ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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PAT QUINN, GOVERNOR **LISA BONNETT**, DIRECTOR

217/524-3300

April 9, 2014

CERTIFIED MAIL
7012 0470 0001 3000 1570
7012 0470 0001 3000 1587

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

WRB Refining LP Wood River Refinery
Attn: Mr. Jay Churchill
900 South Central Avenue
P.O. Box 76
Roxana, Illinois 62084

Re: 1191150002 -- Madison County
Equilon Enterprises (d/b/a Shell Oil Products US)
ILD080012305
Log No. B-43R-CA-65, 68 and 76
RCRA Permit
Permit CA

Dear Mr. Dyer and Mr. Churchill:

This is in response to several submittals recently received by Illinois EPA regarding certain aspects of the RCRA corrective action efforts being conducted by Equilon Enterprises (d/b/a Shell Oil Products US) in accordance with a RCRA permit issued for the above-referenced facility. The Equilon Enterprises LLC 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 LP Wood River Refinery, 900 South Central Avenue, in Roxana, Illinois. The Illinois EPA Identification Number for the refinery itself and its operations is 1190905013. Equilon Enterprises 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 the RCRA permit issued to Equilon (Log No. B-43R and associated modifications); Equilon and its corporate predecessors actually owned and operated the refinery until 2000.

Contaminated soil vapors and groundwater have been encountered along/near a portion of the west property line of the North property of the WRB Refining LP Wood River Refinery in Roxana, Illinois. In general, the area of concern for this remediation effort is bounded by First Street to the north, Rand Avenue to the south, Chaffer Street to the east and Central Avenue (Highway 111) to the west. A drawing showing the general location of this area is attached to this letter.

Among other things, contaminated soil vapors have been encountered near the southern and eastern boundaries of the above-described area within the Village of Roxana. These vapors could potentially migrate into the homes present with this area and adversely impacting the indoor air quality in these areas.

Shell has been addressing this contamination by: (1) monitoring the quality of the soil vapors within the area of concern; (2) assessing the quality of the air within and below several homes in the area; and (3) operating a small soil vapor extraction system from May 2011to January 2012 to remove a localized area of contaminated soil vapors near the corner of 4th Street and Chaffer Street; and (4) operating a larger scale soil vapor extraction system extending from Second Street to Eight Street on the refinery side of Chaffer Street since January 2012. Additional soil vapor extraction wells with the Village of Roxana's Public Works Yard were brought on-line in December 2012. Illinois EPA's last letter approving the operation, maintenance and monitoring of this system is dated July 22, 2013.

All of the submittals being responded to in this letter deal with modifications/upgrades being made to the northern portion of the approved soil vapor extraction system in the vicinity of vapor monitoring point VMP-47 (which is located near the corner of Chaffer Street and the alley which runs between First and Second Streets; these submittals include:

1. An August 21, 2013 e-mail from Bob Billman, URS Corporation (time stamped 1:22 pm), which contained information regarding the soil vapor quality that had been observed at Vapor Monitoring Points VMP-1 and VMP-47. Both of these points are located in the north end of the approved soil vapor extraction system. This submittal also included a scope of work for conducting the first steps needed to be carried out to expand the approved soil vapor extraction system to the north (this work included trenching to look for utilities in the area and installation of additional vapor monitoring in an area north of the approved soil vapor extraction system where no vapor monitoring points were present);

2. An August 21, 2013 e-mail from Mr. Dyer (time stamped 3:44 PM) which contained information regarding the quality of groundwater beneath the northern portion of the approved soil vapor extraction system;

3. An August 21, 2013 e-mail from Mr. Billman (time stamped 5:06 PM) which contained additional information regarding the quality of the soil vapors at Vapor Monitoring Point VMP-47)

4. A September 13, 2013 submittal from Mr. Billman which proposed to install at least three vapor monitoring points north and west of VMP-47 within the village of Roxana

5. A September 19, 2013 e-mail from Mr. Billman (time stamped 12:36 pm) which contained the location and construction details of five additional soil vapor extraction points near/beyond the north end of the approved soil vapor extraction system

6. SVE System Construction Completion Report Addendum No. 2, dated January 9, 2014, which documented the northern extension to the SVE System.

