



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

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

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

Application No.: 22020023

I.D. No.: 119090AAO

Applicant's Designation: Roxana Site

Date Received: February 22, 2022

Subject: Steam Enhanced Extraction System

Date Issued: May 3, 2022

Expiration Date:

Location: WRB Refinery Near Intersection of Chaffer Street and 8th Street,
Roxana, Madison County

This permit is hereby granted to the above-designated Permittee to CONSTRUCT emission unit(s) and/or air pollution control equipment consisting of

Modification to the existing Soil Vapor Extraction (SVE) System controlled by existing Regenerative Thermal Oxidizer (RTO) to include the use of a Steam Enhanced Extraction (SEE) system with one (1) 25.1 mmBtu/hr Natural Gas Fired Steam Boiler and back-up control by use of a Vapor Granular Activated Carbon (VGAC) system (comprised of two (2) in series VGAC).

pursuant to the above-referenced application. This permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. This permit is issued based on the emission of Hazardous Air Pollutants (HAP) as listed in Section 112(g) of the Clean Air Act from the steam Enhanced Extraction with one (1) 25.1 mmBtu/hr Natural Gas Fired Steam Boiler being less than 10 tons/year of any single HAP and 25 tons/year of any combination of such HAPs. As a result, this permit is issued based on the emissions of all HAPs from this source not triggering the requirements of Section 112(g) of the Clean Air Act.
- b. This permit is issued based on the construction of Steam Enhanced Extraction (SEE) system one (1) 25.1 mmBtu/hr Natural Gas Fired Steam Boiler not constituting a new major source or major modification pursuant to Title I of the Clean Air Act, specifically 40 CFR 52.21 Prevention of Significant Deterioration of Air Quality. The source has requested that the Illinois EPA establish emission limitations and other appropriate terms and conditions in this permit that limit the 100 tons/year for Volatile Organic Material (VOM), 10 tons/year for any single Hazardous Air Pollutant (HAP) and 25 tons/year for any combination of such HAPs) from the above-listed equipment below the levels that would trigger the applicability of these rules.

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

PLEASE PRINT ON RECYCLED PAPER

c. The Steam Enhanced Extraction (SEE) system with Boiler and associated Vapor Granular Activated Carbon (VGAC) system shall not begin operation under this construction permit until construction of SEE system, Boiler and associated VGAC, is complete and reasonable measures short of actual operation have been taken to verify proper operation.

2a. The Boiler and RTO associated with the SVE/SEE system are subject to 35 Ill. Adm. Code Part 212 Subpart B (Visible Emissions). Pursuant to 35 Ill. Adm. Code 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 Ill. Adm. Code 212.122.

b. Pursuant to 35 Ill. Adm. Code 212.123(b), the emission of smoke or other particulate matter from any such emission unit may have an opacity greater than 30 percent but not greater than 60 percent for a period or periods aggregating 8 minutes in any 60 minute period provided that such opaque emissions permitted during any 60 minute period shall occur from only one such emission unit located within a 305 m (1000 ft) radius from the center point of any other such emission unit owned or operated by such person, and provided further that such opaque emissions permitted from each such emission unit shall be limited to 3 times in any 24 hour period.

c. This source is subject to 35 Ill. Adm. Code Part 212 Subpart K (Fugitive Particulate Matter). Pursuant to 35 Ill. Adm. Code 212.301, no person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source.

3. The RTO associated with the SVE/SEE system is subject to 35 Ill. Adm. Code Part 214 Subpart K (Process Emission Sources). Pursuant to 35 Ill. Adm. Code 214.301, except as further provided by 35 Ill. Adm. Code Part 214, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2000 ppm.

4a. The SVE/SEE system is subject to 35 Ill. Adm. Code Part 219 Subpart G (Use of Organic Material). Pursuant to 35 Ill. Adm. Code 219.301, no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lbs/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 Ill. Adm. Code 219.302, 219.303, 219.304 and the following exception: If no odor nuisance exists the limitation of 35 Ill. Adm. Code Part 219 Subpart G shall apply only to photochemically reactive material.

b. Pursuant to 35 Ill. Adm. Code 219.302(a), emissions of organic material in excess of those permitted by 35 Ill. Adm. Code 219.301 are allowable if such emissions are controlled by one of the following methods:

Flame, thermal or catalytic incineration so as either to reduce such emissions to 10 ppm equivalent methane (molecular weight 16) or less,

or to convert 85 percent of the hydrocarbons to carbon dioxide and water.

