91 7199 9991 7035 6665 9896

dep

west virginia department of environmental protection

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

UIC Permit

RITCHIE HUNTER WATER DISPOSAL, LLC
1048 TEXAN TRAIL
GRAPEVINE, TX 76051-

Dear Applicant:

Enclosed you will find Underground Injection Control Permit Number UIC2D08510142 dated December 23, 2015. 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 UIC2D08510142 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 with 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.

James Martin
Chief,
Office of Oil and Gas

Enclosures as stated

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James Martin
Chief,
Office of Oil and Gas

Enclosures as stated

UNDERGROUND INJECTION CONTROL PERMIT

For

Ritchie Hunter Water Disposal, LLC

Number UIC2D08510142

AUTHORIZATION TO OPERATE AN UNDERGROUND INJECTION CONTROL (UIC) INJECTION WELL
PERMIT NUMBER # UIC 2D08510142

In compliance with provisions of the West Virginia Code, Chapter 22, Article 6, Article 11 and Article 12, as well as Legislative Rules, Title 47, Series 13 and Series 58, Title 47, Series 55, and Title 35 Series 1 and Series 4.

NAME	Ritchie Hunter Water Disposal, LLC	FACILITY TYPE	Brine Disposal
ADDRESS	1048 Texan Trail	WELL API #	**47-085-10142**
ADDRESS	Grapevine, TX 76051	FIELD NAME	NA

is authorized by this permit to inject Class II fluids that are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection into the **Oriskany Sandstone** formations in accordance with the conditions set forth herein. The permitted injection depth shall be **6294** feet to **6360** feet. The injection well is located in **Ritchie** County, 7.5' **Ellenboro** Quadrangle. The coordinates for this injection well are:

UTM NAD 83 Northing **4345258** and UTM NAD 83 Easting **491686.3**.

The maximum permitted wellhead injection pressure is established as **1901** PSI.

All references to West Virginia Regulations are to those that are in effect on the date that this permit becomes effective.

Any person who holds a permit shall pay an annual permit fee in accordance with the provisions of Title 47 Series 9 section 7 of the Legislative Rule. The first annual permit fee shall be remitted to the Office of Oil and Gas one (1) calendar year from the date of permit issuance; subsequent annual permit fees shall be remitted on or before the anniversary date of the permit issuance. The annual permit fee for a Class II disposal well is twenty five dollars ($25). The permit becomes void if the annual permit fee has not been paid within one hundred eighty (180) days of the due date. The Chief shall not reissue a permit until all annual permit fees due during prior terms of that permit have been paid in full.

Failure to pay the annual groundwater fee of $75.00 for Class IID as required by the West Virginia Code, Chapter 22, Article 11 and/or Article 12, shall be cause for revocation of this permit. The annual permit fee is due on the anniversary date of permit issuance and shall be paid on the anniversary date of issuance of this permit.

Non-compliance with the terms of this permit shall be cause for revocation of Certification under the terms of Chapter 22, Article 12, and revocation of the permit under Chapter 22, Article 11 of the West Virginia Code.

This permit and its authorization to inject shall remain in effect for five (5) years from the date of issuance of the final permit provided all terms of the permit are met.

James Martin, Chief
Office of Oil and Gas

PART I

A. REAPPLICATION

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit an administratively complete application for a new permit at least one hundred and eighty (180) days before this permit expires.

B. IMMEDIATE REPORTING

The permittee shall report any noncompliance which may endanger human health or the environment immediately after becoming aware of the circumstances by using the WVDEP Emergency Spill line number, 1-800-642-3074. Written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, permittee shall provide the anticipated time it is expected to continue; and the steps taken or planned to be taken to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported immediately:

i. Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water (USDWs).

ii. Any non-compliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between the USDWs, or failure of mechanical integrity test demonstrations.

C. RIGHT OF APPEAL

Notice is hereby given of your right to appeal the terms and conditions of this permit by which you are aggrieved to the State Environmental Quality Board by filing a NOTICE OF APPEAL on the form prescribed by such Board for this purpose, with the Board, in accordance with the provisions of Chapter 22 Article 11, Section 21 of the code of West Virginia within thirty (30) days after the date of receipt of the above permit.

D. EFFECT OF PERMIT

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit based on an approved permit application. The permittee shall not allow the underground injection activity authorized by this permit to cause or allow the movement of fluid containing any contaminant into underground sources of drinking water and may not cause a violation of any primary drinking water regulation or any health-based limit promulgated under 40 CFR Chapter 1, Part 142, of the Code of Federal Regulations, or of any water quality standard promulgated by the West Virginia Department of Environmental Protection/Division of Water and Waste Management. Any underground injection activity not authorized in this permit is prohibited. Compliance with the terms of this permit does not constitute a defense to any action brought under Part C and the imminent and substantial endangerment provisions in Part D of the Safe Drinking Water Act (SDWA) or any other common or statutory law for any breach of any other applicable legal duty.

E. PERMIT ACTIONS

1. This permit can be modified, revoked and reissued or terminated for cause specified in Chapter 22, Article 11 (hereafter §22-11), and Chapter 22, Article 12 (hereafter §22-12) of the West Virginia Code, and Title 47, Series 13 (hereafter 47 CSR 13) of the Legislative Rules. The filing of a request by the permittee for a permit modification, revocation and reissuance, suspension or revocation, or notification of planned changes or anticipated noncompliance, does not stay any permit condition.

2. Transfer of Permits. This permit is not transferable to any person unless notice is first provided to the Office of Oil and Gas and the permittee complies with requirements of 47 CSR 13-13.17. The Office of Oil and Gas may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act (SDWA).

F. SEVERABILITY

The provisions of this permit are severable, and if any condition of this permit or the permittee's application of any provision of this permit to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of other provisions of the permit and the remainder of this permit shall not be affected.

G. DURATION OF PERMIT

This permit and the authorization to inject are issued for a period of five (5) years unless terminated under Part I Section H paragraph 11 of this permit. However, when through no fault of the permittee the West Virginia Department of Environmental Protection does not issue a new permit with an effective date on or before the expiration date of the previous permit and the permittee has submitted a timely administratively complete application as required in Part I section A of this permit, which is a complete application for a new permit, the expired permit shall continue to remain fully effective and enforceable.

H. GENERAL REQUIREMENTS

1. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the SDWA and the State Act and is grounds for enforcement action; for permit suspension or revocation, revocation and reissuance, or modification; or for denial of a permit renewal application. (47 CSR 13-13.12.a) Copies of UIC Program regulations (§22-11) may be obtained from the West Virginia Legislature's Web Site http://www.legis.state.wv.us/WVCODE/Code.cfm, and (47 CSR 13) may be obtained from the West Virginia Secretary of State's Web Site at http://www.sos.wv.gov/.

