



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
dep.wv.gov

October 22, 2019
UIC Permit

Synergy Oil and Gas, Inc.
PO Box 190
Chloe, WV 25235

Re: Permit approval for Underground Injection Control (UIC) Permit # 2D03902803002
Date Issued: October 22, 2019

Enclosed you will find the above referenced Underground Injection Control Permit. This permit will expire in five (5) years from the date of issuance.

Be advised that all conditions established by this permit 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 matter 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.

A handwritten signature in blue ink that reads "Charles T. Brewer".

Charles T. Brewer
Assistant Chief - Permitting
Office of Oil and Gas

Enclosures as stated

UNDERGROUND INJECTION CONTROL PERMIT

For

SYNERGY OIL AND GAS, INC.

Permit Number 2D03902803002

Issue Date: 10/22/19

Expiration Date: 10/22/24

**AUTHORIZATION TO OPERATE AN
UNDERGROUND INJECTION CONTROL
(UIC) CLASS II INJECTION WELL
PERMIT NUMBER # UIC 2D03902803002**

ISSUE DATE: 10/22/2019

EXPIRATION DATE: 10/22/2024

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, Series 55 and Series 58, and Title 35 Series 1 and Series 4,

PERMITTEE / OPERATOR		Non-Commercial
NAME Synergy Oil and Gas, Inc.	FACILITY TYPE	Waste Disposal
ADDRESS PO Box 190	WELL API #	<u>47-039-02803</u>
ADDRESS Chloe, WV 25235	WELL NAME	Smith #1

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 **Big Injun** formation in accordance with the conditions set forth herein. The permitted injection depth shall be 1,808 feet to 1,820 feet. The injection well is located in **Elk** District, **Kanawha** County, **Kettle** 7.5' Quadrangle. The coordinates for this injection well are: UTM NAD 83 Northing 4262151 and Easting 460718 (meters); Latitude 38.506845, Longitude -81.450552.

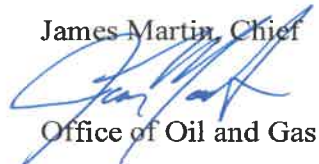
The maximum permitted wellhead injection pressure is established as **350** psi.

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 Legislative Rule Title 47 Series 9 Section 7. 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 and eighty (180) days of the due date. The Chief shall not reissue a permit until all annual permit fees due during prior terms have been paid in full. Failure to pay the annual groundwater fee of seventy-five dollars (\$75) for Class II disposal as required by the West Virginia Code, Chapter 22, Article 11 and/or Article 12, shall be cause for revocation 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. SPECIAL PERMIT CONDITIONS

1. **Injectate Samples.** The Permittee shall sample, analyze and record the nature of all the injected fluid for the parameters listed in TABLE 1 (Part III.B.13) from sources at least twice per year, or upon request of the Chief, or whenever the operator observes or anticipates a change in the injection fluid, to yield representative data on their physical, chemical, or other relevant characteristics. New facilities shall submit a representative sample prior to the initiation of injection operations. The Permittee shall take samples at or before the wellhead for analysis. Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize applicable analytical methods and test results shall be submitted to the Office of Oil and Gas with complete laboratory analysis data sheets (report). Any analysis of injectate with a specific gravity result greater than 1.2 shall be reported to the Chief within twenty-four (24) hours of the results.
2. **Stream Samples.** Within thirty (30) days of the permit issuance date, the Permittee shall conduct stream monitoring at two (2) locations along Jakes Run adjacent to the facility. These monitoring points, one (1) upstream and one (1) downstream of the injection well location shall be sampled and analyzed for the parameters listed in TABLE 2 (Part III.B.14) within thirty (30) days of the permit issuance date. The sampling shall continue on a nine (9) month schedule. The results will be reported to the Office of Oil and Gas, accompanied by a map identifying the sampling points and corresponding coordinates.

PART II

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, along with application fee payment, 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:

1. Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water (USDWs); and
2. 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 issuance of this 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 a breach of another applicable legal duty.

E. PERMIT ACTIONS

1. **Permit Status Change.** This permit can be modified, revoked and reissued or terminated for cause specified in Chapter 22, Article 11 (hereafter WV Code §22-11), and Chapter 22, Article 12 (hereafter WV Code §22-12) of the West Virginia Code, and Title 47, Series 13 (hereafter Legislative Rule 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 Legislative Rule 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 II Section H paragraph 11 of this permit. However, when through no fault of the Permittee the Office of Oil and Gas 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 II 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. (Legislative Rule 47 CSR 13-13.12.a) Copies of UIC Program regulations (WV Code §22-11) may be obtained from the West Virginia Legislature's Website <http://www.legis.state.wv.us/WVCODE/Code.cfm>, and (Legislative Rule 47 CSR 13) may be obtained from the West Virginia Secretary of State's Website 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 and obtain a new permit as required in Part II Section A of this permit at least one hundred and eighty (180) days before this permit expires.
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 operating 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 WV Code §22-11 and WV Code §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:
 - i. For a corporation, by a responsible corporate officer of at least the level of vice-president;
 - ii. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

- iii. 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:
 - i. The authorization is made in writing by a person described in paragraph a. above;
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and
 - iii. 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: (Legislative Rule 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 Federal, 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.** In accordance with Legislative Rule 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. An affidavit or written request stating the need for requested confidential documents to remain confidential must also be submitted with the documents.

