



August 30, 2023

Mr. James C. Bennett
Source Water & UIC Section
Water Division
U.S. EPA Region 3
Four Penn Center
1600 John F. Kennedy Blvd.
Philadelphia, PA 19103

Mr. Bennett:

EnerVest is submitting this permit application to renew Permit #VAS2D932BDIC Class II-D fluid disposal well in the Cane Creek area of 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
HSE Specialist
jlawson@enervest.net



UNDERGROUND INJECTION CONTROL

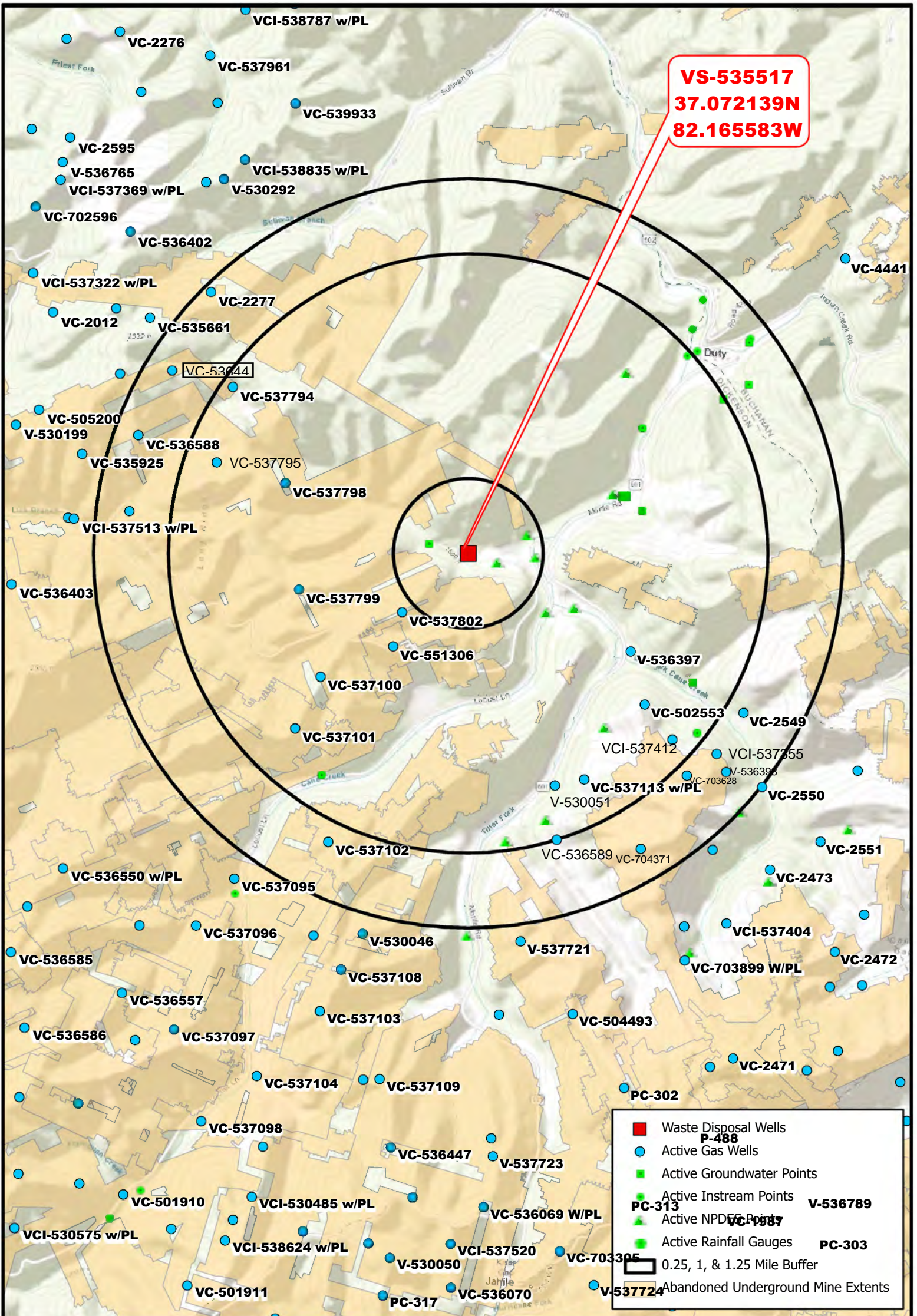
PERMIT RENEWAL APPLICATION

FOR CLASS II-D PRODUCTION FLUID DISPOSAL WELL

EXISTING WELL VS-535517
EPA # VAS2D932BDIC

NORA FIELD
DICKENSON COUNTY, VIRGINIA

AUGUST 2023



VS-535517
37.072139N
82.165583W

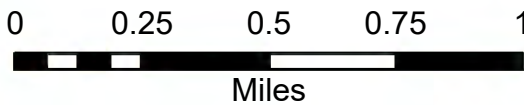
- Waste Disposal Wells **P-488**
- Active Gas Wells
- Active Groundwater Points
- Active Instream Points
- ▲ Active NPD **VC-1987**
- Active Rainfall Gauges **PC-303**
- 0.25, 1, & 1.25 Mile Buffer
- Abandoned Underground Mine Extents



Location Map



1 inch = 2,000 feet



VS-535517

Dickenson Co., Virginia



United States Environmental Protection Agency
Underground Injection Control
Permit Application for a Class II Well
(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, and 40 CFR Part 144)

For Official Use Only	
Date Received	
Permit Number	

Read Attached Instructions Before Starting

I. Owner Name, Address, Phone Number and/or Email	II. Operator Name, Address, Phone Number and/or Email
EnerVest Operating LLC 809 Happy Valley Dr. Clintwood, VA 24228 276-926-1300 jlawson@enervest.net	EnerVest Operating LLC 809 Happy Valley Dr Clintwood, VA 24228 276-926-1300 jlawson@enervest.net

III. Commercial Facility	IV. Ownership	V. Permit Action Requested	VI. SIC Code(s)	VII. Indian Country
Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private Federal State/Tribal/ Municipal	New Permit <input checked="" type="checkbox"/> Permit Renewal Modification Add Well to Area Permit Other	1311	Yes <input checked="" type="checkbox"/> No

VIII. Type of Permit (For multiple wells, use additional page(s) to provide the information requested for each additional well)

<input checked="" type="checkbox"/> A. Individual	Number of Wells	Well Field and/or Project Names
<input type="checkbox"/> B. Area	1	Nora

IX. Class and Type of Well (see reverse)

A. Class	B. Type (enter code(s))	C. If type code is "X," explain.
II	D	

X. Well Status	XI. Well Information
<input checked="" type="checkbox"/> A. Operating Date Injection Started 04/21/2004	<input type="checkbox"/> B. Conversion Date Well Constructed 02/01/2004
<input type="checkbox"/> C. Proposed	API Number 450510114400 Permit (or EPA ID) Number VAS2D932BDIC Full Well Name VWD-535517 Cane Creek SWD

XII. Location of Well or, for Multiple Wells, Approximate Center of Field or Project

Locate well in two directions from nearest lines of quarter section and drilling unit	Latitude 37 04 19.7
Surface Location ____ 1/4 of ____ 1/4 of Section Township Range ____ ft. from (N/S) Line of quarter section ____ ft. from (E/W) Line of quarter section.	Longitude -82 09 56.10

XIII. Attachments

In addition to this form, complete Attachments A-U (as appropriate for the specific well class) on separate sheets. Submit complete information, as required in the instructions and list all attachments, maps or other figures, by the applicable letter.

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)

Name and Official Title (Please Type or Print) Kevin Miller, VP	Signature <i>Kevin J. Miller</i>	Date Signed 06/01/2023
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INSTRUCTIONS FOR FORM 7520-6 (CLASS II WELLS)

A permit application must be completed by all owners or operators of current or proposed Class I, II, and III wells, and some Class V injection wells subject to the requirement to obtain an Underground Injection Control (UIC) permit as described at 40 CFR 144.31 and others directed by a UIC official to apply for a UIC permit. Please note that the information needs vary by well class. These instructions are specific to Class III wells; other versions are available for other well classes. Please note that this form must be signed by a responsible entity as described at 40 CFR 144.32, even if the attachments are prepared by contractors or service companies. If the application covers multiple wells, use additional pages as necessary to provide all the requested information.

I. OWNER NAME, ADDRESS, PHONE AND/OR EMAIL: Enter the name and street address, city/town, state, and ZIP code of the owner of the well, well field, or company. Also provide an email address (if available) and/or a phone number.

II. OPERATOR NAME, ADDRESS, PHONE AND/OR EMAIL: Enter the name and street address, city/town, state, and ZIP code of the operator of well or well field; also provide an email address (if available) and/or a phone number. If the operator is the same as the owner, enter "same as owner."

III. COMMERCIAL FACILITY: Check the appropriate box to indicate the type of facility. A commercial facility is a single or multiple well facility that is specifically engaged in the business of injecting waste fluids generated by third party producers that is originated off-site and transported to the facility by truck for a fee or compensation.

IV. OWNERSHIP: Check the appropriate box to indicate whether the owner of the well/facility is a private, Federal, or State/Tribal/Municipal entity.

V. TYPE OF PERMIT ACTION REQUESTED: Check "new permit" if the well has never been subject to a UIC permit (e.g., for a newly constructed or converted well). Check "permit renewal" for an application associated with extending an expiring UIC permit. Check "modification" for an application to modify an existing permit that is not expiring. Check "add well to area permit" if additional wells are to be covered under an existing UIC area permit. Check "other," if needed and describe the situation.

VI. SIC CODES: List at least one and no more than four Standard Industrial Classification (SIC) Codes that best describe the nature of the business in order of priority. A list of SIC codes is available from the U.S. Department of Labor at <https://www.osha.gov/pls/imis/sicsearch.html>.

VII. INDIAN COUNTRY: Check yes if the well is located in Indian country. Indian country (as defined in 18 U.S.C. 1151) includes: all land within the limits of any Indian reservation under the jurisdiction of the U.S. government; all dependent Indian communities within the borders of the U.S.; and all Indian allotments, the Indian titles to which have not been extinguished.

VIII. TYPE OF PERMIT: Check "Individual" or "Area" to indicate the type of permit requested. Individual permits cover a single injection well, while area permits may cover more than one injection well. Note that area permits are issued at the discretion of the Director and that wells covered by an area permit must: be at one contiguous site, be under the control of one entity, and may not inject hazardous waste. If an area permit is requested, enter the **number of wells** to be included in the permit. In the case of a project or field that crosses State lines, it may be possible to consider an area permit if EPA has jurisdiction in all affected States (each such case will be considered individually). Also provide the **name of the well field or project**.

IX. CLASS AND TYPE OF WELL: Enter the class (as defined in 40 CFR 144.6) and type of injection well for which a permit is requested. Use the most pertinent code selected from the table below. When selecting type "X", please explain in the space provided.

TABLE OF CLASS II WELL TYPES

A	Annular Disposal Well.
D	Produced Fluid Disposal Well.
H	Hydrocarbon Storage Well (excluding natural gas).
R	Enhanced Recovery Well.
X	Other Class II Wells (not included in Type "A," "D," "H," or "R").

X. WELL STATUS: Check **Box A, Operating** if the well currently operates as an injection well (e.g., if a permit renewal is requested or a permit is sought for an existing rule-authorized injection well). Check **Box B, Conversion** for an existing well not currently being utilized for injection that is proposed to be converted to an injection well. Check **Box C, Proposed** for an underground injection well not yet constructed or completed. Provide relevant dates if A or B are checked.

XI. WELL INFORMATION: Enter the **API number** (the number assigned by the local jurisdiction (usually a State Oil and Gas Agency) using the American Petroleum Institute standard numbering system). Enter the **Permit or EPA ID number** assigned to the injection well by the EPA or the permitting authority. If you do not have a number (e.g., for a new well), this will be provided by EPA or the permitting authority, and you can leave the field blank. Also enter the **Full Name of the Well** or project.

XII. LOCATION: For individual permit applications, in the fields provided, enter the location of the well using latitude and longitude and/or the Public Land Survey System. When using latitude and longitude, use decimal degrees to five or six places after the decimal, if possible; be sure to include a negative sign for the longitude of a well in the Western Hemisphere and a

negative sign for the latitude of a well in the Southern Hemisphere. When using the Public Land Survey System, fill in the complete township, range, and section to the nearest quarter-quarter section. A township is north or south of the baseline, and a range is east or west of the principal meridian (e.g., T12N, R34W). Also include the distance, in feet, from the nearest north or south line and nearest east or west line of the quarter-section. For area permit applications, provide the latitude and longitude of the approximate center of the area.

XIII. ATTACHMENTS: Specific instructions for completing the attachments are presented on pages 3 through 6. Place the permit or EPA ID number (or, if none has been assigned, other identifying information such as an API number or the project name) in the upper right hand corner of each page of the attachments.

XIV. CERTIFICATION: All permit applications must be signed by either: a responsible corporate officer for a corporation, by a general partner for a partnership, by the proprietor of a sole proprietorship, or by a principal executive or ranking elected official for a public agency, or a duly authorized representative of that person.

PAPERWORK REDUCTION ACT NOTICE: The public reporting and recordkeeping burden for this collection of information is estimated to average 61 hours per response for a Class II well permit application. Burden means the total time, effort, or financial resource expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal Agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to the collection of information; search data sources; complete and review the collection of information; and, transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques to Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822), 1200 Pennsylvania Ave., NW, Washington, DC 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.

Instructions for Completing Attachments to Form 7520-6 (Class II Wells)

The Underground Injection Control (UIC) program, as promulgated under the Safe Drinking Water Act (SDWA), is designed to prevent injection activity from allowing the movement of fluid containing any contaminant into underground sources of drinking water (USDWs), if the presence of that contaminant may cause a violation of any primary drinking water regulation or may otherwise adversely affect the health of persons as found at Title 40 of the Code of Federal Regulations (40 CFR) section 144.12. Any applicant for a permit under this program shall have the burden of showing that their proposed construction, operation, maintenance, conversion, plugging, abandonment, and injection activity, does not endanger USDWs.