2. Duty to Reapply. If the permittee wishes to continue activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit as required in Part I section A of this permit as well as obtain a new permit.

3. Duty to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on health of persons or the environment resulting from noncompliance with this permit.

5. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities, systems of treatment and control, and related equipment which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, adequate security at the facility to prevent unauthorized access, adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facility or similar systems only when necessary to achieve compliance with the conditions of this permit.

6. Duty to Provide Information. The permittee shall furnish to the Chief within a reasonable time, any information which the Chief may request to determine whether cause exists for modifying, revoking and reissuing, or revoking this permit, or to determine compliance with this permit. The permittee shall also furnish to the Chief, upon request, copies of records required to be kept by this permit. If the permittee becomes aware of any incomplete or incorrect information in the permit application or subsequent report(s), the permittee shall promptly submit information addressing these deficiencies to the Chief.

7. Inspection and Entry. The permittee shall allow the Chief, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

    a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance for any substances or parameters at any location.

8. Penalties. Any person who violates a permit requirement is subject to civil penalties, criminal penalties, fines and other enforcement actions under §22-11 and §22-12.

9. Signatory Requirements. Only a duly authorized person may sign documents and reports associated with this permit.

   a. All reports required by this permit and other information requested by the Chief shall be signed as follows:

      (1) For a corporation, by a responsible corporate officer of at least the level of vice-president;

      (2) For a partnership or sole proprietorship, by a general partner or proprietor, respectively; or

      (3) For a Municipality, State, Federal, or other public agency by either a principal executive or a ranking elected official.

   b. A duly authorized representative of the official designated in paragraph a. above may also sign only if:

      (1) The authorization is made in writing by a person described in paragraph a. above;

      (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, and;

      (3) The written authorization is submitted to, and approved by, the Chief.

   c. If an authorization under paragraph (b) of this section is no longer accurate because a different individual has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Chief prior to or together with any reports, information or applications to be signed by an authorized representative.

   d. Any person signing a document under paragraph (b) of this section shall make the following certification: (47 CSR 13-13.11.d). "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

10. Property Rights. Issuance of this permit does not convey property rights or mineral rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, any infringement of State or local law or regulations, or any exclusive privilege.

11. Permit Actions. This permit may be modified, revoked and reissued, suspended, or revoked for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, suspension or revocation, or notification of planned changes or anticipated noncompliance, does not stay any permit condition.

12. Confidentiality of Information.

    a. In accordance with 47 CSR 13-13.21, any information submitted to the State pursuant to this rule may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions, or in the case of other submissions, by stamping the words "CONFIDENTIAL BUSINESS INFORMATION" on each page containing such information. If no claim is made at the time of submission, the State may make the information available to the public without further notice.

    b. Claims of confidentiality for the following information will be denied:

        i. The name and address of any permit applicant or permittee.
        ii. Information which deals with the existence, absence, or level of contaminants in drinking water.

13. Monitoring Reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

14. Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than thirty (30) days following each schedule date.

15. Other information. Where a permittee becomes aware that he/she failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Chief, he/she shall promptly submit such facts or information.

16. It shall be unlawful for any person, unless an authorization has been issued by a groundwater regulatory agency, to deliberately allow crude oil, or any petroleum product derived from crude oil, or seepage, or natural gas, or condensate, or salt water, or any chemical mixture which may impact groundwater quality to escape from any well, pipeline, impoundment, storage tank, treatment unit, or storage container, or be deliberately allowed to flow onto or under the land surface in such a manner that could impact groundwater quality.

17. State or Federal Laws. Nothing in this permit shall be construed to preclude the institution on any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any State or Federal law or regulation.

PART II

A. RECORD RETENTION

1. Required Records. The permittee shall retain all records concerning the permitted underground injection well until three (3) years after completion of any plugging and abandonment. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.

B. MONITORING REQUIREMENTS

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the fluid to be analyzed and the procedure for analysis of the sample shall be in accordance with test procedures approved under 40 CFR 136.3, unless otherwise approved by the Chief. The permittee shall identify the types of tests and methods used to generate the monitoring data.

2. All environmental measurements required by the permit, including but not limited to, measurements of pressure, temperature, mechanical, and chemical analyses shall be done in accordance with state guidance on quality assurance. All analysis must be performed by a West

Virginia certified laboratory.

3. Records of monitoring information shall include:

    a. The date, exact place, and time of sampling or measurements;
    b. The individual(s) who performed the sampling or measurements;
    c. The date(s) analysis(es) were performed;
    d. Individual(s) who performed the analyses;
    e. The analytical techniques or methods used; and
    f. The results of such analyses.

4. The permittee shall daily monitor all the 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 of any leaks from the injection zone or casing. The Permittee shall also monitor injection pressure, volume, and rate daily. This information shall be reported monthly using the Office of Oil and Gas electronic WR-40 Form. Submittal shall be through the WVDEP Electronic Submittal System (ESS).

5. The permittee shall sample, analyze and record the nature of all the injected fluid for the parameters listed in TABLE 1 below at the initiation of the injection operation and upon request by the Chief or whenever the operator observes or anticipates a change in the injection fluid.

TABLE 1

-pH	-Manganese
-Specific Gravity	-Total Dissolved Solids
-Barium	-Hydrogen Sulfide
-Specific Conductance	-Sodium
-Iron	-Alkalinity
-Magnesium	-Hardness
-Chloride	-Total Organic Carbon (TOC)
-Dissolved Oxygen	

6. Any analysis of specific gravity greater than 1.2 and any analysis of TOC greater than 250.0 mg/L shall be reported to the Chief within twenty-four (24) hours of the results.

7. The permittee shall maintain a record (manifest) of every load of fluid received. The record shall include the hauler's name and signature, the operator's name and signature, API number for the well the fluid was collected or the location from where the load was obtained, the volume of the load and whether the load of fluid delivered was a split load. If the load was a split load, each operator's name and location shall be listed and, if possible, the volumes of fluid received from each operator documented. This information shall be maintained on the Class II disposal manifest attached to this permit and maintained at the facility.

8. A wellhead pressure gauge shall be installed and maintained on the injection tubing 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 on Form WR-40.