- a. 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; or
 - 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 under Part III Section B of 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. **Prohibited Activity.** It shall be unlawful for any person, unless an authorization has been issued by a groundwater regulatory agency, to 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 allowed to flow onto or under the land surface or in such a manner that could impact surface or 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 III

A. RECORD RETENTION

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 Chief may require the Owner or Operator to deliver the records to the Chief at the conclusion of the retention period.

B. MONITORING REQUIREMENTS

1. **Sampling and Measurement.** 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 Code of Federal Regulations 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. **Monitoring Devices.** The Permittee shall install and maintain in good operating condition:
 - a. A tap on the discharge line between the injection pump and the wellhead for obtaining representative samples of injection fluids;
 - b. Devices to continuously measure and record injection pressure, flow rates, injection and production volumes;
 - c. Pressure gauges shall be of a design that provides a full pressure range of at least fifty (50) percent (%) greater than the anticipated operating pressure and a certified deviation accuracy of five (5) percent (%) or less throughout the operating pressure range; and
 - d. Flow meters shall measure cumulative volumes and be certified for a deviation accuracy of five (5) percent (%) or less throughout the range of rates allowed by the permit.
3. **Wellhead Pressure Gauge.** A wellhead pressure gauge shall be installed and maintained on the injection tubing to facilitate inspection and ensure compliance of the maximum injection pressures as approved on Office of Oil and Gas Form WR-37. A daily reading of the injection pressure shall be taken and reported on Form WR-40.
4. **Daily Monitoring.** 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 packer, injection zone or casing. The Permittee shall also monitor the daily maximum 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): <https://apps.dep.wv.gov/eplogin.cfm>.
5. **Monitoring Records.** 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.

6. **Injection Well Mechanical Integrity Testing (MIT).** The Permittee shall conduct a mechanical integrity test of the injection well at a minimum frequency of once every five (5) years per Legislative Rule 35 CSR 4-7.7.b. The Permittee shall notify the Chief of his or her intent to conduct a mechanical integrity test of the well no less than twenty-four (24) hours prior to such test. The pressure requirement of a mechanical integrity test on a well is a pressure of at least one hundred and fifty (150) percent (%) or 1.5 times the maximum injection pressure. The pressure must be held for a period of at least twenty (20) minutes with no more than five (5) percent (%) pressure loss to be approved for injection operations. The Permittee must submit a WR-37 Form with the pressure recording graph/chart as an attachment to the Office of Oil and Gas within thirty (30) days of each mechanical integrity test conducted. 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. Any MIT test that fails must be documented on a separate WR-37 Form. All repairs shall be completed by the Permittee within ninety (90) days of the failure date and approved by the Office of Oil and Gas prior to resuming operations. If repaired, the well must be re-tested and an updated WR-37 Form with pressure recording graph/chart must be submitted to the Office of Oil and Gas for approval.

7. **Pipeline Mechanical Integrity Testing (MIT).** The Permittee shall conduct a mechanical integrity test of all pipeline(s) from the holding tanks to the injection well at a minimum frequency of once every five (5) years. The operator has the option of testing the pipeline simultaneously with well or separately. The Permittee shall notify the Chief of his or her intent to conduct a mechanical integrity test of the pipeline(s) no less than twenty-four (24) hours prior to such test. The pipeline integrity test shall pressurize the injection pipeline(s) to one hundred (100) psi greater than the maximum permitted wellhead injection pressure for a minimum of twenty (20) minutes, allowing for no more than five (5) percent (%) loss after completion. The Permittee must submit a WR-37 Form with the pressure test recording graph/chart as an attachment to the Office of Oil and Gas within thirty (30) days of each mechanical integrity test conducted. 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 or replaced and then tested. Any MIT test that fails must be documented on a separate WR-37 Form. All repairs shall be completed by the Permittee within ninety (90) days of the failure date and approved by the Office of Oil and Gas prior to resuming operations. If repaired, the line must be re-tested and an updated WR-37 Form with pressure recording graph/chart must be submitted to the Office of Oil and Gas for approval. Any change made to the pipeline fittings or piping will require integrity pressure testing. All Office of Oil and Gas forms, including the WR-37 form can be found on the Office of Oil and Gas webpage: <http://www.dep.wv.gov/oil-and-gas/GI/Forms/Pages/default.aspx>.