The attachments below have been constructed to provide applicants with clear expectations as to what information EPA needs to make a determination that an applicant's proposed activities will not endanger USDWs.

Pre-Application Coordination

Coordination between the UIC program and the permit applicant prior to submittal of the permit application is an important step for efficient and effective permitting. Early discussions will ensure that the applicant is aware of all the permit application requirements, including state specific requirements found at 40 CFR part 147. These discussions may also help the applicant plan how to invest time and resources needed to develop a comprehensive and complete permit application.

Applicants are encouraged to contact their EPA regional UIC program for a pre-application coordination meeting.

Note: If the owner or operator of *existing rule authorized Class II UIC well(s)* is required by the EPA to apply for a permit (40 CFR § 144.25), consult with EPA staff during the pre-application coordination for additional requirements that may apply.

When completing each attachment, please be sure to specify the units reported, e.g., of depth, pressure, temperature, etc.

Attachment A. Map(s) and Area of Review

Part I. Well Location(s)

For Individual Permits: If the surface location provided in the accompanying 7520-6 form does not adequately describe the well location (i.e., due to deviation, directional, or horizontal drilling), please describe the well's orientation and provide the top- and bottom-hole coordinates, as appropriate. If any monitoring wells are proposed as part of this permit application, provide coordinates for all monitoring wells.

For Area Permits (40 CFR § 144.33): Provide information similar to what is outlined above for individual permits for each well (existing or proposed) to be covered by this permit. In addition, provide a description of the proposed permitted area. At a minimum, this area should include all the proposed or existing wells known at the time of permit application submittal. For circular areas, this description should consist of a defined-radius from a singular point whose coordinates have been given. For polygonal areas, use a series of coordinates describing the vertices or corners of the area. Submit a Geographic Information System (GIS) file, if available.

Part II. Area of Review Size Determination (40 CFR § 146.6)

For All Permits. Give the method (fixed radius or equation) and, if appropriate, all calculations used to determine the size of the area of review (AOR). If you are uncertain as to which method to use, consult with your regional EPA office.

The AOR must be a minimum radius of one-fourth (1/4) mile from the well bore, including a well's lateral, or the proposed area permit boundary for area permits, unless the use of an equation is approved by the Director.

In addition, for Class II enhanced oil recovery well(s). The AOR will be at a minimum the larger of the following: one-fourth (1/4) mile radius or the distance to the nearest active producer in the production formation.

Part III. Map(s) (40 CFR §§ 144.31 & 146.24)

Submit a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the facility property boundary showing:

- project injection well(s), well pad(s) and/or project area,
- applicable area of review,
- all outcrops of injection and confining formations,
- all surface water intake and discharge structures, and
- all hazardous waste treatment, storage, or disposal facilities.

Consult with your EPA regional office for the definition of the facility property boundary.

The information below does not apply to existing rule authorized Class II well(s).

Within the one-fourth (1/4) mile beyond the facility property boundary or the AOR, whichever is larger, the map will also show the:

- name and location of all production wells, injection wells, abandoned wells, dry holes, and all water wells, noting their types (public water system, domestic drinking water, stock, etc.),

- springs and surface bodies of water,
- mines (surface and subsurface) and quarries, and
- other pertinent surface features, including residences, schools, hospitals, and roads.

Only information of public record and pertinent information known to the applicant is required to be included on this map. Multiple maps may be needed to display this information clearly. If a certain feature is not present in the area covered, please state so definitively (e.g., "There are no known outcrops of the confining formation in the mapped area.").

Part IV, below does not apply to existing rule authorized Class II well(s).

Part IV. Area of Review Wells and Corrective Action Plans (40 CFR §§ 144.55 & 146.24)

Submit a tabulation of data and wellbore diagrams reasonably available from public records or otherwise known to the applicant on all wells within the AOR included on the map, which penetrate the proposed confining zone(s). Such information will include:

- well name, location and depth,
- well type,
- date well was drilled,
- well construction that includes casing and cement details, including demonstrated or calculated top of cement,
- cement bond logs (if available), and
- record of well completion and plugging (if applicable).

For such wells which are improperly sealed, completed, or abandoned, also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into USDWs.

Part V. Landowners Information (40 CFR § 144.31 and part 147)

Identify and submit a list with the names and addresses of all owners of record of land within one-fourth (1/4) mile of the facility property boundary. This requirement may be waived by the Regional Administrator if the site is in a populous area and the Regional Administrator determines that the requirement would be impracticable.

Consult with your regional EPA office, as additional state landowner notification requirements may apply (40 CFR part 147).

Attachment B. Geological and Geophysical Information

Part I. Geological Data (40 CFR § 146.24)

Provide the following information:

- geological data on all formations from the surface to the base of the injection well, identifying all USDWs and confining and injection zone(s). This data includes the lithologic description, geological name, thickness, depth, and total dissolved solids (TDS) concentrations from these formations (if known),
- source of information for the geologic data and formation TDS,
- porosity and permeability of injection formation (if available),
- geological cross-sections (if available) proximate to the injection well that includes the confining and injection zones. The cross-sections should illustrate the regional geologic setting and show the thickness and lateral continuity of the confining zone(s) through the area of review,
- within the AOR, identify known or suspected faults and fracture systems. If identified, provide proximity to the injection zone and the effect the fault/fracture system may have on the injection activities, and
- a history of seismic activity in the area and proximity to crystalline (i.e., granitic) basement.

Part II. Proposed Formation Testing Program (40 CFR § 146.22)

Provide a formation testing program to obtain data on:

- fluid pressure,
- estimated fracture pressure, and
- physical and chemical characteristics of the injection zone.

Attachment C. Well Construction/Conversion Information

Part I. Well Schematic Diagram (40 CFR § 146.24)

Provide a detailed proposed well schematic diagram that includes:

- identification of USDWs and confining and injection zones,
- casing and cementing details, including demonstrated or calculated top of cement,
- tubing and packer (if applicable),
- open hole or perforated intervals, and

- surface trace (if horizontal or deviated well).

For wells that are drilled and to be converted to an injection well, also provide the current well schematic diagram.

Part II. Well Construction or Conversion Procedures (40 CFR §§ 144.52, 146.22, & 146.24)

Provide detailed description of well construction or conversion procedures, that includes:

- proposed logs and other tests conducted during the drilling and construction of new well(s),
- proposed stimulation plan(s), if planned, and
- description of alarms and shut-down systems at the well (if applicable).

For wells that are drilled and to be converted to an injection well, also provide:

- well completion and cementing records, and
- previously run logs/tests.

Attachment D. Injection Operation and Monitoring Program (40 CFR §§ 146.23 & 146.24)

Submit the following information:

- flow diagram of fluid flow through the facility,
- contingency plan(s) to cope with well failure, so as to prevent migration of contaminating fluids into a USDW,
- drawing of the surface construction,
- locations of all monitoring devices (show on the map(s) referenced in section A.III. above), and
- description of sampling and monitoring devices to monitor the nature of the injected fluids, injection pressure, annulus pressure (if applicable), flowrate, and cumulative volume.

Hydrocarbon storage and enhanced recovery may be monitored on a field or project basis rather than on an individual well basis by manifold monitoring. If a manifold monitoring program is utilized, describe details of the monitoring program and how the program is comparable to individual well monitoring. Also, include on the map in section A.III.B, the distribution manifold applying injection fluid to all wells in the area, including location of all system monitoring locations.

Additionally, submit the following proposed operating data for each well in the individual or area permit:

- average and maximum daily rate and volume of fluids to be injected,
- average and maximum injection pressure,
- source(s) of injection fluids (including field and formation names),
- proposed annular fluid, and
- analysis of the chemical and physical characteristics of the injection fluid. At a minimum, this should include pH, specific gravity, TDS, and conductivity. Consult with the regional EPA office for additional guidance.

Attachment E. Plugging and Abandonment Plan (40 CFR §§ 144.31, 144.51 & 146.24)

Submit a plugging and abandonment (P&A) plan of the well on EPA Form 7520-19 along with a P&A diagram. The plan should include:

- type, and number of plugs to be used,
- placement of each plug including the elevation of top and bottom,
- type, grade, and quantity of cement to be used, and
- method of placement of the plugs.

Provide one or more cost estimates from an independent firm in the business of plugging and abandoning wells to conduct the work proposed in the P&A plan for EPA to contract plugging of the well. This is to ensure that EPA has adequate funding to plug the well(s) if the operator is unable to plug the well(s).

Consult with the regional EPA office for additional guidance on developing the P&A plan and cost estimate calculations.

Attachment F. Financial Assurance (40 CFR § 144.52)

Submit evidence of financial resources, such as a surety bond or financial statement, necessary for a third party to close, plug, or abandon the well in the event an owner or operator is unable to do so. The monetary amount is based on the P&A plan cost estimate provided in Attachment E.

Attachment G. Site Security and Manifest Requirements (Commercial Wells Only)

Provide a proposed site security plan. This could include fencing around the perimeter of the facility. Consult with the regional EPA office for additional guidance on manifest requirements.

Attachment H. Aquifer Exemptions (40 CFR §§ 144.7 & 146.4)

If an aquifer exemption (AE) is requested, submit the information required at 40 CFR § 144.7 and to demonstrate that the criteria found at 40 CFR § 146.4 are met. Consult with your regional EPA office for additional guidance.

Attachment I. Existing EPA Permits (40 CFR § 144.31)

Submit a listing of all permits or construction approvals received or applied for under any of the following programs:

- Hazardous Waste Management program under RCRA,
- UIC program under SDWA,
- NPDES program under CWA,
- Prevention of Significant Deterioration (PSD) program under the Clean Air Act,
- Nonattainment program under the Clean Air Act,
- National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act.
- Ocean dumping permits under the Marine Protection Research and Sanctuaries Act,
- Dredge and fill permits under section 404 of CWA, and
- Other relevant environmental permits, including State permits.

Attachment J. Description of Business (40 CFR § 144.31)

Provide a brief description of the nature of the business.

Attachment K. Optional Additional Project Information (40 CFR § 144.4)

The following is a list of Federal laws that may apply prior to the issuance of permits. When any of these laws are applicable, EPA must ensure that they are followed. The optional additional information requested below will assist EPA in its analyses to satisfy these laws.

- The Wild and Scenic Rivers Act, 16 U.S.C. 1273 et seq.
Identify any national wild and scenic river that may be impacted by the activities associated with the proposed project.
- The National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq.
Identify properties listed or eligible for listing in the National Register of Historic Places that may be affected by the activities associated with the proposed project. If previous historic and cultural resource survey(s) have been conducted, provide the results of the survey(s).
- The Endangered Species Act, 16 U.S.C. 1531 et seq.
Identify any endangered or threatened species that may be affected by the activities associated with the proposed project. If a previous endangered or threatened species survey has been conducted, provide the results of the survey.
- The Coastal Zone Management Act, 16 U.S.C. 1451 et seq.
Identify any coastal zones that may be affected by the activities associated with the proposed project.

INTRODUCTION

EnerVest Operating, LLC (EnerVest) in Clintwood, Virginia is submitting this permit application for a renewal of a Class II-D oil and gas production fluid disposal well. The existing permit VAS2D932BDIC and state number VS-535517 in Dickenson County, VA is a private injection well owned and operated by EnerVest.

The VS-535517 injection well is in the Cane Creek watershed of Dickenson County, Virginia. This permit application will present the necessary information and supporting documentation for renewing the well.

1.0 WELL LOCATION



State	Virginia
County	Dickenson
District	Ervinton
Latitude/Longitude	37.072121 N 82.165604 W
911 Address	3426 Monte Road Bee, VA 24217

Virginia Injection Well VS-535517 - Digital Plat attached

2.0 AREA OF REVIEW

The fixed radius of $\frac{1}{4}$ - miles from well VS-535517 was used for the area of review (AOR). All information presented and mapping provided are based upon the $\frac{1}{4}$ - mile radius using the proposed well as the center.

On some selective mapping, a radius of one mile, using Well VWD-535517 and the $\frac{1}{4}$ -mile AOR as the center, will be the area of review as required by this permit application.

3.0 AREA OF REVIEW MAPPING

Drawing 1 identifies the area within a one mile and $\frac{1}{4}$ -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 UIC well; inactive mining and water monitoring points within 1-mile of UIC well, and abandoned underground mine extents within 1-mile of UIC well.

MAP

- See mapping insert page. Injection Well Location, Area of Review Boundary (0.25-mile, 1.00-mile, and 1.25-mile), Name and Location of all known features (wells, mining, water bodies, etc.)
- The map was created from EnerVest's GIS department using company records and Division of Gas and oil files.**

4.0 AOR Review Wells

Within the one (1) mile radius of proposed UIC Well VS-535517, a total of 25 wells exist, based upon EnerVest and Virginia Division of Gas and Oil records in December 2022. These 25 wells consist of:

- Coal Bed Methane Wells – Twenty-one of the wells are coalbed methane (CBM) wells ranging in depth from 1,341 to 2,529 feet and are extracting methane gas from the shallow coal seams. No CBM wells are within ¼-mile of the proposed well. The CBM wells are identified further in Appendix C.
- Underground Injection Control Well – No UIC wells are active in the 1-mile radius of the Class II-D UIC VAS2D932BDIC
 - EPA Permit VAS2D932BDIC: injection formation Weir.
- Conventional Natural Gas Wells – four conventional wells exist within 1-mile radius of VS-535517. They range in depth from 5,080 feet in Berea formation to 6,312 feet in the Cleveland shale. No plugged or abandoned wells are known to exist within the ¼-mile radius of the UIC well.

