analysis must be in accordance with the applicable methods found in USEPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Third Edition, Final Update III (December 1996), or the most current SW-846 Method.

8. The following procedures must be utilized in the collection of all soil samples:

a. Collection of all soil samples must be carried out in accordance with ASTM or SW-846 procedures. Acceptable ASTM procedures include:

(1) Method D 4700-91 (Method for Soil Sampling from the Vadose Zone);

(2) Method D 6001-96 (Guide for Direct-Push Sampling for Geoenvironmental Investigations); and

(3) Method 6169-97 (Guide for Selection of Soil and Rock Sampling Devices Used with Drill Rigs for Environmental Investigations).

b. Soil samples collected for VOCs analysis require specialized sampling and handling procedures as specified in Method 5035 of SW-846.

c. All soil encountered during the sampling effort must be field classified in accordance with ASTM D-2488 and evaluated for odors and staining/discoloration.

d. Vertical locations where samples are collected must be biased, as appropriate, to stained/discolored areas or areas where contamination is suspected to be present (such as the highest field screening results).

e. Soil which is encountered in an area where VOC contamination is a concern must be field-screened for VOCs. However, the actual samples collected for analysis at the laboratory must not be field-screened.

9. Quality assurance/quality control procedures which meet the requirements of SW-846 must be implemented during all required sampling/analysis efforts.

10. 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.

11. A report documenting the results of the required sampling/analysis results must be submitted for Illinois EPA review and approval within ninety (90) days of the date of this letter, which includes:

a. identification of the reason for the sampling/analysis effort and the goals of the effort;

b. a summary in tabular form of all analytical data, including all quality assurance/quality control data;

c. a scaled drawing showing the horizontal location from which all soil samples were collected;

d. identification of the depth and vertical interval from which each sample was collected;

e. a description of the soil sampling procedures, sample preservation procedures and chain of custody procedures;

f. identification of the test method used and detection limits achieved, including sample preparation, sample dilution (if necessary) and analytical interferences;

g. copies of the final laboratory report sheets, including final sheets reporting all quality assurance/quality control data;

h. logs of all the borings made; these logs must document all field observations made while drilling each boring, including: (1) soil type and field-observed properties; (2) field-screening results for VOCs; (3) staining/discoloration; and (4) presence/type of any odors.

i. a summary of all procedures used for quality assurance/quality control, including the results of these procedures; and

j. a discussion of the data, as it related to the overall goal of the sampling/analysis effort.

k. a description of activities conducted for removal of product. Product removal activities must be conducted to remove product to the maximum extent possible. Therefore, the report must also propose ongoing removal activities if necessary.

l. include a minimum of two (2) scaled geologic cross-sections normal to each other, and depict the depth to water, product thickness encountered, and screened interval of wells.

m. a delineation of the extent of the free phase plume based on the new data must be provided. If the new data points indicate that free product may extend beyond the six (6) investigative wells approved in this letter, further delineation must be proposed.

n. submit boring logs, construction diagrams and datasheets from installation and development of new wells. All pertinent information must also be submitted to the appropriate State agencies.

12. Weekly gauging in the ROST-PZ-4 area must continue until product removal activities have been deemed completed by the Illinois EPA.

13. The facility must continue to pursue access for additional groundwater investigation beyond well GP-5 to further delineate the dissolved plume, as required by Condition 6.a(3) of the August 5, 2010 Illinois EPA letter (Log Nos. B-43-CA-16 and CA-18).

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

15. The Illinois EPA determined that the document entitled, "Groundwater Monitoring Report – 4th Quarter 2010, Roxana, Illinois", dated April 14, 2011 and received by the Illinois EPA April 15, 2011, is inadequate in regards to reporting discussions with the facility. The report has not fully incorporated the inadequacies discussed during the February 15 and March 3, 2011 conference calls. Therefore, the document must be resubmitted in accordance with Condition 5 above.

This letter shall constitute Illinois EPA's final decision on the subject submittal. Within 35 days of 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 ninety 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.

