



July 23, 2018

Mr. James C. Bennett (3WP22)
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Bennett:

EnerVest is submitting this permit application to renew Permit #VAS2D697BDIC, VWD-539572 Class II-D fluid disposal well in the Ervinton District of Dickenson County, Virginia. The well is currently undrilled but EnerVest would like to renew the permit for future installation.

Please contact me with any questions and/or further requested information (276) 926-1292.

Sincerely,

Jon Lawson, CSP
Sr. HSE Specialist
jlawson@enervest.net



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029**

**UNDERGROUND INJECTION CONTROL PERMIT NUMBER VAS2D697BDIC
AUTHORIZATION TO OPERATE A CLASS II-D INJECTION WELL**

In compliance with provisions of the Safe Drinking Water Act, as amended, 42 U. S. C. §§ 300f - 300j-11 ("SDWA"), and the SDWA implementing regulations promulgated by the U. S. Environmental Protection Agency at Parts 144 - 147 of Title 40 of the Code of Federal Regulations, this permit authorizes:

EnerVest Operating, L.L.C.
300 Capitol Street
Suite 200
Charleston, West Virginia 25301

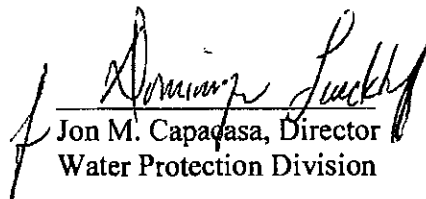
as the Permittee, to construct and operate a disposal Class II-D injection well, VWD-539572, (hereinafter, "Injection Well") which includes injection of fluid produced solely in association with oil and gas production from EnerVest Operating, L.L.C. ("Permittee"), in accordance with the provisions of this Permit. The Injection Well will be located at the Nora Field, Ervinton District, Dickenson County, Virginia, into the Lower Mississippian Weir Sand Formation in accordance with the conditions set forth herein. The coordinates for the Injection Well are: Latitude 37° 04' 13" and Longitude -82° 10' 26".

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this Permit becomes effective.

This permit shall become effective on January 14, 2016.

This permit and its authorization to inject shall remain in effect until midnight November 4, 2018.

Signed this 14 day of January, 2016.


Jon M. Capadasa, Director
Water Protection Division

PART I

A. Effect of Permit

Permittee is allowed to engage in underground injection at the Injection Well in accordance with the conditions of this Permit. The Permittee shall not allow the underground injection activity, otherwise authorized by this Permit, to cause or contribute to the movement of fluid containing any contaminant into any underground source(s) of drinking water ("USDW"), if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. Part 141, or if it may otherwise adversely affect the health of persons. Any underground injection activity not authorized in this Permit or otherwise authorized by permit or rule is prohibited. 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, or any infringement of State or local law or regulations. Compliance with the terms of this Permit does not constitute a defense to any action brought under Part C of the SDWA, or the imminent and substantial endangerment provisions of Part D of the SDWA, or any other common or statutory law for any breach of any applicable legal duty.

B. Permit Actions

This Permit can be modified, revoked and reissued, or terminated for cause or upon request as specified in 40 C.F.R. §§ 124.5, 144.12, 144.39 and 144.40. Also, this Permit is subject to minor modifications as specified in 40 C.F.R. § 144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the Permittee shall not stay the applicability or enforceability of any Permit condition.

C. Severability

The provisions of this Permit are severable and if any provision of this Permit is held invalid by a court order, the Permittee shall remain bound to comply with all remaining provisions.

D. General Requirements

1. Duty to Comply. The Permittee shall comply with all applicable Underground Injection Control ("UIC") regulations, including 40 C.F.R. Parts 124, and 144-147, and with the conditions of this Permit, except to the extent and for the duration that EPA authorizes any noncompliance by an emergency permit issued under 40 C.F.R. § 144.34. Any Permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, Permit termination, revocation and reissuance or modification, or for denial of a Permit renewal application.

2. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for the 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.
3. Duty to Mitigate. The Permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Permit.
4. Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, adequate security to prevent unauthorized access and operation of the Injection Well and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.
5. Duty to Provide Information. The Permittee shall furnish to the Director of the Water Protection Division ("Director"), within a time specified by the Director, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Director, 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 reports, the Permittee shall promptly submit information addressing these deficiencies. For purposes of this Permit, reports that are required to be submitted "in writing", or in "written" format may be submitted electronically through email or facsimile, unless otherwise specified herein.
6. Inspection and Entry. The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by the law to:
 - a. Enter upon the Permittee's premises where the 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 the Facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
 - d. Sample or monitor at reasonable times any substances or parameters at any location for the purposes of assuring Permit compliance or as otherwise authorized by the SDWA.

7. Penalties. Any person who violates a requirement of this Permit is subject to administrative or civil penalties, fines and other enforcement actions under the SDWA. Any person who willfully violates conditions of this Permit may be subject to criminal prosecution.
8. Transfer of Permits. This Permit is not transferable to any person except after notice is sent on EPA Form 7520-7, approval is received from the Director, and the requirements of 40 C.F.R. § 144.38 are satisfied. The Director may require modification or revocation of this Permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA or its implementing regulations. The transferee is not authorized to inject under this Permit unless and until the Director notifies the transferee that the transferee is so authorized through issuance of a revised permit identifying the transferee as the Permittee.
9. Signatory Requirements.
 - a. The Permittee shall sign all reports required by this Permit and other information requested by the Director 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 officer or a ranking elected official.
 - b. A duly-authorized representative of the person 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, such as the position of plant manager, operator of a well or a well field, superintendent, or a position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and
 - 3) the written authorization is submitted to the Director.
 - c. If an authorization under Paragraph b. of this section is no longer accurate because a different individual or position 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 Director 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 a. or b. of this section shall make the following certification:

"I certify under the penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

10. Confidentiality of Information.

- a. In accordance with 40 C.F.R. Part 2 (Public Information) and § 144.5, any information submitted to the Director pursuant to this Permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2.
- b. In accordance with 40 C.F.R. §§ 2.304(f) and 144.5, EPA will deny any claims of confidentiality for the following information:
- 1) The name and address of any permit applicant or permittee.
 - 2) Information which deals with the existence, absence, or level of contaminants in drinking water.

11. State Laws. Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation.

12. Reapplication. If the Permittee wishes to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittee must submit a complete application for a new permit at least one hundred (100) days before this Permit's expiration date.

PART II

A. General

The Permittee shall sign and certify copies of all reports and notifications required by this Permit in accordance with the requirements of Section D.9 of Part I, and shall submit such information to the Director at the following address:

Ground Water & Enforcement Branch (3WP22)

Office of Drinking Water and Source Water Protection
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103

B. Monitoring Requirements

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The Permittee shall obtain representative sample(s) of the fluid to be analyzed and conduct analysis(es) of the sample(s) in accordance with the approved methods and test procedures provided in 40 C.F.R. § 136.3, or methods and test procedures otherwise approved by the Director. The Permittee shall identify in its monitoring records the types of tests and methods used to generate the monitoring data.
2. The Permittee shall continuously monitor and record surface injection pressure, annular pressure, flow rate and cumulative volume in the Injection Well beginning on the date the Injection Well commences operation and concluding when the Injection Well is plugged and abandoned. The Injection Well shall be equipped with an automatic shut-off device which would be activated in the event of a mechanical integrity failure. The Permittee shall compile the monitoring data monthly to complete the Annual Report referenced in paragraph II.D.7 of this Permit.
3. The Permittee shall monitor the nature and composition of the injected fluid by sampling, analyzing and recording the injected fluid for the parameters listed below at the initiation of the injection operation and every two years and whenever the operator anticipates a change in the composition of the injection fluid.

-pH	- Manganese
- Specific Gravity	- Total Dissolved Solids
- Specific Conductance	- Barium
- Sodium	- Hydrogen Sulfide
- Chloride	- Alkalinity
- Iron	- Dissolved Oxygen
- Magnesium	- Hardness

4. The Permittee shall verbally report, to the Director, analytical results for specific gravity that are greater than 1.05 within twenty-four hours of obtaining the analytical results. Within five business days, the substance of that report shall be reduced to writing and provided to EPA pursuant to the submission requirements of I.D.5 of this Permit.
5. The Permittee shall make a demonstration of mechanical integrity in accordance with 40 C.F.R. § 146.8 at least once every five years. In addition to the above requirement, the Permittee shall conduct a mechanical integrity test demonstration on any Injection Well where and when the protective casing or tubing is removed from the Injection Well, the packer is resealed, or a well failure is likely, or as requested by the Director. The Permittee may continue operation of the Injection Well only if the

Permittee has demonstrated the mechanical integrity of the Injection Well to the Director's satisfaction. The Permittee shall cease injection operations if a loss of mechanical integrity becomes evident or if the Permittee cannot demonstrate mechanical integrity.

6. The Permittee shall perform all environmental measurements required by the permit, including, but not limited to; measurements of pressure, temperature, mechanical integrity (as applicable) and chemical analyses in accordance with EPA guidance on quality assurance.

C. Record Retention

1. The Permittee shall retain records of all monitoring and other information required by this Permit, including the following (if applicable), for a period of at least five years from the date of the sample, measurement, report or application, unless such records are required to be retained for a longer period of time as specified by this Permit. The Director may extend this record retention time period at any time. If the Director extends the record retention time period, the Permittee shall comply with the new record retention time period.
 - a. All data required to complete the Permit Application form for this Permit and any supplemental information submitted under 40 C.F.R. § 144.31;
 - b. Calibrations and maintenance records and all original strip chart recordings for continuous monitoring instrumentation;
 - c. Copies of all reports required by this Permit;
2. The Permittee shall retain records concerning the nature and composition of all injected fluids, as listed in Paragraph II.B.3, above, of this Permit, until three years after the completion of any plugging and abandonment procedures. The Permittee shall continue to retain these records after the three year retention period unless he or she delivers the records to the Director or obtains written approval from the Director to discard the records.
3. Records of monitoring information shall include:
 - a. The date, exact place, and the time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. A precise description of both sampling methodology and the handling (custody) of samples;
 - d. The date(s) analyses were performed;
 - e. The individual(s) who performed the analyses;
 - f. The analytical techniques or methods used;

- g. The results of such analyses;

D. Reporting and Notification Requirements

1. Report on Permit Review. Within thirty (30) days of receipt of this Permit, the Permittee shall ensure that the person designated pursuant to Paragraph I.D.9 of this Permit reports to the Director that he or she has read and is personally familiar with all terms and conditions of this Permit.
2. Twenty-four Hour Reporting.
 - a. The Permittee shall report to the Director any noncompliance which may endanger, or has, endangered health or the environment. The Permittee shall provide such report orally (phone numbers: (215) 814-5445 or (215) 814-5469) within twenty-four hours from the time the Permittee becomes aware of the circumstances. The Permittee shall include the following information in the oral report:
 - 1) Any monitoring or other information which indicates that any contaminant may endanger, or has endangered an underground source of drinking water.
 - 2) Any noncompliance with a Permit condition, malfunction of the injection system which may cause, or has caused, fluid migration into or between underground sources of drinking water, or failure of mechanical integrity test demonstrations.
 - b. The Permittee shall provide a written submission within five (5) days of the time the Permittee becomes aware of the circumstances described in Paragraph II.D.2.a., above. 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, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
3. Anticipated Noncompliance. The Permittee shall give advance written notice to the Director of any planned changes in the permitted Facility or activity which may result in noncompliance with Permit requirements.
4. Other Noncompliance. The Permittee shall report all other instances of noncompliance to the Director in writing within ten (10) days of the time the Permittee becomes aware of the circumstances. The reports shall contain the information listed in Paragraph II.D.2 of this Permit.
5. Planned Changes. The Permittee shall provide written notice to the Director as soon as possible of any planned physical alterations or additions to the permitted Facility.
6. Conversion. The Permittee shall provide written notice to the Director thirty (30) days prior to the conversion of the Injection Well to an operating status other than an injection well.

7. Annual Report. The Permittee shall submit a written Annual Report to the Director summarizing the results of the monitoring required in Paragraph II.B, above, of this Permit. This report shall include monthly monitoring records of injected fluids, the results of any mechanical integrity test(s), and any major changes in characteristics or sources of injected fluids. The Permittee shall complete and submit this information with its Annual Report EPA Form 7520-11 (Annual Disposal Injection Well Monitoring Report). The Permittee shall submit the Annual Report to the Director no later than January 31st of each year, summarizing the activity of the calendar year ending the previous December 31st.
8. Plugging and Abandonment Reports and Notifications.
 - a. The Permittee shall notify the Director in writing at least forty-five (45) days before plugging and abandonment of any Injection Well as described in Paragraph III.C of this Permit. The Director may allow a shorter notice period upon written request.
 - b. The Permittee shall submit any revisions to the Plugging and Abandonment Plan attached to and incorporated into this Permit (Attachment 1) to the Director no less than forty-five (45) days prior to plugging and abandonment on EPA Plugging and Abandonment Form 7520-14. The Permittee shall not commence plugging and abandonment until it receives written approval of the revisions to the Plan from the Director.
 - c. To the extent that any unforeseen circumstances occur during plugging and abandonment of any Injection Well that cause the Permittee to believe the Plugging and Abandonment Plan should be modified, the Permittee shall obtain written approval from EPA of any changes to the Plugging and Abandonment Plan prior to plugging the Injection Well.
 - d. Within sixty (60) days after plugging any Injection Well, the Permittee shall submit a Plugging and Abandonment Report to the Director which shall consist of either:
 - 1) A statement that the Injection Well was plugged in accordance with the EPA-approved Plugging and Abandonment Plan; or
 - 2) Where actual plugging differed from the Plugging and Abandonment Plan previously approved by EPA, the Permittee shall provide to the Director an updated version of Form 7520-14 specifying the different procedures used.
 - e. The Permittee shall ensure that the Plugging and Abandonment Report is certified as accurate by the owner or operator and by the person who performed the plugging operation (if other than the owner or operator).
9. Compliance Schedules. The Permittee shall submit reports of compliance or noncompliance with, or any progress reports on, interim and final requirements

contained in any compliance schedule of this Permit no later than thirty (30) days following each schedule date.

10. Mechanical Integrity Tests. The Permittee shall notify the Director in writing at least thirty (30) days prior to conducting Mechanical Integrity Testing on the Injection Well.
11. Cessation of Injection Activity. After cessation of injection into the Injection Well for two years, the Permittee shall plug and abandon the Injection Well in accordance with the Plugging and Abandonment Plan [Attachment 1] unless:
 - a. The Permittee provides written notice to the Director that describes actions and/or procedures, including compliance with the technical requirements applicable to the Injection Well, that are necessary to ensure that the Injection Well will not endanger any USDW during any period of temporary abandonment, unless waived, in writing, by the Director;
 - b. The Permittee receives approval from the Director that the actions and/or procedures described in the notice are satisfactory; and
 - c. The Permittee implements such EPA approved actions and/or procedures.

E. Mechanical Integrity

1. Standards. The Permittee shall maintain the mechanical integrity of the permitted Injection Wells pursuant to 40 C.F.R. § 146.8.
2. Request from Director. The Director may by written notice require the Permittee to demonstrate mechanical integrity of the Injection Well at any time during the term of this Permit and the Permittee shall comply with the Director's request.

PART III

A. Construction Requirements

1. Confining Zone. Notwithstanding any other provision of this Permit, the Permittee shall inject through the Injection Well only into a formation which is separated from any Underground Source of Drinking Water by a confining zone, as defined in 40 C.F.R. § 146.3, that is free of known open faults or fractures within the Area of Review, as defined at 40 C.F.R. § 146.3.
2. Casing and Cementing. The Permittee shall construct and maintain:
 - a. casing and cementing in the Injection Well to prevent the movement of fluids into or between underground sources of drinking water and in accordance with 40 CFR §§ 146.22 and 147.1955(b);
 - b. casing and cement designed for the life expectancy of the well;

- c. surface casing in the Injection Well from the ground surface to a depth of approximately 708 feet, and at least 50 feet below the base of the lowermost USDW;
 - d. cement in the entire length of the surface casing in the Injection Well back to the surface;
 - e. isolation of the injection zone by placing long string casing from the surface to the top of the injection zone and cement this casing from the top of the injection zone to a minimum of 100 feet above the injection zone; and
 - f. the Injection Well with a tubing string with packer set inside the long string casing.
3. Logs and Tests. In accordance with 40 C.F.R. § 146.22(f), the Permittee shall prepare logs and perform tests as follows during the drilling and construction or rework of the Injection Well: electric, gamma ray and caliper logs in the open hole, a cement bond, temperature or density log on the surface casing (if cement returns are not achieved), and a cement bond log/variable density log on the long string casing. The Permittee shall submit to the Director, for all Injection Wells, cement records, a narrative report that interprets the well log(s) and test results, which specifically relate to the results of the cementing operation, and a detailed description of the rationale used to make these interpretations. The narrative report shall be prepared by a knowledgeable log analyst and submitted to the Director. The Director may prescribe additional logs or waive logging requirements in the future should field conditions so warrant.
4. Mechanical Integrity. The Permittee is prohibited from conducting injection operations in any Injection Well until it demonstrates: (1) the mechanical integrity of the Injection Well in accordance with the provisions of Condition D.2. of Part II of this Permit; and (2) the Permittee has received notice from the Director that such a demonstration is satisfactory in accordance with Condition D.2 of Part II of this Permit.
5. Corrective Action. The Permittee is prohibited from conducting injection operations in any Injection Well until it has completed corrective action by plugging and abandoning any "abandoned wells", as defined at 40 C.F.R. § 146.3, located within the one-quarter mile area of review that could provide conduits for fluid migration into USDWs. If an abandoned well is discovered within the area of review after injection commences, the permittee shall notify the Director upon discovery, and within five (5) days of such discovery, the Permittee shall submit to the Director for approval a plan for corrective action, consistent with the requirements of 40 C.F.R. Parts 144-147.

B. Operating Requirements

1. Injection Formation. The Permittee shall inject only into the Lower Mississippian Weir Sandstone in the subsurface intervals between approximately 5127 feet to 5183 feet below surface elevation.

2. Injection Fluid. The Permittee shall not inject any hazardous substances, or hazardous waste, as defined by 40 C.F.R. Part 261 or any other fluid, other than produced fluid obtained from Permittee's production operations.
3. Injection Volume Limitation. Injection volume shall not exceed 55,000 barrels per month.
4. Injection Pressure Limitation. The permittee shall not exceed a surface injection pressure maximum of 1416 psi and bottom hole pressure of 3747 psi. This pressure calculation is based on the specific gravity of the injection fluid not exceeding 1.05. If the specific gravity of the injection fluid is greater than 1.05, the permittee shall reduce the surface injection pressure by an appropriate amount such that the bottom hole pressure does not exceed 3747 psi. The permittee is prohibited from injecting at a pressure which initiates new fractures or propagates existing fractures in the confining zone adjacent to USDWs or which causes the movement of injection or formation fluids into an USDW.
5. The Permittee is prohibited from injecting between the outermost casing protecting USDWs and the well bore, and also from injecting into any USDW.

C. Plugging and Abandonment

1. The Permittee shall plug and abandon the Injection Well in accordance with the approved plugging and abandonment plan in Attachment 1 hereto.
2. The Permittee shall conduct plugging and abandonment in such a manner that fluids shall not be allowed to move into or between USDWs.

D. Financial Responsibility

1. The Permittee shall maintain financial responsibility and resources to close, plug and abandon the underground injection well in accordance with 40 CFR Section 144.52(a)(7) in the amount of at least \$35,000. If the circumstances regarding the acceptability of the Surety Bond and Standby Trust Agreement submitted to EPA to demonstrate financial responsibility should change, the Permittee shall provide advance notification to the Director, and the Director may seek an alternative financial demonstration from the Permittee.
2. The Permittee shall not substitute an alternative demonstration of financial responsibility for that which the Director has approved, unless he or she has previously submitted evidence of that alternative demonstration to the Director and the Director notifies him or her that the alternative demonstration of financial responsibility is acceptable. The Director may require the Permittee to submit a revised demonstration of Financial Responsibility if the Director has reason to believe that the original demonstration is no longer adequate to cover the costs of plugging and abandonment.

Attachment A

Area of Review

INTRODUCTION AND AREA OF REVIEW

ATTACHMENT

A

1.0 INTRODUCTION

EnerVest Operating, LLC (EnerVest) in Clintwood, Virginia is submitting this permit renewal application for the permitted, undrilled VWD-539572 Class II-D oil and gas production fluid disposal well. The original application was submitted and approved in Summer/Fall 2008 and permit plans remain unchanged at the time of renewal.

EnerVest obtained Range Resources' operations in 2016, prior to that acquisition; Range Resources had acquired Equitable Production Company –which first permitted the VWD-539572 being renewed. During the uncertainty of company transitions, the permitted well was never drilled; however, as stability in the market is expected to return the prospect of drilling the VWD-539572 is also more likely.

The VWD-539572 is permitted as a new drill, not a conversion of existing well, in the Cane Creek Area of Dickenson County, Virginia. This permit renewal application will present the necessary information and supporting documentation for renewing the existing permit for the undrilled well.

2.0 AREA OF REVIEW

The fixed radius of ½ miles from proposed well VWD-539572 was used for the area of review. All information presented and mapping provided are based upon the ½ - mile radius using Well VWD-539572 as the center.

On some selective mapping, a radius of one mile, using Well VWD-539572 as the center, will be the area of review as required by this permit application.

2,130'

Well Coordinates: (Geographic N27)
37.070186' -82.174016'

Latitude 37° 05' 00"

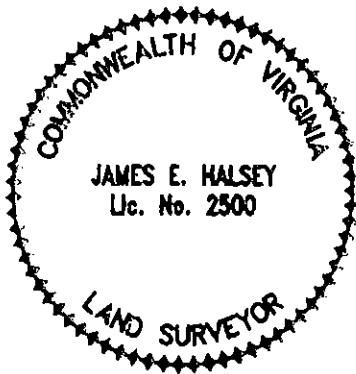
82° 10' 00"

4,800'

Lease No. 906889L
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources-Pine Mountain, Inc. - oil, gas & CBM

○ WVD-539572

Heartwood Forestland Fund IV, L.P. - surface



Well Coordinates: (VA St. Plane S. Zone,
NAD 83, Calculated from CCC coordinates)
N 3,570,006 E 10,411,330

Well Coordinates: (VA St. Plane S. Zone,
NAD 27, Calculated from CCC coordinates)
N 289,129 E 928,344

Well Coordinates: (Clinchfield Coal Co.)
S 10,837.18 E 61,081.08

Well elevation determined by
GPS survey from Mon. Barn

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER WVD-539572
TRACT NO. Lease No. 906889 / T-428 ELEVATION 2,186.13' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervin SCALE 1" = 400' DATE 4-07-2008

This Plat is a new plat x; an updated plat ; or a final location plat

+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
~~Licensed Professional Engineer or~~ Licensed Land Surveyor

Attachment B

Review Area and Well Information

REVIEW AREA AND WELL INFORMATION

ATTACHMENT

1.0 AREA OF REVIEW MAPPING

Drawing 1 identifies the area within a one mile and ¼-mile radius from the proposed renewal UIC well and all coalbed methane wells/conventional wells existing within area. Additional drawings include active mining within 1-mile of proposed UIC well; inactive mining and water monitoring points within 1-mile of proposed UIC well, and abandoned underground mine extents within 1-mile of proposed UIC well.

2.0 PROPOSED UIC WELL VWD-539572 – EPA # VAS2D697BDIC

EnerVest proposes to renew the permit for a new well for the express purpose of the underground injection of fluids from its Virginia operations' conventional and coalbed methane (CBM) production wells. The primary fluid to be injected is the connate waters associated with the production of methane from EnerVest's CBM wells

Proposed well VWD-539572 will be drilled, completed, and operated as a Class II-D production fluid disposal well. The primary formation to be explored for the production fluid is the Weir formation. However the proposed well will be drilled through the deeper Berea formation. Should the testing of the Weir formation render the Weir unacceptable for the disposal of the production fluids, the Berea formation will be tested. If the Weir formation is proven acceptable, no further formations will be tested. If the Berea formation is tested, the Weir formation will be plugged and isolated from any fluid injections. If both formations are found unacceptable for the disposal of production fluids, the total well bore/well will be plugged and abandoned, as specified in Attachment Q.

EnerVest operates seven (7) existing Class II-D production fluid disposal wells in the Nora Field and have two (2) permitted undrilled UIC wells. All of these wells utilize the Weir Formation for disposal zone. Based on EnerVest's extensive knowledge of the various oil and gas formations underlying the Nora Field and previous experience with the seven existing wells, the Weir formation has been selected as the production fluid injection zone for the proposed UIC well VWD-539572.

The proposed well will be located in Dickenson County, Ervinton District, and in the Cane Creek Watershed.

REVIEW AREA AND WELL INFORMATION

ATTACHMENT

B

3.0 SURROUNDING WELLS

Within the one (1) mile radius of proposed UIC Well VWD-539572, a total of nineteen (19) wells exist, based upon EnerVest and Virginia Division of Gas and Oil records in May 2018. These 19 wells consist of:

- **Coal Bed Methane Wells** – sixteen of the wells are coalbed methane (CBM) wells ranging in depth from 1,787 to 2,531 feet and are extracting methane gas from the shallow coal seams. Two (2) of the CBM wells are within ¼-mile of the proposed renewal UIC well VWD-539572. The CBM wells are identified further in Appendix C.
- **Underground Injection Control Well** – One (1) UIC well is active in the ½-mile radius of the proposed renewal well. This Class II-D UIC well is identified as:
 - VWD-535517 (EPA Permit VAS2D932BDIC): injection formation Weir (4,468 to 4,524 feet below ground surface). Located approximately 0.5 mile northeast of the proposed renewal well.
- **Conventional Natural Gas Wells** – two conventional wells exist within 1-mile radius of VWD-539572. They range in depth from 5,080 feet in the Cleveland shale to 8,730 feet in the Huron horizontal well. No plugged or abandoned wells are known to exist within the ¼-mile or 1-mile radius of the proposed UIC well.

The intended injection zone of proposed renewal UIC well VWD-539572 is the Weir (top of Weir is projected at 4,957 feet) formation, with the Berea being the secondary injection zone (top of Berea is projected at 5,611 feet). The deepest coalbed methane well within the one mile radius is 2,531 feet, which provides for a minimum separation of 2,426 feet from the top of the Weir to the deepest CBM in the one-mile area of review.

REVIEW AREA AND WELL INFORMATION

ATTACHMENT

4.0 Water Sources

During the surficial survey of the area within ¼-mile radius of the proposed UIC Well VWD-539572, no drinking water users or supplies were found. Further, a search of state records indicated no drinking water sources within the ¼-mile radius. Current Virginia Division of Gas and Oil regulations would require an additional survey prior to commencing drilling the proposed well.

5.0 MINING ACTIVITY

The area within ¼-mile radius of proposed UIC Well VWD-539572 is being actively surface mined. This extensive surface mining was evident during field reconnaissance and documented by Virginia Division of Mine Land Reclamation (DMLR) files and mapping.

One of the conditions of approval for EnerVest to locate the proposed UIC well and the connecting injection fluids pipeline was mining had to be completed before EnerVest could initiate its drilling and pipeline activities. Reclamation of the site includes a post-mine land use revision being approved, highwall elimination and backfilling be completed, and a hold-harmless agreement between the mining company and gas company in the event the reclaimed surface mine area is damaged by EnerVest's actions.

During initial permitting, documentation was provided confirming all surface mining activities that could have an impact on the drilling and operation of proposed UIC Well VWD-539572 will have been completed and the disturbed surface mine area reclaimed and stabilized. Therefore, the active surface mining of the area within ¼-mile radius will have no impact upon the proposed UIC Well VWD-539572.

As reported by Virginia DMLR, the total area underlying the ¼-mile radius around the proposed UIC well has been deep mined. The deep mining is completed and deep mine properly closed and sealed. The limits of these deep mine activities is noted on the map included.

The deep mining occurred in the Tiller Seam at a depth of approximately 675 feet below ground surface. The Tiller Seam was deep mined by Clinchfield Coal Company's Moss 3A mines. The Tiller mine was room and pillar mining, thus solid blocks of coal (the pillar) are spaced on an approximate 80 by 80-foot grid. With

REVIEW AREA AND WELL INFORMATION**ATTACHMENT**

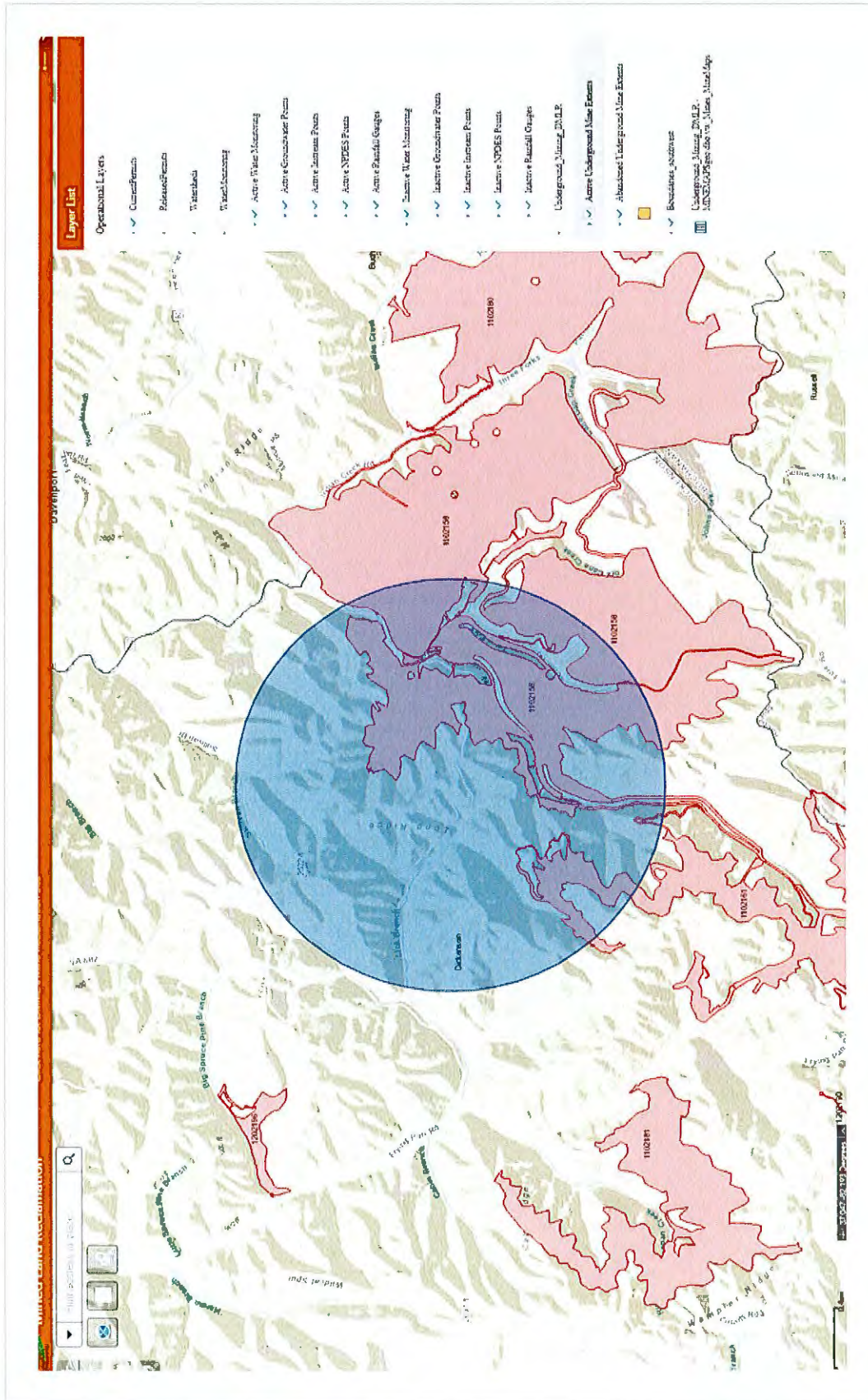
the assistance of the current coal mining operator, EnerVest has located the proposed UIC Well VWD-539572 overtop of one of the solid blocks of coal pillars. With this location, the well bore will pass through the solid block of coal encountering no voids or mined workings. The proposed well will be cased from below the deepest commercial minable coal seam to the well's ground surface, thus sealing not only the deep mined area but other coals and strata along this interval. This plan of drilling through the pillar of the closed and sealed mine was reviewed with Virginia's Department of Mines, Minerals, and Energy and approved by letter dated April 14, 2008.

6.0 REGIONAL STRUCTURE AND FAULTS

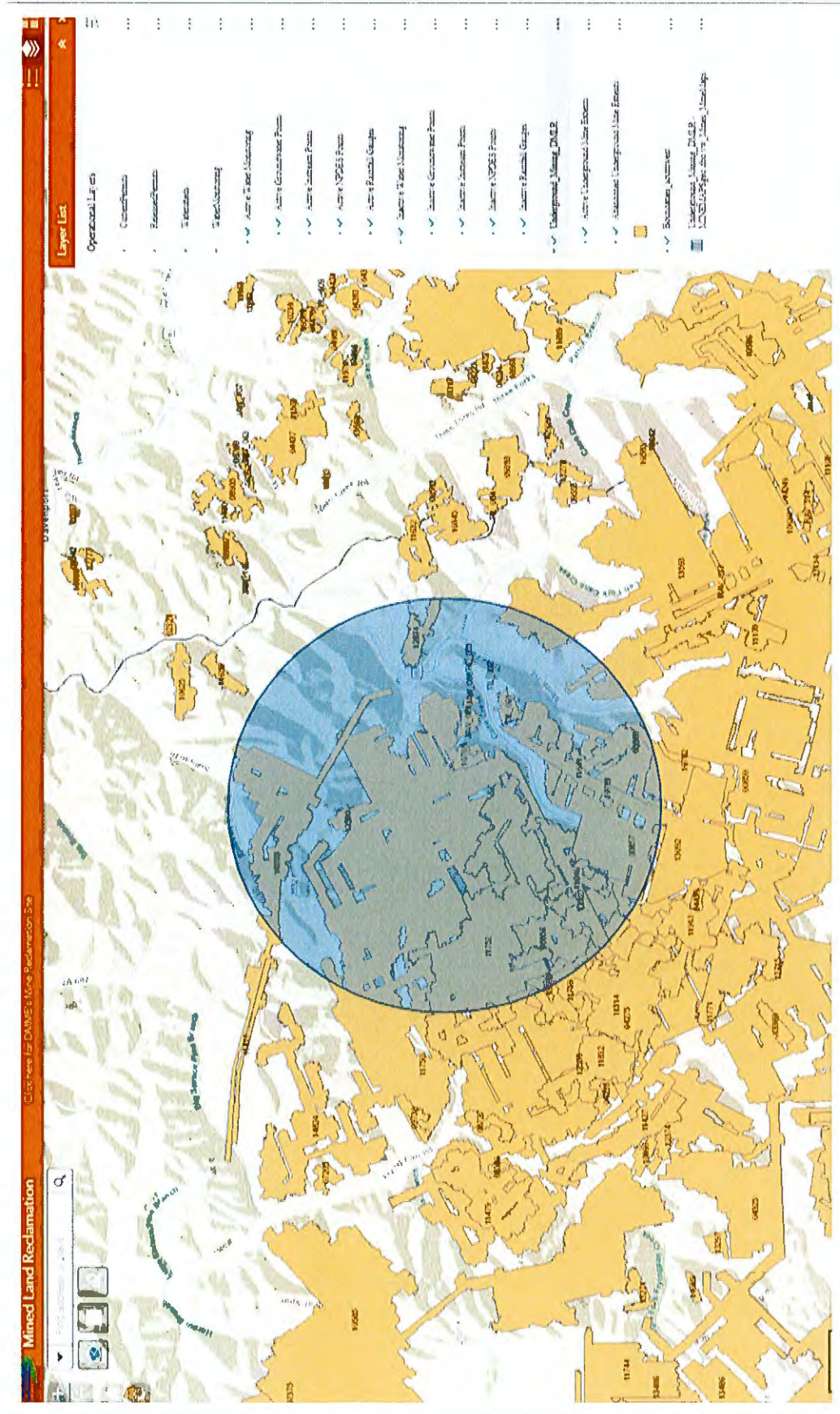
Site/Regional Structure – Proposed UIC Well VWD-539572 is located along the northwestern limb of the Sourwood Anticline, a broad, gentle fold whose axis is located in Russell County, Virginia to the east. Bedrock aspect should exhibit a subtle west to northwesterly dip (Meissner, 1978). In addition, the rocks of the Nora and Duty quadrangles have an average dip of 0.6 degrees toward the northwest, which is indicative of the presence of a subtle structural high with approximately 50 feet of closure that generally corresponds to a northeast trending anticlinal feature recognized in the underlying Mississippian age rocks crossing the northwest part of the Nora quadrangle (Diffenbach, 1989).

Faulting – Proposed UIC Well VWD-539572 is located nearly 3.1 miles to the southwest of the Russell Fork Fault, a steeply dipping, right lateral (primarily) transcurrent fault believed to have a lateral displacement of up to six (6) miles. Based on review of published cross sections (Meissner, 1978), the Pine Mountain Overthrust underlies the region at an approximate depth of 6,200 feet below drainage. Additional faulting in the area of the Duty quadrangle appears to be limited to indications of thrust faulting within several of the Pennsylvanian coal seams of this area, in response to the Pine Mountain Overthrust (Diffenbach, 1989).

ACTIVE SURFACE MINING WITHIN 1-MILE RADIUS OF PROPOSED VWD-539572



ABANDONED UNDERGROUND MINING EXTENTS WITHIN 1-MILE RADIUS OF VWD-539572



Attachment C

Existing Well Records
within
One-Mile Radius of the Proposed UIC Well

EXISTING WELLS IN AREA OF REVIEW

ATTACHMENT

C

1.0 WELL DATA

Provided by Appendix C is a summary of well data for a one (1) mile radius from the proposed renewal UIC Well VWD-539572. These wells are located by Drawing 1. Appendix C also provides a reprint of the well drilling and completion reports for those wells within one-mile of the proposed UIC Well.

2.0 WELLS WITHIN AREA OF STUDY

The surveyed location of proposed UIC Well VWD-539572 is shown in Drawing 1. As shown, there is two (2) CBM wells within the ¼-mile radius of the proposed UIC well renewed by this application. No other wells (conventional gas or coalbed methane – active, abandoned, or plugged) are known to exist of record within the ¼-mile radius.

3.0 CORRECTIVE ACTION PLAN

The production fluid will be injected into the proposed UIC Well VWD-539572 at less than breakdown and treatment pressures of the Weir Formation. The maximum surface injection pressure will be 1,416 psig (80% of the calculated maximum wellhead pressure, as provided by Attachment) or less. Should this pressure or other operating and injection problems be encountered, the following will be undertaken:

- Immediately stop all injections and allow well to stabilize.
- If well cannot be stabilized and problems encountered cannot be corrected to the satisfaction of the state and federal agencies, proposed UIC Well VWD-539572 will be plugged, as outlined in Attachment Q.

4.0 SURFACE OWNERS

The surface owner within the ¼-mile radius of proposed UIC Well VWD-539572 are listed below.

EXISTING WELLS IN AREA OF REVIEW

ATTACHMENT

C

One Quarter-Mile Radius Surface Ownership	
Owner Name and Address	Tax Map ID
Heartwood Forest Land Fund IV, L.P. c/o The Forestland Group, LLC 19045 Stone Mountain Road Abingdon, VA 24210	125A-709 #3251

The surface owner information was obtained from the Dickenson County, Virginia Assessor's records and EnerVest land department records.

Attachment E

Underground Drinking Water Sources

UNDERGROUND DRINKING WATER SOURCES

ATTACHMENT

E

1.0 UNDERGROUND DRINKING WATER SOURCES

No changes have occurred in drinking water sources since the original permit application. No water wells, springs, or other drinking supplies are located within ¼-mile radius of VWD-539572. No drinking water users exist within the radius. A search of state and county records confirm no occurrences of drinking water sources.

2.0 GROUNDWATER DEPTHS

Groundwater aquifers have been found to exist during the drilling of existing UIC Well VWD-535517, 0.5 miles from the proposed UIC Well VWD-539572. The driller recorded two fresh water zones, the first at 64 feet and the second at 96 feet below ground surface. No other information was recorded about these zones by the driller. The driller also recorded a damp zone at 395 feet below ground surface, with no measurable flow.

The CBM wells within ¼-mile, VC-537799 and VC-537802, had no groundwater zone encountered with a daily report showing a wet zone at 604 feet with no measureable flow (VC-537799) and a ½ inch rate fresh water zone at 615 feet below ground surface and wet zone with no measureable flow at 1,560 feet below ground surface (VC-537802).

Conventional wells within 1-mile had freshwater at 62 feet below ground surface (VH-530138) and a driller's report of a wet zone with no recordable flow at 30 feet (V-530051).

3.0 GROUNDWATER PROTECTION

As part of proposed UIC Well VWD-539572's construction, a groundwater and coal-protection casing is to be installed. The groundwater and coal-protection casing extends from the ground surface to a depth of 2,041 feet. This 8 5/8-inch steel groundwater and coal-protection casing will be cemented continuous from 2,041 feet to ground surface, sealing the well's operations from the surrounding groundwater and coal seams.

Attachment G

Geological Information
Proposed Class II-D UIC Well

GEOLOGICAL INFORMATION**ATTACHMENT****G****1.0 INJECTION ZONE**

The selected formation to receive the production fluids is known geologically as the Mississippian Weir formation. The Weir formation is generally divided into two (2) intervals. The lowermost is a dark organic shale approximately 400 feet in thickness. The uppermost portion of the Weir Formation consists of a very fine-grained, dirty siltstone, which is approximately 100 to 150 feet thick. The dirty siltstone portion of the Weir formation is the planned injection zone and is projected to have an average porosity of five (5) percent, with a water saturation of approximately 35 percent. The water saturation is due to bound water found in the clay constituents of the Weir formation. Generally, no free formation water is associated with the Weir formation. The top of the Weir formation is projected to be 4,959 feet below ground surface, with the bottom of the Weir formation projected at 5,544 feet below ground surface. The targeted area of injection is anticipated to be from 5,127 to 5,183 feet below ground surface.

2.0 CONFINING ZONES

Laying directly on top of the Weir formation is the Mississippian Big Lime formation consisting of a dense carbonate, 748 to 750 feet thick. Situated below the Weir formation is a 67-foot thick zone of dense, dark, highly organic "Sunbury" shale, and a 13-foot thick section of Mississippian Berea formation, a fine-grained dirty siltstone. The bottom of the Big Lime formation is located at 4,959 feet below ground surface and the top of the Berea formation is located 5,611 feet below ground surface.

Figure 1 provides a "Weir Isopach" using the proposed UIC well location as the map's center. Figure 2 provides a "Structural Map" using the top of the Berea formation as the datum and the proposed UIC well location as the map's center. Figure 3 provides a "Structural Map" using the base of the Big Lime formation as the datum and the proposed UIC well location as the map's center. Figures 1, 2, and 3 are provided at the end of this Attachment.

3.0 FRACTURE PRESSURES

The fracture pressure for proposed UIC Well VWD-539572 is based on the nearest well completed in the Weir formation. This well is located approximately 0.5 miles to the northeast of this proposed UIC well. The existing well is identified as VWD-535517 UIC well (USEPA Permit No. VAS2D932BDIC). Only the Weir formation was completed in UIC Well VWD-535517, with the following pressures reported by the UIC well's Completion Report on file in the Commonwealth of Virginia, Department of Mines, Minerals and Energy, Division of Gas and Oil Office:

GEOLOGIC INFORMATION

G

☐ **Fracture (breakdown) and treatment pressures**
(surface pressures)

Weir formation

Fracture pressure	-	1,401 psig
Treatment Pressure (maximum)	-	2,087 psig

☐ **Instantaneous shut-in pressures**
(surface pressures)

Weir formation	-	1,941 psig
----------------	---	------------

With the completion of the existing UIC Well VWD-535517 in the Weir formation and its relatively close location to proposed UIC Well VWD-539572, the anticipated fracture pressure of the Weir formation should be similar at 1,400 psig (surface pressure) and the instantaneous shut-in pressure should be 1,940 psig (surface pressure).

4.0 STRATIGRAPHIC COLUMN







A stratigraphic column has been developed for proposed UIC Well VWD-539572, using the Completion Report for existing UIC Well VWD-535517 located approximately 0.5 miles to the northeast of the proposed UIC well. The proposed VWD-539572 stratigraphic column is provided on the following page.

GEOLOGIC INFORMATION**G**

Stratigraphic column proposed UIC Well VWD-539572

Formation	Depth in Feet (From Surface)		Formation Thickness (Feet)
	Top	Bottom	
Sand & Shale	0.00	209	209
Coal	209	210	1
Sand & Shale	210	362	152
Coal	362	365	3
Sand & Shale	365	458	93
Coal	458	462	4
Sand & Shale	462	655	193
Coal	655	660	5
Sand & Shale	660	2,960	2,300
Ravencliff	2,960	3,132	172
Little Stone & Shale	3,132	3,768	636
Maxon	3,768	4,139	371
Little Lime	4,139	4,211	72
Big Lime	4,211	4,959	748
Weir & Weir Shale	4,959	5,544	585
Sunbury	5,544	5,611	67
Berea	5,611	5,624	13
Cleveland	5,624	5,694	70
Estimated Total Depth	5,694	--	--

SWD-539572 WEIR NET PAY ISOPACH MAP

-  DUAL
-  GAS
-  INJ
-  O&G
-  OIL
-  CBM

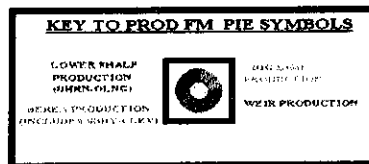
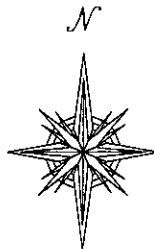
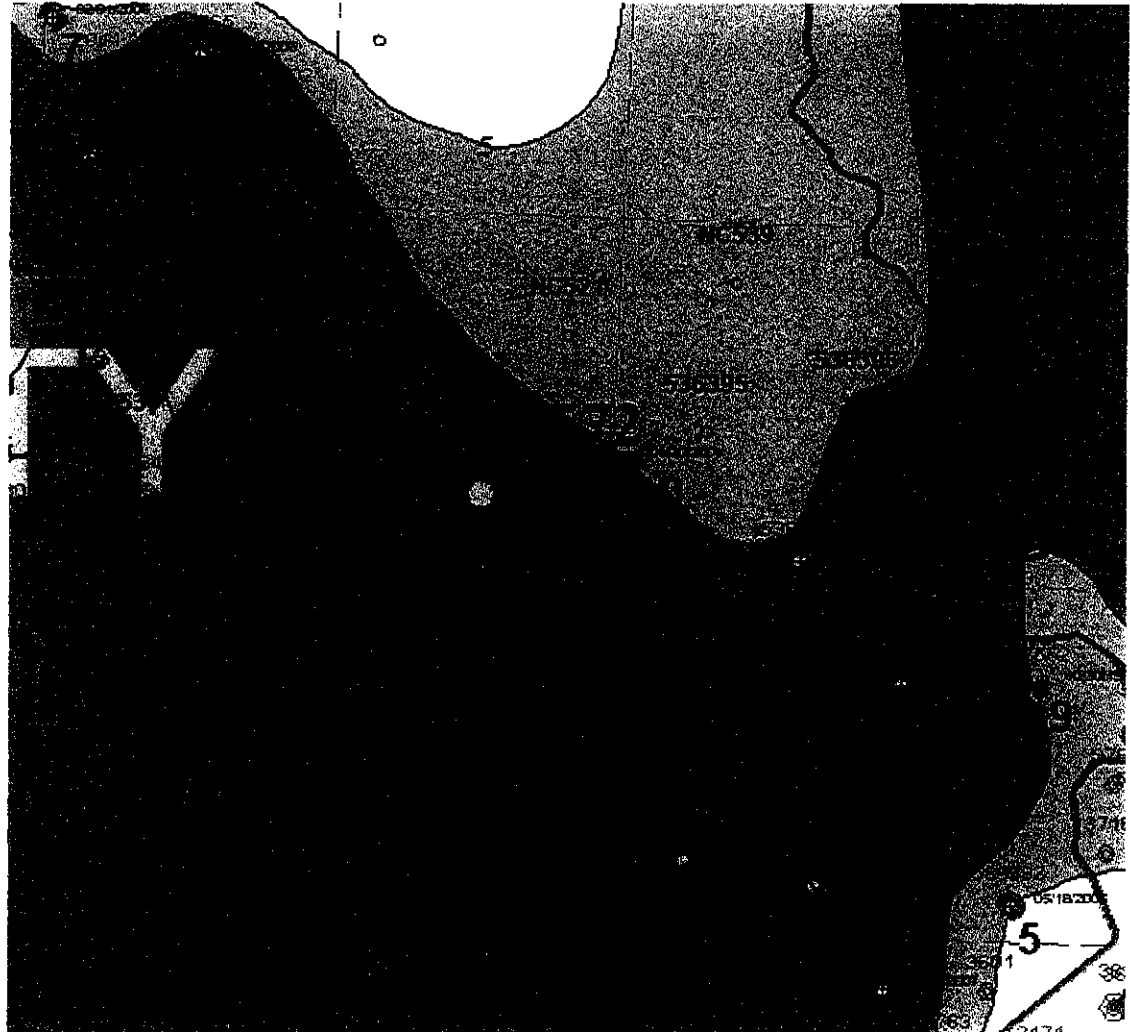








FIGURE 1

EQUITABLE PRODUCTION



SWD-539572 UPPER CONFINING ZONE (Base Big Lime) MAP

-  DUAL
-  GAS
-  INJ
-  O&G
-  OIL
-  CBM

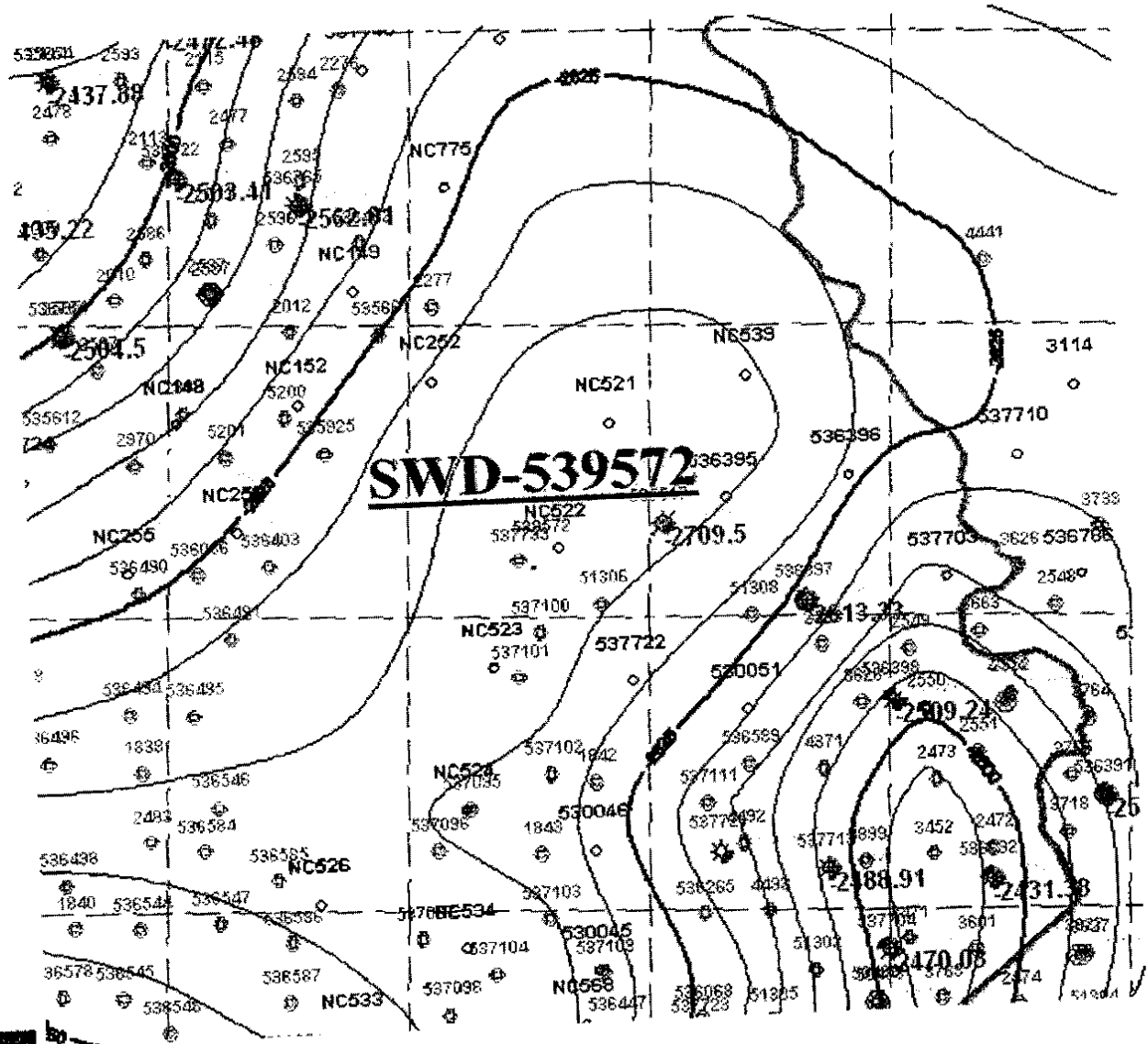
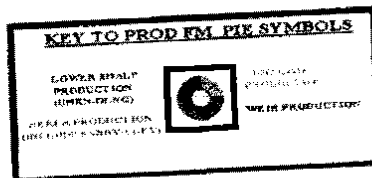
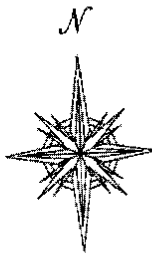


FIGURE 3
**EQUITABLE
PRODUCTION**

Attachment H

Operation Information

OPERATION INFORMATION**ATTACHMENT****H****1.0 OPERATION DATA**

The injection fluid to be injected into Well VWD-539572 will be treated production fluids from EnerVest's Virginia Operations. No other fluids for disposal will be injected in this well.

2.0 FLOW RATES

The injection fluid volume will not exceed 45,000 barrels per month.

3.0 INJECTION PRESSURES

Provided by the report of completion of well work for existing UIC Well VWD-535517 filed with the Virginia Oil and Gas Inspector at the Abingdon, VA office on July 14, 2005 and the injection fluid analysis, as reported in this attachment, the following information was reported for the proposed injection zone:

➤ **Weir Formation**

Existing Well UIC VWD-535517	
Breakdown pressure	1,401 psig
Treatment pressure	2,087 psig
Average injection pressure	2,044 psig
Maximum injection pressure	2,087 psig
Instantaneous shut-in pressure	1,941 psig

Proposed UIC Well VWD-539572	
Top perforation (from ground surface)	5,127 feet
Specific gravity of injection fluids	1.09 (from 2017 sample Use 1.10)

The maximum injection pressure for the proposed UIC well VWD-539572 was established at 1,416 psig (surface pressure). This maximum injection pressure was based on the original calculations and applied safety factor.

OPERATION INFORMATION

ATTACHMENT

H

4.0 INJECTION FLUID

The injection fluid to be injected into Well VWD-539572 (VAS2D697BDIC) will be treated production fluids from EnerVest's Virginia Operations. No other fluids for disposal will be injected in this well.

Annulus fluid will be a mixture of water and commercially available Packer Fluid, which contains a biocide, corrosion inhibitor, and oxygen scavenger.

The following Certificate of Analysis is the most recent fluid sample (2017) from the VWD-535517 active UIC operation.



ENVIRONMENTAL MONITORING, INCORPORATED
 ENVIRONMENTAL CONSULTANTS ▲ ANALYTICAL LABORATORIES
 5730 INDUSTRIAL PARK RD. ▲ NORTON, VIRGINIA 24273 ▲ 276/679-6544

Certificate of Analysis

Page: 1 of 1

Client Name: ENERVEST OPERATING, LLC
 Address: 408 W MAIN STREET
 ABINGDON, VA 24210

Report Date: 05/12/17

Lab Sample No.: **1685010**

Client No.: 3096

EMI Project No.: 160

Sample Identification: V-535517

Date Collected: 05/03/17

Time Collected: 1040

Site Description: INJECTION WELL MONITORING

Sample Matrix: AQ

Collected By: BUCHANAN, WILLIAM

Parameter	Sample Result	Units	MDL	RL	Method	Date Analyzed	Time Analyzed	Analyst
Alkalinity	122	mg/l CaCO ₃	4.00	4.00	SM 2320B-4c-2011	5/4/2017	900	CNS
Chloride	75976	mg/l	1000	1000	SM 4500-Cl B-2011	5/5/2017	1436	THR
Conductivity	128000	umhos/cm	10.0	10.0	SM 2510B-2011	5/5/2017	1433	CLN
Dissolved Oxygen (Not NELAP)	3.72	mg/l			SM 4500-O G-2011	5/3/2017	1040	FLD
Hardness, Total	24900	mg/l CaCO ₃	100	100	SM 2340 C-2011	5/4/2017	953	CNS
pH (Not NELAP)	6.80	STD			SM 4500-H+B-2011	5/3/2017	1040	FLD
Specific Gravity (Not NELAP)	1.09				SM 2710 F-2011	5/4/2017	1105	CNS
Sulfide	BDL	mg/l	1.00	1.00	SM 4500 S2-F-2011	5/4/2017	1310	THR
Total Dissolved Solids	104785 SV	mg/l	1.00	1.00	SM 2540 C-2011	5/4/2017	1027	JRS
Barium, Total	1656	mg/l	0.070	3.00	EPA 200.7	5/5/2017	1246	AWM
Iron, Total	48.4	mg/l	0.0091	0.050	EPA 200.7	5/4/2017	1843	AWM
Magnesium, Total	1430	mg/l	1.19	50.0	EPA 200.7	5/4/2017	1533	AWM
Manganese, Total	1.65	mg/l	0.0056	0.050	EPA 200.7	5/4/2017	1843	AWM
Sodium, Total	32010	mg/l	7.82	50.0	EPA 200.7	5/4/2017	1356	AWM

To the best of our knowledge and belief, the collection, preservation, and analysis of all parameters represented by this report have been determined to comply the requirements as specified in 40 CFR, Part 136.

This report may not be reproduced except in full, without the written approval of the laboratory.



VA Laboratory ID#: 460038

WV Laboratory ID#: 105

KY Laboratory ID#: 98012

EPA Laboratory ID#: VA00010

The release of this report is authorized by:

R. J. Porter

Technical Director

Flow if Available (GPM):

Temp. if Available (C): 22.0

Depth if Available (Ft):

Analysis Package Code: BF3

Type of Sample: Grab

BDL = Below Detection Limit

FLD = Field Technician

MR = Multiple analytical runs were used for this result

IV = Flag indicates Insufficient Sample Volume

SV = Sample volume indicated by method not used

AB = Analyte found in Method Blank

MSF = Matrix Spike Failure - Method in Control

EV = Estimated Value: Outside of calibration range

J = Flag indicates estimated value below Report Limit

T = Results indicate possible toxicity which is expected to influence reported value.

NA = A result for this analyte is not available.

MI = Matrix Interference - Final result may not be representative.

BQ = Batch QC Outside Acceptable Range

HE = Parameter Hold Time Exceeded

FC = Failure to Comply Current SOP

R = Sample results rejected because of gross deficiencies in QC or method performance.

QC = Duplicate did not meet method criteria, method process in control

P = Sample was not properly preserved for this parameter.

PSCN

Rev-03-06-15

Attachment M

Construction Details

CONSTRUCTION DETAILS

ATTACHMENT

M

1.0 CONSTRUCTION DETAILS

Drawing 07-475-02 provides a schematic layout of the minimum proposed surface facilities, which outlines fluid handling, storage, treatment, and fail-safe controls.