- c. The SVE/SEE system with RTO is subject to 35 Ill. Adm. Code Part 219 Subpart TT (Other Emission Units). Pursuant to 35 Ill. Adm. Code 219.980(a), the requirements of 35 Ill. Adm. Code Part 219 Subpart TT shall apply to a source's VOM emission units, which are not included within any of the categories specified in 35 Ill. Adm. Code Part 219 Subparts B, E, F, H, Q, R, S, T, V, X, Y, Z, AA, BB, PP, QQ, or RR, or are not exempted from permitting requirements pursuant to 35 Ill. Adm. Code 201.146, if the source is subject to 35 Ill. Adm. Code Part 219 Subpart TT. A source is subject to 35 Ill. Adm. Code Part 219 Subpart TT if it contains process emission units, not regulated by 35 Ill. Adm. Code Part 219 Subparts B, E, F (excluding 35 Ill. Adm. Code 219.204(1)), H (excluding 35 Ill. Adm. Code 219.405), Q, R, S, T, (excluding 35 Ill. Adm. Code 219.486 of this Part), V, X, Y, Z or BB, which as a group both:
 - i. Have maximum theoretical emissions of 91 Mg (100 tons) or more per calendar year of VOM if no air pollution control equipment were used, and
 - ii. Are not limited to less than 91 Mg (100 tons) of VOM emissions per calendar year in the absence of air pollution control equipment, through production or capacity limitations contained in a federally enforceable permit or a SIP revision.
- d. Pursuant to 35 Ill. Adm. Code 219.986(a), every owner or operator of an emission unit subject to 35 Ill. Adm. Code Part 219 Subpart TT shall comply with the requirements of 35 Ill. Adm. Code 219.986(a), (b), (c), (d) or (e).

Emission capture and control equipment which achieve an overall reduction in uncontrolled VOM emissions of at least 81 percent from each emission unit.

5. This permit is issued based on the SVE/SEE system at this source not being subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Site Remediation, 40 CFR 63 Subpart GGGGG because this source is not a major source of HAP as defined in 40 CFR 63.2. This is a result of the federally enforceable production and operating limitations, which were established in this permit to restrict the potential to emit to less than 10 tons/year for any individual Hazardous Air Pollutant (HAP), and 25 tons/year of any combination of such HAPs.
- 6a. In the event that the operation of this source results in an odor nuisance, the Permittee shall take appropriate and necessary actions to minimize odors, including but not limited to, changes in raw material or installation of controls, in order to eliminate the odor nuisance.
- b. The RTO shall be in operation at all times when the associated SVE/SEE system is in operation and emitting air contaminants.

- c. The backup VGAC system shall be in operation when the RTO is shut down and SEE system is in operation and emitting air contaminants.
- d. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic inspections and maintenance on the RTO and VGAC associated with the SVE/SEE system such that the RTO and VGAC are kept in proper working condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein.
- e. The boiler shall only be operated with natural gas as the fuel. The use of any other fuel in the RTO and boiler may require that the Permittee first obtain a construction permit from the Illinois EPA and perform stack testing to verify compliance with all applicable requirements.
- 7a. The Permittee shall operate the SEE system such that the emissions and operation of the SEE system not exceed the following limits:

	Maximum VOM/HAP Emissions		
<u>(Lbs/Hour)</u>	<u>(Tons/Month)</u>	<u>(Tons/Year)</u>	
1.42	0.53	3.43	

These limits are based on 35 Ill. Adm. Code 219.301 and emissions shall be calculated using the following equation:

- b. Combustion emissions of the SEE System shall not exceed the following limits:

Total Maximum firing rate = 25.106 mmBtu/hr

Maximum Natural gas usage = 215.6 mmscf

<u>Pollutant</u>	Emission	Emissions	
	<u>(Lb/mmBtu)</u>	<u>(Tons/Mo)</u>	<u>(Tons/Yr)</u>
Carbon Monoxide (CO)	0.084	0.91	9.06
Nitrogen Oxides (NO _x)	0.10	1.08	10.78
Particulate Matter (PM)	0.0076	0.08	0.82
Sulfur Dioxide (SO ₂)	0.0006	0.006	0.06

These limits are based on maximum firing rate, operating hours (8,760 hr/yr), standard AP-42 - Tables 3.1-1 and 3.1-2a emission factors and information in the application.