The injection zone of this proposed UIC well is the Weir formation from 4,281 feet to 4,331 feet below surface elevation, the deepest coalbed methane well within the one-mile radius is 2,529 feet, which provides for a minimum separation of 1,752 feet from the top of the Weir to the deepest CBM in the one-mile area of review.

- Tabulation of Area of Review Wells - Appendix C follows this section with area of review wells. Along with drilling and completion reports for all wells in AOR.
- Existing Well Information – All wells within the Area of Review **identified by operator's well number, state file number and well type** for all known producing, abandoned, dry holes, and injection. This information was gathered from well and map records on file with the **Virginia Division of Gas and Oil and from EnerVest's company files.**

5.0 CORRECTIVE ACTION PLAN

The production fluid will be injected into proposed well VS-535517 at less than fracture pressure of the Weir formation. The maximum surface injection pressure will be 90% of Weir formation instantaneous shut-in pressure or less. Should this pressure or other operating and injection problems be encountered in Well VS-535517 the following will be undertaken:

- Immediately stop all injections and allow well to stabilize.
- If stabilization does not occur a plan will be submitted to correct the problem with workover or other means.
- If well cannot be stabilized and problems encountered cannot be corrected to satisfaction of the state and federal agencies, UIC Well will be plugged, as outlined in Attachment E of this renewal.

6.0 LANDOWNER INFORMATION

An information search for landowners in the 1/2 mile area of the proposed well bore includes one landowner. The 1/2-mile radius includes one public-owned surface owner but there are no houses or water wells on the property. The surface owner has purchased the tract from Heartwood Forest Fund.

Landowner	Contact Addresses
The Nature Conservancy c/o CF Highlands, LLC	CF Highlands, LLC c/o The Nature Conservancy 146 East Main Street Abingdon, VA 24210

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 siltstone portion of the Weir is the injection zone, 4281-feet to 4331-feet below ground surface.

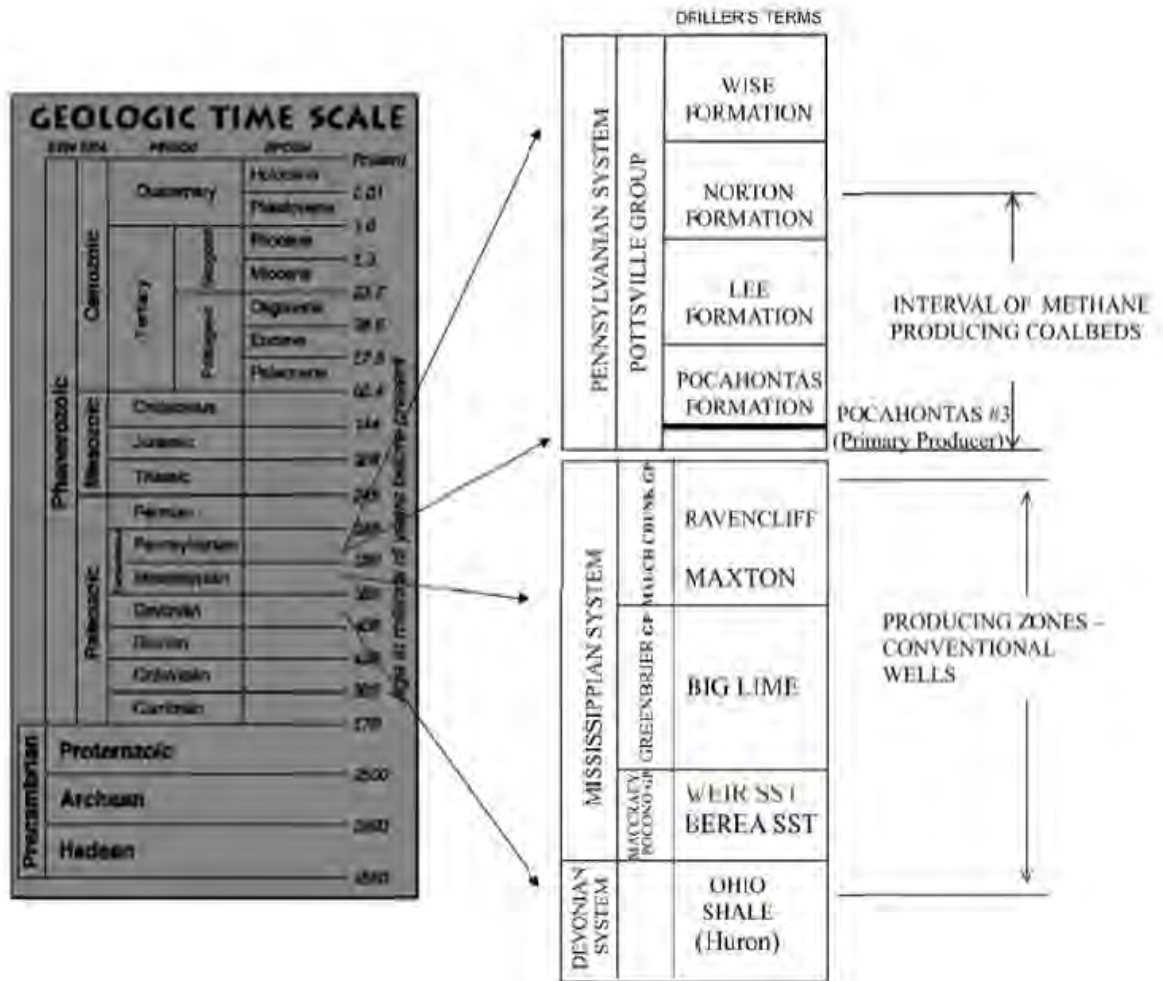


Figure B-1. Virginia Geologic Column

2.0 CONFINING ZONES

Laying directly on top of the Weir Formation is the Mississippian Keener, a 54-foot thick gray shale and the Mississippian Big Lime Formation consisting of dense carbonate, 518-feet thick. Situated below the Weir Formation is a 76-ft thick zone of dense, dark, highly organic “Sunbury” Shale, and a 74-foot thick section of Mississippian Berea formation, a fine-grained dirty siltstone. The bottom of the Big Lime Formation is located at 3,955-ft below ground surface and the top of the Berea Formation is located at 4,855-feet below ground surface.

GEOLOGICAL DATA (ESTIMATED)						
		DEPTH	THICKNESS			
FRESH WATER:	Possible at unknown depths					
SALT WATER:	Possible at unknown depths					
		NAME	DEPTH	THICKNESS	MINING IN AREA	MINE INDEX NUMBER
GAS AND OIL:	Base Lee Sand	1417'			No	
	Ravenclyff	2387'				
	Maxon	2830'				
	Little Lime	3429'				
	Big Lime	3437'				
	Weir	4181'				
	Sunbury	4789'				
	Berea	4855'				
	Cleveland	4860'				

Figure B-2. Geological Data

From the surface to Ravenclyff - sand, shale, and coal formations are found.

3.0 Fracture Pressure

The fracture pressure observed in UIC VWD-535517, where only the Weir was completed as reported by the completion report on file:

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

Weir Formation

Fracture Pressure	-	1,401 psig
Treatment Pressure	-	2,087 psig

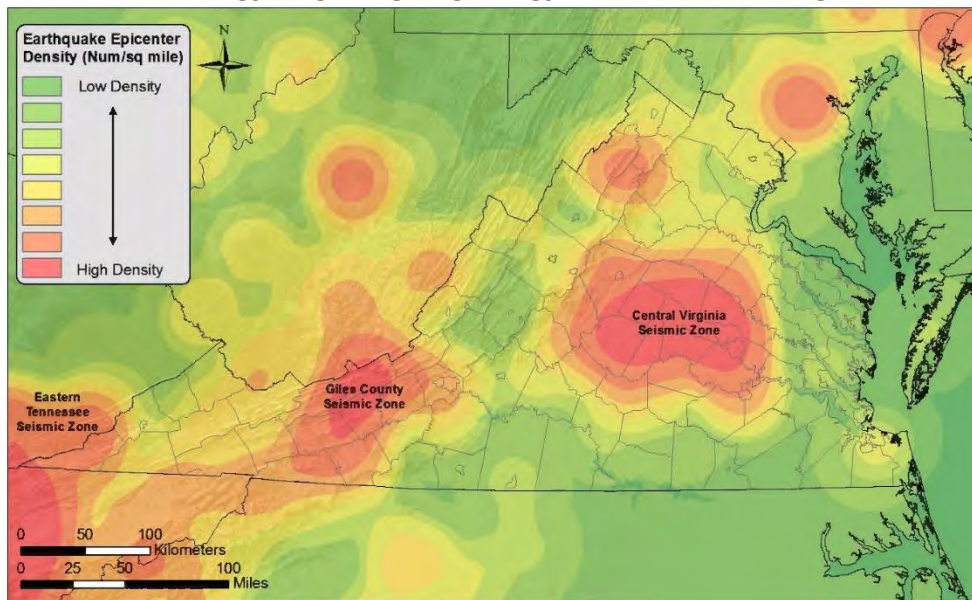
➤ **Instantaneous shut-in pressures (surface pressure)**

Weir Formation	1,941 psig
----------------	------------

Weir Porosity	5 - 6%
Weir Permeability	0.059mD

4.0 Seismic Activity

Seismic Zones in Virginia
 (<https://energy.virginia.gov/geology/EQHazardMapping.shtml>)



- **Local Seismic Activity.** Historically, seismic activity in Virginia has been minor. The faults that exist in the region were active during the Acadian and Alleghanian

Orogenies approximately 375 million to 260 million years ago. The VS-535517 well is in a region that is not susceptible to earthquakes since there are no active forces causing crustal movement.

5.0 Formation Testing Plan

Based upon EnerVest's extensive knowledge of the Weir formation in Dickenson and Buchanan County in Virginia and the operating history of the existing UIC wells operated by EnerVest, the Weir formation will continue to be utilized for the renewal of this well with no additional testing besides periodic mechanical integrity proposed.

6.0 Mechanical Integrity Testing

The renewed well's production casing will be integrity tested following the previously-approved procedures below.

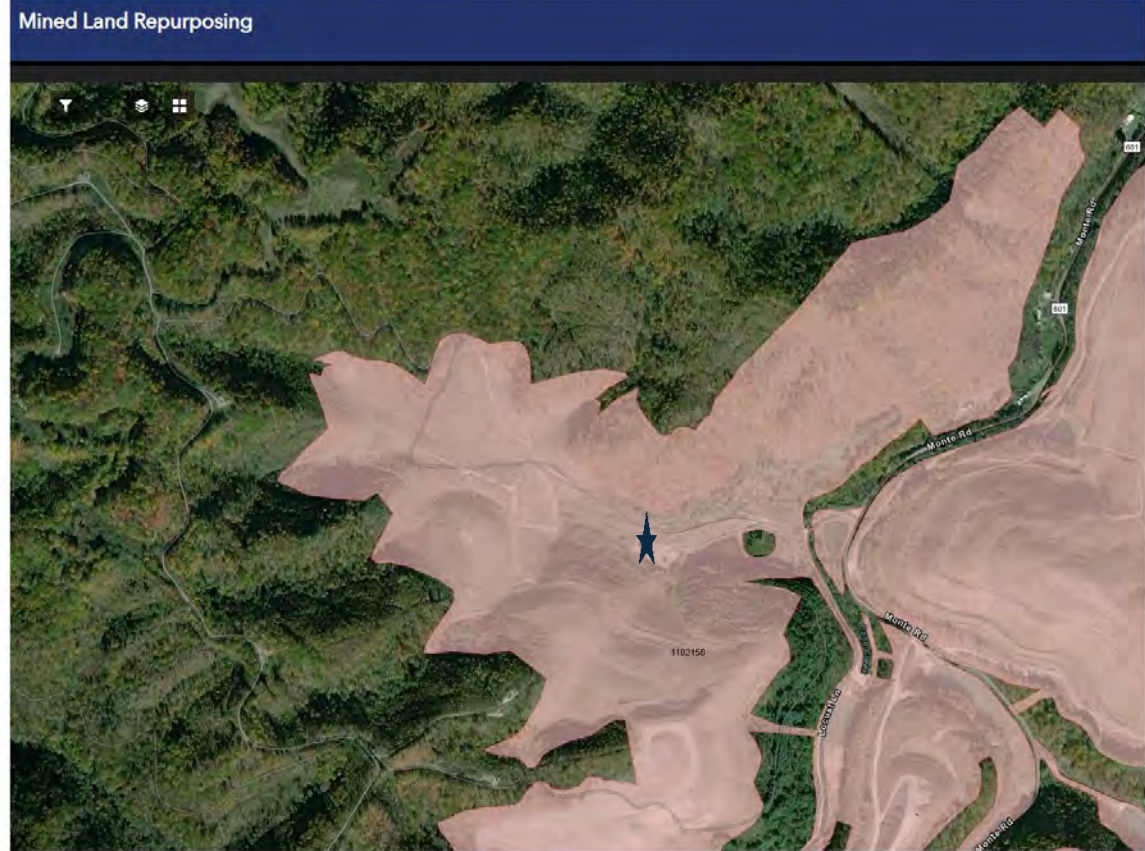
- Test to maximum surface injection pressure for the Weir Formation as approved in the permit and a safety factor of 110 percent.
- Fill the production casing to surface with freshwater and gradually pressure the casing to a minimum pressure described above at surface. Once the pressure has stabilized, it will be maintained (no more than 5% decrease) for 30 minutes at a minimum.
- The pressuring of the production casing and the test duration will be recorded by pressure chart and digital gauge, with the the pressure verified by a calibrated liquid filled pressure guage.
- The pressure will be monitored for 30 minutes and with no loss of pressure (no more than 5% decrease) during this time period the test will be terminated.
- Should a loss of pressure of the inability to establish the desired minimum test pressure occur, all testing will cease. The problem will be corrected and testing resumed based upon the concurrence of the Commonwealth of Virginia's Gas and Oil representative and US EPA Region III's representative present during the testing.
- The mechanical integrity testing will be witnessed by the VA DGO, US EPA Region III and EnerVest. With the successful completion of the mechanical integrity test, the pressure chart or form will be signed and dated by those witnessing the test.
- The test pressure will be relieved (vented) to normal operation following successful test.