8. **Additional MIT Requirements.** 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 resealed, if a well failure is likely, or as requested by the Chief. The Permittee may continue operation only if they have

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. The Permittee must submit a written notification to Office of Oil and Gas within twenty-four (24) hours if mechanical integrity of the well is lost. The notification must include a plan to repair and retest of the well within ninety (90) days.

9. **Environmental Measurements.** 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. Certified laboratories can be found on the WVDEP webpage at <http://www.dep.wv.gov/WWE/Programs/lab/Pages/default.aspx>.
10. **Authorized Injection Fluids.** The Permittee shall not inject any hazardous substances, as defined by Code of Federal Regulations 40 CFR 261, or any other fluid, other than the Class II fluids produced solely in association with oil and gas production operations. This permit is for authorization of injection of only fluids as defined for Class II wells in Legislative Rule 47 CSR 13-4.2. 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) may be deemed approved provided that such fluid(s) meet all Class II injection standards and the Permittee reports within five (5) business days the source, API number 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 enforcement action and/or revocation of this permit.
11. **Manifest Records.** 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, the location from where the load was obtained and 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.
12. **Contract Haulers.** No hauler whose trucks do not belong to the UIC operator 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. All delivery manifest requirements must still be met.
13. **Injectate Samples.** The Permittee shall sample, analyze and record the nature of all the injected fluid for the parameters listed in TABLE 1 below from sources at least twice per year, or upon request of the Chief, or whenever the operator observes or anticipates a change in the injection fluid to yield representative data on their physical, chemical, or other relevant characteristics. New facilities shall submit a

representative sample prior to the initiation of injection operations. The Permittee shall take samples at or before the wellhead for analysis. Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize applicable analytical methods and test results shall be submitted to the Office of Oil and Gas with complete laboratory analysis data sheets (report). Any analysis of injectate with a specific gravity result greater than 1.2 shall be reported to the Chief within twenty-four (24) hours of the results.

TABLE 1

Chloride	TPH-GRO
Bromide	TPH-DRO
Strontium	TPH-ORO
Barium	Benzene (B)
Iron	Ethylbenzene (E)
Manganese	Toluene (T)
Aluminum	Total Xylenes (X)
Arsenic	Total Dissolved Solids (TDS)
Sodium	Total Organic Carbon (TOC)
Calcium	Total Suspended Solids (TSS)
Sulfate	Radium-226 and Radium 228
Specific Gravity	Gross Alpha and Gross Beta
pH	

14. **Stream Samples.** Within thirty (30) days of the permit issuance date, the Permittee shall conduct stream monitoring at two (2) locations along Jakes Run adjacent to the facility. These monitoring points, one (1) upstream and one (1) downstream of the injection well location shall be sampled and analyzed for the parameters listed in TABLE 2 within thirty (30) days of the permit issuance date. The sampling shall continue on a nine (9) month schedule. The results will be reported to the Office of Oil and Gas, accompanied by a map identifying the sampling points and corresponding coordinates.

TABLE 2

Chloride	TPH-GRO
Bromide	TPH-DRO
Strontium	TPH-ORO
Barium	Benzene (B)
Iron	Ethylbenzene (E)
Manganese	Toluene (T)
Aluminum	Total Xylenes (X)
Arsenic	Total Dissolved Solids (TDS)
Sodium	Total Organic Carbon (TOC)
Calcium	Total Suspended Solids (TSS)
Sulfate	pH

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 II Section B, and Part III Section C Paragraph 3 of this permit, at the time monitoring reports are submitted. The report shall contain the information listed in Part II 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 physical alterations, additions to the permitted facility, and/or any changes planned in the operation of the facility.
4. **Conversion and Abandonment Notification.** The Operator shall provide written notification to the Chief prior to conversion or abandonment of the well or in the case of area/enhanced recovery permits before closure of the project, per Legislative Rule 47 CSR 13-13.6.e. Notice should be given at least thirty (30) days prior to any conversion, abandonment or alteration. Notice shall also be given prior to the addition, reduction or conversion of wells within an area/enhanced recovery permit.
5. **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. All lines shall be completely drained of all fluids and the wellhead shut-in anytime injection operations cease for a period of greater than ninety (90) days. The Office of Oil and Gas must be contacted at least twenty-four (24) hours prior to the cessation shut-in process.
6. **Certification of 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. The Certification Document is included as an attachment of this permit, and must be signed, dated and submitted to Office of Oil and Gas.
7. **Duty of Owner/Operator to Report Discharges.** 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 Legislative Rule 35 CSR 1, 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.

