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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
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Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Monday, August 27, 2018

**UIC Permit**

EQT PRODUCTION COMPANY  
625 LIBERTY AVE., SUITE 1700  
PITTSBURGH, PA 15222

Re: Permit approval for Underground Injection Control (UIC) Permit # 2D04701511002  
Date Issued: 8/27/2018

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, appearing to read "James A. Martin".

James A. Martin  
Chief  
Office of Oil and Gas

Enclosures as stated

**UNDERGROUND INJECTION CONTROL PERMIT**

For

**EQT PRODUCTION COMPANY**

**Number UIC2D04701511002**

**FINAL**

**Issued: 08/27/2018**

**AUTHORIZATION TO OPERATE AN  
UNDERGROUND INJECTION CONTROL  
(UIC) CLASS II INJECTION WELL  
PERMIT NUMBER # UIC 2D04701511002**

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

**ISSUE DATE:** 08/27/2018

**EXPIRATION:** 08/27/2023

PERMITTEE / OPERATOR			Non-Commercial
NAME	EQT Production Company	FACILITY TYPE	Waste Disposal
ADDRESS	1710 Pennsylvania Avenue	WELL API #	<u>47-047-01511</u>
ADDRESS	Charleston, WV 25304	WELL NAME	506168

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 **Berea Sandstone** in accordance with the conditions set forth herein. The permitted injection depth shall be **3398** feet to **3458** feet. The injection well is located in **Browns Creek** District, **McDowell** County, 7.5' **Davy** Quadrangle. The coordinates for this injection well are: UTM NAD 83 Northing **4148469.1** and Easting **441073.1** (meters). Latitude **37.4812443** and Longitude **-81.6664981**.

The maximum permitted wellhead injection pressure is established as **717** 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 have been paid in full. Failure to pay the annual groundwater fee of seventy-five dollars (\$75) 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 and shall be paid on the anniversary date of permit issuance.

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, 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:

- 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 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 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. (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 I 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:
    - (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 the 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: (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.
    - 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 II 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 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 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; and
  - 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.
  - 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 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 current 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 no less than twenty-four (24) hours prior to such demonstration. The Permittee must submit a WR-37 Form to the Office of Oil and Gas within thirty (30) days of each mechanical integrity test conducted. When a pressure test is conducted, the Permittee must submit a pressure recording graph/chart as an attachment to the WR-37 Form. The pressure requirement of a mechanical integrity test on a well is a pressure of at least 150% or 1.5 times the maximum injection pressure. The pressure must be held for a period of at least 20 minutes with no more than 5% pressure loss to be approved for injection operations. 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. Each mechanical integrity test failure must be documented on the WR-37 Form and submitted with any pressure recording graph/chart. 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 with any pressure recording graph/chart must be submitted to the Office of Oil and Gas for approval.
  
7. **Pipeline Mechanical Integrity Testing (MIT).** 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 the WR-37 Form along with the pressure test recording graph/chart 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 twenty (20) 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 prior to resuming operations. All repairs shall be completed within ninety (90) days of the failure date. 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 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. The Permittee must send a written notification to WVDEP Office of Oil and Gas within 24 hours if mechanical integrity of the well is lost. The notification must include a plan to address the failure within 90 days. The plan must either outline a repair and retest of the well or to plug the well within 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) shall 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. **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	pH
Specific Gravity	NORM

13. **Stream Samples.** Within thirty (30) days of permit issuance date, the Permittee shall designate stream monitoring points adjacent to the injection well facility. These monitoring points, one upstream and one downstream of the injection wells' location shall be sampled and analyzed for the parameters listed in TABLE 2 below. The sampling will be on a nine (9) month schedule. The results will be reported to the WVDEP 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 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 physical alterations, additions to the permitted facility, and/or any 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. 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 WVDEP-Office of Oil and Gas must be contacted at least twenty-four (24) hours prior to the cessation shut-in process.
5. **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.
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 WVDEP-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.
8. **Third Party Haulers - Commercial Wells Only.** No third-party haulers shall be permitted without approval by the WVDEP-Office of Oil and Gas. For approval, the permittee shall designate by letter to the WVDEP-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 WVDEP-Office of Oil and Gas.