9. All pipeline(s) from the injection pump to the injection well shall be tested for integrity at least once every five (5) years with the results reported on WR-37 Form along with the pressure test recording graph and then submitted to the Office of Oil and Gas within thirty (30) days. The pipeline integrity test shall pressurize the injection pipeline(s) to 100 psi greater than the maximum permitted wellhead injection pressure for a minimum of thirty (30) minutes, allowing for no more than five (5) percent loss after completion. The permittee shall notify the Chief of his or her intent to conduct an integrity test of the pipeline(s) no less than twenty-four (24) hours prior to such test. Upon failure of a mechanical integrity test or expiration of the five (5) year mechanical integrity test regulatory period, the permittee shall cease operation/injection and shut-in the well immediately until successfully repaired, replaced and then tested. Repairs shall be completed by the permittee and approved by the Office of Oil and Gas. All repairs shall be completed within ninety (90) days

of the failure date. If repaired, the well must be re-tested and an updated WR-37 Form must be submitted to the Office of Oil and Gas for approval. Any change made to the pipeline fittings or piping will require integrity testing.

10. The permittee shall conduct a mechanical integrity test of the injection well at a minimum frequency of once every five (5) years per 35 CSR 4-7.7.b. The permittee shall notify the Chief of his or her intent to conduct a mechanical integrity test no less than twenty-four (24) hours prior to such demonstration. The permittee must submit the test results on the WR-37 Form with each mechanical integrity test along with the pressure test recording graph and then submitted to the Office of Oil and Gas within thirty (30) days. Upon failure of a mechanical integrity test or expiration of the five (5) year mechanical integrity test regulatory period, the permittee shall cease operation/injection and shut-in the well immediately until successfully repaired, tested or permanently plugged and abandoned per regulation. Corrective action for repairs shall be completed for approval by the Office of Oil and Gas and be conducted within ninety (90) days of the failure date. If repaired, the well must be re-tested and an updated WR-37 Form must be submitted to the Office of Oil and Gas for approval.

11. In addition to the above requirement, a mechanical integrity test demonstration shall be conducted whenever protective casing or tubing is removed from the well, the packer is replaced or reseated, if well failure is likely, or as requested by the Chief. The permittee may continue operation only if he or she has successfully demonstrated to the Chief the mechanical integrity of the permitted well. The permittee shall cease injection operations if a loss of mechanical integrity becomes evident or if mechanical integrity cannot be demonstrated.

C. REPORTING AND NOTIFICATION REQUIREMENTS

1. Anticipated Noncompliance. The permittee shall give advance notice to the Chief of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

2. Other Noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs Part I Section B, and Part II Section C Paragraph 3 of this permit, at the time monitoring reports are submitted. The report shall contain the information listed in Part I Section B of this permit. The permittee shall report all other instances of noncompliance in writing within ten (10) days of the time the permittee becomes aware of the circumstances. The reports shall contain the information listed in this permit.

3. Planned Changes. The permittee shall give notice to the Chief as soon as possible of any planned significant physical alterations, additions to the permitted facility, and/or any significant changes planned in the operation of the facility.

4. Cessation of Injection Activity. Any well which is not in use for a period of twelve (12) consecutive months shall be presumed to have been abandoned and shall promptly be plugged by the operator in accordance with the provisions in Chapter 22, Article 6 Section 24 of the West Virginia Code, unless the operator furnishes satisfactory proof to the Chief that there is a bona fide future use for such well.

5. Report on Permit Review. Within thirty (30) days of receipt of this permit, the permittee shall report to the Chief that he or she has read and understands and accepts all terms and conditions of the permit.

6. The owner or operator or person in charge of a facility subject to this rule from which a reportable discharge as described in subsection 3.3 of 35CSR1 occurs shall notify the Office of Oil and Gas by calling 1-800-642-3074 immediately; but in no case, later than twenty-four (24) hours after becoming aware of the discharge.

7. Within sixty (60) days of the issuance date of this permit, UIC 2D08510142, the injection fluid shall be sampled for all of the following required baseline parameters: TPH GRO, TPH DRO, TPH ORO, BTEX, pH, Aluminum, Arsenic, Barium, Calcium, Chloride, Detergents (MBAS), Iron, Manganese, Sodium, Sulfate, Total Dissolved Solids, Total Suspended Solids, Total Organic Carbon, Dissolved Methane,

Dissolved Ethane, Dissolved Butane, Dissolved Propane, Bacteria (Total Coliform), Specific Gravity and Radiation (NORM). Upon receipt of the laboratory analysis data, a complete copy must be submitted to the Office of Oil and Gas for review.

8. Within sixty (60) days of the issuance date of this permit, UIC 2D08510142, all potential drinking water sources (potable drinking water well(s), cistern(s), etc.) and USDWs (Underground Sources of Drinking Water) within the AOR (1/4 mile radius of well 47-085-10142) shall be sampled for all of the following required baseline parameters: TPH GRO, TPH DRO, TPH ORO, BTEX, pH, Aluminum, Arsenic, Barium, Calcium, Chloride, Detergents (MBAS), Iron, Manganese, Sodium, Sulfate, Total Dissolved Solids, Total Suspended Solids, Total Organic Carbon, Dissolved Methane, Dissolved Ethane, Dissolved Butane, Dissolved Propane and Bacteria (Total Coliform). Upon receipt of the laboratory analysis data, a complete copy must be submitted to the Office of Oil and Gas for review.

PART III

A. OPERATING REQUIREMENTS

1. Injection Fluid. The permittee shall not inject any hazardous substances, as defined by 40 CFR 261, or any other fluid, other than the fluids produced solely in association with oil and gas production operations.

2. Any well that penetrates the injection zone with an inactive and/or abandoned status within the permitted Area of Review, that does not have cement casing through the injection zone, shall be monitored immediately by a method approved by the Office of Oil and Gas, as well as properly plug and abandon such wells, as necessary.

3. Injection between the outermost casing protecting underground sources of drinking water and the wellbore is prohibited, as is injection into any USDW.

4. Corrective Action. The applicant must satisfy the requirement 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. This must be done in a manner which satisfies the requirements of 47 CSR 13-13.9.

    a. Within sixty (60) days of the issuance date of this permit, UIC 2D08510142, a plugging permit application for well 47-085-09721 shall be submitted to the Office of Oil and Gas for review. Upon approval of said plugging permit, well 47-085-09721 shall be plugged within the permitted timeframe. Daily monitoring will continue on well 47-085-09721, until such time that proper plugging and abandonment is achieved.

5. Loading and unloading stations shall have spill prevention and control facilities and procedures as well as secondary containment. Spill containment and cleanup equipment shall be readily accessible.

6. The permittee shall ensure that secondary containment for existing above ground storage tank(s) shall be adequately designed and constructed to be sufficiently impervious to prevent the released substance from penetrating the containment structure until the release can be detected and recovered, but in no case will that time be less than seventy-two (72) hours.