Figure 4 (located at the end of Attachment L) provides an illustration of the proposed UIC well's proposed construction as a Class II-D production fluid disposal well. A review of this schematic diagram will provide the following information:

- ☐ A 2 3/8-inch x 5 1/2-inch Weatherford Arrowset 1X Packer System (or equivalent) will be set at 4,925 feet. The packer will be set on the 2 3/8-inch injection tubing.
- ☐ The packer will be equipped with a two-way shut-off valve that has an on/off seal connector.
- ☐ The annulus area between the 2 3/8-inch injection tubing from the top of the packer and 5 1/2-inch casing will be filled to the surface with a neat mixture of fresh water and Halliburton ANGARD having a density of approximately 8.74 lb/gal (a copy of Halliburton's Material Safety Data Sheet for the inhibitor is provided in Attachment L).
- ☐ A tubing head will be installed to seal the 2 3/8-inch injection tubing, 5 1/2-inch casing annulus. A casing head will be installed to seal the 5 1/2-inch production casing and the 8 5/8-inch intermediate casing (piping) annulus. The heads will have pressure monitoring connections for the pressure recorders and the pressure switches, as outlined by Attachment O.

Attachment O

Well Failures

WELL FAILURES

ATTACHMENT

0

1.0 WELL FAILURES

The operation of proposed UIC Well VWD-539572 will be continuously monitored by recording charts or a digital recorder. This monitoring will consist of:

- ☐ Continuous pressure recording of the area between the 8 5/8-inch and 5 1/2-inch casings (fresh water and inhibitor area).
- ☐ Continuous pressure recording of the area between the 5 1/2-inch casing and 2 3/8-inch tubing (fresh water and inhibitor area).
- ☐ Continuous recording of the injection pressure and flow.

This monitoring data will provide a historical operation record for the well and should allow for detection of variances or failures within the well. Further, the well and the injection facilities will be equipped with fail-safe devices that will shutdown the operations for lack of fluid, pressure (low and high), and flows (low and high).

Should failures or shut-ins happen, all injection operations will be stopped "**IMMEDIATELY.**" No additional fluid will be pumped from the treatment facilities at existing UIC Well VWD-535517 to proposed Well VWD-539572. If the problem cannot be readily corrected or immediate danger exists that migration will occur, the following will be undertaken:

- ☐ Reduce and stabilize the fluid pressure in the proposed UIC well. Fluid may be returned to surface tanks for proper disposal at other permitted locations.
- ☐ With fluid pressure stabilized, the well will be plugged as outlined by Attachment Q.

2.0 MONITORING

The pressure at three (3) points and the injection fluid flow at one (1) point will be continuously monitored and recorded.

The pressure points are:

- ☐ Injection fluid pressure into the 2 3/8-inch injection tubing. Measurement point at the proposed UIC wellhead.

WELL FAILURES



- ☐ The area (annulus) between the outside of the 2 3/8-inch injection tubing and the inside of the 5 1/2-inch casing. Measurement point at the proposed UIC wellhead.
- ☐ The area (annulus) between the outside of the 5 1/2-inch casing and inside of the 8 5/8-inch casing. Measurement point at the proposed UIC wellhead.

The injection fluid flow point is:

- ☐ The pipeline flow just before the fluid is pumped into the well's 2 3/8-inch injection tubing measurement point at the proposed UIC wellhead.

As shown by Drawing 07-475-02, no relief valves are used to control the well's operation. Pressure switches and flow meter will be used to control the injection at the wellhead and to monitor the well's injection activities and well's operation. Pressure switches and flow meter at existing UIC Well VWD-535517 central treatment facility will control the fluid delivery pipeline to proposed UIC Well VWD-539572.

The following will occur at proposed UIC Well VWD-539572:

- ☐ If any pressure is recorded in excess of 60 psig by pressure switch PC-7 (5 1/2-inch and 8 5/8-inch annulus), the control valve on the injection fluid pipeline will close and sound an alarm. The injection will not re-start automatically but must be manually re-started after the problem is corrected.
- ☐ A pressure of 100 to 200 psig will be placed on the annulus area of the 2 3/8-inch and 5 1/2-inch piping. If pressure switch PC-6 records a pressure above 250 psig, the control valve will close and the alarm sounded. The system will not re-start automatically, but must be manually re-started after the problem is corrected.
- ☐ Pressure switch PC-7 monitors the pressure between the annulus of the 5 1/2-inch casing and the 8 5/8-inch casing.

WELL FAILURES

0

- ☐ Pressure switch PC-6 monitors the pressure between the annulus of the 2 3/8-inch injection tubing and the 5 1/2-inch casing. A positive pressure of 100 to 200 psig will be established in this annulus area. This positive pressure will be monitored by the pressure switch with a high pressure shutdown set at 250 psig and a low pressure shutdown at 5 psig.
- ☐ Pressure switch PC-5 and flow control switch FC-3 control the injection fluid pipeline pump. Pressure switch PC-5 is set at the maximum injection pressure (high pressure setting) of 1,416 psig and the low pressure is set at 100 psig.
- ☐ Pressure switch PC-4 and flow control switch (flow meter contacts) FC-2 control the injection into the proposed UIC well. Pressure switch PC-4 is set at the maximum injection pressure of 1,416 psig and flow control switch FC-2 is set at the maximum permitted monthly injection flow.
- ☐ If the maximum injection pressure is reached and recorded by pressure switch PC-5, the control valve on the injection pipeline will close and sound an alarm. A one-hour period will be programmed into pressure switch PC-5. If the maximum pressure has subsided to below the maximum injection pressure, then the control valve will open and injection resumed. If the pressure has not subsided, then the control valve will remain closed and no injection will occur. At this point, the problem will be corrected before injection resumes.
- ☐ If the maximum monthly injection volume or flow has occurred, flow switch FC-3 will close the control valve and sound an alarm, with no further injection until the next period. The closing of the control valve will sound an alarm and the system must be manually checked before pumping/injection is resumed.

If the injection fluid pressure exceeds 1,416 psig at the wellhead of the proposed UIC well, the high pressure shutdown will close the control valve and the alarm will be sounded. After one hour, if the wellhead pressure is less than 1,416 psig, the control valve will re-open and injection will resume. If after one hour the wellhead pressure is still at 1,416 psig, the system will not re-start automatically, but must be manually re-started after the problem is corrected. The initial injection into the proposed UIC well will be on a vacuum. This condition will only occur during the beginning of injection. Once the well stabilizes, any

WELL FAILURES



further injection will be at a positive pressure. If the injection fluid pressure drops below 100 psig (after the well's stabilization), the low pressure shutdown will close the control valve and the alarm will be sounded. The system will not re-start automatically, but must be manually re-started after the problem is corrected.

If at any time the injection flow exceeds 60 gpm at existing UIC Well VWD-535517 central treatment facility, the flow control switch will shutdown (stop) injection pump, and the alarm will be sounded. The system will not re-start automatically, but must be manually re-started after the problem is corrected.

Attachment P

Monitoring Program

MONITORING PROGRAM

ATTACHMENT

P

1.0 MONITORING PROGRAM

Drawing 07-475-02 provides a schematic layout of the proposed monitoring program for the receipt, treatment and injection of the production fluid. A review of this monitoring program will, at a minimum, provide the following:

- ☐ Level controls on tanks (low and high volumes) at central treatment facility
- ☐ Pump controls (low and high pressures) at central treatment facility
- ☐ Flow metering (at both the central treatment facility and proposed UIC Well VWD-539572)
- ☐ Well casing and injection tubing pressure controls (low and high pressures) at proposed UIC Well VWD-539572
- ☐ Continuous recording at all pressure and flow monitoring points at proposed UIC Well VWD-539572

2.0 MONITORING WELLS

No monitoring wells are proposed or planned in conjunction with this application for Class II-D production fluid disposal wells. However, the pressures between the 8 5/8-inch and 5 1/2-inch casings and 5 1/2-inch casing and 2 3/8-inch injection tubing at proposed UIC Well VWD-539572 will be continuously monitored, with pressure and injection flow recorded. Should a problem exist, these two (2) areas should show an immediate pressure fluctuation, thus alerting Equitable that a problem exists and corrective action is needed.

Attachment Q

Plugging and Abandonment Plan

PLUGGING AND ABANDONMENT PLAN

ATTACHMENT

Q

1.0 PLUGGING AND ABANDONMENT PLAN

The plugging and abandonment plan to be used to abandon proposed UIC Well VWD-539572 is illustrated by Figure 5 (Figure 5 is provided at the end of this Attachment). A review of this schematic will provide the following information:

- ☐ Move in service rig.
- ☐ Rig up service company and pump cement plug down injection tubing. Run enough cement to cover from injection perforations back to the bottom of tubing plus 100% excess to squeeze off the formation.
- ☐ Displace cement to below bottom of injection tubing.
- ☐ Let cement set.
- ☐ Release the packer and pull tubing. (If injection tubing cannot be pulled, cut the injection tubing off just above the packer and pull the tubing.)
- ☐ Set a solid bridge plug 20 feet above (4,905 feet) the setting depth of the packer (4,925 feet).
- ☐ Using the tubing, spot a 100-foot cement plug on top of solid bridge plug from 4,905 feet to 4,805 feet (minimum).
- ☐ Cut off 5 1/2-inch casing at 1,800 feet (top of cement at 1,841 feet).
- ☐ Spot a 100-foot cement plug on top of 5 1/2-inch casing stub.
- ☐ Raise 5 1/2-inch casing to 300 feet and cement to surface. The 5 1/2-inch casing will be removed and the top of the cement plug will be inside of the 8 5/8-inch casing at ground surface.
- ☐ Install vent on the top of the 8 5/8-inch casing.
- ☐ Remove any remaining surface equipment and reclaim the well site.

PLUGGING AND ABANDONMENT PLAN

Q

- ☐ The cement blend to be used will be Class A with 2% gel and 2% calcium chloride. Also, the fluid between the cement plugs will be 6% bentonite gel.

2.0 PLUGGING AND ABANDONMENT FORM

The completed and signed Plugging and Abandonment Plan Form is presented at the end of this section of Attachment Q. Following the Plugging and Abandonment Plan Form is Figure 5, a Schematic Diagram of proposed UIC Well VWD-539572 Plugging and Abandonment Plan.

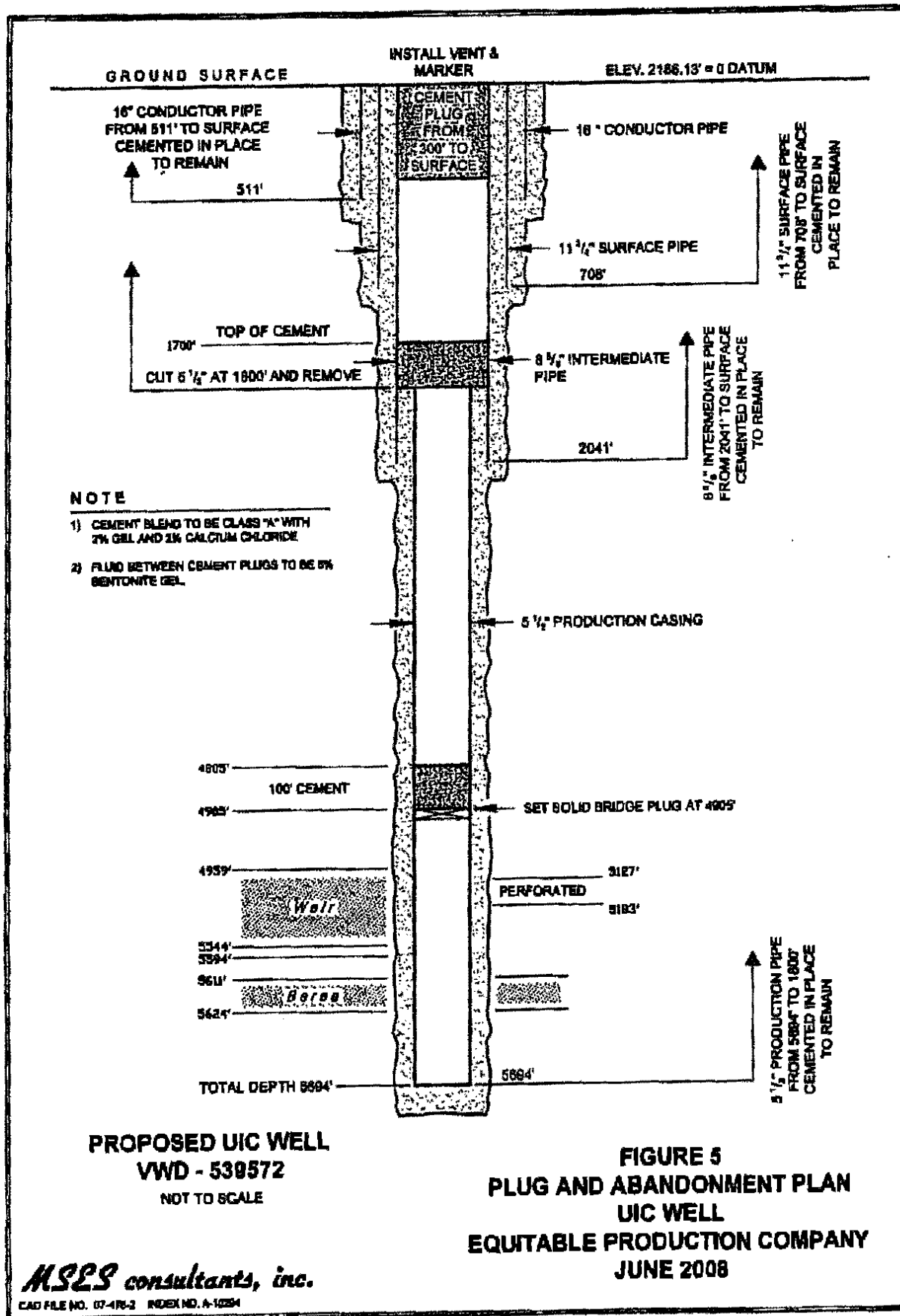
OMB No. 2040-0042

Approval Expires 11/30/2014


 United States Environmental Protection Agency
 Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility Class II-D Injection Well VWD-539572 Nora Field, Ervinton District, Dickenson County, VA		Name and Address of Owner/Operator EnerVest Operating, LLC 300 Capitol Street, Suite 200, Charleston, WV 25301																																																																																																																
Locate Well and Outline Unit on Section Plat - 360 Acres <div style="text-align: center;"> </div>	State VA	County Dickenson	Permit Number VWD-539572																																																																																																															
Surface Location Description 1/4 of _____ 1/4 of _____ 1/4 of _____ 1/4 of _____ Section _____ Township _____ Range _____ Locate well in two directions from nearest lines of quarter section and drilling unit Surface Location _____ ft. from (N/S) _____ Line of quarter section and _____ ft. from (E/W) _____ Line of quarter section.																																																																																																																		
TYPE OF AUTHORIZATION <input checked="" type="checkbox"/> Individual Permit <input type="checkbox"/> Area Permit <input type="checkbox"/> Rule Number of Wells <u>1</u> Lease Name <u>#906889 (Tract T-428)</u>		WELL ACTIVITY <input type="checkbox"/> CLASS I <input checked="" type="checkbox"/> CLASS II <input checked="" type="checkbox"/> Brine Disposal <input type="checkbox"/> Enhanced Recovery <input type="checkbox"/> Hydrocarbon Storage <input type="checkbox"/> CLASS III Well Number <u>VWD-539572</u>																																																																																																																
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">CASING AND TUBING RECORD AFTER PLUGGING</th> <th colspan="2">METHOD OF EMPLACEMENT OF CEMENT PLUGS</th> </tr> <tr> <th>SIZE</th> <th>WT (LB/FT)</th> <th>TO BE PUT IN WELL (FT)</th> <th>TO BE LEFT IN WELL (FT)</th> <th>HOLE SIZE</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>16</td> <td>42.05</td> <td>511</td> <td>511</td> <td>19</td> <td colspan="2" rowspan="5"> <input checked="" type="checkbox"/> The Balance Method <input type="checkbox"/> The Dump Bailer Method <input type="checkbox"/> The Two-Plug Method <input type="checkbox"/> Other </td> </tr> <tr> <td>11 3/4</td> <td>32</td> <td>708</td> <td>708</td> <td>15</td> </tr> <tr> <td>8 5/8</td> <td>24</td> <td>2041</td> <td>2041</td> <td>11</td> </tr> <tr> <td>5 1/2</td> <td>15.5</td> <td>3694</td> <td>3894</td> <td>7 7/8</td> </tr> <tr> <td colspan="5">CEMENTING TO PLUG AND ABANDON DATA:</td> </tr> <tr> <td colspan="5">Size of Hole or Pipe in which Plug Will Be Placed (Inches)</td> <td>PLUG #1</td> <td>PLUG #2</td> </tr> <tr> <td colspan="5">Depth to Bottom of Tubing or Drill Pipe (ft)</td> <td>5.0</td> <td>8.2</td> </tr> <tr> <td colspan="5">Sacks of Cement To Be Used (each plug)</td> <td>4905</td> <td>1800</td> </tr> <tr> <td colspan="5">Slurry Volume To Be Pumped (cu. ft.)</td> <td>12.7</td> <td>33.9</td> </tr> <tr> <td colspan="5">Calculated Top of Plug (ft.)</td> <td>17.1</td> <td>45.7</td> </tr> <tr> <td colspan="5">Measured Top of Plug (if tagged ft.)</td> <td>137.2</td> <td>137.2</td> </tr> <tr> <td colspan="5">Slurry WL (Lb./Gal.)</td> <td>4805</td> <td>1700</td> </tr> <tr> <td colspan="5">Type Cement or Other Material (Class III)</td> <td>Surface</td> <td>Surface</td> </tr> <tr> <td colspan="5"></td> <td>Class A</td> <td>Class A</td> </tr> <tr> <td colspan="5"></td> <td>Class A</td> <td>Class A</td> </tr> </tbody> </table>				CASING AND TUBING RECORD AFTER PLUGGING					METHOD OF EMPLACEMENT OF CEMENT PLUGS		SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE			16	42.05	511	511	19	<input checked="" type="checkbox"/> The Balance Method <input type="checkbox"/> The Dump Bailer Method <input type="checkbox"/> The Two-Plug Method <input type="checkbox"/> Other		11 3/4	32	708	708	15	8 5/8	24	2041	2041	11	5 1/2	15.5	3694	3894	7 7/8	CEMENTING TO PLUG AND ABANDON DATA:					Size of Hole or Pipe in which Plug Will Be Placed (Inches)					PLUG #1	PLUG #2	Depth to Bottom of Tubing or Drill Pipe (ft)					5.0	8.2	Sacks of Cement To Be Used (each plug)					4905	1800	Slurry Volume To Be Pumped (cu. ft.)					12.7	33.9	Calculated Top of Plug (ft.)					17.1	45.7	Measured Top of Plug (if tagged ft.)					137.2	137.2	Slurry WL (Lb./Gal.)					4805	1700	Type Cement or Other Material (Class III)					Surface	Surface						Class A	Class A						Class A	Class A
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Certification I certify under the 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. (Ref. 40 CFR 144.32)																																																																																																																		
Name and Official Title (Please type or print) James McKinney, Senior VP & General Manager		Signature 																																																																																																																
Date Signed		Date Signed																																																																																																																



Attachment T

Existing EPA Permits

EXISTING U.S. EPA PERMITS**ATTACHMENT****T****1.0 EXISTING U.S. EPA PERMITS**

EnerVest operates seven existing UIC wells and has permits for two undrilled UIC wells (Table T-1) in Dickenson County and Buchanan County, Virginia.

Table T-1. Existing EPA Permits**NORA**

State File #	Operation Name	EPA #
DI-0192	P-750132 WD	VAS2D947BDIC
DI-0203	P-143 (750143)	VAS2D907BDIC
DI-0220	P-148 (750148)	VAS2D927BDIC
DI-0230	P-750171 WD	VAS2D937BDIC
DI-0249	P-750205 WD	VAS2D957BDIC
DI-1144	VWD-535517	VAS2D932BDIC
not drilled	VWD-539572	VAS2D697BDIC
HAYSI		
BU-1614	23606 w/PL	VAS2D950BBUC
not drilled	900146	VAS2D955BBUC

Attachment U

Description of Business

DESCRIPTION OF BUSINESS

ATTACHMENT

U

1.0 DESCRIPTION OF BUSINESS

EnerVest (www.EnerVest.net) is a private oil and gas company with 40,000 wells across 15 states, 6.5 million acres under lease and \$8 billion in assets under management. Operational Fund XIV owns proved reserves of 6.5 TCF and operations in Appalachia and the Southwestern United States. The December 2015 purchase of Range Resources – Pine Mountain included the operations in the southern Appalachian Basin. EnerVest now owns or has leased the oil, gas and coal bed methane on approximately 350,000 acres in Virginia and produces gas from Pennsylvania age coal seams, as well as deeper formations, including the Devonian Shale, Berea, Weir and Mississippian Big Lime. EnerVest currently operates approximately 3,500 wells in Virginia and plans to drill several hundred additional wells in the next 5 years. Along with coal bed methane and the deeper formation gas production, produced fluid is also extracted. It is because of these produced fluids that EnerVest will dispose of in the renewed Class II-D disposal well.

APPENDIX C

EXISTING WELL RECORDS WITHIN ONE-MILE RADIUS OF UIC #VAS2D697BDIC (VWD-539572)

1.0 INTRODUCTION

This appendix provides the following information:

- A summary of the known wells contained in the Virginia Division of Gas and Oil (DGO) records is provided by Pages 2 and 3 of this Appendix.
- This well summary is provided by the tables identified as:
 - Proposed Renewal Injection Well VAS2D697BDIC (VWD-539572)
 - Existing UIC Well within 1-mile, the VWD-535517.
 - Coal Bed Methane Wells of Record within ¼-mile radius of VWD-539572. Two CBM wells exist within ¼-mile.
 - Vertical Wells of Record within 1 mile radius of Well VWD-539572. Two conventional wells exist within 1-mile.
 - Coal Bed Methane Wells of Record from ¼-mile to 1-mile radius of VWD-539572. Fourteen CBM wells exist between ¼-mile to 1-mile from VAS2D697BDIC.
 - There are no currently proposed Wells within 1-mile radius of VWD-539572

2.0 WELL RECORDS

Copies of well records are provided following Page 3 of Appendix C.

APPENDIX C

EXISTING WELL RECORDS WITHIN

ONE-MILE RADIUS OF UIC # VAS2D697BDIC (VWD-539572)

Proposed UIC# VAS2D697BDIC				
Permit No.	Virginia File No.	Well No.	Total Depth	Formation at TD
-	DI-2032	VWD-539572	-	Weir

UIC within 1-mile of Proposed VWD-539572				
Permit No.	Virginia File No.	Well No.	Total Depth	Formation at TD
5689	DI-1144	VWD-535517	5163	Weir

Coal Bed Methane Wells of Record Within ¼ miles of VWD-539572				
Permit No.	Virginia File No.	Well No.	Total Depth	Formation at TD
8618	DI-1835	VC-537799	2385	Pocahontas
2212	DI-2245	VC-537802	2193	Pocahontas

Conventional Wells of Record Within 1-mile of VWD-539572				
Permit No.	Virginia File No.	Well No.	Total Depth	Formation at TD
10144	DI-2124	VH-530138	8730	Huron
10957	DI-2322	V-530051	5080	Cleveland

APPENDIX C

EXISTING WELL RECORDS WITHIN

ONE-MILE RADIUS OF UIC # VAS2D697BDIC (VWD-539572)

Coal Bed Methane Wells of Record Within 1-Mile of VWD-539572				
Permit No.	Virginia File No.	Well No.	Total Depth	Formation at TD
7516	DI-1573	VC-551306	2206	Pocahontas
7766	DI-1651	VC-537100	2395	Pocahontas
10535	DI-2213	VC-537798	2408	Pocahontas
10488	DI-2198	VC-537795	2387	Pocahontas
7764	DI-1649	VC-537101	2241	Pocahontas
8106	DI-1743	VC-537102	2364	Pocahontas
8051	DI-1718	VC-501842	2010	Pocahontas
7765	DI-1650	VC-537095	1787	Pocahontas
10684	DI-2243	VC-537794	2376	Pocahontas
10177	DI-2131	VC-536444	2531	Pocahontas
10399	DI-2179	VC-536588	2358	Pocahontas
6430	DI-1310	VC-535925	2473	Pocahontas
13178	DI-2711	VCI-537513	2103	Pocahontas
13179	DI-2712	VCI-530454	2130	Pocahontas

Proposed Wells within 1-mile radius of VWD-539572				
Permit No.	Virginia File No.	Well No.	Total Depth	Formation at TD
N/A	N/A	N/A	N/A	N/A



UNDERGROUND INJECTION CONTROL

PERMIT RENEWAL APPLICATION RESPONSE TO NOD #1

FOR CLASS II-D PRODUCTION FLUID DISPOSAL WELL

PROPOSED RENEWAL WELL VWD-539572
EPA # VAS2D697BDIC

NORA FIELD
DICKENSON COUNTY, VIRGINIA

OCTOBER 2018



November 28, 2018

Mr. James C. Bennett (3WP22)
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Bennett:

EnerVest received your letter of deficiencies for permit application to renew Permit #VAS2D697BDIC Class II-D fluid disposal well in Dickenson County, Virginia. Attachment 1 details information included for updating the UIC permit renewal application.

Please contact me with any questions and/or further requested information (276) 926-1292.

Sincerely,



Jon Lawson
Sr. HSE Specialist
jlawson@enervest.net



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

August 14, 2018

Jon Lawson
Sr. HSE Specialist
EnerVest Operating, LLC
809 Happy Valley Drive
Clintwood, VA 24228

Re: Notice of Deficiency: EnerVest Renewal Application: VAS2D697BDIC
Underground Injection Control (UIC) Program: Class IID Injection Well no. VWD-539572

Dear Mr. Lawson,

On July 30, 2018, the U.S. Environmental Protection Agency (EPA) received from EnerVest, a permit renewal application for a brine disposal injection well (Class IID) in the Ervinton District, Dickenson County, Virginia. (Permit identification number VAS2D697BDIC). We have since started to conduct a completeness review to ensure that all the necessary attachments have been submitted. Overall, the application is comprehensive and the required attachments have been submitted.

However, EPA would like for EnerVest to submit Attachment I "Formation Testing Program". Since the injection well has not been drilled yet, we'd like EnerVest to develop a plan for the testing program to obtain data on fluid pressure, estimated fracture pressure, and physical and chemical characteristics on the injection zone, after the well has been constructed. This information will then be used to calculate an instantaneous shut-in pressure for use in setting a maximum allowable injection pressure at the ground surface.

Please send the requested information to me at the address listed above or you may also send it via email. Once we have received the necessary information we can proceed with processing the draft permit and statement of basis. Thank you for your cooperation on this matter. If you have any questions or concerns please contact me at 215-814-5463 or rowsey.kevin@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin Rowsey", is positioned above the typed name.

Kevin Rowsey
Ground Water & Enforcement Branch (3WP22)
Office of Drinking Water & Source Water Protection



Lawson, Jon

From: Rowsey, Kevin <rowsey.kevin@epa.gov>
Sent: Wednesday, October 03, 2018 9:09 AM
To: Lawson, Jon
Cc: Rectenwald, David; Bennett, James
Subject: 10/3/18 Meeting Follow-up - VAS2D697BDIC

Jon,

Thank you for meeting with us today. I quickly listed what we needed for the Cane Creek well today at the meeting, but I wanted to put in writing what we still need to process your permit reissuance.

- Attachment B – Area of Review - Information regarding landowners, springs, surface water bodies, and drinking water wells within ½ mile of the proposed wellbore.
- Attachment Q – *Dated* Plugging & Abandonment Plan
- Attachment M – Correction to Application where “ANGARD” is used and alternative that will be used.
- Dave, Jim and I will review the Attachment I that you emailed me yesterday and we’ll let you know if we agree on the proposed formation testing program and then you can submit that updated attachment as well.

Please let me know if you have any more questions for us.

Have a great day.

Kevin Rowsey
Ground Water & Enforcement Branch
Water Protection Division
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103
Phone: 215.814.5463



Addendum – Letter Regarding Berea Development



November 28, 2018

Mr. James C. Bennett (3WP22)
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Bennett:

Upon further review of my July 23rd, 2018 submittal of renewal application for Permit #VAS2D697BDIC, VWD-539572, Class II-D fluid disposal well in the Ervinton District of Dickenson County, Virginia, a previous company "EQT" had originally permitted the well to the Weir Formation, with contingencies to the Berea formation. EnerVest has no interest in developing the Berea as a contingency for this UIC permit.

If there are any questions please feel free to contact me directly.

Respectfully submitted,



Jon Lawson, CSP
Sr. HSE Specialist
jlawson@enervest.net

REVIEW AREA AND WELL INFORMATION**ATTACHMENT****B****AREA OF REVIEW ADDENDUM – ½ mile review***Landowner Information*

Per request, an information search for additional landowners in the ½ mile area of the proposed well bore added one additional landowner. The ½-mile radius includes one private surface owner but there are no houses or water wells on the property. The surface owner to the SW is the Corbbet Glen Anderson et al, tract.

Landowner	Contact Addresses
Heartwood Forest Fund IV, L.P. c/o The Forestland Group, LLC	Heartwood Forest Fund c/o The Forestland Group, LLC PO Box 1155; Lebanon, VA 24266-1155
Corbbet Glen Anderson et al	<p>Corbbet Glen Anderson 300 Vagneur Lane Basalt, CO 81621</p> <p>Harry & Sharon Anderson 56 Birchlief Drive Spruce Pine, NC 28777</p> <p>Robert & Patrick Kuchan 825 Wayne Avenue Abingdon, VA 24210</p> <p>Timmy Mac Sutherland 3847 Fleetwood Avenue Trevose, PA 19053</p> <p>Phyllis Anderson 2135 NC Highway 66 South Kernersville, NC 27284</p> <p>Alton Anderson 94 Skyland Drive Roswell, GA 30075</p>



Attachment B Additional Information

REVIEW AREA AND WELL INFORMATION**ATTACHMENT****B***Drinking Water Information*

No drinking water wells were located within the ½-mile radius of the proposed wellbore. The area was surveyed again in 2017 and found no wells within the area of review.

Springs and surface water bodies

Two surface water bodies exist within the ½-mile area of review. The well is located in the Cane Creek watershed and across the ridge there is Lick Branch of Fryingpan Creek.

HUC12	VAHU6	Watershed
050702020402	BS17	Indian Creek-Cane Creek of Big Sandy
050702020404	BS19	Lick Branch of Fryingpan Creek


No springs were encountered within ½-mile radius during initial permitting or in 2017 field reconnaissance. The area has been extensively mined historically, room and pillar underground mining and surface mines.

VAS2D697BDIC

Additional 1/2 mile radius map

Legend

 1/2-mile Circle

 Proposed WWD-539572

Proposed WWD-539572

Google Earth

© 2018 Google

2000 ft

N

For assistance in accessing this document, contact R3_UIC_Mailbox@epa.gov

VAS2D697BDIC

Additional 1/2 mile radius map

Legend

1/2-mile Circle



Proposed VWD-539572

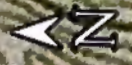


Proposed VWD-539572

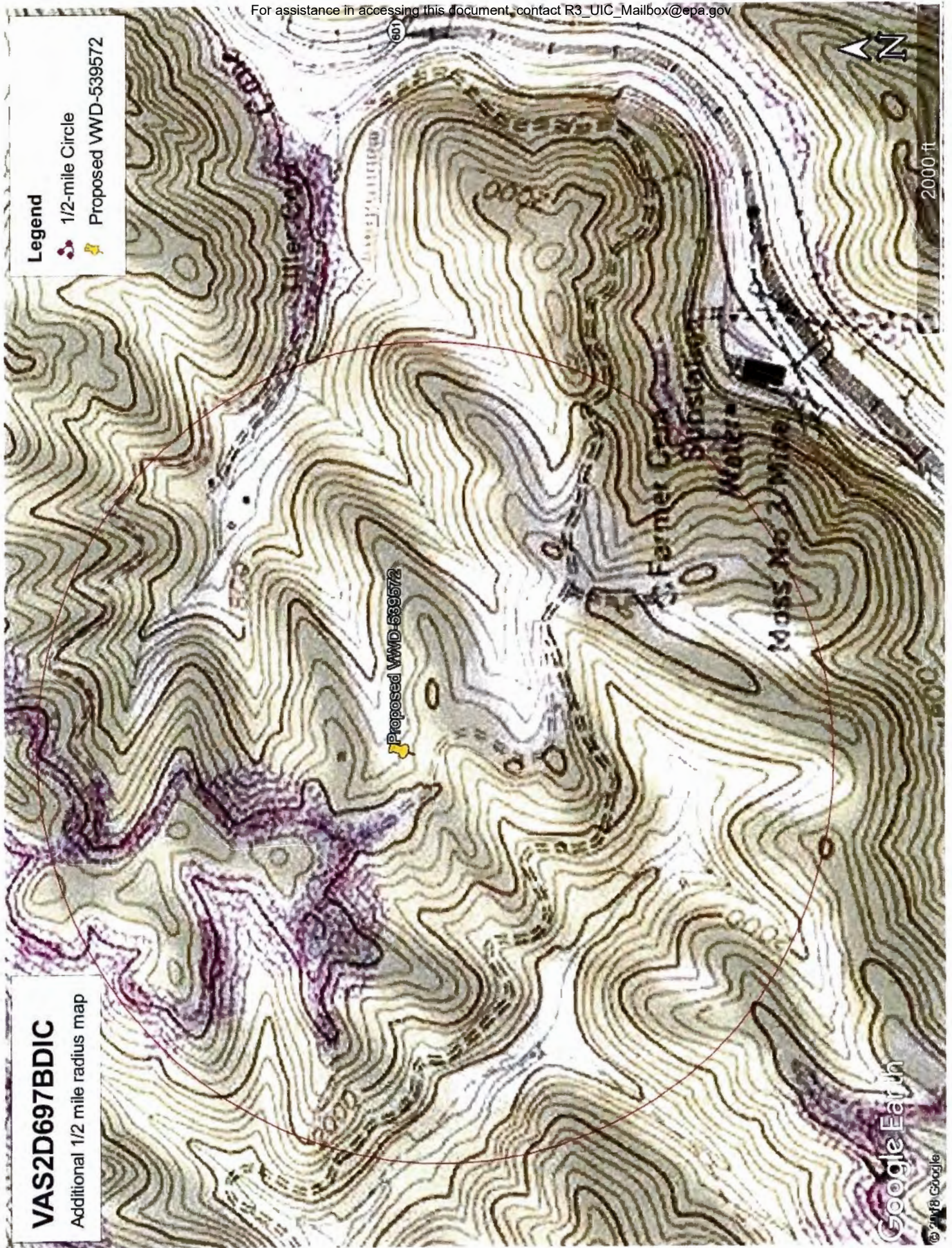


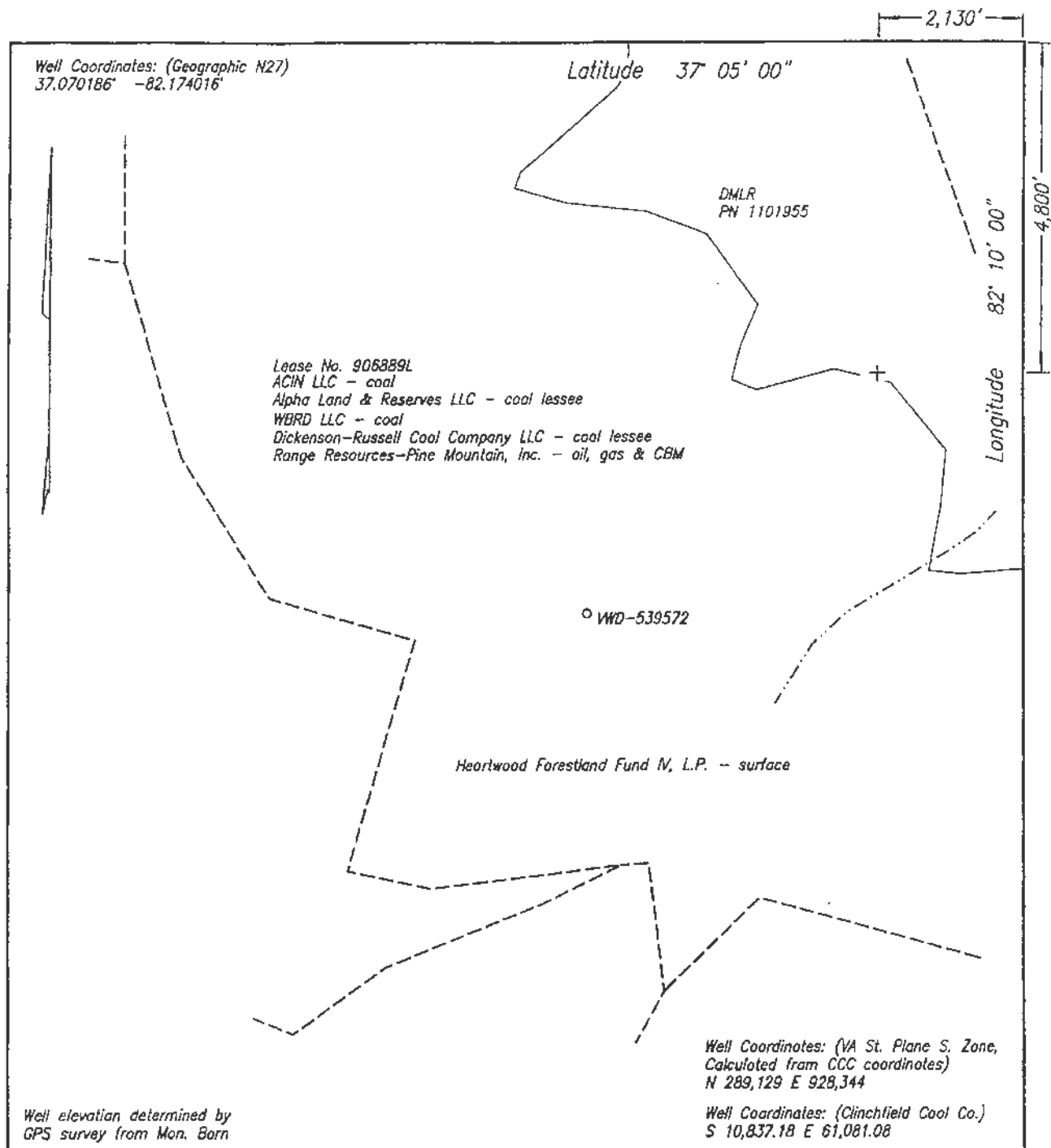
Google Earth

© 2018 Google



2000 ft





WELL LOCATION PLAT

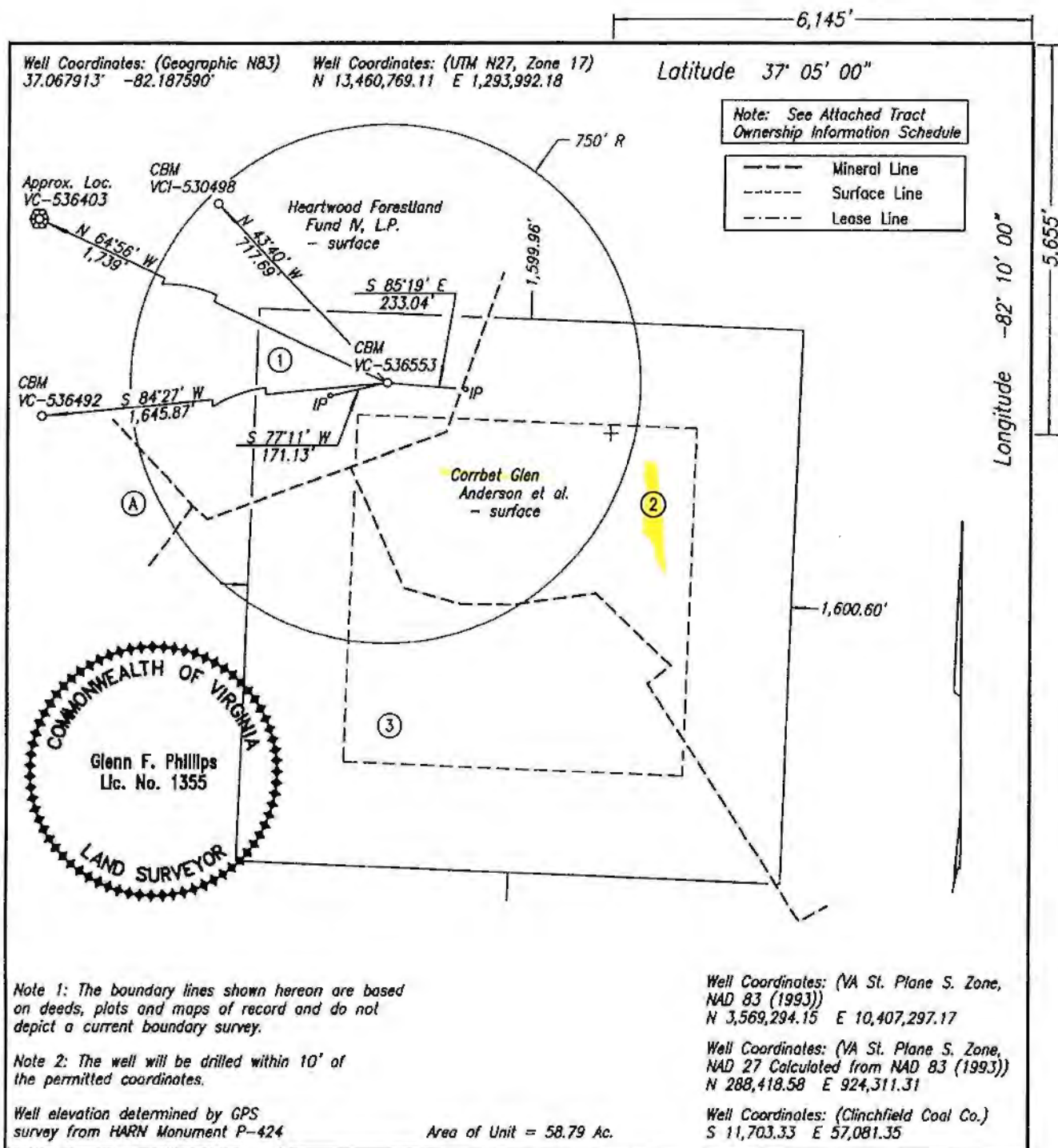
COMPANY Equitable Production Company WELL NAME AND NUMBER WVD-539572
TRACT NO. Lease No. 906889 / T-428 ELEVATION 2,186.13' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 01-18-2008

This Plat is a new plat x; an updated plat ; or a final location plat

+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

PRELIMINARY PLAT

Licensed Professional Engineer or Licensed Land Surveyor



WELL LOCATION PLAT NORA GRID BI-73

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VC-536553
 TRACT NO. I-405 ELEVATION 2,209.68' QUADRANGLE Duty
 COUNTY Dickenson DISTRICT Ervin SCALE 1" = 400' DATE 6-21-2017
 This Plat is a new plat x; an updated plat ; or a final location plat
 + Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

~~Licensed Professional Engineer or Licensed Land Surveyor~~



Attachment I - Updated Information

FORMATION TESTING PROGRAM

ATTACHMENT

I

1.0 PROPOSED INJECTION FORMATION

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The construction of the proposed UIC Well VWD-539572 was provided in Attachment L.

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EnerVest Operating, LLC's other permitted wells are located in the Weir Formation, so there is extensive knowledge of the Weir Formation in Dickenson County, Virginia. However, to ensure the calculated instantaneous shut-in pressure for use in setting a maximum allowable injection pressure at the ground surface, a testing program will be enacted during the completion of the well.

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This information will be supplied to US EPA Region 3 for analysis.

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- The completed well's 5 ½-inch production casing will be integrity tested following the procedures outlined below. This mechanical integrity testing will be conducted prior to installing any perforations in the 5 ½-inch production casing.
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FORMATION TESTING PROGRAM

ATTACHMENT

I

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Attachment M – Updated Information

CONSTRUCTION DETAILS

ATTACHMENT

M

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Drawing 07-475-02 provides a schematic layout of the minimum proposed surface facilities, which outlines fluid handling, storage, treatment, and fail-safe controls.

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Attachment Q – Dated P&A Form

OMB No. 2048-0642 Approval Expires 11/30/2014

United States Environmental Protection Agency Washington, DC 20460																																																																									
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Certification I certify under the 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. (Ref. 40 CFR 144.32)																																																																									
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UNDERGROUND INJECTION CONTROL

PERMIT RENEWAL APPLICATION RESPONSE TO NOD #1

FOR CLASS II-D PRODUCTION FLUID DISPOSAL WELL

**PROPOSED RENEWAL WELL VWD-539572
EPA # VAS2D697BDIC**

NORA FIELD
DICKENSON COUNTY, VIRGINIA

OCTOBER 2018



November 28, 2018

Mr. James C. Bennett (3WP22)
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Bennett:

EnerVest received your letter of deficiencies for permit application to renew Permit #VAS2D697BDIC Class II-D fluid disposal well in Dickenson County, Virginia. Attachment 1 details information included for updating the UIC permit renewal application.

Please contact me with any questions and/or further requested information (276) 926-1292.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jon Lawson', with a long horizontal flourish extending to the right.

Jon Lawson
Sr. HSE Specialist
jlawson@enervest.net



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029**

August 14, 2018

Jon Lawson
Sr. HSE Specialist
EnerVest Operating, LLC
809 Happy Valley Drive
Clintwood, VA 24228

Re: Notice of Deficiency; EnerVest Renewal Application; VAS2D697BDIC
Underground Injection Control (UIC) Program; Class IID Injection Well no. VWD-539572

Dear Mr. Lawson,

On July 30, 2018, the U.S. Environmental Protection Agency (EPA) received from EnerVest, a permit renewal application for a brine disposal injection well (Class IID) in the Ervinton District, Dickenson County, Virginia. (Permit identification number VAS2D697BDIC). We have since started to conduct a completeness review to ensure that all the necessary attachments have been submitted. Overall, the application is comprehensive and the required attachments have been submitted.

However, EPA would like for EnerVest to submit Attachment I "Formation Testing Program". Since the injection well has not been drilled yet, we'd like EnerVest to develop a plan for the testing program to obtain data on fluid pressure, estimated fracture pressure, and physical and chemical characteristics on the injection zone, after the well has been constructed. This information will then be used to calculate an instantaneous shut-in pressure for use in setting a maximum allowable injection pressure at the ground surface.

Please send the requested information to me at the address listed above or you may also send it via email. Once we have received the necessary information we can proceed with processing the draft permit and statement of basis. Thank you for your cooperation on this matter. If you have any questions or concerns please contact me at 215-814-5463 or rowsey.kevin@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin Rowsey", is written over a horizontal line.

Kevin Rowsey
Ground Water & Enforcement Branch (3WP22)
Office of Drinking Water & Source Water Protection



Lawson, Jon

From: Rowsey, Kevin <rowsey.kevin@epa.gov>
Sent: Wednesday, October 03, 2018 9:09 AM
To: Lawson, Jon
Cc: Rectenwald, David; Bennett, James
Subject: 10/3/18 Meeting Follow-up - VAS2D697BDIC

Jon,

Thank you for meeting with us today. I quickly listed what we needed for the Cane Creek well today at the meeting, but I wanted to put in writing what we still need to process your permit reissuance.

- Attachment B – Area of Review - Information regarding landowners, springs, surface water bodies, and drinking water wells within ½ mile of the proposed wellbore.
- Attachment Q – *Dated* Plugging & Abandonment Plan
- Attachment M – Correction to Application where “ANGARD” is used and alternative that will be used.
- Dave, Jim and I will review the Attachment I that you emailed me yesterday and we’ll let you know if we agree on the proposed formation testing program and then you can submit that updated attachment as well.

Please let me know if you have any more questions for us.

Have a great day.

Kevin Rowsey
Ground Water & Enforcement Branch
Water Protection Division
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103
Phone: 215.814.5463



For assistance in accessing this document, contact R3_UIC_Mailbox@epa.gov

Attachment B Additional Information

REVIEW AREA AND WELL INFORMATION

ATTACHMENT

AREA OF REVIEW ADDENDUM – ½ mile review*Landowner Information*

Per request, an information search for additional landowners in the ½ mile area of the proposed well bore added one additional landowner. The ½-mile radius includes one private surface owner but there are no houses or water wells on the property. The surface owner to the SW is the Corbbet Glen Anderson et al, tract.

Landowner	Contact Addresses
Heartwood Forest Fund IV, L.P. c/o The Forestland Group, LLC	Heartwood Forest Fund c/o The Forestland Group, LLC PO Box 1155; Lebanon, VA 24266-1155
Corbbet Glen Anderson et al	<p>Corbbet Glen Anderson 300 Vagneur Lane Basalt, CO 81621</p> <p>Harry & Sharon Anderson 56 Birchlief Drive Spruce Pine, NC 28777</p> <p>Robert & Patrick Kuchan 825 Wayne Avenue Abingdon, VA 24210</p> <p>Timmy Mac Sutherland 3847 Fleetwood Avenue Trevose, PA 19053</p> <p>Phyllis Anderson 2135 NC Highway 66 South Kernersville, NC 27284</p> <p>Alton Anderson 94 Skyland Drive Roswell, GA 30075</p>

REVIEW AREA AND WELL INFORMATION**ATTACHMENT***Drinking Water Information*

No drinking water wells were located within the ½-mile radius of the proposed wellbore. The area was surveyed again in 2017 and found no wells within the area of review.

Springs and surface water bodies

Two surface water bodies exist within the ½-mile area of review. The well is located in the Cane Creek watershed and across the ridge there is Lick Branch of Fryingpan Creek.

HUC12	VAHU6	Watershed
050702020402	BS17	Indian Creek-Cane Creek of Big Sandy
050702020404	BS19	Lick Branch of Fryingpan Creek



No springs were encountered within ½-mile radius during initial permitting or in 2017 field reconnaissance. The area has been extensively mined historically, room and pillar underground mining and surface mines.

VAS2D697BDIC

Additional 1/2 mile radius map

For assistance in accessing this document, contact D3-UIO Mailbox@epa.gov

Legend

-  1/2-mile Circle
-  Proposed VWD-539572

 Proposed VWD-539572

Google Earth

© 2018 Google

2000 ft



VAS2D697BDIC

Additional 1/2 mile radius map

Legend

1/2-mile Circle

Proposed WWD-539572

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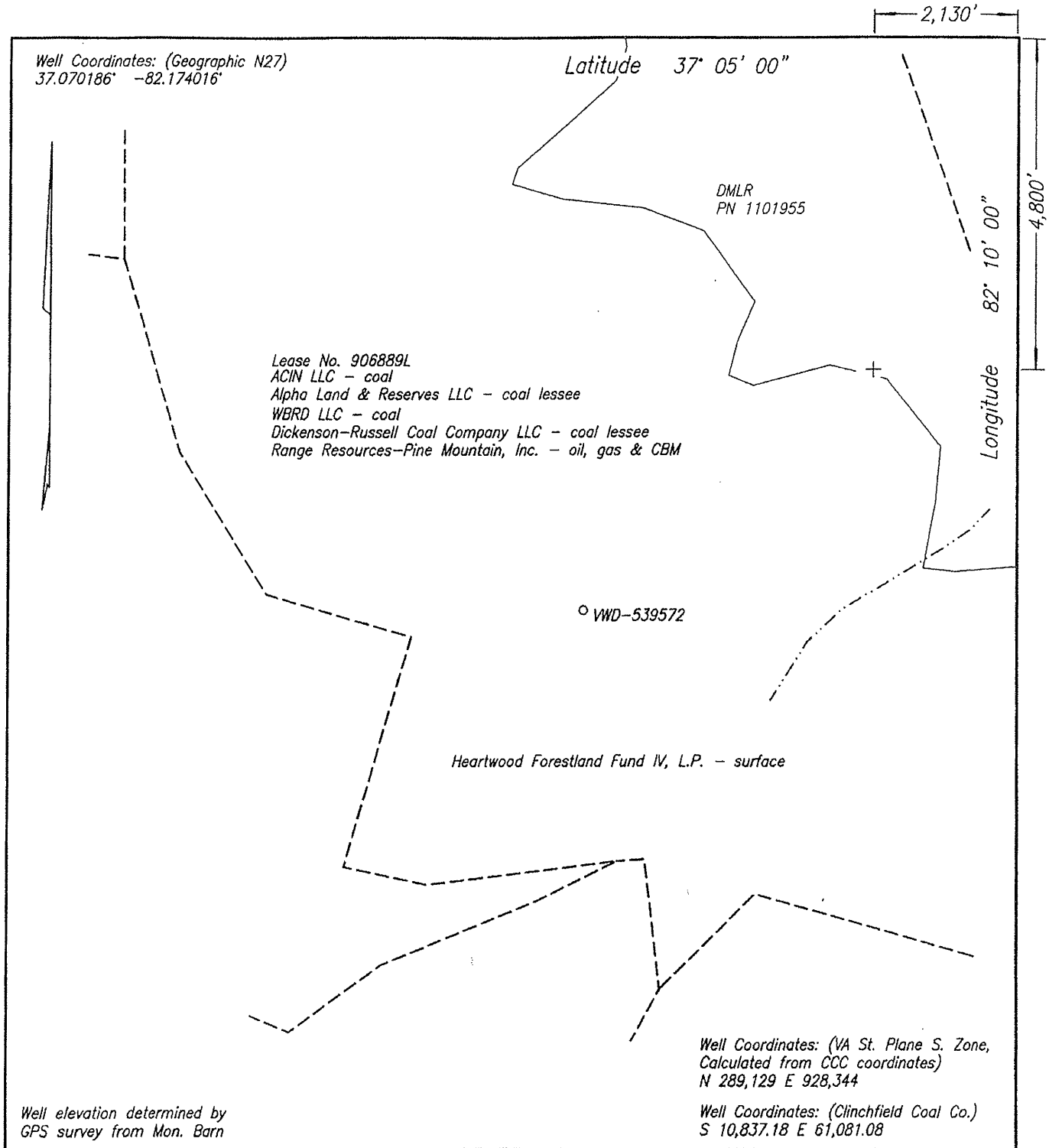


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Proposed WWD-539572

Google Earth

© 2018 Google



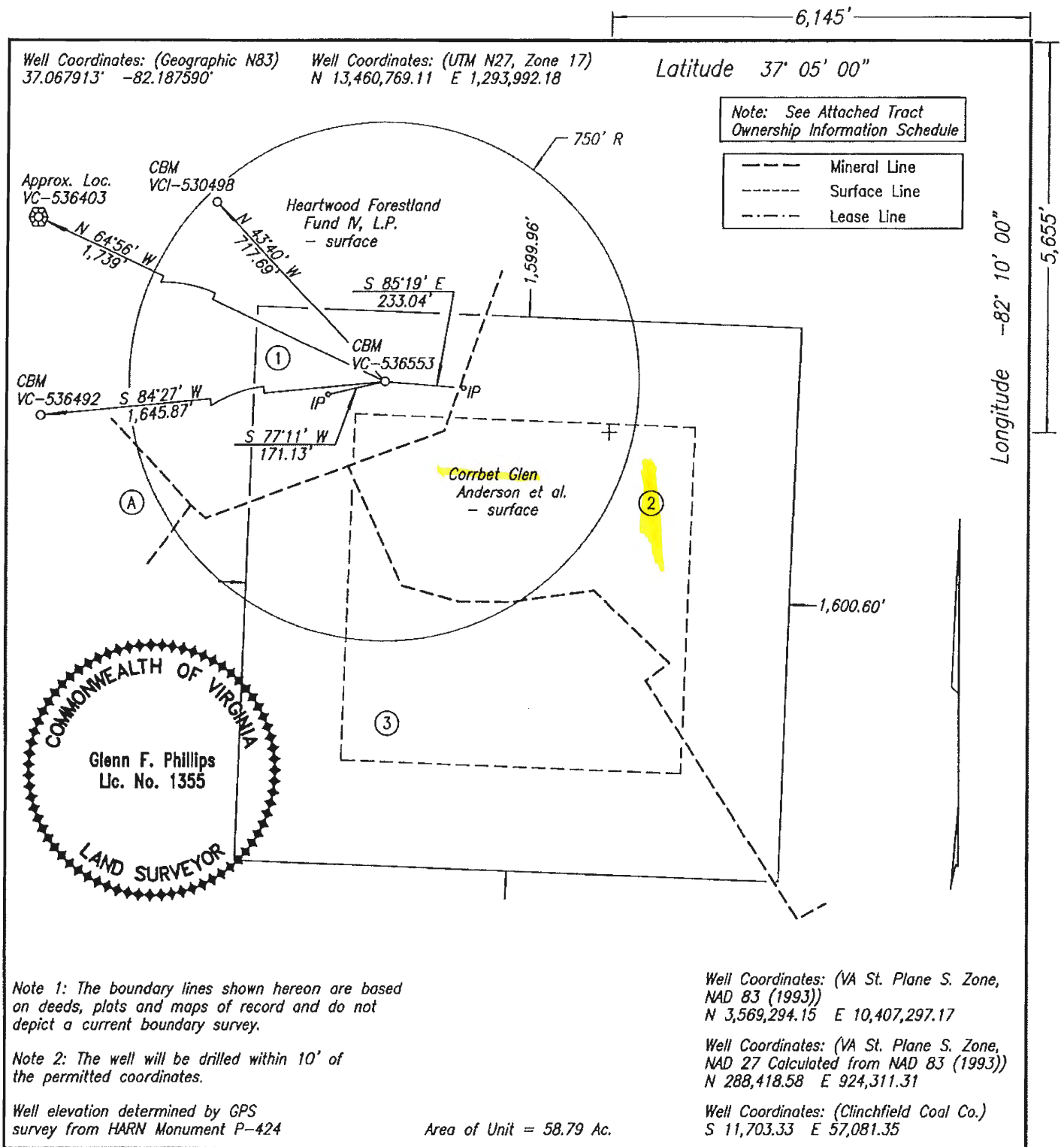
WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VWD-539572
TRACT NO. Lease No. 906889 / T-428 ELEVATION 2,186.13' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 01-18-2008
This Plat is a new plat x; an updated plat ; or a final location plat

+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

PRELIMINARY PLAT

~~Licensed Professional Engineer or Licensed Land Surveyor~~



WELL LOCATION PLAT NORA GRID BI-73

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VC-536553
 TRACT NO. T-405 ELEVATION 2,209.68' QUADRANGLE Duty
 COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 6-21-2017
 This Plat is a new plat x; an updated plat ; or a final location plat
 + Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

~~Licensed Professional Engineer or~~ Licensed Land Surveyor



Attachment I - Updated Information



FORMATION TESTING PROGRAM

ATTACHMENT

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Attachment Q – Dated P&A Form

OMB No. 2040-0042

Approval Expires 11/30/2014


 United States Environmental Protection Agency
 Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility Class II-D Injection Well VWD-539572 Nora Field, Ervinton District, Dickenson County, VA		Name and Address of Owner/Operator EnerVest Operating, LLC 300 Capitol Street, Suite 200, Charleston, WV 25301	
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Calculated Top of Plug (ft.)				4805	1700	Surface				
Measured Top of Plug (If tagged ft.)										
Slurry Wt. (Lb./Gal.)				14.8	14.8	14.8				
Type Cement or Other Material (Class III)				Class A	Class A	Class A				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)			
From	To	From	To
5127	5183	Projected Weir	Perforated Interval

Estimated Cost to Plug Wells
 \$35,000

Certification

I certify under the 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. (Ref. 40 CFR 144.32)

Name and Official Title (Please type or print) James McKinney, Senior VP & General Manager	Signature 	Date Signed 10/16/2018
--	----------------------	----------------------------------



Addendum – Letter Regarding Berea Development



November 28, 2018

Mr. James C. Bennett (3WP22)
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Bennett:

Upon further review of my July 23rd, 2018 submittal of renewal application for Permit #VAS2D697BDIC, VWD-539572, Class II-D fluid disposal well in the Ervinton District of Dickenson County, Virginia, a previous company "EQT" had originally permitted the well to the Weir Formation, with contingencies to the Berea formation. EnerVest has no interest in developing the Berea as a contingency for this UIC permit.

If there are any questions please feel free to contact me directly.

Respectfully submitted,



Jon Lawson, CSP
Sr. HSE Specialist
jlawson@enervest.net



August 14, 2018

Mr. James C. Bennett (3WP22)
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Bennett:

Upon further review of my July 23rd, 2018 submittal of renewal application for Permit #VAS2D697BDIC, VWD-539572, Class II-D fluid disposal well in the Ervinton District of Dickenson County, Virginia, a typographical mistake in the Area of Review was discovered. EnerVest wishes for the record to reflect a ¼-mile standard area of review instead of the ½-mile area of review mistakenly stated.