Notifications will be made ten working days prior to commencing the testing programs.

7.0 MINING ACTIVITY

The area within ¼-mile radius of VS-535517 is a formerly surface mined area. This extensive surface mining was evident during field reconnaissance and documented by Virginia Division of Mine Land Reclamation (DMLR) files and mapping.

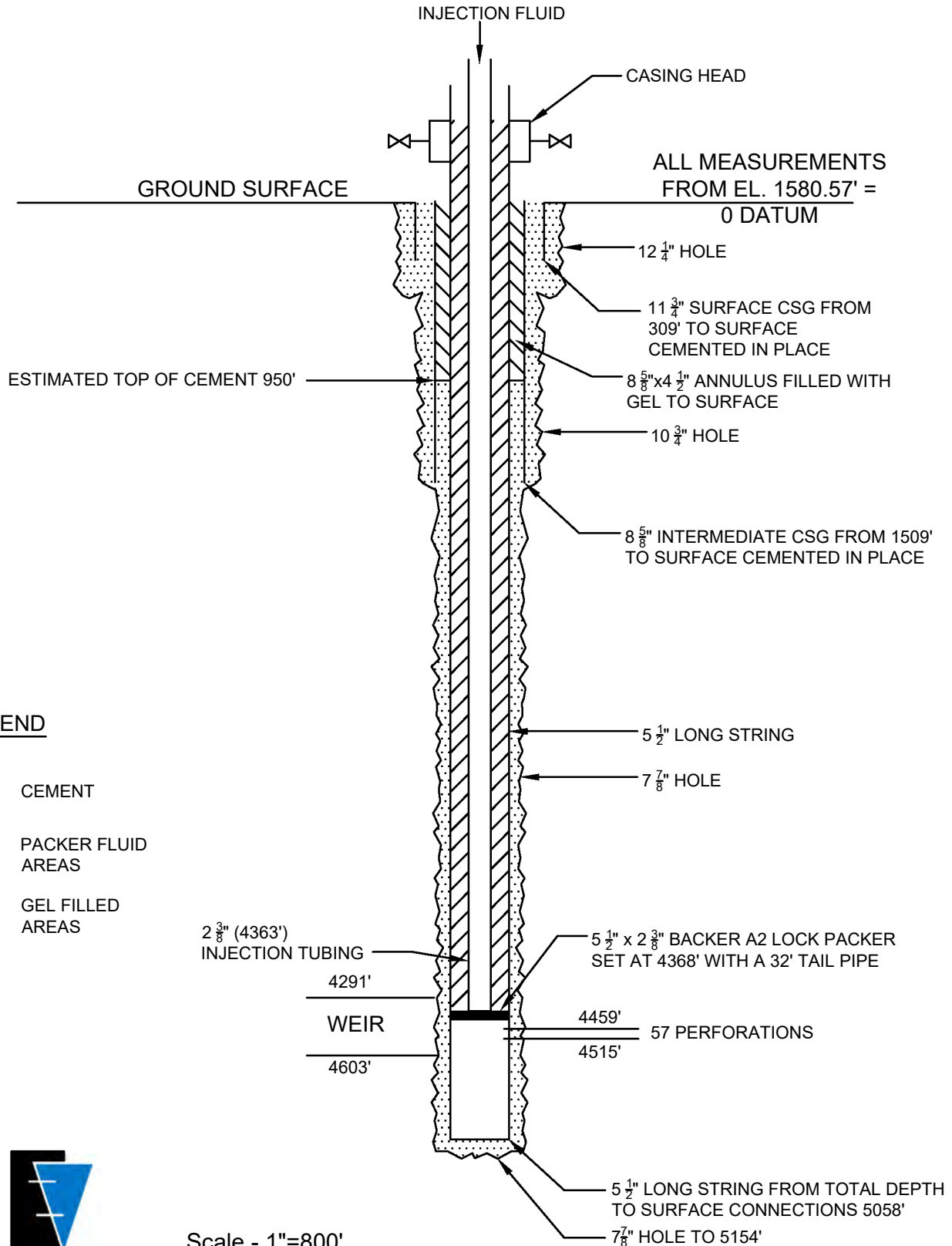
Virginia Energy Division of Mine Land Repurposing Mapping






EnerVest works closely with the mining company to ensure seamless operations.

VWD-535517 SWD DOWNHOLE SCHEMATIC

Permit # VAS2D932BDIC API # 45-051-01144 VA File # DI-1144



LEGEND

-  CEMENT
-  PACKER FLUID AREAS
-  GEL FILLED AREAS

Scale - 1"=800'
 Hole & Casing Exaggerated
 Date: 9/8/23

United States Environmental Protection Agency



WELL REWORK RECORD, PLUGGING AND ABANDONMENT PLAN, OR PLUGGING AND ABANDONMENT AFFIDAVIT

Name and Address, Phone Number and/or Email of Permittee
 EnerVest Operating, LLC
 809 Happy Valley Drive
 Clintwood, VA 24228
 276-926-1300
 ilandon@enervest.net

Permit or EPA ID Number VAS2D932BDIC	API Number 45-051-0114400	Full Well Name VS-535517 SWD Cane Creek
--	-------------------------------------	---

State Virginia	County Dickenson
--------------------------	----------------------------

Locate well in two directions from nearest lines of quarter section and drilling unit Latitude

Surface Location Longitude

1/4 of 1/4 of Section Township Range

ft. from (N/S) Line of quarter section
 ft. from (E/W) Line of quarter section.

Well Class	Timing of Action (pick one)	Type of Action (pick one)
<input type="checkbox"/> Class I <input checked="" type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Class V	<input checked="" type="checkbox"/> Notice Prior to Work Date Expected to Commence <input type="text"/> <input type="checkbox"/> Report After Work Date Work Ended <input type="text"/>	<input type="checkbox"/> Well Rework <input checked="" type="checkbox"/> Plugging and Abandonment <input type="checkbox"/> Conversion to a Non-Injection Well

Provide a narrative description of the work planned to be performed, or that was performed. Use additional pages as necessary. See instructions.

See Original (attached)

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) Kevin Miller, VP-Land	Signature 	Date Signed <input type="text" value="08/05/2023"/>
--	----------------------	---

INSTRUCTIONS FOR FORM 7520-19

This form replaces forms 7520-12 and 7520-14. Use this form only when work is planned or has occurred that affects the well's construction or operation as an injection well, including work on the casing, tubing or packer (or for shallow Class V wells, the subsurface fluid emplacement network). Use one form per injection well. While reports or other information developed by contractors or service companies may be attached, this form must be signed by a responsible entity as described at 40 CFR 144.32. Note: operators closing Class V wells should use Form 7520-17.

NAME, ADDRESS, PHONE AND/OR EMAIL OF PERMITTEE: Enter the name and street address, city/town, state, and ZIP code of the permittee. Also provide an email address (if available) and/or a phone number.

PERMIT OR EPA ID NUMBER: Enter the well identification number or permit number assigned to the well by the EPA or the permitting authority.

API NUMBER: Enter the number assigned by the local jurisdiction (usually a State Oil and Gas Agency) using the American Petroleum Institute standard numbering system.

FULL WELL NAME: Enter the full name of the well or project.

Enter the **STATE** and **COUNTY** where the well is located. For States that do not have counties, use the name of that State's equivalent jurisdiction at a more local level.

WELL LOCATION: Fill in the complete township, range, and section to the nearest quarter-quarter section. A township is north or south of the baseline, and a range is east or west of the principal meridian (e.g., T12N, R34W). Also include the distance, in feet, from the nearest north or south line and nearest east or west line of the quarter-section. Also, enter the **latitude** and **longitude** of the well in decimal degrees, to five or six places if possible; be sure to include a negative sign for the longitude of a well in the Western Hemisphere and a negative sign for the latitude of a well in the Southern Hemisphere.

Enter the **WELL CLASS**, i.e., the class of injection well as defined in 40 CFR 144.6.

TIMING OF THE ACTION: Check **Notice prior to work** if the activity has not yet occurred (i.e., is planned). Check **Report after work** if the activity described has already occurred. As appropriate, include the date the activity is expected to start or the date the activity was completed. (Note this may not be available, e.g., for a plugging plan submitted with a permit application.)

TYPE OF ACTION: Check the appropriate box to describe the kind of activity being reported. Check **Well Rework** for work that was/will be performed on the well after it has already been in operation as an injection well. Check **Plugging and Abandonment** to report on plans for or descriptions of final closure/plugging after use as an injection well. Check **Conversion to a Non-Injection Well** if the well is to be converted to something other than an injection well.

Provide a **NARRATIVE DESCRIPTION** of the work planned to be performed, or that was performed. The narrative should include a description of the main procedures planned or that occurred during the work activity. A service company report, daily report, or similar document may be attached if it includes all the requested information and is clear and legible.

For well reworks, include the following information: The reason for the well rework; depths of activity; type of activity; changes to injection well configuration, well casing, or cement behind casing; any plug added to the well and its depth; any newly drilled interval and its depth; method(s) to demonstrate that the well has mechanical integrity (as applicable); and any deviations from the approved rework plan (as applicable).

For a well plugging plan, include the following information: Reason for the well plugging; number of plugs placed, and their depths; materials used as plugs (e.g., cast iron bridge plug, cement, cement retainer); method to set plugs; and wait-on-cement times, if any. Also provide one or more cost estimates from an independent firm in the business of plugging and abandoning wells to plug the well as described in the plan.

For well plugging affidavit, include the following information: Reason for the well plugging; number of plugs placed, and their depths; materials used as plugs (e.g., cast iron bridge plug, cement, cement retainer); method to set plugs; wait-on-cement times, if any; and any deviations from the approved plugging plan (if applicable).

For conversion to a non-injection well, include the following information: Depths of activity; type of activity; changes to injection well configuration, well casing, or cement behind casing; any plug added to the well and its depth; any newly drilled interval and its depth; depths of new perforations; and method(s) to demonstrate that the well has mechanical integrity (as applicable).

For all of the above activities, include a well sketch depicting the work, results of well tests/logging performed, service company tickets, and any other available information demonstrating how the work was/is to be performed. Also, specify whether depths are below ground surface, relative to Kelly bushing, etc.

CERTIFICATION: This form must be signed and dated by either: a responsible corporate officer for a corporation, by a general partner for a partnership, by the proprietor of a sole proprietorship, or by a principal executive or ranking elected official for a public agency.

PAPERWORK REDUCTION ACT NOTICE: The public reporting and recordkeeping burden for this collection of information is estimated to average between 6.0 and 7.9 hours per response, depending on the injection well class. Burden means the total time, effort, or financial resource expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal Agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to the collection of information; search data sources; complete and review the collection of information; and, transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques to Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822), 1200 Pennsylvania Ave., NW., Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.



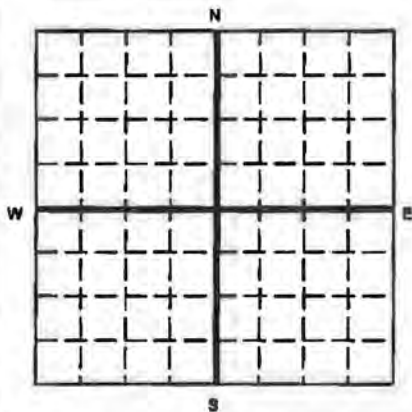
United States Environmental Protection Agency
Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility
Class II-D injection Well 535517
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 - 640 Acres



State Virginia County Dickenson Permit Number 837

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
 Individual Permit
 Area Permit
 Rule
 Number of Wells ___
 Lease Name Campbell Carter
 WELL ACTIVITY
 CLASS I
 CLASS II
 Brine Disposal
 Enhanced Recovery
 Hydrocarbon Storage
 CLASS III
 Well Number 535517

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
11 3/4	38	300'	300'	12 1/4"
8 5/8	24	1467'	1467'	10 3/4"
5 1/2	14	5060'	3710'	7 7/8"
2 3/8	4.7	4230'	0	---

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- The Balance Method
- The Dump Baller Method
- The Two-Plug Method
- Other

CEMENTING TO PLUG AND ABANDON DATA:		PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (Inches)		5 1/2"	5 1/2"	5.5-8 5/8"	8 5/8"			
Depth to Bottom of Tubing or Drill Pipe (ft)		5060	5060	1467	1467			
Sacks of Cement To Be Used (each plug)		25	25	30	38			
Slurry Volume To Be Pumped (cu. ft.)		129.8	129.8	115.7	197.2			
Calculated Top of Plug (ft.)		4595	4210	1300	Surface			
Measured Top of Plug (if tagged ft.)		---	---	---	---			
Slurry Wt. (Lb./Gal.)		14.8	14.8	14.8	14.8			
Type Cement or Other Material (Class III)		Class A	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
4281'	4331'	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

1.0 PLUGGING AND ABANDONMENT PLAN

The plugging and abandonment plan to be used to abandon the UIC well is illustrated by Figure 4. 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 tubing cannot be pulled, cut the tubing off just above the packer and pull the tubing.)
- Set a solid bridge plug 20' above the setting depth of the packer (4,190').
- Set a 100-foot cement plug from 3,487 feet to 3,387 feet.
- Cut 5 1/2-inch casing off at 1,350 feet.
- Pull 5 1/2-inch casing to surface and cement from 300 feet to surface.
- Install vent on the top of the 8 5/8-inch casing.
- 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.

With the plugging and abandonment of the UIC well, all surface equipment and facilities will be removed and the well site reclaimed and vegetated.