7. The above ground storage tank(s) associated with this underground injection facility shall have secondary containment sufficient capacity to contain 110% volume of the largest tank. Tank batteries or tanks connected in series by manifold, the combined volume of the tanks must be considered if the tanks are capable of simultaneous release. The combined capacity of the tanks connected by manifold shall be considered, unless the tanks are operated in a manner that prevents fluids flowing from one tank to another under any conditions.

8. Above ground tanks connected in series by manifold shall utilize a system where valves are closed and locked to isolate tanks when their combined volume exceeds the secondary containment capacity. At no point in time shall the combined volume be accessible through the manifold system exceed the capacity of the secondary containment without someone being on site to monitor.

9. Pumps and ancillary equipment (e.g. valves, flanges, filters, condensate lines and instrumentation) handling materials that have the potential to contaminate groundwater shall be selected and installed to prevent or contain any spills or leaks.

10. Sumps containing materials which have the potential to contaminate groundwater shall be designed, constructed, and operated utilizing leak detection or secondary containment, or other appropriate controls that are capable of preventing groundwater contamination.

11. No third party haulers shall be permitted without approval by the Office of Oil and Gas. For approval, the permittee shall designate by letter to the Office of Oil and Gas, any third party hauler proposed to be used for the transportation of fluids to the facility. The third party hauler may not commence transportation of fluids to the facility until approved by the Office of Oil and Gas.

12. Facility Security. The gate on the access road to the site shall be closed and locked at all times when there is not a company representative at the facility. All valves, water drains, containment areas storage areas shall be secured and locked utilizing locking devises and/or plugs. During the life of this permit all gates and access points shall be secured and locked while no representative is at the facility. All visitors must check in upon arriving at the facility. Haulers (if used) shall not be allowed to off load without the proper paperwork and documentation.

B. PLUGGING AND ABANDONMENT

1. Any well which is not in use for a period of twelve (12) consecutive months shall be presumed to have been abandoned and shall promptly be plugged by the operator in accordance with the provisions of Chapter 22, Article 6, of the West Virginia Code, unless the operator furnishes satisfactory proof to the Chief that there is a bona fide future use for such well.

2. Prior to well plugging, the permittee shall apply for and receive a plugging permit from the Office of Oil and Gas to plug and abandon the well in accordance with an approved plugging and abandonment plan.

3. Plugging and abandonment shall be conducted in a manner to prevent movement of fluids into or between underground sources of drinking water.

4. Pursuant to Legislative Rule 47-13-13.7.f, the permittees plugging and abandonment plan shall be incorporated into the UIC permit. See attachment 1.

PART IV

A. SITE SPECIFIC CONDITIONS

1. Appendix A: Specific operational conditions.

2. Appendix H: Groundwater Protection Plan (GPP) The GPP shall be maintained and updated as necessary to protect groundwater quality.

3. Appendix I: Requirement for Financial Responsibility to plug/abandoned an injection well.

4. Attachment 1: Plugging and Abandonment Plan.

5. Attachment 2: Site/Facility Diagram.

APPENDIX A

1) GEOLOGIC TARGET FORMATION Oriskany Sandstone

Depth 6,294 Feet (top) 6,360 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 6,450 Feet

3) Approximate water strata depths: Fresh 175 Feet Salt 1,000 Feet

4) Approximate coal seam depths: NA

5) Is coal being mined in the area? Yes _____ No X

6) Virgin reservoir pressure in target formation 1,400 psig Source _____

7) Estimated reservoir fracture pressure 2,940 psig (BHFP)

8) MAXIMUM INJECTION OPERATIONS:

Injection rate (bbl/hour) 210 bbl/hour

Injection volume (bbl/day) 5,000 bbl/day

Injection pressure (psig) 1,965 psi

Bottom hole pressure (psig) 5,035 psi

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES

Production Brines; Flowback, Pit, and Runoff Water; Corrosion Inhibitor, Biocide

Temperature of injected fluid: (°F) 60

10) FILTERS (IF ANY) Bag and Cartridge Filters are used at the Pumps.

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

Pipelines are supported, wrapped, and coated to reduce corrosion.

APPENDIX A (cont.)

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	13 3/8"	New	R-3	48#	35'	35'	7 sks (CTS)
Fresh Water	9 5/8"	New	R-3	26#	330'	330'	90 sks (CTS)
Coal							
Intermediate 1	7"	New	R-3	17#	2130'	2130'	300 sks (CTS)
Intermediate 2							
Production	4 1/2"	New	R-3	11.6#	6447'	6447'	115 sks
Tubing	2 7/8"	New	J-55	6.5#	6260'	6260'	
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)	Cement to Surface ?
Conductor	15"	13 3/8"	.330	1,640	Type 1/Class A	1.4	Y
Fresh Water	12 1/4"	9 5/8"	.312	2,270	Type 1/Class A	1.38	Y
Coal							
Intermediate 1	8 7/8"	7"	.231	2,310	Type 1/Class A	1.4	Y
Intermediate 2							
Production	6 3/8"	4 1/2"	.250	7,780	Strong Lite 150	1.94	N, 4,450'
Tubing							
Liners							

Packers

	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	Baker Hughes-Double LokSet A-2			
Sizes:	2 7/8" x 4 1/2"			
Depths Set:	6,260'			

APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: Ritchie Hunter #2

County: Ritchie

Facility Location:

Postal Service Address:	122 Lonesome Pine Rd		
Ellenboro, WV 26346			
Latitude :	39°15'30.41"	Longitude:	8°5'58.54"

Contact Information:

Person:	Bryn Mueller
Phone Number:	(469)444-9816
E-mail Address:	bmueller@greenhunterwater.com

Date: 3/6/2015

1. A list of all operations that may contaminate the groundwater.

Handling and Disposing of Oilfield Produced Brine Water

2. A description of procedures and facilities used to protect groundwater quality from the list of potential contaminant sources above.

Any accumulated stormwater inside of the containment berm will flow to the 1000 gallon sump. The sump is equipped with a float valve. Once the sump reaches a certain amount, the product will flow to the 210 barrel crude oil/brine water storage tank. No stormwater will be discharged from the secondary containment structures.

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3. List procedures to be used when designing and adding new equipment or operations.

Any new equipemtn will be installed and maintained with the same integrity as the current equipment. Any possible spills will be confined to the secondary containment and will flow to the underground sump. No groundwater will be affected.

4. Summarize all activities at your facility that are already regulated for groundwater protection.

Handling and Disposing of Oil and Gas Produced Brine Water

5. Discuss any existing groundwater quality data for your facility or an adjacent property.

There is no groundwater use at this facility or on any adjacent property. The Ritchie facility has fresh water brought in and the only other water usage is via a cistern at a nearby church roughly .25 mile from the facility.

6. Provide a statement that no waste material will be used for deicing or fill material on the property unless allowed by another rule.