PART IV

A. OPERATING REQUIREMENTS

1. **Permit Documents On-Site.** The UIC Permit and all attachments must be kept on location at all times.
2. **Required Barrel Counter.** The Permittee shall install and maintain a barrel counter, or other means of flow volume metering, on the injection line. The results are to be recorded and reported on the WR-40.
3. **Annulus Injection Prohibited.** Injection between the outermost casing protecting underground sources of drinking water and the wellbore is prohibited, as is injection into any USDW.
4. **Duty to Monitor or Plug Non-Cemented Wells That Penetrates the Injection Zone Within the AOR.** Any well that penetrates the injection zone with an inactive and/or abandoned status within the permitted Area of Review (AOR), 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.
5. **Corrective Action.** The applicant 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 permitted Area of Review. This must be done in a manner which satisfies the requirements of Legislative Rule 47 CSR 13-13.9.
6. **Cement Evaluation Analysis.** After conducting a cement squeeze job in an open hole, or after any well cement repair for the well constructed under this permit, the Permittee shall submit cementing records and cement evaluation logs that demonstrate the isolation of the injection interval(s). The analysis shall include a spherically-focused tool, run after the long-string casing is set and cemented, which enables the evaluation of the bond between cement and casing as well as of the bond between cement and formation. The Permittee may not commence or recommence injection until it has received written notice from the Office of Oil and Gas that such a demonstration is satisfactory.
7. **Loading/Unloading Stations.** 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.
8. **Above Ground Storage Tanks.**
 - a. 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, shall that time be less than seventy-two (72) hours. The secondary containment structure shall have capacity to contain one hundred and ten (110) percent (%) volume of the largest tank. If tank batteries or tanks are 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 from flowing from one tank to another under any conditions.

- b. Above ground tanks connected in series by a 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 time, shall the combined volume of the tanks be accessible through the manifold system exceed the capacity of the secondary containment without someone being on site to monitor.
 - c. All above ground storage tanks within the floodplain, as defined by the Federal Emergency Management Agency "FEMA" 100-year floodplain map, shall be anchored significantly enough to prevent movement in the case of a high-water flood event. The Permittee should contact the county floodplain manager to confirm the floodplain status of the tank(s) location(s).
9. **Wellhead Reinforcement.** All wellheads shall be reinforced or otherwise armored to protect against accidental collisions, if so positioned where collision could be possible.
 10. **Pumps and Ancillary Equipment.** 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.
 11. **Sumps.** Sumps containing materials which have the potential to contaminate groundwater shall be designed, constructed and operated utilizing secondary containment, or other appropriate controls that can prevent groundwater contamination.
 12. **Facility Security.** All valves, water drains, containment areas, and storage areas shall be secured and locked utilizing locking devices and/or plugs. All gates and access points shall be secured and locked while no representative is at the facility.
 13. **Duty to Drain Injection Pipelines.** All lines shall be completely drained of all fluids and the wellhead shut-in anytime injection operations cease for a period of greater than ninety (90) days. The Office of Oil and Gas must be contacted at least twenty-four (24) hours prior to the cessation shut-in process.
 14. **Non-Commercial Permits.** The facility is permitted as a Non-Commercial operation and can only accept Class II fluids from wells owned and operated by the Permittee. The list of designated wells is included with this permit as Appendix G. The Office of Oil and Gas will allow the Permittee to amend the designated well list upon request pending verification of well ownership.

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. Plugging and abandonment shall be conducted in a manner to prevent movement of fluids into or between USDWs (underground sources of drinking water).
3. Pursuant to Legislative Rule 47 CSR 13-13.7.f, the Permittee's plugging and abandonment plan shall be incorporated into the UIC permit. See Attachment 1.
4. 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.

PART V

A. SITE SPECIFIC CONDITIONS

1. Appendix A: Specific Operational Conditions / Well Construction
2. Appendix G: Wells Serviced by Injection Well
3. Appendix H: Groundwater Protection Plan (GPP)
4. Appendix I: Requirement for Financial Responsibility to plug/abandon an injection well
5. Attachment 1: Plugging and Abandonment Plan
6. Attachment 2: Site/Facility Diagram
7. Class II Manifest
8. Right of Appeal
9. UIC Certification of Review