NOTES

1. ALL MEASUREMENTS FROM 0 DATUM OR GROUND SURFACE.
2. THE CEMENT BLEND WILL BE CLASS A WITH 2% GEL AND 2% CALCIUM CHLORIDE.

LEGEND

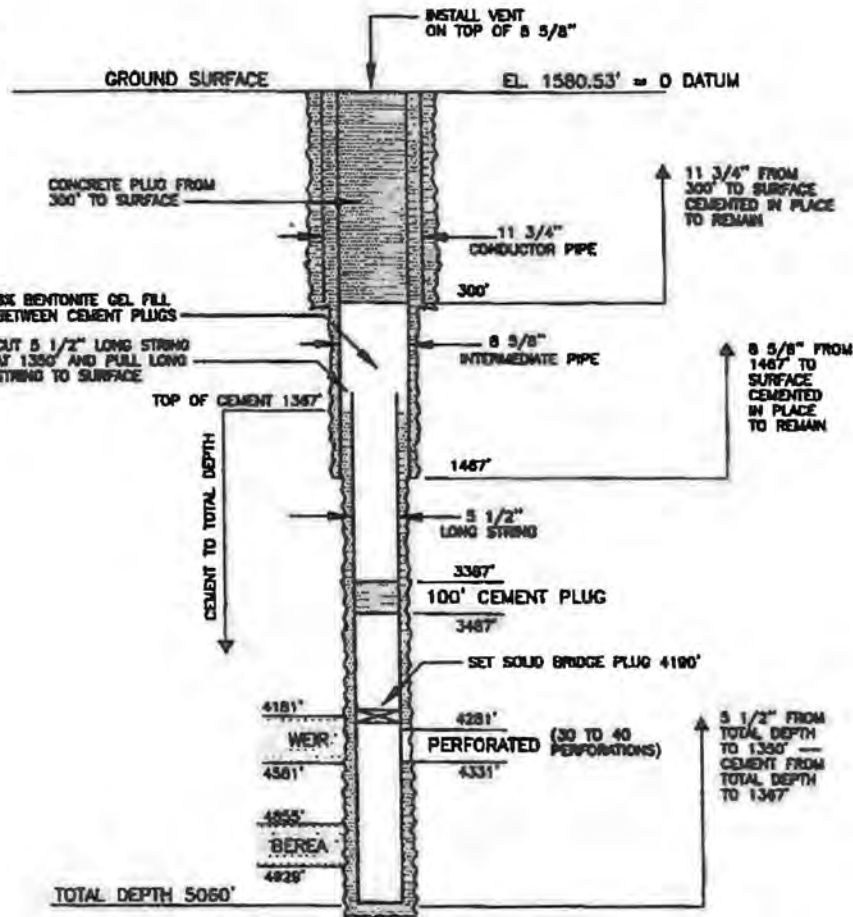


FIGURE 4
SCHEMATIC DIAGRAM
UIC WELL
PLUGGING & ABANDONMENT
EPC PRODUCTION COMPANY
NOVEMBER 2002
REVISED APRIL 8, 2003

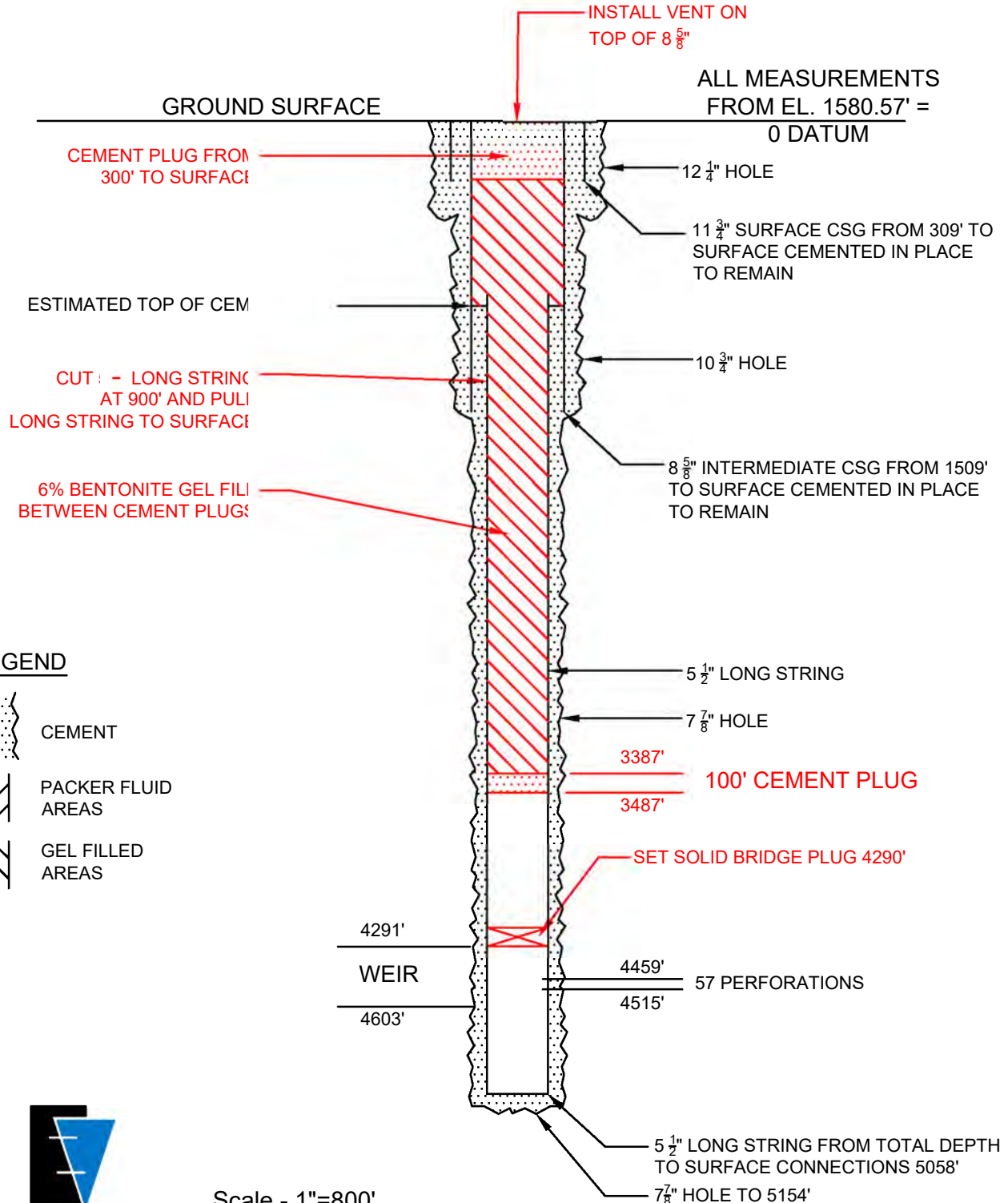
COMPANY WELL NO. VWD 535517
NOT TO SCALE

CAD FILE NO. 02-335-4 / DISK 1699

Drawn	RLA/SANC	12/02
Engineer	LMB	12/02
Checked	LMB	12/02
		Date

VWD-535517 SWD PLUGGING SCHEMATIC

Permit # VAS2D932BDIC API # 45-051-01144 VA File # DI-1144



Scale - 1"=800'
 Hole & Casing Exaggerated
 Date: 9/8/23



EWS

EAGLE WELL SERVICE INC

SALYERSVILLE, KY

CONTACT

Eagle Well Service Inc
PO Box 1666
Salyserville, KY 41465
(606) 349-4141

August 24, 2023

Mr. Landon,

Eagle Well Service Inc, would like to submit the following bid to plug Enervest Operating's salt water disposal well in VA for a turnkey price of **\$96,500.00**

This turnkey bid will include:

Rig time and labor

- Up to 8 days total to include rig time and labor along with power swivel, mills, and mud pump

Cementing services – cement mixing and pumping equipment

Cement – Class A (Class L) with 2% gel and 2% CaCl

Wireline services – including Cast Iron Bridge plug, perforating and casing cutting as listed in plugging procedure.

All hauling to and from location and well fluid disposal

All labor per deim and lodging

If changes to the plugging procedure are made, this bid will be adjusted accordingly. If you should have any questions, please do not hesitate to call. Thank you for this opportunity to quote this job for you!

Sincerely,
Brent Wright
Eagle Well Service Inc.
Cell: (740) 502-6171

Proposed Plugging Procedure

Well: 535517 SWD

File #:

Permit #:

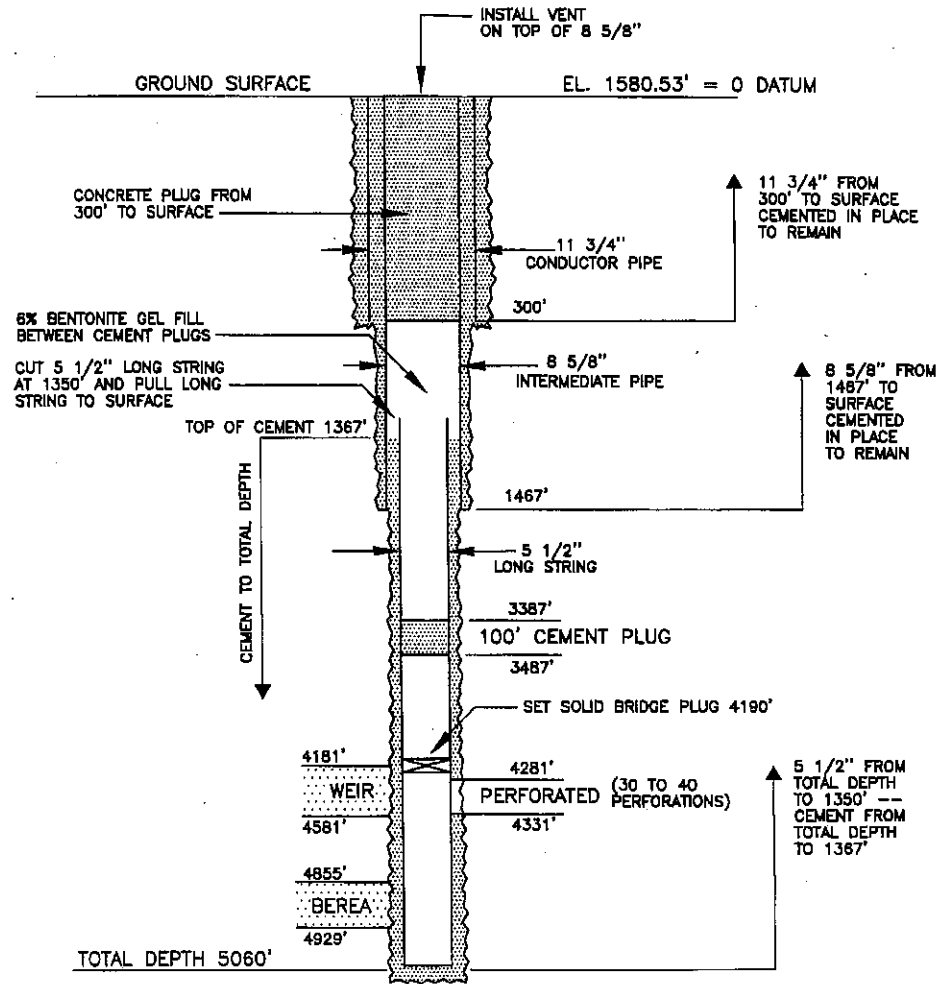
API #:

Procedure:

- Miru
- Kill well w/## lb/gal mud down tbg
- Release on/off tool and circulate out annulus w/## lb/gal mud
- Sting back on packer and release packer
- TOOH w/tbg and packer, removing SealTite collar inserts
- Set 5-1/2" CIBP w/wireline at 4190'
- TIH w/2-3/8" tbg to 4190', load hole w/6% gel
- TOOH to 3487', spot 100' cement plug (Class A + 2% gel + 2% CaCl₂), TOOH w/tbg, WOC
- Tag TOC w/wireline
- Cut 5-1/2" csg at 1350', TOOH w/csg
- TIH w/2-3/8" tbg to 300'
- Spot cem plug from 300' to surface (Class A + 2% gel + 2% CaCl₂)
- TOOH w/tbg, top off cem
- Install permanent marker at least 30" high with permittee's name (Enervest Operating, LLC), well name, permit number, and date the well was plugged.
- Rdmo

NOTES

1. ALL MEASUREMENTS FROM 0 DATUM OR GROUND SURFACE.
2. THE CEMENT BLEND WILL BE CLASS A WITH 2% GEL AND 2% CALCIUM CHLORIDE.