GreenHunter Water will not allow any waste material to be used for deicing or fill material; only state approved and environmentally-friendly fill will be used, unless otherwise directed.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

Facility personnel receive training for protecting the groundwater by routinely inspecting the external tank sidewalls, tops, attached valves, and piping. The personnel conducting the inspections are required to record the findings, any deficiencies noted during the routine inspections are recorded and immediately brought to the attention of the on-site facility manager. The daily integrity checks will be recorded in the main Marietta office for a period of at least 3 years.

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8. Include provisions for inspections of all GPP elements and equipment. Inspections must be made quarterly at a minimum.

External tanks sidewalls, tops, and attached valves and piping are inspected routinely during daily operations. Facility personnel conducting the inspections are required to record the findings, any deficiencies noted during the routine inspections are recorded and immediately brought to the attention of the on-site facility manager.

Signature: _____

Date: March 6, 2015

(4/25)

APPENDIX I

Requirement for Financial Responsibility to Plug/Abandon an Injection Well

To: WV Department of Environmental Protection
Office of Oil and Gas
601 57th Street, SE
Charleston, West Virginia 25304-2345
ATTN: Underground Injection Control Program

From: GreenHunter Water, LLC
28407 State Route 7
Marietta, OH 45750

Date: March 6, 2015

Subject: Underground Injection Control (UIC) Permit Application
2D08510142
Requirement for Financial Responsibility

I, Robert W. Sloan, verify in accordance with 47CSR13-13.7.g., that I will maintain financial responsibility and resources to close, plug, and abandon underground injection wells(s) in a manner prescribed by the Chief of the Office of Oil and Gas.

Name: Robert W Sloan

Signature:

Date: March 6, 2015

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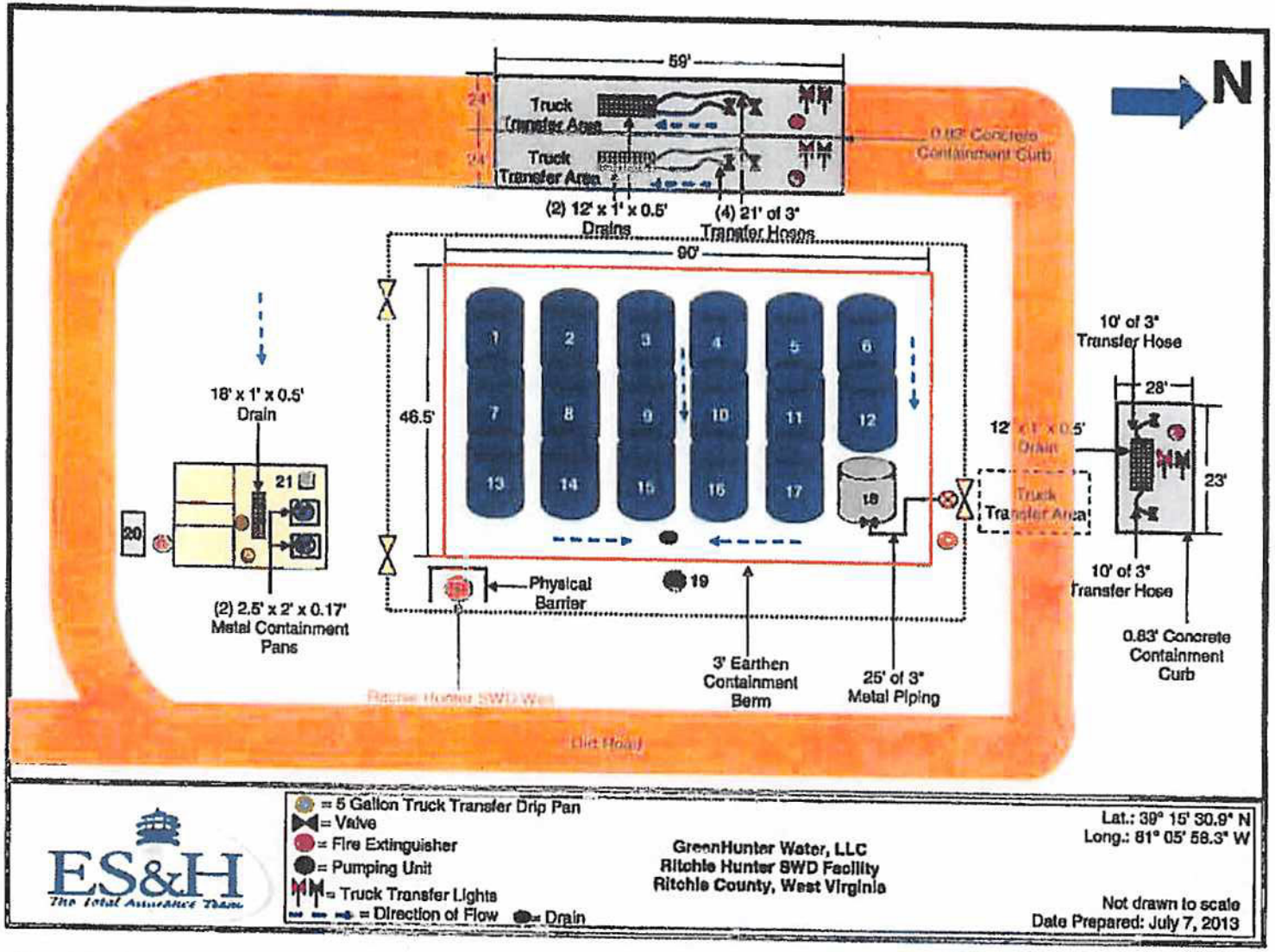
Attachment 1

Plugging Procedure Proposal for SWD Well API # 47-085-10142

1. Pull tubing and remove packer
2. Run tubing back in well and set 200' cement plug from 6180'-6380'
3. Tag cement top to guarantee cement placement
4. Pull tubing
5. Cut and pull 4 ½" casing @ approximately 4440'
6. TBIH with tubing
7. Set 100 ' cement plug across 4 ½" casing cut
8. Set 100' cement plug across 7" casing shoe from 2100'-2200'
9. Set 100' cement plug from 300'-400'
10. Set 100' cement plug from 200-surface
11. Gel to be used between all cement plugs
12. Erect monument with API # affixed

Attachment 2



Page ___ of___

Class II Manifest

UIC # _____

*I hereby certify that the contents of this shipment are Class II fluids that were brought to the surface in connection with oil or natural gas production.

Hauler' Name	*Signature	Receiver's Name	*Signature	API or Other	Volume of Load (Barrels)	Was the Load Split (Y/N)	Date

Make as many copies of the document as necessary to comply with the UIC permit.
Page numbers should be maintained sequentially to provide an adequate record.