- c. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months.
- 8. The issuance of this permit does not relieve the Permittee of the responsibility of complying with the applicable provisions of the State of Illinois Rules and Regulations, Title 35: Subtitle C, Water

Pollution Control, Chapter 1. The Permittee may need to obtain a permit from the Division of Water Pollution Control for operation of the system.

- 9a. Pursuant to 35 Ill. Adm. Code 201.282, every emission source or air pollution control equipment shall be subject to the following testing requirements for the purpose of determining the nature and quantities of specified air contaminant emissions and for the purpose of determining ground level and ambient air concentrations of such air contaminants:
 - i. Testing by Owner or Operator. The Illinois EPA may require the owner or operator of the emission source or air pollution control equipment to conduct such tests in accordance with procedures adopted by the Illinois EPA, at such reasonable times as may be specified by the Illinois EPA and at the expense of the owner or operator of the emission source or air pollution control equipment. The Illinois EPA may adopt procedures detailing methods of testing and formats for reporting results of testing. Such procedures and revisions thereto, shall not become effective until filed with the Secretary of State, as required by the APA Act. All such tests shall be made by or under the direction of a person qualified by training and/or experience in the field of air pollution testing. The Illinois EPA shall have the right to observe all aspects of such tests.
 - ii. Testing by the Illinois EPA. The Illinois EPA shall have the right to conduct such tests at any time at its own expense. Upon request of the Illinois EPA, the owner or operator of the emission source or air pollution control equipment shall provide, without charge to the Illinois EPA, necessary holes in stacks or ducts and other safe and proper testing facilities, including scaffolding, but excluding instruments and sensing devices, as may be necessary.
 - b. Testing required by Conditions 11 and 12 shall be performed upon a written request from the Illinois EPA by a qualified independent testing service.
10. Pursuant to 35 Ill. Adm. Code 212.110(c), upon a written notification by the Illinois EPA, the owner or operator of a particulate matter emission unit subject to 35 Ill. Adm. Code Part 212 shall conduct the applicable testing for particulate matter emissions, opacity, or visible emissions at such person's own expense, to demonstrate compliance. Such test results shall be submitted to the Illinois EPA within thirty (30) days after conducting the test unless an alternative time for submittal is agreed to by the Illinois EPA.
 11. Pursuant to 35 Ill. Adm. Code 219.988(a), when in the opinion of the Illinois EPA it is necessary to conduct testing to demonstrate compliance with 35 Ill. Adm. Code 219.986, the owner or operator of a VOM emission unit subject to the requirements of 35 Ill. Adm. Code Part 219 Subpart TT shall, at his own expense, conduct such tests in accordance with the applicable test methods and procedures specified in

35 Ill. Adm. Code 219.105.

- 12a. Pursuant to 35 Ill. Adm. Code 219.105(d) (2) (A) (i), an owner or operator: That uses an afterburner or carbon adsorber to comply with any Section of 35 Ill. Adm. Code Part 219 must use Illinois EPA and USEPA approved continuous monitoring equipment which is installed, calibrated, maintained, and operated according to vendor specifications at all times the control device is in use except as provided in 35 Ill. Adm. Code 219.105(d) (3). The continuous monitoring equipment must monitor the following parameters:

For each afterburner which does not have a catalyst bed, the combustion chamber temperature of each afterburner.