APPENDIX A Injection Well Form

1) GEOLOGIC TARGET FORMATION <u>BIG INJUN</u>	
Depth <u>1808</u>	Feet (top) <u>1820</u> Feet (bottom)
2) Estimated Depth of Completed Well, (or actual depth of existing well): <u>2278</u> Feet	
3) Approximate water strata depths: Fresh <u>95 Approx.</u> Feet Salt <u>NONE</u> Feet	
4) Approximate coal seam depths: <u>N/A</u>	
5) Is coal being mined in the area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
6) Virgin reservoir pressure in target formation <u>1000</u> psig Source <u>Est. from current reservoir pressure</u>	
7) Estimated reservoir fracture pressure _____ psig (BHFP)	
8) MAXIMUM PROPOSED INJECTION OPERATIONS:	
Injection rate (bbl/hour)	<u>5 Bbl/hr</u>
Injection volume (bbl/day)	_____
Injection pressure (psig)	<u>350</u>
Bottom hole pressure (psig)	<u>1200</u>
9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:	
<u>SALT WATER/BRINE FORMATION WATER</u>	
Temperature of injected fluid: (°F) <u>AMBIENT</u>	
10) FILTERS (IF ANY) <u>None</u>	
11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL	

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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							
Fresh Water	8 5/8"	NEW		20lbs	204'	204'	TO SURFACE
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"	NEW		9.9lbs	1964'	1964'	EST. to 1600'
Tubing	2 3/8	NEW		4.7lbs	1757'	1775'	
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

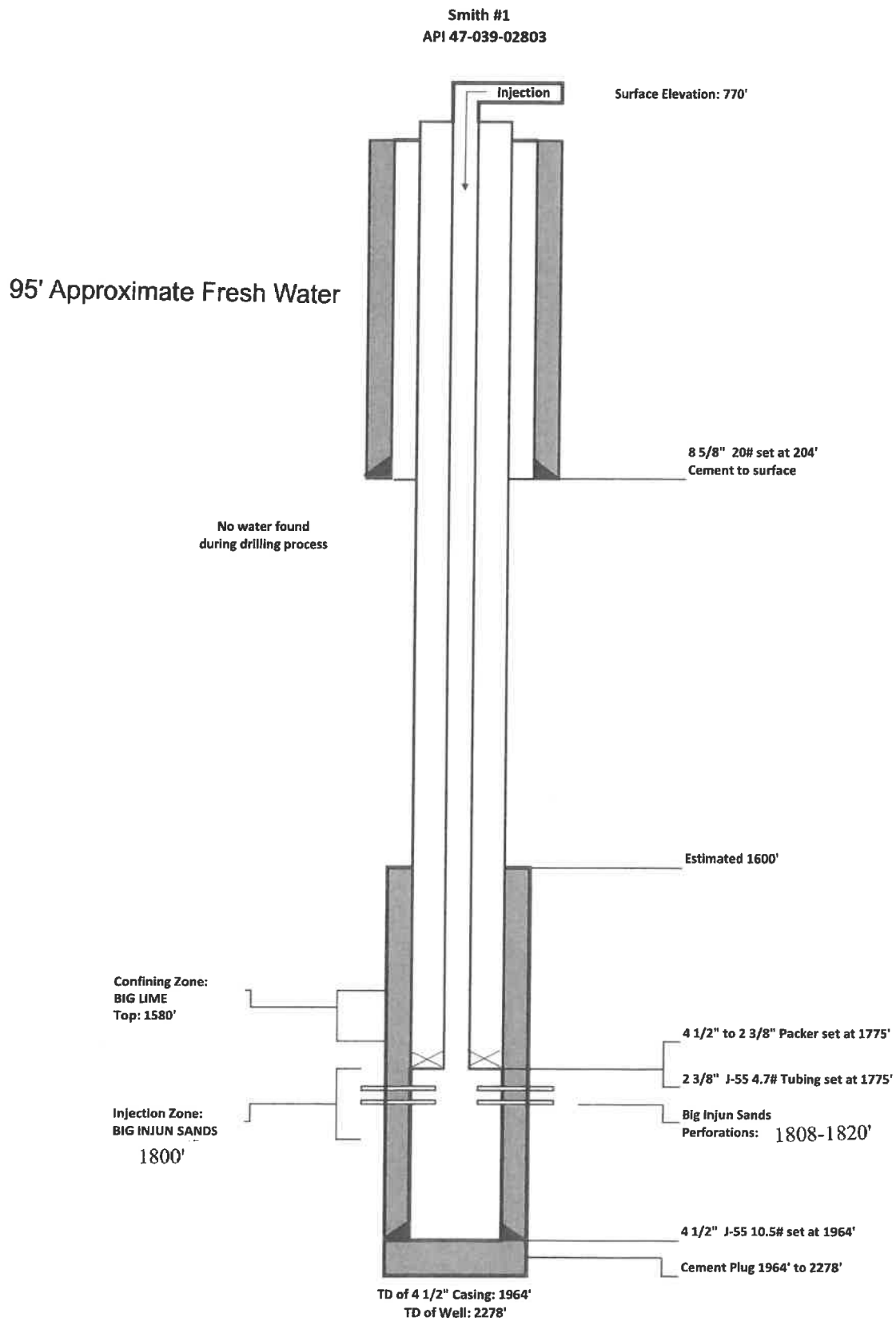
PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	HALIBURTON			
Sizes:	4-1/2 x 2-3/8			
Depths Set:	1775			