### PART III

#### 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. **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 WVDEP-Office of Oil and Gas, as well as properly plug and abandon such wells, as necessary.
4. **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.
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 110% 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 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.

## **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 WVDEP-Office of Oil and Gas to plug and abandon the well in accordance with an approved plugging and abandonment plan.

## **PART IV**

### **A. SITE SPECIFIC CONDITIONS**

1. Appendix A: Specific Operational Conditions / Well Construction.
2. Appendix H: Groundwater Protection Plan (GPP).
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.
6. Attachment 3: Manifest Document.
7. Right of Appeal
8. Response to Comments
9. UIC Certification of Review

## APPENDIX A Injection Well Form

1) GEOLOGIC TARGET FORMATION <u>Berea SS</u>	
Depth <u>3398</u>	Feet (top) <u>3458</u> Feet (bottom)
2) Estimated Depth of Completed Well, (or actual depth of existing well): <u>3575</u> Feet	
3) Approximate water strata depths:	Fresh <u>85,111,250</u> Feet Salt <u>N/A</u> Feet
4) Approximate coal seam depths: <u>115,200,350,480,1000</u>	
5) Is coal being mined in the area? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
6) Virgin reservoir pressure in target formation <u>859</u> psig	Source <u>Offset Well: 47-047-00944</u>
7) Estimated reservoir fracture pressure <u>2551</u> psig (BHFP)	
8) MAXIMUM PROPOSED INJECTION OPERATIONS:	
Injection rate (bbl/hour)	<u>47.7</u>
Injection volume (bbl/day)	<u>1,145</u>
Injection pressure (psig)	<u>717</u>
Bottom hole pressure (psig)	<u>1550 psig</u>
9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:	
The fluids injected include Brine, Corrosion Inhibitors, and Scale Inhibitors. The Material, Data Safety, Sheets are provided in attached documentation.	
Temperature of injected fluid: (°F)	<u>Atmospheric</u>
10) FILTERS (IF ANY)	
<u>None</u>	
11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL	
Injection tubing is Seal Tite. Internally lined and tubing - CSG annulus is loaded with an inhibited fluid to mitigate corrosion issues.	

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## APPENDIX A (cont.)

### 12. Casing and Tubing Program

<b>TYPE</b>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	16"	New			23'	23'	CTS
Fresh Water	11 3/4"	New	F-25	42	360'	360'	CTS
Coal	8 5/8"	New	F-25	24	1020'	1020'	CTS
Intermediate 1							
Intermediate 2							
Production	5.5"	New	J-55	15.5	3554'	3554'	510
Tubing	2 3/8"	New	J-55	4.7	3277.5'	3277.5'	
Liners							

<b>TYPE</b>	<u>Wellbore Diameter</u>	<u>Casing Size</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./sk)</u>	<u>Cement to Surface ? (Y or N)</u>
Conductor		16"		1,640	C1A		Y
Fresh Water		11 3/4"	0.3"	1,980	C1A		Y
Coal		8 5/8"	0.264"	2,950	C1A		Y
Intermediate 1							
Intermediate 2							
Production	7 7/8"	5 1/2"	.275"	4,810	C1A	1.89	N
Tubing		2 3/8"	0.19	7,700	N/A	N/A	N/A
Liners							

<b>PACKERS</b>	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	1XS Mechanical Packer			
Sizes:	5 1/2" x 2 3/8"			
Depths Set:	3,277.5' - 3,283.3'			

**CASING DETAIL**

16" csg @ 23'  
TOC @ Surface (Class A cement)

11 3/4" csg @ 360'  
Grade F-25, 42lb/ft,  
0.3" wall thickness  
TOC @ Surface (205 cu ft) CI A

8 5/8" csg @ 1020'  
Grade F-25, 24lb/ft  
0.264" wall thickness  
TOC @ Surface (333 cu ft) CI A

5 1/2" csg @ 3554'  
Grade J-55, 15.5lb/ft  
0.275" wall thickness  
TOC @ 1874 (510 cu ft) CI A  
Drilled w/ 7 7/8" bit

WELL: 506168

API: 47-047-01511

Fresh Water @ 85', 1" stream  
Fresh Water @ 111', 2" stream  
Coal @ 115'-117'  
Coal @ 200'-202'  
Fresh Water @ 250', 6" stream