Illinois EPA has completed its review of submittals mentioned above and hereby approves them subject to the following conditions and modifications:

1. The initially approved SVE system which consisted of thirty-four vapor extraction wells (referred to as SVE-3 through SVE-36), associated piping, two condensate tanks, a blower and a thermal oxidizer. This system is now being expanded to thirty-nine wells (the designation of the new wells are SVE-37 thru SVE-41). Some sixty-four vapor monitoring points are also present within the area where the SVE system is located, fifty-one of which are used in monitoring the effectiveness of the SVE system. A drawing showing the location of the SVE wells and vapor monitoring points is attached.

2. Operation of the subject SVE system must be carried out in accordance with the plans and reports approved by Illinois EPA on September 13, 2012 and July 22, 2013.

3. The approximate screened interval (based upon the depth below ground surface) from which soil gas will be removed from each SVE well is as follows:

Well	Screened Interval (ft)	Well	Screened Interval (ft)	Well	Screened Interval (ft)
SVE-3R	31-41	SVE-16	10-20	SVE-29	20-30
SVE-4	5-10	SVE-17	10-20	SVE-30	25-35
SVE-5	10-20	SVE-18	8-18	SVE-31	25-35
SVE-6	10-20	SVE-19	11-21	SVE-32	25-35
SVE-7	10-20	SVE-20	25-35	SVE-33	25-35
SVE-8	9-19	SVE-21	25-35	SVE-34	25-45
SVE-9	10-20	SVE-22	25-35	SVE-35	31-41
SVE-10	10-20	SVE-23	15-25	SVE-36	10-20
SVE-11	10-20	SVE-24	15-25	SVE-37	25-35
SVE-12	10-20	SVE-25	10-25	SVE-38	25-35
SVE-13	10-20	SVE-26	20-30	SVE-39	25-35
SVE-14	10-20	SVE-27	25-35	SVE-40	25-35
SVE-15	10-20	SVE-28	41-51	SVE-41	20-30

4. The SVE wells identified above are connected to be to one of seven header lines which are in turn connected to the blower which creates the vacuum necessary to extract contaminated vapors from the subsurface. For ease in the field, each header line has been assigned a certain color. A summary of the wells associated with each header line and the general location of each set of wells is as follows:

Header	SVE Wells Attached to Header	Description of Wells
Blue Line	3R, 4, 10, 11, 12, 25	Wells 3, 4 and 25 are along 4th Street; Wells 10-12 are along Chaffer Street
Green Line	13, 14, 15, 16, 17, 18, 19, 36	Southernmost wells along Chaffer Street
Brown Line	34 and 35	Deep wells between 5th and 6th Streets
Red Line	5, 6, 7, 8, 9,37,38,39,40,41	Far northern wells along Chaffer Street
Purple Line	28, 29, 30, 31, 32, 33	Deeper Wells North of Fifth Street
Teal Line	20, 21, 22, 23, 24, 26, 27	Well 20 is in the refinery, but near the Roxana Public Works area. The other wells are within the public works area.

5. The SVE system identified in Conditions 1 thru 4 above must be expanded, if necessary, if the system does not appear to be adequately removing the contaminated soil vapors from the subsurface within the study area. Such a determination will be based on many factors, such as system performance and potential risks posed by soil vapors.

6. Appropriate information and data must be collected to ensure the system identified in Condition 1 above is operating properly. Documentation of the results of all observations made and data collected in this evaluation must be recorded in the operating record for the system. Documentation of observed deficiencies in the operation of the systems must also be placed in this record, as well as documentation of the tasks carried out to correct these deficiencies. One of the important items that must be documented is when a thermal treatment unit, blower or individual SVE well is not in operation.

    a. Operation, maintenance and monitoring of the system must be carried out in accordance with: (1) the manufacturing specifications and recommendations; (2) the permit issued by Illinois EPA's Bureau of Air permit for the system; and (3) this letter.

    b. Appropriate meters and other equipment must be available at the site to collect the data specified in Condition 9 below.

    c. The system must be appropriately monitored to ensure it is properly operating.

7. Illinois EPA, Bureau of Land, Permit Section and Collinsville Field Office must be notified via e-mail any time the full-scale SVE system is down for more than seventy-two continuous hours.