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STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

WELL RECORD

2803
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OIL & GAS DIV
DEPT. OF MINES

Kettle 7 1/2
Quadrangle Walton
Permit No. KAN-2803

Rotary X Oil _____
Cable _____ Gas _____
Recycling _____ Comb. X
Water Flood _____ Storage _____
Disposal _____ (Kind)

Company Franklin '76
Address 1814 Seventh St., Parkersburg, WV
Farm Woodrow Smith Acres 154
Location (waters) Jakes Fork
Well No. 1 Elev. 770'
District Elk County Kanawha
The surface of tract is owned in fee by _____
Woodrow Smith
Address Frame, W. Va.
Mineral rights are owned by C.B. Canterbury et al
Address Charleston, WV
Drilling Commenced Nov. 14, 1977
Drilling Completed Nov. 18, 1977
Initial open flow _____ cu. ft. _____ bbls.
Final production _____ cu. ft. per day 30 bbls.
Well open _____ hrs. before test 300# RP.

Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Size 20-16			To surface
Cond. 13-10"			
9 5/8			To 1600' est.
8 5/8	204	204	
7			
5 1/2			
4 1/2	1964	1964	
3			
2			
Liners Used			

Well treatment details: Fractured 5-12-78: 610 bbl. water; 30,000# 20/40 mesh sand; 500 gal Hcl Acid.
Attach copy of cementing record.

Coal was encountered at _____ Feet _____ Inches
Fresh water _____ Feet _____ Salt Water _____ Feet
Producing Sand Big Injun Depth 1808-1820

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	* Remarks
Surface			0	20		
Sand			20	60		
Shale			60	90		
Sand-Shale			90	180		
Shale			180	200		
Sand-Shale			200	260		
Shale			260	340		
Sand			340	480		
Shale-Sand			480	640		
Sand			640	780		
Shale-Sand			780	1120		
Sand			1120	1470		
Sand-Shale			1470	1580		
Limestone			1580	1800		
Sand			1800	1830		
Sandy Shale			1830	2278		
Berea Top at 2220 (No sand)						

* Indicates Electric Log tops in the remarks section.

(over)

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"Pipeline"

Select County: (039) Kanawha (Check All)
 Enter Permit #: 2803
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Btm Hole Loc

Get Data Reset

Table Descriptions
 County Code Translations
 Permit-Numbering Series
 Usage Notes
 Contact Information
 Disclaimer
 WVGES Main
 "Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 39 Permit = 2803

Report Time: Friday, February 22, 2019 12:58:55 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4703902803	Kanawha	2803	Elk	Kette	Walton	38.506809	-81.451026	460675.1	4262145.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4703902803	11/18/1977	Original Loc	Completed	Woodrow Smith	1					C B Canterbury et al	Franklin 76		
4703902803	-/-	Worked Over	Completed	Woodrow Smith	1					Beech, Inc.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_E
4703902803	-/-	-/-	770 Ground Level	Blue Ck(Fig Rk)	Sunbury Sh	Big Injun (Price&eq)	Development Well	Development Well	Oil w/ Gas Show	Rotary	Acid-Frac	2278		2278		
4703902803	-/-	-/-	770 Ground Level	Blue Ck(Fig Rk)	Sunbury Sh	Big Injun (Price&eq)	Service Well	Unsuccessful	Salt Water Disp	unknown	unknown	2278				0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4703902803	-/-	Horizon	Injection	Vertical	1808	Big Injun (Price&eq)	1820	Big Injun (Price&eq)					
4703902803	11/18/1977	Pay	Oil	Vertical	1808	Big Injun (Price&eq)	1820	Big Injun (Price&eq)					

Production Gas Information: (Volumes in Mcf) * 2018 data are incomplete at this time

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703902803	Trinity Oil and Gas Corp.	1982	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Trinity Oil and Gas Corp.	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Trinity Oil and Gas Corp.	1985	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	1985	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2006	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2018 data are incomplete at this time

