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**west virginia department of environmental protection**

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Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304  
(304) 926-0450  
(304) 926-0452 fax

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

**UIC Permit**

VIKING ENERGY CORPORATION  
P. O. BOX 13366  
SISSONVILLE, WV 25360

Dear Applicant:

Enclosed you will find Underground Injection Control Permit Number UIC2D0392210 dated June 03, 2011. Be advised that the duration of the permit is for a period of five (5) years.

Also be advised that all conditions established by UIC Permit Number UIC2D0392210 either expressly or incorporated by reference, must be strictly adhered to. All monitoring forms shall be submitted to the Office of Oil and Gas in the manner and frequency prescribed. The monitoring forms will be compared with the scope of permitted activity to verify compliance.

Please review the permit carefully and be aware of all permit conditions. Compliance of all permit conditions will be strictly enforced.

The operation of this injection well facility in general, including maintenance of all related surface equipment, shall be conducted so as to preclude any unlawful discharge of waste materials into the surface or ground waters of the state.

James Martin  
Chief,  
Office of Oil and Gas

Enclosures as stated

**UIC PERMIT NO. UIC2D0392210**  
**WELL NO. Wallace #1**

UNDERGROUND INJECTION CONTROL PERMIT  
FOR  
DEPARTMENT OF ENVIRONMENTAL PROTECTION,  
OFFICE OF OIL AND GAS AND DIVISION OF WATER AND WASTE MANAGEMENT  
FOR  
COMMERCIAL CLASS II DISPOSAL WELL

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This document consists of the Underground Injection Control (UIC) Permit required by the Department of Environmental Protection, Office of Oil and Gas (OOG), and Division of Water and Waste Management. The permittee is allowed to engage in underground injection in accordance with the terms and conditions of this permit based upon an approved UIC Permit.

The Underground Injection Control Permit No. **UIC2D0392210** consists of Forms WW-3A and WW-3B and the terms and conditions below:

1. The underground injection activity authorized by this permit shall not allow the movement of fluid, as per (47CSR13-2.26), containing any contaminant into any subsurface area other than that which is specified and may not cause a violation of any primary drinking water regulation promulgated under 40 CFR Chapter 1, Part 141 or any water quality standard promulgated by the Department of Environmental Protection.
2. This permit is issued in accordance with the provisions of Article 11 and 12, Chapter 22 of the Code of West Virginia and the Legislative Rule 47CSR13.
3. All reports required by this permit shall be submitted to the Office of Oil and Gas with the exception to paragraph 4 below.
4. The following activities require the immediate cessation of facility operations and prompt notification of the Director of Water and Waste Management (47CSR13-13.6.d and 47CSR13-13.12.1.6).
  - a) Any monitoring or other information which indicates that any contaminant has caused or may cause an endangerment to an underground source of drinking water;
  - b) Any non-compliance with a permit condition or any malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water; and
  - c) Any non-compliance which may endanger health and environment.

5. This permit is for authorization of injection of only fluids as defined for Class II wells in 47CSR13-4.2. The fluids to be injected shall only be from those sources listed in the permit application. Additional sources of fluids may be approved upon written request by the permittee. However, permittee's acceptance of additional sources of fluid(s) shall be deemed approved provided that such fluids meet all Class II injection standards and the permittee reports within five (5) business days the source, API# and formation(s) for the sources added during the previous week. Accepting any fluid that does not meet Class II injection standards is grounds for revocation of this permit.
6. The permit must satisfy the requirements of the Office of Oil and Gas regarding any corrective action needed on all known wells penetrating the injection zone within the area of review.
7. Any production well within a ¼ mile radius of disposal well# 47-039-02210 which does not have cemented production casing shall be plugged immediately upon becoming inactive. Any temporary inactive well shall be monitored at a frequency and by a method prescribed by the Office of Oil and Gas upon notice by the permittee of such activity. Any well shut-in more than one (1) week shall be considered inactive.
8. The area of review is designated as a 1 / 4 mile radius around the injection project.
9. This permit approves the Newburg formation for injection from 5514' to 5584' (open hole).
10. The maximum wellhead injection pressure shall be established at 2,018 PSI.
11. The permittee shall provide for security and safety at the injection facility to guard against illegal or unauthorized dumping and injection at the injection facility. A gated security fence shall be maintained around the permitted well system. The facility shall be monitored 24 hours. All unnecessary equipment (determined by the WVDEP-OOG) shall be removed from the UIC facility upon request by the Office of Oil and Gas.
12. The permittee shall monitor the 2 3/8" X 5 1/2" and 5 1/2" X 8 5/8" casing annuli with pressure sensitive devices or with such a method as approved or required by the Office of Oil and Gas to allow early detection on any leaks from the injection zone or casing. The results of such monitoring shall be reported on Form WR-40.
13. Authorization to inject is contingent upon submission and approval of the Office of Oil and Gas Form WR-37 for each well. Construction modifications from the proposed work plan (O&G Form WW-3) and mechanical integrity will be evaluated at this time. Operational conditions will be finalized at this time. Upon approval of Form WR-37, conditions established on this form are incorporated by reference as conditions of this permit. FORM WR-37 SHALL BE SUBMITTED WITHIN 30 DAYS OF THE EFFECTIVE DATE OF THE UIC PERMIT.