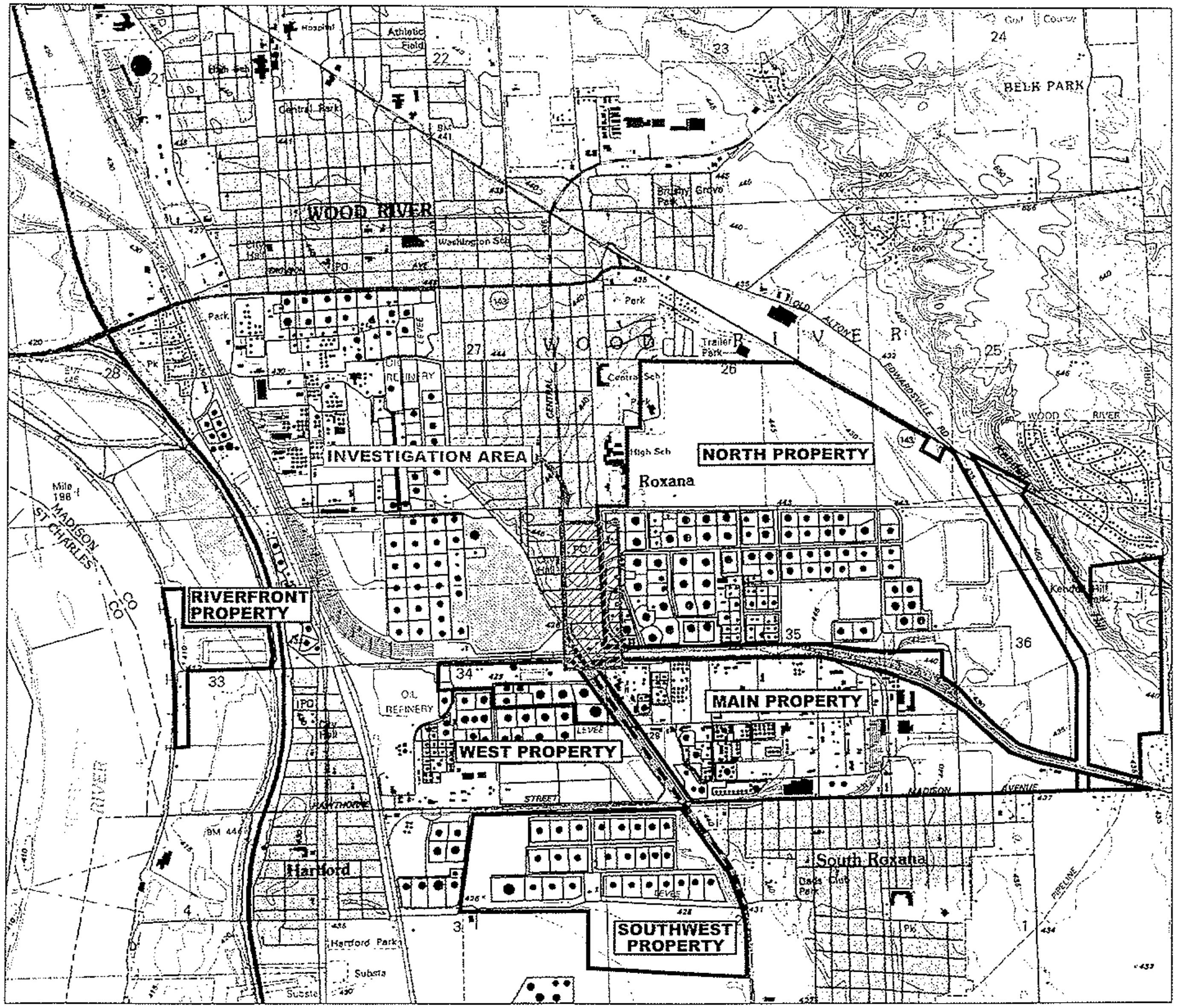
If you have any questions regarding the groundwater aspects of this letter, please contact Amy Boley at 217/558-4716; questions regarding other aspects of this letter should be directed to James K. Moore, P.E. at 217/524-3295.

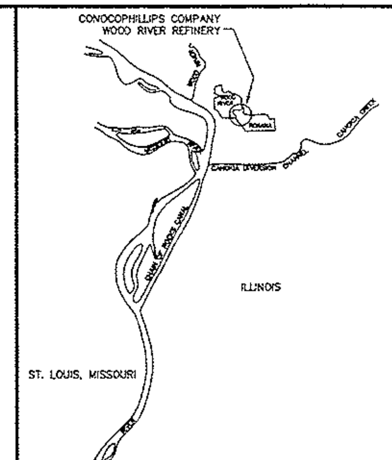
Sincerely,

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

SFN:AMB:bjh\111982s.doc
AMB sign 9/21
Attachment: Investigation Area

cc: Robert Billman, URS
Eric Peterson, ConocoPhillips





SITE VICINITY MAP

SCALE: 1IN = 8 MILES

LEGEND

WOOD RIVER REFINERY PROPERTY BOUNDARY

INVESTIGATION AREA

SOURCE: MAP TAKEN FROM ELECTRONIC USGS DIGITAL RASTER GRAPHIC 7.5 MINUTE TOPOGRAPHIC MAP OF WOOD RIVER, ILL-MO REVISED 1994.

CONTOUR INTERVAL = 5 FT

0 2000

SCALE FEET

SHELL OIL PRODUCTS US ROXANA, ILLINOIS	PROJECT NO. 21562593
URS	
DRN. BY: djd 12/15/10 DSGN. BY: djd CHKD. BY: wmp	Investigation Area Location Map — FIG. NO. 1