LEGEND

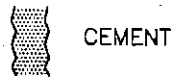


FIGURE 4
SCHEMATIC DIAGRAM
UIC WELL
PLUGGING & ABANDONMENT
EPC PRODUCTION COMPANY
NOVEMBER 2002
 REVISED APRIL 9, 2003

CAD FILE NO. 02-335-4 / DISK 1899

Drawn	KLA/SARC	12/02
Engineer	LMR	12/02
Checked	LMR	12/02
		Date

COMPANY WELL NO. VWD 535517
 NOT TO SCALE



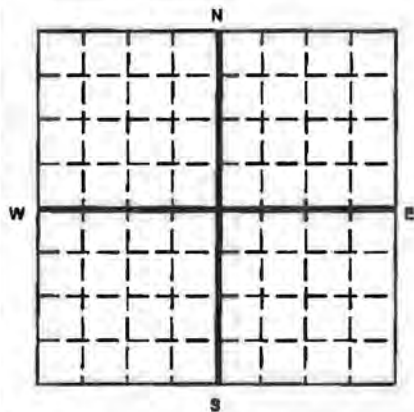
United States Environmental Protection Agency
Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility
Class II-D injection Well 535517
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 - 640 Acres



State Virginia County Dickenson Permit Number 837

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
 Individual Permit
 Area Permit
 Rule
Number of Wells ___

WELL ACTIVITY
 CLASS I
 CLASS II
 Brine Disposal
 Enhanced Recovery
 Hydrocarbon Storage
 CLASS III

Lease Name Campbell Carter Well Number 535517

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
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 The Dump Baller Method
 The Two-Plug Method
 Other

CEMENTING TO PLUG AND ABANDON DATA:

	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (Inches)	5 1/2"	5 1/2"	5.5-8 5/8"	8 5/8"			
Depth to Bottom of Tubing or Drill Pipe (ft)	5060	5060	1467	1467			
Sacks of Cement To Be Used (each plug)	25	25	30	38			
Slurry Volume To Be Pumped (cu. ft.)	129.8	129.8	115.7	197.2			
Calculated Top of Plug (ft.)	4595	4210	1300	Surface			
Measured Top of Plug (if tagged ft.)	---	---	---	---			
Slurry Wt. (Lb./Gal.)	14.8	14.8	14.8	14.8			
Type Cement or Other Material (Class III)	Class A	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
4281'	4331'	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
James McKinney

Date Signed

1.0 PLUGGING AND ABANDONMENT PLAN

The plugging and abandonment plan to be used to abandon the UIC well is illustrated by Figure 4. 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 tubing cannot be pulled, cut the tubing off just above the packer and pull the tubing.)
- Set a solid bridge plug 20' above the setting depth of the packer (4,190').
- Set a 100-foot cement plug from 3,487 feet to 3,387 feet.
- Cut 5 1/2-inch casing off at 1,350 feet.
- Pull 5 1/2-inch casing to surface and cement from 300 feet to surface.
- Install vent on the top of the 8 5/8-inch casing.
- 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.

With the plugging and abandonment of the UIC well, all surface equipment and facilities will be removed and the well site reclaimed and vegetated.

NOTES

1. ALL MEASUREMENTS FROM 0 DATUM OR GROUND SURFACE.
2. THE CEMENT BLEND WILL BE CLASS A WITH 2% GEL AND 2% CALCIUM CHLORIDE.

LEGEND

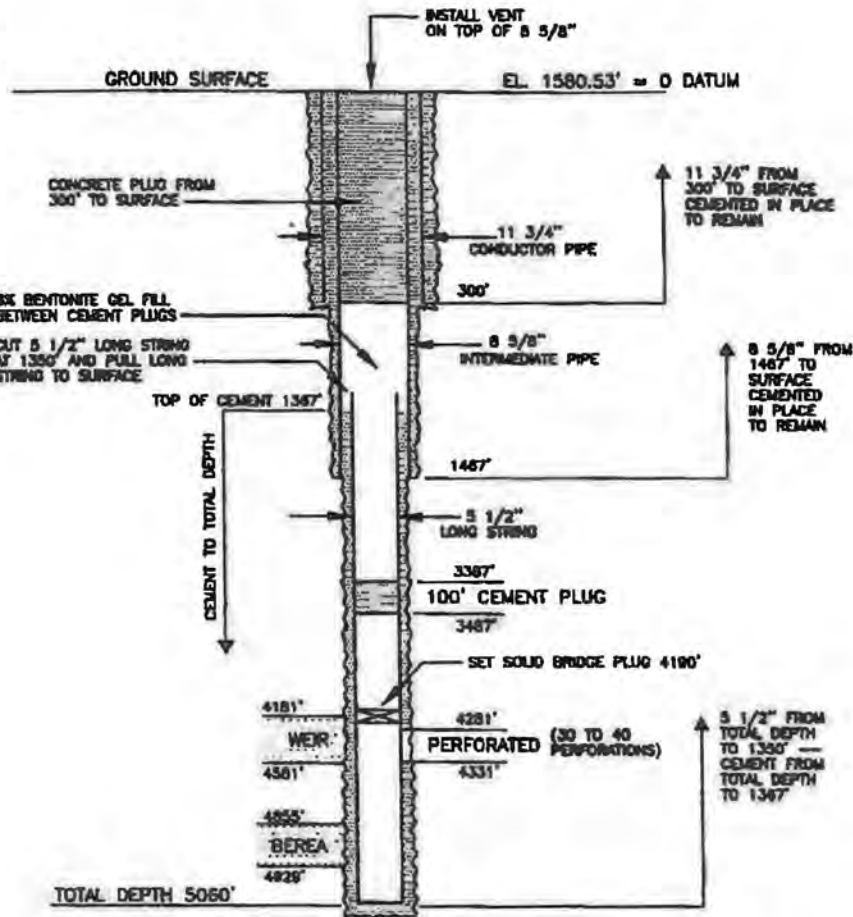


FIGURE 4
SCHEMATIC DIAGRAM
UIC WELL
PLUGGING & ABANDONMENT
EPC PRODUCTION COMPANY
NOVEMBER 2002
REVISED APRIL 8, 2003

COMPANY WELL NO. VWD 535517
NOT TO SCALE

CAD FILE NO. 02-335-4 / DISK 1699

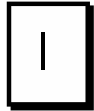
Drawn	RLA/SANC	12/02
Engineer	LMB	12/02
Checked	LMB	12/02
		Date



1.0 SURETY BOND

EnerVest has provided information to EPA Region 3 on the current surety bond for previous injection wells.

The surety is active and renewed annually with the third party insurer



1.0 EXISTING U.S. EPA PERMITS

EnerVest operates six existing UIC wells, recently plugging VAS2D927BDIC, and has permits for two undrilled UIC wells (Table I-1) in Dickenson County and Buchanan County, Virginia.

Table I-1. Existing EPA Permits

UIC Wells		
NORA		
State File #	Operation Name	EPA #
DI-0192	P-750132 WD	VAS2D947BDIC
DI-0203	P-143 (750143)	VAS2D907BDIC
DI-0220	P-148 (PLUGGED)	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

1.0 DESCRIPTION OF BUSINESS

EnerVest (www.EnerVest.net) is a private oil and gas company with 10,000 wells across 4 states, 1.5 million acres under lease and \$3 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 these produced fluids that EnerVest will dispose of in the renewed Class II-D disposal well.

V-535517 Waste Disposal Facility



502553 Final Completion Report.pdf
502553 Final Drilling Report.pdf
530051 Final Completion Report.pdf
530051 Final Drilling Report.pdf
536397 Final Completion Report.pdf
536397 Final Drilling Report.pdf
536398 Final Completion Report.pdf
536398 Final Drilling Report.pdf
536444 Final Completion Report.pdf
536444 Final Drilling Report.pdf
536588 Final Completion Report.pdf
536588 Final Drilling Report.pdf
536589 Final Completion Report.pdf
536589 Final Drilling Report.pdf
537100 Final Completion Report.pdf
537100 Final Drilling Report.pdf
537101 Final Completion Report.pdf
537101 Final Drilling Report.pdf
537102 Final Completion Report.pdf
537102 Final Drilling Report.pdf
537355 Final Completion Report.pdf
537355 Final Drilling Report.pdf
537412 Final Completion Report.pdf
537412 Final Drilling Report.pdf
537513 Final Completion Report.pdf
537513 Final Drilling Report.pdf
537713 Final Completion Report.pdf
537713 Final Drilling Report.pdf
537794 Final Completion Report.pdf

537794 Final Drilling Report.pdf
537795 Final Completion Report.pdf
537795 Final Drilling Report.pdf
537798 Final Completion Report.pdf
537798 Final Drilling Report.pdf
537799 Final Completion Report.pdf
537799 Final Drilling Report.pdf
537802 Final Completion Report.pdf
537802 Final Drilling Report.pdf
551306 Final Completion Report.pdf
551306 Final Drilling Report.pdf
703628 Final Completion Report.pdf
703628 Final Drilling Report.pdf
704371 Final Completion Report.pdf
704371 Final Drilling Report.pdf
2277 Final Completion Report.pdf
2277 Final Drilling Report.pdf
2549 Final Completion Report.pdf
2549 Final Drilling Report.pdf
2550 Final Completion Report.pdf
2550 Final Drilling Report.pdf



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: 85
Company: Equitable Production Company
File Number: DI-1551
Operations Name: VC-502553 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>9/7/2006</u>
Driller's Total Depth: <u>1,618</u>	Log's Total Depth: <u>1,627</u>

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

2. Stimulation Record

Stimulated Not Stimulated Gob

Description	FileName
502553	502553 COMPLETION.pdf

3. Final Production

Description	FileName
502553	502553 FINAL PRODUCTION.jpg

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 1/11/2007 8:49:56 AM (Company)

By: Todd Tetrick Title: Manager (Signature)

_____	_____
_____	_____
_____	_____

Well: VC502553
 Date Well Completed: 09/07/2006
 Total Depth of Well: 1,618.00
 Permit: 7448

Formation Record

Permit: 7448 Well: VC502553

Stage1		Stage2		Stage3	
Date	08/29/2006	Date	08/29/2006	Date	08/29/2006
FracType	70Q Foam	FracType	70Q Foam	FracType	70Q Foam
Zone	L Hrspn/x sm/poca#5	Zone	Unnamed C/ Beckley	Zone	M Hrspn/C Sm Rdr/C Sm/WrC
# of Perfs	28	# of Perfs	32	# of Perfs	34
From/To	1,016— 1,422	From/To	923— 959	From/To	760— 879
BD Press	1,573	BD Press	2,498	BD Press	3,095
ATP Psi	2,760	ATP Psi	2,740	ATP Psi	3,074
Avg Rate	33	Avg Rate	36	Avg Rate	13
Max Press Psi	3,004	Max Press Psi	3,370	Max Press Psi	3,792
ISIP Psi	1,690	ISIP Psi	1,821	ISIP Psi	3,088
10min SIP	1,429	10min SIP	1,402	10min SIP	2,654
5 min.		5 min.		5 min.	
Frac Gradient	1.79	Frac Gradient	2.10	Frac Gradient	4.19
Sand Proppant	50.25	Sand Proppant	74.03	Sand Proppant	15.74
Water-bbl	211	Water-bbl	268	Water-bbl	119
SCF N2	233,420	SCF N2	328,700	SCF N2	76,417
Acid-gal	500 gal	Acid-gal	1,000 gal	Acid-gal	1,000 gal
	10%MSA		10%MSA		10%MSA

Final Production

Final Production if Gas Zones
are commingled

After Stimulation

BOD

MCFD

Hours Tested

Rock Pressure

71
(In line)

0

250



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: 106
 Company: Equitable Production Company
 File Number: DI-1551
 Operations Name: VC-502553 W/PL
 Operation Type: Coalbed/Pipeline
 Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 8/16/2006 Drilling Contractor: GASCO
 Date drilling completed: 8/22/2006 Rig Type: Rotary Cable Tool
 Driller's Total Depth (feet): 1,618
 Log Total Depth (feet): 1,627 Coal Seam At Total Depth PENN COAL

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

Permitted State Plane X 933,893 Final Plat State Plane X: 933,892
 Permitted State Plane Y: 287,033 Final Plat State Plane Y: 287,034

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
502553	502553 WELL LOCATION PLAT (FINAL).pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
1,210	1/2	INCH

Salt Water At:

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

Coal Seams

List of Attached Items:

Description	FileName
502553	502553 COAL SEAMS.jpg

Gas and Oil Shows

List of Attached Items:

Description	FileName
502553	502553 GAS AND OIL SHOWS.jpg

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
502553	502553 SURVEY RESULTS.jpg

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
502553	502553 CASING AND TUBING.jpg

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.

Cement Baskets: 88

8. Drillers Log

Compiled By: Todd Tetrick

List of Attached Items:

Description	FileName
502553	502553 DRILLERS LOG.pdf

9. Comments

10. Signature

Permitee: Equitable Production Company Date: 1/11/2007 (Company)

Signed By: Todd Tetrick Title: Manager (Signature)

INTERNAL USE ONLY

Submit Date: 1/11/2007

Status: Inspr Approved

Date: 2/23/2007

Final PDF Date: 2/26/2007

8,690'

Well Coordinates: (Geographic N27)
37.065029° -82.154734°

Latitude 37° 05' 00"

Lease No. 241490L / T-432
David Tiller, Sr.
400.00 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 0.96 Ac. 1.63%

DMLR Permit
No. 1101955

DMLR Permit
No. 1101955

Longitude 82° 07' 30"

6,665'

1600'

300'

Lease No. 241490L / T-427
John L. Tiller
244.00 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 54.55 Ac. 92.82%

Left Fork

Heartwood Forestland Fund IV, L.P. - surface

S 58°06' W
206.60'
CBM
VC-502553

S 37°56' E
440.98'

Heartwood Forestland Fund IV, L.P. - surface

Lease No. 241640L / T2-164
Julia Fletcher
91.00 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 3.26 Ac. 5.55%



DMLR Permit
No. 1101955

The undersigned hereby certifies
that the final location is within ten
(10') feet of the location shown
on the well plat dated 5-09-2006.