8. Vapor monitoring points have been installed at locations VMP-1 thru VMP-64 (VMP-56 is located within 20' of VMP-43 and is to be used in place of VMP-31 which is being abandoned). Multiple monitoring points are installed at most of these locations; an attachment to this letter identifies the vertical intervals where soil vapor samples can be collected at each location.

9. The following must be carried out on a monthly basis for SVE wells, as well as the VMPs identified in the attached table, to monitor the general operational effectiveness of the SVE system:

    a. At each SVE well that is operating during the monthly event, the vacuum within the well and the depth to any water present in the well must be measured.

    b. At each VMP well screened during the monthly event, the initial vacuum within the well must be measured as well as the vacuum in the well after the well has been allowed to stabilize.

    c. The general chemical composition of the vapor with each SVE and VMP well screened during the monthly event must be determined using the following instruments:

        (1) A photoionization detector (PID);

        (2) A flame ionization detector (FID);

        (3) An FID with a charcoal filter placed in the influent line (this set up allows for the FID to only measure the amount of methane in the soil gas; as such the

        total amount of petroleum hydrocarbons in the soil gas can be determined by subtracting the results of the filtered FID measurement from the total FID measurement);

        (4) A gas meter that can detect oxygen and carbon dioxide; this meter must also be able to report the relative amount of any ignitable vapors in the well (typically referred as determining the amount of vapor relative to the lower explosive limit (% LEL))

10. On a quarterly basis, soil vapor samples must be collected for chemical analysis using USEPA Test Method TO-15 from all nested wells identified in the attached table as being

sampled quarterly (these samples may be collected using equipment which will gather vapors from the subsurface at a rate of no greater than 200 milliliters/min).

11. A report summarizing/documenting the results of all monitoring and remedial efforts associated with operation of this SVE system must be developed on a quarterly basis and submitted to Illinois EPA for review. This report must contain:

    a. A summary of the geology and hydrogeology of the area, including the results of recent groundwater monitoring efforts in the area;

    b. A discussion of the system's operation during the quarter, including deviations from the system's design parameters (such as problems maintain an adequate vacuum, down time due to equipment failure or other reasons);

    c. A discussion of any maintenance carried out on the system during the quarter;

    d. A brief discussion of the efforts carried out in conducting the monitoring efforts required by Conditions 9 and 10 above;

    e. A summary/discussion/evaluation of the results of all monitoring efforts carried out during the quarter, especially those carried out monthly in accordance with Condition 9 above;

    f. An estimate of the amount of hydrocarbon removed from the subsurface by the system during the quarter;

    g. An evaluation of the subsurface vacuum maintained by the system during the quarter, supported as appropriate with data and calculations;

    h. A tabular summary of the results of the soil vapor monitoring program conducted in accordance with Condition 10 above and an evaluation of these results. Copies of the actual analytical reports need not be provided in the quarterly reports; copies of these analytical reports must be maintained by the facility and available for Illinois EPA review upon request. Furthermore, the summary tables in the report should contain the analytical results from the three previous quarters (as well as the results for the quarter being addressed in the report) so that an evaluation can be made regarding the levels of contaminants in the soil vapor over the past year.

    i. Charts and/or summary tables which show the level of benzene and methane concentrations detected at each vapor monitoring point identified in Condition 10

above over time (starting with the first time that a soil gas sample was collected at that location). Locations where the contaminant levels have consistently been near the practical quantitation need only be listed in a table; the analytical results themselves do not need to be provided.

j. An overall evaluation of the system's operation during the quarter, including an evaluation of the results of the vapor monitoring efforts carried out in the study area; and

k. Recommended changes, if any, which need to be made to improve the effectiveness or the operation of the system.

12. The quarterly reports required by Condition 11 above must be prepared and submitted to the Illinois EPA in accordance with the following table:

Quarter of Calendar year	Report for the Months of	Report to the Illinois EPA by the following
1st quarter	January-March	May 1st
2nd quarter	April-June	August 1st
3rd quarter	July-September	November 1st
4th quarter	October-December	February 1st

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

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.