RIGHT OF APPEAL

Notice is hereby given of your right to appeal the terms and conditions of this permit of which you are aggrieved to the Environmental Quality Board by filing a NOTICE OF APPEAL, on the form prescribed by such Board for this purpose, in accordance with the provisions of Section 21, Article 11, Chapter 22 of the Code of West Virginia within thirty (30) days after the date of receipt of this permit.

Underground Injection Control Permit

CERTIFICATION DOCUMENT

West Virginia Department of Environmental Protection
Office of Oil and Gas

Permit Id: 2D08510142

Permit Name: Ritchie Hunter Water Disposal, LLC

In accordance with Part II, Reporting and Notification Requirements, I hereby certify that I have read and am personally familiar with all the terms and conditions of this permit.

I understand that the underground injection of any waste streams other than those provided for in this permit is strictly prohibited. I understand that failure to pay the Annual Permit Fee or any other associated fees required by West Virginia Code, Chapter 22, Articles 11 and 12 shall be cause for revocation of this Permit. I further understand that reporting is required, and noncompliance with the terms of this permit will be cause for revocation of the permit and subject me to significant penalties including the possibility of fines and imprisonment.

_____

Signature

_____

Name and Title (Type or Print)

_____

Date

west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
Phone: (304) 926-0450; Fax: (304) 926-0452

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

Ritchie Hunter Water Disposal, LLC Underground Injection Control Permit **UIC2D08510142** Public Comments and Response to Public Comments and Final UIC Permit.

On October 28, 2015, the Draft Underground Injection Control Permit No. **UIC2D08510142** was presented to the public by an advertisement being published in The Pennsboro News Newspaper for a 30 day review and comment period, as required by Legislative Rule 47-13. The following is a summary of comments received during the comment period and West Virginia Department of Environmental Protection, Office of Oil and Gas's response to public comment(s).

1. *Permit Authorization Page*: The 2015 completion report for this well locates the perforations at 6294 to 6360 feet below the surface and the Oriskany sandstone (the injection formation) at 6300 to 6360 feet below the surface. The Authorization Page locates the injection at 6270 feet below the surface, well into the confining formation (Onadaga limestone). The authorization page's injection depth should be changed to 6294 to 6360 feet below the surface.

   DEP Response: The Office of Oil and Gas (OOG) agrees with the comment. The final permit will reflect the correction request submitted.

2. The location of the well is given differently according to which source one examines: Authorization Page, completion report, GPP, and application. Google Earth shows the Authorization Page's location is the closest to the actual position of the well.

   DEP Response: OOG agrees with the comment. The coordinates on the Authorization Page has been field verified and all subsequent documents will reflect the corrected location.

3. *Part I - H.6:* The word "Director" in the second sentence of this condition should be changed to "Chief" to match the wording in the rest of the condition.

   DEP Response: OOG agrees with the comment and the change has been incorporated into the final permit.

4. *Missing condition:* We approved of a condition found in other recent draft permits which is not found in this permit. We are as concerned with what might happen on the surface due to spills as with what might happen underground due to improper underground injection.

Activities on the surface at UIC2D0392210 caused severe groundwater contamination which has since been remediated.

According to the operator's SPCC Plan in the permit application materials, the dike is a 3 foot high earthen berm. We have observed at a local gas well site that if the berm is not keyed to the surface, that fluids, when there is a spill within the containment, will flow through the containment at the base of the berm where it contacts the much more compacted soil surface. The permit application materials do not indicate that the containment is impermeable.

This condition should be added to section H of Part I:

> *It shall be unlawful for any person, unless authorization has been issued by a groundwater regulatory agency, to deliberately allow crude oil, or any petroleum product derived from crude oil, or seepage, or natural gas fluids or condensate, or salt water, or any chemical mixture which may impact groundwater quality to escape from any well, pipeline, impoundment, storage tank, treatment unit, or storage container, or be deliberately allowed to flow onto or under the land surface in such a manner that could impact groundwater quality.*

DEP Response: OOG agrees and has incorporated the statement into the final permit. However, conditions set in Part III, Section A, Paragraphs 5, 6, 7, 8, 9, and 10 establish the regulatory criterion for the prevention of a release to the waters of the state. Although incorporating the statement into the permit may be redundant, it may assist in the permittee's understanding.

5. *Part II – Monitoring Requirements:* B.5 The permit's injection fluid lab analysis parameters (Table 1) is not protective and does not show the range of constituents characteristic of the fluids the operator is injecting. This permit condition requires lab analysis of fluid only once every five years. Region 3's non-commercial permit requires testing a sample every 2 years which we believe is more useful for this commercial well, especially considering condition B.6. The permit application package has its own list of parameters which is better suited for the range of fluids injected in this state.

Table 1 therefore should be:

Table 1	
TPH GRO	Aluminum
TPH DRO	Arsenic
TPH ORO	Barium
BTEX	Calcium
pH	Chloride
Sulfate	Iron
MBAS	Manganese
Dissolved Methane	Sodium

Dissolved Ethane	Total Dissolved Solids
Dissolved Butane	Total Suspended Solids
Dissolved Propane	Total Organic Carbon
Specific Gravity	Total Coliform Bacteria
NORM	

The operator failed to test a fluid sample for NORM and TSS as required by the Office's Permit Application Package Instructions and Guidance. In addition, hydrocarbon samples were improperly collected so that there was headspace in the vials/bottles. The lab reported difficulties obtaining consistent results for hydrocarbons and dilution (DL01 and DL02) results from sample 01 did not match. Proper sample collection is important.

DEP Response: OOG acknowledges your comment and will continue to require sampling every five years, when there is a change of fluid source or earlier at the Chief's request. The required test parameters do characterize the injection fluid. A special permit condition will be incorporated into the final permit which will require the Permittee to collect a sample for a complete sampling analysis of the injectate. The table of 25 parameters above is the list from the permit application package instructions and guidance, used to establish a complete and thorough initial baseline. The Draft Permit, and subsequently the Final Permit, injectate monitoring sampling requirement table "Table 1" has 15 sample parameters, which OOG believes characterizes the injection fluid.

Baseline Injectate Analysis Parameters (25)	
TPH GRO	Aluminum
TPH DRO	Arsenic
TPH ORO	Barium
BTEX	Calcium
pH	Chloride
Sulfate	Iron
MBAS	Manganese
Dissolved Methane	Sodium
Dissolved Ethane	Total Dissolved Solids
Dissolved Butane	Total Suspended Solids
Dissolved Propane	Total Organic Carbon
Total Coliform Bacteria	Specific Gravity
Radiation (NORM)	

Monitoring Injectate Analysis Parameters (15)

pH	Manganese
Specific Gravity	Total Dissolved Solids
Barium	Hydrogen Sulfide
Specific Conductance	Sodium
Iron	Alkalinity
Magnesium	Hardness
Chloride	Total Organic Carbon (TOC)
Dissolved Oxygen	

6. When the operator submitted their permit application to the Office they recorded lab results for the fluid sample on Appendix E, which is properly used for recording drinking water source samples.