Coal @ 350'-351'

Coal @ 480'-481'

Coal @ 1000'-1002'

Silty Shales 2640'-3,378' (Additional Confining Zones)

2 3/8" 8rd 4.7lb/ft PVC lined tbg @ 3,277.5'  
Retrievable AS I-XS (14lb to 17lb) 5 1/2" x 2 3/8"

Sunbury Shale 3,378' to 3,398' (Confining Zone)

Perforations: 3402'-3458' (16 Holes)

Berea 3,398' to 3,458'

Perforations: 3439'-3448' (36 Holes)

Perforations: 3454'-3458' (16 Holes)

Upper Huron Shale starting at 3,458' (Lower Confining Zone)

Original Well TD based on drillers log (3575')

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# APPENDIX H

## GROUNDWATER PROTECTION PLAN

Facility Name: Twin Branch

County: McDowell

Facility Location:

Postal Service Address:	Box 5-A 17 Twin Branch Road		
Twin Branch, WV 24889			
Latitude :	37.480990	Longitude:	81.667010

Contact Information:

Person:	Chad Carmichael		
Phone Number:	(304) 348-7661		
E-mail Address:	ccarmichael@eqt.com		

Date: \_\_\_\_\_

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

Contamination would be most likely to occur either from a leak, or failure of the underground liquid injection well. Spills on-site would most likely result from either the failure of tanks or liquids unloading operations occurring at the facility. Secondary containment structures are in place at the site in order to prevent a spill. Inspections on-site, and continued maintenance are in place and utilized in order to determine that risk of groundwater contamination from either tanks, or fluid injection is prevented.

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

Quarterly inspections are conducted to monitor the facility and ensure it is properly maintained in order to prevent spillage or groundwater contamination.

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

When new equipment is added to the site, secondary containment calculations and design will be conducted in order to insure that tanks have appropriate containment. Furthermore, records of injection will be maintained, as well as quarterly inspections will be conducted in order to insure the well is maintained appropriately.



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

The facility is presently regulated under the Underground Injection Control (UIC) Program, Spill Prevention, Control, and Countermeasure (SPCC) regulations, and West Virginia Above-ground Storage Tank (AST) Regulations.

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

Groundwater in the area is utilized for residential purposes.

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 at the Twin Branch site.

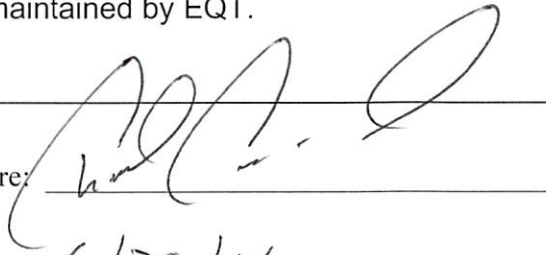
7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

EQT maintains a formal written procedure and conducts routine training on groundwater contamination prevention.

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

Quarterly inspections are conducted on-site in order to fulfill GPP requirements. The inspection include evaluations of the secondary containment, tanks located on-site, and the underground liquids injection well. Inspections are recorded and maintained by EQT.

Signature: \_\_\_\_\_



Date: \_\_\_\_\_

6/30/16

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WV Dept. of Environmental Protection

# APPENDIX I

## Requirement for Financial Responsibility to Plug/Abandon an Injection Well

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

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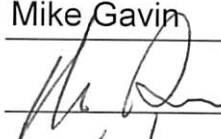
WV Department of  
 Environmental Protection

From: EQT Production  
 \_\_\_\_\_  
 1 Hillcrest Drive East  
 \_\_\_\_\_  
 Charleston, WV 25311  
 \_\_\_\_\_  
 Attn: Chad Carmichael  
 \_\_\_\_\_

Date: 5-7-18

Subject: Underground Injection Control (UIC) Permit Application  
# 2D0471511  
Requirement for Financial Responsibility

I, Mike Gavin, 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: Mike Gavin  
 Signature:   
 Date: 5/7/18