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 287,034 E 933,892

Well Coordinates: (Cinchfield Coal Co.)
S 12,714.89 E 66,704.90

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-502553
TRACT NO. T-427 ELEVATION 1,834.54' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 8-18-2006

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

Coal Seams & Open Mines

<u>Type</u>	<u>From</u>
Coal	196'-97',298'-99',417'-19',425'-26',530'-31',535'-36',
Coal	660'-62',760'-61',822'-23',840'-41',849'-50',
Coal	881'-82',962'-63',1002'-03',1058'-59',1410'-13'

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</u>
195	No Show
415	No Show
603	No Show
791	No Show
1,010	No Show
1,197	No Show
1,415	No Show
1,618	TSTM

Survey Results

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
195	1/4
415	1/4
603	1/4
791	1/4
1,010	1/4
1,197	1/4
1,415	1/2
1,618	1/4

Casing Data

Casing Outside Diameter	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
12 3/4	0- 53	15				
8 5/8	0- 327	12 1/4	212.40	Y	08/16/2006	88
4 1/2	0- 1577	6 1/2	327.54	Y	08/21/2006	

<u>Tubing Size</u>	<u>Footage</u>
2 3/8	1,476.05
5/8	1480.1

Drillers Log


Permit: 7448

Well: VC502553

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Greasv Creek	402.00	403.80	1.80
shale	403.80	524.00	120.20
Middle Seaboard	524.00	526.00	2.00
shale	526.00	575.50	49.50
Lower Seaboard	575.50	577.70	2.20
shale	577.70	660.50	82.80
Unnamed A	660.50	664.80	4.30
shale	664.80	721.00	56.20
Upper Horsenen	721.00	722.00	1.00
shale	722.00	760.50	38.50
Middle Horsenen	760.50	762.50	2.00
shale	762.50	825.00	62.50
C Seam Rider	825.00	825.80	0.80
shale	825.80	846.00	20.20
C Seam	846.00	847.00	1.00
shale	847.00	877.50	30.50
War Creek	877.50	878.50	1.00
sandy shale	878.50	923.50	45.00
Unnamed C	923.50	924.50	1.00
sandy shale	924.50	953.00	28.50
Becklev	953.00	958.00	5.00
sandy shale	958.00	996.00	38.00
Lower Horsenen	996.00	997.20	1.20
sandy shale	997.20	1,049.00	51.80
X Seam	1,049.00	1,051.00	2.00
shale	1,051.00	1,067.00	16.00
Pocahontas #9	1,067.00	1,067.30	0.30
sand & shale	1,067.30	1,390.50	323.20
Pocahontas #5 Rider	1,390.50	1,391.30	0.80
sandy shale	1,391.30	1,420.50	29.20
Pocahontas #5	1,420.50	1,421.50	1.00
sandy shale	1,421.50	1,627.00	205.50

Total Depth of Well: 1,618.00

Permittee: EQUITABLE PRODUCTION COMPANY (Company)

By:  (Signature)
12/20/06



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
-------------	----------

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

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

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

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

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

Permitted State Plane X:	<u>10415295.3700</u>	Final Plat State Plane X:	<u>10415293.2800</u>
Permitted State Plane Y:	<u>3566479.3300</u>	Final Plat State Plane Y:	<u>3566482.4900</u>

Plat Previously Submitted Or... F

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

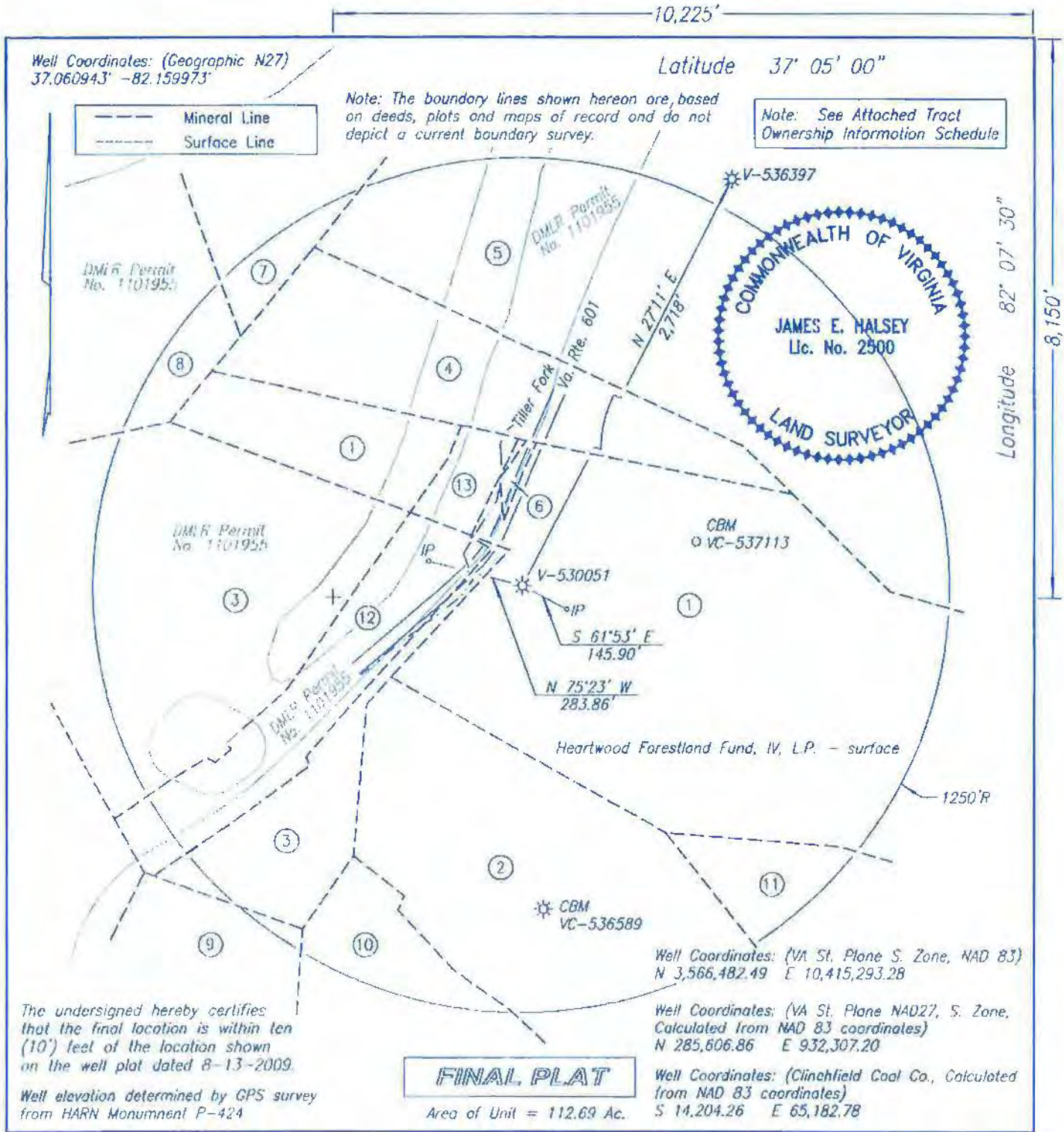
INTERNAL USE ONLY

Submit Date: 11/10/2011

Status: A

Date: 3/5/2012

Final PDF Date: 3/6/2012



Well Coordinates: (Geographic N27)
37.060943' -82.159973'

Latitude 37° 05' 00"

--- Mineral Line
- - - Surface Line

Note: The boundary lines shown hereon are based on deeds, plots and maps of record and do not depict a current boundary survey.

Note: See Attached Tract Ownership Information Schedule

Longitude 82° 07' 30"

8,150'

The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 8-13-2009.

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

FINAL PLAT

Area of Unit = 112.69 Ac.

Well Coordinates: (VA St. Plane S. Zone, NAD 83)
N 3,566,482.49 E 10,415,293.28

Well Coordinates: (VA St. Plane NAD27, S. Zone, Calculated from NAD 83 coordinates)
N 285,606.86 E 932,307.20

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

WELL LOCATION PLAT

COMPANY Range Resources - Pine Mountain, Inc. WELL NAME AND NUMBER V-530051
TRACT NO. Is. No. 906889/T2-166 ELEVATION 1,624.76' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervington SCALE 1" = 400' DATE 11-16-2009

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.

James E. Halsey
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
Ravenclyff	2050		NS		
Ravenclyff	2690		NS		
Maxton	3360		NS		
Big Lime	4810		odor		
Berea	5080		odor		

Survey Results

Depth of Survey	Direction/Distance/Degree From True Vertical
200'	1/4°
400'	1/4°
600'	1/4°
800'	1/4°
1000'	1/2°
1200'	1/2°
1400'	1/2°
1800'	1/2°

Driller's Log

Geologic Age	Formation	General		Depth		Thickness	Remarks
		Lithology	Color	Top	Bottom		
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: 9297
Company: EnerVest Operating, LLC
File Number: DI-1304
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Gas	Date Well Completed: 4/13/2005
Driller's Total Depth: 6018.00	Log's Total Depth: 6023.00

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	5DI1304_V536397WPL_EQT_DICKENSON.pdf

3. Final Production

Description	FileName
FINAL	5DI1304_V536397WPL_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: 8/10/2016

Final PDF Date: 8/10/2016

DI-1304
JAH

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

Permit: 6410 Well: V536397

Completion Report

Well Type: Gas Well

Date Well Completed 04/13/2005 Total Depth of Well: 6,018.00 LTD: 6,023.00

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>MCED</u>	<u>Hours Tested</u>	<u>Rock Pressure</u>
Final Production if Gas Zones are commingled	797		0	0

Permitee: EQUITABLE PRODUCTION COMPANY (Company)

By: Victoria Dugan (Signature)

ENTERED

JAB
12/29/05



Well: V536397
 Date Well Completed: 04/13/2005
 Total Depth of Well: 6,018.00
 Permit: 6410

Formation Record

Permit: 6410 Well: V536397

Stage1		Stage2		Stage3		Stage4		Stage5	
Date	04/09/2005	Date	06/25/2005	Date	06/26/2005	Date	06/26/2005	Date	06/28/2005
FracType	85Q Foam	FracType	65Q Foam	FracType	75Q Foam	FracType	Acid w/ N2	FracType	65Q Foam
Zone	Lower Huron	Zone	Upper Shale	Zone	Weir	Zone	Big Lime	Zone	Ravencliff
# of Perfs	40	# of Perfs	30	# of Perfs	25	# of Perfs	20	# of Perfs	20
From/To	5,866— 5,933	From/To	4,850— 5,103	From/To	4,397— 4,431	From/To	3,894— 3,913	From/To	2,212— 2,235
BD Press	0	BD Press	3,036	BD Press	3,269	BD Press	4,181	BD Press	2,719
ATP Psi	3,251	ATP Psi	2,992	ATP Psi	2,782	ATP Psi	3,701	ATP Psi	2,781
Avg Rate	19	Avg Rate	42	Avg Rate	35	Avg Rate	27	Avg Rate	26
Max Press Psi	3,654	Max Press Psi	3,077	Max Press Psi	2,988	Max Press Psi	4,181	Max Press Psi	2,860
ISIP Psi	2,683	ISIP Psi	2,206	ISIP Psi	1,802	ISIP Psi	3,140	ISIP Psi	1,924
10min SIP	2,586 5 min.	10min SIP	2,027 5 min.	10min SIP	1,655 5 min.	10min SIP	2,795 5 min.	10min SIP	1,570 5 min.
Frac Gradient	0.60	Frac Gradient	0.64	Frac Gradient	0.60	Frac Gradient	0.92	Frac Gradient	1.09
Sand Proppant	514.92	Sand Proppant	503.26	Sand Proppant	207.30	Sand Proppant	0.00	Sand Proppant	305.91
Water-bbl	375	Water-bbl	310	Water-bbl	110	Water-bbl	0	Water-bbl	395
SCF N2	1,604,788	SCF N2	823,370	SCF N2	272,200	SCF N2	233,793	SCF N2	370,500
Acid-gal	500 gal 0% MSA	Acid-gal	500 gal 7.5%	Acid-gal	500 gal 15%HCL	Acid-gal	2,500 gal 15%HCL	Acid-gal	500 gal 15%HCL

DI-1304
JAH

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

Permit: 6410 Well: V536397

Completion Report

Well Type: Gas Well

Date Well Completed 04/13/2005 Total Depth of Well: 6,018.00 LTD: 6,023.00

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	797		0	0

Permitee: EQUITABLE PRODUCTION COMPANY (Company)

By: Victoria Dugan (Signature)

ENTERED

JAB
12/29/05



Well: V536397
 Date Well Completed: 04/13/2005
 Total Depth of Well: 6,018.00
 Permit: 6410

Formation Record

Permit: 6410 Well: V536397

Stage1		Stage2		Stage3		Stage4		Stage5	
Date	04/09/2005	Date	06/25/2005	Date	06/26/2005	Date	06/26/2005	Date	06/28/2005
FracType	85Q Foam	FracType	65Q Foam	FracType	75Q Foam	FracType	Acid w/ N2	FracType	65Q Foam
Zone	Lower Huron	Zone	Upper Shale	Zone	Weir	Zone	Big Lime	Zone	Ravencliff
# of Perfs	40	# of Perfs	30	# of Perfs	25	# of Perfs	20	# of Perfs	20
From/To	5,866— 5,933	From/To	4,850— 5,103	From/To	4,397— 4,431	From/To	3,894— 3,913	From/To	2,212— 2,235
BD Press	0	BD Press	3,036	BD Press	3,269	BD Press	4,181	BD Press	2,719
ATP Psi	3,251	ATP Psi	2,992	ATP Psi	2,782	ATP Psi	3,701	ATP Psi	2,781
Avg Rate	19	Avg Rate	42	Avg Rate	35	Avg Rate	27	Avg Rate	26
Max Press Psi	3,654	Max Press Psi	3,077	Max Press Psi	2,988	Max Press Psi	4,181	Max Press Psi	2,860
ISIP Psi	2,683	ISIP Psi	2,206	ISIP Psi	1,802	ISIP Psi	3,140	ISIP Psi	1,924
10min SIP	2,586 5 min.	10min SIP	2,027 5 min.	10min SIP	1,655 5 min.	10min SIP	2,795 5 min.	10min SIP	1,570 5 min.
Frac Gradient	0.60	Frac Gradient	0.64	Frac Gradient	0.60	Frac Gradient	0.92	Frac Gradient	1.09
Sand Proppant	514.92	Sand Proppant	503.26	Sand Proppant	207.30	Sand Proppant	0.00	Sand Proppant	305.91
Water-bbl	375	Water-bbl	310	Water-bbl	110	Water-bbl	0	Water-bbl	395
SCF N2	1,604,788	SCF N2	823,370	SCF N2	272,200	SCF N2	233,793	SCF N2	370,500
Acid-gal	500 gal 0% MSA	Acid-gal	500 gal 7.5%	Acid-gal	500 gal 15%HCL	Acid-gal	2,500 gal 15%HCL	Acid-gal	500 gal 15%HCL



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:	9367
Company:	EnerVest Operating, LLC
File Number:	DI-1304
Operations Name:	V-536397
Operation Type:	Gas
Drilling Report Type:	Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	3/21/2005	Drilling Contractor:	GASCO
Date drilling completed:	3/29/2005	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	6018.00		
Log Total Depth (feet):	6023.00	Formation At Total Depth	LOWER HURON

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

Permitted State Plane X:	10416628.7200	Final Plat State Plane X:	10416628.0000
Permitted State Plane Y:	3568849.0700	Final Plat State Plane Y:	3568849.0000

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
PLAT	1DI1304_V536397WPL_EQT_DICKENSON.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
230	2	INCH
380	WET	
97	1.5	INCH

Salt Water At:

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

Coal Seams:

List of Attached Items:

Description	FileName
COAL	2DI1304_V536397WPL_EQT_DICKENSON.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
GAS	2DI1304_V536397WPL_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	3DI1304_V536397WPL_EQT_DICKENSON.pdf

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
CASING	3DI1304_V536397WPL_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	4DI1304_V536397WPL_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: 8/10/2016

Final PDF Date: 8/10/2016



8,980'

Latitude 37° 05' 00"

Well Coordinates: (Geographic N27)
37.067579° -82.155697°

The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 10-21-2004.