   DEP Response: OOG agrees with the comment. The Appendix E form will be corrected in that the summary analyses will include at a minimum the following 23 parameters: Total Petroleum Hydrocarbons (GRO, DRO, ORO), BTEX, pH, Aluminum, Arsenic, Barium, Calcium, Chloride, Detergents (MBAS), Iron, Manganese, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Total Organic Carbon (TOC), Sodium, Sulfate, Dissolved Methane, Dissolved Ethane, Dissolved Butane, Dissolved Propane, and Bacteria (total coliform).

Appendix E (minimum parameters)	
TPH GRO	Aluminum
TPH DRO	Arsenic
TPH ORO	Barium
BTEX	Calcium
pH	Chloride
Sulfate	Iron
MBAS	Manganese
Dissolved Methane	Sodium
Dissolved Ethane	Total Dissolved Solids
Dissolved Butane	Total Suspended Solids
Dissolved Propane	Total Organic Carbon
Total Coliform Bacteria	

7. B.9 We approve of the pipeline MIT condition, but wish the tests were required annually instead of every 5 years. In the Office's other permits the pressurization of the pipeline is 1.5 times the maximum injection pressure for the MIT. In this permit's condition the pressure only needs to be 100 psi greater. Specifications for the pipeline tubing (Fiberspar) in the operator's application materials (pages 42 and 43) indicates that the pipeline can easily accept the usual 1.5 times the maximum injection pressure (or 2852 psi) MIT. The pipeline has a maximum operating pressure of 2500 psi with a maximum burst pressure of 9700 psi. The wording in this condition should be changed to:

   ". . . shall pressurize the injection pipeline(s) to ~~100 psi greater than~~ 1.5 times the maximum permitted wellhead injection pressure . . ."

   DEP Response: OOG acknowledges your comment. The over pressurization of the pipeline and fitting hardware could possibly lead to a rupture causing a release with a potential environmental impact or result in personal injury or even death. The OOG's policy of requiring the pipeline MIT to reach a minimum of 100 psi greater than maximum injection pressure will prove mechanic integrity.

8. *Part III – A Operating Requirements:* A.7 We approve of the condition requiring secondary containment for aboveground storage tanks. This condition has been worded slightly differently than conditions found in other permits, possibly because of the large number of tanks on the site. The operator's SPCC Plan shows that the containment is more than adequate for a single 400 barrel tank (there are 17 within the containment). If the 400 barrel tanks are on a manifold, however, the containment is woefully inadequate according to this condition.

   DEP Response: OOG acknowledges your comment. Your concerns are addressed in the Draft Permit, Part III Section A.7 "Operating Requirements":

   III.A.7 "*Above ground storage tank(s) associated with this underground injection facility shall have secondary containment sufficient capacity to contain 110% volume of the largest tank. Tank batteries or tanks connected in series by manifold, the combined volume of the tanks must be considered if the tanks are capable of simultaneous release. The combined capacity of the tanks connected by manifold shall be considered, unless the tanks are operated in a manner that prevents fluids flowing from one tank to another under any conditions."*

9. *A.11:* We would slightly revise the third sentence in this condition to read as follows:
   All valves, water drains, containment areas, and storage areas shall be locked utilizing locking devices and/or plugs.

   DEP Response: OOG agrees with the comment. The final permit will reflect the above correction.

10. Appendix A - The receiving formation depth on this form needs to be changed, as we

commented earlier when discussing the depth given on the Authorization Page.

The actual depth of the well is 6480 feet according to the completion report, not 6450. The operator's schematic shows the total depth as 6447 feet, apparently based on the length of the production casing used according to the completion report.

The maximum injection pressure on the Authorization Page is 1901 psi. Appendix A has the pressure as 1965 psi.

Form WW-3B in the operator's 2014 well conversion permit gives the actual amount of cement used: 7 sacks for the 13 3/8 inch conductor casing; 90 sacks for the 9 5/8 inch surface casing; 300 sacks for the 7 inch intermediate casing; and 115 sacks for the 4 ½ inch production casing. Cement to surface took place, according to the completion report, for the conductor, surface, and intermediate casings, and to about 4,450 feet for the production casing (about 2000 feet of cement). Using the cement yields in Appendix A (and completion report) the cement appears to be adequate except the cement for the production casing probably did not reach 2000 feet from the bottom of the hole, especially if 30 or more feet of cement remained in the hole and casing if one accepts the 6450 depth of well given earlier in Appendix A.

DEP Response: OOG acknowledges your comment. The final permit will reflect the correction to the "Geologic Target Formation" on the Appendix A. The maximum injection pressure on the Authorization Page of 1901 psi is generated by OOG, as is the entire Authorization Page. The Appendix A pressure of 1965 psi is the "Maximum Proposed Injection Operations", which is a figure that the Permittee has generated and proposed. The cement bond log ran on February 4, 2015 by Nabors Completion, clearly shows the TOC (top of cement) for the 4 ½" production casing at approximately 4,445'. The cement yield calculation for 115 sacks of "Strong Lite 150" (yield 1.94 ft^3/sks) filling the annulus of the 4 ½" casing within a 6 $^3/_8$" hole diameter drilled with a 6 $^3/_8$" bit, yields enough cement to reach the area of the reported TOC.

11. Groundwater Protection Plan - The operator's GPP has a number of deficiencies and we refer the Office back to our earlier permit comments for what we believe is needed in the Guidance. As for this particular GPP, the operator provided a too cursory list of operations which may contaminate groundwater. Included in section 1 should be fluid transfer and the operation of the UIC well itself. Section 2 focuses on stormwater alone, unfortunately.

    DEP Response: OOG acknowledges your comment. The current Groundwater Protection Plan (GPP) meets the requirements of the application.

12. Groundwater Sampling - The Office's Permit Application Package Instructions and Guidance in section 7.4 on page 7 requires water tests for all drinking water wells within the AOR. The operator in several locations in the permit application states that groundwater is not used locally for drinking water – that area residents are on city water. Except the GPP mentions a cistern at the nearby church for supply. Importantly, the application does not state the source of water stored in the cistern. In our area spring fed cisterns are common for use as domestic water supply. Unlike our neighbors, our cisterns are rainwater fed.
    The operator on their spreadsheet of wells within the half mile AOR lists a water well of theirs used for potable water.