The associated mapping and field reviews were based on ¼-mile area of review. An updated Attachment A is included with this request letter. I apologize for the inconvenience. If there are any questions please feel free to contact me directly.

Respectfully submitted,

Jon Lawson, CSP
Sr. HSE Specialist
jlawson@enervest.net

INTRODUCTION AND AREA OF REVIEW

ATTACHMENT

A

1.0 INTRODUCTION

EnerVest Operating, LLC (EnerVest) in Clintwood, Virginia is submitting this permit renewal application for the permitted, undrilled VWD-539572 Class II-D oil and gas production fluid disposal well. The original application was submitted and approved in Summer/Fall 2008 and permit plans remain unchanged at the time of renewal.

EnerVest obtained Range Resources' operations in 2016, prior to that acquisition; Range Resources had acquired Equitable Production Company –which first permitted the VWD-539572 being renewed. During the uncertainty of company transitions, the permitted well was never drilled; however, as stability in the market is expected to return the prospect of drilling the VWD-539572 is also more likely.

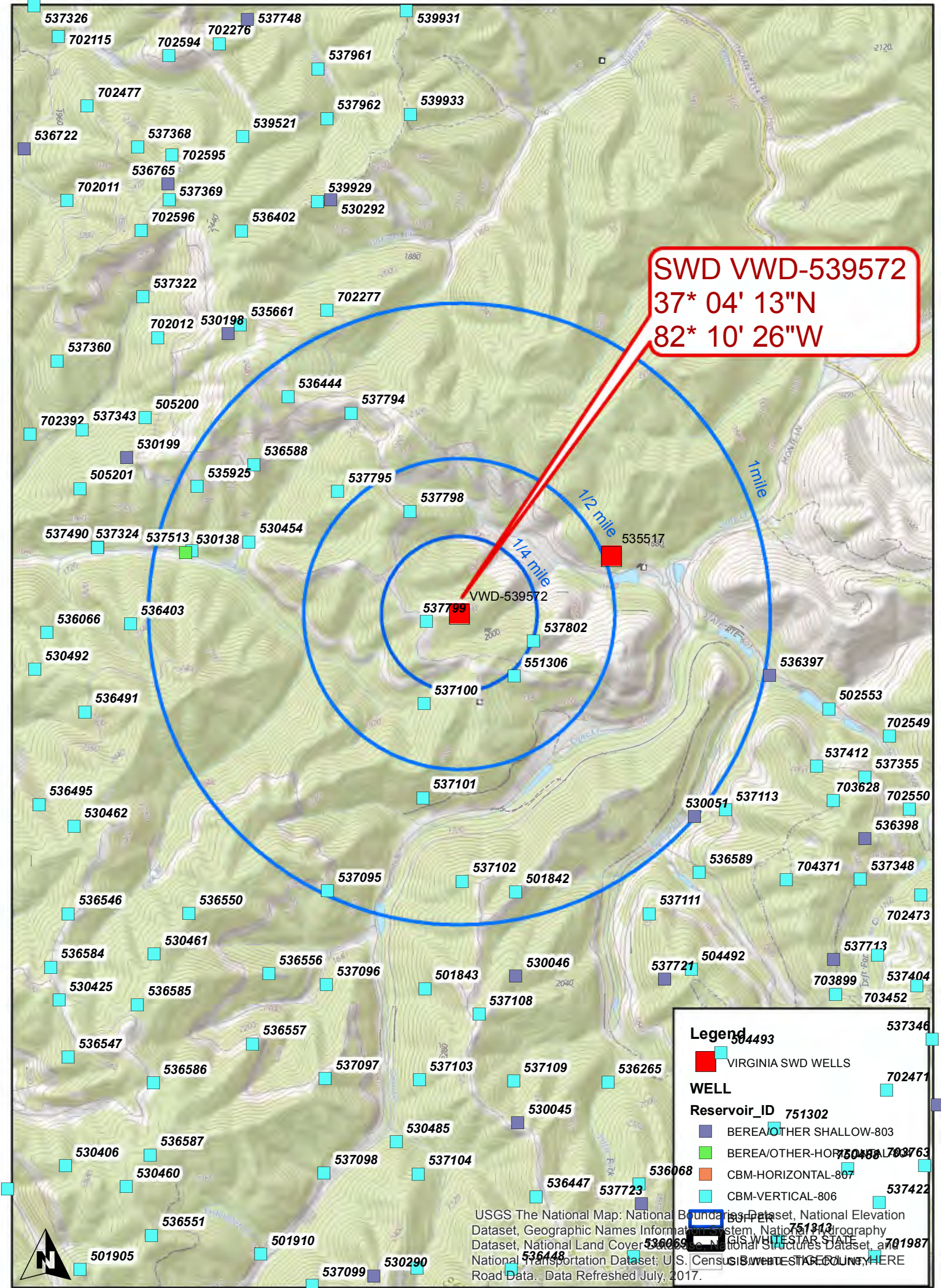
The VWD-539572 is permitted as a new drill, not a conversion of existing well, in the Cane Creek Area of Dickenson County, Virginia. This permit renewal application will present the necessary information and supporting documentation for renewing the existing permit for the undrilled well.

2.0 AREA OF REVIEW

The fixed radius of $\frac{1}{4}$ - miles from proposed well VWD-539572 was used for the area of review. All information presented and mapping provided are based upon the $\frac{1}{4}$ - mile radius using Well VWD-539572 as the center.

On some selective mapping, a radius of one mile, using Well VWD-539572 as the center, will be the area of review as required by this permit application.

DRAWING 1



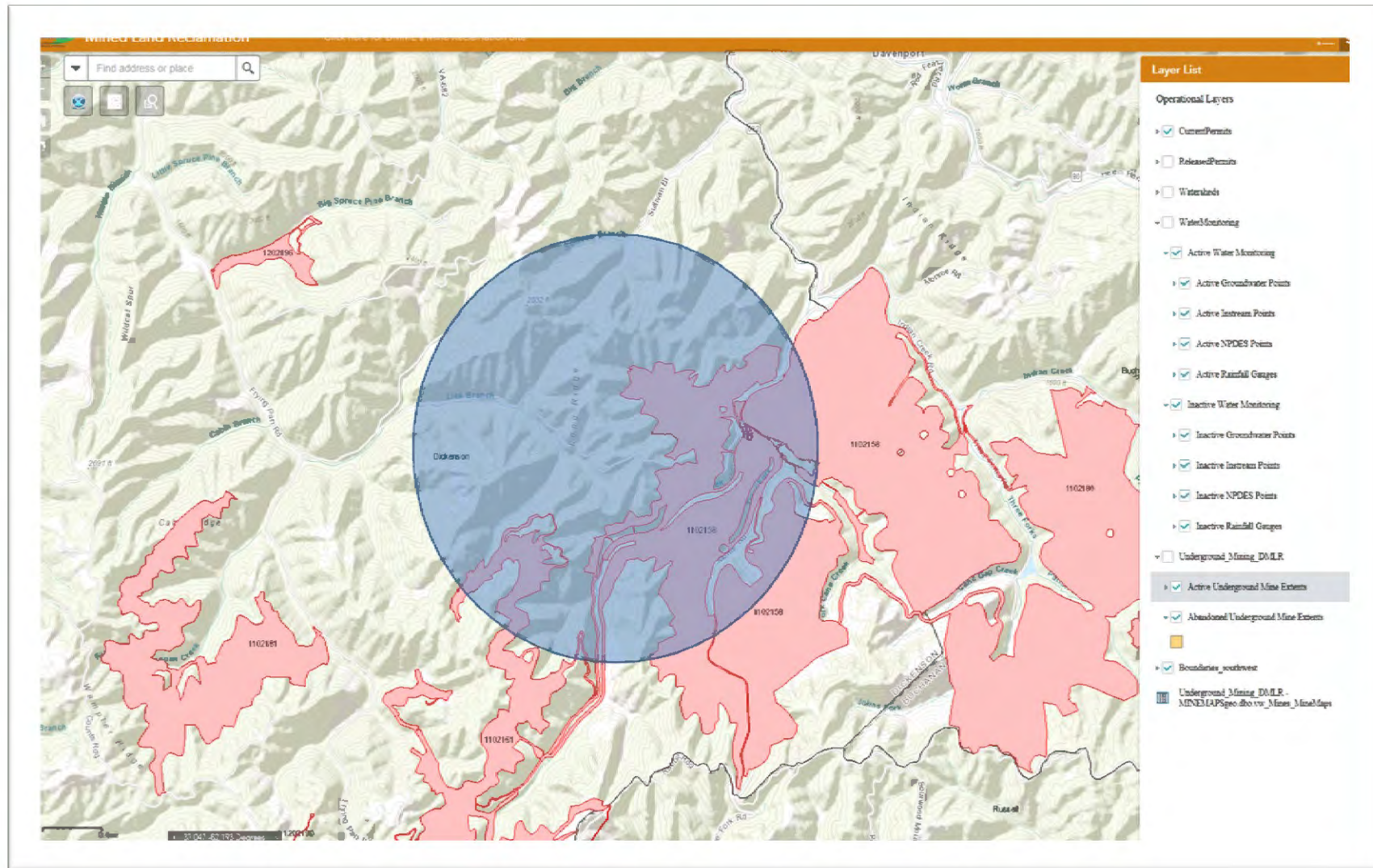
VWD-539572

1 inch = 2,000 feet

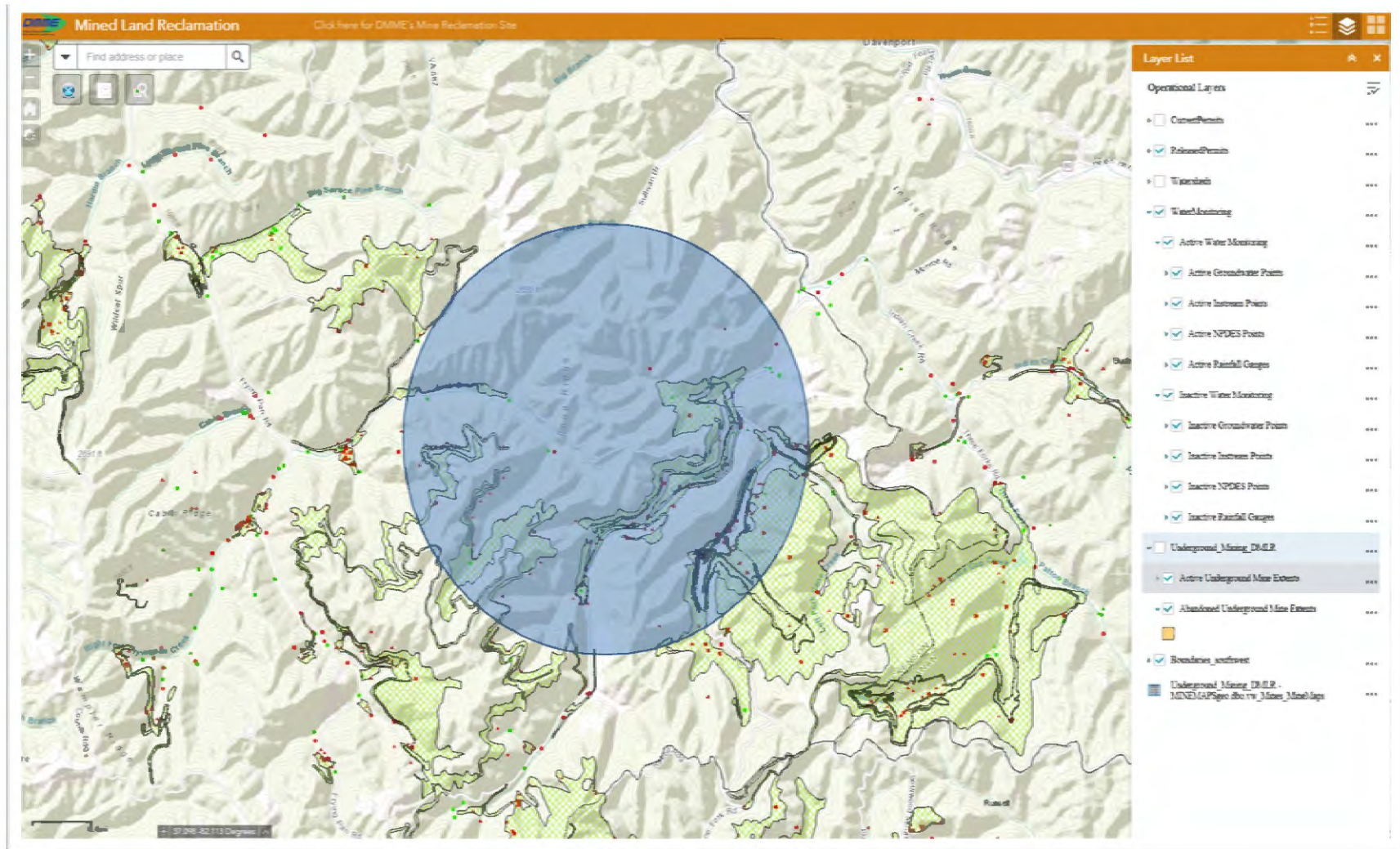
0 0.25 0.5 1 Miles



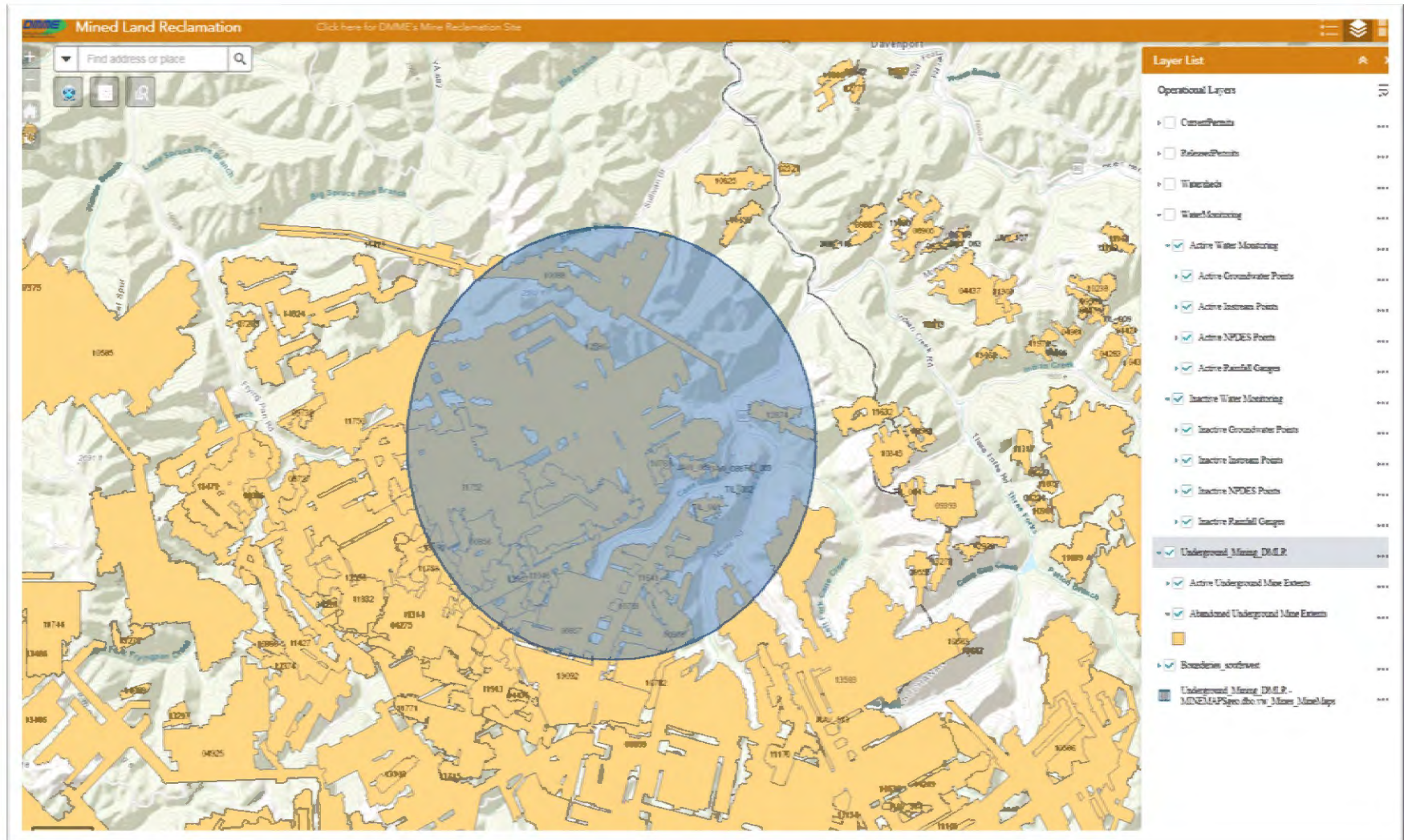
ACTIVE SURFACE MINING WITHIN 1-MILE RADIUS OF PROPOSED VWD-539572



WATER MONITORING POINTS AND INACTIVE SURFACE MINING WITHIN 1-MILE RADIUS OF VWD-539572



ABANDONED UNDERGROUND MINING EXTENTS WITHIN 1-MILE RADIUS OF VWD-539572



OMB No. 2040-0042

Approval Expires 12/31/2018

 United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</i>		EPA ID Number: VAS2D697BDIC		
		T/A	C	
Read Attached Instructions Before Starting For Official Use Only				
Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number
I. Owner Name and Address		II. Operator Name and Address		
Owner Name EnerVest Operating, L.L.C.		Owner Name EnerVest Operating, L.L.C.		
Street Address 300 Capitol Street		Street Address 809 Happy Valley Dr		
Phone Number (304) 414-8220		Phone Number (276) 926-1300		
City Charleston	State WV	ZIP CODE 25301	City Clintwood	
State VA	ZIP CODE 24228			
IV. Commercial Facility		V. Ownership		
<input type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other		
		<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator		
		1311		
VIII. Well Status (Mark 'x')				
<input type="checkbox"/> A. Operating <input type="checkbox"/> B. Modification/Conversion <input checked="" type="checkbox"/> C. Proposed				
IX. Type of Permit Requested (Mark 'x' and specify if required)				
<input checked="" type="checkbox"/> A. Individual <input type="checkbox"/> B. Area		Number of Existing Wells --		
		Number of Proposed Wells 1		
		Name(s) of field(s) or project(s) Nora Field, Virginia		
X. Class and Type of Well (see reverse)				
A. Class(es) (enter code(s))		B. Type(s) (enter code(s))		
II		D		
		C. If class is "other" or type is code 'x,' explain --		
		D. Number of wells per type (if area permit) --		
XI. Location of Well(s) or Approximate Center of Field or Project				
Latitude		Longitude		
Deg	Min	Deg	Min	
37	04	82	10	
Sec	Sec	Sec	Sec	
13	26			
Township and Range		Feet From		
Sec	Twp	Range	Line	
		1/4 Sec		
		Feet From		
		Line		
XII. Indian Lands (Mark 'x')				
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
XIII. Attachments				
(Complete the following questions on a separate sheet(s) and number accordingly; see instructions) For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.				
XIV. Certification				
I certify under the 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. (Ref. 40 CFR 144.32)				
A. Name and Title (Type or Print)		B. Phone No. (Area Code and No.)		
James McKinney, Senior VP and General Manager		(304) 343-5505		
C. Signature		D. Date Signed		
		7/23/2018		



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-530454 w/PL
Application Number: 29372

**APPLICATION FOR A NEW PERMIT, PERMIT MODIFICATION,
OR TRANSFER OF PERMIT RIGHTS**

Application Information:

Name: EnerVest Operating, LLC
Address: 408 W Main Street
Abingdon, VA 24210
Telephone Number: 276-628-9001
Designated Agent: Ian Landon

Type of Application: New

Type of Operation: Coalbed/Pipeline

Horizontal Unit Name:

Operator's Bond Information:

Bond Number	Type	Amount	Institution
B007948	SUR	100000.00	

Article 2 Board Requirements:

Field Order:

Does this application fall under a Field Order established by the Virginia Gas and Oil Board? Yes

Field Name: Nora Coalbed

Increased Density:

Is this well an increased density well for the unit? Yes

If yes, Docket #: 89-0126-0009-09

Pooling:

Is pooling Voluntary? Yes

Location Exception:

Is an exception to statewide spacing required by the board? No

Director Exception:

Is an exception to field order spacing required by the Director? Yes

Description	File Name
VCI-530454 Aerial Map	VCI-530454 Aerial Map.pdf

VCI-530454 Director Request	VCI-530454 Director Request.pdf
VCI-530454 Plat with Topo	VCI-530454_Plat w_topo.pdf

Director Approval:

Is location exception due to mining? No

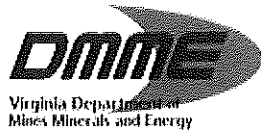
Application Certification:

I, Laura Murray representing EnerVest Operating, LLC

certify that all persons required to be notified under Section 45.1-361.30 of the Code of Virginia have been notified. Proof of notice is included as a part of this application. In the case of an application for a Permit, Permit Modification, or an application under 4 VAC 25-150-80, I hereby state that the Applicant named above has the right to conduct operations as set forth in the application and operations plan.

Title: Associate Landman

Date: 11/8/2016



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-530454 w/PL
Application Number: 29372

NOTICE OF APPLICATION FOR A PERMIT OR PERMIT MODIFICATION

Take Notice of EnerVest Operating, LLC, pursuant to Code of Virginia, Section 45.1-361.29, is filing this Notice and Application of a permit with the Virginia Division of Gas and Oil with respect to an operation on the lands Heartwood Forestland Fund IV, L.P, ACIN, LLC, WBRD, LLC, Paramount Contura, LLC, Dickenson-Russell Contura, LLC, LLC, Mullins Land & Mineral, Inc. and EnerVest Energy Institutional Fund XIV-A, EnerVest Energy Institutional Fund XIV-A1, L.P. & EnerVest Energy Institutional Fund XIV-WIC, L.P. on the H.W. Sutherland, tract(s) of 225 acres, more or less, Ervinton District, DICKENSON City/County, Virginia.

Attached to this Notice of Application is a copy of the required plat or map, operations plan and other information required by the Director. The operations plan describes the work to be done and meets the requirements of Regulation 4 VAC 25-150-100.

You may have the right to file an objection to the proposed operations within fifteen (15) days from the receipt of this notice pursuant to the Code of Virginia, Section 45.1-361.35. A copy of this Code section is attached for your review. You must describe the specific practices you are objecting to and reference the appropriate part of Section 45.1-361.35 when submitting any objection.

Section 45.1-361.35.A "Objections to new or modification permits may be filed with the Director by those having standing as set out in Section 45.1-361.30. Such objections shall be filed within fifteen days of the objecting party's receipt of the notice required by Section 45.1-361.30. Persons objecting to a permit must state the reasons for their objections."

After receipt of a valid objection, an informal conference will be scheduled pursuant to the Code of Virginia Section 45.1-361.35.H.

Section 45.1-361.35.H "The Director shall fix a time and place for an informal fact finding hearing concerning such objections. The hearing shall not be scheduled for less than twenty nor more than thirty days after an objection is filed."

City/County: DICKENSON District: Ervinton Quadrangle: DUTY

Waterway: Lick Branch of Fryingpan Creek Farm Name: H.W. Sutherland

State Plane NAD 83 East / X	State Plane NAD 83 North / Y	Surface Elevation
10407791.7100	3571314.5300	1766.30

OBJECTIONS MUST BE FILED WITH

**DEPARTMENT OF MINES, MINERALS AND ENERGY
DIVISION OF GAS AND OIL
P.O. Drawer 159
Lebanon, VA 24266
276-415-9700**

SECTION 45.1-361.35 - OBJECTIONS TO PERMITS; HEARINGS

A. Objections to new or modification permits may be filed with the Director by those having standing as set out in Section 45.1-361.30. Such objections shall be filed within fifteen days of the objecting party's receipt of the notice required by Section 45.1-361.30. Persons objecting to a permit must state the reasons for their objections.

B. The only objections to permits or permit modifications which may be raised by surface owners are:

1. The operations plan for soil erosion and sediment control is not adequate or effective;
2. Measures in addition to the requirement for a well's water-protection string are necessary to protect fresh water-bearing strata; and
3. The permitted work will constitute a hazard to the safety of any person.
4. Location of the coalbed methane well or coalbed methane well pipeline will unreasonably infringe on the surface owner's use of the surface, provided; however, that a reasonable alternative site is available within the unit, and granting the objection will not materially impair any right contained in an agreement, valid at the time of the objection, between the surface owner and the operator or their predecessors or successors in interest.

C. The only objections to permits or permit modifications which may be raised by royalty owners are whether the proposed well work:

1. Directly impinges upon the royalty owner's gas and oil interests; or
2. Threatens to violate the objecting royalty owner's property or statutory rights aside from his contractual rights; and
3. Would not adequately prevent the escape of the Commonwealth's gas and oil resources or provide for the accurate measurement of gas and oil production and delivery to the first point of sale.

For assistance in accessing this document, contact R3_UIC_Mailbox@epa.gov
D. Objections to permits or permit modifications may be raised by coal owners or operators pursuant to the provisions of Sections 45.1-361.11 and 45.1-361.12.

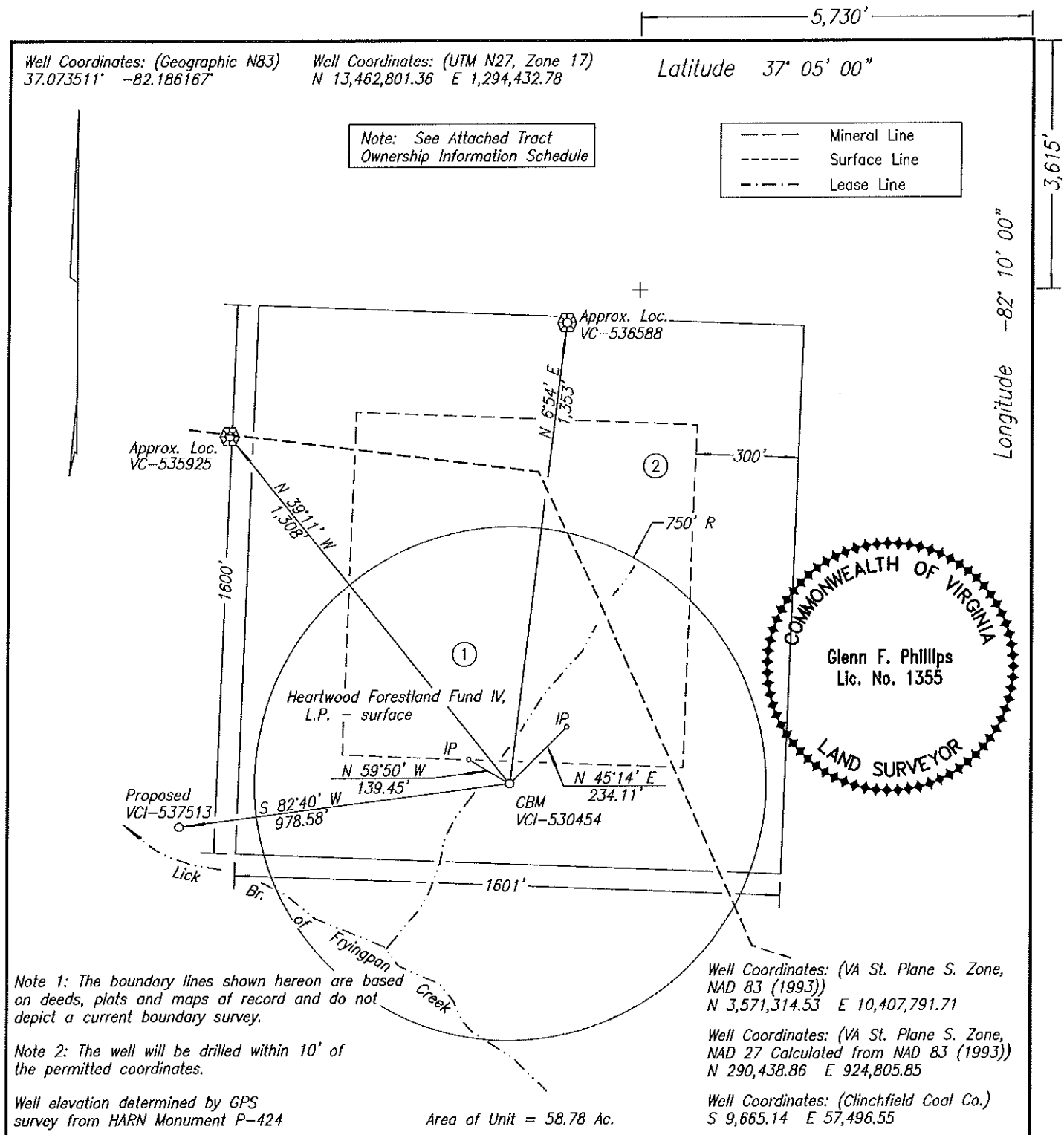
E. The only objections to permits or permit modifications which may be raised by mineral owners are those which could be raised by a coal owner under Section 45.1-361.11 provided the mineral owner makes the objection and affirmatively proves that it does in fact apply with equal force to the mineral in question.

F. The only objections to permits or permit modifications which may be raised by gas storage field operators are those in which the gas storage operator affirmatively proves that the proposed well work will adversely affect the operation of his State Corporation Commission certificated gas storage field; however, nothing in this subsection shall be construed to preclude the owner of nonstorage strata from the drilling of wells for the purpose of producing oil or gas from any stratum above or below the storage stratum.

G. The Director shall have no jurisdiction to hear objections with respect to any matter subject to the jurisdiction of the Board as set out in Article 2 (Section 45.1-361.13 et seq.) of this chapter. Such objections shall be referred to the Board in a manner prescribed by the Director.

H. The Director shall fix a time and place for an informal fact finding hearing concerning such objections. The hearing shall not be scheduled for less than twenty nor more than thirty days after the objection is filed. The Director shall prepare a notice of the hearing, stating all objections and by whom made, and send a copy of such notice by certified mail, return receipt requested, at least ten days prior to the hearing date, to the permit applicant and to every person with standing to object as prescribed by Section 45.1-361.30.

I. At the hearing, should the parties fail to come to an agreement, the Director shall proceed to decide the objection pursuant to those provisions of the Administrative Process Act (Section 9-6.14.1 et seq.) relating to informal fact finding hearings.



WELL LOCATION PLAT NORA GRID BG-73

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VCI-530454
TRACT NO. I-405 ELEVATION 1,766.30' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 10-05-2016
This Plat is a new plat X; an updated plat ; or a final location plat

+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

~~Licensed Professional Engineer or Licensed Land Surveyor~~

VCI-530454 PLAT
TRACT OWNERSHIP INFORMATION SCHEDULE
10/5/2016

1 . T-405

H. W. Sutherland

225 Acres

ACIN LLC - coal (except Jawbone & Tiller seams)

Paramont Contura, LLC - coal lessee

WBRD LLC - coal (except Jawbone & Tiller seams)

Dickenson-Russell Contura, LLC - coal lessee

Mullins Land & Mineral, Inc. - coal (Jawbone & Tiller seams)

EnerVest Energy Institutional Fund XIV-A, L.P., EnerVest Energy Institutional Fund XIV-A1, L.P., &

EnerVest Energy Institutional Fund XIV-WIC, L.P. - oil, gas & CBM

Gas 30.43 Ac. 51.77%

2 . T-409

J. N. R. Sutherland

430.65 Acres

ACIN LLC - coal (except Jawbone & Tiller seams)

Paramont Contura, LLC - coal lessee

WBRD LLC - coal (except Jawbone & Tiller seams)

Dickenson-Russell Contura, LLC - coal lessee

Mullins Land & Mineral, Inc. - coal (Jawbone & Tiller seams)

EnerVest Energy Institutional Fund XIV-A, L.P., EnerVest Energy Institutional Fund XIV-A1, L.P., &

EnerVest Energy Institutional Fund XIV-WIC, L.P. - oil, gas & CBM

Gas 28.35 Ac. 48.23%



Operations Name: VCI-530454 w/PL

Application Number: 29372

PERSONS RECEIVING OFFICIAL NOTICE OF PERMIT APPLICATION OR PERMIT MODIFICATION

For the purposes of an application for a new permit or permit modification, list such persons by name and address on additional sheets as needed with the title, "Supplemental Sheet for Persons Receiving Official Notice of Permit Application" and indicate the category for each person or group affected.

Application for Well Work Permit:

- ☒ Surface, coal and mineral owners on the tract to be drilled
- ☒ Surface owners of record on tracts where the surface is to be disturbed
- ☒ Gas, oil and royalty owners within
 - ☐ (1) one-half the distance specified in Section 45.1-361.17
 - ☐ (2) one-half the distance to the nearest well completed in the same pool or
 - ☒ (3) within the drilling unit established by the Virginia Gas and Oil Board
- ☐ Coal operators who have a registered operation plan with the Department for activities located on the tract to be drilled
- ☐ All coal operators who have applied for or obtained a mining or prospecting permit with respect to tracts within 500' of the proposed well location
- ☒ All coal or mineral owners on tracts located within 500' of the proposed well location
- ☐ All Storage Field Operators Within 1250'
- ☒ Local Government pursuant to Section 45.1-361.30.E
- ☒ Public notice pursuant to Section 45.1-361.30.E, such as an affidavit of publication from the newspaper

Coalbed Methane Well Applications (In Addition to Above)

- ☒ All coal operators, coal owners or mineral owners within 750 feet of the proposed well location
- ☐ All coal operators who have applied for or obtained a mining or prospecting permit with respect to tracts within 750 feet of the proposed well location

Applications for Pipelines and Facilities

- ☒ All surface owners affected by the proposed operations

Applications for Ground Disturbing Geophysical

Operations

- ☐ Surface owners on tracts where the surface is to be disturbed
- ☐ Coal owners, coal operators, and mineral owners on the tract(s) to be drilled
- ☐ Coal operators who have registered operations plans with the Department for activities located on the tract to be drilled

**SUPPLEMENTAL SHEET(S) FOR PERSONS RECEIVING OFFICIAL NOTICE OF PERMIT
APPLICATION PURSUANT TO SECTION 45.1-361.30**

APPLICATIONS FOR WELL WORK PERMIT

A. Surface, coal and mineral owners on the tract to be drilled

Mr. Chad Mooney, ACIN, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Chad Mooney, WBRD, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Craig Kaderavek, Heartwood Forestland Fund, IV, LP, 19045 Stone Mountain Road, Abingdon, VA 24210
Mr. Freddie Mullins, Mullins Land and Mineral Inc., PO Box 951, Clintwood, VA 24228
Mr. James McKinney, EnerVest Energy Institutional Fund XIV-A, L.P. & E, P.O. 2136, Abingdon, VA 24210
Mr. Steve Smith, Alpha Land and Reserves, LLC, 5703 Crutchfield Drive, Norton, VA 24273
Mr. Steve Smith, Dickenson-Russell Coal Company, LLC, 5703 Crutchfield Drive, Norton, VA 24273

B. Surface owners of record on tracts where the surface is to be disturbed

Mr. Craig Kaderavek, Heartwood Forestland Fund, IV, LP, 19045 Stone Mountain Road, Abingdon, VA 24210

C. Gas, oil and royalty owners within

1. one-half the distance specified in Section 45.1-361.17

N/A

2. one-half the distance to the nearest well completed in the same pool

N/A

3. within the drilling unit established by the Virginia Gas and Oil Board

Mr. James McKinney, EnerVest Energy Institutional Fund XIV-A, L.P. & E, P.O. 2136, Abingdon, VA 24210

D. Coal operators who have a registered operation plan with the Department for activities located on the tract to be drilled

N/A

E. All coal operators who have applied for or obtained a mining or prospecting permit with respect to tracts within 500' of the proposed well location

N/A

F. All coal or mineral owners on tracts located within 500' of the proposed well location

Mr. Chad Mooney, ACIN, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Chad Mooney, WBRD, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Freddie Mullins, Mullins Land and Mineral Inc., PO Box 951, Clintwood, VA 24228
Mr. James McKinney, EnerVest Energy Institutional Fund XIV-A, L.P. & E, P.O. 2136, Abingdon, VA 24210
Mr. Steve Smith, Alpha Land and Reserves, LLC, 5703 Crutchfield Drive, Norton, VA 24273
Mr. Steve Smith, Dickenson-Russell Coal Company, LLC, 5703 Crutchfield Drive, Norton, VA 24273

G. All Storage Field Operators Within 1250'

N/A

Dickenson County Administrator, P.O. Box 1098, , Clintwood, VA 24614

- I. Public notice pursuant to Section 45.1-361.30.E, such as an affidavit of publication from the newspaper
The Dickenson Star, P.O. Box 707, , Clintwood, VA 24228

COALBED METHANE WELL APPLICATION IN ADDITION TO ABOVE

- J. All coal operators, coal owners or mineral owners within 750 feet of the proposed well location

Mr. Chad Mooney, ACIN, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Chad Mooney, WBRD, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Freddie Mullins, Mullins Land and Mineral Inc., PO Box 951, Clintwood, VA 24228
Mr. James McKinney, EnerVest Energy Institutional Fund XIV-A, L.P. & E, P.O. 2136, Abingdon, VA 24210
Mr. Steve Smith, Alpha Land and Reserves, LLC, 5703 Crutchfield Drive, Norton, VA 24273
Mr. Steve Smith, Dickenson-Russell Coal Company, LLC, 5703 Crutchfield Drive, Norton, VA 24273

- K. All coal operators who have applied for or obtained a mining or prospecting permit with respect to tracts within 750 feet of the proposed well location

N/A

APPLICATIONS FOR PIPELINES AND FACILITIES

- L. All surface owners affected by the proposed operations

Mr. Craig Kaderavek, Heartwood Forestland Fund, IV, LP, 19045 Stone Mountain Road, Abingdon, VA 24210

APPLICATIONS FOR GROUND DISTURBING GEOPHYSICAL OPERATIONS

- M. Surface owners on tracts where the surface is to be disturbed

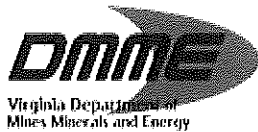
N/A

- N. Coal owners, coal operators, and mineral owners on the tract(s) to be drilled

N/A

- O. Coal operators who have registered operations plans with the Department for activities located on the tract to be drilled

N/A



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

NOTICE BY PUBLICATION OF AN APPLICATION FOR A PERMIT

For purposes of publication requirements under § 45.1-361.30.E., the following format shall be used.

NOTICE OF APPLICATION FOR

Operations Name: VCI-530454 w/PL
Application Number: 29372

Take Notice that, pursuant to Code of Virginia, Section 45.1-361.30.E. the undersigned operator proposes to file, or has filed, an application for gas and oil operations known as VCI-530454 w/PL with the Department of Mines, Minerals and Energy, Division of Gas and Oil under Code of Virginia, Section 45.1-361.29, with respect to an operation on the lands Heartwood Forestland Fund IV, L.P, ACIN, LLC, WBRD, LLC, Paramount Contura, LLC, Dickenson-Russell Contura, LLC, LLC, Mullins Land & Mineral, Inc. and EnerVest Energy Institutional Fund XIV-A, EnerVest Energy Institutional Fund XIV-A1, L.P. & EnerVest Energy Institutional Fund XIV-WIC, L.P. on the H.W. Sutherland, tract(s) of 225 acres, more or less, tract(s) in the Ervinton District, DICKENSON City/County, Virginia

The application is on file with the Division of Gas and Oil identifying the proposed location and all work to be performed at the described site. Any inquiries should be directed to the Division of Gas and Oil at 276 415-9700.

Code of Virginia Section 45.1-361.30 identifies persons with rights to file objections to the gas and oil operation. Persons objecting to a permit must state their reasons for objecting within 15 days of the date of receipt of notice. Written objections must be filed with the Director, Department of Mines, Minerals and Energy, Division of Gas and Oil, P. O. Drawer 159, Lebanon, Virginia 24266.

Operator: EnerVest Operating, LLC

Address: 408 W Main Street
Abingdon, VA 24210

Telephone Number: 276-628-9001



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-530454 w/PL

Application Number: 29372

TECHNICAL DATA SHEET FOR PERMIT APPLICATIONS UNDER SECTION 45.1-361.29

☐ the information is related to the conversion of a VVH to a CBM under 4 VAC 25-150-580.

Geological Target Formation: Pocahontas

Estimated Depth of Completed Well : 2124.0

GEOLOGICAL DATA (ESTIMATE)

Predict:

Description	FileName
VCI-530454 Geological Data	VCI-530454 Geological Data.pdf

Consent to Stimulate:

Description	FileName
VCI-530454 CTS	VCI-530454 Consent to Stimulate.pdf

Proposed Casing/Tubing Program

	Size	Depth	Cement Details
Conductor	9 5/8"	40'	Back fill with drill cuttings
Surface/Water Prot. Casing	7"	400'	Cement to Surface
Coal Protection Casing			
Other Casing			
Other Casing			
Other Casing			
Production Casing	4 1/2"	2124'	Cement to Surface
Tubing	2 3/8"	2074'	



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-530454 w/PL

TECHNICAL DATA SHEET FOR GATHERING PIPELINES

Pursuant to Code of Virginia, Section 45.1-361.29, the applicant is applying for a permit for a gathering pipeline and/or associated facilities.

Location of Proposed Pipeline:

City/County(s): DICKENSON

District(s): Ervinton

Quadrangle(s): DUTY

Watershed(s): Lick Branch of Fryingpan Creek

Pipeline Type	Pipeline Diameter (Inches)	Right of Way Width (feet)	Proposed Length (Feet)	Calculated Distrubed Acres	Surface / Buried	Pipeline Material	Well Name
Gas	4.00	100	224.00	0.51	Surface	Steel	VCI-530454

Total Length of Proposed Pipeline: 224.00

Area to be disturbed: 0.51

Associated pipeline or well permit number:

Operations Name / File #
BF-25PL



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-530454 w/PL

Application Number: 29372

OPERATIONS PLAN

PRE-DEVELOPMENT SITE CONDITIONS:

Existing Land Use: Forest

Set-back variance requested: ☐ Yes ☒ No

Located on DMLR permit(s): ☐ Yes ☒ No

Active underground mining located within ☐ 500' ☐ 200' of proposed well location or ☒ No Mining

Is the topography different from that depicted on the attached topographic map(s): ☐ Yes ☒ No

Ground Water Analysis Attached: ☐ Yes ☒ To be submitted prior to drilling
☐ Not required (No Groundwater found within 500' of proposed well or corehole)

Source Water Analysis Attached: ☐ Yes ☒ To be submitted prior to drilling
☐ Not required (using municipal water source) ☐ Not required (using onsite water source)

Provide a statement of the acres to be disturbed to the nearest 1/10 of an acre subject to this application:

2.90

CONSTRUCTION PLANS

- ☒ Not less than 1" - 400' topographic map depicting all existing and proposed access roads to be upgraded or constructed. Anticipated culvert sizes, locations, and the approximate final road grades shall be shown on the proposed roads. Adjoining state and county maintained roads and previously permitted roads which will be used in conjunction with the proposed roads shall be labeled for reference purposes.
- ☒ Not less than 1" - 50' site map with cross section(s) indicating the elevations before and after construction, the drilling pad size, the location of all drainage and erosion/sediment control structures, topsoil stockpiles and pits.
- ☒ Not less than 1" - 600' topographic map showing the total length of the proposed pipelines with notations of the pipeline diameter. This map shall show the location of all proposed drips, tanks and associated facilities (if applicable) and shall indicate where the pipe is to be buried or on the surface. The anticipated grades after construction for the ground disturbing sections of the pipeline rights-of-way shall also be shown on the map or an associated section profiles.
- ☐ Identify on attached maps any adjacent land, man-made or public safety features which would be at risk because of proposed operations as Red Zone(s) as required by 45 VAC 25-150-100(B).

Description	FileName
VCI-530454 Exhibit 1	VCI-530454 Exhibit 1.pdf
VCI-530454 Exhibit 1A	VCI-530454 Exhibit 1A.pdf
VCI-530454 Exhibit 1B	VCI-530454 Exhibit 1B.pdf
VCI-530454 Deep mine works Jawbone	VCI-530454_deepmine_works_Jwb.pdf
VCI-530454 Pipeline 1"=400'	VCI-530454_pl.pdf
VCI-530454 Pipeline 1"=2000'	VCI-530454_t.pdf

WORK PLANS

Stimulation plan attached: ☒ Yes ☐ Does Not Apply

Description	FileName
CBM Stimulation Plan	CBM Stimulation Plan.pdf

Analysis of mud medium/drilling medium/oil based fluid medium attached/filed:

☐ Yes ☐ Does Not Apply ☒ On File with DGO

SPCC Plan Required by EPA: ☐ Yes ☒ No

Pit Identification:

Pit Name	Date Added	Date Removed
Pit		

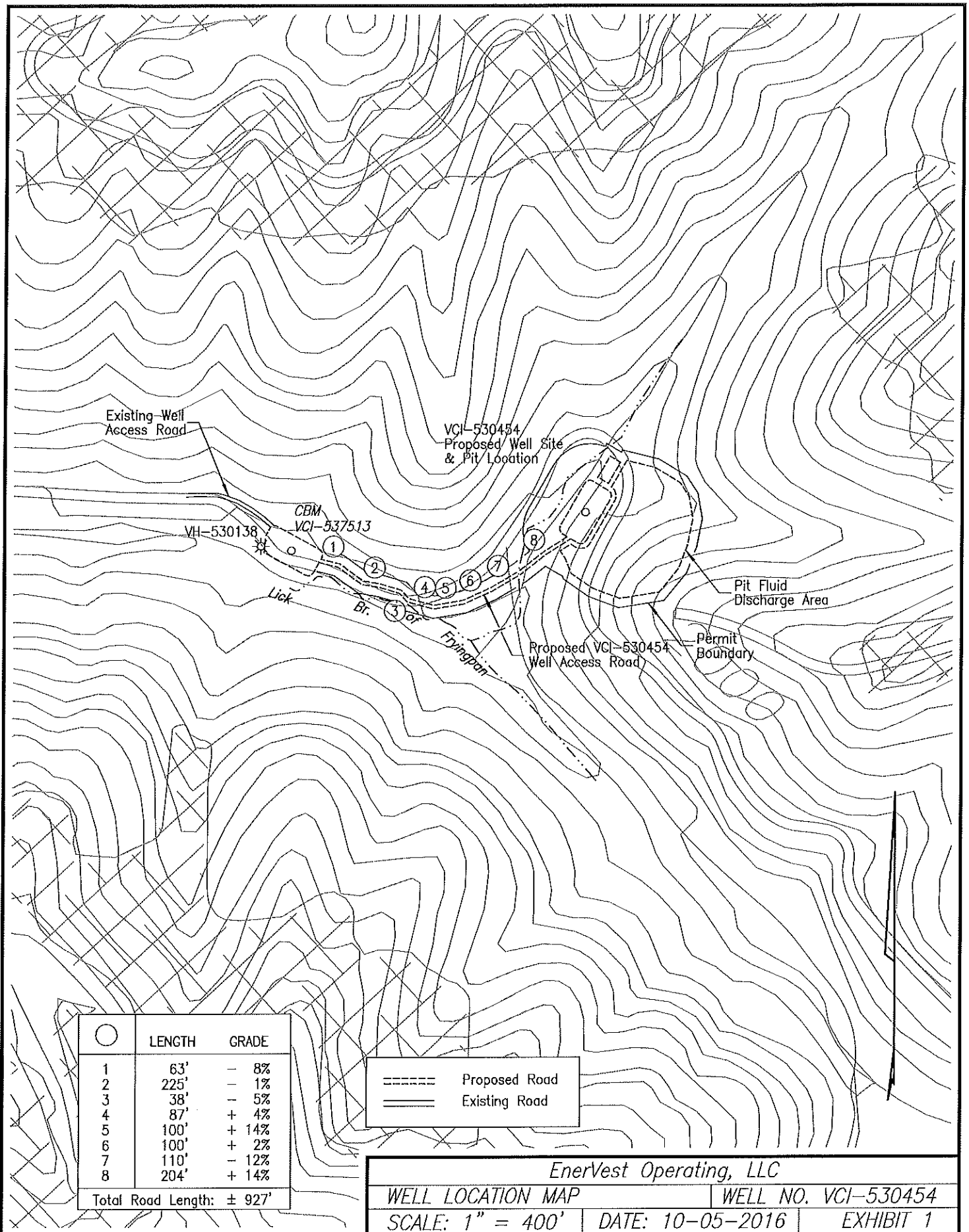
Wellbore Identification:

Wellbore Identifier	Date Added
---------------------	------------

PROVIDE INFORMATION OR ATTACHEMENTS PERTAINING TO SITE SPECIFIC INFORMATION THAT IS NOT ADDRESSED ABOVE

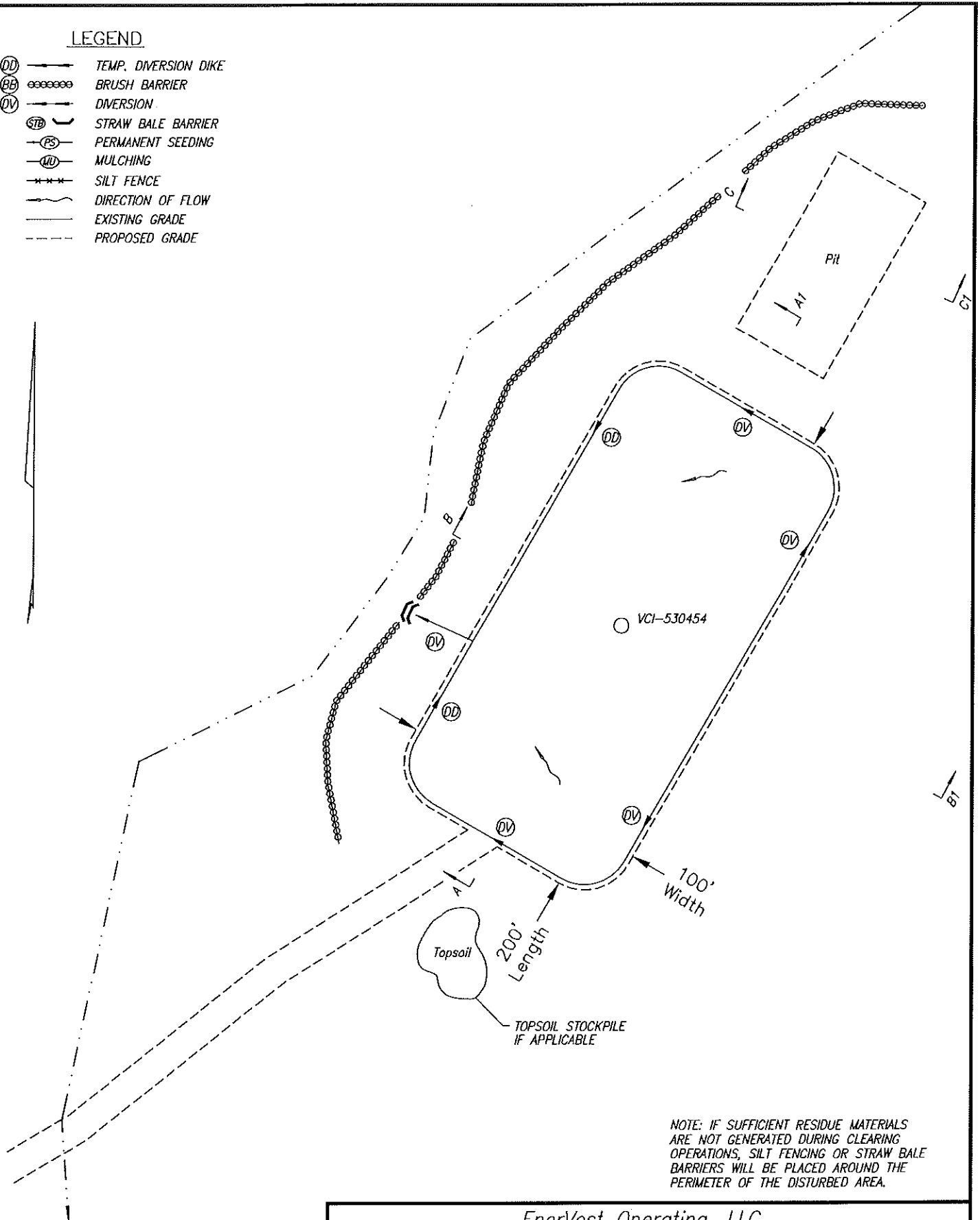
Description	FileName
VCI-530454 Site Specific Information	VCI-530454 Site Specific Information.pdf

Directions to site: From the intersection of VA State Routes 63 & 657 (top of Hazel Mtn between Trammel and Dante), Take SR 657 (East Hazel Mtn) east, go 5.7 miles to Carrie. Turn left on SR 600 (Fryingpan), go 3.2 miles to Bucu. Turn right on lease road, thru gate, go 0.92 miles to intersection. Turn hard right, go 0.76 miles to VH-530138 location. East end (Front of Location) follow flagging along PL to interconnect. Continue following flagging to left up hollow to well stake.

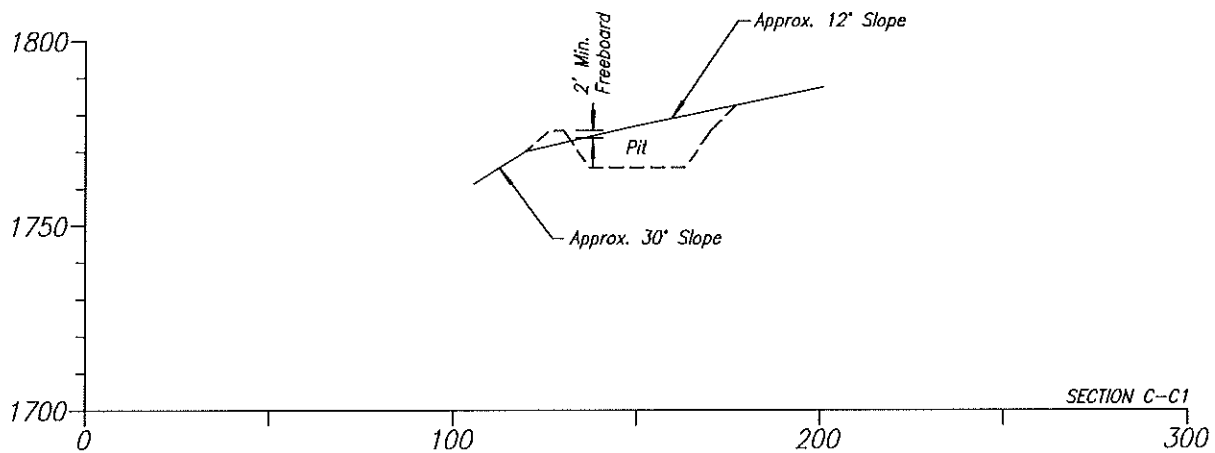
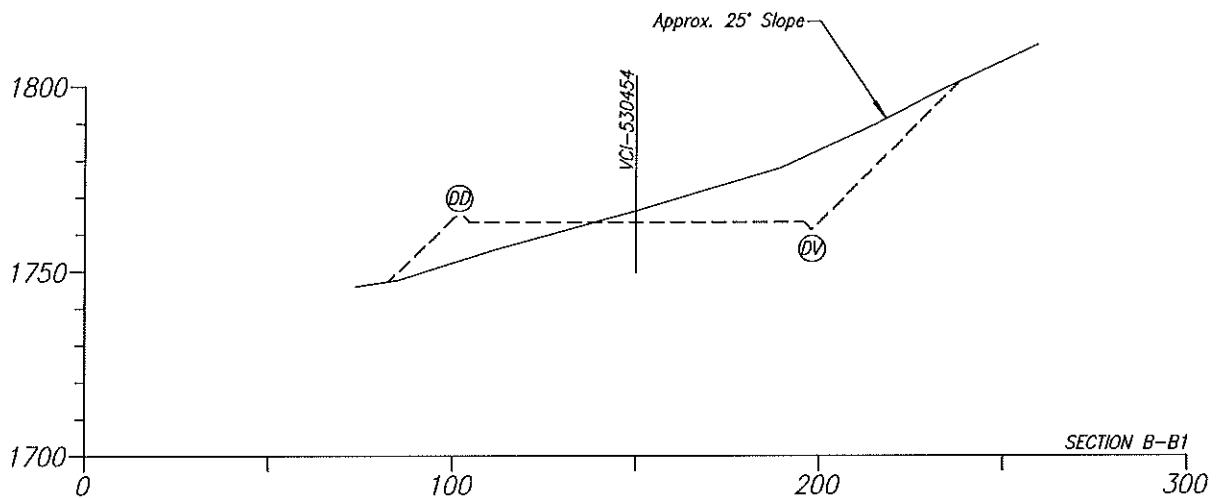
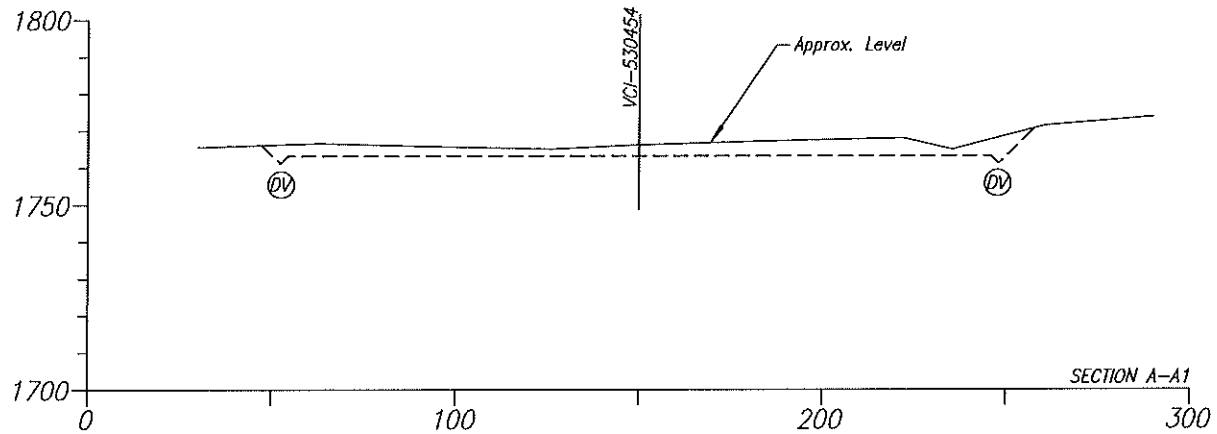


LEGEND

- ⓓⓓ ——— TEMP. DIVERSION DIKE
- ⓅⓅ ——— BRUSH BARRIER
- ⓓⓓ ——— DIVERSION
- ⓈⓈ ——— STRAW BALE BARRIER
- Ⓟ ——— PERMANENT SEEDING
- ⓓ ——— MULCHING
- SILT FENCE
- DIRECTION OF FLOW
- EXISTING GRADE
- PROPOSED GRADE



EnerVest Operating, LLC		
SCALE: 1" = 50'	WELL SITE PLAN	WELL NO. VCI-530454
DATE: 10-05-2016	EXHIBIT 1A	



LEGEND

- DD ——— TEMP. DIVERSION DIKE
- BB ——— BRUSH BARRIER
- DV ——— DIVERSION
- SB ——— STRAW BALE BARRIER
- PS ——— PERMANENT SEEDING
- MD ——— MULCHING
- *** ——— SILT FENCE
- > ——— DIRECTION OF FLOW
- EXISTING GRADE
- PROPOSED GRADE

NOTE: IF SUFFICIENT RESIDUE MATERIALS ARE NOT GENERATED DURING CLEARING OPERATIONS, SILT FENCING OR STRAW BALE BARRIERS WILL BE PLACED AROUND THE PERIMETER OF THE DISTURBED AREA.

DATE: 10-05-2016

EnerVest Operating, LLC

WELL SITE & PIT CROSS-SECTIONS

WELL NO. VCI-530454

SCALE: 1" = 50'

EXHIBIT 1B

NOTE: IF SUFFICIENT RESIDUE MATERIALS ARE NOT GENERATED DURING CLEARING OPERATIONS, SILT FENCING OR STRAW BALE BARRIERS WILL BE PLACED AROUND THE PERIMETER OF THE DISTURBED AREA.

CULVERT SCHEDULE			
CULV. NO.	Q (CFS)	D (IN)	MIN. H.W. (FT)
C1	2.09	18	1.0
C2	64.9	48	1.0
C3	<1.0	12	1.0

Existing Well Access Road

VH-530138

PROPOSED VCI-537513

Existing 4" 530138PL

Existing 8" BF-45PL

VCI-530454
Proposed Well Site & Pit Location

Lick

Br.