## PLUGGING PROGNOSIS

506168  
Pocahontas Land Corp.  
API# 47-047-01511  
District, Browns Creek  
McDowell County, WV

BY: R Green  
DATE: 01/18/18

### **CURRENT STATUS:**

**TD @ 3554'**  
**Elevation @ 1165'**

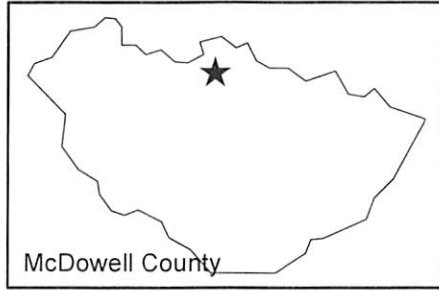
16" casing @ 23' (CTS)  
11 3/4" casing @ 360' (CTS)  
8 5/8" casing @ 1020' (CTS)  
5 1/2" casing @ 3554' (Cemented with 510.3 cu.ft)  
2 3/8" tubing set on 2 3/8" X 5 1/2" packer @ 3277'  
Perforations @ 3412' to 3468' (16 holes)  
    " @ 3449' to 3458' (36 holes)  
    " @ **3464' to 3468' (16 holes)**

**Fresh Water @ 85', 111', 250'**  
Saltwater @ None Reported  
**Oil Show @ None Reported**  
**Gas shows @ None Reported**  
Coal @ 115', 200', 350', 480', 1000'

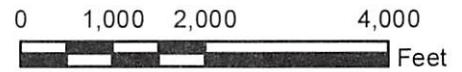
1. Notify inspector Brian Ferguson @ 304-550-6265, 24 hrs. prior to commencing operations.
2. Release packer and TOOH packer and 2 3/8" tubing.
3. TIH to 3400', spot 30 bbl. of 6% gelled water followed by a 300' C1A cement plug. 3400' to 3100'. WOC 8 hrs. Tag TOC. Add additional C1A cement if necessary.
4. TOOH to 2500' set a 200' C1A cement plug 2500' to 2300'.
5. Free point 5 1/2" casing cut casing @ free point. (EST @ 1800') TOOH 5 1/2" casing.
6. Set a 100' C1A cement plug 50' in/out of casing cut. Perforate all freshwater, saltwater, coal, oil and gas shows below cut. Do not omit any plugs.
7. TOOH to 1600' set a 100' C1A cement plug 1600' to 1500'. (Safety plug).
8. TOOH to 1250' set a 300' C1A cement plug 1250' to 950' (Elevation, & 8 5/8" casing seat).
9. TOOH to 500' set a 500' C1A cement plug 500' to surface. (11 3/4" casing seat, coal, freshwater).
10. Erect monument with API#, date plugged, & company name.
11. Reclaim location and road to WV-DEP specifications.