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703902803	Trinity Oil and Gas Corp.	1982	2,994	574	162	191	177	245	559	206	190	125	283	137	145
4703902803	Trinity Oil and Gas Corp.	1983	7,760	873	709	683	665	665	631	573	788	469	582	582	539
4703902803	Trinity Oil and Gas Corp.	1985	410	39	39	33	19	45	26	52	25	32	27	46	27
4703902803	Status Oil Wells, Inc.	1996	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902803	Status Oil Wells, Inc.	2006	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV DATUM
4703902803	Original Loc	Greenbrier Group	Well Record	1580	Reasonable			770 Ground Level
4703902803	Original Loc	Big Lime	Well Record	1580	Reasonable	230	Reasonable	770 Ground Level
4703902803	Original Loc	Big Injun (Price&eq)	Well Record	1500	Reasonable	220	Reasonable	770 Ground Level
4703902803	Original Loc	Sunbury Sh	Well Record	2220	Reasonable	30	Reasonable	770 Ground Level

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: SYNERGY OIL & GAS, INC.

County: KANAWHA

Facility Location:

Postal Service Address:	625 JAKES RUN ROAD		
	ELKVIEW, WV 25071		
Latitude :	38.506845	Longitude:	-81.450552

Contact Information:

Person:	HAROLD HAMRICK		
Phone Number:	304-982-2522		
E-mail Address:	N/A		

Date: 2/9/18

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

<p>Waste Disposal - Injection of Brine Transfer of water from transport truck to well</p>

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

<p>All truck transfers use secondary containment spill buckets. Injection well is subjected to MIT test every 5 years.</p>
--

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

<p>No plans for any new operations.</p>

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

Waste Disposal is regulated for groundwater protection

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

Disposal fluid will be sampled and submitted to an approved water testing facility for analysis. If any problems arise, they will be addressed before any disposal operations take place.

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

No waste material will be used for deicing or fill material on the property unless allowed by another rule.

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.

All Synergy Oil and Gas employees are trained in the visual inspection of tanks, pipelines, and equipment. This is for continued maintenance of the injection facility. Also, all significant employees have received training on spill response during safety training meetings.

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

While in operation, inspections are made on a daily basis. The inspections include visual inspection of all equipment, pipelines, and overall operations. The injection well itself is subject to MIT test every five years.

Signature:



Date:

2/6/19

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Promoting a healthy environment.

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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: Synergy Oil and Gas, Inc.

 P.O. Box 190

 Chloe, WV 25235

Date: 2/6/19

Subject: Underground Injection Control (UIC) Permit Application
 # 2D0392803

 Requirement for Financial Responsibility

I, Harold Hamrick, 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: Harold Hamrick

 Signature: [Handwritten Signature]

 Date: 2/6/19



Attachment 1: Plugging and Abandonment Plan

SMITH #1

UIC PERMIT# UIC2D0392803

Section 12

A well work plugging permit must be obtained from the West Virginia Department of Environmental Protection Office of Oil and Gas before beginning any well plugging operation. Plan will be in compliance with all applicable plugging and abandonment regulations including 35-4-14 and 22-6-24. The guidelines provided in Oil and Gas rule and code will be followed to complete the necessary application to plug and abandon. All cement plugs will be a minimum of 100 feet in thickness. A cement plug will be set above any perforation(s) and/or shot hole(s). All casings will be free pointed and as much casing will be removed as possible. A cement plug will be used to separate oil and gas bearing formations. A cement plug will be placed across all casing cuts. An elevation plug will be placed in each. If surface casing is cemented to surface a cement plug will be placed across the shoe and at the surface. If there is no cemented surface casing then a cement plug will be placed across fresh water zone and at the surface. Gel will be used as a spacer between all cement plugs.

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Figure No. 4

SYNERGY UIC 2D0392803 SITE MAP

LOWER EARTHEN
CONTAINMENT

STORAGE BUILDING

NOT
IN USE

60ft

20ft

35ft






10ft

25ft

30ft

TOP AREA OF CONTAINMENT = 1450sq ft
BOTTOM AREA OF CONTAINMENT = 950 sq ft
TOTAL VOLUME OF CONTAINMENT= 2978.1 CUBIC FEET

Legend

-  2803 INJECTION WELL
-  WATER LINE
-  WELL ACCESS ROAD
-  CONTAINMENT AREA
-  #6 STORAGE TANK 170bb1

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Synergy UIC# 2D0392803 Storage Tank #6 Containment Volume LOWER CONTAINMENT