Fryingpan

	LENGTH	GRADE
1	63'	- 8%
2	225'	- 1%
3	38'	- 5%
4	87'	+ 4%
5	100'	+ 14%
6	100'	* 2%
7	110'	- 12%
8	204'	+ 14%
Total Road Length: ± 927'		

----- Proposed Road
===== Existing Road

LEGEND

- DIVERSION DITCH
- ▤▤▤▤ STRAW BARRIER
- ~~~~~ CLEARING LIMIT
- ooooo BRUSH BARRIER
- ***** SILT FENCE
- DRIP
- ⊗ ROCK (RIP RAP)

EnerVest Operating, LLC

PROPOSED ROAD E&S CONTROL PLAN | WELL NO. VCI-530454

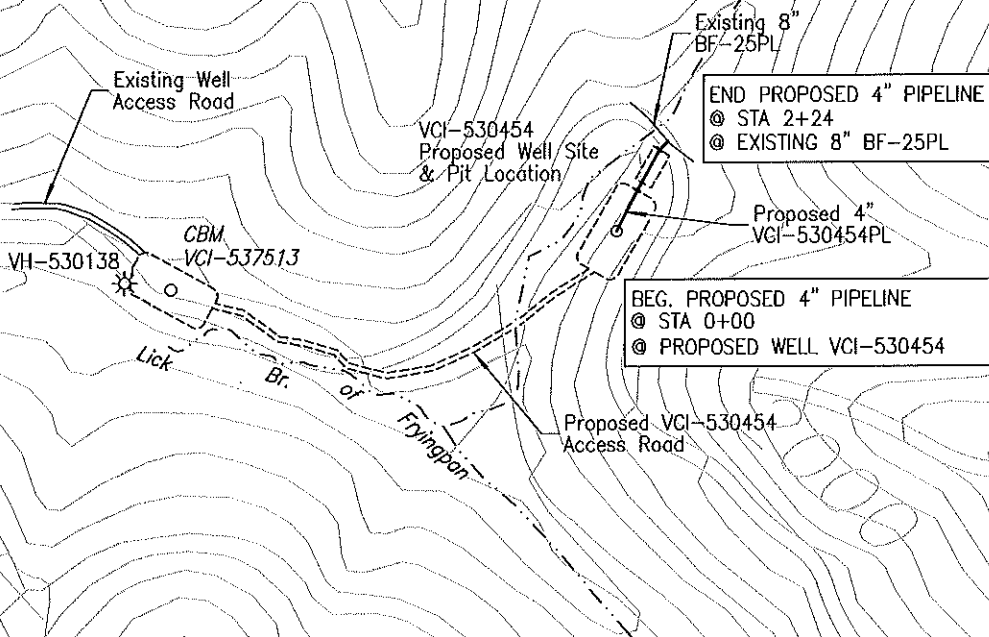
SCALE: 1" = 400'

DATE: 10-05-2016

EXHIBIT 2

TOTAL PIPELINE LENGTH: 224 FT.

NOTE: IF SUFFICIENT RESIDUE MATERIALS ARE NOT GENERATED DURING CLEARING OPERATIONS, SILT FENCING OR STRAW BALE BARRIERS WILL BE PLACED AROUND THE PERIMETER OF THE DISTURBED AREA.



BEG. PROPOSED 4" PIPELINE
@ STA 0+00
@ PROPOSED WELL VCI-530454

END PROPOSED 4" PIPELINE
@ STA 2+24
@ EXISTING 8" BF-25PL

LEGEND

- DIVERSION DITCH
- ▤ STRAW BARRIER
- ▤▤▤ BRUSH BARRIER
- *** SILT FENCE
- DRIP

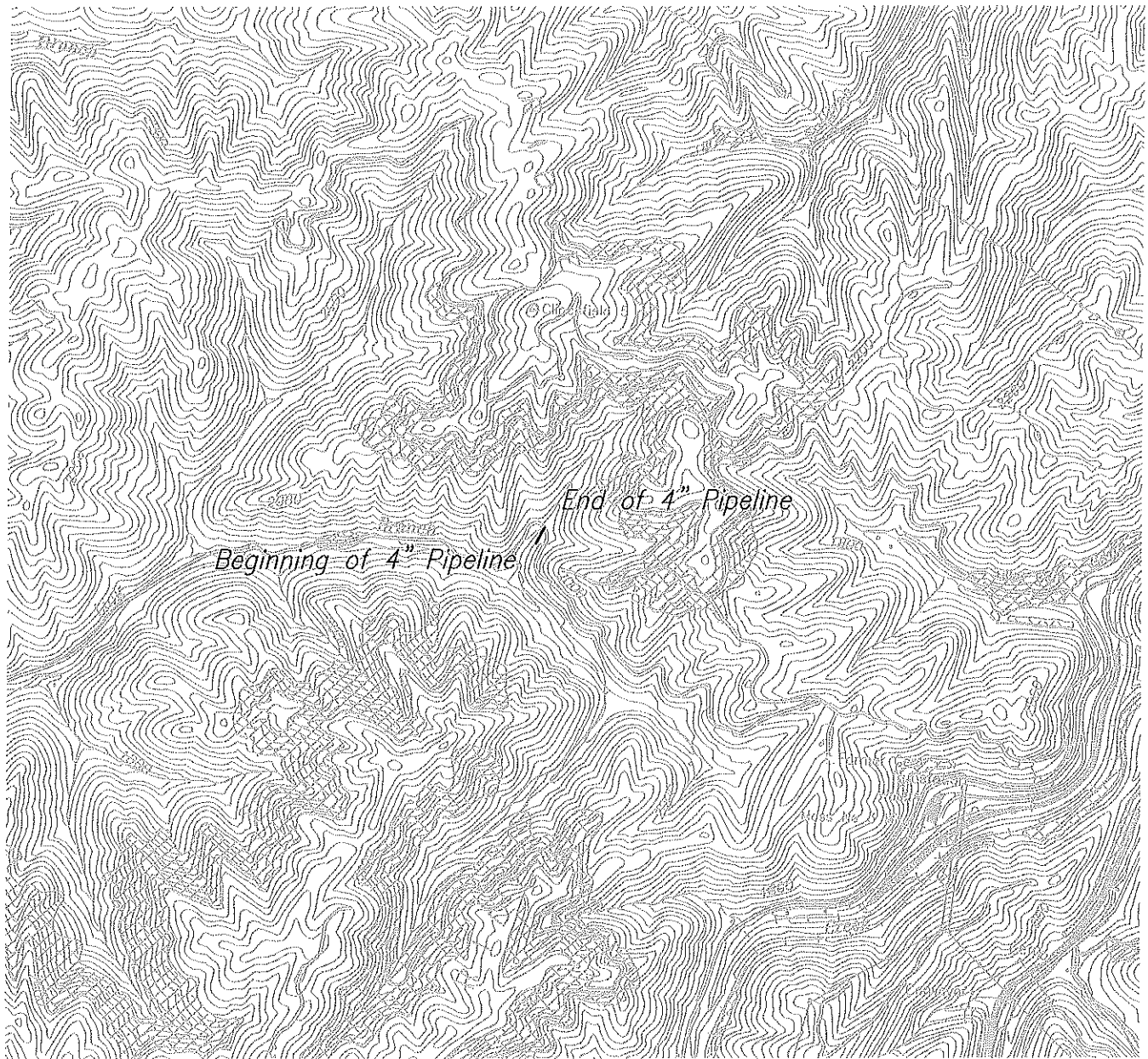
NOTE: Compass Surveyed on 2016
Magnetic Meridian with Slope Distance
Along Proposed Pipeline

STA	GRADE
0+00 - 1+00	SURFACE - 1%
1+00 - 2+00	SURFACE + 6%
2+00 - 2+24	SURFACE - 3%

EnerVest Operating, LLC

SITE PLAN FOR PROPOSED GAS PIPELINE

PIPELINE NO. VCI-530454PL	DUTY QUADRANGLE
DICKENSON COUNTY	ERVINTON DISTRICT
SCALE: 1" = 400'	DATE: 10-05-2016



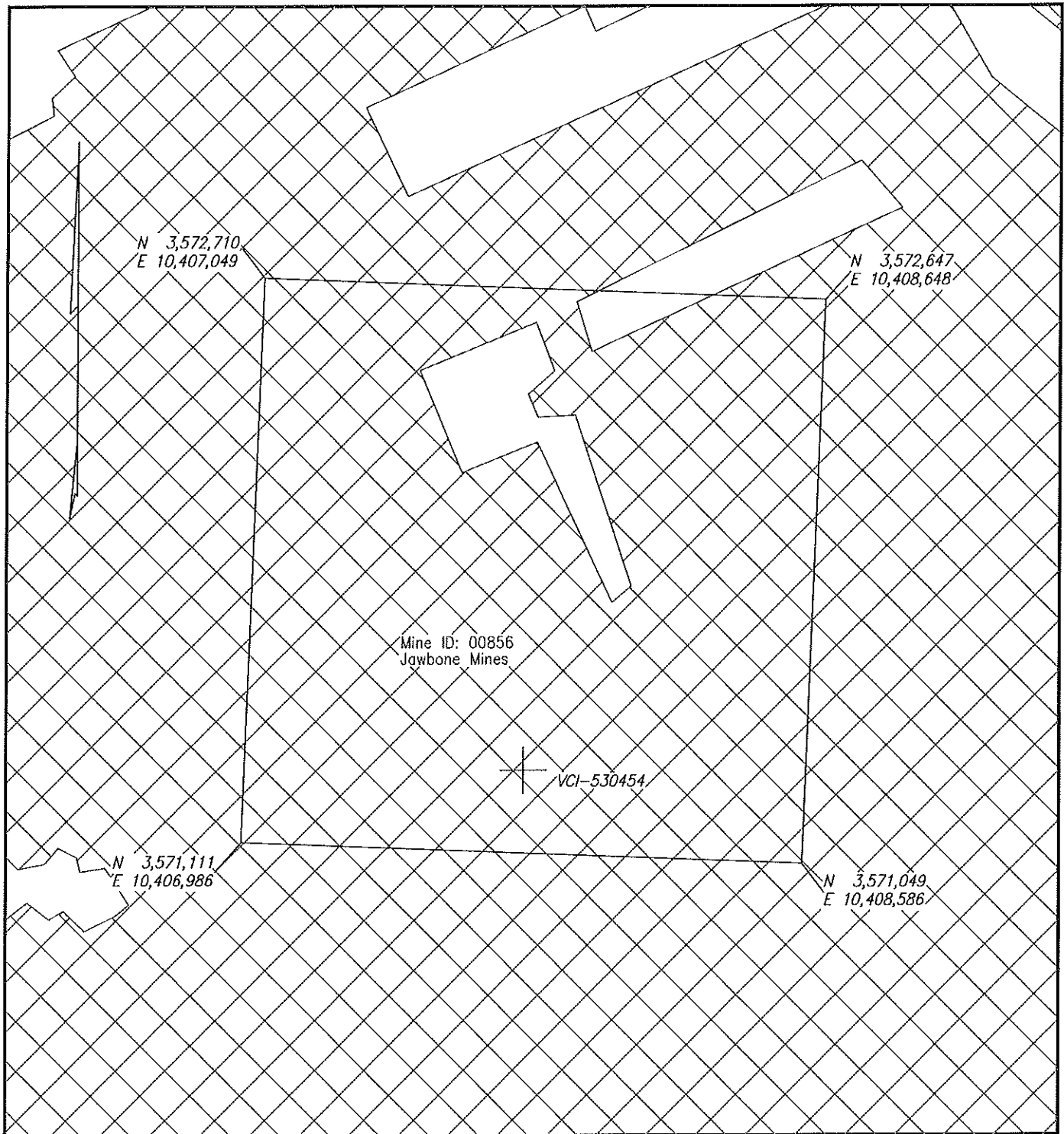
VA State Plane Coordinates for Line
VCI-530454PL

Beg. N 3,571,315	End N 3,571,510
E 10,407,792	E 10,407,904
EL 1,766'	EL ± 1,771'

EnerVest Operating, LLC

PROPOSED GAS PIPELINE LOCATION MAP

PIPELINE NO. VCI-530454PL	DUTY QUADRANGLE
DICKENSON COUNTY	ERVINTON DISTRICT
SCALE: 1" = 2000'	DATE: 10-05-2016



WELL & MINE LOCATION MAP NORA GRID BG-73

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VCI-530454
QUADRANGLE Duty PERMIT NO. _____ SCALE 1" = 400' DATE 10-05-2016

NOTE: The mine locations are approximate locations taken from downloaded DMME data.
The maps are to be used for anticipated drilling hazards only.

D. ATTACHMENTS TO OPERATIONS PLAN PERTAINING TO SITE SPECIFIC INFORMATION

1) Predevelopment Site Location

EnerVest Operating, LLC proposes to drill Well No. VCI-530454 w/PL in Dickenson County, Virginia.

Directions: From the intersection of VA State Routes 63 & 657 (top of Hazel Mtn between Trammel and Dante), Take SR 657 (East Hazel Mtn) east, go 5.7 miles to Carrie. Turn left on SR 600 (Fryingpan), go 3.2 miles to Bucu. Turn right on lease road, thru gate, go 0.92 miles to intersection. Turn hard right, go 0.76 miles to VH-530138 location. East end (Front of Location) follow flagging along PL to interconnect. Continue following flagging to left up hollow to well stake.

2) Construction Plan

All fluids from the well will be handled in a lined pit(s). The primary drilling pit and alternate pit (if necessary) will be constructed to contain all solids and fluids respectfully which may accumulate during drilling operations and maintain a 2' freeboard. These pits will be constructed to reasonably conform to the lines and grades as shown on Exhibits 1A and 1B. Prior to beginning construction, the area will be denuded. Topsoil will be segregated and stockpiled for use in reclamation of the site and pit. Constructed pits will have properly installed liners consisting of a minimum single 20 Mil HDPE. Outslopes of pits will be stabilized immediately. If construction takes place uphill of a residential area or a public road and a constructed brush barrier is insufficient to prevent a safety hazard, a rock fence will be installed.

Blasting is not anticipated on this project, but if it becomes necessary to complete the site, road or pipeline construction, all blasting operations will be performed in accordance with VAC-25-150-250.

3) Erosion and Sediment Controls

Vegetation will be cleared as necessary before any proposed road, site or pipeline construction begins. If sufficient residue materials are available from clearing, they will be windrowed below the anticipated fill out-slopes to intercept and retain sediment from the disturbed areas. Silt fencing, straw bale barriers or brush barriers will be installed around the lower perimeter of the disturbed area prior to beginning construction. Road ditches will be maintained to transport surface runoff to strategically placed culverts in order to provide proper drainage. Disturbed areas will be stabilized by seeding with a suitable mixture and mulching within seven days after completion, unless the area is to be re-disturbed within 30 days. The vegetative cover will be composed of species compatible with the area and capable of stabilizing the soil surface to prevent erosion.

Any excess timber not utilized for the installation of brush barriers, will be stacked on the permitted area in a manner that will not interfere with erosion and sediment control measures.

4) Reclamation

Fluids will be drained from the pit and applied on the permitted site pursuant to VAC 25-150-420 or transferred to EnerVest Operating, LLC permitted salt water disposal well(s) in Virginia, copies of permits are on file in the DGO office. All drill cuttings and solids will remain in the pit and covered with a minimum 20 Mil HDPE liner or a low permeability clay cap covered with soil. The cap will be graded to provide positive drainage and prevent pooling.

Reclamation of the site will include the removal of all equipment, structures and facilities not required for monitoring the site and permanently marking the well or core hole. A permanent vegetative cover will be established on denuded areas that are to be left inactive for more than one year.

5) Pipeline and Produced Fluids

Any product fluid (brine) will be pumped to the tank site to be located at VCI-530454. If during construction of the aforementioned pipeline it is determined that the installation of one or more inline drips is indicated, this will be accomplished within the specified right-of-way and in accordance with the current DGO regulations. Fluid collected by drips from a future connecting pipeline will be contained in an approved holding tank. Both produced and drip fluids will be stored until such time that the fluid is transferred to a EnerVest Operating, LLC permitted salt water disposal well(s) in Virginia, copies of permits are on file in the DGO office. Should any drips be installed during construction, a revised map indicating the location of said drips will be submitted as a supplement to the permit.

6) Drilling

In accordance with 4 VAC 25-150-80-C.8, EnerVest Operating, LLC will add Airfoam HD, a multipurpose foaming agent to the water used in drilling to help remove cuttings during drilling operations. A description and certificate of analysis are on file with the Division of Gas and Oil. The use of this additive will not lessen the groundwater quality within the area this well is being drilled.



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-530454 w/PL
Application Number: 29372

NOTICE OF RIGHT TO OBJECT

EnerVest Operating, LLC is applying for a permit from the Virginia Department of Mines, Minerals and Energy, Division of Gas and Oil, to conduct gas and oil operations for well/pipeline number VCI-530454 w/PL. The activities proposed to be permitted are described in the enclosed Notice of Application for a permit.

We are required to give you notice of this application, and you have certain rights. You have 15 days from the day you receive this notice to do one of the following:

1. You may sign and return the attached waiver form if you wish to waive the time and any right you may have to object to the permit application. The Virginia Gas and Oil Act gives you the option to waive these rights in writing. (You may submit this waiver to the Division of Gas and Oil, 135 Highland Drive, Post Office Drawer 159, Lebanon, VA 24266, Telephone (276) 415-9700, Fax (276) 415-9671.)

2. You may file an objection to the issuance of this permit. The types of objections which may be raised are listed in Section 45.1-361.35 of the Virginia Gas and Oil Act. A copy of this code section is attached hereto for your review.

If you wish to object to this permit application, then you must file your objections, including your reasons why, within 15 days of receipt of this letter. You must file any objections with the Director of the Division of Gas and Oil at the address given above. If statutorily allowed objections in accordance with the Virginia Gas and Oil Act, Section 45.1-361.35, are submitted to the Division of Gas and Oil, then the Division will hold an informal fact-finding hearing concerning them. You will be notified if an informal conference is scheduled.

3. You may take no action. This will cause you to waive any rights you may have to object to the permit application.

I affirm that this notice and waiver form is being sent to you on behalf of EnerVest Operating, LLC on this 8th day of November, 2016.

A handwritten signature in blue ink, appearing to read "Laura Wapner", written over a horizontal line.

Signature of Permit Applicant

WAIVER

Operations Name: VCI-530454 w/PL
Application Number: 29372

TO: (Commonwealth of Virginia, Department of Mines, Minerals & Energy, Division of Gas and Oil)
(135 Highland Drive, P.O. Drawer 159, Lebanon, VA 24266)

I acknowledge receipt of the notice that EnerVest Operating, LLC has applied for a permit to conduct gas and/or oil operations for well/pipeline number VCI-530454 w/PL. I hereby waive my fifteen-day right, if any, to object to the permit application.

I understand that the Division of Gas and Oil may rely on this waiver in reaching a decision on the permit application.

Signed: _____ Date: _____

Print Name: _____

SECTION 45.1-361.35 - OBJECTIONS TO PERMITS; HEARINGS

A. Objections to new or modification permits may be filed with the Director by those having standing as set out in Section 45.1-361.30. Such objections shall be filed within fifteen days of the objecting party's receipt of the notice required by Section 45.1-361.30. Persons objecting to a permit must state the reasons for their objections.

B. The only objections to permits or permit modifications which may be raised by surface owners are:

1. The operations plan for soil erosion and sediment control is not adequate or effective;
2. Measures in addition to the requirement for a well's water-protection string are necessary to protect fresh water-bearing strata; and
3. The permitted work will constitute a hazard to the safety of any person.
4. Location of the coalbed methane well or coalbed methane well pipeline will unreasonably infringe on the surface owner's use of the surface, provided; however, that a reasonable alternative site is available within the unit, and granting the objection will not materially impair any right contained in an agreement, valid at the time of the objection, between the surface owner and the operator or their predecessors or successors in interest.
5. If the surface owner is an interstate park commission, the location of the well or pipeline will unreasonably infringe on the surface owner's use of the surface, provided that a reasonable alternative site is available within the unit, and that granting the objection will not materially impair any right contained in an agreement, valid at the time of the objection, between the surface owner and the operator or their predecessors or successors in interest.

C. The only objections to permits or permit modifications which may be raised by royalty owners are whether the proposed well work:

1. Directly impinges upon the royalty owner's gas and oil interests; or
2. Threatens to violate the objecting royalty owner's property or statutory rights aside from his contractual rights; and
3. Would not adequately prevent the escape of the Commonwealth's gas and oil resources or provide for the accurate measurement of gas and oil production and delivery to the first point of sale.

D. Objections to permits or permit modifications may be raised by coal owners or operators pursuant to the provisions of Sections 45.1-361.11 and 45.1-361.12.

E. The only objections to permits or permit modifications which may be raised by mineral owners are those which could be raised by a coal owner under Section 45.1-361.11 provided the mineral owner makes the objection and affirmatively proves that it does in fact apply with equal force to the mineral in question.

F. The only objections to permits or permit modifications which may be raised by gas storage field operators are those in which the gas storage operator affirmatively proves that the proposed well work will adversely affect the operation of his State Corporation Commission certificated gas storage field; however, nothing in this subsection shall be construed to preclude the owner of nonstorage strata from the drilling of wells for the purpose of producing oil or gas from any stratum above or below the storage stratum.

G. The Director shall have no jurisdiction to hear objections with respect to any matter subject to the jurisdiction of the Board as set out in Article 2 (Section 45.1-361.13 et seq.) of this chapter. Such objections shall be referred to the Board in a manner prescribed by the Director.

H. The Director shall fix a time and place for an informal fact finding hearing concerning such objections. The hearing shall not be scheduled for less than twenty nor more than thirty days after the objection is filed. The Director shall prepare a notice of the hearing, stating all objections and by whom made, and send a copy of such notice by certified mail, return receipt requested, at least ten days prior to the hearing date, to the permit applicant and to every person with standing to object as prescribed by Section 45.1-361.30.

I. At the hearing, should the parties fail to come to an agreement, the Director shall proceed to decide the objection pursuant to those provisions of the Administrative Process Act (Section 9-6.14.1 et seq.) relating to informal fact finding hearings.



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-537513 w/PL
Application Number: 29370

**APPLICATION FOR A NEW PERMIT, PERMIT MODIFICATION,
OR TRANSFER OF PERMIT RIGHTS**

Application Information:

Name: EnerVest Operating, LLC
Address: 408 W Main Street
Abingdon, VA 24210
Telephone Number: 276-628-9001
Designated Agent: Ian Landon

Type of Application: New
Type of Operation: Coalbed/Pipeline
Horizontal Unit Name:

Operator's Bond Information:

Bond Number	Type	Amount	Institution
B007948	SUR	100000.00	

Article 2 Board Requirements:

Field Order:

Does this application fall under a Field Order established by the Virginia Gas and Oil Board? Yes

Field Name: Nora Coalbed

Increased Density:

Is this well an increased density well for the unit? Yes

If yes, Docket #: 89-0126-0009-85

Pooling:

Is pooling Voluntary? Yes

Location Exception:

Is an exception to statewide spacing required by the board? No

Director Exception:

Is an exception to field order spacing required by the Director? Yes

Description	File Name
VCI-537513 Aerial Map	VCI-537513 Aerial Map.pdf

VCI-537513 Director Request	VCI-537513 Director Request.pdf
VCI-537513 Plat with Topo	VCI-537513_Plat wTopo.pdf

Director Approval:

Is location exception due to mining? No

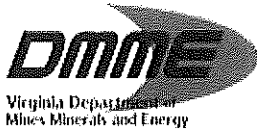
Application Certification:

I, Laura Murray representing EnerVest Operating, LLC

certify that all persons required to be notified under Section 45.1-361.30 of the Code of Virginia have been notified. Proof of notice is included as a part of this application. In the case of an application for a Permit, Permit Modification, or an application under 4 VAC 25-150-80, I hereby state that the Applicant named above has the right to conduct operations as set forth in the application and operations plan.

Title: Associate Landman

Date: 11/7/2016



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-537513 w/PL
Application Number: 29370

NOTICE OF APPLICATION FOR A PERMIT OR PERMIT MODIFICATION

Take Notice of EnerVest Operating, LLC, pursuant to Code of Virginia, Section 45.1-361.29, is filing this Notice and Application of a permit with the Virginia Division of Gas and Oil with respect to an operation on the lands Heartwood Forestland Fund IV, L.P, ACIN, LLC, WBRD, LLC, Paramount Contura, LLC, Dickenson-Russell Contura, LLC, LLC, Mullins Land & Mineral, Inc. and EnerVest Energy Institutional Fund XIV-A, EnerVest Energy Institutional Fund XIV-A1, L.P. & EnerVest Energy Institutional Fund XIV-WIC, L.P. on the H.W. Sutherland, tract(s) of 225 acres, more or less, Ervinton District, DICKENSON City/County, Virginia.

Attached to this Notice of Application is a copy of the required plat or map, operations plan and other information required by the Director. The operations plan describes the work to be done and meets the requirements of Regulation 4 VAC 25-150-100.

You may have the right to file an objection to the proposed operations within fifteen (15) days from the receipt of this notice pursuant to the Code of Virginia, Section 45.1-361.35. A copy of this Code section is attached for your review. You must describe the specific practices you are objecting to and reference the appropriate part of Section 45.1-361.35 when submitting any objection.

Section 45.1-361.35.A "Objections to new or modification permits may be filed with the Director by those having standing as set out in Section 45.1-361.30. Such objections shall be filed within fifteen days of the objecting party's receipt of the notice required by Section 45.1-361.30. Persons objecting to a permit must state the reasons for their objections."

After receipt of a valid objection, an informal conference will be scheduled pursuant to the Code of Virginia Section 45.1-361.35.H.

Section 45.1-361.35.H "The Director shall fix a time and place for an informal fact finding hearing concerning such objections. The hearing shall not be scheduled for less than twenty nor more than thirty days after an objection is filed."

City/County: DICKENSON District: Ervinton Quadrangle: DUTY
Waterway: Fryingpan Creek Farm Name: H.W. Sutherland

State Plane NAD 83 East / X	State Plane NAD 83 North / Y	Surface Elevation
10406821.1200	3571189.7100	1714.56

OBJECTIONS MUST BE FILED WITH

DEPARTMENT OF MINES, MINERALS AND ENERGY
DIVISION OF GAS AND OIL
P.O. Drawer 159
Lebanon, VA 24266
276-415-9700

SECTION 45.1-361.35 - OBJECTIONS TO PERMITS; HEARINGS

A. Objections to new or modification permits may be filed with the Director by those having standing as set out in Section 45.1-361.30. Such objections shall be filed within fifteen days of the objecting party's receipt of the notice required by Section 45.1-361.30. Persons objecting to a permit must state the reasons for their objections.

B. The only objections to permits or permit modifications which may be raised by surface owners are:

1. The operations plan for soil erosion and sediment control is not adequate or effective;
2. Measures in addition to the requirement for a well's water-protection string are necessary to protect fresh water-bearing strata; and
3. The permitted work will constitute a hazard to the safety of any person.
4. Location of the coalbed methane well or coalbed methane well pipeline will unreasonably infringe on the surface owner's use of the surface, provided; however, that a reasonable alternative site is available within the unit, and granting the objection will not materially impair any right contained in an agreement, valid at the time of the objection, between the surface owner and the operator or their predecessors or successors in interest.

C. The only objections to permits or permit modifications which may be raised by royalty owners are whether the proposed well work:

1. Directly impinges upon the royalty owner's gas and oil interests; or
2. Threatens to violate the objecting royalty owner's property or statutory rights aside from his contractual rights; and
3. Would not adequately prevent the escape of the Commonwealth's gas and oil resources or provide for the accurate measurement of gas and oil production and delivery to the first point of sale.

For assistance in accessing this document, contact R3_UIC_Mailbox@epa.gov
D. Objections to permits or permit modifications may be raised by coal owners or operators pursuant to the provisions of Sections 45.1-361.11 and 45.1-361.12.

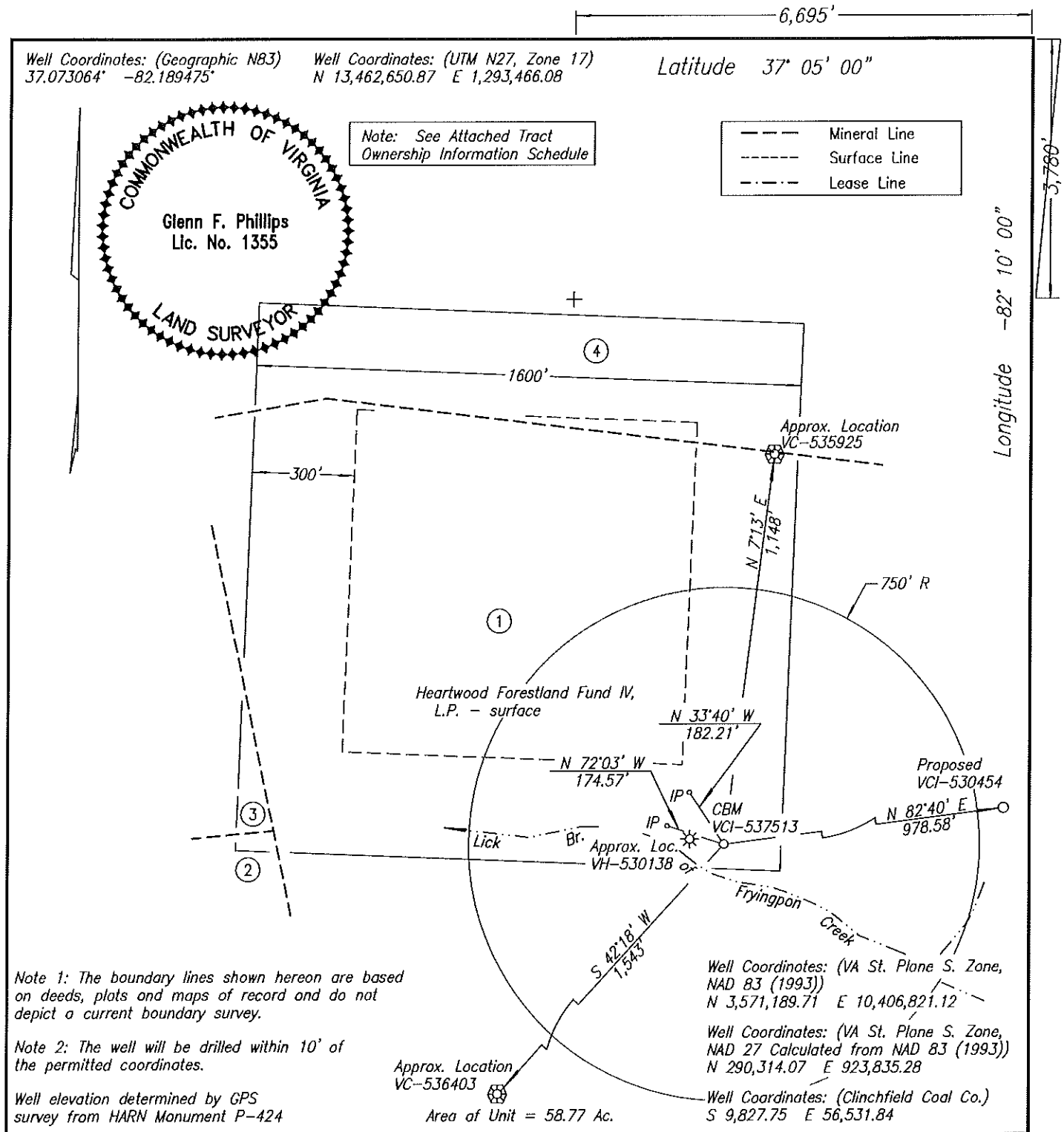
E. The only objections to permits or permit modifications which may be raised by mineral owners are those which could be raised by a coal owner under Section 45.1-361.11 provided the mineral owner makes the objection and affirmatively proves that it does in fact apply with equal force to the mineral in question.

F. The only objections to permits or permit modifications which may be raised by gas storage field operators are those in which the gas storage operator affirmatively proves that the proposed well work will adversely affect the operation of his State Corporation Commission certificated gas storage field; however, nothing in this subsection shall be construed to preclude the owner of nonstorage strata from the drilling of wells for the purpose of producing oil or gas from any stratum above or below the storage stratum.

G. The Director shall have no jurisdiction to hear objections with respect to any matter subject to the jurisdiction of the Board as set out in Article 2 (Section 45.1-361.13 et seq.) of this chapter. Such objections shall be referred to the Board in a manner prescribed by the Director.

H. The Director shall fix a time and place for an informal fact finding hearing concerning such objections. The hearing shall not be scheduled for less than twenty nor more than thirty days after the objection is filed. The Director shall prepare a notice of the hearing, stating all objections and by whom made, and send a copy of such notice by certified mail, return receipt requested, at least ten days prior to the hearing date, to the permit applicant and to every person with standing to object as prescribed by Section 45.1-361.30.

I. At the hearing, should the parties fail to come to an agreement, the Director shall proceed to decide the objection pursuant to those provisions of the Administrative Process Act (Section 9-6.14.1 et seq.) relating to informal fact finding hearings.



WELL LOCATION PLAT NORA GRID BG-72

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VCI-537513
TRACT NO. T-405 ELEVATION 1,714.56' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 10-03-2016
This Plat is a new plat x; an updated plat ; or a final location plat

+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

~~Licensed Professional Engineer or Licensed Land Surveyor~~

VCI-537513 PLAT
TRACT OWNERSHIP INFORMATION SCHEDULE
10/3/2016

1 . T-405

H. W. Sutherland
225 Acres
ACIN LLC - coal (except Jawbone & Tiller seams)
Paramont Contura, LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Contura, LLC - coal lessee
Mullins Land & Mineral, Inc. - coal (Jawbone & Tiller seams)
EnerVest Energy Institutional Fund XIV-A, L.P., EnerVest Energy Institutional Fund XIV-A1, L.P., &
EnerVest Energy Institutional Fund XIV-WIC, L.P. - oil, gas & CBM
Gas 46.21 Ac. 78.62%

2 . T2-223

Ezekiel Sutherland
178.67 Acres
ACIN LLC - coal (except Jawbone & Tiller seams)
Paramont Contura, LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Contura, LLC - coal lessee
Mullins Land & Mineral, Inc. - coal (Jawbone & Tiller seams)
EnerVest Energy Institutional Fund XIV-A, L.P., EnerVest Energy Institutional Fund XIV-A1, L.P., &
EnerVest Energy Institutional Fund XIV-WIC, L.P. - oil, gas & CBM
Gas 0.15 Ac. 0.26%

3 . T-408

E. Sutherland
382.22 Acres
ACIN LLC - coal (except Jawbone & Tiller seams)
Paramont Contura, LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Contura, LLC - coal lessee
Mullins Land & Mineral, Inc. - coal (Jawbone & Tiller seams)
EnerVest Energy Institutional Fund XIV-A, L.P., EnerVest Energy Institutional Fund XIV-A1, L.P., &
EnerVest Energy Institutional Fund XIV-WIC, L.P. - oil, gas & CBM
Gas 0.57 Ac. 0.97%

4 . T-409

J. N. R. Sutherland
430.65 Acres
ACIN LLC - coal (except Jawbone & Tiller seams)
Paramont Contura, LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Contura, LLC - coal lessee
Mullins Land & Mineral, Inc. - coal (Jawbone & Tiller seams)
EnerVest Energy Institutional Fund XIV-A, L.P., EnerVest Energy Institutional Fund XIV-A1, L.P., &
EnerVest Energy Institutional Fund XIV-WIC, L.P. - oil, gas & CBM
Gas 11.84 Ac. 20.15%



For assistance in accessing this document, contact R3_UIC_Mailbox@epa.gov

Commonwealth of Virginia

Department of Mines, Minerals, and Energy

Division of Gas and Oil

P.O. Drawer 159, Lebanon, VA 24266

Telephone: (276) 415-9700

Operations Name: VCI-537513 w/PL

Application Number: 29370

PERSONS RECEIVING OFFICIAL NOTICE OF PERMIT APPLICATION OR PERMIT MODIFICATION

For the purposes of an application for a new permit or permit modification, list such persons by name and address on additional sheets as needed with the title, "Supplemental Sheet for Persons Receiving Official Notice of Permit Application" and indicate the category for each person or group affected.

Application for Well Work Permit:

- ☒ Surface, coal and mineral owners on the tract to be drilled
- ☒ Surface owners of record on tracts where the surface is to be disturbed
- ☒ Gas, oil and royalty owners within
 - ☐ (1) one-half the distance specified in Section 45.1-361.17
 - ☐ (2) one-half the distance to the nearest well completed in the same pool or
 - ☒ (3) within the drilling unit established by the Virginia Gas and Oil Board
- ☐ Coal operators who have a registered operation plan with the Department for activities located on the tract to be drilled
- ☐ All coal operators who have applied for or obtained a mining or prospecting permit with respect to tracts within 500' of the proposed well location
- ☒ All coal or mineral owners on tracts located within 500' of the proposed well location
- ☐ All Storage Field Operators Within 1250'
- ☒ Local Government pursuant to Section 45.1-361.30.E
- ☒ Public notice pursuant to Section 45.1-361.30.E, such as an affidavit of publication from the newspaper

Coalbed Methane Well Applications (In Addition to Above)

- ☒ All coal operators, coal owners or mineral owners within 750 feet of the proposed well location
- ☐ All coal operators who have applied for or obtained a mining or prospecting permit with respect to tracts within 750 feet of the proposed well location

Applications for Pipelines and Facilities

- ☒ All surface owners affected by the proposed operations

Applications for Ground Disturbing Geophysical Operations

- ☐ Surface owners on tracts where the surface is to be disturbed
- ☐ Coal owners, coal operators, and mineral owners on the tract(s) to be drilled
- ☐ Coal operators who have registered operations plans with the Department for activities located on the tract to be drilled

**SUPPLEMENTAL SHEET(S) FOR PERSONS RECEIVING OFFICIAL NOTICE OF PERMIT
APPLICATION PURSUANT TO SECTION 45.1-361.30**

APPLICATIONS FOR WELL WORK PERMIT

A. Surface, coal and mineral owners on the tract to be drilled

Mr. Chad Mooney, ACIN, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Chad Mooney, WBRD, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Craig Kaderavek, Heartwood Forestland Fund, IV, LP, 19045 Stone Mountain Road, Abingdon, VA 24210
Mr. Freddie Mullins, Mullins Land and Mineral Inc., PO Box 951, Clintwood, VA 24228
Mr. James McKinney, EnerVest Energy Institutional Fund XIV-A, L.P. & E, P.O. 2136, Abingdon, VA 24210
Mr. Steve Smith, Alpha Land and Reserves, LLC, 5703 Crutchfield Drive, Norton, VA 24273
Mr. Steve Smith, Dickenson-Russell Coal Company, LLC, 5703 Crutchfield Drive, Norton, VA 24273

B. Surface owners of record on tracts where the surface is to be disturbed

Mr. Craig Kaderavek, Heartwood Forestland Fund, IV, LP, 19045 Stone Mountain Road, Abingdon, VA 24210

C. Gas, oil and royalty owners within

1. one-half the distance specified in Section 45.1-361.17

N/A

2. one-half the distance to the nearest well completed in the same pool

N/A

3. within the drilling unit established by the Virginia Gas and Oil Board

Mr. James McKinney, EnerVest Energy Institutional Fund XIV-A, L.P. & E, P.O. 2136, Abingdon, VA 24210

D. Coal operators who have a registered operation plan with the Department for activities located on the tract to be drilled

N/A

E. All coal operators who have applied for or obtained a mining or prospecting permit with respect to tracts within 500' of the proposed well location

N/A

F. All coal or mineral owners on tracts located within 500' of the proposed well location

Mr. Chad Mooney, ACIN, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Chad Mooney, WBRD, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Freddie Mullins, Mullins Land and Mineral Inc., PO Box 951, Clintwood, VA 24228
Mr. James McKinney, EnerVest Energy Institutional Fund XIV-A, L.P. & E, P.O. 2136, Abingdon, VA 24210
Mr. Steve Smith, Alpha Land and Reserves, LLC, 5703 Crutchfield Drive, Norton, VA 24273
Mr. Steve Smith, Dickenson-Russell Coal Company, LLC, 5703 Crutchfield Drive, Norton, VA 24273

G. All Storage Field Operators Within 1250'

N/A

Dickenson County Administrator, P.O. Box 1098, , Clintwood, VA 24614

- I. Public notice pursuant to Section 45.1-361.30.E, such as an affidavit of publication from the newspaper
The Dickenson Star, P.O. Box 707, , Clintwood, VA 24228

COALBED METHANE WELL APPLICATION IN ADDITION TO ABOVE

- J. All coal operators, coal owners or mineral owners within 750 feet of the proposed well location

Mr. Chad Mooney, ACIN, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Chad Mooney, WBRD, LLC, 5260 Irwin Rd, Huntington, WV 25705-3247
Mr. Freddie Mullins, Mullins Land and Mineral Inc., PO Box 951, Clintwood, VA 24228
Mr. James McKinney, EnerVest Energy Institutional Fund XIV-A, L.P. & E, P.O. 2136, Abingdon, VA 24210
Mr. Steve Smith, Alpha Land and Reserves, LLC, 5703 Crutchfield Drive, Norton, VA 24273
Mr. Steve Smith, Dickenson-Russell Coal Company, LLC, 5703 Crutchfield Drive, Norton, VA 24273

- K. All coal operators who have applied for or obtained a mining or prospecting permit with respect to tracts within 750 feet of the proposed well location

N/A

APPLICATIONS FOR PIPELINES AND FACILITIES

- L. All surface owners affected by the proposed operations

Mr. Craig Kaderavek, Heartwood Forestland Fund, IV, LP, 19045 Stone Mountain Road, Abingdon, VA 24210

APPLICATIONS FOR GROUND DISTURBING GEOPHYSICAL OPERATIONS

- M. Surface owners on tracts where the surface is to be disturbed

N/A

- N. Coal owners, coal operators, and mineral owners on the tract(s) to be drilled

N/A

- O. Coal operators who have registered operations plans with the Department for activities located on the tract to be drilled

N/A



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

NOTICE BY PUBLICATION OF AN APPLICATION FOR A PERMIT

For purposes of publication requirements under § 45.1-361.30.E., the following format shall be used.

NOTICE OF APPLICATION FOR

Operations Name: VCI-537513 w/PL
Application Number: 29370

Take Notice that, pursuant to Code of Virginia, Section 45.1-361.30.E. the undersigned operator proposes to file, or has filed, an application for gas and oil operations known as VCI-537513 w/PL with the Department of Mines, Minerals and Energy, Division of Gas and Oil under Code of Virginia, Section 45.1-361.29, with respect to an operation on the lands Heartwood Forestland Fund IV, L.P, ACIN, LLC, WBRD, LLC, Paramount Contura, LLC, Dickenson-Russell Contura, LLC, LLC, Mullins Land & Mineral, Inc. and EnerVest Energy Institutional Fund XIV-A, EnerVest Energy Institutional Fund XIV-A1, L.P. & EnerVest Energy Institutional Fund XIV-WIC, L.P. on the H.W. Sutherland, tract(s) of 225 acres, more or less, tract(s) in the Ervinton District, DICKENSON City/County, Virginia

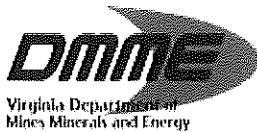
The application is on file with the Division of Gas and Oil identifying the proposed location and all work to be performed at the described site. Any inquiries should be directed to the Division of Gas and Oil at 276 415-9700.

Code of Virginia Section 45.1-361.30 identifies persons with rights to file objections to the gas and oil operation. Persons objecting to a permit must state their reasons for objecting within 15 days of the date of receipt of notice. Written objections must be filed with the Director, Department of Mines, Minerals and Energy, Division of Gas and Oil, P. O. Drawer 159, Lebanon, Virginia 24266.

Operator: EnerVest Operating, LLC

Address: 408 W Main Street
Abingdon, VA 24210

Telephone Number: 276-628-9001



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-537513 w/PL

Application Number: 29370

TECHNICAL DATA SHEET FOR PERMIT APPLICATIONS UNDER SECTION 45.1-361.29

☐ the information is related to the conversion of a VVH to a CBM under 4 VAC 25-150-580.

Geological Target Formation: Pocahontas

Estimated Depth of Completed Well : 2128.0

GEOLOGICAL DATA (ESTIMATE)

Predict:

Description	FileName
VCI-537513 Geological Data	VCI-537513 Geological Data.pdf

Consent to Stimulate:

Description	FileName
VCI-537513 CTS	VCI-537513 Consent to Stimulate.pdf

Proposed Casing/Tubing Program

	Size	Depth	Cement Details
Conductor	9 5/8"	40'	Back fill with drill cuttings
Surface/Water Prot. Casing	7"	300'	Cement to Surface
Coal Protection Casing			
Other Casing			
Other Casing			
Other Casing			
Production Casing	4 1/2"	2128'	Cement to Surface
Tubing	2 3/8"	2078'	

TECHNICAL DATA SHEET FOR PERMIT APPLICATIONS UNDER SECTION 45.1-361.29**Geological Data (Predict) Operation VCI-537513**

Formation/Coal Seam Name	Planned Zones		Depth(top)	Thickness	Water Anticipated		Mining in Formation		
	Stimulation	Production			Fresh	Salt	Active	Abandoned	Mine Index
Aily			68						
Raven			113						
Jawbone Rider			223						
Jawbone			268					X	00856
Tiller			273						
Upper Seaboard A	X	X	485						
Upper Seaboard	X	X	523						
Greasy Creek	X	X	701						
Middle Seaboard	X	X	759						
Lower Seaboard	X	X	806						
Unnamed A	X	X	878						
Upper Horsepen	X	X	940						
Middle Horsepen	X	X	965						
C Seam	X	X	1071						
War Creek	X	X	1143						
Unnamed C	X	X	1158						
Beckley	X	X	1180						
Lower Horsepen	X	X	1245						
X Seam Rider	X	X	1268						
X Seam	X	X	1283						
Pocahontas 9	X	X	1378						
Pocahontas 7	X	X	1425						
Pocahontas 5	X	X	1672						
Pocahontas 3	X	X	1825						
Pocahontas 2	X	X	1878						
Pocahontas 1			1978						

*** EnerVest Operating, LLC would like to request a variance to the DGO internal policy to stimulate and produce the Upper Seaboard A and Upper Seaboard.**

Note:

"Active" mining area includes production sections, mains, submains, and sealed areas with the projected mining unit (pmu).

"Abandoned" includes operations where the mine license and bond have been released



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-537513 w/PL

TECHNICAL DATA SHEET FOR GATHERING PIPELINES

Pursuant to Code of Virginia, Section 45.1-361.29, the applicant is applying for a permit for a gathering pipeline and/or associated facilities.

Location of Proposed Pipeline:

City/County(s): DICKENSON
District(s): Ervinton
Quadrangle(s): DUTY
Watershed(s): Fryingpan Creek

Pipeline Type	Pipeline Diameter (Inches)	Right of Way Width (feet)	Proposed Length (Feet)	Calculated Distrubed Acres	Surface / Buried	Pipeline Material	Well Name
Gas	4.00	100	74.00	0.17	Both	Steel	VCI-537513

Total Length of Proposed Pipeline: 74.00

Area to be disturbed: 0.17

Associated pipeline or well permit number:

Operations Name / File #
VH-530138PL



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-537513 w/PL

Application Number: 29370

OPERATIONS PLAN

PRE-DEVELOPMENT SITE CONDITIONS:

Existing Land Use: Forest

Set-back variance requested: ☐ Yes ☒ No

Located on DMLR permit(s): ☐ Yes ☒ No

Active underground mining located within ☐ 500' ☐ 200' of proposed well location or ☒ No Mining

Is the topography different from that depicted on the attached topographic map(s): ☐ Yes ☒ No

Ground Water Analysis Attached: ☐ Yes ☒ To be submitted prior to drilling
☐ Not required (No Groundwater found within 500' of proposed well or corehole)

Source Water Analysis Attached: ☐ Yes ☒ To be submitted prior to drilling
☐ Not required (using municipal water source) ☐ Not required (using onsite water source)

Provide a statement of the acres to be disturbed to the nearest 1/10 of an acre subject to this application:

1.50

CONSTRUCTION PLANS

- ☒ Not less than 1" - 400' topographic map depicting all existing and proposed access roads to be upgraded or constructed. Anticipated culvert sizes, locations, and the approximate final road grades shall be shown on the proposed roads. Adjoining state and county maintained roads and previously permitted roads which will be used in conjunction with the proposed roads shall be labeled for reference purposes.
- ☒ Not less than 1" - 50' site map with cross section(s) indicating the elevations before and after construction, the drilling pad size, the location of all drainage and erosion/sediment control structures, topsoil stockpiles and pits.
- ☒ Not less than 1" - 600' topographic map showing the total length of the proposed pipelines with notations of the pipeline diameter. This map shall show the location of all proposed drips, tanks and associated facilities (if applicable) and shall indicate where the pipe is to be buried or on the surface. The anticipated grades after construction for the ground disturbing sections of the pipeline rights-of-way shall also be shown on the map or an associated section profiles.
- ☐ Identify on attached maps any adjacent land, man-made or public safety features which would be at risk because of proposed operations as Red Zone(s) as required by 45 VAC 25-150-100(B).

Description	FileName
VCI-537513 Deep Mine Works Jawbone	VCI-537513_deepmine_works_Jwb.pdf
VCI-537513 Deep Mine Works Raven	VCI-537513_deepmine_works_Raven.pdf
VCI-537513 Exhibit 1	VCI-537513_Exhibit 1.pdf
VCI-537513 Exhibit 1A	VCI-537513_Exhibit 1A.pdf
VCI-537513 Exhibit 1B	VCI-537513_Exhibit 1B.pdf

WORK PLANS

Stimulation plan attached: ☒ Yes ☐ Does Not Apply

Description	FileName
CBM Stimulation Plan	CBM Stimulation Plan.pdf

Analysis of mud medium/drilling medium/oil based fluid medium attached/filed:

☐ Yes ☐ Does Not Apply ☒ On File with DGO

SPCC Plan Required by EPA: ☐ Yes ☒ No

Pit Identification:

Pit Name	Date Added	Date Removed
Pit		

Wellbore Identification:

Wellbore Identifier	Date Added
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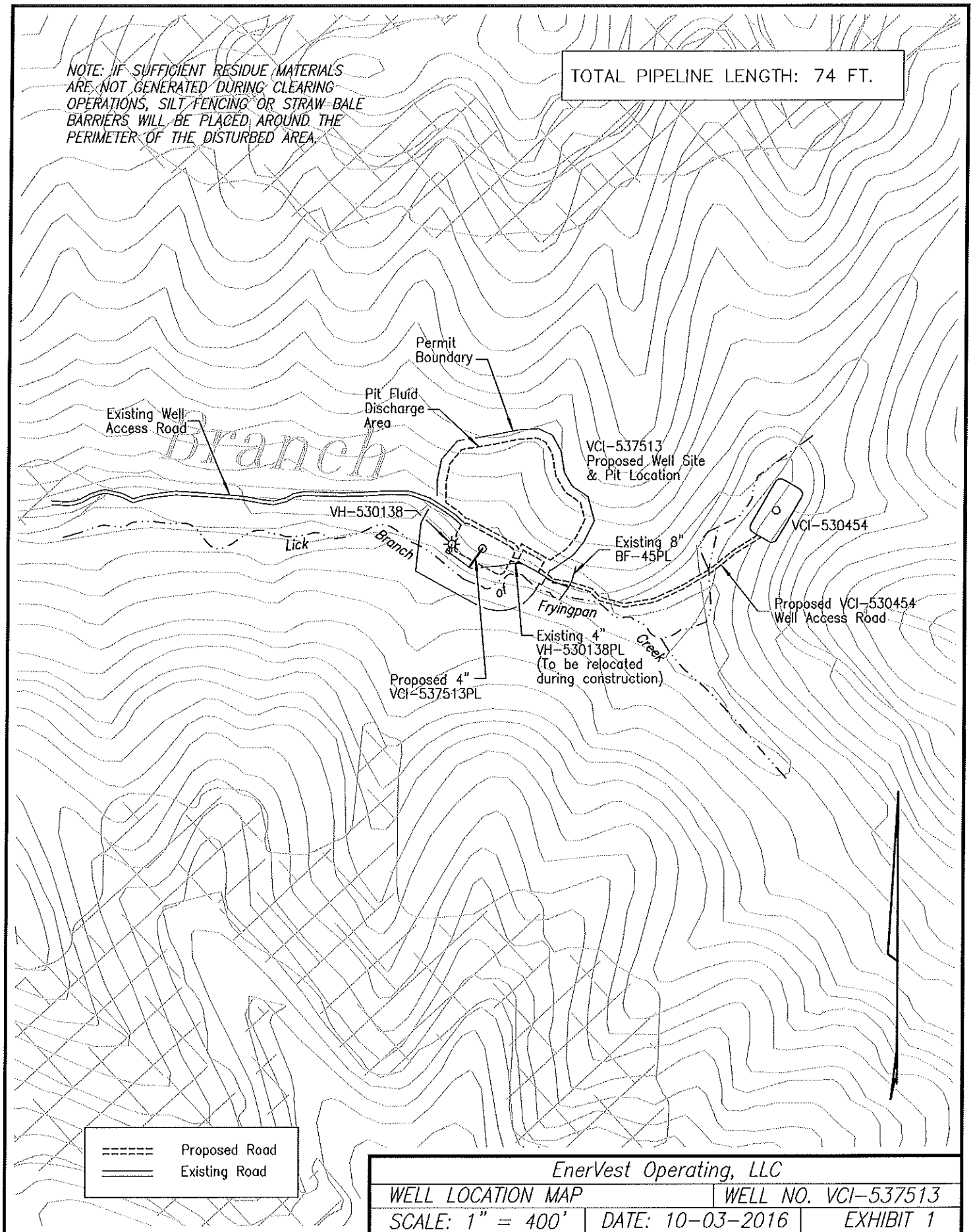
PROVIDE INFORMATION OR ATTACHEMENTS PERTAINING TO SITE SPECIFIC INFORMATION THAT IS NOT ADDRESSED ABOVE

Description	FileName
VCI-537513 Site Specific Information	VCI-537513 Site Specific Information.pdf

Directions to site: From the intersection of VA State Routes 63 & 657 (top of Hazel Mtn between Trammel and Dante), Take SR 657 (East Hazel Mtn) east, go 5.7 miles to Carrie. Turn left on SR 600 (Fryingpan), go 3.2 miles to Bucu. Turn right on lease road, thru gate, go 0.92 miles to intersection. Turn hard right, go 0.76 miles to VH-530138 location. Stake is at end of road on location.

NOTE: IF SUFFICIENT RESIDUE MATERIALS ARE NOT GENERATED DURING CLEARING OPERATIONS, SILT FENCING OR STRAW-BALE BARRIERS WILL BE PLACED AROUND THE PERIMETER OF THE DISTURBED AREA.

TOTAL PIPELINE LENGTH: 74 FT.



EnerVest Operating, LLC

WELL LOCATION MAP

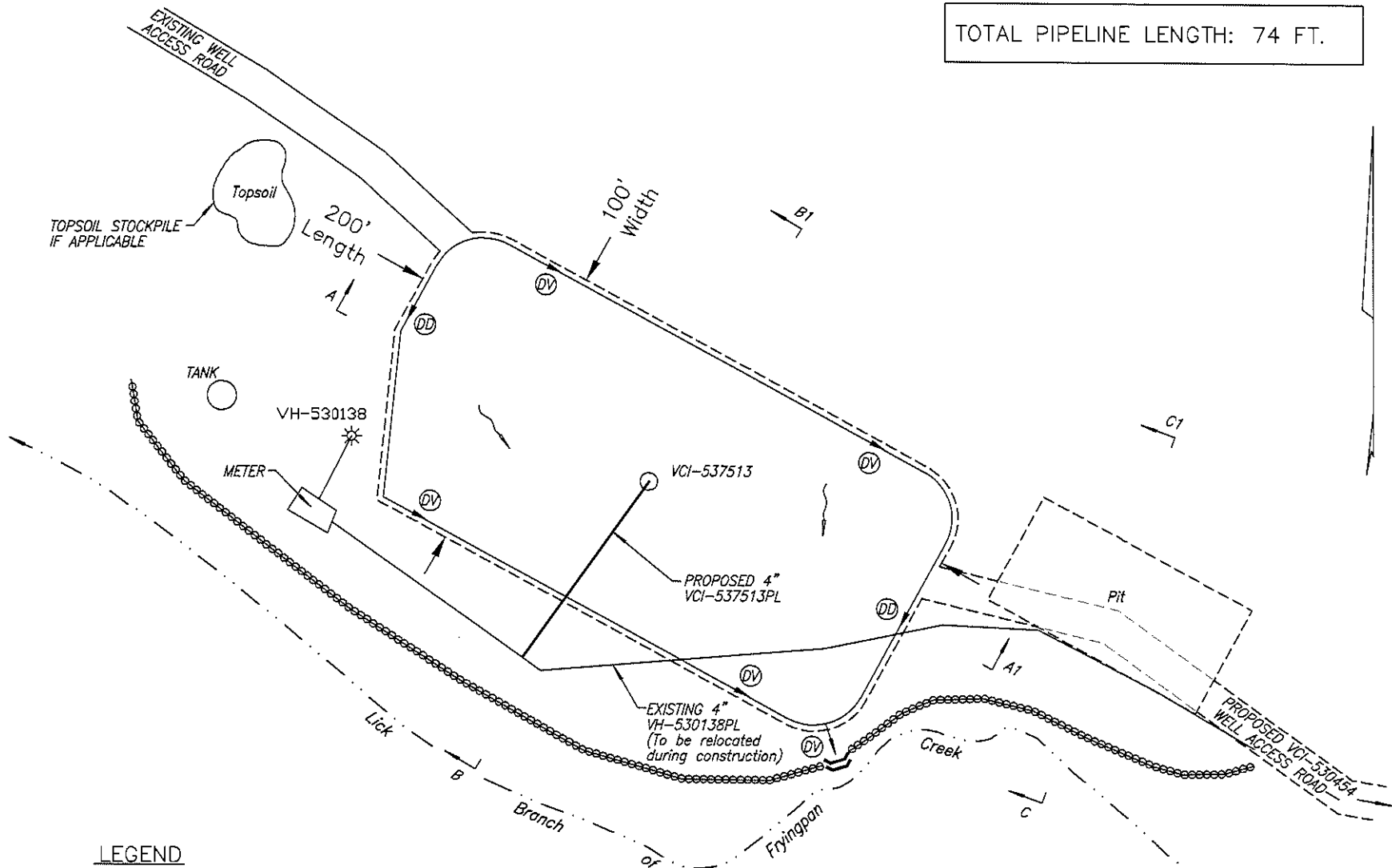
WELL NO. VCI-537513

SCALE: 1" = 400'

DATE: 10-03-2016

EXHIBIT 1

TOTAL PIPELINE LENGTH: 74 FT.



LEGEND

- ⓓⓓ ——— TEMP. DIVERSION DIKE
- ⓓⓓ ——— BRUSH BARRIER
- ⓓⓓ ——— DIVERSION
- ⓓⓓ ——— STRAW BALE BARRIER
- ⓓⓓ ——— PERMANENT SEEDING
- ⓓⓓ ——— MULCHING
- ⓓⓓ ——— SILT FENCE
- ⓓⓓ ——— DIRECTION OF FLOW
- ⓓⓓ ——— EXISTING GRADE
- ⓓⓓ ——— PROPOSED GRADE

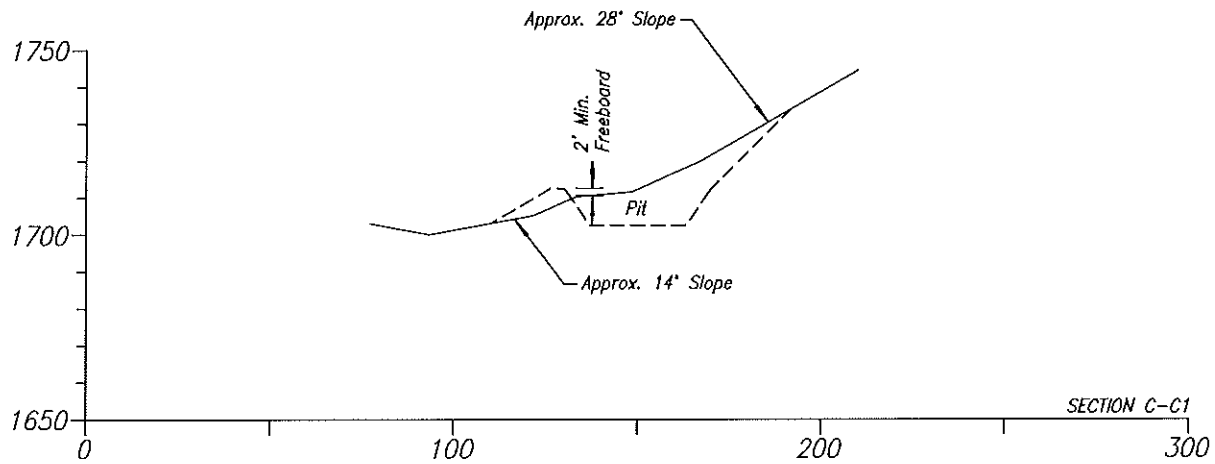
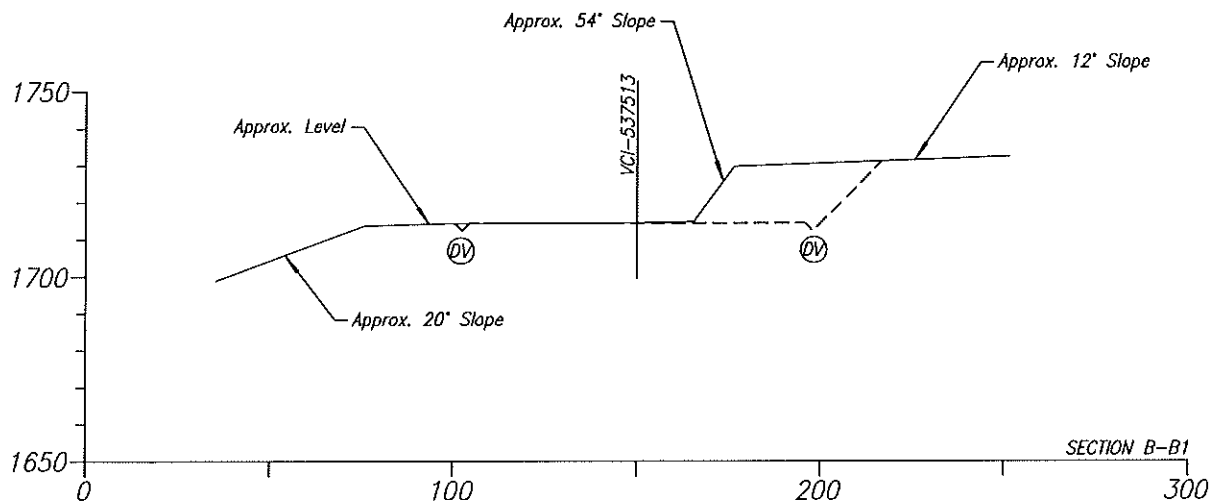
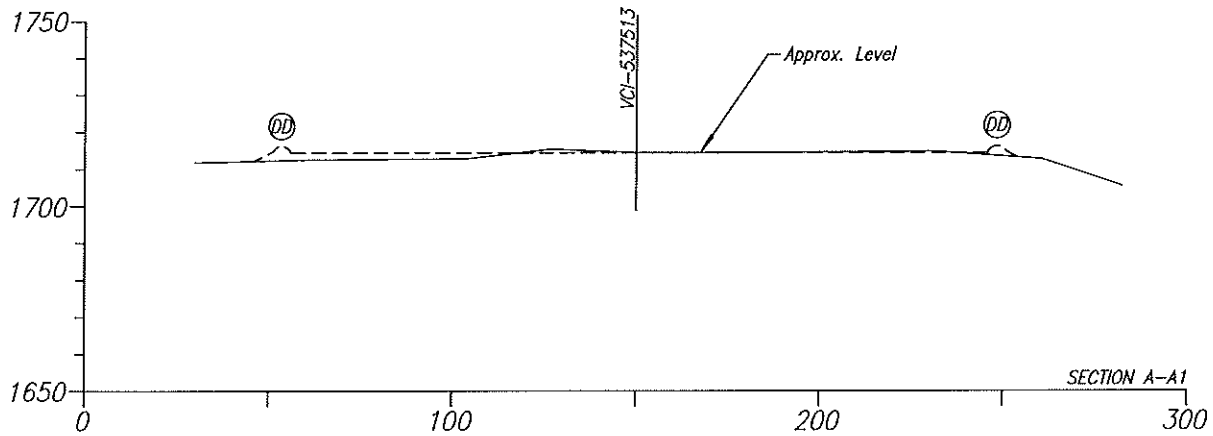
NOTE: IF SUFFICIENT RESIDUE MATERIALS ARE NOT GENERATED DURING CLEARING OPERATIONS, SILT FENCING OR STRAW BALE BARRIERS WILL BE PLACED AROUND THE PERIMETER OF THE DISTURBED AREA.

EnerVest Operating, LLC

SCALE: 1" = 50' WELL SITE PLAN WELL NO. VCI-537513

DATE: 10-03-2016

EXHIBIT 1A



LEGEND

- DD TEMP. DIVERSION DIKE
- BB BRUSH BARRIER
- DV DIVERSION
- STB STRAW BALE BARRIER
- PS PERMANENT SEEDING
- ML MULCHING
- XXXX SILT FENCE
- DIRECTION OF FLOW
- EXISTING GRADE
- - - PROPOSED GRADE

NOTE: IF SUFFICIENT RESIDUE MATERIALS ARE NOT GENERATED DURING CLEARING OPERATIONS, SILT FENCING OR STRAW BALE BARRIERS WILL BE PLACED AROUND THE PERIMETER OF THE DISTURBED AREA.

DATE: 10-03-2016

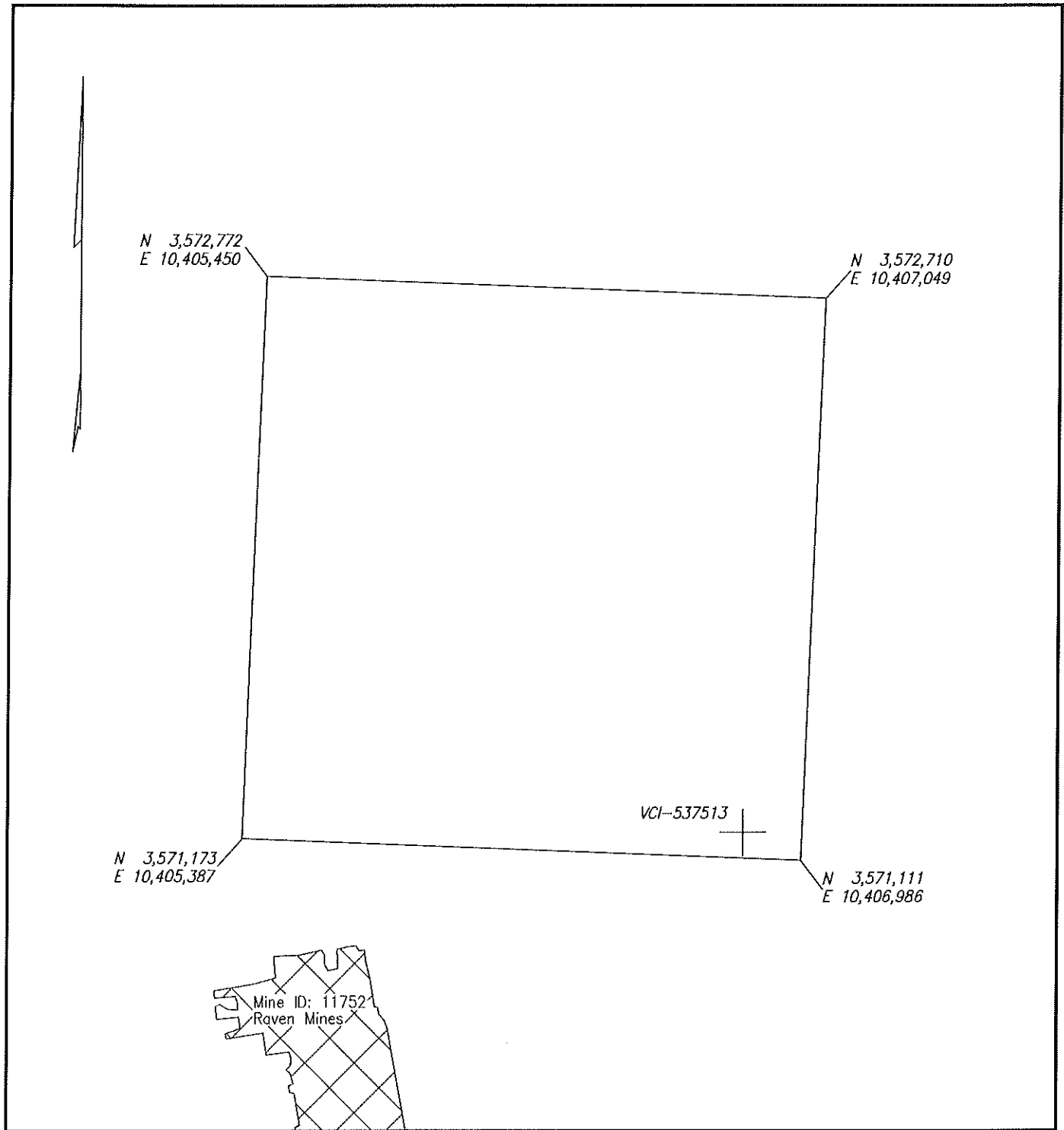
EnerVest Operating, LLC

WELL SITE & PIT CROSS-SECTIONS

WELL NO. VCI-537513

SCALE: 1" = 50'