- b. Pursuant to 35 Ill. Adm. Code 219.105(d) (2) (B), an owner or operator: Must install, calibrate, operate and maintain, in accordance with manufacturer's specifications, a continuous recorder on the temperature monitoring device, such as a strip chart, recorder or computer, having an accuracy of ± 1 percent of the temperature measured, expressed in degrees Celsius or $\pm 0.5^{\circ}$ C, whichever is greater.
13. Pursuant to 40 CFR 63.10(b) (3), if an owner or operator determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants regulated by any standard established pursuant to Section 112(d) or (f) of the Clean Air Act, and that stationary source is in the source category regulated by the relevant standard, but that source is not subject to the relevant standard (or other requirement established under 40 CFR Part 63) because of limitations on the source's potential to emit or an exclusion, the owner or operator must keep a record of the applicability determination on site at the source for a period of 5 years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination must be signed by the person making the determination and include an analysis (or other information) that demonstrates why the owner or operator believes the source is unaffected (e.g., because the source is an area source). The analysis (or other information) must be sufficiently detailed to allow the USEPA and/or Illinois EPA to make a finding about the source's applicability status with regard to the relevant standard or other requirement. If relevant, the analysis must be performed in accordance with requirements established in relevant subparts of 40 CFR Part 63 for this purpose for particular categories of stationary sources. If relevant, the analysis should be performed in accordance with USEPA guidance materials published to assist sources in making applicability determinations under Section 112 of the Clean Air Act, if any. The requirements to determine applicability of a standard under 40 CFR 63.1(b) (3) and to record the results of that determination under 40 CFR 63.10(b) (3) shall not by themselves create an obligation for the owner or operator to obtain a Title V permit.
14. Pursuant to 35 Ill. Adm. Code 212.110(e), the owner or operator of an emission unit subject to 35 Ill. Adm. Code Part 212 shall retain records of all tests which are performed. These records shall be

retained for at least three (3) years after the date a test is performed.

- 15a. Pursuant to 35 Ill. Adm. Code 219.991(a)(2), any owner or operator of a VOM emission unit which is subject to the requirements of 35 Ill. Adm. Code Part 219 Subpart PP, QQ, RR or TT and complying by the use of emission capture and control equipment shall comply with the following:

On and after a date consistent with Section 219.106 of this Part, or on and after the initial start-up date, the owner or operator of a subject VOM source shall collect and record all of the following information each day and maintain the information at the source for a period of three years:

- i. Control device monitoring data.
- ii. A log of operating time for the capture system, control device, monitoring equipment and the associated emission source.
- iii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.

- 16a. The Permittee shall maintain monthly records of the following items:

- i. Records addressing use of good operating practices for the RTO and VGAC system (when in operation) associated with the SVE/SEE system:
 - A. Records for periodic inspection of the RTO and VGAC system (when in operation) with date, individual performing the inspection, and nature of inspection;
 - B. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair; and
 - C. Records for monthly photoionization detector (PID) measurements between first and second VGAC vessel.
- ii. Measured exhaust total VOM and HAP contaminant concentration (ppmv) in exhaust air flow samples exhausting the SVE and for the SEE system before and after the VGAC system (when in operation). These samples and measurements shall be taken at start-up, once/day for first 3 days, 2 times/week for first 2 weeks and once every other month thereafter. Air samples from the first two weeks shall be sent to a certified lab and analyzed by USEPA method TO-14A using gas chromatography. After the first 2 weeks of operation, the Permittee may measure exhaust total VOM and HAP contaminant concentration (ppmv) in exhaust air using an appropriately calibrated photo or flame ionization detector on a once/every other month basis.

- iii. Exhaust air flow rate (dscfm) from the SVE/SEE system at start-up, once per week for first 2 weeks, and once every other month thereafter;
 - iv. Hours of operation of the system (hours/month, hours/year
 - v. Natural gas usage (mmscf/month, mmscf/year); and
 - vi. Monthly and annual emissions of CO, NOx, PM, SO2, VOM, and HAPs from the SEE with boiler with supporting calculations (tons/month and tons/year).
- b. All records and logs required by this Condition 17(a) of permit shall be retained at a readily accessible location at the source for at least five (5) years from the date of entry and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request. Any records retained in an electronic format (e.g., computer storage device) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA or USEPA request for records during the course of a source inspection.
- 17a. If there is an exceedance of or a deviation from the requirements of this permit as determined by the records required by this permit or otherwise, the Permittee shall submit a report to the Illinois EPA's Bureau of Air Compliance Section in Springfield, Illinois within thirty (30) days after the exceedance or deviation. The report shall identify the duration and the emissions impact of the exceedance or deviation, a copy of the relevant records and information to resolve the exceedance or deviation, and a description of the efforts to reduce emissions from, and the duration of exceedance or deviation, and to prevent future occurrences of any such exceedance or deviation.
- b. One (1) copy of required reports and notifications shall be sent to:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

If you have any questions on this permit, please contact Jocelyn Stakely at 217/785-1705.



William D. Marr
Manager, Permit Section
Bureau of Air

WDM:JRS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
- 6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
- 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.