Calculations for Earthen Wall Containment	2:1 Side Slope
H = Containment depth:	2.5 ft
A1 = Area of containment top: (30 ft x 25 ft) + (35 ft x 20 ft)	1450 square ft
A2 = Area of containment bottom: (25 ft x 20 ft) + (30 ft x 15 ft)	950 square ft
Total volume of containment: $H \times (A1 + A2 + \sqrt{(A1 \times A2)}) / 3$	2978.1 cubic ft
$2.5 \text{ ft} \times (1450 \text{ sf} + 950 \text{ sf} + \sqrt{(1450 \text{ sf} \times 950 \text{ sf})}) / 3$	954.618 cubic ft
Volume of one 170 bbl tank (Tank 1): (170 bbl x 42 gal/bbl x 0.1337 cf/gal)	1050.07 cubic ft
Volume of 110% of one 170 bbl tank: (954.618 cf x 1.10)	
Ratio of effective containment volume to 110% tank volume: (1050.07 cf / 2978.1 cf)	284%

After calculating the volume of the earthen wall containment for the subject injection well's storage tank, it is found that the containment area is capable of containing **284%** of the 170bbl storage tank. Storage tank #6 has been properly registered with the WVDEP

Compute $V = (h) \times (A1 + A2 + \sqrt{(A1 \times A2)}) / 3$

A1	A2	A1 * A2	sqrt(A1 * A2)	V1+V2 +sqrt(V1 * V2)	Depth (H)	* (H)	Tank Ex	110%	Cont Vol	%
1450	950	1377500	1173.7	3573.7	2.5	8934.2	2978.1	1050.08	2978.1	284%

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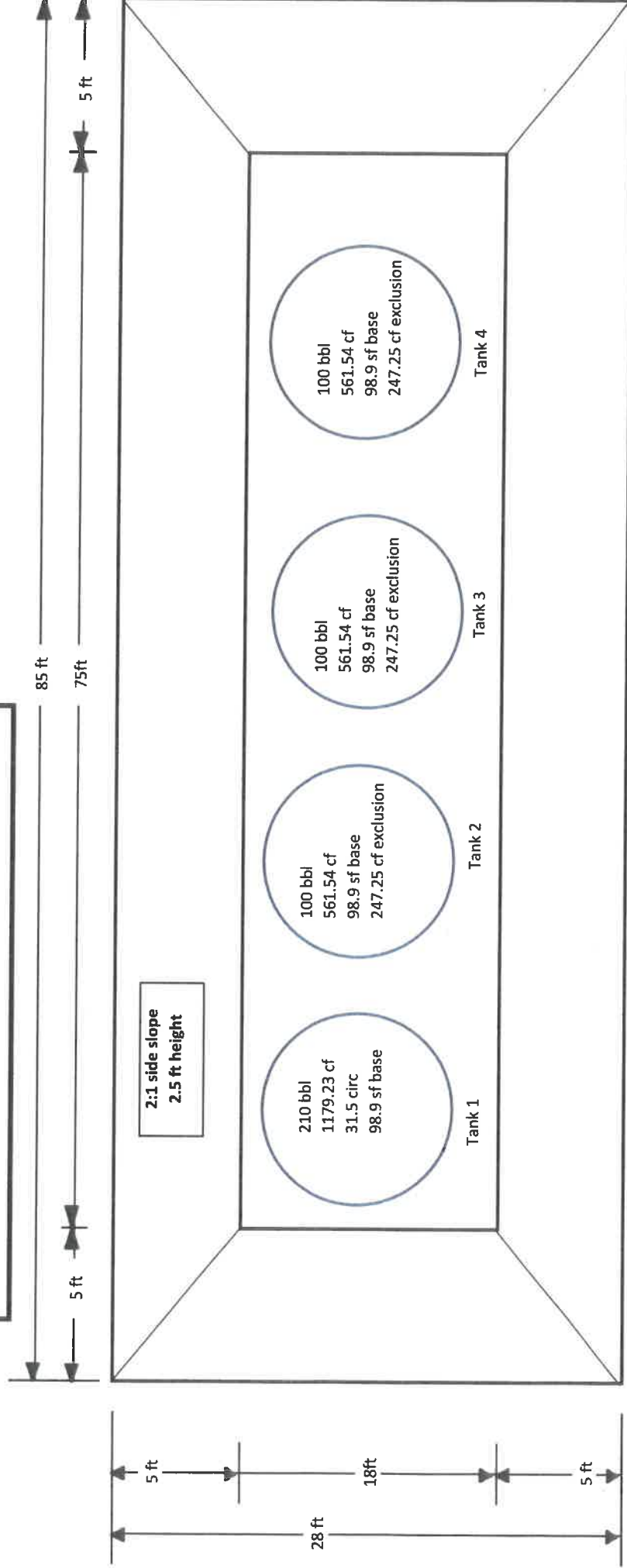
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JUN 26 2019

Synergy Oil & Gas, Inc.
Upper Secondary Earthen Wall Containment
UIC2D0392803

Earth Containment 2:1 Slope (scale approximate)



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: 2D03902803002

Permit Name: SYNERGY OIL AND GAS, INC.

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