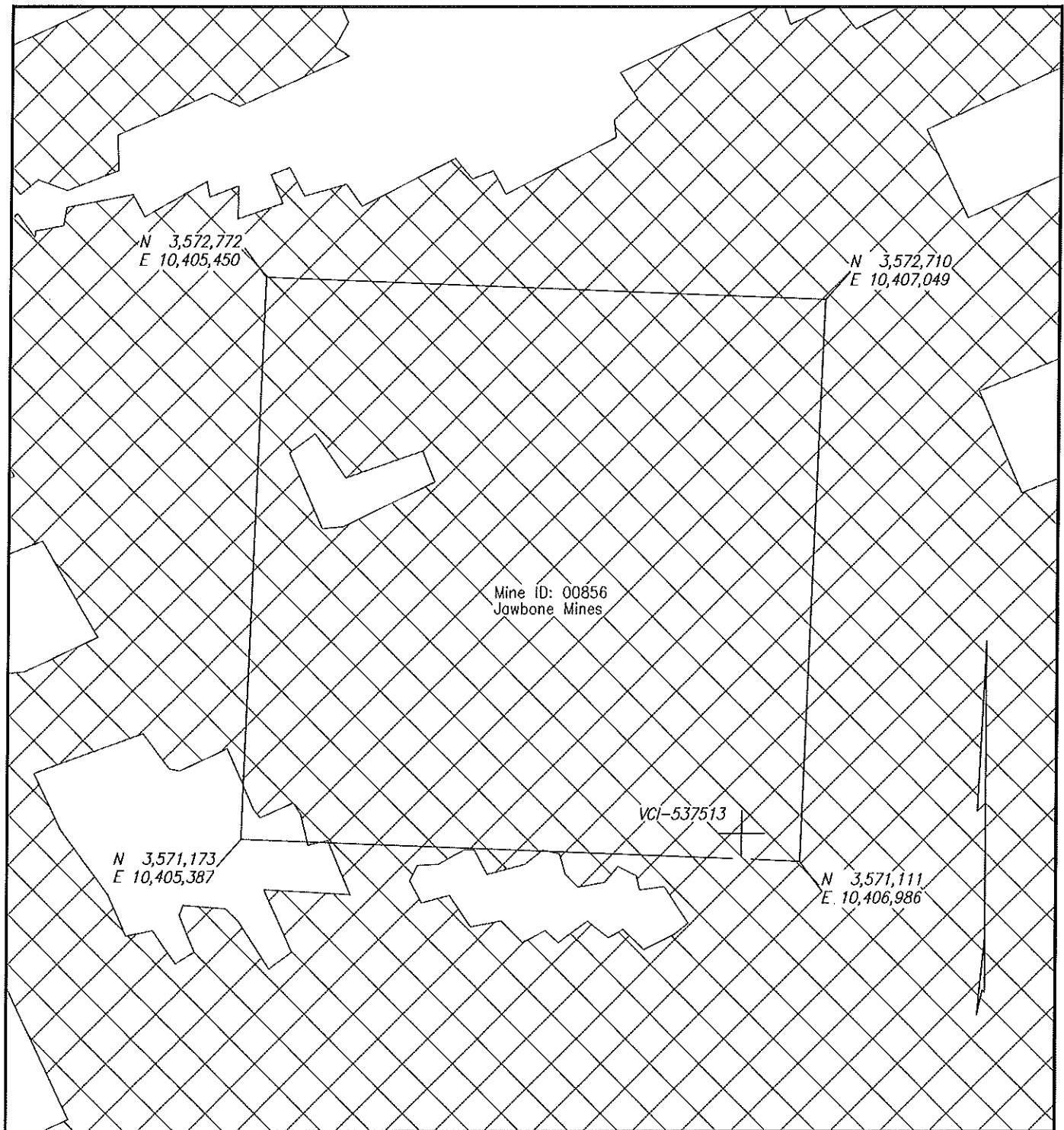
EXHIBIT 1B



WELL & MINE LOCATION MAP NORA GRID BG-72

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VCI-537513
QUADRANGLE Duty PERMIT NO. _____ SCALE 1" = 400' DATE 10-03-2016

NOTE: The mine locations are approximate locations taken from downloaded DMME data.
The maps are to be used for anticipated drilling hazards only.



WELL & MINE LOCATION MAP NORA GRID BG-72

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VCI-537513
QUADRANGLE Duty PERMIT NO. _____ SCALE 1" = 400' DATE 10-03-2016

NOTE: The mine locations are approximate locations taken from downloaded DMME data.
The maps are to be used for anticipated drilling hazards only.

D. ATTACHMENTS TO OPERATIONS PLAN PERTAINING TO SITE SPECIFIC INFORMATION

1) Predevelopment Site Location

EnerVest Operating, LLC proposes to drill Well No. VCI-537513 w/PL in Dickenson County, Virginia.

Directions: From the intersection of VA State Routes 63 & 657 (top of Hazel Mtn between Trammel and Dante), Take SR 657 (East Hazel Mtn) east, go 5.7 miles to Carriac. Turn left on SR 600 (Fryingpan), go 3.2 miles to Bucu. Turn right on leasc road, thru gate, go 0.92 miles to intersection. Turn hard right, go 0.76 miles to VH-530138 location. Stake is at end of road on location.

2) Construction Plan

All fluids from the well will be handled in a lined pit(s). The primary drilling pit and alternate pit (if necessary) will be constructed to contain all solids and fluids respectfully which may accumulate during drilling operations and maintain a 2' freeboard. These pits will be constructed to reasonably conform to the lines and grades as shown on Exhibits 1A and 1B. Prior to beginning construction, the area will be denuded. Topsoil will be segregated and stockpiled for use in reclamation of the site and pit. Constructed pits will have properly installed liners consisting of a minimum single 20 Mil HDPE. Outslopes of pits will be stabilized immediately. If construction takes place uphill of a residential area or a public road and a constructed brush barrier is insufficient to prevent a safety hazard, a rock fence will be installed.

Blasting is not anticipated on this project, but if it becomes necessary to complete the site, road or pipeline construction, all blasting operations will be performed in accordance with VAC-25-150-250.

3) Erosion and Sediment Controls

Vegetation will be cleared as necessary before any proposed road, site or pipeline construction begins. If sufficient residue materials are available from clearing, they will be windrowed below the anticipated fill out-slopes to intercept and retain sediment from the disturbed areas. Silt fencing, straw bale barriers or brush barriers will be installed around the lower perimeter of the disturbed area prior to beginning construction. Road ditches will be maintained to transport surface runoff to strategically placed culverts in order to provide proper drainage. Disturbed areas will be stabilized by seeding with a suitable mixture and mulching within seven days after completion, unless the area is to be re-disturbed within 30 days. The vegetative cover will be composed of species compatible with the area and capable of stabilizing the soil surface to prevent erosion.

Any excess timber not utilized for the installation of brush barriers, will be stacked on the permitted area in a manner that will not interfere with erosion and sediment control measures.

4) Reclamation

Fluids will be drained from the pit and applied on the permitted site pursuant to VAC 25-150-420 or transferred to EnerVest Operating, LLC permitted salt water disposal well(s) in Virginia, copies of permits are on file in the DGO office. All drill cuttings and solids will remain in the pit and covered with a minimum 20 Mil HDPE liner or a low permeability clay cap covered with soil. The cap will be graded to provide positive drainage and prevent pooling.

Reclamation of the site will include the removal of all equipment, structures and facilities not required for monitoring the site and permanently marking the well or core hole. A permanent vegetative cover will be established on denuded areas that are to be left inactive for more than one year.

5) Pipeline and Produced Fluids

Any product fluid (brine) will be pumped to the tank site to be located at VCI-537513. If during construction of the aforementioned pipeline it is determined that the installation of one or more inline drips is indicated, this will be accomplished within the specified right-of-way and in accordance with the current DGO regulations. Fluid collected by drips from a future connecting pipeline will be contained in an approved holding tank. Both produced and drip fluids will be stored until such time that the fluid is transferred to a EnerVest Operating, LLC permitted salt water disposal well(s) in Virginia, copies of permits are on file in the DGO office. Should any drips be installed during construction, a revised map indicating the location of said drips will be submitted as a supplement to the permit.

6) Drilling

In accordance with 4 VAC 25-150-80-C.8, EnerVest Operating, LLC will add Airfoam HD, a multipurpose foaming agent to the water used in drilling to help remove cuttings during drilling operations. A description and certificate of analysis are on file with the Division of Gas and Oil. The use of this additive will not lessen the groundwater quality within the area this well is being drilled.



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Operations Name: VCI-537513 w/PL
Application Number: 29370

NOTICE OF RIGHT TO OBJECT

EnerVest Operating, LLC is applying for a permit from the Virginia Department of Mines, Minerals and Energy, Division of Gas and Oil, to conduct gas and oil operations for well/pipeline number VCI-537513 w/PL. The activities proposed to be permitted are described in the enclosed Notice of Application for a permit.

We are required to give you notice of this application, and you have certain rights. You have 15 days from the day you receive this notice to do one of the following:

1. You may sign and return the attached waiver form if you wish to waive the time and any right you may have to object to the permit application. The Virginia Gas and Oil Act gives you the option to waive these rights in writing. (You may submit this waiver to the Division of Gas and Oil, 135 Highland Drive, Post Office Drawer 159, Lebanon, VA 24266, Telephone (276) 415-9700, Fax (276) 415-9671.)

2. You may file an objection to the issuance of this permit. The types of objections which may be raised are listed in Section 45.1-361.35 of the Virginia Gas and Oil Act. A copy of this code section is attached hereto for your review.

If you wish to object to this permit application, then you must file your objections, including your reasons why, within 15 days of receipt of this letter. You must file any objections with the Director of the Division of Gas and Oil at the address given above. If statutorily allowed objections in accordance with the Virginia Gas and Oil Act, Section 45.1-361.35, are submitted to the Division of Gas and Oil, then the Division will hold an informal fact-finding hearing concerning them. You will be notified if an informal conference is scheduled.

3. You may take no action. This will cause you to waive any rights you may have to object to the permit application.

I affirm that this notice and waiver form is being sent to you on behalf of EnerVest Operating, LLC on this 8th day of November, 2016.

A handwritten signature in blue ink, appearing to read "Laura M. Quinn", written over a horizontal line.

Signature of Permit Applicant

WAIVER

Operations Name: VCI-537513 w/PL
Application Number: 29370

TO: (Commonwealth of Virginia, Department of Mines, Minerals & Energy, Division of Gas and Oil)
(135 Highland Drive, P.O. Drawer 159, Lebanon, VA 24266)

I acknowledge receipt of the notice that EnerVest Operating, LLC has applied for a permit to conduct gas and/or oil operations for well/pipeline number VCI-537513 w/PL. I hereby waive my fifteen-day right, if any, to object to the permit application.

I understand that the Division of Gas and Oil may rely on this waiver in reaching a decision on the permit application.

Signed: _____ Date: _____

Print Name: _____

SECTION 45.1-361.35 - OBJECTIONS TO PERMITS; HEARINGS

A. Objections to new or modification permits may be filed with the Director by those having standing as set out in Section 45.1-361.30. Such objections shall be filed within fifteen days of the objecting party's receipt of the notice required by Section 45.1-361.30. Persons objecting to a permit must state the reasons for their objections.

B. The only objections to permits or permit modifications which may be raised by surface owners are:

1. The operations plan for soil erosion and sediment control is not adequate or effective;
2. Measures in addition to the requirement for a well's water-protection string are necessary to protect fresh water-bearing strata; and
3. The permitted work will constitute a hazard to the safety of any person.
4. Location of the coalbed methane well or coalbed methane well pipeline will unreasonably infringe on the surface owner's use of the surface, provided; however, that a reasonable alternative site is available within the unit, and granting the objection will not materially impair any right contained in an agreement, valid at the time of the objection, between the surface owner and the operator or their predecessors or successors in interest.
5. If the surface owner is an interstate park commission, the location of the well or pipeline will unreasonably infringe on the surface owner's use of the surface, provided that a reasonable alternative site is available within the unit, and that granting the objection will not materially impair any right contained in an agreement, valid at the time of the objection, between the surface owner and the operator or their predecessors or successors in interest.

C. The only objections to permits or permit modifications which may be raised by royalty owners are whether the proposed well work:

1. Directly impinges upon the royalty owner's gas and oil interests; or
2. Threatens to violate the objecting royalty owner's property or statutory rights aside from his contractual rights; and
3. Would not adequately prevent the escape of the Commonwealth's gas and oil resources or provide for the accurate measurement of gas and oil production and delivery to the first point of sale.

D. Objections to permits or permit modifications may be raised by coal owners or operators pursuant to the provisions of Sections 45.1-361.11 and 45.1-361.12.

E. The only objections to permits or permit modifications which may be raised by mineral owners are those which could be raised by a coal owner under Section 45.1-361.11 provided the mineral owner makes the objection and affirmatively proves that it does in fact apply with equal force to the mineral in question.

F. The only objections to permits or permit modifications which may be raised by gas storage field operators are those in which the gas storage operator affirmatively proves that the proposed well work will adversely affect the operation of his State Corporation Commission certificated gas storage field; however, nothing in this subsection shall be construed to preclude the owner of nonstorage strata from the drilling of wells for the purpose of producing oil or gas from any stratum above or below the storage stratum.

G. The Director shall have no jurisdiction to hear objections with respect to any matter subject to the jurisdiction of the Board as set out in Article 2 (Section 45.1-361.13 et seq.) of this chapter. Such objections shall be referred to the Board in a manner prescribed by the Director.

H. The Director shall fix a time and place for an informal fact finding hearing concerning such objections. The hearing shall not be scheduled for less than twenty nor more than thirty days after the objection is filed. The Director shall prepare a notice of the hearing, stating all objections and by whom made, and send a copy of such notice by certified mail, return receipt requested, at least ten days prior to the hearing date, to the permit applicant and to every person with standing to object as prescribed by Section 45.1-361.30.

I. At the hearing, should the parties fail to come to an agreement, the Director shall proceed to decide the objection pursuant to those provisions of the Administrative Process Act (Section 9-6.14.1 et seq.) relating to informal fact finding hearings.



Commonwealth of Virginia
 Department of Mines, Minerals, and Energy
 Division of Gas and Oil
 P.O. Box 1416; Abingdon, VA 24212
 Telephone: (276) 676-5423

Tracking Number: 818
 Company: Equitable Production Company
 File Number: DI-1718
 Operations Name: VC-501842 W/PL
 Operation Type: Coal Bed
 Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 6/27/2007 Drilling Contractor: Drillers LLC
 Date drilling completed: 6/29/2007 Rig Type: ☒ Rotary ☐ Cable Tool
 Driller's Total Depth (feet): 2,010
 Log Total Depth (feet): 2,020 Coal Seam At Total Depth POCAHONTAS #6

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X 929,216 Final Plat State Plane X: 929,216
 Permitted State Plane Y: 284,408 Final Plat State Plane Y: 284,408

☐ Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
Final Plat 501842	VC-501842 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
1,510	1/4	INCH

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams

List of Attached Items:

Description	FileName
Coal Seams 501842	Coal Seams.doc

Gas and Oil Shows

List of Attached Items:

Description	FileName
Gas & Oil Shows 501842	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A.)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? ☒ Yes ☐ No

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 501842	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 501842	Casing Data.doc
Tubing 501842	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Lost Circ @ Open Mine @ 330'-336', Grouted 9 5/8" casing to surface

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Drillers Log 501842	Drillers Log.doc

Well Coordinates: (Geographic N27)
37.057322° -82.170400°

DMLR Permit
No. 1101955

Lease No. 241490L / T-238

Charles Barnett

466.38 Acres

Heartwood Forestland Fund IV, L.P. - surface

ACIN LLC - coal (except Jawbone & Tiller seams)

Alpha Land & Reserves LLC - coal lessee

WBRD LLC - coal (except Jawbone & Tiller seams)

Dickenson-Russell Coal Company LLC - coal lessee

Clinchfield Coal Company - coal (Jawbone & Tiller seams only)

Pine Mountain Oil & Gas, Inc. - oil, gas & CBM

Gas 21.01 Ac. 35.75%

Latitude 37° 05' 00"

JAMES E. HALSEY
002500

LAND SURVEYOR

Lease No. 241640L / T2-169
S.J. Tiller
50.15 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - (CBM)
Unleased
Evens Tiller Heirs - oil & gas (CBM)
Gas 10.70 Ac. 18.21%

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plot dated 3-29-2007.

Well Coordinates: (VA St. Plane S. Zone,
Calculated from CCC coordinates)
N 284,408 E 929,216

Well Coordinates: (Clinchfield Coal Co.)
S 15,520.93 E 62,135.83

Lease No. 241640L / T2-170

S.J. Tiller

49.00 Acres

Heartwood Forestland Fund IV, L.P. - surface

ACIN LLC - coal

Alpha Land & Reserves LLC - coal lessee

WBRD LLC - coal

Dickenson-Russell Coal Company LLC - coal lessee

Pine Mountain Oil & Gas, Inc. - (CBM)

Unleased

Evens Tiller Heirs - oil & gas (CBM)

Gas 2.91 Ac. 4.95%

Lease No. 241640L / T2-172
S.J. Tiller
8.03 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC -
coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC -
coal lessee
Pine Mountain Oil & Gas, Inc. - (CBM)
Unleased
J.B. Tiller Heirs - oil & gas (CBM)
Gas 0.57 Ac. 0.97%

DMLR Permit
No. 1101955

Well elevation determined by GPS
survey from BM Y 108

FINAL PLAT

Area of Unit = 58.77 Ac.

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-501842
TRACT NO. T2-168 ELEVATION 2,171.15' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervington SCALE 1" = 400' DATE 6-28-2007
This Plat is a new plat ____; an updated plat ____; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



<u>Resource</u>	<u>Depth</u>
Coal	12'-13',148'-50',477'- 79.2',525.5'-36.2',585'- 85.8',702'-02.8'
Coal	730.5'-31.4',873.5'- 75.9',1003'-04.8',1055.5'- 57.3',1127'-27.3',1152'-53'
Coal	1178.5'-80.3',1222.5'- 23.3',1310'-10.6',1326'- 27.1',1360.5'-61.6',1398'-98.6'
Coal	1437'-41.5',1593.5'- 94.8',1660.5'-60.8',1846'-48.6'
Open Mine	330'-36'

Shows

Gas Tests

<u>Depth</u>	<u>Description</u>
150	No Show
200	No Show
433	No Show
330	No Show
473	No Show
530	No Show
730	No Show
896	No Show
1,322	No Show
1,395	No Show
1,586	No Show
1,794	No Show
1,843	No Show
2,010	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
150	1/4
330	1/4
473	1/4
530	1/4
730	1/4
896	1/4
1,015	1/4
1,215	1/4
1,322	1/4
1,395	1/2
1,430	1/4
1,586	1/4
1,780	1/2
1,843	1/2
2,010	3/4

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmt'd To Surface	Date Cemented	Cement Baskets
13 3/8	43	17 1/2				
9 5/8	403	12 1/4	292.64	y	06/27/2007	309' & 299'
4 1/2	1953	6 1/2	550.80	y	06/30/2007	

Tubing Size

2 3/8

5/8"

Footage

1,910.45

1913.25

DrillersLog

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
OverBurden	0.00	3.00	3.00
Brown Shale	3.00	12.00	9.00
Coal	12.00	13.00	1.00
Grey Sand / Shale	13.00	34.00	21.00
Brown Sand	34.00	41.00	7.00
Sand & Shale	41.00	148.00	107.00
Coal	148.00	150.00	2.00
Sand & Shale	150.00	330.00	180.00
Open Mine	330.00	336.00	6.00
Sand & Shale	336.00	477.00	141.00
Jawbone Rider	477.00	479.20	2.20
sand & shale	479.20	525.50	46.30
Jawbone	525.50	536.20	10.70
sand & shale	536.20	585.00	48.80
Tiller	585.00	585.80	0.80
sand & shale	585.80	702.00	116.20
Upper Seaboard A	702.00	702.80	0.80
sand & shale	702.80	730.50	27.70
Upper Seaboard	730.50	731.40	0.90
sand & shale	731.40	873.50	142.10
Greasy Creek	873.50	875.90	2.40
sand & shale	875.90	1,003.00	127.10
Middle Seaboard	1,003.00	1,004.80	1.80
sand & shale	1,004.80	1,055.50	50.70
Lower Seaboard	1,055.50	1,057.30	1.80
sand & shale	1,057.30	1,127.00	69.70
Unnamed A	1,127.00	1,127.30	0.30
sand & shale	1,127.30	1,152.00	24.70
Unnamed B	1,152.00	1,153.00	1.00
sand & shale	1,153.00	1,178.50	25.50
Upper Horsepen	1,178.50	1,180.30	1.80
sand & shale	1,180.30	1,222.50	42.20
Middle Horsepen	1,222.50	1,223.30	0.80
sand & shale	1,223.30	1,310.00	86.70
C Seam	1,310.00	1,310.60	0.60
sand & shale	1,310.60	1,326.00	15.40
War Creek Rider	1,326.00	1,327.10	1.10
sand & shale	1,327.10	1,360.50	33.40
War Creek	1,360.50	1,361.60	1.10
sand & shale	1,361.60	1,398.00	36.40
Unnamed C	1,398.00	1,398.60	0.60
sand & shale	1,398.60	1,437.00	38.40
Beckley	1,437.00	1,441.50	4.50
sand & shale	1,441.50	1,474.00	32.50
Lower Horsepen	1,474.00	1,474.00	0.00
sand & shale	1,474.00	1,593.50	119.50

X Seam	1,593.50	1,594.80	1.30
sand & shale	1,594.80	1,660.50	65.70
Pocahontas #9	1,660.50	1,660.80	0.30
sand & shale	1,660.80	1,846.00	185.20
Pocahontas #6	1,846.00	1,848.60	2.60
sand & shale	1,848.60	1,930.50	81.90
sand & shale	1,930.50	2,020.00	89.50



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2467
Company:	Range Resources-Pine Mountain
File Number:	DI-2322
Operations Name:	V-530051
Operation Type:	Gas
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	11/10/2009	Drilling Contractor:	SW Jack #18
Date drilling completed:	11/17/2009	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	5080.00		
Log Total Depth (feet):	5084.00	Formation At Total Depth	Cleveland Shale

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10415295.3700	Final Plat State Plane X:	10415293.2800
Permitted State Plane Y:	3566479.3300	Final Plat State Plane Y:	3566482.4900

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
V530051 Final Plat	V-530051 Final Plat.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
30	Damp	

Salt Water At:

Depth (in feet)	Rate	Unit of Measure

Coal Seams:

List of Attached Items:

Description	FileName
V-530051 Coal Seams	V-530051 Coal.xls

Gas and Oil Shows:

List of Attached Items:

Description	FileName
V-530051 Gas Shows	Shows.xls

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: Hi Res GR/Dens/Temp/Audio/PE/Caliper Data Pack

Did logs disclose vertical locations of a coal seam? £

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
V-530051 Survey	Survey.xls

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
V-530051 Casing	Casing.xls

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

8. Drillers Log

Compiled By: Range Resources - Pine Mountain, Inc.

List of Attached Items:

Description	FileName
V-530051 Driller's Log	V-530051 Log.xls

9. Comments

Inspection report shows 1601' of 7". Please double check. [3/5/2012, gje]

10. Signature

Permitee: Range Resources-Pine Mountain Date: 11/10/2011
Signed By: Laura Murray Title: Permit Specialist

<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	

Latitude 37° 05' 00"

Note: See Attached Tract
Ownership Information Schedule



8,150.

Well Coordinates: (Clinchfield Coal Co., Calculated
from NAD 83 coordinates)
S 14,204.26 E 65,182.78

WELL LOCATION PLAT

~~Licensed Professional Engineer or Licensed Land Surveyor~~

V-530051 PLAT
TRACT OWNERSHIP INFORMATION SCHEDULE
7/14/2009

1. Elaine Duty
51.27 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Lease No. 245255L
Charlton Tiller - oil & gas
Heartwood Forestland Fund IV, L.P. - surface
51.27 Acres
Gas 32.80 Ac. 29.11%
2. Lease No. 906889L / T2-173
Rebecca Deel
27.36 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources - Pine Mountain, Inc. - oil & gas
Gas 14.88 Ac. 13.21%
3. H.M.C. Tiller
30.60 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Lease No.
Eivens Tiller Heirs - oil & gas
Gas 18.32 Ac. 16.26%
4. Radford Powers
14.00 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Lease No.
S.J. Tiller Heirs - oil & gas
Gas 9.47 Ac. 8.40%

- 5 . Lease No. 906889L / T2-164
Julia Fletcher
91.00 Acres
Range Resources - Pine Mountain, Inc. - oil & gas
Gas 22.73 Ac. 20.17%
- 6 . Lease No. 906889L / T2-166
Elaine Duty
0.13 Acres, p/o 51.27 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources - Pine Mountain, Inc. - oil & gas
Gas 0.20 Ac. 0.18%
- 7 . Lease No. 906889L / T2-163
Lon Kiser
32.00 Acres
Range Resources - Pine Mountain, Inc. - oil & gas
Gas 1.13 Ac. 1.00%
- 8 . Lease No. 906889L / T2-162
W.H. Sheckler
48 Acres
Range Resources - Pine Mountain, Inc. - oil & gas
Gas 1.38 Ac. 1.23%
- 9 . Lease No.
J.B. Tiller
11.47 Acres
J.B. Tiller Heirs - oil & gas
Gas 0.16 Ac. 0.14%
- 10 . Evans Tiller
7.5 Acres
Lease No.
Eivens Tiller Heirs - oil & gas
Gas 2.64 Ac. 2.34%
- 11 . Lease No. 906889L / T2-253
Rosie Jessee Tiller
10.08 Acres
Range Resources - Pine Mountain, Inc. - oil & gas
Gas 2.10 Ac. 1.86%

- 12 . Lease No. 906889L / T2-167
H.M.C. Tiller
30.60 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources - Pine Mountain, Inc. - oil & gas
Gas 5.68 Ac. 5.04%
- 13 . Lease No. 906889L / T2-166
Elaine Duty
51.27 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources - Pine Mountain, Inc. - oil & gas
Gas 1.20 Ac. 1.06%

Coal Seams

				MINING IN AREA		
NAME	TOP	BOTTOM	THICKNESS	YES	NO	MINED OUT
No coals listed in driller's book.						

Gas and Oil Shows

FORMATION	DEPTH	THICKNESS	IPF (MCFD/BOPD)	PRESSURE	HOURS TESTED
Ravencliff	2050		NS		
Ravencliff	2690		NS		
Maxton	3360		NS		
Big Lime	4810		odor		
Berea	5080		odor		

Survey Results

Depth of Survey	Direction/Distance/Degree From True Vertical
200'	$\frac{1}{4}^{\circ}$
400'	$\frac{1}{4}^{\circ}$
600'	$\frac{1}{4}^{\circ}$
800'	$\frac{1}{4}^{\circ}$
1000'	$\frac{1}{2}^{\circ}$
1200'	$\frac{1}{2}^{\circ}$
1400'	$\frac{1}{2}^{\circ}$
1800'	$\frac{1}{2}^{\circ}$

Casing Program

	Casing	Casing	Hole	Cement Used	Cemented To Surface	Date	Packers Or Bridge Plugs	Cement Baskets
Casing Type	Size	Interval	Size	In Cubic Ft.	Yes/No	Cemented	Kind/Size/Set	(ft)
Conductor	13 ³ / ₈ "	0-44'	15"					
Water Protection	9 ⁵ / ₈ "	0-336'	12 ¹ / ₄ "	242	Yes	11/06/09		84'
Coal Protection	7"	0-2362'	8 ⁷ / ₈ "	604.2	Yes	11/09/09		252'
Production Casing	4 ¹ / ₂ "	0-4704'	6 ¹ / ₄ "	349.7	No	11/13/09		3528' 4238'
Other Casing And Tubing Left In Well	2 ³ / ₈ "	0-3974'						
Liners								

Driller's Log

Geologic Age	Formation	General Lithology	Color	Depth Top	Depth Bottom	Thickness	Remarks
Pennsylvanian		Sandy Shale		0	820	820	
Pennsylvanian	Lee	Sandstone		820	1664	844	
Pennsylvanian		Sandy Shale		1664	2199	535	
Mississippian	Ravenclyff	Sandstone		2199	2368	169	
Mississippian		Shale		2368	3030	662	
Mississippian	Maxton	Sandstone		3030	3095	65	
Mississippian		Sandy Shale		3095	3152	57	
Mississippian		Sandstone		3152	3180	28	
Mississippian		Sandy Shale		3180	3245	65	
Mississippian		Sandstone		3245	3370	125	
Mississippian		Sandy Shale		3370	3427	57	
Mississippian	Little Lime	Limestone		3427	3634	207	
Mississippian		Shale		3634	3709	75	
Mississippian	Big Lime	Limestone		3709	4268	559	
Mississippian	Weir	Siltstone		4268	4584	316	
Mississippian	Weir Shale	Shale		4584	4874	290	
Mississippian	Sunbury	Shale		4874	4956	82	
Mississippian	Berea	Sandstone		4956	5005	49	
Devonian	Cleveland	Shale		5005			
					5084 TD		



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	9229
Company:	EnerVest Operating, LLC
File Number:	DI-1144
Operations Name:	VWD-535517
Operation Type:	Gas
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	1/20/2004	Drilling Contractor:	RIG 18
Date drilling completed:	2/1/2004	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	5163.00		
Log Total Depth (feet):	5163.00	Formation At Total Depth	Cleveland Shale

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10413765.6300	Final Plat State Plane X:	10413765.6320
Permitted State Plane Y:	3570578.0800	Final Plat State Plane Y:	3570585.0810

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
PLAT	1DI1144_VWD_535517_EQT_DICKENSON.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
395	DAMP	
64	6	INCH
96	4	INCH

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams:

List of Attached Items:

Description	FileName
COAL	2DI1144_VWD_535517_EQT_DICKENSON.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
GAS	2DI1144_VWD_535517_EQT_DICKENSON.pdf

4. Geophysical Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/DEN/TEMP/IND/NEU

Did logs disclose vertical locations of a coal seam?

☒

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
SURVEY	3DI1144_VWD_535517_EQT_DICKENSON.pdf

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
CASING	3DI1144_VWD_535517_EQT_DICKENSON.pdf

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
LOG	4DI1144_VWD_535517_EQT_DICKENSON.pdf

9. Comments

MATERIAL INSERTED BY DGO [7/13/2016, jhh]

10. Signature

Permitee: EnerVest Operating, LLC Date: 7/13/2016

Signed By: VICTORIA DUGAN Title: *****

INTERNAL USE ONLY

Submit Date: 7/13/2016

Status: A

Date: 9/6/2016

Final PDF Date: 9/6/2016

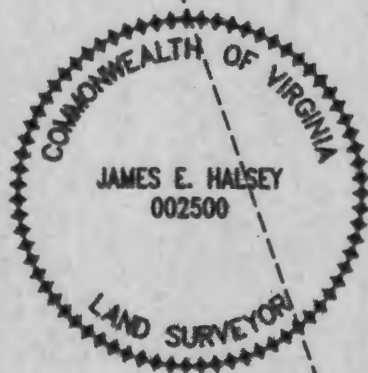
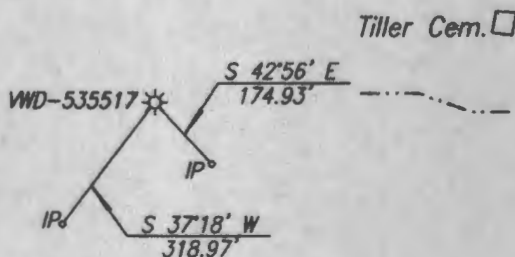
Well Coordinates: (Geographic N27)
37.072036° -82.165749°

Latitude 37° 05' 00"

Longitude 82° 07' 30"

4,120'

Lease No. 241490L / T-432
David Tiller, Jr.
400 Acres
Clinchfield Coal Company /
Pyxis Resources Company - surface & coal
Dickenson-Russell Coal Company LLC,
Alpha Land & Reserves LLC - coal
Pine Mountain Oil & Gas, Inc. - oil & gas



Well elevation determined by
GPS survey from Mon. Barn

FINAL PLAT

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plat dated 1-30-2004.

Well Coordinates: (VA St. Plane S. Zone,
Calculated from CCC coordinates)
N 289,708 E 930,780

Well Coordinates: (Clinchfield Coal Co.)
S 10,163.78 E 63,492.15

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER WVD-535517
TRACT NO. T-432 ELEVATION 1,580.57' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervington SCALE 1" = 400' DATE 1-30-2004

This Plat is a new plat x; an updated plat ; or a final location plat

+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor

Department of Mines, Minerals and Energy
 Division of Gas and Oil
 P.O. Box 1416
 Abingdon, Virginia 24210
 276-676-5423

Drilling Report

Attach a final location Plat as required by 4 VAC 25-150-360.C

Drilling Data

Date Drilling Commenced: 01/20/2004 Drilling Contractor: Rig 18
 Date Drilling Completed: 02/01/2004
 Date Well Completed: 04/07/2004 Rig Type: Rotary: X Cable Tool:
 DTD: 5,163.00
 LTD: 5,163.00

Geological Data

Type	From / GPM per Inch
Fresh water	6" @ 64
Fresh water	4" @ 96
Fresh water	damp @395

Coal Seams & Open Mines

Type	From
Coal	209'-210'
Coal	362'-365'

Gas and Oil Shows

Gas Tests

Depth	Remarks
2,447	No Show
2,540	No Show
2,851	No Show
4,314	No Show
5,163	No Show

Department of Mines, Minerals and Energy
 Division of Gas and Oil
 P.O. Box 1416
 Abingdon, Virginia 24210
 276-676-5423

Drilling Report

Attach a final location Plat as required by 4 VAC 25-150-360.C

Drilling Data

Date Drilling Commenced: 01/20/2004 Drilling Contractor: Rig 18
 Date Drilling Completed: 02/01/2004
 Date Well Completed: 04/07/2004 Rig Type: Rotary: X Cable Tool:
 DTD: 5,163.00
 LTD: 5,163.00

Geological Data

Type	From / GPM per Inch
Fresh water	6" @ 64
Fresh water	4" @ 96
Fresh water	damp @395

Coal Seams & Open Mines

Type	From
Coal	209'-210'
Coal	362'-365'

Gas and Oil Shows

Gas Tests

Depth	Remarks
2,447	No Show
2,540	No Show
2,851	No Show
4,314	No Show
5,163	No Show

Cuttings or samples are not available for examination by a member of the Virginia Division of Mineral Resources
Cuttings or samples have not been furnished to the Virginia Division of Mineral Resources

Electric Logs and Surveys

List logs run on wellbore: GR/Density/Temp/Induction/Neutron

Did Logs disclose vertical location of a coal seam? Yes: ☐ No: ☒

Survey Results

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
378	1/2
578	1/2
778	3/4
978	3/4
1,178	1
1,378	1
1,561	1

Casing Data

Casing Outside Diameter	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
20	0- 45	22				
16	0- 90	22				
11 3/4	0- 318	15	236.00	Y	01/22/2004	88
8 5/8	0- 1519	11	501.50	Y	01/25/2004	407
5 1/2	0- 5067	7 7/8	710.85		01/31/2004	

<u>Tubing Size</u>	<u>Footage</u>
2 3/8	4,400.00

Cuttings or samples are not available for examination by a member of the Virginia Division of Mineral Resources
Cuttings or samples have not been furnished to the Virginia Division of Mineral Resources

Electric Logs and Surveys

List logs run on wellbore: GR/Density/Temp/Induction/Neutron

Did Logs disclose vertical location of a coal seam? Yes: ☐ No: ☒

Survey Results

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
378	1/2
578	1/2
778	3/4
978	3/4
1,178	1
1,378	1
1,561	1

Casing Data

Casing Outside Diameter	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
20	0- 45	22				
16	0- 90	22				
11 3/4	0- 318	15	236.00	Y	01/22/2004	88
8 5/8	0- 1519	11	501.50	Y	01/25/2004	407
5 1/2	0- 5067	7 7/8	710.85		01/31/2004	

<u>Tubing Size</u>	<u>Footage</u>
2 3/8	4,400.00

Drillers Log

Permit: 5689

Well: WD535517

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Base LEE	0.00	1,328.00	0.00
RVCF	2,301.00	2,473.00	172.00
AVIS	2,473.00	2,536.00	63.00
LLIM	3,480.00	3,552.00	72.00
BGLM	3,552.00	4,300.00	748.00
WEIR	4,300.00	4,612.00	312.00
WEIR Sh	4,612.00	4,885.00	273.00
SNBY	4,885.00	4,952.00	67.00
BEREA	4,952.00	4,965.00	13.00
CLEV	4,965.00	0.00	0.00

Total Depth of Well: 5,163.00

Permittee: **EQUITABLE PRODUCTION COMPANY** (Company)

By: *Victoria Deegan* (Signature)



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	9372
Company:	EnerVest Operating, LLC
File Number:	DI-1310
Operations Name:	VC-535925
Operation Type:	Coal Bed
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	12/6/2004	Drilling Contractor:	GASCO
Date drilling completed:	12/9/2004	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	2473.00		
Log Total Depth (feet):	2454.00	Coal Seam At Total Depth	Pocahontas

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10406964.4200	Final Plat State Plane X:	10406964.0000
Permitted State Plane Y:	3572331.0100	Final Plat State Plane Y:	3572331.0000

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
PLAT	1DI1310_VC535925WPL_EQT_DICKENSON.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
205	1/4	INCH

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams:

List of Attached Items:

Description	FileName
COAL	2DI1310_VC535925WPL_EQT_DICKENSON.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
GAS	2DI1310_VC535925WPL_EQT_DICKENSON.pdf

4. Geophysical Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/DEN/TEMP/IND/NEU

Did logs disclose vertical locations of a coal seam?



5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
SURVEY	3DI1310_VC535925WPL_EQT_DICKENSON.pdf

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
CASING	3DI1310_VC535925WPL_EQT_DICKENSON.pdf

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
LOG	4DI1310_VC535925WPL_EQT_DICKENSON.pdf

9. Comments

MATERIAL INSERTED BY DGO [8/5/2016, jhh]

10. Signature

Permitee: EnerVest Operating, LLC Date: 8/5/2016
Signed By: VICTORIA DUGAN Title: ***

INTERNAL USE ONLY

Submit Date: 8/5/2016

Status: A

Date: 8/29/2016

Final PDF Date: 8/29/2016

Well Coordinates: (Geographic N27)
37.076099° -82.189273°

Latitude 37° 05' 00"

Longitude 82° 10' 00"

Lease No. 241490L / T-409
J.N.R. Sutherland
430.65 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas, & CBM
Gas 11.84 Ac. 20.15%

Lease No. 241490L / T-405
H.W. Sutherland
225.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas, & CBM
Gas 46.21 Ac. 78.62%

Lease No. 241640L / T2-222
Ezekiel Sutherland
178.67 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas, & CBM
Gas 0.15 Ac. 0.26%

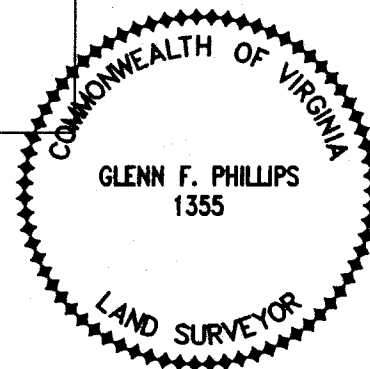
Well elevation determined by
GPS survey from BM Y 108

FINAL PLAT

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plat dated 9-10-2004.
Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane S. Zone,
Calculated from CCC coordinates)
N 291,454 E 923,980

Well Coordinates: (Clinchfield Coal Co.)
S 8,684.09 E 56,631.35



WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-535925
TRACT NO. T-405 ELEVATION 2,204.70' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 12-06-2004

This Plat is a new plat ____; an updated plat ____; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

Glenn F. Phillips

Licensed Professional Engineer or Licensed Land Surveyor

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
276-676-5423

Drilling Report

Attach a final location Plat as required by 4 VAC 25-150-360.C

Drilling Data

Date Drilling Commenced: 12/06/2004 Drilling Contractor: Gasco
Date Drilling Completed: 12/09/2004
Date Well Completed: 12/22/2004 Rig Type: Rotary: X Cable Tool:
DTD: 2,473.00
LTD: 2,454.00

Geological Data

<u>Type</u>	<u>From / GPM per Inch</u>
Fresh water	1/4" @ 205'

Coal Seams & Open Mines

<u>Type</u>	<u>From</u>
Coal	90'-91'205'-06',308'-09',455'-56',495'-96'548'-69'
Coal	580'-81',700'-02',807'-09',915'-16',950'-51'
Coal	980'-81',1132'-33',1220'-21',1370'-73',1600'-03'
Coal	1645'-46',1715'-16',1768'-69',2080'-81',2270'-71'
Open Mine	730'-738'

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</u>
840	No Show
2,473	TRACE

Department of Mines, Minerals and Energy
 Division of Gas and Oil
 P.O. Box 1416
 Abingdon, Virginia 24210
 276-676-5423

Drilling Report

Attach a final location Plat as required by 4 VAC 25-150-360.C

Drilling Data

Date Drilling Commenced: 12/06/2004 Drilling Contractor: Gasco
 Date Drilling Completed: 12/09/2004
 Date Well Completed: 12/22/2004 Rig Type: Rotary: X Cable Tool:
 DTD: 2,473.00
 LTD: 2,454.00

Geological Data

<u>Type</u>	<u>From / GPM per Inch</u>
Fresh water	1/4" @ 205'

Coal Seams & Open Mines

<u>Type</u>	<u>From</u>
Coal	90'-91'205'-06',308'-09',455'-56',495'-96'548'-69'
Coal	580'-81',700'-02',807'-09',915'-16',950'-51'
Coal	980'-81',1132'-33',1220'-21',1370'-73',1600'-03'
Coal	1645'-46',1715'-16',1768'-69',2080'-81',2270'-71'
Open Mine	730'-738'

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</u>
840	No Show
2,473	TRACE

Cuttings or samples are not available for examination by a member of the Virginia Division of Mineral Resources
 Cuttings or samples have not been furnished to the Virginia Division of Mineral Resources

Electric Logs and Surveys

List logs run on wellbore: GR/Density/Temp/Induction/Neutron

Did Logs disclose vertical location of a coal seam? Yes: ☐ No: ☒

Survey Results

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
198	1/4
400	1/4
600	1/4
750	1/4
798	1/4
1,000	1/4
1,140	1/4
1,395	1/4
1,614	1/4
1,812	1/2
2,031	1/2
2,221	1/2
2,410	1/2

Casing Data

Casing Outside Diameter	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmt'd To Surface	Date Cemented	Cement Baskets
16	0- 30	17 1/2				
8 5/8	0- 817	11	369.20	Y	12/07/2004	680, 648
4 1/2	0- 2372	6 1/2	502.50	Y	12/09/2004	

Tubing Size

2 3/8

5/8

Footage

2,319.40

2322.15

Cuttings or samples are not available for examination by a member of the Virginia Division of Mineral Resources
 Cuttings or samples have not been furnished to the Virginia Division of Mineral Resources

Electric Logs and Surveys

List logs run on wellbore: GR/Density/Temp/Induction/Neutron

Did Logs disclose vertical location of a coal seam? Yes: ☐ No: ☒

Survey Results

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
198	1/4
400	1/4
600	1/4
750	1/4
798	1/4
1,000	1/4
1,140	1/4
1,395	1/4
1,614	1/4
1,812	1/2
2,031	1/2
2,221	1/2
2,410	1/2

Casing Data

Casing Outside Diameter	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
16	0- 30	17 1/2				
8 5/8	0- 817	11	369.20	Y	12/07/2004	680, 648
4 1/2	0- 2372	6 1/2	502.50	Y	12/09/2004	

Tubing Size

2 3/8

5/8

Footage

2,319.40

2322.15

Drillers Log**Permit:** 6430**Well:** VC535925

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Ailv	440.00	574.00	134.00
Raven	574.00	693.00	119.00
Jawbone	693.00	827.00	134.00
Tiller	827.00	911.50	84.50
Upper Seaboard A	911.50	950.00	38.50
Upper Seaboard	950.00	1,127.50	177.50
Greasv Creek	1,127.50	1,185.50	58.00
Middle Seaboard	1,185.50	1,232.50	47.00
Lower Seaboard	1,232.50	1,329.00	96.50
Upper Horsepen	1,329.00	1,367.00	38.00
Middle Horsepen	1,367.00	1,475.00	108.00
C Seam Rider	1,475.00	1,497.50	22.50
C Seam	1,497.50	1,570.00	72.50
War Creek	1,570.00	1,607.00	37.00
Becklev	1,607.00	1,671.50	64.50
Lower Horsepen	1,671.50	1,710.00	38.50
X Seam	1,710.00	1,852.00	142.00
Pocahontas #8	1,852.00	2,036.00	184.00
Pocahontas #6 Rider	2,036.00	2,075.00	39.00
Pocahontas #6	2,075.00	2,099.00	24.00
Pocahontas #5	2,099.00	2,251.50	152.50
Pocahontas #3	2,251.50	2,473.00	221.50

Total Depth of Well: 2,473.00Permittee: **EQUITABLE PRODUCTION COMPANY** (Company)By: Victoria Dugan (Signature)



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	1939
Company:	Equitable Production Company
File Number:	DI-2131
Operations Name:	VC-536444
Operation Type:	Coal Bed
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	<u>3/26/2009</u>	Drilling Contractor:	<u>Crossrock Drilling</u>
Date drilling completed:	<u>3/29/2009</u>	Rig Type:	<u>R Rotary</u> <u>F Cable</u>
Driller's Total Depth (feet):	<u>2531.00</u>		
Log Total Depth (feet):	<u>2529.00</u>	Coal Seam At Total Depth	<u>POCAHONTAS #3</u>

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	<u>10408550.4700</u>	Final Plat State Plane X:	<u>10408550.6400</u>
Permitted State Plane Y:	<u>3573800.3200</u>	Final Plat State Plane Y:	<u>3573798.5300</u>

Plat Previously Submitted Or... F

List of Attached Items:

Description	FileName
Final Plat 536444	VC-536444 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
200	1	INCH

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams:

List of Attached Items:

Description	FileName
Coal Seams 536444	Coal Seams.doc

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Gas & Oil Shows 536444	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? R

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 536444	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 536444	Casing Data.doc
Tubing 536444	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Did not encounter Open Mine @ 844' while drilling. Lost Circ @ 833' while cementing 7" csg. (broken formation) Did balance job.

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Drillers Log 536444	Drillers Log.doc

9. Comments

10. Signature

Permitee: Equitable Production Company Date: 8/25/2009

Signed By: Michael D. Butcher Title: Director of Drilling

INTERNAL USE ONLY

Submit Date: 8/25/2009

Status: A

Date: 8/28/2009

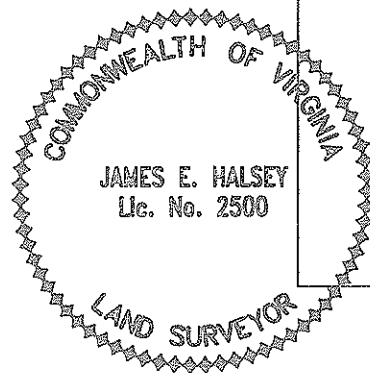
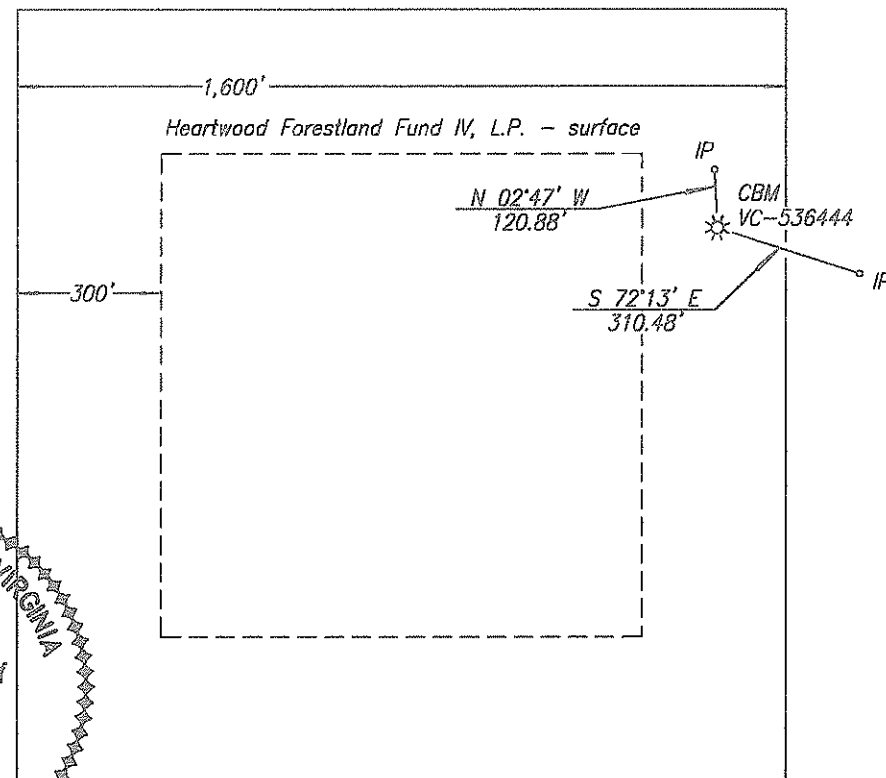
Final PDF Date: 9/29/2009

Well Coordinates: (Geographic N27)
37.080301° -82.184041°

Latitude 37° 05' 00"

Lease No. 906889 / T-409
J.N.R. Sutherland
430.65 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources-Pine Mountain, Inc. - oil, gas & CBM
Gas 58.77 Ac. 100.00%

Longitude 82° 10' 00"



Well Coordinates: (VA St. Plane S. Zone, NAD 83)
N 3,573,798.53 E 10,408,550.64