14. Permittee shall conduct a mechanical integrity test (MIT) at least once every five years per regulation submitting a copy of the test chart and WR-37 Form to the OOG. If a mechanical integrity test should fail, the permittee shall cease operation/injection and shut-in the well immediately until repaired or permanently plugged and abandoned per regulation. The well must be repaired or permanently plugged within 90 days of the failure date. If repaired, the well must be re-tested making sure to submit a WR-37 Form to the Office of Oil and Gas. The Office of Oil and Gas shall be notified 24 hours in advance of the re-test date to witness said test.
15. A well head pressure gauge shall be installed and maintained on the injection tubing / casing to facilitate inspection and ensure compliance of maximum injection pressures as approved on Oil and Gas Form WR-37. A daily reading of the injection pressure shall be taken and reported monthly on Form WR-40 to the Office of Oil and Gas.
16. The permittee shall sample and analyze injection fluids upon request by the Office of Oil and Gas. Analyses shall cover all parameters listed on Attachment A of this permit or any other requested by the Office of Oil and Gas. Results of all analyses shall be submitted to the Office of Oil and Gas. Permittee shall submit a letter of explanation for any parameter which exceeds the ranges on Attachment A.
17. All injection lines shall be inspected, maintained, operated and monitored to allow early detection of any leakage and so that the occurrence of leaks will be minimized.
18. Pipeline(s) connecting UIC above-ground storage tanks and permitted well (UIC2D0392210) shall be tested for integrity at least once every five years reporting results on Form WR-37 to this agency.
19. Permittee shall construct and/or maintain adequate secondary containment for all tanks on site and for unloading area for fluids coming into the facility.
20. Permittee shall sample the stream (Tuppers Creek) bi-annually both above and below the injection facility submitting results to the Office of Oil and Gas. Any existing groundwater monitoring wells shall also be sampled bi-annually submitting results to the Office of Oil and Gas.
21. Permittee shall install and maintain a vapor recovery system on all tanks and any other equipment (if practical) that has the potential to put off vapors.
22. The permittee shall fulfill the requirements of the Office of Oil and Gas regarding maintaining financial responsibility and resources to close, plug, and abandon permitted wells. An additional five-thousand dollar performance bond shall be maintained on permitted UIC well #47-039-02210.
23. The herein-described activity is to be extended, modified, added to, made, enlarged, acquired, constructed or installed, and operated, used and maintained strictly in accordance with the terms and conditions of this permit; with the information submitted with the Permit Application No. **UIC2D0392210** with the plan of maintenance and method of operation thereof submitted with such application(s); and with any applicable rules and regulations promulgated by the Department of Environmental Protection.

24. This permit is issued in accordance with the provisions of Article 11 and 12, Chapter 22, of the Code of West Virginia and Legislative Rule 47CSR13.
25. Failure to comply with the terms and conditions of this permit, with the plans and specifications submitted with the Permit Application No. **UIC2D0392210** and with the plan of maintenance and method of operation thereof submitted with such application(s) shall constitute grounds for the revocation or suspension of this permit and for the invocation of all the enforcement procedures set forth in Article 11 and 12, Chapter 22, of the Code of West Virginia and Legislative Rule 47CSR13.
26. The operation of this injection well facility in general, including maintenance of all unrelated surface equipment, shall be conducted so as to preclude any unlawful discharge of waste materials into the surface or ground waters of this State.
27. The permittee must satisfy the requirement of the Office of Oil and Gas for plugging and abandonment of permitted injection wells in such a manner as to ensure that no fluid movement occurs either from the injection zone into an underground source of drinking water or from one underground source of drinking water to another.
28. Permittee shall implement a manifesting system to record all loads hauled to the facility making sure to document the source of the waste fluid and hauler identification. The Office of Oil and Gas shall approve the instrument, prior to the transportation of any fluids.
29. Permittee shall haul all fluids from the source to the facility for disposal or designate by letters to the Office of Oil and Gas, a single hauler to transport all fluids. No third party haulers will be permitted to transport fluid to the facility.