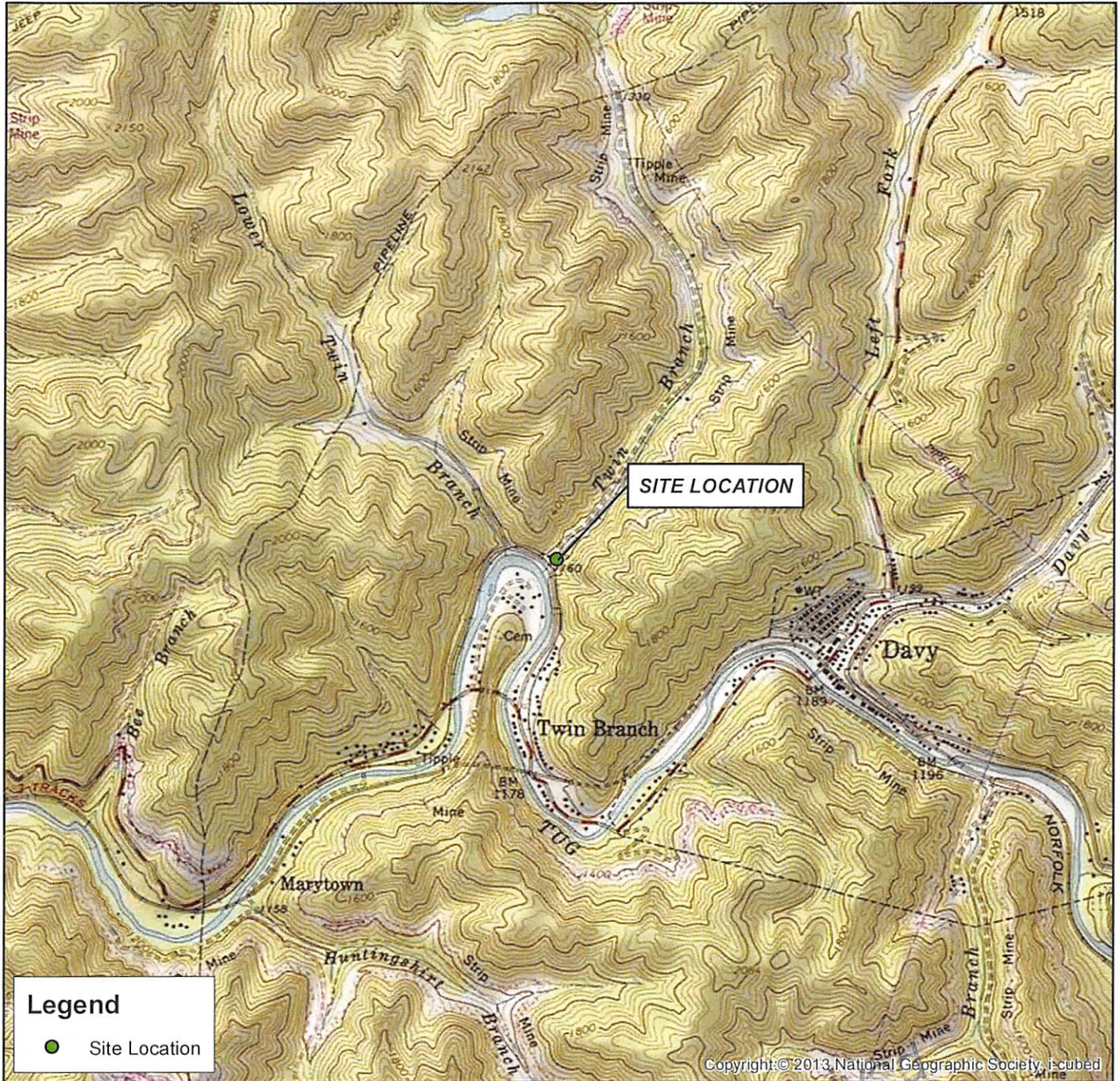
West Virginia



McDowell County



LAT. 37.48099 LON. -81.66701  
 MCDOWELL COUNTY  
 WEST VIRGINIA



**Legend**

- Site Location

Copyright: © 2013 National Geographic Society, i-cubed

USGS 1:24K 7.5' Quadrangle:  
 Davy, WV

**SITE LOCATION MAP**

**EQT PRODUCTION COMPANY**  
 Twin Branch Underground Injection Well  
 Twin Branch  
 McDowell County, West Virginia

JUN 30 2016

GIS Review: MC  
 CHK'D: MC  
 0350417



Drawn By:  
 SRV-6/8/16

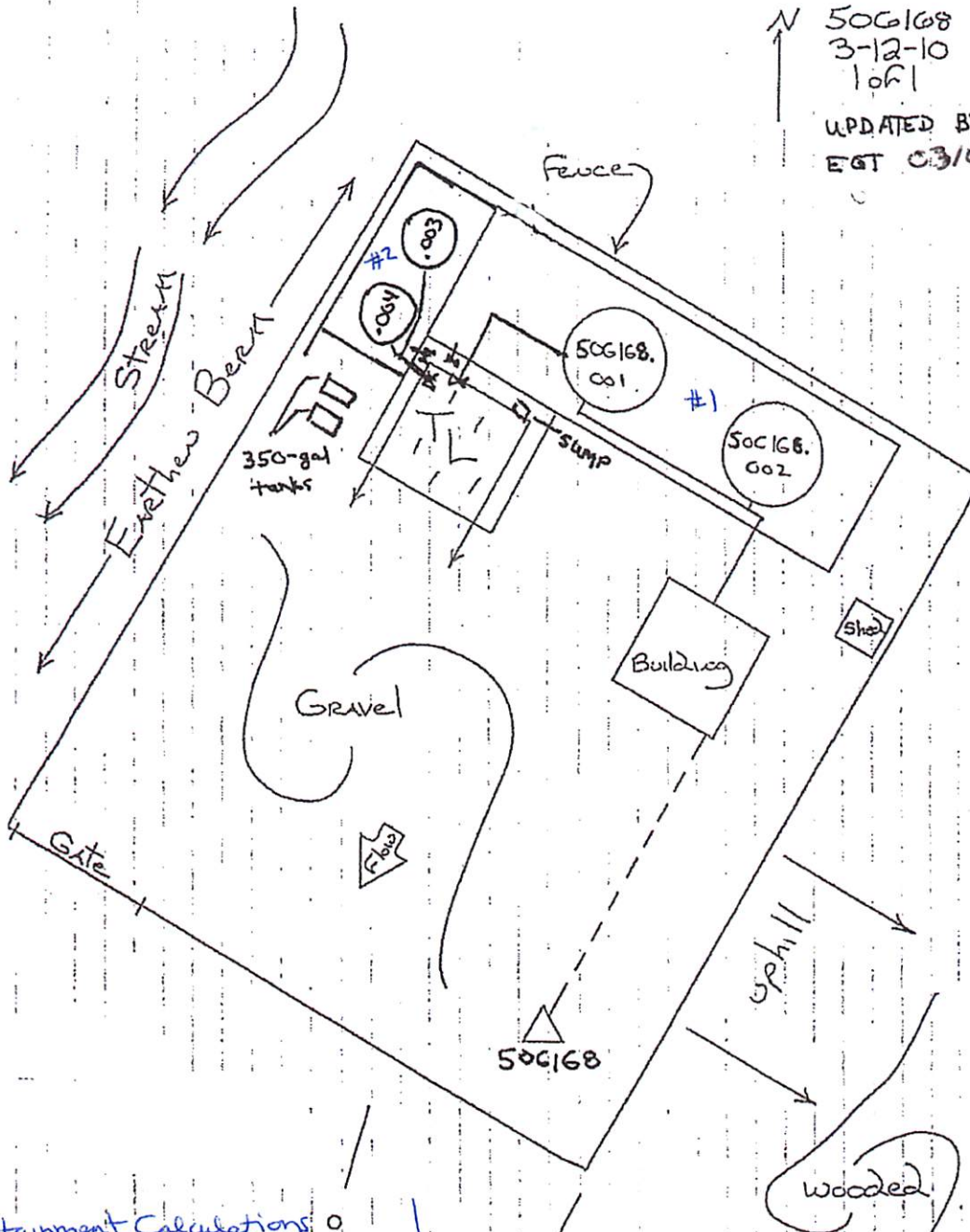
**Environmental Resources Management**

FIGURE 1

Branch\_SiteLocation\_Location\_Map.mxd - 6/8/2016[SRV]



Site sketch:



N  
 506168  
 3-12-10  
 1 of 1  
 UPDATED BY  
 EGT 03/01/18

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Secondary Containment Calculations:

#1  $50' \times 24.8' \times 2.5' = 3100 \text{ ft}^3$   
 $3100 \text{ ft}^3 (7.48 \text{ gal/ft}^3) = 23,188 \text{ gal total volume}$   
 tank displacement volume:  $(\# \text{ of tanks}) (\pi \times \frac{D^2}{4} \times H)$   
 $= 1 (\pi \frac{(12')^2}{4}) (2.5) = 283 \text{ ft}^3 (7.48 \text{ gal/ft}^3) = 2,115 \text{ gal}$   
 Net volume = total volume - tank displacement  
 $= 23,188 - 2,115 = 21,073 \text{ gal (162\%)}$

#2  $32.8' \times 16.5' \times 3.13' = 1691 \text{ ft}^3$   
 $1691 \text{ ft}^3 (7.48 \text{ gal/ft}^3) = 12,651 \text{ gal total volume}$   
 tank displacement volume:  
 $(1) (\pi \frac{(10')^2}{4}) (2.79) = 219 \text{ ft}^3 (7.48 \text{ gal/ft}^3) = 1,640 \text{ gal}$   
 \*tanks rest on 4" beams so H for displacement is less than height of containment  
 Net volume = total volume - tank displacement  
 $= 12,651 - 1,640 = 11,011 \text{ gal (125\%)}$

## 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

## **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: 2D04701511002

Permit Name: EQT PRODUCTION COMPANY

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