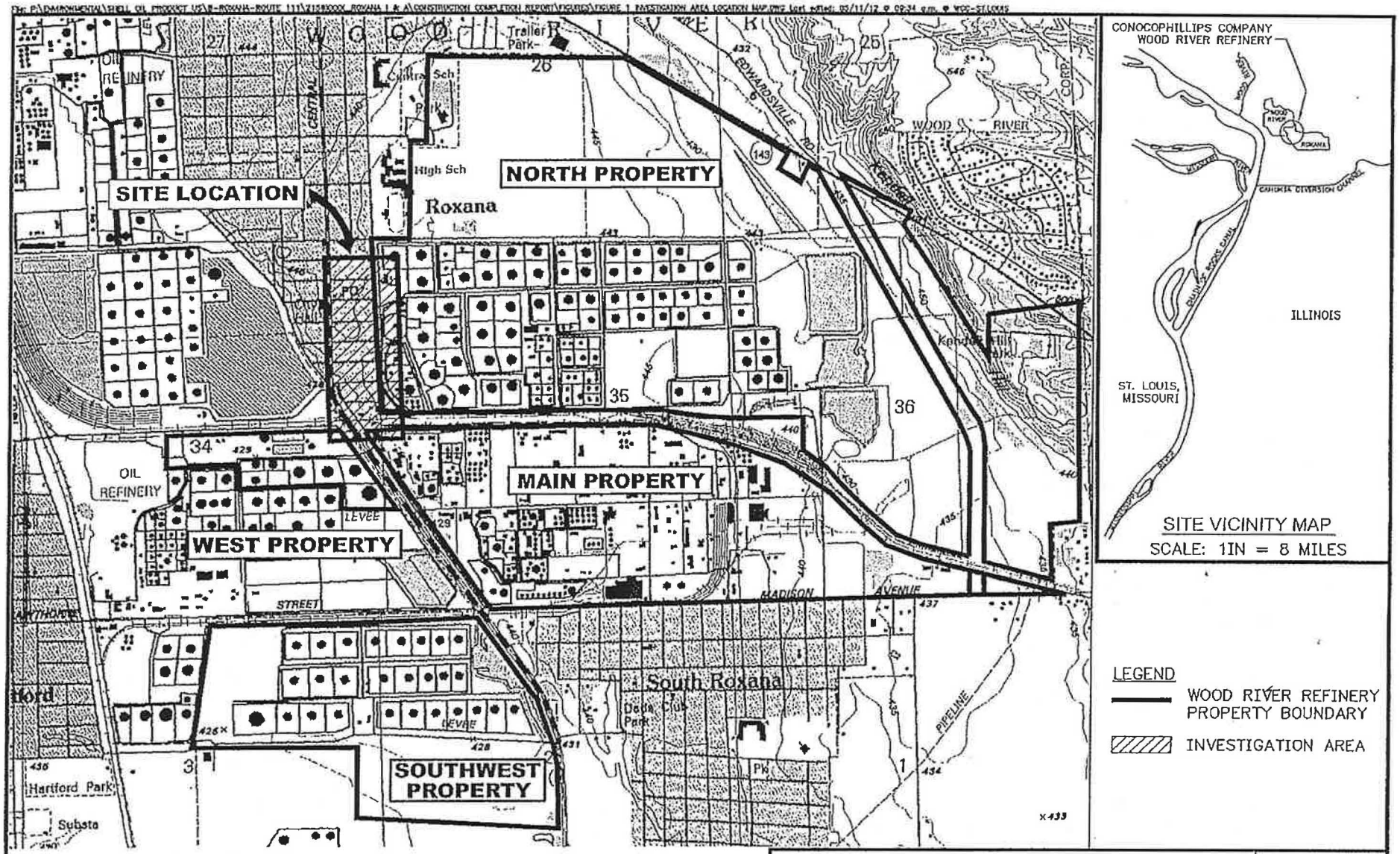
If you have any questions regarding this letter, please contact William T. Sinnott, II at 217/524-3310.