Well Coordinates: (VA St. Plane NAD27, S. Zone,
Calculated from NAD 83 coordinates)
N 292,922.73 E 925,564.77

Well Coordinates: (Clinchfield Coal Co., Calculated
from NAD 83 coordinates)
S 7,152.94 E 58,157.28

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plat dated 11-26-2008.

FINAL PLAT

Well elevation determined by GPS
survey from HARN Monument P-424

Area of Unit = 58.77 Ac.

WELL LOCATION PLAT (Nora Grid BF-73)

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-536444
TRACT NO. Tr. No. 906889/T-409 ELEVATION 2,307.79' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 3-27-2009

This Plat is a new plat ; an updated plat ; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



Type

Coal

Coal

Coal

Coal

From

86'-87', 128'-29', 157'-58', 180'-81', 300'-01', 354'-55', 428'-29', 485'-86',
625'-26', 658'-59', 842'-43', 1018'-19', 1061'-62', 1115'-16', 1232'-33', 1300'-
01',
1360'-61', 1415'-16', 1418.5'-19.2', 1451.5'-52.3', 1512.5'-13.4', 1596'-96.8',
1609'-09.8', 1657.5'-58.4',
1724'-28.1', 1770.5'-71.1', 1816.5'-18.1', 1882.5'-83.9', 2178.5'-79', 2202'-
02.8', 2355.5'-57.1'



Gas Tests

<u>Depth</u>	<u>Result</u>
1 / 4	No Show
354	No Show
534	No Show
714	No Show
904	No Show
1,084	No Show
1,264	No Show
1,444	No Show
1,624	No Show
1,804	No Show
1,984	No Show
2,164	No Show
2,344	No Show
2,524	No Show
2,488	No Show
2,531	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
174	1/8
354	1/4
534	1/4
714	1/4
904	1/8
1,084	1/4
1,264	1/8
1,444	1/8
1,624	1/4
1,804	1/4
1,984	1/8
2,164	1/8
2,344	1/4
2,524	1/4

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
13 3/8	42	17 1/2				
7	935	8 7/8	237.18	y	03/27/2009	780,802
4 1/2	2488	6 3/8	462.50	y	03/29/2009	

Tubing Size

2 3/8

5/8"

Footage

2,406.65

2391.9

Drillers
Log

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Fill	0.00	25.00	25.00
Sand and Shale	25.00	86.00	61.00
Coal	86.00	87.00	1.00
Sand and Shale	87.00	128.00	41.00
Coal	128.00	129.00	1.00
Sand and Shale	129.00	157.00	28.00
Coal	157.00	158.00	1.00
Sand and Shale	158.00	180.00	22.00
Coal	180.00	181.00	1.00
Sand	181.00	300.00	119.00
Coal	300.00	301.00	1.00
Sand and Shale	301.00	354.00	53.00
Coal	354.00	355.00	1.00
Sand and Shale	355.00	428.00	73.00
Coal	428.00	429.00	1.00
Sand and Shale	429.00	485.00	56.00
Coal	485.00	486.00	1.00
Sand and Shale	486.00	583.00	97.00
Sand	583.00	625.00	42.00
Coal	625.00	626.00	1.00
Sand	626.00	658.00	32.00
Coal	658.00	659.00	1.00
Sand	659.00	842.00	183.00
Broken Formation	842.00	843.00	1.00
Sand	843.00	925.00	82.00
Sand and Shale	925.00	1,018.00	93.00
Coal	1,018.00	1,019.00	1.00
Sand	1,019.00	1,061.00	42.00
Coal	1,061.00	1,062.00	1.00
Sand	1,062.00	1,115.00	53.00
Coal	1,115.00	1,116.00	1.00
Sand	1,116.00	1,185.00	69.00
Sand and Shale	1,185.00	1,232.00	47.00
Coal	1,232.00	1,233.00	1.00
Sand and Shale	1,233.00	1,300.00	67.00
Coal	1,300.00	1,301.00	1.00
Sand	1,301.00	1,360.00	59.00
Coal	1,360.00	1,361.00	1.00
Sand and Shale	1,361.00	1,415.00	54.00
Coal	1,415.00	1,416.00	1.00
Sand and Shale	1,416.00	1,418.50	2.50
Unnamed A	1,418.50	1,419.20	0.70
sand & shale	1,419.20	1,451.50	32.30
Unnamed B	1,451.50	1,452.30	0.80
sand & shale	1,452.30	1,512.50	60.20

Middle Horsepen	1,512.50	1,513.40	0.90
sand & shale	1,513.40	1,596.00	82.60
C Seam Rider	1,596.00	1,596.80	0.80
sand & shale	1,596.80	1,609.00	12.20
C Seam	1,609.00	1,609.80	0.80
sand & shale	1,609.80	1,657.50	47.70
War Creek	1,657.50	1,658.40	0.90
sand & shale	1,658.40	1,724.00	65.60
Beckley	1,724.00	1,728.10	4.10
sand & shale	1,728.10	1,770.50	42.40
Lower Horsepen	1,770.50	1,771.10	0.60
sand & shale	1,771.10	1,816.50	45.40
X Seam	1,816.50	1,818.10	1.60
sand & shale	1,818.10	1,882.50	64.40
Pocahontas #9	1,882.50	1,883.90	1.40
sand & shale	1,883.90	2,178.50	294.60
Pocahontas #6	2,178.50	2,179.00	0.50
sand & shale	2,179.00	2,202.00	23.00
Pocahontas #5	2,202.00	2,202.80	0.80
sand & shale	2,202.80	2,355.50	152.70
Pocahontas #3	2,355.50	2,357.10	1.60
sand & shale	2,357.10	2,531.00	173.90



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2078
Company:	EQT Production Company
File Number:	DI-2179
Operations Name:	VC-536588
Operation Type:	Coal Bed
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	6/21/2009	Drilling Contractor:	Crossrock Drilling
Date drilling completed:	6/23/2009	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	2358.00		
Log Total Depth (feet):	2333.00	Coal Seam At Total Depth	POCAHONTAS #3

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10407953.6600	Final Plat State Plane X:	10407953.2100
Permitted State Plane Y:	3572658.2800	Final Plat State Plane Y:	3572658.0400

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
Final Plat 536588	VC-536588 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams:

List of Attached Items:

Description	FileName
Coal Seams 536588	Coal Seams.doc

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Gas & Oil Shows 536588	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? R

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 536588	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 536588	Casing Data.doc
Tubing 536588	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Did not circ. Broken formation @ 713'. Did not hit open mine @ 729'. TD'd the hole 41' short of est. TD of 2399' because of broken hammer & bit.

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Drillers Log 536588	Drillers Log.doc

9. Comments

10. Signature

Permitee: EQT Production Company Date: 10/6/2009

Signed By: Michael D. Butcher Title: Director of Drilling

INTERNAL USE ONLY

Submit Date: 10/6/2009

Status: A

Date: 12/22/2009

Final PDF Date: 12/23/2009

LATITUDE 37°05'00"

FINAL PLAT

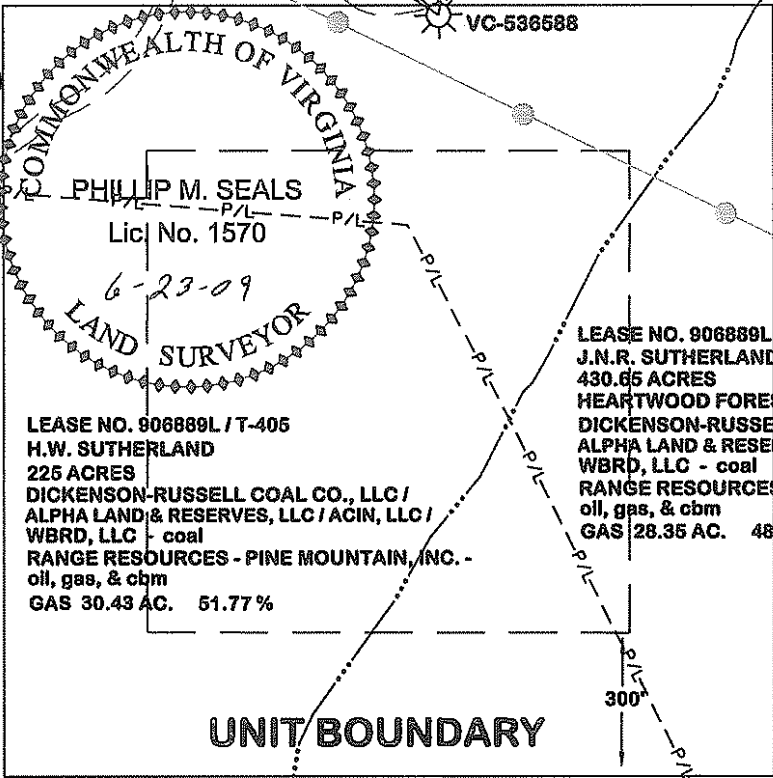
The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 1-15-09.

LONGITUDE 82°10'00"

STATE PLANE
NAD 83 COORDINATES OF
WELL VC-536588
N 3,572,658.04
E 10,407,953.21

LAT. & LONG.
(NAD 27 DECIMAL DEGREES)
OF WELL VC-536588
37.077104
82.185933

CCC
COORDINATES OF
WELL VC-536588
S 8,317.24
E 57,805.87



LEASE NO. 906889L / T-405
H.W. SUTHERLAND
225 ACRES
DICKENSON-RUSSELL COAL CO., LLC /
ALPHA LAND & RESERVES, LLC / ACIN, LLC /
WBRD, LLC - coal
RANGE RESOURCES - PINE MOUNTAIN, INC. -
oil, gas, & cbm
GAS 30.43 AC. 51.77 %

LEASE NO. 906889L / T-409
J.N.R. SUTHERLAND
430.65 ACRES
HEARTWOOD FORESTLAND FUND IV, L.P.- surface
DICKENSON-RUSSELL COAL CO., LLC /
ALPHA LAND & RESERVES, LLC / ACIN, LLC /
WBRD, LLC - coal
RANGE RESOURCES - PINE MOUNTAIN, INC. -
oil, gas, & cbm
GAS 28.35 AC. 48.23 %

NOTE:

ELEVATIONS WERE DETERMINED BY GPS & TRIGONOMETRIC
METHODS BASED ON CORS STA LS 01.
THE BOUNDARY LINES SHOWN HEREON ARE BASED ON DEEDS, PLATS, AND MAPS
OF RECORD OR SURVEYS BY OTHERS, AND DO NOT DEPICT A CURRENT BOUNDARY SURVEY.
PROPERTY INFORMATION PROVIDED BY EQUITABLE PRODUCTION COMPANY.

**TOTAL UNIT AREA
= 58.78 ACRES**

WELL LOCATION PLAT

COMPANY EQUITABLE PRODUCTION CO. WELL NAME OR NUMBER VC-536588
TRACT NO. T-409 QUADRANGLE DUTY
DISTRICT Ervinton
WELL COORDINATES (VIRGINIA STATE PLANE 27) N 291,781.00 E 924,967.75
ELEVATION 2204.43 METHOD USED TO DETERMINE ELEVATION: GPS & TRIG.
COUNTY Dickenson SCALE: 1" = 400' DATE 06-23-09
THIS PLAT IS A NEW PLAT ; AN UPDATED PLAT ; OR A FINAL LOCATION PLAT X

+ DENOTES THE LOCATION OF A WELL ON UNITED STATES TOPOGRAPHIC MAPS, SCALE 1 TO 24,000,
LATITUDE AND LONGITUDE LINES BEING REPRESENTED BY BORDER LINES AS SHOWN.

Philip M. Seals
LICENSED LAND SURVEYOR



Type

Coal

Coal

Coal

Coal

From

58'-59',76'-77',88'-89',210'-11',310'-11',354'-55',398'-99',443'-44',500'-01'

534'-35',577'-78',654'-55',729'-30',910'-11',915'-16.5',961'-62.5',1128'-30.08',1192'-93.58'

1240.5'-42.42',1296.5'-96.83',1311'-11.25,1335'-36',1373'-74.17',1489'-89.75',1549'-

50.17',1610'-13.5'

1653.5'-53.83',1711'-12.58',1801'-02.25',1857.5'-58.17',2046.5'-48.08',2078'-78.58',2102'-

03.33',2255'-56.5'



Gas Tests

<u>Depth</u>	<u>Result</u>
182	No Show
362	No Show
542	No Show
722	No Show
902	No Show
1,082	No Show
1,262	No Show
1,442	No Show
1,622	No Show
1,802	No Show
1,982	No Show
2,162	No Show
2,342	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
182	1/8
362	1/8
542	1/8
722	1/4
902	1/8
1,082	1/4
1,262	1/8
1,442	1/8
1,622	1/8
1,802	1/4
1,982	1/4
2,162	1/4
2,342	1/8

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
13 3/8	31	17 1/2				
7	811	8 7/8	286.74	y	06/21/2009	641, 683
4 1/2	2320	6 3/8	432.50	y	06/23/2009	

Tubing Size

2 3/8

5/8"

Footage

2,317.40

2375

Table
1.00

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Fill	0.00	4.00	4.00
Sand	4.00	40.00	36.00
Sand and Shale	40.00	58.00	18.00
Coal	58.00	59.00	1.00
Sand and Shale	59.00	76.00	17.00
Coal	76.00	77.00	1.00
Sand and Shale	77.00	88.00	11.00
Coal	88.00	89.00	1.00
Sand and Shale	89.00	110.00	21.00
Sand	110.00	210.00	100.00
Coal	210.00	211.00	1.00
Sand	211.00	310.00	99.00
Coal	310.00	311.00	1.00
Sand and Shale	311.00	354.00	43.00
Coal	354.00	355.00	1.00
Sand	355.00	398.00	43.00
Coal	398.00	399.00	1.00
Sand	399.00	443.00	44.00
Coal	443.00	444.00	1.00
Sand and Shale	444.00	500.00	56.00
Coal	500.00	501.00	1.00
Sand and Shale	501.00	534.00	33.00
Coal	534.00	535.00	1.00
Sand and Shale	535.00	577.00	42.00
Coal	577.00	578.00	1.00
Sand and Shale	578.00	654.00	76.00
Coal	654.00	655.00	1.00
Sand and Shale	655.00	729.00	74.00
Coal	729.00	730.00	1.00
Sand and Shale	730.00	910.00	180.00
Coal	910.00	911.00	1.00
Sand and Shale	911.00	915.00	4.00
Upper Seaboard A	915.00	916.50	1.50
sand & shale	916.50	961.00	44.50
Upper Seaboard	961.00	962.50	1.50
sand & shale	962.50	1,128.00	165.50
Greasy Creek	1,128.00	1,130.08	2.08
sand & shale	1,130.08	1,192.00	61.92
Middle Seaboard	1,192.00	1,193.58	1.58
sand & shale	1,193.58	1,240.50	46.92
Lower Seaboard	1,240.50	1,242.42	1.92
sand & shale	1,242.42	1,296.50	54.08
Unnamed A	1,296.50	1,296.83	0.33
sand & shale	1,296.83	1,311.00	14.17
Unnamed B	1,311.00	1,311.25	0.25
sand & shale	1,311.25	1,335.00	23.75

Upper Horsepen	1,335.00	1,336.00	1.00
sand & shale	1,336.00	1,373.00	37.00
Middle Horsepen	1,373.00	1,374.17	1.17
sand & shale	1,374.17	1,489.00	114.83
C Seam Rider	1,489.00	1,489.75	0.75
sand & shale	1,489.75	1,549.00	59.25
War Creek	1,549.00	1,550.17	1.17
sand & shale	1,550.17	1,610.00	59.83
Beckley	1,610.00	1,613.50	3.50
sand & shale	1,613.50	1,653.50	40.00
Lower Horsepen	1,653.50	1,653.83	0.33
sand & shale	1,653.83	1,711.00	57.17
X Seam	1,711.00	1,712.58	1.58
sand & shale	1,712.58	1,801.00	88.42
Pocahontas #9	1,801.00	1,802.25	1.25
sand & shale	1,802.25	1,857.50	55.25
Pocahontas #8	1,857.50	1,858.17	0.67
sand & shale	1,858.17	2,046.50	188.33
Pocahontas #6 Rider	2,046.50	2,048.08	1.58
sand & shale	2,048.08	2,078.00	29.92
Pocahontas #6	2,078.00	2,078.58	0.58
sand & shale	2,078.58	2,102.00	23.42
Pocahontas #5	2,102.00	2,103.33	1.33
sand & shale	2,103.33	2,255.00	151.67
Pocahontas #3	2,255.00	2,256.50	1.50
sand & shale	2,256.50	2,358.00	101.50



Commonwealth of Virginia
 Department of Mines, Minerals, and Energy
 Division of Gas and Oil
 P.O. Box 1416; Abingdon, VA 24212
 Telephone: (276) 676-5423

Tracking Number: 397
Company: Equitable Production Company
File Number: DI-1650
Operations Name: VC-537095 W/PL
Operation Type: Coalbed/Pipeline
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 1/15/2007 Drilling Contractor: Gasco
 Date drilling completed: 1/17/2007 Rig Type: ☒ Rotary ☐ Cable Tool
 Driller's Total Depth (feet): 1,787
 Log Total Depth (feet): 1,781 Coal Seam At Total Depth POCAHONTAS #3

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X 926,662 Final Plat State Plane X: 926,661
 Permitted State Plane Y: 283,970 Final Plat State Plane Y: 283,966
☐ Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
Final Plat 537095	VC-537095 final plat .tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams

List of Attached Items:

Description	FileName
Coal Seams 537095	Coal Seams.doc

Gas and Oil Shows

List of Attached Items:

Description	FileName
Gas & Oil Shows 537095	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A.)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? ☒ Yes ☐ No

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 537095	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Csg 537095	Casing Data.doc
Tbg 537095	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Lost circulation through mine voids at 152' - 155' and 180' to 185'

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Drillers Log 537095	Drillers Log.doc

Well Coordinates: (Geographic N27)
37.055835° -82.179089°

Latitude 37° 05' 00"

Lease No. 241490L / T-238
Charles Barnett
466.38 Acres
ACIN LLC - coal (except Jawbone & Tiller seams)
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Coal Company LLC - coal lessee
Clinchfield Coal Company - coal (Jawbone & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - CBM
Unleased
Gaynell Rasnoke Owens, et al - oil & gas (2)
Gas 4.47 Ac. 7.61%

DMLR Permit
No. 1101840

DMLR Permit
No. 1201108

DMLR Permit
No. 1300482

DMLR Permit
No. 1300482

DMLR Permit
No. 1101840

Lease No. 241490L / T-238
Charles Barnett
466.38 Acres
ACIN LLC - coal (except Jawbone & Tiller seams)
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Coal Company LLC - coal lessee
Clinchfield Coal Company - coal (Jawbone & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 54.30 Ac. 92.39%

Heartwood Forestland Fund IV, L.P. - surface

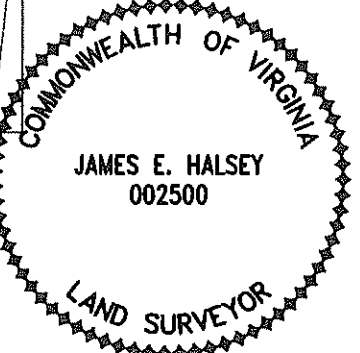
N 25°01' W

145.71'

N 62°05' W

133.05'

IP
IP
CBM
VC-537095



Well Coordinates: (VA St. Plane S. Zone,
Calculated from CCC coordinates)
N 283,966 E 926,661

Well Coordinates: (Clinchfield Coal Co.)
S 16,062.10 E 59,601.52

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plot dated 11-08-2006.

Well elevation determined by GPS
Surveying from BM Y 108

FINAL PLAT

Area of Unit = 58.77 Ac.

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537095
TRACT NO. T-238 ELEVATION 1,745.15 QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 1-16-2007

This Plat is a new plat ____; an updated plat ____; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



Type

Coal

Coal

Coal

Open Mine

From

155'-56',260'-61',570'-

71',970'-71',1010'-11'

1050'-51',1135'-36',1180'-

81',1290'-91',1505'-06'

1553'-54',1605'-06'

152'-55',180'-85'



Gas Tests

<u>Depth</u>	<u>Remarks</u>
152	TSTM
185	TSTM
200	TSTM
400	No Show
600	No Show
800	No Show
1,000	No Show
1,200	No Show
1,400	No Show
1,600	No Show
1,787	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
152	1/4
185	1/4
200	1/4
400	1/4
600	1/4
800	1/4
1,000	1/4
1,200	1/4
1,400	1/4
1,600	1/4
1,787	1/2

Casing Outside Diameter	<div></div>	Casing Interval	Hole Size	Cement used in Cu. ft.	Date Cemented	
					Cmtd To Surface	Cement Baskets
12 3/4		31	15			
7		317	8 7/8	212.40	01/15/2007	118
4 1/2		1714	6 1/2	306.00	01/17/2007	

Tubing Size

2 3/8

5/8"

Footage

1,570.30

1569.95

Table
1.00

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Upper Seaboard A	374.50	376.50	2.00
sand & shale	376.50	391.00	14.50
Upper Seaboard	391.00	392.00	1.00
sand & shale	392.00	557.00	165.00
Greasy Creek	557.00	559.80	2.80
sand & shale	559.80	654.50	94.70
Middle Seaboard	654.50	656.50	2.00
sand & shale	656.50	703.50	47.00
Lower Seaboard	703.50	705.50	2.00
sand & shale	705.50	769.00	63.50
Unnamed A	769.00	770.00	1.00
sand & shale	770.00	799.00	29.00
Unnamed B	799.00	800.00	1.00
sand & shale	800.00	825.00	25.00
Upper Horsepen	825.00	827.30	2.30
sand & shale	827.30	863.00	35.70
Middle Horsepen	863.00	863.30	0.30
sand & shale	863.30	962.00	98.70
War Creek Rider	962.00	964.80	2.80
sand & shale	964.80	1,011.50	46.70
War Creek	1,011.50	1,013.00	1.50
sand & shale	1,013.00	1,049.50	36.50
Unnamed C	1,049.50	1,050.50	1.00
sand & shale	1,050.50	1,086.00	35.50
Beckley	1,086.00	1,090.70	4.70
sand & shale	1,090.70	1,116.50	25.80
Lower Horsepen	1,116.50	1,117.00	0.50
sand & shale	1,117.00	1,248.00	131.00
Pocahontas #9	1,248.00	1,251.50	3.50
sand & shale	1,251.50	1,498.00	246.50
Pocahontas #6	1,498.00	1,500.80	2.80
sand & shale	1,500.80	1,694.00	193.20
Pocahontas #3	1,694.00	1,694.50	0.50
sand & shale	1,694.50	1,787.00	92.50



Commonwealth of Virginia
 Department of Mines, Minerals, and Energy
 Division of Gas and Oil
 P.O. Box 1416; Abingdon, VA 24212
 Telephone: (276) 676-5423

Tracking Number: 696
Company: Equitable Production Company
File Number: DI-1651
Operations Name: VC-537100 W/PL
Operation Type: Coalbed/Pipeline
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 4/24/2007 Drilling Contractor: Gasco
 Date drilling completed: 4/26/2007 Rig Type: ☒ Rotary ☐ Cable Tool
 Driller's Total Depth (feet): 2,395
 Log Total Depth (feet): 2,395 Coal Seam At Total Depth POCAHONTAS #2

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X 928,186 Final Plat State Plane X: 928,180
 Permitted State Plane Y: 287,526 Final Plat State Plane Y: 287,526
☐ Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
final plat	VC-537100 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
479	damp	
795	damp	

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams

List of Attached Items:

Description	FileName
coal seams 537100	Coal Seams 537100.doc

Gas and Oil Shows

List of Attached Items:

Description	FileName
gas shows 537100	Gas and Oil Shows 537100.doc

4. Electric Logs (As required by 4VAC25-150-280.A.)

List all logs run: GR/Density/Temp/Induction/GR

Did logs disclose vertical locations of a coal seam? ☒ Yes ☐ No

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
surveys 537100	Survey Results 537100.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
casing 537100	Casing Dat1.doc
tbg 537100	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

8. Drillers Log

Compiled By: _____

List of Attached Items:

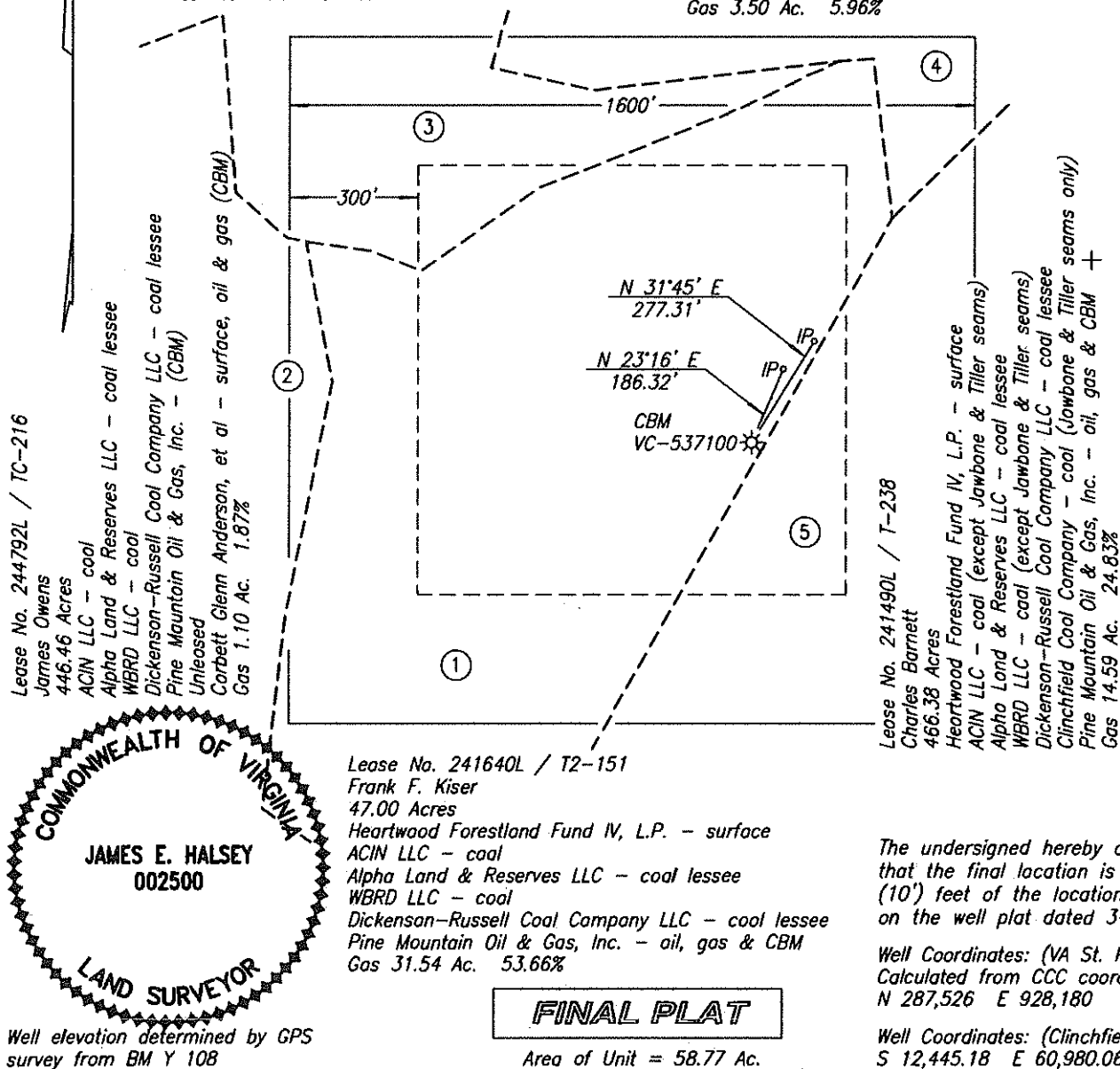
Description	FileName
Drillers log 537100	Drillers Log.doc

Well Coordinates: (Geographic N27)
37.065769° -82.174363°

Latitude 37° 05' 00"

Lease No. 241640L / T2-150
Robert Smith
55.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 8.04 Ac. 13.68%

Lease No. 241490L / T-428
David Tiller Jr.
245.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 3.50 Ac. 5.96%



WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537100
TRACT NO. T2-151 ELEVATION 2,223.76' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervington SCALE 1" = 400' DATE 5-1-2007
This Plat is a new plat ____; an updated plat ____; or a final location plat x
+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor

--

Type

Coal
Coal
Coal
Coal

From

190'-91',360'-61',460'-61',505'-06',680'-81'
1075'-76',1130'-31',1200'-01',1280'-81',1350'-51'
1500'-01',1620'-21',1705'-06',2010'-11',2110'-11'
2250'-51'

Gas Tests

<u>Depth</u>	<u>Remarks</u>
102	No Show
320	No Show
564	No Show
740	No Show
940	No Show
1,110	No Show
1,366	No Show
1,566	No Show
1,766	No Show
1,938	No Show
2,184	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
195	1/4
384	1/4
574	1/4
763	1/4
984	1/4
1,174	1/4
1,363	1/4
1,553	1/4
1,742	1/4
1,931	1/4
2,121	1/4
2,310	1/2

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
12 3/4	21	15		n		
7	756	8 7/8	271.40	y	04/24/2007	624.3 & 669
4 1/2	2333	6 1/2	464.60	y	04/25/2007	

Total Size
2.5/8

Footnote
2,268.15

Table
1

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
OverBurden	0.00	3.00	3.00
Sandy Shale	3.00	190.00	187.00
Coal	190.00	191.00	1.00
Sand Stone	191.00	360.00	169.00
Coal	360.00	361.00	1.00
Sandy Shale	361.00	385.00	24.00
Sand Stone	385.00	460.00	75.00
Coal	460.00	461.00	1.00
Sandy Shale	461.00	505.00	44.00
Coal	505.00	506.00	1.00
Sandy Shale	506.00	680.00	174.00
Coal	680.00	681.00	1.00
Sand Stone	681.00	795.00	114.00
Sandy Shale	795.00	859.50	64.50
Upper Seaboard A	859.50	860.80	1.30
sand & shale	860.80	878.50	17.70
Upper Seaboard	878.50	879.30	0.80
sand & shale	879.30	1,032.00	152.70
Greasy Creek	1,032.00	1,032.30	0.30
sand & shale	1,032.30	1,078.00	45.70
Middle Seaboard	1,078.00	1,079.80	1.80
sand & shale	1,079.80	1,151.00	71.20
Lower Seaboard	1,151.00	1,152.50	1.50
sand & shale	1,152.50	1,202.00	49.50
Unnamed A	1,202.00	1,204.10	2.10
sand & shale	1,204.10	1,268.00	63.90
Upper Horsepen	1,268.00	1,270.90	2.90
sand & shale	1,270.90	1,322.00	51.10
Middle Horsepen	1,322.00	1,323.80	1.80
sand & shale	1,323.80	1,444.00	120.20
War Creek Rider	1,444.00	1,444.70	0.70
sand & shale	1,444.70	1,456.00	11.30
War Creek	1,456.00	1,456.90	0.90
sand & shale	1,456.90	1,498.00	41.10
Unnamed C	1,498.00	1,498.70	0.70
sand & shale	1,498.70	1,537.50	38.80
Beckley	1,537.50	1,538.30	0.80
sand & shale	1,538.30	1,570.50	32.20
Lower Horsepen	1,570.50	1,574.30	3.80
sand & shale	1,574.30	1,693.50	119.20
X Seam	1,693.50	1,695.20	1.70
sand & shale	1,695.20	1,951.00	255.80
Pocahontas #6	1,951.00	1,951.00	0.00
sand & shale	1,951.00	1,994.50	43.50
Pocahontas #5	1,994.50	1,995.30	0.80
sand & shale	1,995.30	2,183.50	188.20

Pocahontas #3	2,183.50	2,183.80	0.30
sand & shale	2,183.80	2,223.00	39.20
Pocahontas #2	2,223.00	2,225.70	2.70
sand & shale	2,225.70	2,395.00	169.30



Commonwealth of Virginia
 Department of Mines, Minerals, and Energy
 Division of Gas and Oil
 P.O. Box 1416; Abingdon, VA 24212
 Telephone: (276) 676-5423

Tracking Number: 453
 Company: Equitable Production Company
 File Number: DI-1649
 Operations Name: VC-537101 W/PL
 Operation Type: Coalbed/Pipeline
 Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 1/20/2007 Drilling Contractor: Gasco
 Date drilling completed: 1/26/2007 Rig Type: ☒ Rotary ☐ Cable Tool
 Driller's Total Depth (feet): 2,241
 Log Total Depth (feet): 2,238 Coal Seam At Total Depth POCAHONTAS #2

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X 927,733 Final Plat State Plane X: 927,732
 Permitted State Plane Y: 286,615 Final Plat State Plane Y: 286,617

☐ Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
Final Plat 537101	VC-537101 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams

List of Attached Items:

Description	FileName
Coal Seams 537101	Coal Seams.doc

Gas and Oil Shows

List of Attached Items:

Description	FileName
Gas & Oil Show 537101	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A.)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? ☒ Yes ☐ No

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 537101	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Csg. 537101	Casing Data.doc
Tbg. 537101	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Lost circ @ open mine 462' - 470'

8. Drillers Log

Compiled By: _____

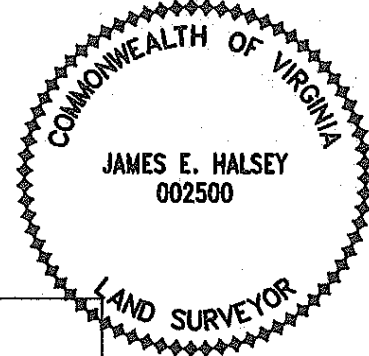
List of Attached Items:

Description	FileName
Drillers Log 537101	Drillers Log.doc

Well Coordinates: (Geographic N27)
37.063226° -82.175776°

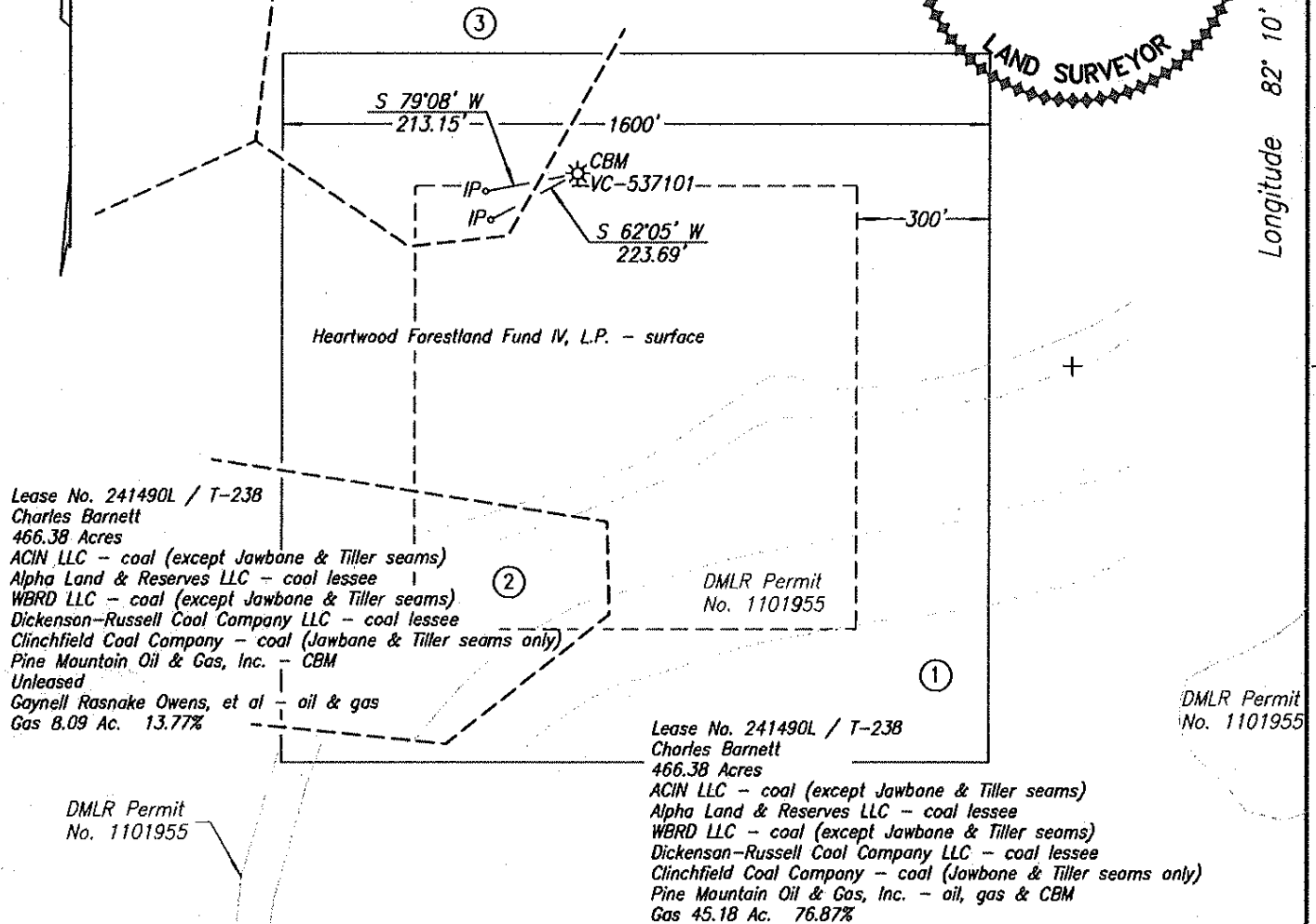
Latitude 37° 05' 00"

Lease No. 241490L / T-151
Frank F. Kiser
47.00 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 5.50 Ac. 9.36%



Longitude 82° 10' 00"

7,325'



The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plat dated 10-23-2006.

Well elevation determined by GPS
survey from BM Y 108

FINAL PLAT

Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane S. Zone,
Calculated from CCC coordinates)
N 286,617 E 927,732

Well Coordinates: (Cinchfield Coal Co.)
S 13,371.28 E 60,567.72

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537101
TRACT NO. Le. No. 241490L / T-238 ELEVATION 2,164.17' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 1-25-2007
This Plat is a new plat —; an updated plat —; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



Type

Coal

Coal

Coal

Open Mine

From

80'-81',130'-31',310'-11',415'-
16',621'-25'

995'-96',1032'-33',1095'-
96',1220'-21',1405'-06'

1515'-18',1930'-31',2160'-61'
462'-70'



Gas Tests

<u>Depth</u>	<u>Remarks</u>
200	No Show
400	No Show
470	No Show
599	No Show
624	No Show
800	No Show
1,000	No Show
1,200	No Show
1,400	No Show
1,518	No Show
1,600	No Show
1,800	No Show
2,000	No Show
2,200	No Show
2,241	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
200	0
400	1/4
470	1/4
599	1/4
624	1/4
800	1/4
1,000	1/4
1,200	1/4
1,400	1/4
1,518	1/2
1,600	1/2
1,800	1/2
2,000	1/2
2,200	1/2
2,241	1/2

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
12 3/4	22	15				
9 5/8	534	12 1/4	365.80	Y	01/24/2007	446
4 1/2	2214	6 1/2	606.90	Y	01/26/2007	

Tubing Size

2 3/8

5/8"

Footage

2,153.95

2155

Table
1.00

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
OverBurden	0.00	5.00	5.00
sandstone	5.00	40.00	35.00
Sandy Shale	40.00	80.00	40.00
Coal	80.00	81.00	1.00
Sandy Shale	81.00	130.00	49.00
Coal	130.00	131.00	1.00
Sandy Shale	131.00	310.00	179.00
Coal	310.00	311.00	1.00
Sandy Shale	311.00	415.00	104.00
Coal	415.00	416.00	1.00
Sandy Shale	416.00	460.00	44.00
Open Mine	462.00	470.00	8.00
Sandy Shale	470.00	570.00	100.00
Jawbone Rider	570.00	572.00	2.00
sand & shale	572.00	624.50	52.50
Jawbone	624.50	631.50	7.00
sand & shale	631.50	678.50	47.00
Tiller	678.50	679.50	1.00
sand & shale	679.50	805.00	125.50
Upper Seaboard A	805.00	805.60	0.60
sand & shale	805.60	821.50	15.90
Upper Seaboard	821.50	822.00	0.50
sand & shale	822.00	985.00	163.00
Greasy Creek	985.00	987.30	2.30
sand & shale	987.30	1,092.80	105.50
Middle Seaboard	1,092.80	1,094.50	1.70
sand & shale	1,094.50	1,143.50	49.00
Lower Seaboard	1,143.50	1,145.50	2.00
sand & shale	1,145.50	1,211.00	65.50
Unnamed A	1,211.00	1,213.80	2.80
sand & shale	1,213.80	1,267.50	53.70
Upper Horsepen	1,267.50	1,268.50	1.00
sand & shale	1,268.50	1,298.00	29.50
Middle Horsepen	1,298.00	1,298.80	0.80
sand & shale	1,298.80	1,380.00	81.20
C Seam	1,380.00	1,381.00	1.00
sand & shale	1,381.00	1,397.00	16.00
War Creek Rider	1,397.00	1,398.50	1.50
sand & shale	1,398.50	1,437.00	38.50
War Creek	1,437.00	1,438.00	1.00
sand & shale	1,438.00	1,473.50	35.50
Unnamed C	1,473.50	1,474.50	1.00
sand & shale	1,474.50	1,505.00	30.50
Beckley	1,505.00	1,508.70	3.70
sand & shale	1,508.70	1,551.30	42.60
Lower Horsepen	1,551.30	1,552.10	0.80

sand & shale	1,552.10	1,658.50	106.40
X Seam	1,658.50	1,660.50	2.00
sand & shale	1,660.50	1,919.50	259.00
Pocahontas #6	1,919.50	1,921.50	2.00
sand & shale	1,921.50	1,936.00	14.50
Pocahontas #5 Rider	1,936.00	1,937.00	1.00
sand & shale	1,937.00	1,997.00	60.00
Pocahontas #5	1,997.00	1,997.00	0.00
sand & shale	1,997.00	2,154.50	157.50
Pocahontas #2	2,154.50	2,157.70	3.20
sand & shale	2,157.70	2,241.00	83.30



Commonwealth of Virginia
 Department of Mines, Minerals, and Energy
 Division of Gas and Oil
 P.O. Box 1416; Abingdon, VA 24212
 Telephone: (276) 676-5423

Tracking Number: 820
 Company: Equitable Production Company
 File Number: DI-1743
 Operations Name: VC-537102 W/PL
 Operation Type: Coalbed/Pipeline
 Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 6/23/2007 Drilling Contractor: Driller's LLC
 Date drilling completed: 6/27/2007 Rig Type: ☒ Rotary ☐ Cable Tool
 Driller's Total Depth (feet): 2,364
 Log Total Depth (feet): 2,376 Coal Seam At Total Depth POCAHONTAS #6

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X 928,317 Final Plat State Plane X: 928,316
 Permitted State Plane Y: 284,612 Final Plat State Plane Y: 284,614

☐ Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
final plat 537102	VC-537102 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams

List of Attached Items:

Description	FileName
coal seams 537102	Coal Seams 537102.doc

Gas and Oil Shows

List of Attached Items:

Description	FileName
gas shows	Gas and Oil Shows 537102.doc

4. Electric Logs (As required by 4VAC25-150-280.A.)

List all logs run: Gr/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? ☒ Yes ☐ No

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
surveys 537102	Survey Results 537102.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
csg 537102	Casing Dat 537102.doc
tbg 537102	Tubing Size 537102.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

lost circ @ open mines @ 425'-428; 624'0627' & 641'-645', Grouted 9 5/8" and 7" casing back to surface

8. Drillers Log

Compiled By: _____

List of Attached Items:

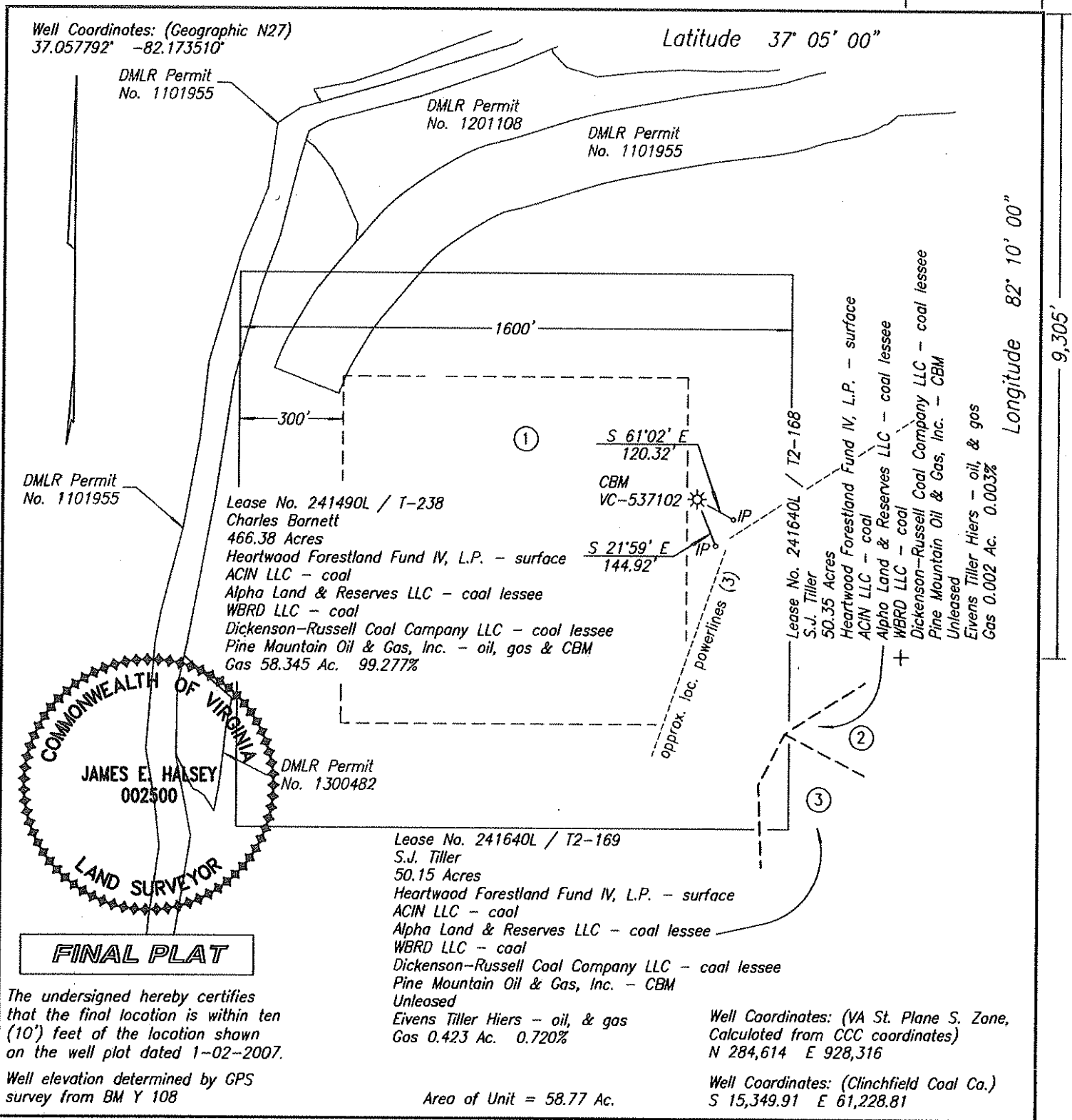
Description	FileName
driller's log 537102	Drillers Log 537102.doc

Signed By: L. Todd Tetric Title: Director of Drilling (Signature)

_____	_____
_____	_____
_____	_____

Well Coordinates: (Geographic N27)
37.057792° -82.173510°

Latitude 37° 05' 00"



WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537102
TRACT NO. Le. No. 241490L/T-238 ELEVATION 2,246.23' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 6-26-2007

This Plat is a new plat ; an updated plat ; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



<u>Type</u>	<u>Range</u>
Coal	580'-84',728.5'-29.5',815'-15.7',838.5'-39.3',998'-00.3'
Coal	1113'-14.4',1165'-66.5',1230.5'-32',1249'-50.3',1425'-25.5'
Coal	1441'-42',1477.5'-78.7',1515'-15.7',1553.5'-58',1590.5'-91.2'
Coal	1722'-24.4',1954'-56.8'
Open Mine	425'-28',624'-27',641'-645'

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Result</u>
200	No Show
400	No Show
521	No Show
584	No Show
784	No Show
984	No Show
1,038	No Show
1,238	No Show
1,428	No Show
1,553	No Show
1,753	No Show
1,944	No Show
2,048	No Show
2,204	No Show
2,364	No Show

Survey Results

<u>Point</u>	<u>Direction/Distance/Degrees From True Vertical</u>
200	1/2
400	1/2
521	1/2
584	1/2
784	1/2
984	1/2
1,038	1/2
1,238	1/2
1,428	1/2
1,553	1/2
1,753	1/2
1,944	1/2
2,048	1/2
2,204	1/2
2,364	1/2

Casing Outside Diameter	Casing Data	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
13 3/8		44	17 1/2				
9 5/8		504	12 3/8	350.46	y	06/24/2007	391 & 406
7		727	7	205.32	y	06/25/2007	605 & 590
4 1/2		2084	6 1/2	255.00	y	06/27/2007	

2 5/8

2 5/8

5/8"

2,029.15

2,029.15

2034'

Drillers
Log

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Fill	0.00	4.00	4.00
Brown Sand	4.00	41.00	37.00
Sand & Shale	41.00	425.00	384.00
Open Mine	425.00	428.00	3.00
Sand & Shale	428.00	521.00	93.00
Sand & Shale	521.00	580.00	59.00
Coal	580.00	584.00	4.00
Sand & Shale	584.00	624.00	40.00
Open Mine	624.00	627.00	3.00
Sand & Shale	627.00	633.00	6.00
opening	641.00	645.00	4.00
Sand & Shale	645.00	728.50	83.50
Tiller	728.50	729.50	1.00
sand & shale	729.50	815.00	85.50
Upper Seaboard A	815.00	815.70	0.70
sand & shale	815.70	838.50	22.80
Upper Seaboard	838.50	839.30	0.80
sand & shale	839.30	998.00	158.70
Greasy Creek	998.00	1,000.30	2.30
sand & shale	1,000.30	1,113.00	112.70
Middle Seaboard	1,113.00	1,114.40	1.40
sand & shale	1,114.40	1,165.00	50.60
Lower Seaboard	1,165.00	1,166.50	1.50
sand & shale	1,166.50	1,230.50	64.00
Unnamed A	1,230.50	1,232.00	1.50
sand & shale	1,232.00	1,249.00	17.00
Upper Horsepen	1,249.00	1,250.30	1.30
sand & shale	1,250.30	1,297.00	46.70
sand & shale	1,297.00	1,425.00	128.00
C Seam	1,425.00	1,425.50	0.50
sand & shale	1,425.50	1,441.00	15.50
War Creek Rider	1,441.00	1,442.00	1.00
sand & shale	1,442.00	1,477.50	35.50
War Creek	1,477.50	1,478.70	1.20
sand & shale	1,478.70	1,515.00	36.30
Unnamed C	1,515.00	1,515.70	0.70
sand & shale	1,515.70	1,553.50	37.80
Beckley	1,553.50	1,558.00	4.50
sand & shale	1,558.00	1,590.50	32.50
Lower Horsepen	1,590.50	1,591.20	0.70

sand & shale	1,591.20	1,722.00	130.80
Pocahontas #9	1,722.00	1,724.40	2.40
sand & shale	1,724.40	1,954.00	229.60
Pocahontas #6	1,954.00	1,956.80	2.80
sand & shale	1,956.80	2,050.50	93.70
sand & shale	2,050.50	2,376.00	325.50



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2156
Company:	EQT Production Company
File Number:	DI-2243
Operations Name:	VC-537794
Operation Type:	Coal Bed
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	8/15/2009	Drilling Contractor:	Crossrock Drilling
Date drilling completed:	8/18/2009	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	2376.00		
Log Total Depth (feet):	2392.00	Coal Seam At Total Depth	POCAHONTAS #3

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10409620.9900	Final Plat State Plane X:	10409621.1000
Permitted State Plane Y:	3573508.6100	Final Plat State Plane Y:	3573508.4200

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
Final Plat 537794	VC-537794 final plat_0001.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
45'	1	INCH

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams:

List of Attached Items:

Description	FileName
Coal Seams 537794	Coal Seams.doc

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Gas & Oil Shows 537794	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? R

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 537794	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 537794	Casing Data.doc
Tubing 537794	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Did Not hit anticipated Open Mine @ 743'

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Drillers Log 537794	Drillers Log.doc

9. Comments

10. Signature

Permittee: EQT Production Company Date: 11/4/2009

Signed By: Michael D. Butcher Title: Director of Drilling

INTERNAL USE ONLY

Submit Date: 11/4/2009

Status: A

Date: 1/11/2010

Final PDF Date: 1/12/2010

3,960'

Well Coordinates: (Geographic N27)
37.079620° -82.180335°

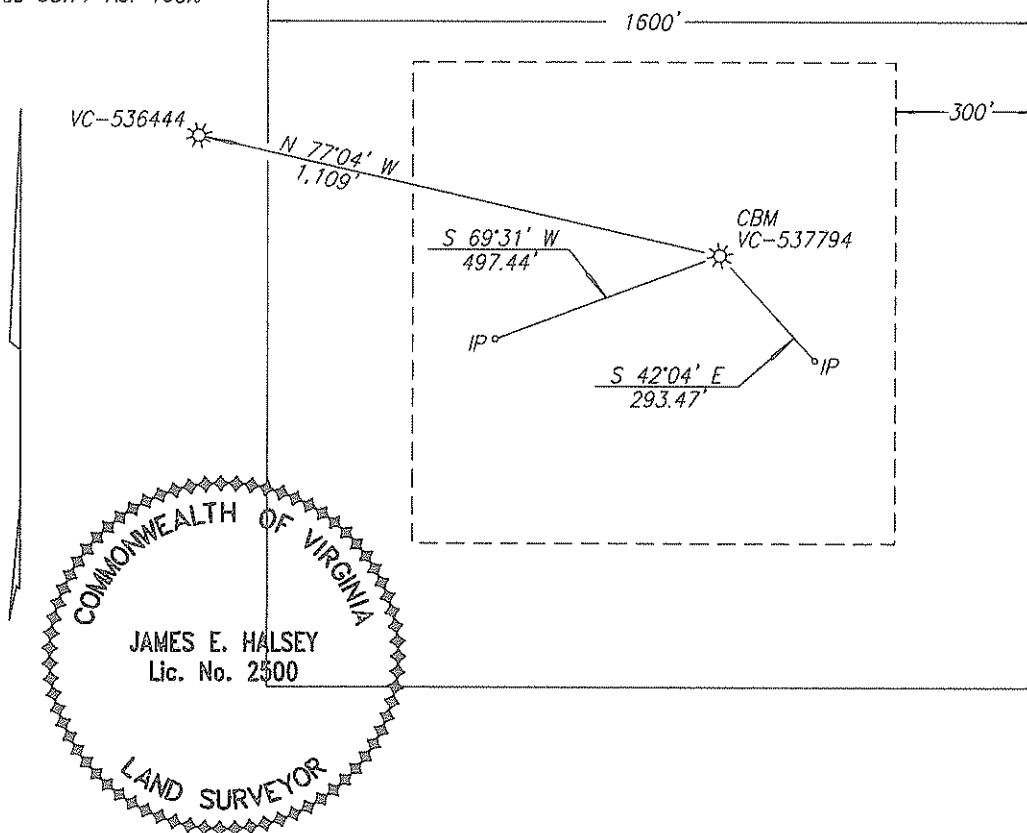
Latitude 37° 05' 00"

1,365'

Lease No. 906889 / T-409
J.N.R. Sutherland
430.65 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources-Pine Mountain, Inc. - oil, gas, & CBM
Gas 58.77 Ac. 100%

Note: The boundary lines shown hereon are based on deeds, plats and maps of record and do not depict a current boundary survey. The property ownership information was provided by Equitable Production Company.

Longitude 82° 10' 00"



The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 6-12-2009.

Well elevation determined by GPS survey from HARN Monument P-424

FINAL PLAT

Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane S. Zone, NAD 83)

N 3,573,508.42 E 10,409,621.10

Well Coordinates: (VA St. Plane S. Zone, NAD 27 Calculated from NAD 83)

N 292,632.61 E 926,635.20

Well Coordinates: (Clinchfield Coal Co.)

S 7,401.03 E 59,238.09

WELL LOCATION PLAT (Nora Grid BF-74)

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537794
TRACT NO. Lease No. 906889 / T-409 ELEVATION 2,206.18' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervington SCALE 1" = 400' DATE 8-17-2009
This Plat is a new plat ; on updated plat ; or a final location plot x

+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



T

Coal

Coal

Coal

Coal

P

106'-0.7',441'-42',499'-00',571'-72',742'-43',923.5'-24.75',967'-68'

1152'-55.58',1204'-05.5',1254'-55.67',1325'-25.83',1370'-70.67',1390.5'-91.67',1420.5'-21.33'

1500.5'-00.92',1523.5'-24.83',1565'-67',1631'-34.67',1681.5'-82.75',1727.5'-29.08'

1796'-97.92',1864.5'-1865',2047'-48.33',2091.5'-91.67',2109.5'-10.67',2263.5'-65.42'



Gas Tests

<u>Depth</u>	<u>Result</u>
200	No Show
392	No Show
592	No Show
746	No Show
929	No Show
1,122	No Show
1,157	No Show
1,362	No Show
1,512	No Show
1,712	No Show
1,892	No Show
2,039	No Show
2,102	No Show
2,302	No Show
2,358	No Show
2,376	No Show

Survey Results

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
200	1/4
392	1/8
592	1/8
746	1/8
929	1/8
1,122	1/8
1,157	1/4
1,362	1/8
1,512	1/8
1,712	1/8
1,892	1/4
2,039	1/4
2,102	1/8
2,302	1/4

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
13 3/8	40	17 1/2				
7	806	8 7/8	277.30	y	08/16/2009	638, 680
4 1/2	2358	6 3/8	440.00	y	08/18/2009	

Tubing Size

2 3/8

5/8"

Footage

2,292.90

2302

Drillers**100**

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Fill	0.00	18.00	18.00
Sand and Shale	18.00	106.00	88.00
Coal	106.00	107.00	1.00
Sand and Shale	107.00	441.00	334.00
Coal	441.00	442.00	1.00
Sand and Shale	442.00	499.00	57.00
Coal	499.00	500.00	1.00
Sand and Shale	500.00	542.00	42.00
Sand	542.00	571.00	29.00
Coal	571.00	572.00	1.00
Sand and Shale	572.00	673.00	101.00
Sand	673.00	730.00	57.00
Sand and Shale	730.00	742.00	12.00
Jawbone	742.00	743.00	1.00
Sand and Shale	743.00	923.50	180.50
Upper Seaboard A	923.50	924.75	1.25
sand & shale	924.75	967.00	42.25
Upper Seaboard	967.00	968.00	1.00
sand & shale	968.00	1,152.00	184.00
Greasy Creek	1,152.00	1,155.58	3.58
sand & shale	1,155.58	1,204.00	48.42
Middle Seaboard	1,204.00	1,205.50	1.50
sand & shale	1,205.50	1,254.00	48.50
Lower Seaboard	1,254.00	1,255.67	1.67
sand & shale	1,255.67	1,325.00	69.33
Unnamed A	1,325.00	1,325.83	0.83
sand & shale	1,325.83	1,370.00	44.17
Unnamed B	1,370.00	1,370.67	0.67
sand & shale	1,370.67	1,390.50	19.83
Upper Horsepen	1,390.50	1,391.67	1.17
sand & shale	1,391.67	1,420.50	28.83
Middle Horsepen	1,420.50	1,421.33	0.83
sand & shale	1,421.33	1,500.50	79.17
C Seam Rider	1,500.50	1,500.92	0.42
sand & shale	1,500.92	1,523.50	22.58
C Seam	1,523.50	1,524.83	1.33
sand & shale	1,524.83	1,565.00	40.17
War Creek	1,565.00	1,567.00	2.00
sand & shale	1,567.00	1,631.00	64.00
Beckley	1,631.00	1,634.67	3.67
sand & shale	1,634.67	1,681.50	46.83
Lower Horsepen	1,681.50	1,682.75	1.25
sand & shale	1,682.75	1,727.50	44.75
X Seam	1,727.50	1,729.08	1.58
sand & shale	1,729.08	1,796.00	66.92
Pocahontas #9	1,796.00	1,797.92	1.92

sand & shale	1,797.92	1,864.50	66.58
Pocahontas #8	1,864.50	1,865.00	0.50
sand & shale	1,865.00	2,047.00	182.00
Pocahontas #6 Rider	2,047.00	2,048.33	1.33
sand & shale	2,048.33	2,091.50	43.17
Pocahontas #6	2,091.50	2,091.67	0.17
sand & shale	2,091.67	2,109.50	17.83
Pocahontas #5	2,109.50	2,110.67	1.17
sand & shale	2,110.67	2,263.50	152.83
Pocahontas #3	2,263.50	2,265.42	1.92
sand & shale	2,265.42	2,376.00	110.58



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2125
Company:	EQT Production Company
File Number:	DI-2198
Operations Name:	VC-537795
Operation Type:	Coal Bed
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	6/24/2009	Drilling Contractor:	Crossrock Drilling
Date drilling completed:	6/27/2009	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	2387.00		
Log Total Depth (feet):	2397.00	Coal Seam At Total Depth	POCAHONTAS #5

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10409336.6500	Final Plat State Plane X:	10409336.2700
Permitted State Plane Y:	3572179.4300	Final Plat State Plane Y:	3572179.0200

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
Final Plat 537795	VC-537795 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
572	damp	

Salt Water At:

Depth (in feet)	Rate	Unit of Measure

Coal Seams:

List of Attached Items:

Description	FileName
Coal Seams 537795	Coal Seams.doc

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Gas & Oil Shows 537795	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? R

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 537795	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 537795	Casing Data.doc
Tubing 537795	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Lost Circ. Hit Open Mine @ 742'-746'

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Drillers Log 537795	Drillers Log.doc

9. Comments

10. Signature

Permittee: EQT Production Company Date: 10/22/2009

Signed By: Michael D. Butcher Title: Director of Drilling

INTERNAL USE ONLY

Submit Date: 10/22/2009

Status: A

Date: 1/8/2010

Final PDF Date: 1/8/2010

Well Coordinates: (Geographic N27)
37.075941° -82.181133°

Lease No. 906889 / T-409

Latitude 37° 05' 00"

J.N.R. Sutherland

430.65 Acres

Heartwood Forestland Fund IV, L.P. - surface

ACIN LLC - coal

Alpha Land & Reserves LLC - coal lessee

WBRD LLC - coal

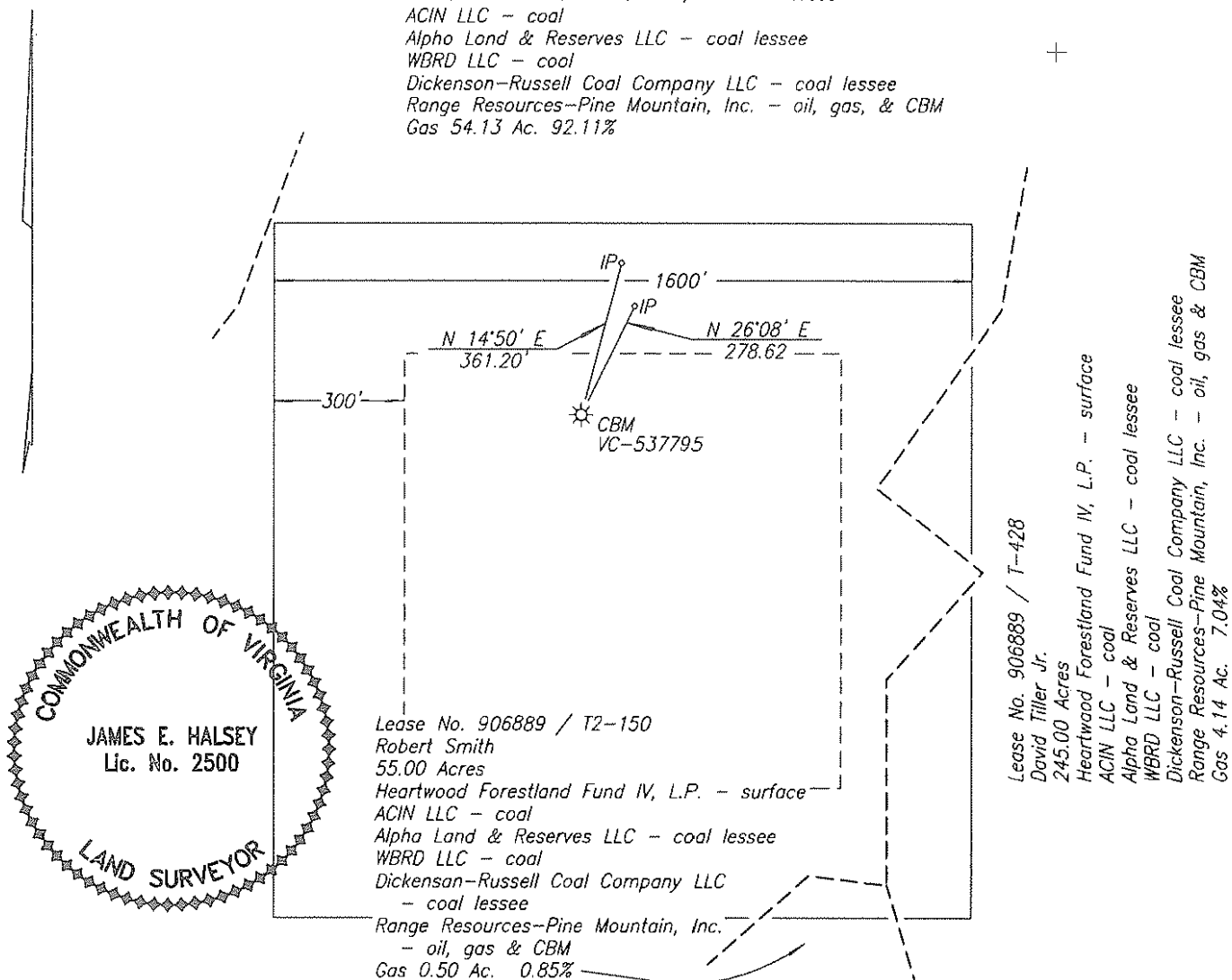
Dickenson-Russell Coal Company LLC - coal lessee

Range Resources-Pine Mountain, Inc. - oil, gas, & CBM

Gas 54.13 Ac. 92.11%

Longitude 82° 10' 00"

2,700'



Note: The boundary lines shown hereon are based on deeds, plats and maps of record and do not depict a current boundary survey. The property ownership information was provided by Equitable Production Company.

The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 4-29-2009.

Well elevation determined by GPS survey from HARN Monument P-424

FINAL PLAT

Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane S. Zone, NAD 83)

N 3,572,179.02 E 10,409,336.27

Well Coordinates: (VA St. Plane S. Zone, NAD 27 Calculated from NAD 83)

N 291,303.28 E 926,350.37

Well Coordinates: (Clinchfield Coal Co.)

S 8,740.57 E 59,005.35

WELL LOCATION PLAT (Nora Grid BG-74)

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537795

TRACT NO. Lease No. 906889 / T-409 ELEVATION 2,214.87' QUADRANGLE Duty

COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 6-26-2009

This Plat is a new plat ; an updated plat ; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



Type

Coal

Coal

Coal

Coal

Open Mine

From

65'-66',108'-09',122'-23',182'-83',208'-09',265'-66',386'-87',408'-09'

451'-52',497'-98',506'-07',636'-37',684'-85',926.5'-27.83',960'-62.25',1143.5'-46.92'

1199.5'-00.83',1249'-50.83',1343.5'-44.17',1381.5'-84.08',1495'-95.58',1511.5'-13',1560'-61.17',1621.5'-24.67'

1736.5'-38.42',1829'-29.5',1872.5'-73.33',2022'-23.33',2046'-47.25',2088.5'-89.25',2101'-02'

742'-746'



Gas Tests

<u>Depth</u>	<u>Result</u>
182	No Show
362	No Show
542	No Show
722	No Show
902	No Show
1,082	No Show
1,262	No Show
1,442	No Show
1,622	No Show
1,802	No Show
1,982	No Show
2,162	No Show
2,342	No Show
2,213	No Show
2,387	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
182	1/8
362	1/8
542	1/8
722	1/8
902	1/4
1,082	1/8
1,262	1/4
1,442	1/8
1,622	1/4
1,802	1/8
1,982	1/4
2,162	1/4
2,342	1/4