If the church's cistern is spring fed, that should be sampled for water testing. Similarly, the operator's drinking water supply well should also be sampled for water testing. Results of water tests should be resubmitted on a new Appendix E by the operator. The operator's submission of disposal fluid analysis on Appendix E is inappropriate.

DEP Response: OOG agrees with the comment. A permit condition will be incorporated into the final permit which the Permittee will be required to complete sampling analysis of all potential drinking water sources (potable drinking water well(s), cistern(s), etc.) and USDWs (Underground Sources of Drinking Water) within the AOR (1/4 mile radius of well 47-085-10142). All sample analysis results will be reported onto Appendix E.

13. Area of Review - There were a large number of unknown wells within the operator's half mile Area of Review. These are wells for which there are very scanty records. While it may be assumed that they are shallow wells, it can also be assumed that more than a few could provide additional conduits for groundwater contamination if they pass through aquifers which have become contaminated.

Groundwater, according to well records in the AOR, was found variously at approximately 26 to 250 feet, 400-551 feet, and ranging from 1076 to 2050 feet deep. We believe the water at 400-551 feet could be considered a probable USDW. Drillers variously reported water found at 400 feet as fresh and "salt." Deeper water might also be probable USDW.

None of the wells within the AOR, for which records exist, appear to go to or through the Oriskany sandstone, the formation into which waste is to be disposed. There are a number of Devonian shale wells, including the operator's UIC2D0859721. If there are unknown faults through the Onadaga limestone, or if there is a failure of this well's production casing or cement, these Devonian shale wells might become conduits for the waste to groundwater. UIC2D0859721, for instance, is already leaking behind the intermediate casing. The operator should establish communications with other operators within the AOR so that if unexpected events occur the operator will be notified.

DEP Response: OOG acknowledges the comment. The AOR (area of review) was conducted in accordance with 47CSR13-5 and supported using the EPA "Prescone" induced pressure model. The OOG assumed the policy that reservoir capacity has been reached when injection fluids cannot be safely injected at or beneath their permitted maximum injection pressures.

As a policy, OOG provides the West Virginia Geologic and Economic Survey (WVGES) with a copy of all UIC permit applications prior to the Technical and Area of Reviews. WVGES then provides OOG with comments that are used during formulation and considerations in the review process. All operators, within the AOR and beyond, have an opportunity to comment on every UIC draft permit, just as is the case with all the public.

14. Condition for Operator's Financial Responsibility for Plugging - State law (47CSR13-13.7.g) requires the permit have a condition that the operator maintain financial responsibility for plugging the well. "The permittee must show evidence of financial responsibility to the Director by submission of a surety bond, or other adequate assurance, such as a financial statement or other material acceptable to the Director."

What we are not seeing in operators' applications, except in one instance (the permit application for UIC2D0873432), is evidence of financial responsibility. Without that

evidence the certification included in the permit as a condition is meaningless. Either this and other operators need to provide documentation in their application providing evidence of financial responsibility, or the Chief needs to include in the application materials made available to the public certification that the Office has seen and reviewed evidence of financial responsibility.

Without actual evidence of financial responsibility the operator's certification that serves as a condition in the permit is meaningless.

We have presented this comment in the past and wish that the Office had not so blithely passed over it.

Financial responsibility needs to be based on a realistic cost estimate for the plugging of the well. This operator's plugging plan as we remark below is inadequate for creating such an estimate. The plan attached to the permit as a condition does not conform to the state's legal requirements for plugging a well.

If the state didn't have at least 10 UIC 2D wells that have been abandoned and not plugged this wouldn't be such an important issue. UIC2D0870658's permit expired in 2001 according to the Office's databases, UIC2D0871926's in 2002. It is unacceptable that these and other wells have not been plugged and properly abandoned according to state law.

We see no evidence in the current permitting program regarding financial responsibility for plugging to show that there have been changes from the permitting program of a few years ago. We see every indication that operators will continue to ignore their legal obligations because of the Office's flimsy financial responsibility requirements.

Note that the operator's UIC2D0855151 is not on our list of abandoned and unplugged wells, even though its permit expired a year ago.

DEP Response: OOG acknowledges your comment. As part of the UIC permitting process, all operators are required by OOG to declare financial responsibility with the "Requirement for Financial Responsibility to Plug/Abandon an Injection Well" form (Appendix I). The Appendix I form certifies that the operator verifies in accordance with 47CSR13-13.7.g, that financial responsibility and resources to close, plug, and abandon underground injection wells in a manner prescribed by the Chief.

15. Plugging Plan - The operator's plugging plan is a condition of the permit (47CSR13-13.7.f). What surprises us is how so many of the plans submitted in applications that we have reviewed the past few months have been inadequately prepared.

State law in §22-6-24 and 35CSR4-13 and federal law in 40CFR146.10 have clear requirements. Federal law in 40CFR146.10.a.3 requires static equilibrium with mud weight equalized top to bottom when plugging an injection well. Federal law requires cement plugs and the intention, though not the requirement, is that the entire well bore be plugged with cement. State law has a clear methodology and clear work order requirements for a plugging permit. It stands to reason that a permit condition for a UIC Class IID well would present a carefully constructed work order satisfying 35CSR4-13.4.

The plugging plan as a condition for the permit for UIC2D08510142 has problems. The production casing should be cut and removed near or at the top of the cement behind the casing (at about 4450 feet according to the well schematic). The plan seems to assume such a removal has taken place, but does not specify it, nor does the plan require a plug at the point casing is removed.

We believe a revised plugging plan should be made a condition of the permit.

DEP Response: OOG acknowledges your comment. OOG required Ritchie Hunter Water Disposal, LLC to submit a plugging and abandonment plan for the disposal well as part of 2D08510142 Class 2 UIC application package, just as all operator/permittees are required. The UIC plugging and abandonment plan is a proposal and is subject to change, and maybe likely to change by the time when such plugging activities are conducted. OOG requires an approved plugging and abandonment permit to be issued no more than two years prior to such activities. The operator/permittee has accepted the responsibility and all costs associated with plugging disposal well 47-085-10142 in their submittal of a completed and signed Appendix I (Requirement for Financial Responsibility to Plug/Abandon an Injection Well). A more complete plugging and abandonment work order prognosis proposal has been included into the Final Permit as "Attachment 1".

The West Virginia Department of Environmental Protection, Office of Oil and Gas would like to express gratitude and appreciation for the attention to detail, time and effort spent in supplying the above comments. Future special considerations may be incorporated in the Underground Injection Control Permitting, Compliance and Enforcement Section's procedures and policies.