Sincerely,

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

SFN:WTS:1191150002-RCRA-B43RCA65,68,76
JKH

Attachments: Site Location Map
Location of SVE and VMP Wells
Table 1 VMP Locations Sampled in Quarterly and Monthly Events in Roxana, IL



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

SHELL OIL PRODUCTS US
ROXANA, ILLINOIS

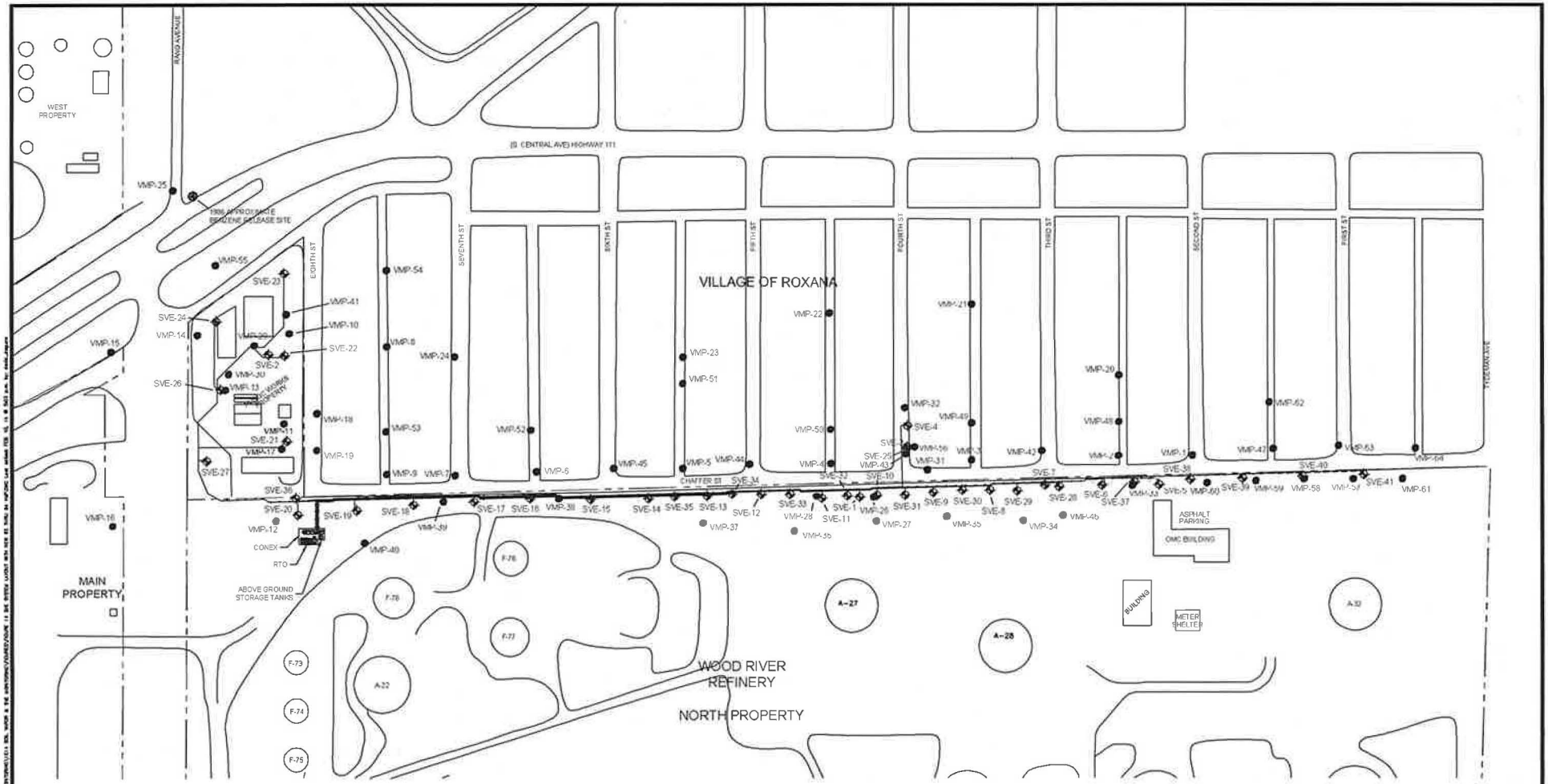
PROJECT NO.
21562735

URS

DRN. BY: djd May 2Ø12
DSGN. BY: djd
CHKD. BY: mpm

Site Location Map

FIG. NO.
1



LEGEND:

- SVE EXTRACTION WELL
- VAPOR MONITORING POINT (VMP)
- PROPERTY BOUNDARY
- UNDERGROUND PIPING

0 200

SCALE FEET

SHELL OIL PRODUCTS US ROXANA, ILLINOIS	PROJECT NO. 21562973
URS	
DRN. BY: djd February 2014 DSGN. BY: lv CHKD. BY: mcc	SVE System Layout — FIG. NO.