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
13 3/8	42	17 1/2				
7	802	8 7/8	236.00	y	06/24/2009	492, 713
4 1/2	2210	6 3/8	432.50	y	06/26/2009	

Tubing Size

2 3/8

5/8"

Footage

2,174.10

2205'

Table
1.00

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Fill	0.00	35.00	35.00
Sand	35.00	65.00	30.00
Coal	65.00	66.00	1.00
Sand and Shale	66.00	108.00	42.00
Coal	108.00	109.00	1.00
Sand and Shale	109.00	122.00	13.00
Coal	122.00	123.00	1.00
Sand	123.00	182.00	59.00
Coal	182.00	183.00	1.00
Sand	183.00	208.00	25.00
Coal	208.00	209.00	1.00
Sand and Shale	209.00	265.00	56.00
Coal	265.00	266.00	1.00
Sand and Shale	266.00	386.00	120.00
Coal	386.00	387.00	1.00
Sand	387.00	408.00	21.00
Coal	408.00	409.00	1.00
Sand and Shale	409.00	451.00	42.00
Coal	451.00	452.00	1.00
Sand and Shale	452.00	497.00	45.00
Coal	497.00	498.00	1.00
Sand and Shale	498.00	506.00	8.00
Coal	506.00	507.00	1.00
Sand and Shale	507.00	636.00	129.00
Coal	636.00	637.00	1.00
Sand and Shale	637.00	684.00	47.00
Coal	684.00	685.00	1.00
Sand and Shale	685.00	742.00	57.00
Open Mine	742.00	746.00	4.00
Sand and Shale	746.00	926.50	180.50
Upper Seaboard A	926.50	927.83	1.33
sand & shale	927.83	960.00	32.17
Upper Seaboard	960.00	962.25	2.25
sand & shale	962.25	1,143.50	181.25
Greasy Creek	1,143.50	1,146.92	3.42
sand & shale	1,146.92	1,199.50	52.58
Middle Seaboard	1,199.50	1,200.83	1.33
sand & shale	1,200.83	1,249.00	48.17
Lower Seaboard	1,249.00	1,250.83	1.83
sand & shale	1,250.83	1,343.50	92.67
Unnamed B	1,343.50	1,344.17	0.67
sand & shale	1,344.17	1,381.50	37.33
Upper Horsepen	1,381.50	1,384.08	2.58
sand & shale	1,384.08	1,495.00	110.92
C Seam Rider	1,495.00	1,495.58	0.58
sand & shale	1,495.58	1,511.50	15.92

C Seam	1,511.50	1,513.00	1.50
sand & shale	1,513.00	1,560.00	47.00
War Creek	1,560.00	1,561.17	1.17
sand & shale	1,561.17	1,621.50	60.33
Beckley	1,621.50	1,624.67	3.17
sand & shale	1,624.67	1,736.50	111.83
X Seam	1,736.50	1,738.42	1.92
sand & shale	1,738.42	1,829.00	90.58
Pocahontas #9	1,829.00	1,829.50	0.50
sand & shale	1,829.50	1,872.50	43.00
Pocahontas #8	1,872.50	1,873.33	0.83
sand & shale	1,873.33	2,022.00	148.67
Pocahontas #6 Rider	2,022.00	2,023.33	1.33
sand & shale	2,023.33	2,046.00	22.67
Pocahontas #6	2,046.00	2,047.25	1.25
sand & shale	2,047.25	2,088.50	41.25
Pocahontas #5 Rider	2,088.50	2,089.25	0.75
sand & shale	2,089.25	2,101.00	11.75
Pocahontas #5	2,101.00	2,102.00	1.00
sand & shale	2,102.00	2,387.00	285.00



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2238
Company:	EQT Production Company
File Number:	DI-2213
Operations Name:	VC-537798
Operation Type:	Coal Bed
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	6/27/2009	Drilling Contractor:	Crossrock Drilling
Date drilling completed:	6/29/2009	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	2397.00		
Log Total Depth (feet):	2408.00	Coal Seam At Total Depth	UNNAMED

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10410546.9000	Final Plat State Plane X:	10410546.3900
Permitted State Plane Y:	3571814.0500	Final Plat State Plane Y:	3571814.2000

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
Final Plat 537798	VC-537798 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams:

List of Attached Items:

Description	FileName
Coal Seam 537798	Coal Seams.doc

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Gas & Oil Shows 537798	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? R

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 537798	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 537798	Casing Data.doc
Tubing 537798	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Lost Circ. Hit Open Mine @ 740'-756'

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Drillers Log 537798	Drillers Log.doc

9. Comments

coal seam report (page 2) lists the deepest coal bed at 2265.5'-65.5'. Correct here or in drillers log, along with coal bed at total depth on page 1. [1/12/2010, jal]

10. Signature

Permitee: EQT Production Company Date: 1/19/2010

Signed By: Michael D. Butcher Title: Director of Drilling

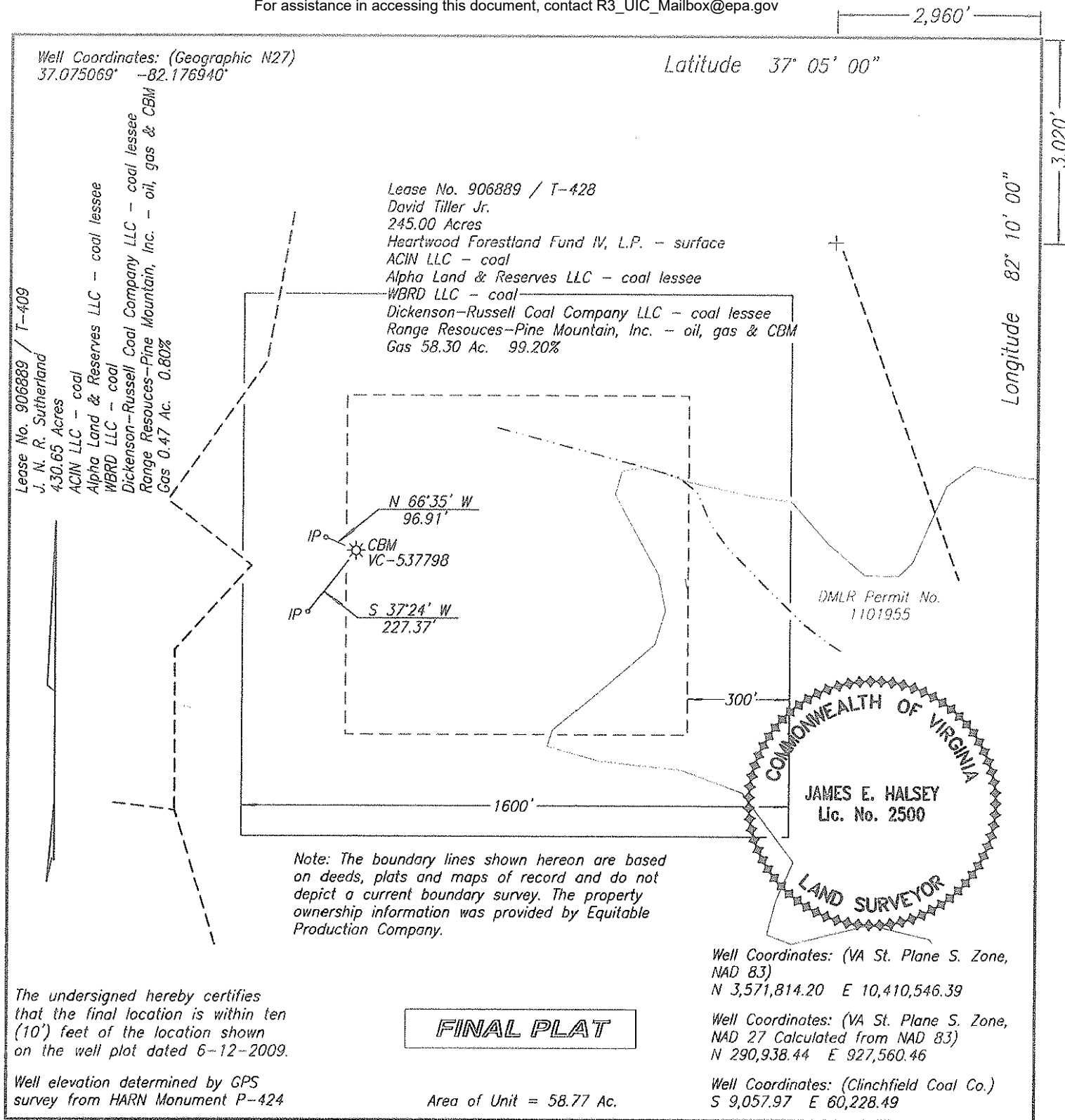
INTERNAL USE ONLY

Submit Date: 1/19/2010

Status: A

Date: 3/30/2010

Final PDF Date: 4/5/2010



WELL LOCATION PLAT (Nora Grid BG-75)

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537798
TRACT NO. Lease No. 906889 / T-428 ELEVATION 2,229.30' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervington SCALE 1" = 400' DATE 6-29-2009
This Plat is a new plat ; an updated plat ; or a final location plat
+ Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



<u>Type</u>	<u>From</u>
Coal	69'-70',202'-03',204'-05',399'-00',440'-41',486'-87'
Coal	520'-21',530'-31',558'-59',590'-91'
Coal	1320'-21.08',1351.5'-53.5',1404'-05.75'
Coal	1507'-08.5',1657'-60.42,1742'-45.5'
Open Mine	740'-756'



Gas Tests

<u>Depth</u>	<u>Result</u>
182	No Show
362	No Show
542	No Show
722	No Show
902	No Show
1,082	No Show
1,262	No Show
1,442	No Show
1,622	No Show
1,802	No Show
1,982	No Show
2,162	No Show
2,342	No Show
2,338	No Show
2,397	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
182	1/8
362	1/8
542	1/8
722	1/8
902	1/8
1,082	1/8
1,262	1/8
1,442	1/4
1,622	1/8
1,802	1/4
1,982	1/4
2,162	1/4
2,342	1/8

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
13 3/8	42	17 1/2				
7	813	8 7/8	236.00	y	06/27/2009	654,690
4 1/2	2337	6 3/8	432.50	y	06/29/2009	

Tubing Size

2 3/8

5/8"

Footage

2,304.55

2305.35

Drillers
Log

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Jawbone	0.00	0.00	0.00
Pocahontas #8	0.00	0.00	0.00
Pocahontas #9	0.00	0.00	0.00
sand & shale	0.00	0.00	0.00
sand & shale	0.00	0.00	0.00
sand & shale	0.00	0.00	0.00
sand & shale	0.00	0.00	0.00
Tiller	0.00	0.00	0.00
Unnamed C	0.00	0.00	0.00
Fill	0.00	5.00	5.00
Sand and Shale	5.00	69.00	64.00
Coal	69.00	70.00	1.00
Sand and Shale	70.00	202.00	132.00
Coal	202.00	203.00	1.00
Sand and Shale	203.00	204.00	1.00
Coal	204.00	205.00	1.00
Sand and Shale	205.00	399.00	194.00
Coal	399.00	400.00	1.00
Sand and Shale	400.00	440.00	40.00
Coal	440.00	441.00	1.00
Sand and Shale	441.00	486.00	45.00
Coal	486.00	487.00	1.00
Sand and Shale	487.00	520.00	33.00
Coal	520.00	521.00	1.00
Sand and Shale	521.00	530.00	9.00
Coal	530.00	531.00	1.00
Sand and Shale	531.00	558.00	27.00
Coal	558.00	559.00	1.00
Sand and Shale	559.00	590.00	31.00
Coal	590.00	591.00	1.00
Sand and Shale	591.00	740.00	149.00
Open Mine	740.00	756.00	16.00
sand & shale	756.00	1,320.00	564.00
Upper Seaboard A	1,320.00	1,321.08	1.08
sand & shale	1,321.08	1,351.50	30.42
Upper Seaboard	1,351.50	1,353.50	2.00
sand & shale	1,353.50	1,404.00	50.50
Greasy Creek	1,404.00	1,405.75	1.75
sand & shale	1,405.75	1,507.00	101.25
Middle Seaboard	1,507.00	1,508.50	1.50
sand & shale	1,508.50	1,657.00	148.50
Unnamed B	1,657.00	1,660.42	3.42
sand & shale	1,660.42	1,742.00	81.58
Beckley	1,742.00	1,745.50	3.50
sand & shale	1,745.50	2,043.00	297.50

sand & shale	2,043.00	2,265.50	222.50
sand & shale	2,265.50	2,397.00	131.50



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416, Abingdon, VA 24212
Telephone: (276) 676-5423

Tracking Number:	1556
Company:	Equitable Production Company
File Number:	DI-1835
Operations Name:	VC-537799
Operation Type:	Coal Bed
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	10/29/2007	Drilling Contractor:	Gasco rig 6
Date drilling completed:	10/31/2007	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	2370.00		
Log Total Depth (feet):	2385.00	Coal Seam At Total Depth	POCAHONTAS #2

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10410779.5500	Final Plat State Plane X:	10410785.5500
Permitted State Plane Y:	3569939.9900	Final Plat State Plane Y:	3569938.9900

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
Final Plat 537799	VC-537799 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
604	wet	

Salt Water At:

Depth (in feet)	Rate	Unit of Measure

Coal Seams:

List of Attached Items:

Description	FileName
Coal Seams 537799	Coal Seams.doc

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Gas & Oil Shows 537799	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? ☒

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 537799	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 537799	Casing Data.doc
Tubing 537799	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Lost Circ. Hit Open Mine @ 690'-695'

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Driller Log 537799	Drillers Log.doc

9. Comments

10. Signature

Permittee: Equitable Production Company Date: 11/13/2008

Signed By: Michael D. Butcher Title: Director of Drilling

INTERNAL USE ONLY

Submit Date: 11/13/2008

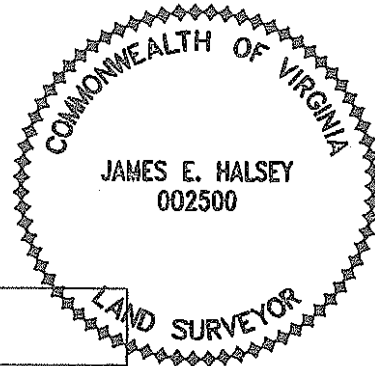
Status: A

Date: 11/26/2008

Final PDF Date: 3/25/2009

Well Coordinates: (Geographic N27)
37.069944° -82.175869°

Latitude 37° 05' 00"



Longitude 82° 10' 00"

4,890'

Lease No. 906889 / T2-150
Robert Smith
55.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 10.08 Ac. 17.15%

Lease No. 906889 / T-428
David Tiller Jr.
245.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 48.69 Ac. 82.85%

N 25°37' W
116.53'

IP

CBM
VC-537799

S 16°19' W
177.12'

IP

1600'

300'

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plat dated 9-13-2007.

Well elevation determined by GPS
survey from HARN Manument P-424

FINAL PLAT

Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane NAD27, S. Zone,
Calculated from CCC coordinates)
N 289,062 E 927,800

Well Coordinates: (Clinchfield Coal Co.)
S 10,925.09 E 60,540.68

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537799
TRACT NO. Lse. No. 906889/T2-150 ELEVATION 2,201.89' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 11-1-2007

This Plat is a new plat ; an updated plat ; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor



Table 1

Coal

Coal

Coal

Coal

Open Mine

Table 2

85'-6', 320'-21', 410'-11', 630'-31', 655'-56',
803'-04.1', 882'-83.5', 904.5'-05.7', 1091.5'-
94.', 1158.5'-60.3', 1209'-11.4',
1280'-82.7', 1338.5'-40.8', 1453.5'-54.2',
1465'-66', 1506'-07',
1536'-37.3', 1567'-70.8', 1704.5'-06.3',
2000.5'-02', 2236'-37.1'
690'-95'



Gas Tests

<u>Depth</u>	<u>Result</u>
190	No Show
418	No Show
604	No Show
830	No Show
1,008	No Show
1,197	No Show
1,418	No Show
1,670	No Show
1,794	No Show
2,016	No Show
2,206	No Show
2,370	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
196	1/4
418	1/4
604	1/4
830	1/4
1,008	1/4
1,197	1/4
1,418	1/4
1,670	1/4
1,794	1/4
2,016	1/4
2,206	1/4
2,370	1/4

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
12 3/4	22	15				
7	801	8 7/8	542.80	y	10/30/2007	487',531'
4 1/2	2335	6 1/2	438.60	y	10/31/2007	

Tubing Size

2 3/8

5/8"

Footage

2,282.65

2289.5"

Table
1.00

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
	0.00	0.00	0.00
	0.00	0.00	0.00
OverBurden	0.00	10.00	10.00
sandstone	10.00	85.00	75.00
Coal	85.00	86.00	1.00
Sand Stone	86.00	190.00	104.00
Sand Stone	191.00	320.00	129.00
Coal	320.00	321.00	1.00
Sand Stone	321.00	410.00	89.00
Coal	410.00	411.00	1.00
sandstone	411.00	630.00	219.00
Coal	630.00	631.00	1.00
Sand Stone	631.00	655.00	24.00
Coal	655.00	656.00	1.00
Sand Stone	656.00	690.00	34.00
VTD	690.00	695.00	5.00
Sand & Shale	695.00	803.00	108.00
Tiller	803.00	804.10	1.10
sand & shale	804.10	882.00	77.90
Upper Seaboard A	882.00	883.50	1.50
sand & shale	883.50	904.50	21.00
Upper Seaboard	904.50	905.70	1.20
sand & shale	905.70	1,048.50	142.80
sand & shale	1,048.50	1,091.50	43.00
Middle Seaboard	1,091.50	1,094.00	2.50
sand & shale	1,094.00	1,158.50	64.50
Lower Seaboard	1,158.50	1,160.30	1.80
sand & shale	1,160.30	1,209.00	48.70
Unnamed A	1,209.00	1,211.40	2.40
sand & shale	1,211.40	1,280.00	68.60
Upper Horsepen	1,280.00	1,282.70	2.70
sand & shale	1,282.70	1,338.50	55.80
Middle Horsepen	1,338.50	1,340.80	2.30
sand & shale	1,340.80	1,453.50	112.70
War Creek Rider	1,453.50	1,454.20	0.70
sand & shale	1,454.20	1,465.00	10.80
War Creek	1,465.00	1,466.00	1.00
sand & shale	1,466.00	1,506.00	40.00
Unnamed C	1,506.00	1,507.00	1.00
sand & shale	1,507.00	1,536.00	29.00
Beckley	1,536.00	1,537.30	1.30
sand & shale	1,537.30	1,567.00	29.70
Lower Horsepen	1,567.00	1,570.80	3.80
sand & shale	1,570.80	1,643.00	72.20
sand & shale	1,643.00	1,704.50	61.50
X Seam	1,704.50	1,706.30	1.80

sand & shale	1,706.30	2,000.50	294.20
Pocahontas #5	2,000.50	2,002.00	1.50
sand & shale	2,002.00	2,236.00	234.00
Pocahontas #2	2,236.00	2,237.10	1.10
sand & shale	2,237.10	2,370.00	132.90



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2212
Company:	EQT Production Company
File Number:	DI-2245
Operations Name:	VC-537802
Operation Type:	Coal Bed
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	8/18/2009	Drilling Contractor:	Crossrock Drilling
Date drilling completed:	9/21/2009	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	2186.00		
Log Total Depth (feet):	2193.00	Coal Seam At Total Depth	POCAHONTAS #2

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10412601.6500	Final Plat State Plane X:	10412602.2800
Permitted State Plane Y:	3569540.8700	Final Plat State Plane Y:	3569540.9300

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
Final Plat 537802	VC-537802 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
1560	damp	
615	1/2	INCH

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams:

List of Attached Items:

Description	FileName
Coal Seams 537802	Coal Seams.doc

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Gas & Oil Shows 537802	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? R

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
Survey Results 537802	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 537802	Casing Data.doc
Tubing 537802	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

Lost Circ. Hit Open Mine @ 498'-501'

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
Drillers Log 537802	Drillers Log.doc

9. Comments

10. Signature

Permittee: EQT Production Company Date: 11/16/2009
Signed By: Michael D. Butcher Title: Director of Drilling

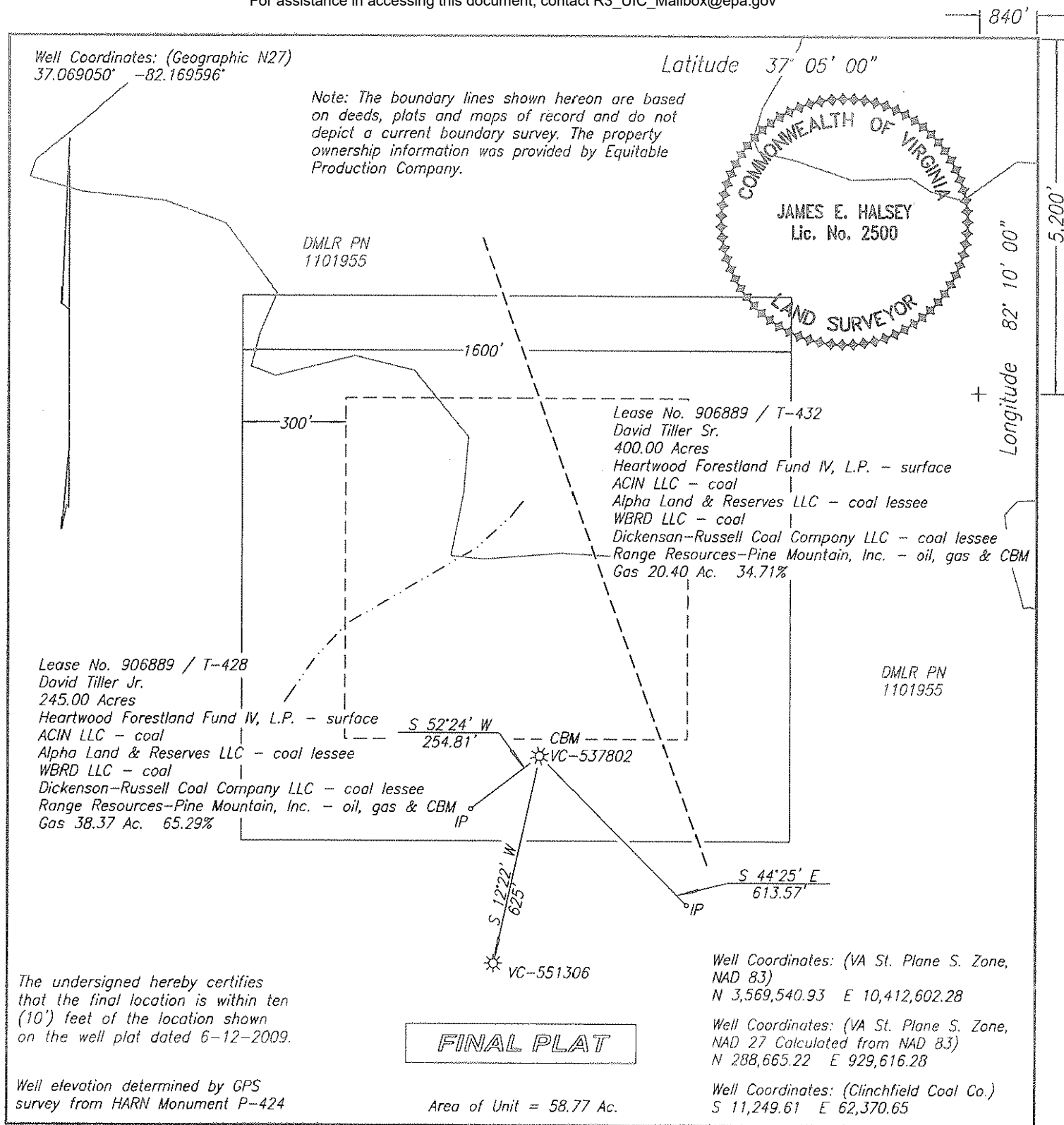
INTERNAL USE ONLY

Submit Date: 11/16/2009

Status: A

Date: 1/12/2010

Final PDF Date: 1/14/2010



WELL LOCATION PLAT (Nora Grid BH-76)

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537802
 TRACT NO. Lease No. 906889 / T-428 ELEVATION 2,074.82' QUADRANGLE Duty
 COUNTY Dickenson DISTRICT Ervin SCALE 1" = 400' DATE 8-19-2009
 This Plat is a new plat ; an updated plat ; or a final location plat
 + Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
 Licensed Professional Engineer or Licensed Land Surveyor



Type

Coal

Coal

Coal

Coal

Open Mine

From

109'-10',160'-61',197'-99',338'-39',520'-25',553'-54'

599.5'-00.33',695.5'-96.67',718.5'-19.33',908.5'-10.58',980.5'-82.25',1031'-33'

1095.5'-98.33',1139.5'-40.17',1193'-94.17',1272'-72.67',1290'-90.92',1329'-30.25

1395'-98.5',1499.5'-00.42',1514.5'-16.5',1829.5'-30.67',2064'-67.42'

498'-01'



Gas Tests

<u>Depth</u>	<u>Result</u>
197	No Show
397	No Show
498	No Show
520	No Show
720	No Show
862	No Show
1,020	No Show
1,103	No Show
1,303	No Show
1,386	No Show
1,504	No Show
1,704	No Show
1,904	No Show
2,104	No Show
2,186	No Show



<u>Depth</u>	<u>Direction/Distance/Degrees</u> <u>From True Vertical</u>
197	1/8
397	1/8
498	1/8
520	1/4
720	1/4
862	1/4
1,020	1/8
1,103	1/8
1,303	1/4
1,386	1/4
1,504	1/8
1,704	1/8
1,904	1/8
2,104	1/8
2,186	1/4

Casing Outside Diameter	<div></div> Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
13 3/8	44	17 1/2				
7	553	8 7/8	289.10	y	08/19/2009	384, 426
4 1/2	2148	6 3/8	392.50	y	08/20/2009	

Tubing Size

2 3/8

5/8"

Footage

2,100.45

2100.45

Table
1

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Fill	0.00	5.00	5.00
Sand and Shale	5.00	109.00	104.00
Coal	109.00	110.00	1.00
Sand and Shale	110.00	160.00	50.00
Coal	160.00	161.00	1.00
Sand	161.00	197.00	36.00
Coal	197.00	199.00	2.00
Sand and Shale	199.00	260.00	61.00
Sand	260.00	338.00	78.00
Coal	338.00	339.00	1.00
Sand and Shale	339.00	376.00	37.00
Sand	376.00	498.00	122.00
Open Mine	498.00	501.00	3.00
Sand and Shale	501.00	520.00	19.00
Coal	520.00	525.00	5.00
Sand and Shale	525.00	553.00	28.00
Coal	553.00	554.00	1.00
Sand and Shale	554.00	599.50	45.50
Tiller	599.50	600.33	0.83
sand & shale	600.33	695.50	95.17
Upper Seaboard A	695.50	696.67	1.17
sand & shale	696.67	718.50	21.83
Upper Seaboard	718.50	719.33	0.83
sand & shale	719.33	908.50	189.17
Middle Seaboard	908.50	910.58	2.08
sand & shale	910.58	980.50	69.92
Lower Seaboard	980.50	982.25	1.75
sand & shale	982.25	1,031.00	48.75
Unnamed A	1,031.00	1,033.00	2.00
sand & shale	1,033.00	1,095.50	62.50
Upper Horsepen	1,095.50	1,098.33	2.83
sand & shale	1,098.33	1,139.50	41.17
Middle Horsepen	1,139.50	1,140.17	0.67
sand & shale	1,140.17	1,193.00	52.83
C Seam	1,193.00	1,194.17	1.17
sand & shale	1,194.17	1,272.00	77.83
War Creek Rider	1,272.00	1,272.67	0.67
sand & shale	1,272.67	1,290.00	17.33
War Creek	1,290.00	1,290.92	0.92
sand & shale	1,290.92	1,329.00	38.08
Unnamed C	1,329.00	1,330.25	1.25
sand & shale	1,330.25	1,395.00	64.75
Lower Horsepen	1,395.00	1,398.50	3.50
sand & shale	1,398.50	1,499.50	101.00
X Seam Rider	1,499.50	1,500.42	0.92
sand & shale	1,500.42	1,514.50	14.08

X Seam	1,514.50	1,516.50	2.00
sand & shale	1,516.50	1,829.50	313.00
Pocahontas #5	1,829.50	1,830.67	1.17
sand & shale	1,830.67	2,064.00	233.33
Pocahontas #2	2,064.00	2,067.42	3.42
sand & shale	2,067.42	2,186.00	118.58



Commonwealth of Virginia
 Department of Mines, Minerals, and Energy
 Division of Gas and Oil
 P.O. Box 1416; Abingdon, VA 24212
 Telephone: (276) 676-5423

Tracking Number: 134
 Company: Equitable Production Company
 File Number: DI-1573
 Operations Name: VC-551306 W/PL
 Operation Type: Coalbed/Pipeline
 Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 10/31/2006 Drilling Contractor: Gasco
 Date drilling completed: 11/7/2006 Rig Type: ☒ Rotary ☐ Cable Tool
 Driller's Total Depth (feet): 2,193
 Log Total Depth (feet): 2,206 Coal Seam At Total Depth POCAHONTAS #2

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X 929,459 Final Plat State Plane X: 929,459
 Permitted State Plane Y: 288,056 Final Plat State Plane Y: 288,062
☐ Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
final plat 551306	VC-551306 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
-----------------	------	-----------------

Coal Seams

List of Attached Items:

Description	FileName
coal 551306	Coal Seams.doc

Gas and Oil Shows

List of Attached Items:

Description	FileName
GT 551306	Gas and Oil Shows.doc

4. Electric Logs (As required by 4VAC25-150-280.A.)

List all logs run: GR/Density/Temp/Induction/Neutron

Did logs disclose vertical locations of a coal seam? ☒ Yes ☐ No

5. Survey Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
surveys 551306	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
csg 551306	Casing Data.doc
tbg	Tubing Size.doc

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
formations 551306	Drillers Log.doc

Signed By: L. Todd Tetrick Title: Director of Drilling (Signature)

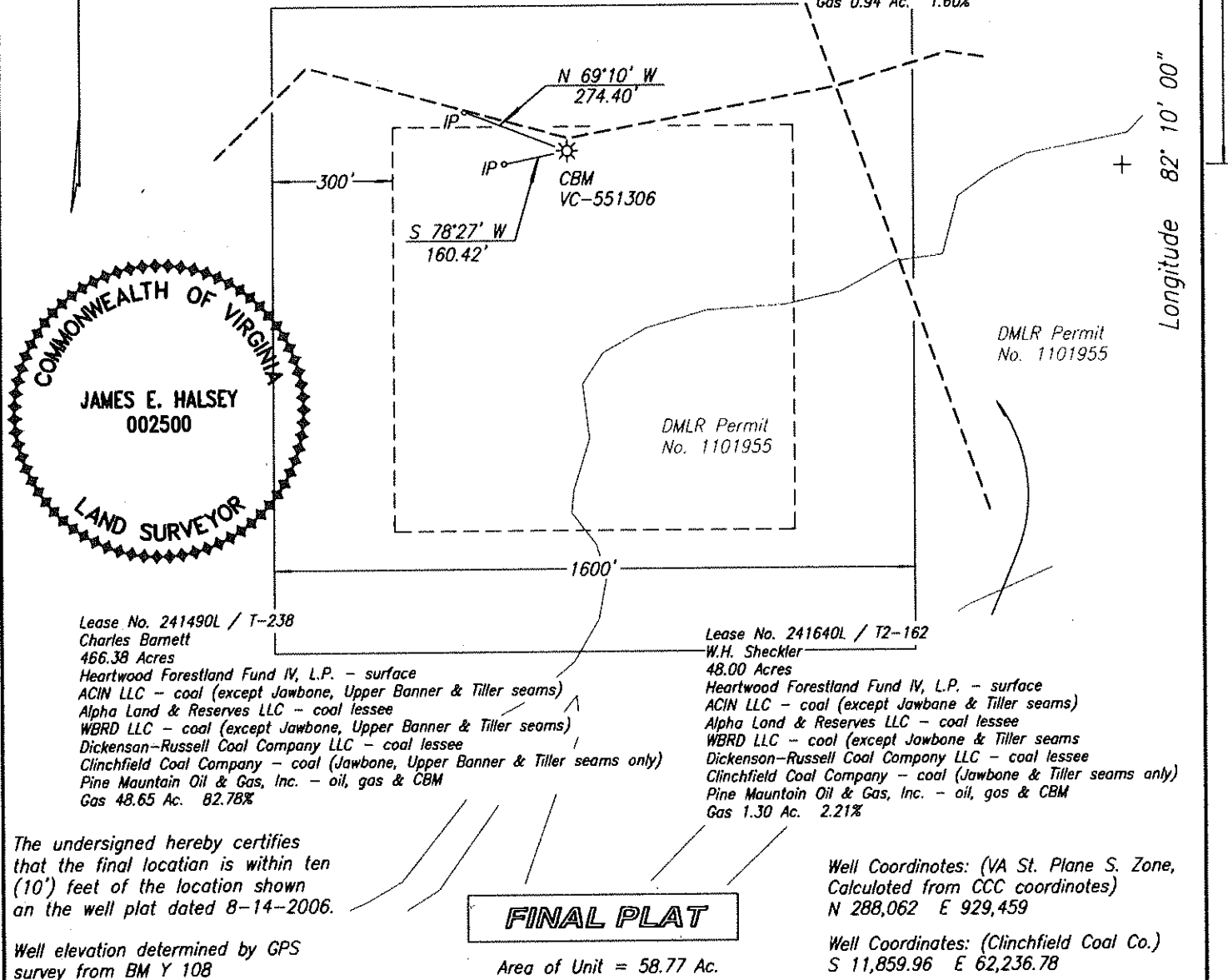
<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black;"></div>		
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Well Coordinates: (Geographic N27)
37.067377 -82.170054

Latitude 37° 05' 00"

Lease No. 241490L / T-428
David Tiller Jr.
245.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal (except Jawbone & Tiller seams)
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Coal Company LLC - coal lessee
Clinchfield Coal Company - coal (Jawbone & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 7.88 Ac. 13.41%

Lease No. 241490L / T-432
David Tiller Sr.
348.88 Acres
ACIN LLC - coal (except Jawbone & Tiller seams)
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Coal Company LLC - coal lessee
Clinchfield Coal Company - coal (Jawbone & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 0.94 Ac. 1.60%



Lease No. 241490L / T-238

Charles Barnett
466.38 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal (except Jawbone, Upper Banner & Tiller seams)
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal (except Jawbone, Upper Banner & Tiller seams)
Dickenson-Russell Coal Company LLC - coal lessee
Clinchfield Coal Company - coal (Jawbone, Upper Banner & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 48.65 Ac. 82.78%

Lease No. 241640L / T2-162

W.H. Sheckler
48.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal (except Jawbone & Tiller seams)
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal (except Jawbone & Tiller seams)
Dickenson-Russell Coal Company LLC - coal lessee
Clinchfield Coal Company - coal (Jawbone & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 1.30 Ac. 2.21%

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plat dated 8-14-2006.

Well elevation determined by GPS
survey from BM Y 108

FINAL PLAT

Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane S. Zone,
Calculated from CCC coordinates)
N 288,062 E 929,459

Well Coordinates: (Clinchfield Coal Co.)
S 11,859.96 E 62,236.78

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-551306
TRACT NO. T-238 ELEVATION 2,056.47' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 11-03-2006
This Plat is a new plat ; an updated plat ; or a final location plat x

+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

James E. Halsey
Licensed Professional Engineer or Licensed Land Surveyor

Coal Seams & Open Mines

<u>Type</u>	<u>From</u>
Coal	63'-64',180'-81',326'-27',450'-51',850'-51',908'-12',
Coal	955'-56',1105'-08',1320'-21',1375'-76',1450'-51',
Coal	1800'-04',2040'-45'
Open Mine	315'-319',485'-490'

**Gas and
Oil Shows**

Gas Tests

<u>Depth</u>	<u>Remarks</u>
199	No Show
512	No Show
622	No Show
804	No Show
912	No Show
1,108	No Show
1,329	No Show
1,551	No Show
1,772	No Show
2,045	No Show
2,193	No Show

Survey Results

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
199	1/4
512	1/4
622	1/4
804	1/4
912	1/4
1,108	1/2
1,329	1/2
1,551	1/2
1,772	1/2
2,045	1/2
2,193	1/2

Casing Data						
Casing Outside Diameter	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented Cement Baskets	
12 3/4	21	15				
9 5/8	407	12 3/8	330.40	11/01/2006	220.65, 265	
7	598	8 7/8	228.92	11/02/2006	466	
4 1/2	2151	6 1/2	377.40	11/06/2006		

Taking

2 3/8

Refrigerant

2,075.70

Drillers
Log

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Upper Horsepen	677.00	678.50	1.50
sand & shale	678.50	1,129.00	450.50
Upper Seaboard	700.50	701.50	1.00
sand & shale	701.50	852.00	150.50
Greasy Creek	852.00	852.00	0.00
sand & shale	852.00	907.00	55.00
Middle Seaboard	907.00	910.50	3.50
sand & shale	910.50	963.50	53.00
Lower Seaboard	963.50	965.30	1.80
sand & shale	965.30	1,015.80	50.50
Unnamed A	1,015.80	1,018.10	2.30
sand & shale	1,018.10	677.00	0.00
Middle Horsepen	1,129.00	1,130.00	1.00
sand & shale	1,130.00	1,212.00	82.00
C Seam	1,212.00	1,212.80	0.80
sand & shale	1,212.80	1,266.00	53.20
War Creek Rider	1,266.00	1,266.40	0.40
sand & shale	1,266.40	1,282.00	15.60
War Creek	1,282.00	1,283.00	1.00
sand & shale	1,283.00	1,321.00	38.00
Unnamed C	1,321.00	1,322.20	1.20
sand & shale	1,322.20	1,355.00	32.80
Beckley	1,355.00	1,356.00	1.00
sand & shale	1,356.00	1,386.80	30.80
Lower Horsepen	1,386.80	1,390.80	4.00
sand & shale	1,390.80	1,459.00	68.20
X Seam Rider	1,459.00	1,459.80	0.80
sand & shale	1,459.80	1,493.50	33.70
X Seam	1,493.50	1,495.30	1.80
sand & shale	1,495.30	1,546.00	50.70
Pocahontas #9	1,546.00	1,546.00	0.00
sand & shale	1,546.00	1,591.00	45.00
Pocahontas #8	1,591.00	1,591.00	0.00
sand & shale	1,591.00	1,783.00	192.00
Pocahontas #6	1,783.00	1,783.00	0.00
sand & shale	1,783.00	1,806.50	23.50
Pocahontas #5 Rider	1,806.50	1,807.50	1.00
sand & shale	1,807.50	1,822.00	14.50
Pocahontas #5	1,822.00	1,823.00	1.00

sand & shale	1,823.00	1,982.00	159.00
Pocahontas #3	1,982.00	1,982.00	0.00
sand & shale	1,982.00	2,049.00	67.00
Pocahontas #2	2,049.00	2,052.30	3.30
sand & shale	2,052.30	2,206.00	153.70



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2297
Company:	Range Resources-Pine Mountain
File Number:	DI-2124
Operations Name:	VH-530138
Operation Type:	Horizontal Gas
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	5/20/2009	Drilling Contractor:	Pheonix #4 / SW Jack #13
Date drilling completed:	7/7/2009	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	8730.00		
Log Total Depth (feet):	0.00	Formation At Total Depth	HURON

2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X:	10406713.4200	Final Plat State Plane X:	10406720.0900
Permitted State Plane Y:	3571206.9600	Final Plat State Plane Y:	3571204.8300

Plat Previously Submitted Or... ☐

List of Attached Items:

Description	FileName
VH-530138 Final Plat	VH-530138 Final Plat.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
62	1/2	INCH

Salt Water At:

Depth (in feet)	Rate	Unit of Measure
1184	Damp	

Coal Seams:

List of Attached Items:

Description	FileName
VH-530138 Coal	Coal.xls

Gas and Oil Shows:

List of Attached Items:

Description	FileName
VH-530138 Gas Shows	Shows.xls

4. Electric Logs (As required by 4VAC25-150-280.A)

List all logs run: Hi Res GR/Dens/Temp/Audio/PE/Caliper Data Pack

Did logs disclose vertical locations of a coal seam? ☐

5. Survery Results (As required by 4VAC25-150-280.B.2)

List of Attached Items:

Description	FileName
VH-530138 Survey	VH-530138 survey.xls

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
VH-530138 Casing	Casing.xls

7. Remarks

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurrence.

8. Drillers Log

Compiled By: Range Resources - Pine Mountain, Inc.

List of Attached Items:

Description	FileName
VH-530138 Driller's Log	Log.xls

9. Comments

10. Signature

Permitee:	<u>Range Resources-Pine Mountain</u>	Date:	<u>1/7/2010</u>
Signed By:	<u>Laura Murray</u>	Title:	<u>Permit Specialist</u>

INTERNAL USE ONLY

Submit Date: 1/7/2010

Status: A

Date: 3/31/2010

Final PDF Date: 4/5/2010

Surface Location

Well Coordinates: (VA St. Plane NAD83, S. Zone)
N 3,571,204.83 E 10,406,720.09

Well Coordinates: (Va. St. Plane S. Zone,
NAD 27, calculated from NAD 83 coord.)
N 290,329.19 E 923,734.26

Well Coordinates: (Clinchfield Coal Co.)
S 9,816.84 E 56,429.84

Well Coordinates: (Geographic N27)
37.072987° -82.189963°

N 293,976
E 920,566

N 293,829
E 924,297

3,733.53'

N 293,664
E 920,854

N 293,541
E 923,985

Lease No. 906889 / T-408
E. Sutherland
382.22 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources-Pine Mountain, Inc. - oil & gas
Gas 144.74 Ac. 45.23%

MD 8730' / TVD 6007'

Bottom Hole Location

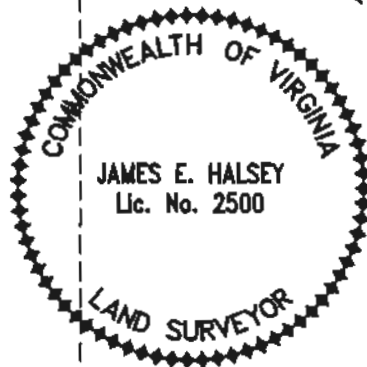
Well Coordinates: (VA St. Plane NAD83, S. Zone)
N 3,574,019 10,405,450

300'

VC-2392 *

Lease No. 906889 / T-409
N. R. Sutherland
430.65 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources-Pine Mountain, Inc. - oil & gas
Gas 113.85 Ac. 35.58%

* VC-505200



VC-505201 *

Lease No. 906889 / T-405
H.W. Sutherland
225.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources-Pine Mountain, Inc. - oil & gas
Gas 57.05 Ac. 17.83%

VC-535925 *

Lease No. 905728L
Sandlick District School Board
1.20 Acres
Dickenson County School Board - coal, oil & gas
Gas 1.08 Ac. 0.33%

Top Packer
MD 6104' / TVD 5947'

N 290,410
E 923,863

N 290,533
E 920,731

Lick Branch

* VH-530138

S 41°51' W
197.97'

S 16°21' E
168.74'

N 290,245
E 920,419

Lease No. 906889 / T2-222
Ezekiel Sutherland
178.67 Acres
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources-Pine Mountain, Inc. - oil & gas
Gas 3.28 Ac. 1.03%

N 290,099
E 924,151

--- Mineral Line
- - - Surface Line

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plat dated 12-30-2008.

Well elevation determined by GPS
survey from HARN Monument P-424

FINAL PLAT

Area of Unit = 320 Ac.

Note: The boundary lines shown hereon are based
on deeds, plats and maps of record and do not
depict a current boundary survey.

WELL LOCATION PLAT

COMPANY Range Resources - Pine Mountain, Inc. WELL NAME AND NUMBER VH-530138
TRACT NO. Lease No. 906889 / T-405 ELEVATION 1,712.78' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 12-16-2009
This Plat is a new plat ; an updated plat ; or a final location plat
+ Denotes the location of a well on United States topographic Maps, scale 1 to
24,000, latitude and longitude lines being represented by border lines as shown.

Coal Seams

				MINING IN AREA		
NAME	TOP	BOTTOM	THICKNESS	YES	NO	MINED OUT
Coal	220	224	4		NO	
Coal	235	236	1		NO	

Gas and Oil Shows

FORMATION	DEPTH	THICKNESS	IPF (MCFD/BOPD)	PRESSURE	HOURS TESTED
Ravenclyff	2479		NS		
Maxton	3604		NS		
Little Lime	3663		NS		
Big Lime	4358		NS		
Weir	5038		NS		
Berea	5277		odor		
Berea	5325		133 MCFD		
Huron	6371		odor		
Huron	7200		42 MCFD		
Huron	7931		42 MCFD		
Huron	8300		odor		
Huron	8495		odor		
Huron	8730		odor		

VH-530138 Survey

MD	Inc	AZ	VS
0.00	0.00	0.00	0.00
100.00	0.70	26.00	0.32
200.00	2.99	41.20	1.4
300.00	4.84	52.20	2.58
400.00	5.01	48.10	3.76
500.00	5.88	49.90	5.23
600.00	6.78	47.60	7.02
700.00	7.01	46.80	9.27
800.00	7.09	47.40	11.59
900.00	7.37	46.80	13.97
1000.00	8.13	44.40	16.88
1100.00	8.40	45.30	20.15
1200.00	8.78	45.60	23.39
1300.00	9.73	46.10	26.77
1400.00	9.56	45.00	30.38
1500.00	10.45	45.20	34.26
1600.00	11.05	45.20	38.39
1700.00	10.62	44.70	42.64
1800.00	11.39	43.40	47.25
1900.00	12.34	43.70	52.37
2000.00	11.66	44.30	57.41
2100.00	11.20	41.00	62.64
2200.00	8.12	35.50	68.18
2300.00	3.18	18.60	72.65
2400.00	1.61	350.10	75.71
2500.00	1.12	321.90	77.99
2600.00	0.61	305.10	79.45
2700.00	0.60	305.00	80.42
2800.00	0.64	332.90	81.46
2900.00	0.77	321.00	82.68
3000.00	0.61	324.50	83.88
3100.00	0.80	317.30	85.1
3200.00	1.03	328.10	86.68
3300.00	0.47	347.80	87.97
3400.00	1.07	336.90	89.28
3500.00	1.16	343.30	91.17
3600.00	0.28	333.00	92.39
3700.00	0.55	314.90	93.1
3800.00	0.87	303.70	94.26
3900.00	0.56	302.40	95.4
4000.00	0.86	317.30	96.57
4100.00	0.94	317.20	98.12
4200.00	0.52	328.70	99.38
4300.00	0.38	322.60	100.16
4400.00	0.44	316.20	100.87
4500.00	0.47	333.50	101.65
4600.00	0.84	328.60	102.79
4700.00	0.99	338.80	104.37
4800.00	1.09	340.90	106.15
4900.00	1.25	327.30	108.17

5000.00	1.58	321.00	110.63
5100.00	2.03	318.80	113.74
5200.00	0.65	311.80	116.04
5325.00	1.61	309.90	118.39
5420.00	1.70	313.60	121.02
5451.00	2.30	324.40	122.09
5481.00	3.90	340.60	123.68
5512.00	6.10	347.40	126.27
5542.00	7.10	339.40	129.59
5573.00	9.20	334.10	133.93
5604.00	12.70	333.60	139.79
5635.00	16.60	335.80	147.57
5665.00	20.70	337.20	157.05
5696.00	25.00	337.80	168.92
5727.00	28.00	337.20	182.56
5757.00	30.90	334.00	197.18
5788.00	34.60	331.90	213.88
5819.00	37.30	331.10	232.05
5850.00	40.80	329.60	251.56
5880.00	43.20	328.20	271.63
5911.00	46.70	327.10	293.52
5942.00	48.90	326.70	316.48
5973.00	52.10	326.20	340.39
6004.00	54.70	325.80	365.26
6034.00	57.60	326.80	390.16
6065.00	60.70	326.30	416.76
6095.00	63.40	326.60	443.25
6126.00	65.70	325.90	471.23
6158.00	68.50	325.30	500.68
6190.00	71.90	325.30	530.75
6222.00	75.30	326.20	561.42
6253.00	79.50	327.10	591.65
6285.00	82.30	328.20	623.25
6317.00	84.60	328.20	655.04
6349.00	86.70	328.20	686.94
6412.00	88.40	328.50	717.92
6444.00	88.80	328.60	749.9
6380.00	89.90	328.40	781.9
6476.00	91.90	328.41	783.9
6508.00	90.01	328.60	813.89
6446.00	91.60	328.70	845.88
6540.00	91.20	329.00	877.86
6572.00	90.80	328.70	909.85
6604.00	91.30	328.90	941.84
6635.00	90.60	328.50	972.84
6667.00	90.50	328.80	1004.83
6699.00	90.30	329.00	1036.83
6731.00	89.90	328.00	1068.83
6794.00	89.60	327.90	1099.83
6826.00	89.60	328.00	1131.83
6762.00	90.50	328.50	1163.83
6889.00	89.70	327.20	1195.82

6921.00	90.50	327.50	1226.82
6858.00	89.40	327.10	1258.82
6953.00	91.50	327.40	1290.81
6985.00	93.30	327.90	1322.78
7016.00	92.00	326.60	1353.74
7048.00	91.40	326.20	1385.72
7080.00	91.20	326.20	1417.69
7112.00	89.60	326.10	1449.67
7143.00	89.30	325.80	1480.65
7207.00	88.00	326.30	1512.63
7239.00	87.00	326.30	1544.6
7175.00	88.40	325.60	1576.55
7303.00	87.00	325.80	1608.47
7334.00	86.50	325.90	1640.4
7271.00	87.30	326.80	1671.34
7366.00	88.00	327.20	1703.31
7398.00	88.60	328.60	1735.3
7430.00	89.00	328.70	1767.29
7462.00	89.30	328.80	1799.28
7494.00	89.50	328.70	1831.28
7526.00	89.70	329.00	1863.27
7558.00	90.20	329.30	1895.27
7653.00	90.40	329.10	1926.26
7589.00	89.00	329.40	1958.25
7621.00	90.10	328.90	1990.25
7717.00	89.40	329.60	2022.23
7748.00	89.30	329.80	2054.21
7685.00	89.80	328.90	2085.2
7780.00	90.40	329.00	2117.2
7812.00	90.50	328.60	2149.2
7844.00	91.20	328.90	2181.19
7876.00	90.90	328.30	2213.18
7907.00	91.00	327.80	2244.18
7939.00	90.80	327.30	2276.17
7971.00	91.50	327.70	2308.16
8034.00	89.70	327.60	2340.16
8066.00	88.20	327.40	2371.15
8003.00	91.00	326.80	2403.14
8130.00	88.90	326.70	2435.12
8162.00	87.90	326.50	2467.09
8098.00	89.60	327.70	2499.09
8194.00	89.20	327.80	2531.09
8226.00	88.90	327.60	2563.08
8257.00	88.00	327.20	2594.07
8289.00	88.30	327.10	2626.05
8321.00	89.30	327.20	2658.04
8353.00	90.40	326.00	2690.02
8385.00	91.00	326.90	2722.01
8449.00	91.30	327.50	2754
8481.00	90.50	327.30	2786
8417.00	92.40	327.40	2817.98
8577.00	93.40	327.30	2849.94

8513.00	93.60	326.80	2881.87
8545.00	94.10	327.00	2913.79
8608.00	92.20	327.30	2944.74
8639.00	90.00	328.30	2975.73
8671.00	88.90	327.90	3007.73
8730.00	88.90	327.90	3066.72

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Casing Program

Casing Type	Casing Size	Casing Interval	Hole Size	Cement Used In Cubic Ft.	Cemented To Surface Yes/No	Date Cemented	Packers Or Bridge Plugs Kind/Size/Set	Cement Baskets (ft)
Conductor	13 ³ / ₈ "	0-44'	15"					
Water Protection	9 ⁵ / ₈ "	0-336'	12 ¹ / ₄ "	363	Yes	05/21/09		126' 168'
Coal Protection	7"	0-1980'	8 ⁷ / ₈ "	541.75	Yes	05/24/09		258' 930'
Production Casing	4 ¹ / ₂ "	0-8695'	6 ¹ / ₄ "	59	No		grout on top of packers	
Other Casing And Tubing Left In Well	2 ³ / ₈ "	0-0'						
Liners								

Packers	Packer	Port
	Depth	Depth
Safety Isolation Packer	5320'	
Packer	6104'	
Stage 9 port		6258'
Packer	6406'	
Stage 8 port		6558'
Packer	6707'	
Stage 7 port		6859'
Packer	7006'	
Stage 6 port		7157'
Packer	7309'	
Stage 5 port		7463'
Packer	7610'	
Stage 4 port		7764'
Packer	7913'	
Stage 3 port		8067'
Packer	8217'	
Stage 2 port		8369'
Packer	8521'	
Stage 1 port		8628'

Driller's Log

Geologic Age	Formation	General Lithology	Color	Depth Top	Depth Bottom	Thickness	Remarks
		Sandy shale		0	220	220	
		Coal		220	224	4	
		Sandy shale		224	235	11	
		Coal		235	236	1	
		Sandy shale		236	2477	2241	
	Ravenclyff	Sandstone		2477	2780	303	
	Maxton	Sandstone		2780	3603	823	
	Little Lime	Limestone		3603	3662	59	
	Big Lime	Limestone		3662	4360	698	
	Weir	Siltstone		4360	4632	272	
	Weir Shale	Shale		4632	5002	370	
	Sunbury	Shale		5002	5039	37	
	Berea	Sandstone		5039	5031	-8	
	Devonian Shale	Shale		5031	6010	979	TVD for Lower Huron
	Lower Huron	Shale		6010	8730	2720	TVD to TMD

Formations are estimated depths taken from Drillers Book.



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416; Abingdon, VA 24212
Telephone: (276) 676-5423

Tracking Number: 777
Company: Equitable Production Company
File Number: DI-1718
Operations Name: VC-501842 W/PL
Operation Type: Coal Bed
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: <u>Coal Bed</u>	Date Well Completed: <u>7/18/2007</u>
Driller's Total Depth: <u>2,010</u>	Log's Total Depth: <u>2,020</u>

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

2. Stimulation Record

☒ Stimulated ☐ Not Stimulated ☐ Gob

Description	FileName
Treatment Summary 501842	Stage1.doc

3. Final Production

Description	FileName
Final Production 501842	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 12/13/2007 2:40:27 PM (Company)

Stage 1

Date	07/10/2007		
FracType	70Q	Foam	
Zone			X-Sm/ Poca #6
# of Perfs		25	
From/To		1,593	1,854
BD Press		1,718	
ATP Psi		3,340	
Avg Rate		34	
Max Press Psi		3,563	
ISIP Psi		1,958	
10min SIP	1,547		5 min.
Frac Gradient		1.29	
Sand Proppant		46.51	
Water-bbl		167	
SCF N2		279,443	
Acid-gal	500	gal	
		15% HCL	

Stage 2

Date	07/10/2007		
FracType	70Q	Foam	
Zone			Bckly/Unnmd C/WrCrk/WrCrk.
# of Perfs		39	
From/To		1,312	1,443
BD Press		2,225	
ATP Psi		2,855	

Avg Rate		47	
Max Press Psi		3,220	
ISIP Psi		1,542	
10min SIP	1,269		5 min.
		1.30	
Frac Gradient			
Sand Proppant			
		96.56	
Water-bbl		322	
SCF N2		468,120	
Acid-gal	600	gal	
		10%MSA	



Date	07/10/2007		
FracType	70Q	Foam	
Zone		L Sbrd/Unmd B/U & M Hrspn	

# of Perfs		38	
From/To		1,058	1,227
BD Press		2,690	
ATP Psi		2,769	
Avg Rate		51	
Max Press Psi		2,855	
ISIP Psi		1,818	
10min SIP	1,476		5 min.
		1.70	
Frac Gradient			
Sand Proppant			
		67.70	
Water-bbl		243	
SCF N2		369,000	

Acid-gal

1,344

gal
10%MSA

<u>Final Production</u>	<u>After Stimulation</u>		<u>Hours Tested</u>	<u>Depth</u>
	<u>BOD</u>	<u>MCFD</u>		
Final Production if Gas Zones are commingled		97	0	280



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number: 9302
Company: EnerVest Operating, LLC
File Number: DI-1310
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coal Bed	Date Well Completed:	12/22/2004
Driller's Total Depth:	2473.00	Log's Total Depth:	2454.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
STIM	5DI1310_VC535925WPL_EQT_DICKENSON.pdf

3. Final Production

Description	FileName
FINAL	5DI1310_VC535925WPL_EQT_DICKENSON.pdf

4. Comments

Notes:

MATERIAL INSERTED BY DGO [8/5/2016, jhh]

5. Signature

Permittee: EnerVest Operating, LLC Date: 8/5/2016 (Company)

By: VICTORIA DUGAN Title: *** (Signature)

INTERNAL USE ONLY

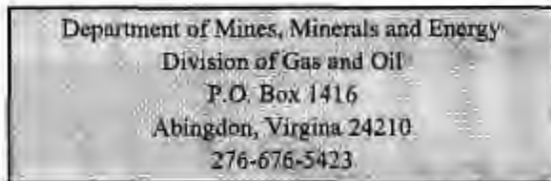
Submit Date: 8/5/2016

Status: _____

Date: 8/29/2016

Final PDF Date: 8/29/2016

DI 1310
JAH



Permit: 6430

Well: VC535925

Completion Report

Well Type: Gas Well

Date Well Completed 12/22/2004 Total Depth of Well: 2,473.00 LTD: 2,454.00

Attach the drilling report if not previously submitted. In addition, submit any changes in casing and tubing that were approved after the drilling report was submitted.

Stimulation Record

Zone 1

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes: X No: Date Stimulated:

Zone 2

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes: X No: Date Stimulated:

Zone 3

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes: X No: Date Stimulated:

Zone 4

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes: X No: Date Stimulated:

Final Production

After Stimulation

Final Production if Gas Zones
are commingled

BOD

MCFD

Hours Tested

Rock Pressure

55
(In Line)

0

240

Permitee: EQUITABLE PRODUCTION COMPANY (Company)

By: Victoria Rugan (Signature)

Form DGO-GO-15
Rev 7/00

6/20/05

ENTERED



Well: VC535925

Formation Record

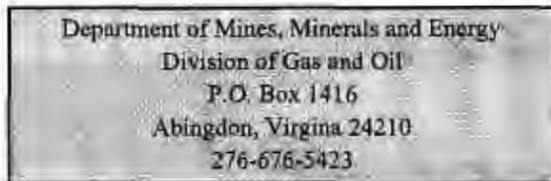
Date Well Completed: 12/22/2004

Total Depth of Well: 2,473.00

Permit: 6430

Stage1			Stage2			Stage3			Stage4			Stage5		
Date 12/18/2004			Date 12/18/2004			Date 12/18/2004			Date 12/18/2004			Date 12/18/2004		
FracType 70Q Foam			FracType 70Q Foam			FracType 70Q Foam			FracType 70Q Foam			FracType 70Q Foam		
Zone Poca #6 Rdr/Poca #6/Poca .			Zone X Seam			Zone Warcreek/ Beckley			Zone M&L Sbrd/M Hrspn/C Sm Rdr			Zone Greasy Creek		
# of Perfs 18			# of Perfs 12			# of Perfs 30			# of Perfs 33			# of Perfs 16		
From/To 2,036— 2,254			From/To 1,710— 1,713			From/To 1,569— 1,611			From/To 1,186— 1,477			From/To 1,127— 1,131		
BD Press 2,890			BD Press 3,286			BD Press 2,069			BD Press 2,588			BD Press 3,149		
ATP Psi 3,146			ATP Psi 3,414			ATP Psi 3,152			ATP Psi 2,895			ATP Psi 3,439		
Avg Rate 37			Avg Rate 37			Avg Rate 40			Avg Rate 41			Avg Rate 26		
Max Press Psi 3,301			Max Press Psi 3,517			Max Press Psi 3,368			Max Press Psi 3,181			Max Press Psi 3,996		
ISIP Psi 1,830			ISIP Psi 1,475			ISIP Psi 1,541			ISIP Psi 1,488			ISIP Psi 1,603		
10min SIP 1,487 5 min.			10min SIP 1,352 5 min.			10min SIP 1,346 5 min.			10min SIP 1,332 5 min.			10min SIP 1,300 5 min.		
Frac Gradient 0.99			Frac Gradient 1.00			Frac Gradient 1.12			Frac Gradient 1.29			Frac Gradient 1.60		
Sand Proppant 10.67			Sand Proppant 7.59			Sand Proppant 21.47			Sand Proppant 21.70			Sand Proppant 11.07		
Water-bbl 147			Water-bbl 123			Water-bbl 238			Water-bbl 227			Water-bbl 173		
SCF N2 133,050			SCF N2 143,347			SCF N2 207,851			SCF N2 218,544			SCF N2 165,589		
Acid-gal 500 gal 7.5%			Acid-gal 800 gal 7.5%			Acid-gal 300 gal 7.5%			Acid-gal 300 gal 7.5%			Acid-gal 300 gal 7.5%		

DI 1310
JAH



Permit: 6430

Well: VC535925

Completion Report

Well Type: Gas Well

Date Well Completed 12/22/2004 Total Depth of Well: 2,473.00 LTD: 2,454.00

Attach the drilling report if not previously submitted. In addition, submit any changes in casing and tubing that were approved after the drilling report was submitted.

Stimulation Record

Zone 1

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes: X No: Date Stimulated:

Zone 2

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes: X No: Date Stimulated:

Zone 3

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes: X No: Date Stimulated:

Zone 4

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes: X No: Date Stimulated:

Final Production

After Stimulation

Final Production if Gas Zones
are commingled

BOD

MCFD

Hours Tested

Rock Pressure

55
(In Line)

0

240

Permitee: EQUITABLE PRODUCTION COMPANY (Company)

By: Victoria Rugan (Signature)