## ATTACHMENT A

### Injection Fluid Analyses Parameters

<u>Parameter</u>	<u>Ranges</u>
PH	>2 – 10
TDS	0 - 265,000 mg/l
TSS	0 - 1000 mg/l
Aluminum	0 - 10 mg/l
Arsenic	0 – 10 mg
Barium	0 – 1500 mg/l
Cadmium	0 – 2 mg/l
Chromium	0 – 1 mg/l
Iron	0 – 1000 mg/l
Lead	0 – 7.5 mg/l
Magnesium	0 – 5000 mg/l
Manganese	0 – 15 mg/l
Potassium	0 – 5000 mg/l
Sodium	0 – 110,000 mg/l
Zinc	0 – 15 mg/l
Surfactants	0 – 10 mg/l
TKN	0 – 25 mg/l
Oil and Grease	0 – 100 mg/l
TOC	0 – 10,000 mg/l
COD	0 – 30,000 mg/l
Acidity	0 – 500 mg/l
Chloride	0 – 250,000 mg/l
Sulfate	0 – 500 mg/l
Cyanide	0 – 1 mg/l
Phenols	0 – 10 mg/l
Calcium	0 – 60,000 mg/l
BNA – Extractables	Trace
Purgeable Aromatics	Trace
Purgeable Halocarbons	Trace
PCBs	<MDL or 50 ppm
Benzene	
Ethylbenzene	
Toluene	
Total Xylenes	
TPHs (ORO, DRO, GRO)	

[illegible]

FOCALALICO QUADRANGLE  
SCALE 1:2000

LOCATION MAP OF PROPOSED  
DISPOSAL WELL 20320

1432' S of 38° 30' 00"  
7400' W of 81° 37' 30"





1) Date: September 27, 2010  
2) Operator's Well No. Wallace #1  
3) API Well No.: 47 039 02210  
State County Permit  
4) UIC Permit No. 220392210

**STATE OF WEST VIRGINIA  
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION  
FOR THE DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**

5) WELL TYPE: Liquid Injection ☒ / Gas Injection (not storage) / Waste Disposal /  
6) LOCATION: Elevation: 647.16 Watershed: Tupper Creek  
District: Union County Kanawha Quadrangle Pocatalico  
7) WELL OPERATOR: Viking Energy, Inc. 8) DESIGNATED AGENT Michael Pinkerton  
Address P. O. Box 13366 Address P. O. Box 13366  
Sissonville, WV 25360 Sissonville, WV 25360  
9) OIL & GAS INSPECTOR TO BE NOTIFIED 10) DRILLING CONTRACTOR  
Name Terry Urban Name  
Address P.O. Box 1207 Address  
Clendenin, WV 25045  
11) PROPOSED WELL WORK Drill / Drill deeper / Redrill / Stimulate  
Plug off old formation / Perforate new formation Convert ☒  
Other physical change in well (specify) (Renewal of old permit) JP  
12) GEOLOGIC TARGET FORMATION Newburg Depth 5557 Feet (top) to 5574 Feet (bottom)  
13) Estimated Depth of Completed Well, (or actual depth of existing well): ~120' 5584 Feet  
14) Approximate water strata depths: Fresh N/A Feet Salt 1190 Feet  
15) Approximate coal seam depths: N/A  
16) Is coal being mined in the area? Yes No ☒  
17) Virgin reservoir pressure in target formation 2125 psig Source Well Record  
18) Estimated reservoir fracture pressure psig (BHFP)  
19) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour 150 BPH Bottom hole pressure 4320  
20) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES  
Produced water and pit fluids  
21) FILTERS (IF ANY) 50 micron bag and 10 micron cartridge  
22) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

23) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS					FOOTAGE INTERVALS		CEMENT FILL - UP OR SACKS (CU. FT.)	PACKERS
	Size	Grade	Weight per ft.	New	Used	For Drilling	Left In Well		
Conductor	20"	H-40	94	✓		15'	15'		Kinds
Fresh Water	13 3/8"	H-40	48	✓		241'	241'	CTS	Baker R-3
Coal									Sizes
Intermediate	8 5/8"	J-55	24	✓		1738'	1738'	CTS	5 1/2" x 2 3/8"
Production	5 1/2"	N-80	17	✓		5514'	5514'	1703KS	Depths set
Tubing	2 3/8"	J-55	4.7	✓		5462'	5462'		5558' (5478')
Liners									Perforations OH
									Top Bottom

24) APPLICANT'S OPERATING RIGHTS were acquired from Triple B Lumber & Farming  
by deed ☒ / lease / other contract dated 11/19/86 of record in the  
Kanawha County Clerk's office in Deed Book 2142 Page(s) 295