Summary of VMP Screening Depths at locations sampled in Monthly and Qaurterly Events
Roxana, IL

Notes:

1. Wells not screened monthly are outside influence of SVE system; they are however sampled quarterly.
2. Wells not sampled quarterly are located within the refinery (along same area where the SVE wells are located); they are however screened monthly
3. VMPs 26, 27, 28, and 31 have integrity problems and are neither screened monthly or sampled quarterly. These VMPs remain in the table to provide for overall continuity.
   a. VMPs 26, 27, and 28 are located within the refinery and have VMPs nearby to collect the data typically obtained at these three locations.
   b. VMP-31 is being replace by VMP 56.

Location ID Number	Depth to Top of Screen for Each Nested VMP					Included in Monthly Effectiveness Program?	Included in Quarterly Sampling Program?
	Screen 1	Screen 2	Screen 3	Screen 4	Screen 5		
VMP-1	5	8.5	23.5	38.5		X	X
VMP-2	5	8.5	22	42		X	X
VMP-3	5	10	22	31.5	39	X	X
VMP-4	5	12	23.5	39		X	X
VMP-5	5	12.5	31	40		X	X
VMP-6	5	10	31.5	39		X	X
VMP-7	5	13.5	29.5	38		X	X
VMP-8	5	9.5	23.5				X
VMP-9	5	11.5	25.5	38.5		X	X
VMP-10	5	10	20	30		X	X
VMP-11	5	8	29	38		X	X
VMP-12	5	11.5	25	39		X	X
VMP-13	5	10.5	21.5	29.5		X	X
VMP-14	5	11.5	20	29		X	X
VMP-15	5	21.5	25.5	29			X
VMP-16	5	13.5	19	31			X
VMP-17	5					X	X
VMP-18	8.5					X	X
VMP-19	5					X	X
VMP-20	5	10	25				X
VMP-21	5	10	25	33			X
VMP-22	5	10	18	38			X
VMP-23	5	10	25				X
VMP-24	5	10	22	34			X
VMP-25	5	21					X
VMP-26	10	20	30	38			
VMP-27	10	20	30	38			
VMP-28	10	20	30	37			
VMP-29	10	18	26	40		X	X
VMP-30	10	18	26	40		X	X
VMP-31	5	10	20	30			
VMP-32	5	10	20	30		X	X
VMP-33		10	20	30		X	
VMP-34		10	20	30		X	
VMP-35		10	20	30		X	
VMP-36		10	20	30		X	
VMP-37		10	20	30		X	
VMP-38		10	20	27		X	
VMP-39		10	20	30		X	
VMP-40		10	20	30		X	
VMP-41		10	20	26		X	X
VMP-42		10	20	30		X	X
VMP-43		10	20	30		X	X
VMP-44		10	20	30		X	X
VMP-45		10	20	30		X	X
VMP-46		10	20	30		X	
VMP-47	5	10	20	30		X	X
VMP-48	5	10	20	30		X	X
VMP-49	5	10	20	30		X	X
VMP-50	5	10	20	30		X	X
VMP-51	5	10	20	30		X	X
VMP-52	5	10	20	30		X	X
VMP-53	5	10	20	30		X	X
VMP-54	5	10	20	30		X	X
VMP-55	5	10	20	30		X	X
VMP-56	10	25	38.5			X	X
VMP-57	5	10	20			X	
VMP-58	5	10	20	30		X	
VMP-59	5	10	20	30		X	
VMP-60	5	10	20	33.5		X	
VMP-61	5	10	20			X	
VMP-62	5	10	20	30		X	X
VMP-63	5	10	20	30		X	X
VMP-64	5	10	20	28		X	X