Form DGO-GO-15
Rev 7/00

6/20/05

ENTERED



Well: VC535925

Formation Record

Date Well Completed: 12/22/2004

Total Depth of Well: 2,473.00

Permit: 6430

Stage1			Stage2			Stage3			Stage4			Stage5		
Date 12/18/2004			Date 12/18/2004			Date 12/18/2004			Date 12/18/2004			Date 12/18/2004		
FracType 70Q Foam			FracType 70Q Foam			FracType 70Q Foam			FracType 70Q Foam			FracType 70Q Foam		
Zone Poca #6 Rdr/Poca #6/Poca .			Zone X Seam			Zone Warcreek/ Beckley			Zone M&L Sbrd/M Hrspn/C Sm Rdr			Zone Greasy Creek		
# of Perfs 18			# of Perfs 12			# of Perfs 30			# of Perfs 33			# of Perfs 16		
From/To 2,036— 2,254			From/To 1,710— 1,713			From/To 1,569— 1,611			From/To 1,186— 1,477			From/To 1,127— 1,131		
BD Press 2,890			BD Press 3,286			BD Press 2,069			BD Press 2,588			BD Press 3,149		
ATP Psi 3,146			ATP Psi 3,414			ATP Psi 3,152			ATP Psi 2,895			ATP Psi 3,439		
Avg Rate 37			Avg Rate 37			Avg Rate 40			Avg Rate 41			Avg Rate 26		
Max Press Psi 3,301			Max Press Psi 3,517			Max Press Psi 3,368			Max Press Psi 3,181			Max Press Psi 3,996		
ISIP Psi 1,830			ISIP Psi 1,475			ISIP Psi 1,541			ISIP Psi 1,488			ISIP Psi 1,603		
10min SIP 1,487 5 min.			10min SIP 1,352 5 min.			10min SIP 1,346 5 min.			10min SIP 1,332 5 min.			10min SIP 1,300 5 min.		
Frac Gradient 0.99			Frac Gradient 1.00			Frac Gradient 1.12			Frac Gradient 1.29			Frac Gradient 1.60		
Sand Proppant 10.67			Sand Proppant 7.59			Sand Proppant 21.47			Sand Proppant 21.70			Sand Proppant 11.07		
Water-bbl 147			Water-bbl 123			Water-bbl 238			Water-bbl 227			Water-bbl 173		
SCF N2 133,050			SCF N2 143,347			SCF N2 207,851			SCF N2 218,544			SCF N2 165,589		
Acid-gal 500 gal 7.5%			Acid-gal 800 gal 7.5%			Acid-gal 300 gal 7.5%			Acid-gal 300 gal 7.5%			Acid-gal 300 gal 7.5%		



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	1879
Company:	Equitable Production Company
File Number:	DI-2131
Completion Report Type:	Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coal Bed	Date Well Completed:	6/12/2009
Driller's Total Depth:	2531.00	Log's Total Depth:	2529.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
Treatment Summary 536444	Stage1.doc

3. Final Production

Description	FileName
Final Production 536444	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 8/25/2009 (Company)

By: Michael D. Butcher Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 8/25/2009

Status: _____

Date: 8/28/2009

Final PDF Date: 8/28/2009

Stage1

Date 06/06/2009

FracType 65Q Foam
Zone Poca #9,#5,#3

of Perfs 30

From/To 2,358 1,882

BD Press 1,110

ATP Psi 2,963

Avg Rate 47

Max Press Psi 3,144

ISIP Psi 1,013

10min SIP 951 5 min.
0.69

Frac Gradient

Sand Proppant 100.00

Water-bbl 279
SCF N2 396,000

Acid-gal gal 937
15%HCL

Stage2

Date 06/06/2009

FracType 65Q Foam
Zone WrCrk/Bckly/X Sm

of Perfs 42

From/To 1,819 1,657

BD Press 1,715

ATP Psi 2,539

Avg Rate 48

Max Press Psi	2,781	
ISIP Psi	1,647	
10min SIP	1,485	5 min. 1.15
Frac Gradient		
Sand Proppant		175.00
Water-bbl	437	
SCF N2		601,000
Acid-gal	gal 7.5%HCL	350

Stage3

Date	06/06/2009	
FracType	65Q	Foam
Zone	M Hrspn/C Sm Rdr/C Sm	
# of Perfs	24	
From/To	1,611	1,512
BD Press	1,586	
ATP Psi	3,242	
Avg Rate	41	
Max Press Psi	3,400	
ISIP Psi	2,137	
10min SIP	1,495	5 min. 1.56
Frac Gradient		
Sand Proppant		75.00
Water-bbl	253	
SCF N2		412,000

Acid-gal gal 350
7.5%HCL

Stage4

Date 06/06/2009

FracType 65Q Foam
Zone M&L Sbrd/Unnmd A&B

of Perfs 36

From/To 1,453 1,309

BD Press 1,646

ATP Psi 2,554

Avg Rate 50

Max Press Psi 2,618

ISIP Psi 1,193

10min SIP 1,119 5 min.
1.06

Frac Gradient

Sand Proppant 113.00

Water-bbl 305
SCF N2 402,000

Acid-gal gal 350
7.5%HCL

Stage5

Date 06/06/2009

FracType 65Q Foam
Zone U Sbrd A/U Sbrd/GrsyCrk

of Perfs 38

From/To 1,245 1,029

BD Press	1,632	
ATP Psi	2,715	
Avg Rate	49	
Max Press Psi	3,008	
ISIP Psi	1,397	
10min SIP	800	5 min. 1.51
Frac Gradient		
Sand Proppant		128.00
Water-bbl	329	
SCF N2		470,000
Acid-gal	gal	500
	7.5%HCL	

Final Production

After Stimulation

BOB

MCED

Hours Tested

**Peak
Production**

Final Production if Gas Zones are commingled

15

0

175



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2022
Company:	EQT Production Company
File Number:	DI-2179
Completion Report Type:	Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coal Bed	Date Well Completed:	7/23/2009
Driller's Total Depth:	2358.00	Log's Total Depth:	2333.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
Treatment Summary 536588	Stage1.doc

3. Final Production

Description	FileName
Final Production 536588	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: EQT Production Company Date: 10/6/2009 (Company)

By: Michael D. Butcher Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 10/6/2009

Status: _____

Date: 12/22/2009

Final PDF Date: 12/23/2009

Stage1

Date 07/09/2009

FracType 65Q Foam
Zone Poca #3/Poca #5/Poca #6/P.

of Perfs 40

From/To 2,257 2,047

BD Press 3,629

ATP Psi 2,832

Avg Rate 47

Max Press Psi 3,300

ISIP Psi 1,905

10min SIP 1,722 5 min.
1.08

Frac Gradient

Sand Proppant 157.38

Water-bbl 467
SCF N2 751,420

Acid-gal gal 850
7.5%HCL

Stage2

Date 07/09/2009

FracType 65Q Foam
Zone Poca #8/#9/X Sm

of Perfs 28

From/To 1,859 1,711

BD Press 2,160

ATP Psi 3,103

Avg Rate 44

Max Press Psi	3,658	
ISIP Psi	1,765	
10min SIP	1,582	5 min. 1.18
Frac Gradient		
Sand Proppant		109.09
Water-bbl	347	
SCF N2		563,981
Acid-gal	gal 7.5%HCL	350

Stage3

Date	07/09/2009	
FracType	65Q	Foam
Zone	Beckley	
# of Perfs	18	
From/To	1,614	1,610
BD Press	2,588	
ATP Psi	2,975	
Avg Rate	39	
Max Press Psi	3,791	
ISIP Psi	1,910	
10min SIP	1,523	5 min. 1.34
Frac Gradient		
Sand Proppant		105.48
Water-bbl	338	
SCF N2		453,091

Acid-gal gal 350
7.5%HCL

Stage4

Date 07/09/2009

FracType 65Q Foam
Zone WrCrk/C Sm Rdr/M&U
Hrspn/.

of Perfs 40

From/To 1,551 1,241

BD Press 2,057

ATP Psi 0

Avg Rate 42

Max Press Psi 3,611

ISIP Psi 1,748

10min SIP 1,339 5 min.
1.56

Frac Gradient

Sand Proppant 185.12

Water-bbl 517
SCF N2 764,934

Acid-gal gal 350
7.5%HCL

Stage5

Date 07/09/2009

FracType 65Q Foam
Zone M Sbrd/GrSyCrk/U Sbrd

of Perfs 34

From/To 1,194 961

BD Press	2,429	
ATP Psi	0	
Avg Rate	0	
Max Press Psi	3,666	
ISIP Psi	1,544	
10min SIP	1,221	5 min. 1.76
Frac Gradient		
Sand Proppant		161.77
Water-bbl	479	
SCF N2		597,159
Acid-gal	gal 7.5%HCL	350

Final Production

After Stimulation

BOB

MCED

Hours Tested

**Peak
Production**

Final Production if Gas Zones are commingled

7

0

260



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416; Abingdon, VA 24212
Telephone: (276) 676-5423

Tracking Number: 364
Company: Equitable Production Company
File Number: DI-1650
Operations Name: VC-537095 W/PL
Operation Type: Coalbed/Pipeline
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coalbed/Pipeline	Date Well Completed:	2/13/2007
Driller's Total Depth:	1,787	Log's Total Depth:	1,781

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

☒ Stimulated ☐ Not Stimulated ☐ Gob

Description	FileName
Treatment Summary 537095	Stage1.doc

3. Final Production

Description	FileName
Final Production 537095	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 6/4/2007 8:26:32 AM (Company)

Stage1

Date	02/03/2007		
FracType	70Q	Foam	
Zone		Poca #9/#6	
# of Perfs		29	
From/To		1,248	1,503
BD Press		3,367	
ATP Psi		2,207	
Avg Rate		40	
Max Press Psi		2,475	
ISIP Psi		1,609	
10min SIP	1,412		5 min.
Frac Gradient		1.42	
Sand Proppant		77.32	
Water-bbl		217	
SCF N2		217,978	
Acid-gal	1,000	gal	
		10%MSA	

Stage2

Date	02/03/2007		
FracType	70Q	Foam	
Zone		Unnamed C/ Beckley	
# of Perfs		24	
From/To		1,049	1,092
BD Press		2,608	
ATP Psi		2,281	
Avg Rate		40	

Max Press Psi		2,461	
ISIP Psi		1,526	
10min SIP	1,319		5 min.
		1.58	
Frac Gradient			
Sand Proppant			
		69.72	
Water-bbl		224	
SCF N2		237,733	
Acid-gal	600	gal	
		10%MSA	

Stage3

Date	02/03/2007		
FracType	70Q	Foam	
Zone		Wrck Rd/Wrck	
# of Perfs		28	
From/To		962	1,014
BD Press		3,040	
ATP Psi		2,876	
Avg Rate		22	
Max Press Psi		3,617	
ISIP Psi		2,030	
10min SIP	1,557		5 min.
		2.24	
Frac Gradient			
Sand Proppant			
		51.34	
Water-bbl		148	
SCF N2		160,408	

Acid-gal 1,000 gal
10%MSA

Stage4

Date 02/03/2007

FracType 70Q Foam
Zone M&L Sbrd/Unmd A&B/U
Hrspn

of Perfs 38

From/To 654

BD Press 2,618

ATP Psi 2,718

Avg Rate 29

Max Press Psi 3,016

ISIP Psi 1,622

10min SIP 1,207 5 min.

2.61

Frac Gradient

Sand Proppant

102.31

Water-bbl 315

SCF N2 372,831

Acid-gal 1,000 gal
10%MSA

Final Production

After Stimulation

BOB

MCED

Hours Tested

**Peak
Production**

Final Production if Gas Zones are commingled

76

0

280



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416; Abingdon, VA 24212
Telephone: (276) 676-5423

Tracking Number: 669
Company: Equitable Production Company
File Number: DI-1651
Operations Name: VC-537100 W/PL
Operation Type: Coalbed/Pipeline
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coalbed/Pipeline	Date Well Completed:	5/14/2007
Driller's Total Depth:	2,395	Log's Total Depth:	2,395

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

☒ Stimulated ☐ Not Stimulated ☐ Gob

Description	FileName
treatment summaries 537100	Stage1.doc

3. Final Production

Description	FileName
final production 537100	Final Production 537100.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 10/23/2007 5:54:40 PM (Company)

Stage1

Date	05/05/2007		
FracType	70Q	Foam	
Zone			X-sm/poca#5/poca#2
# of Perfs			36
From/To		1,693	2,227
BD Press		2,643	
ATP Psi		1,862	
Avg Rate		42	
Max Press Psi		2,228	
ISIP Psi		1,580	
10min SIP	1,343		5 min.
Frac Gradient		1.06	
Sand Proppant		60.88	
Water-bbl		279	
SCF N2		339,594	
Acid-gal	500	gal	
		10%MSA	

Stage2

Date	05/05/2007		
FracType	70Q	Foam	
Zone			Lower Horsepen
# of Perfs			20
From/To		1,570	1,575
BD Press		3,042	
ATP Psi		2,108	

Avg Rate		22	
Max Press Psi		2,212	
ISIP Psi		1,622	
10min SIP	1,365		5 min.
		1.16	
Frac Gradient			
Sand Proppant		44.19	
Water-bbl		188	
SCF N2		191,380	
Acid-gal	1,000	gal	
		10%MSA	

Stage3

Date	05/05/2007		
FracType	70Q	Foam	
Zone		M Hrspn/Wr Crk Rdr/Wr Crk.	
# of Perfs		36	
From/To		1,322	1,539
BD Press		2,438	
ATP Psi		2,828	
Avg Rate		23	
Max Press Psi		3,665	
ISIP Psi		1,752	
10min SIP	1,372		5 min.
		1.46	
Frac Gradient			
Sand Proppant		59.38	
Water-bbl		232	
SCF N2		212,972	

Acid-gal 1,000 gal
10%MSA

Stage4

Date 05/05/2007

FracType 70Q Foam
Zone Unmd A/U Hrspn

of Perfs 30

From/To 1,283 1,202

BD Press 2,413

ATP Psi 2,878

Avg Rate 27

Max Press Psi 3,122

ISIP Psi 2,877

10min SIP 2,269 5 min.

2.37

Frac Gradient

Sand Proppant

60.84

Water-bbl 216

SCF N2 293,849

Acid-gal 1,000 gal
10%MSA

Stage5

Date 05/05/2007

FracType 70Q Foam
Zone M&L Sbrd

of Perfs 22

From/To 1,153 1,078

BD Press		2,854	
ATP Psi		2,591	
Avg Rate		29	
Max Press Psi		2,730	
ISIP Psi		1,568	
10min SIP	1,196		5 min.
		1.49	
Frac Gradient			
Sand Proppant		41.32	
Water-bbl		171	
SCF N2		188,295	
Acid-gal	1,000	gal	
		10%MSA	

Final Production

After Stimulation

POD

MCED

Hours Tested

Back

Final Production if Gas Zones are commingled

76

0

240



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416; Abingdon, VA 24212
Telephone: (276) 676-5423

Tracking Number: 417
Company: Equitable Production Company
File Number: DI-1649
Operations Name: VC-537101 W/PL
Operation Type: Coalbed/Pipeline
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coalbed/Pipeline	Date Well Completed:	3/22/2007
Driller's Total Depth:	2,241	Log's Total Depth:	2,238

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

☒ Stimulated ☐ Not Stimulated ☐ Gob

Description	FileName
Treatment Summary 537101	Stage1.doc

3. Final Production

Description	FileName
Final Production 537101	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 6/26/2007 5:42:43 AM (Company)

Stage1

Date	03/17/2007		
FracType	70Q	Foam	
Zone	X Sm/Poca #6/Poca #5 Rdr/.		
# of Perfs	36		
From/To	1,658	2,158	
BD Press	2,755		
ATP Psi	2,674		
Avg Rate	43		
Max Press Psi	2,807		
ISIP Psi	1,999		
10min SIP	1,441		5 min.
Frac Gradient	1.34		
Sand Proppant	96.59		
Water-bbl	318		
SCF N2	344,967		
Acid-gal	1,000	gal	
		10%MSA	

Stage2

Date	03/17/2007		
FracType	70Q	Foam	
Zone	Unnmd C/Bckly/L Hrspn		
# of Perfs	34		
From/To	1,473	1,553	
BD Press	2,365		
ATP Psi	2,278		
Avg Rate	33		

Max Press Psi		2,616	
ISIP Psi		2,120	
10min SIP	1,582		5 min.
		1.57	
Frac Gradient			
Sand Proppant			
		65.72	
Water-bbl		220	
SCF N2		255,252	
Acid-gal	600	gal	
		10%MSA	

Stage3

Date	03/17/2007		
FracType	70Q	Foam	
Zone		C-Sm/WrCrk/WrCrk Rdr	
# of Perfs		26	
From/To		1,379	1,439
BD Press		2,991	
ATP Psi		3,627	
Avg Rate		10	
Max Press Psi		3,769	
ISIP Psi		2,920	
10min SIP	2,359		5 min.
		2.25	
Frac Gradient			
Sand Proppant			
		0.06	
Water-bbl		173	
SCF N2		107,000	

Acid-gal 1,000 gal
10%MSA

Stage4

Date 03/17/2007

FracType 70Q Foam
Zone U & M Horsepen

of Perfs 16

From/To 1,267 1,300

BD Press 3,479

ATP Psi 3,150

Avg Rate 14

Max Press Psi 3,361

ISIP Psi 3,071

10min SIP 2,659 5 min.

2.55

Frac Gradient

Sand Proppant

20.00

Water-bbl 99

SCF N2 102,853

Acid-gal 1,000 gal
10%MSA

Stage5

Date 03/17/2007

FracType 70Q Foam
Zone Grsy Crk/M&L Sbrd/Unmd A

of Perfs 37

From/To 1,022 1,218

BD Press		1,852	
ATP Psi		2,556	
Avg Rate		28	
Max Press Psi		2,961	
ISIP Psi		1,948	
10min SIP	0		5 min.
		2.04	
Frac Gradient			
Sand Proppant			
		147.30	
Water-bbl		425	
SCF N2		569,834	
Acid-gal	1,000	gal	
		10%MSA	

Final Production

After Stimulation

BOB

MCED

Hours Tested

**Peak
Production**

Final Production if Gas Zones are commingled

62

0

280



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416, Abingdon, VA 24212
Telephone: (276) 676-5423

Tracking Number: 779
Company: Equitable Production Company
File Number: DI-1743
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coalbed/Pipeline	Date Well Completed: 7/26/2007
Driller's Total Depth: 2364.00	Log's Total Depth: 2376.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
treatment summaries 537102	Stage 537102.doc

3. Final Production

Description	FileName
final production 537102	Final Production 537102.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 12/13/2007 (Company)

By: L. Todd Tetrack Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 12/13/2007

Status: _____

Date: 12/14/2007

Final PDF Date: 2/27/2008

Stage1

Date	07/14/2007		
FracType	70Q	Foam	
Zone			Poco #9/#6
# of Perfs			32
From/To			1,722 1,961
BD Press			2,318
ATP Psi			2,414
Avg Rate			38
Max Press Psi			2,590
ISIP Psi			1,689
10min SIP	1,495		5 min.
			1.11
Frac Gradient			
Sand Proppant			48.05
Water-bbl			194
SCF N2			205,160
Acid-gal	1,000		gal
			10% MSA

Stage2

Date	07/14/2007		
FracType	70Q	Foam	
Zone			Beckley/ Lower Horsepen
# of Perfs			30
From/To			1,553 1,592
BD Press			2,288

ATP Psi		2,573	
Avg Rate		36	
Max Press Psi		2,975	
ISIP Psi		1,688	
10min SIP	1,469		5 min.
		1.22	
Frac Gradient			
Sand Proppant			
		46.19	
Water-bbl		209	
SCF N2		227,135	
Acid-gal	1,000	gal	
		10% MSA	

Stage3

Date		07/14/2007	
FracType	70Q	Foam	
Zone		C Sm/WrCrk	
		Rdr/WrCrk/Unmd.	
# of Perfs		32	
From/To		1,424	1,517
BD Press		1,564	
ATP Psi		2,651	
Avg Rate		37	
Max Press Psi		2,989	
ISIP Psi		1,737	
10min SIP	1,497		5 min.
		1.35	
Frac Gradient			

Sand Proppant		29.90
Water-bbl		154
SCF N2		169,032
Acid-gal	1,000	gal 10% MSA

Stage4

Date	07/14/2007		
FracType	70Q	Foam	
Zone		M&L Sbrd/Unmd A/U Hrspn	
# of Perfs		38	
From/To		1,113	1,251
BD Press		2,831	
ATP Psi		2,598	
Avg Rate		28	
Max Press Psi		3,355	
ISIP Psi		1,806	
10min SIP	1,500		5 min.
		1.75	
Frac Gradient			
Sand Proppant		53.96	
Water-bbl		221	
SCF N2		254,278	
Acid-gal	1,000	gal 10% MSA	

Final Production

Final Production if Gas Zones are
commingled

**After
Stimulation
BOD**

MCFD

**Hours
Tested**

**Rock
Pressure**

90

0

240



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2098
Company:	EQT Production Company
File Number:	DI-2243
Completion Report Type:	Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coal Bed	Date Well Completed:	9/1/2009
Driller's Total Depth:	2376.00	Log's Total Depth:	2392.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
Treatment Summary 537794	Stage1.doc

3. Final Production

Description	FileName
Final Production 537794	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: EQT Production Company Date: 11/4/2009 (Company)

By: Michael D. Butcher Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 11/4/2009

Status: _____

Date: 3/30/2010

Final PDF Date: 4/21/2010

Stage1

Date 08/27/2009

FracType 65Q Foam
Zone Poca #6 Rdr/Poca #5/Poca .

of Perfs 32

From/To 2,266 2,046

BD Press 3,579

ATP Psi 2,490

Avg Rate 44

Max Press Psi 2,560

ISIP Psi 1,810

10min SIP 1,601 5 min.
 1.04

Frac Gradient

Sand Proppant 106.15

Water-bbl 330
SCF N2 402,651

Acid-gal gal 850
 7.5%HCL

Stage2

Date 08/27/2009

FracType 65Q Foam
Zone L Hrspn/X Sm/Poca #9/Bckl.

of Perfs 40

From/To 1,798 1,630

BD Press 3,806

ATP Psi 2,629

Avg Rate 39

Max Press Psi	3,019	
ISIP Psi	1,824	
10min SIP	1,647	5 min. 1.27
Frac Gradient		
Sand Proppant		207.26
Water-bbl	588	
SCF N2		753,015
Acid-gal	gal 7.5%HCL	350

Stage3

Date	08/27/2009	
FracType	65Q	Foam
Zone	U&M Hrspn/C- Sm/Wcrk/Unmd.	
# of Perfs	40	
From/To	1,585	1,324
BD Press	3,289	
ATP Psi	2,562	
Avg Rate	44	
Max Press Psi	2,703	
ISIP Psi	1,951	
10min SIP	1,545	5 min. 1.63
Frac Gradient		
Sand Proppant		151.74
Water-bbl	419	
SCF N2		475,165

Acid-gal gal 350
7.5%HCL

Stage4

Date 08/27/2009

FracType 65Q Foam
Zone GrsyCrk/ M&L Sbrd

of Perfs 39

From/To 1,256 1,151

BD Press 3,801

ATP Psi 2,467
Avg Rate 41

Max Press Psi 2,829

ISIP Psi 1,506

10min SIP 1,214 5 min.
1.46

Frac Gradient

Sand Proppant 166.58

Water-bbl 478
SCF N2 517,115

Acid-gal gal 350
7.5%HCL

Stage5

Date 08/27/2009

FracType 65Q Foam
Zone U Sbrd A/U
Sbrd

of Perfs 18

From/To	969	923
BD Press	3,426	
ATP Psi	2,461	
Avg Rate	36	
Max Press Psi	3,278	
ISIP Psi	1,319	
10min SIP	0	5 min. 1.58
Frac Gradient		
Sand Proppant		58.96
Water-bbl	188	
SCF N2		189,593
Acid-gal	gal 7.5%HCL	350

Final Production

After Stimulation

BOD

MCFD

Hours Tested

**Rock
Pressure**

Final Production if Gas Zones are commingled

15

0

240

TIL Date: 09/09/09 @ 16:30



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2067
Company:	EQT Production Company
File Number:	DI-2198
Completion Report Type:	Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coal Bed	Date Well Completed:	7/25/2009
Driller's Total Depth:	2387.00	Log's Total Depth:	2397.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
Treatment Summary 537795	Stage1.doc

3. Final Production

Description	FileName
Final Production 537795	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: EQT Production Company Date: 10/22/2009 (Company)

By: Michael D. Butcher Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 10/22/2009

Status: _____

Date: 3/29/2010

Final PDF Date: 4/13/2010

Stage1

Date 07/15/2009

FracType 65Q Foam
Zone Poca #6/#6 Rdr/#5/#5 Rdr

of Perfs 36

From/To 2,103 2,022

BD Press 3,327

ATP Psi 2,593

Avg Rate 39

Max Press Psi 3,098

ISIP Psi 1,750

10min SIP 1,750 5 min.
1.02

Frac Gradient

Sand Proppant 109.07

Water-bbl 322
SCF N2 415,105

Acid-gal gal 350
7.5%HCL

Stage2

Date 07/15/2009

FracType 65Q Foam
Zone X Seam/Poca
#8

of Perfs 20

From/To 1,874 1,736

BD Press 3,514

ATP Psi 2,949

Avg Rate	34	
Max Press Psi	3,650	
ISIP Psi	1,570	
10min SIP	1,570	5 min. 1.06
Frac Gradient		
Sand Proppant		66.27
Water-bbl	205	
SCF N2		299,713
Acid-gal	gal 7.5%HCL	350

Stage3

Date	07/15/2009	
FracType	65Q	Foam
Zone	Beckley	
# of Perfs	16	
From/To	1,625	1,621
BD Press	2,856	
ATP Psi	2,791	
Avg Rate	37	
Max Press Psi	3,292	
ISIP Psi	1,546	
10min SIP	1,546	5 min. 1.11
Frac Gradient		
Sand Proppant		76.21
Water-bbl	232	
SCF N2		295,487

Acid-gal gal 350
 7.5%HCL

Stage4

Date 07/15/2009

FracType 65Q Foam
 Zone U hrspn/C Sm/WrCrk

of Perfs 36

From/To 1,562 1,381

BD Press 2,749

ATP Psi 2,880
 Avg Rate 37

Max Press Psi 2,939

ISIP Psi 1,590

10min SIP 1,590 5 min.
 1.30

Frac Gradient

Sand Proppant 125.69

Water-bbl 396
 SCF N2 528,004

Acid-gal gal 350
 7.5%HCL

Stage5

Date 07/15/2009

FracType 65Q Foam
 Zone U Sbrd/GrsyCrk/M&L Sbrd

of Perfs 40

From/To 1,251 960

BD Press	2,140	
ATP Psi	2,312	
Avg Rate	44	
Max Press Psi	3,330	
ISIP Psi	1,143	
10min SIP	0	5 min. 1.34
Frac Gradient		
Sand Proppant		221.41
Water-bbl	618	
SCF N2		750,669
Acid-gal	gal 7.5%HCL	350

Final Production

After Stimulation

BOB

MCED

Hours Tested

**Peak
Production**

Final Production if Gas Zones are commingled

29

0

200



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2173
Company:	EQT Production Company
File Number:	DI-2213
Completion Report Type:	Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coal Bed	Date Well Completed:	7/29/2009
Driller's Total Depth:	2397.00	Log's Total Depth:	2408.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
Treatment Summary 537798	Stage1.doc

3. Final Production

Description	FileName
Final Production 537798	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: EQT Production Company Date: 11/30/2009 (Company)

By: Michael D. Butcher Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 11/30/2009

Status: _____

Date: 3/30/2010

Final PDF Date: 4/5/2010

Stage1

Date 07/18/2009

FracType 65Q Foam
Zone X Sm/Poca #6 Rdr/Poca #2

of Perfs 28

From/To 2,267 1,753

BD Press 3,061

ATP Psi 2,592

Avg Rate 45

Max Press Psi 3,090

ISIP Psi 1,670

10min SIP 1,355 5 min.
1.10

Frac Gradient

Sand Proppant 84.21

Water-bbl 276
SCF N2 314,668

Acid-gal gal 850
7.5%HCL

Stage2

Date 07/18/2009

FracType 65Q Foam
Zone C Sm Rdr/C
Sm/WrCrk/Bckly.

of Perfs 44

From/To 1,628 1,420

BD Press 2,579

ATP Psi 3,083

Avg Rate	35	
Max Press Psi	3,756	
ISIP Psi	1,746	
10min SIP	1,433	5 min. 1.38
Frac Gradient		
Sand Proppant		184.60
Water-bbl	551	
SCF N2		712,294
Acid-gal	gal 7.5%HCL	350

Stage3

Date	07/18/2009	
FracType	65Q	Foam
Zone	Unmd A&B/U Hrspn	
# of Perfs	34	
From/To	1,393	1,328
BD Press	2,602	
ATP Psi	2,739	
Avg Rate	40	
Max Press Psi	2,993	
ISIP Psi	1,893	
10min SIP	1,383	5 min. 1.58
Frac Gradient		
Sand Proppant		133.01
Water-bbl	407	
SCF N2		455,036

Acid-gal gal 350
7.5%HCL

Stage4

Date 07/18/2009

FracType 65Q Foam
Zone Greasy Crk/ M&L Seaboard

of Perfs 34

From/To 1,271 1,133

BD Press 2,602

ATP Psi 2,779

Avg Rate 39

Max Press Psi 3,619

ISIP Psi 1,063

10min SIP 0 5 min.
1.09

Frac Gradient

Sand Proppant 128.78

Water-bbl 390
SCF N2 440,787

Acid-gal gal 350
7.5%HCL

Final Production

After Stimulation

BOB

MCED

Hours Tested

**Peak
Production**

Final Production if Gas Zones are commingled

8

0

315



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416, Abingdon, VA 24212
Telephone: (276) 676-5423

Tracking Number: 1504
Company: Equitable Production Company
File Number: DI-1835
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coal Bed	Date Well Completed:	11/15/2007
Driller's Total Depth:	2370.00	Log's Total Depth:	2385.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
Treatment Summary 537799	Stage1.doc

3. Final Production

Description	FileName
Final Production 537799	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 11/13/2008 (Company)

By: Michael D. Butcher Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 11/13/2008

Status: _____

Date: 11/26/2008

Final PDF Date: 3/27/2009

Stage1

Date	11/08/2007		
FracType	70Q	Foam	
Zone			Poca #5/ Poca #2
# of Perfs			18
From/To		2,000	2,238
BD Press		3,089	
ATP Psi		2,736	
Avg Rate		33	
Max Press Psi		2,956	
ISIP Psi		1,805	
10min SIP	1,416		5 min.
Frac Gradient		1.03	
Sand Proppant		32.27	
Water-bbl		155	
SCF N2		174,777	
Acid-gal	500	gal	
		10%MSA	

Stage2

Date	11/08/2007		
FracType	70Q	Foam	
Zone			Bckly/L Hrspn/X Sm
# of Perfs			40
From/To		1,536	1,707
BD Press		2,340	
ATP Psi		2,452	
Avg Rate		43	

Max Press Psi		2,554	
ISIP Psi		1,821	
10min SIP	1,533		5 min.
		1.32	
Frac Gradient			
Sand Proppant			
		83.74	
Water-bbl		284	
SCF N2		343,592	
Acid-gal	1,000	gal	
		10%MSA	

Stage3

Date	11/08/2007		
FracType	70Q	Foam	
Zone			M Hrspn/WrCrk Rdr/WrCrk/U.
# of Perfs		40	
From/To		1,338	1,508
BD Press		2,318	
ATP Psi		3,179	
Avg Rate		31	
Max Press Psi		3,535	
ISIP Psi		2,347	
10min SIP	1,489		5 min.
		1.88	
Frac Gradient			
Sand Proppant			
		61.29	
Water-bbl		249	
SCF N2		290,631	

Acid-gal 1,000 gal
10%MSA

Stage4

Date 11/08/2007

FracType 70Q Foam
Zone U Horsepen

of Perfs 20

From/To 1,280 1,293

BD Press 3,327

ATP Psi 3,279

Avg Rate 18

Max Press Psi 3,582

ISIP Psi 2,907

10min SIP 1,845 5 min.

2.40

Frac Gradient

Sand Proppant

33.05

Water-bbl 139

SCF N2 180,045

Acid-gal 1,000 gal
10%MSA

Stage5

Date 11/08/2007

FracType 70Q Foam
Zone M&L Sbrd/Unmd A

of Perfs 40

From/To 1,091 1,213

BD Press		2,557	
ATP Psi		2,835	
Avg Rate		25	
Max Press Psi		3,142	
ISIP Psi		1,719	
10min SIP	1,250		5 min.
		1.71	
Frac Gradient			
Sand Proppant		89.40	
Water-bbl		272	
SCF N2		325,564	
Acid-gal	1,000	gal	
		10%MSA	

Final Production

After Stimulation

BOB

MCED

Hours Tested

**Peak
Production**

Final Production if Gas Zones are commingled

30

0

260



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	2153
Company:	EQT Production Company
File Number:	DI-2245
Completion Report Type:	Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Coal Bed	Date Well Completed:	9/4/2009
Driller's Total Depth:	2186.00	Log's Total Depth:	2193.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
Treatment Summary 537802	Stage1.doc

3. Final Production

Description	FileName
Final Production 537802	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: EQT Production Company Date: 11/16/2009 (Company)

By: Michael D. Butcher Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 11/16/2009

Status: _____

Date: 3/30/2010

Final PDF Date: 4/5/2010

Stage1

Date 08/28/2009

FracType	65Q	Foam
Zone	Poca #2/Poca #5	
# of Perfs	28	
From/To	2,068	1,829
BD Press	3,394	
ATP Psi	2,759	
Avg Rate	36	
Max Press Psi	3,005	
ISIP Psi	1,906	
10min SIP	1,538	5 min. 1.19
Frac Gradient		
Sand Proppant		108.72
Water-bbl	339	
SCF N2		435,846
Acid-gal	gal	850
	7.5% HCL	

Stage2

Date 08/28/2009

FracType	65Q	Foam
Zone	X Seam Rider/X Seam	
# of Perfs	20	
From/To	1,517	1,499
BD Press	2,632	
ATP Psi	2,644	

Avg Rate	39	
Max Press Psi	2,836	
ISIP Psi	1,724	
10min SIP	1,432	5 min. 1.30
Frac Gradient		
Sand Proppant		71.36
Water-bbl	219	
SCF N2		245,487
Acid-gal	gal 7.5%HCL	350

Stage3

Date	08/28/2009	
FracType	65Q	Foam
Zone	Lower Horsepen	
# of Perfs	18	
From/To	1,399	1,394
BD Press	3,646	
ATP Psi	2,563	
Avg Rate	38	
Max Press Psi	2,969	
ISIP Psi	1,504	
10min SIP	0	5 min. 1.23
Frac Gradient		
Sand Proppant		87.23
Water-bbl	263	

SCF N2 270,844

Acid-gal gal 350
7.5%HCL

Stage4

Date 08/28/2009

FracType 65Q Foam
Zone C Sm/WrCrk/Unnmd C

of Perfs 26

From/To 1,331 1,192

BD Press 2,924

ATP Psi 2,671
Avg Rate 38

Max Press Psi 2,928

ISIP Psi 1,633

10min SIP 1,285 5 min.
1.52

Frac Gradient

Sand Proppant 83.01

Water-bbl 253
SCF N2 275,267

Acid-gal gal 350
7.5%HCL

Stage5

Date 08/28/2009

FracType 65Q Foam
Zone L Sbrd/ Unmd A/ U&M
Hrspn

of Perfs 38

From/To	1,141	980
BD Press	2,352	
ATP Psi	2,512	
Avg Rate	37	
Max Press Psi	2,864	
ISIP Psi	1,667	
10min SIP	1,027	5 min. 1.85
Frac Gradient		
Sand Proppant		182.11
Water-bbl	523	
SCF N2		522,585
Acid-gal	gal 7.5%HCL	350

Final Production

After Stimulation

BOD

MCFD

Hours Tested

**Rock
Pressure**

Final Production if Gas Zones are commingled

17

0

300

TIL Date: 9/16/09



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416; Abingdon, VA 24212
Telephone: (276) 676-5423

Tracking Number: 120
Company: Equitable Production Company
File Number: DI-1573
Operations Name: VC-551306 W/PL
Operation Type: Coalbed/Pipeline
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: <u>Coalbed/Pipeline</u>	Date Well Completed: <u>12/2/2006</u>
Driller's Total Depth: <u>2,193</u>	Log's Total Depth: <u>2,206</u>

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

☒ Stimulated ☐ Not Stimulated ☐ Gob

Description	FileName
treatment summary	Stage1.doc

3. Final Production

Description	FileName
final production 551306	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 4/5/2007 3:41:33 PM (Company)

By: L. Todd Tetrick Title: Director of Drilling (Signature)

_____	_____
_____	_____
_____	_____

Stage1

Date	11/18/2006		
FracType	70Q	Foam	
Zone	X Sm Rdr/X Sm/Poca #5 Rdr.		
# of Perfs	39		
From/To	1,459	2,053	
BD Press	2,699		
ATP Psi	2,698		
Avg Rate	36		
Max Press Psi	2,961		
ISIP Psi	1,764		
10min SIP	1,523		5 min.
		1.10	
Frac Gradient			
Sand Proppant	95.00		
Water-bbl	307		
SCF N2	415,000		
Acid-gal	500	gal	
		10%MSA	

Stage2

Date	11/18/2006		
FracType	70Q	Foam	
Zone	Lower Horsepen		
# of Perfs	22		
From/To	1,386	1,392	
BD Press	3,077		

ATP Psi		3,094	
Avg Rate		24	
Max Press Psi		3,412	
ISIP Psi		1,971	
10min SIP	1,526		5 min.
		1.50	
Frac Gradient			
Sand Proppant		48.00	
Water-bbl		184	
SCF N2		244,000	
Acid-gal	1,000	gal	
		10%MSA	

Stage3

Date	11/18/2006		
FracType	70Q	Foam	
Zone	C Sm/WrCrk/Unmd C/ Bckly		
# of Perfs		34	
From/To		1,211	1,366
BD Press		2,038	
ATP Psi		2,990	
Avg Rate		31	
Max Press Psi		3,326	
ISIP Psi		1,712	
10min SIP	1,437		5 min.
		1.40	
Frac Gradient			

Sand Proppant		48.00
Water-bbl		209
SCF N2		262,000
Acid-gal	1,000	gal 10%MSA

Stage4

Date	11/18/2006		
FracType	70Q	Foam	
Zone	Unnmd A/ U&M Hrspn		
# of Perfs		32	
From/To		1,016	1,131
BD Press		2,431	
ATP Psi		2,748	
Avg Rate		34	
Max Press Psi		2,912	
ISIP Psi		1,688	
10min SIP	1,252		5 min.
		1.70	
Frac Gradient			

Sand Proppant		78.00
Water-bbl		251
SCF N2		275,000
Acid-gal	1,000	gal 10%MSA

Stage5

Date	11/18/2006
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FracType	70Q	Foam	
Zone			M&L Sbrd
# of Perfs			28
From/To			907
BD Press			2,145
ATP Psi			2,170
Avg Rate			44
Max Press Psi			2,421
ISIP Psi			1,183
10min SIP	978		5 min.
Frac Gradient			1.40
Sand Proppant			67.00
Water-bbl			242
SCF N2			267,000
Acid-gal	1,000		gal
			10%MSA

<u>Final Production</u>	<u>After Stimulation</u>	<u>MOED</u>	<u>Home Losses</u>
Final Production if Gas Zones are commingled		68	0



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9650

Tracking Number:	2406
Company:	Range Resources-Pine Mountain
File Number:	DI-2322
Completion Report Type:	Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Gas	Date Well Completed:	12/4/2009
Driller's Total Depth:	5080.00	Log's Total Depth:	5084.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
V-530051 Stimulation Record	V-530051 Stimulation.doc

3. Final Production

Description	FileName
V-530051 Final Production	Final_Prod.xls

4. Comments

Notes:

5. Signature

Permittee: Range Resources-Pine Mountain
Date: 3/22/2010 (Company)

By: Laura Murray
Title: Permit Specialist (Signature)

INTERNAL USE ONLY

Submit Date: 3/22/2010

Status: Approved Date: 3/5/2012

Final PDF Date: 3/6/2012

STIMULATION RECORD

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ZONE 1: Weir Formation Stimulated With: 75Q Foam
Perforated 4463 to 4486 feet No. of Perforations 20 Perforation Size .52
Formation Broke down at: 1568 PSIG Average Injection Rate: 36.8 BPM
ISIP 656 PSIG 2 Min SIP 0 PSIG Average Downhole Injection Pressure 2903 PSIG
Stimulated: ☒ Yes ☐ No Date Stimulated: 12/4/2009

ZONE 2: Big Lime Formation Stimulated With: 50Q Foam
Perforated 3730 to 4225 feet No. of Perforations 34 Perforation Size .33
Formation Broke down at: 1610 PSIG Average Injection Rate: 18.3 BPM
ISIP 920 PSIG 2 Min SIP 890 PSIG Average Downhole Injection Pressure 3065 PSIG
Stimulated: ☒ Yes ☐ No Date Stimulated: 12/4/2009

ZONE 3: Maxton Formation Stimulated With: 65Q Foam
Perforated 3032 to 3094 feet No. of Perforations 24 Perforation Size .42
Formation Broke down at: 3018 PSIG Average Injection Rate: 26.9 BPM
ISIP 992 PSIG 2 Min SIP 932 PSIG Average Downhole Injection Pressure 2673 PSIG
Stimulated: ☒ Yes ☐ No Date Stimulated: 12/4/2009

ZONE 4: Ravenclyff Formation Stimulated With: 65Q Foam
Perforated 2218 to 2304 feet No. of Perforations 24 Perforation Size .42
Formation Broke down at: 1503 PSIG Average Injection Rate: 31.5 BPM
ISIP 3247 PSIG 2 Min SIP 3098 PSIG Average Downhole Injection Pressure 3201 PSIG
Stimulated: ☒ Yes ☐ No Date Stimulated: 12/4/2009

Final Production After Stimulation				
	BOD	MCFD	Hours Tested	Rock Pressure
Zone 1				
Zone 2				
Zone 3				
Final/Commingled Zones		1612	3	500



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number: 2240
Company: Range Resources-Pine Mountain
File Number: DI-2124
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	<u>Horizontal Gas</u>	Date Well Completed:	<u>8/25/2009</u>
Driller's Total Depth:	<u>8730.00</u>	Log's Total Depth:	<u>0.00</u>

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
VH-530138 Stimulation Record	VH-530138 Stimulation.doc

3. Final Production

Description	FileName
VH-530138 Final Production	Final Prod.xls

4. Comments

Notes:

5. Signature

Permittee: Range Resources-Pine Mountain
Date: 1/7/2010 (Company)

By: Laura Murray
Title: Permit Specialist (Signature)

INTERNAL USE ONLY

Submit Date: 1/7/2010

Status:

Date: 6/2/2010

Final PDF Date: 6/10/2010

STIMULATION RECORD

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PACKER: 8521' / PORT @ 8628'

ZONE 1:	Huron	Formation Stimulated With:	N ₂
Perforated	8040 to _____ feet	No. of Perforations	Perforation Size
Formation Broke down at:	4665 PSIG	Average Injection Rate:	53.5 BPM
ISIP	0 PSIG	2 Min SIP	0 PSIG
Average Downhole Injection Pressure	5870	PSIG	
Stimulated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Stimulated:	8/25/2009

PACKER: 8217' – 8521' / PORT @ 8369'

ZONE 2:	Huron	Formation Stimulated With:	N ₂
Perforated	8369' to _____ feet	No. of Perforations	Perforation Size
Formation Broke down at:	3826 PSIG	Average Injection Rate:	51.5 BPM
ISIP	0 PSIG	2 Min SIP	0 PSIG
Average Downhole Injection Pressure	3826	PSIG	
Stimulated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Stimulated:	8/25/2009

PACKER: 7913' – 8217' / PORT @ 8067'

ZONE 3:	Huron	Formation Stimulated With:	N ₂
Perforated	8067' to _____ feet	No. of Perforations	Perforation Size
Formation Broke down at:	4606 PSIG	Average Injection Rate:	53.5 BPM
ISIP	0 PSIG	2 Min SIP	0 PSIG
Average Downhole Injection Pressure	4606	PSIG	
Stimulated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Stimulated:	8/25/2009

PACKER: 7610' – 7913' / PORT @ 7764'

ZONE 4:	Huron	Formation Stimulated With:	N ₂
Perforated	7764' to _____ feet	No. of Perforations	Perforation Size
Formation Broke down at:	4710 PSIG	Average Injection Rate:	54 BPM
ISIP	0 PSIG	2 Min SIP	0 PSIG
Average Downhole Injection Pressure	4710	PSIG	
Stimulated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Stimulated:	8/25/2009

PACKER: 7309' – 7610' / PORT @ 7463'

ZONE 5:	Huron	Formation Stimulated With:	N ₂
Perforated	7463' to _____ feet	No. of Perforations	Perforation Size
Formation Broke down at:	4664 PSIG	Average Injection Rate:	48.5 BPM
ISIP	3714 PSIG	2 Min SIP	3238 PSIG
Average Downhole Injection Pressure	4664	PSIG	
Stimulated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Stimulated:	8/25/2009

PACKER: 7006' – 7309' / PORT @ 7157'

ZONE 6:	Huron	Formation Stimulated With:	N ₂
Perforated	7157' to _____ feet	No. of Perforations	Perforation Size
Formation Broke down at:	4105 PSIG	Average Injection Rate:	42 BPM
ISIP	0 PSIG	2 Min SIP	0 PSIG
Average Downhole Injection Pressure	4105	PSIG	
Stimulated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Stimulated:	8/25/2009

PACKER: 6707' – 7006' / PORT @ 6859'

ZONE 7:	Huron	Formation Stimulated With:	N ₂
Perforated	6859' to _____ feet	No. of Perforations	Perforation Size
Formation Broke down at:	4480 PSIG	Average Injection Rate:	36.5 BPM
ISIP	0 PSIG	2 Min SIP	0 PSIG
Average Downhole Injection Pressure	4480	PSIG	
Stimulated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Stimulated:	8/25/2009

PACKER: 6406' – 6707' / PORT @ 6558'

ZONE 8: Huron

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Formation Stimulated With: N₂

Perforated 6558' to _____ feet No. of Perforations _____ Perforation Size _____

Formation Broke down at: 4601 PSIG Average Injection Rate: 43 BPM

ISIP 0 PSIG 2 Min SIP 0 PSIG Average Downhole Injection Pressure 4601 PSIG

Stimulated: ☒ Yes ☐ No Date Stimulated: 8/25/2009

PACKER: 6104' – 6406' / PORT @ 6258'

ZONE 9: Huron

Formation Stimulated With: N₂

Perforated 6258' to _____ feet No. of Perforations _____ Perforation Size _____

Formation Broke down at: 4512 PSIG Average Injection Rate: 52 BPM

ISIP 3808 PSIG 2 Min SIP 3594 PSIG Average Downhole Injection Pressure 4512 PSIG

Stimulated: ☒ Yes ☐ No Date Stimulated: 8/25/2009

Final Production After Stimulation				
	BOD	MCFD	Hours Tested	Rock Pressure
Zone 1				
Zone 2				
Zone 3				
Final/Commingled Zones		552	3	1260



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number: 9164
Company: EnerVest Operating, LLC
File Number: DI-1144
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	Gas	Date Well Completed:	4/7/2004
Driller's Total Depth:	5163.00	Log's Total Depth:	5163.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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2. Stimulation Record

Stimulation Status: ☒ Stimulated ☐ GOB ☐ Not Stimulated ☐ Service Well

Description	FileName
STIM	5DI1144_VWD_535517_EQT_DICKENSON.pdf

3. Final Production

Description	FileName
FINAL	5DI1144_VWD_535517_EQT_DICKENSON.pdf

4. Comments

Notes:

MATERIAL INSERTED BY DGO [7/13/2016, jhh]

5. Signature

Permittee: EnerVest Operating, LLC Date: 7/13/2016 (Company)

By: VICTORIA DUGAN Title: ***** (Signature)

INTERNAL USE ONLY

Submit Date: 7/13/2016

Status: _____

Date: 9/6/2016

Final PDF Date: 9/6/2016

DI-1144

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Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
276-676-5423

Permit: 5689

Well: WD535517

Completion Report

Well Type:

Date Well Completed 04/07/2004

Total Depth of Well: 5,163.00

LTD: 5,163.00

Attach the drilling report if not previously submitted. In addition, submit any changes in casing and tubing that were approved after the drilling report was submitted.

Stimulation Record

Zone 1

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:

Formation Broke Down at: PSIG Average Injection Rate: BPM

ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG

Stimulated: Yes: X No: Date Stimulated:

Zone 2

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:

Formation Broke Down at: PSIG Average Injection Rate: BPM

ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG

Stimulated: Yes: X No: Date Stimulated:

Zone 3

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:

Formation Broke Down at: PSIG Average Injection Rate: BPM

ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG

Stimulated: Yes: X No: Date Stimulated:

Zone 4

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:

Formation Broke Down at: PSIG Average Injection Rate: BPM

ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG

Stimulated: Yes: X No: Date Stimulated:

Final Production

After Stimulation

	<u>BOD</u>	<u>MCFD</u>	<u>Hours Tested</u>	<u>Rock Pressure</u>
Final Production if Gas Zones are commingled	179	0	0	

Permitee: EQUITABLE PRODUCTION COMPANY (Company)

By: Victor Nuzen (Signature)

Form DGO-GO-15
Rev 7/00

ENTERED

1144
7/22/05



Well: WD535517

Formation Record

Date Well Completed: 04/07/2004

Total Depth of Well: 5,163.00

Permit: 5689

Stage 1

Date	03/09/2004	
FracType	75Q	Foam
Zone	Weir	
# of Perfs	57	
From/To	4,468—	4,524
BD Press	1,401	
ATP Psi	2,044	
Avg Rate	47	
Max Press Psi	2,087	
ISIP Psi	1,941	
10min SIP	1,520	5 min.
Frac Gradient	0.49	
Sand Proppant	719.09	
Water-bbl	351	
SCF N2	646,000	
Acid-gal	750	gal
	5% HCL	

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Perforated: to No. of Perforations: Perforation Size:

Formation Broke Down at: PSIG Average Injection Rate: BPM

ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG

Stimulated: Yes: X No: Date Stimulated:

Zone 3

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:

Formation Broke Down at: PSIG Average Injection Rate: BPM

ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG

Stimulated: Yes: X No: Date Stimulated:

Zone 4

Formation Stimulated With:

Perforated: to No. of Perforations: Perforation Size:

Formation Broke Down at: PSIG Average Injection Rate: BPM

ISIP: PSIG 5 Min SIP PSIG Average Downhole Injection Pressure: PSIG

Stimulated: Yes: X No: Date Stimulated:

Final Production

After Stimulation

	<u>BOD</u>	<u>MCFD</u>	<u>Hours Tested</u>	<u>Rock Pressure</u>
Final Production if Gas Zones are commingled	179	0	0	

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7/22/05



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Formation Record

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From/To	4,468— 4,524
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Max Press Psi	2,087
ISIP Psi	1,941
10min SIP	1,520 5 min.
Frac Gradient	0.49
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