Lease No. 241490L / T-432
David Tiller Sr.
348.88 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
Gas 46.57 Ac. 41.33%

Lease No. 241640L / T2-163
Lon Kiser
32.00 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
Gas 1.72 Ac. 1.52%

DMLR Permit No. 1101150

DMLR Permit No. 1101218

DMLR Permit No. 1101218

DMLR Permit No. 1301224

DMLR Permit No. 1101150

Lease No. 241640L / T2-164
Julia Fletcher
91.00 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
Gas 15.76 Ac. 13.99%

Lease No. 241490L / T-427
John L. Tiller
244 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
Gas 48.64 Ac. 43.16%

DMLR Permit No. 1101150

Well Coordinates: (Va. St. Plane S. Zone, NAD 27, calculated from CCC coordinates)
N 287,973 E 933,648

Well Coordinates: (Cinchfield Coal Co.)
S 11,786.18 E 66,424.27

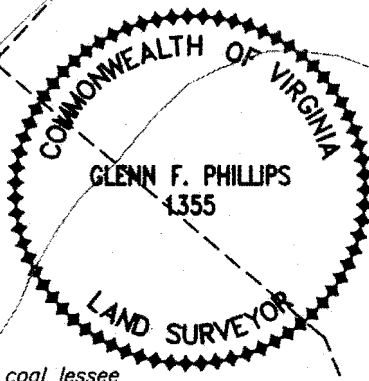
FINAL PLAT

Area of Unit = 112.69 Ac.

Well elevation determined by GPS survey from Mon. Barn

Longitude 82° 07' 30"

5,740'



WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER V-536397
TRACT NO. T-427 ELEVATION 1,593.74' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervington SCALE 1" = 400' DATE 3-23-2005

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

Permit: 6410 Well: V536397

Drilling Report

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

Drilling Data

Date Drilling Commenced: 03/21/2005 **Drilling Contractor:** Gasco
Date Drilling Completed: 03/29/2005
Date Well Completed: 04/13/2005 **Rig Type:** **Rotary:** X **Cable Tool:**
DTD: 6,018.00
LTD: 6,023.00

Geological Data

<u>Type</u>	<u>From / GPM per Inch</u>
Fresh water	1.5" stream @ 97' 2" stream @ 230
Fresh water	Went wet @ 380'

Coal Seams & Open Mines

<u>Type</u>	<u>From</u>
Coal	160'-61',200'-01',335'-36',385'-86',465'-66'
Coal	568'-69',635'-36',720'-21',755'-56',820'-21'
Coal	870'-70',1150'-51',1270'-71'
Coal	1388'-89',1420'-21',1520'-21'

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</u>
2,354	no show
3,109	no show
4,210	no show

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

Permit: 6410 Well: V536397

Drilling Report

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

Drilling Data

Date Drilling Commenced: 03/21/2005 Drilling Contractor: Gasco
Date Drilling Completed: 03/29/2005
Date Well Completed: 04/13/2005 Rig Type: Rotary: X Cable Tool:
DTD: 6,018.00
LTD: 6,023.00

Geological Data

Type	From / GPM per Inch
Fresh water	1.5" stream @ 97' 2" stream @ 230
Fresh water	Went wet @ 380'

Coal Seams & Open Mines

Type	From
Coal	160'-61', 200'-01', 335'-36', 385'-86', 465'-66'
Coal	568'-69', 635'-36', 720'-21', 755'-56', 820'-21'
Coal	870'-70', 1150'-51', 1270'-71'
Coal	1388'-89', 1420'-21', 1520'-21'

Gas and Oil Shows

Gas Tests

Depth	Remarks
2,354	no show
3,109	no show
4,210	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>
197	1/4
380	1/4
569	1/4
757	1/4
945	1/4
1,134	1/4

Casing Data

<u>Casing Outside Diameter</u>	<u>Casing Interval</u>	<u>Hole Size</u>	<u>Cement used in Cu. ft.</u>	<u>Cmtd To Surface</u>	<u>Date Cemented</u>	<u>Cement Baskets</u>
16	0- 20	17 1/2				
11 3/4	0- 270	15	177.50		03/22/2005	88
7	0- 1295	8 7/8	443.20		03/23/2005	309
4 1/2	0- 6002	6 3/8	591.80		03/29/2005	

<u>Tubing Size</u>	<u>Footage</u>
2 3/8	5,839.85

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>
197	1/4
380	1/4
569	1/4
757	1/4
945	1/4
1,134	1/4

Casing Data

<u>Casing Outside Diameter</u>	<u>Casing Interval</u>	<u>Hole Size</u>	<u>Cement used in Cu. ft.</u>	<u>Cmtd To Surface</u>	<u>Date Cemented</u>	<u>Cement Baskets</u>
16	0- 20	17 1/2				
11 3/4	0- 270	15	177.50		03/22/2005	88
7	0- 1295	8 7/8	443.20		03/23/2005	309
4 1/2	0- 6002	6 3/8	591.80		03/29/2005	

<u>Tubing Size</u>	<u>Footage</u>
2 3/8	5,839.85

Drillers Log

Permit: 6410

Well: V536397

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Base LEE	0.00	1,268.00	0.00
RVCF	2,160.00	2,327.00	167.00
AVIS	2,327.00	2,402.00	75.00
MXTN	2,478.00	2,676.00	198.00
LLIM	3,370.00	3,437.00	67.00
BGLM	3,419.00	4,212.00	793.00
WEIR	4,212.00	4,510.00	298.00
WEIR Sh	4,510.00	4,792.00	282.00
SNBY	4,792.00	4,865.00	73.00
BEREA	4,865.00	4,873.00	8.00
CLEV	4,873.00	0.00	0.00
LHRN	5,851.00	0.00	0.00

Total Depth of Well: 6,018.00

Permitee: 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: 9265
Company: EnerVest Operating, LLC
File Number: DI-1281
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Gas	Date Well Completed: 6/7/2005
Driller's Total Depth: 6300.00	Log's Total Depth: 6312.00

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	5DI1281_V536398 WPL_EQT_DICKENSON.pdf

3. Final Production

Description	FileName
FINAL	5DI1281_V536398 WPL_EQT_DICKENSON.pdf

4. Comments

Notes:

MATERIAL INSERTED BY DGO [8/1/2016, jhh]

5. Signature

Permittee: EnerVest Operating, LLC Date: 8/1/2016 (Company)

By: VICTORIA DUGAN Title: *** (Signature)

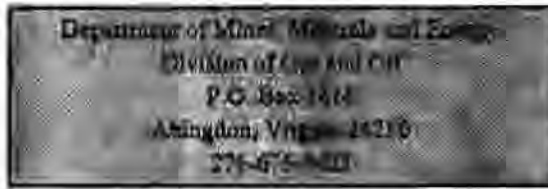
INTERNAL USE ONLY

Submit Date: 8/1/2016

Status: _____

Date: 8/10/2016

Final PDF Date: 8/10/2016



Permit: 6321

Well: VS36398

DI-1281
JAH

Completion Report

Well Type: Gas Well

Date Well Completed 06/07/2005 Total Depth of Well: 6,300.00 LTD: 6,312.00

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	677		0	240

Permitee: EQUITABLE PRODUCTION COMPANY (Company)

By: Victoria Duzan (Signature)

Form DGO-GO-15
Rev 7/00

JAH
12/29/05



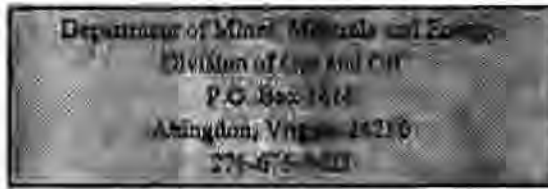
ENTERED

Well: V536398
 Date Well Completed: 06/07/2005
 Total Depth of Well: 6,300.00
 Permit: 6321

Formation Record

Permit: 6321 Well: V536398

Stage1		Stage2		Stage3	
Date	05/28/2005	Date	05/28/2005	Date	05/28/2005
FracType	75Q Foam	FracType	75Q Foam	FracType	65Q Foam
Zone	Lower Huron	Zone	Weir	Zone	Maxton
# of Perfs	40	# of Perfs	30	# of Perfs	36
From/To	6,065— 6,177	From/To	4,496— 4,676	From/To	3,326— 3,334
BD Press	1,820	BD Press	2,621	BD Press	1,112
ATP Psi	3,376	ATP Psi	3,470	ATP Psi	2,732
Avg Rate	33	Avg Rate	43	Avg Rate	30
Max Press Psi	3,640	Max Press Psi	3,605	Max Press Psi	2,910
ISIP Psi	2,732	ISIP Psi	0	ISIP Psi	1,849
10min SIP	2,522 5 min.	10min SIP	0 5 min.	10min SIP	1,700 5 min.
Frac Gradient	0.66	Frac Gradient	0.70	Frac Gradient	0.78
Sand Proppant	502.20	Sand Proppant	409.53	Sand Proppant	205.74
Water-bbl	332	Water-bbl	238	Water-bbl	180
SCF N2	1,208,031	SCF N2	582,820	SCF N2	349,264
Acid-gal	500 gal 7.5%	Acid-gal	500 gal 15%HCL	Acid-gal	500 gal 15%HCL



Permit: 6321

Well: VS36398

DI-1281
JAH

Completion Report

Well Type: Gas Well

Date Well Completed 06/07/2005 Total Depth of Well: 6,300.00 LTD: 6,312.00

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	677		0	240

Permitee: EQUITABLE PRODUCTION COMPANY (Company)

By: Victoria Duzan (Signature)

Form DGO-GO-15
Rev 7/00

JAH
12/29/05



ENTERED

Well: V536398
 Date Well Completed: 06/07/2005
 Total Depth of Well: 6,300.00
 Permit: 6321

Formation Record

Permit: 6321 Well: V536398

Stage1		Stage2		Stage3	
Date	05/28/2005	Date	05/28/2005	Date	05/28/2005
FracType	75Q Foam	FracType	75Q Foam	FracType	65Q Foam
Zone	Lower Huron	Zone	Weir	Zone	Maxton
# of Perfs	40	# of Perfs	30	# of Perfs	36
From/To	6,065— 6,177	From/To	4,496— 4,676	From/To	3,326— 3,334
BD Press	1,820	BD Press	2,621	BD Press	1,112
ATP Psi	3,376	ATP Psi	3,470	ATP Psi	2,732
Avg Rate	33	Avg Rate	43	Avg Rate	30
Max Press Psi	3,640	Max Press Psi	3,605	Max Press Psi	2,910
ISIP Psi	2,732	ISIP Psi	0	ISIP Psi	1,849
10min SIP	2,522 5 min.	10min SIP	0 5 min.	10min SIP	1,700 5 min.
Frac Gradient	0.66	Frac Gradient	0.70	Frac Gradient	0.78
Sand Proppant	502.20	Sand Proppant	409.53	Sand Proppant	205.74
Water-bbl	332	Water-bbl	238	Water-bbl	180
SCF N2	1,208,031	SCF N2	582,820	SCF N2	349,264
Acid-gal	500 gal 7.5%	Acid-gal	500 gal 15%HCL	Acid-gal	500 gal 15%HCL



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: 9335
Company: EnerVest Operating, LLC
File Number: DI-1281
Operations Name: V-536398
Operation Type: Gas
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 5/13/2005 Drilling Contractor: GASCO
Date drilling completed: 5/18/2005 Rig Type: Rotary Cable
Driller's Total Depth (feet): 6300.00
Log Total Depth (feet): 6312.00 Formation At Total Depth: Olentangy

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

Permitted State Plane X: 10418309.7800 Final Plat State Plane X: 10418309.0000
Permitted State Plane Y: 3566725.0300 Final Plat State Plane Y: 3566725.0000

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
PLAT	1DI1281_V536398 WPL_EQT_DICKENSON.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
120	WET	

Salt Water At:

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

Coal Seams:

List of Attached Items:

Description	FileName
COAL	2DI1281_V536398 WPL_EQT_DICKENSON.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
GAS	2DI1281_V536398 WPL_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	3DI1281_V536398 WPL_EQT_DICKENSON.pdf

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
CASING	3DI1281_V536398 WPL_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	4DI1281_V536398 WPL_EQT_DICKENSON.pdf

9. Comments

MATERIAL INSERTED BY DGO [8/1/2016, jhh]

10. Signature

Permitee: EnerVest Operating, LLC Date: 8/1/2016

Signed By: VICTORIA DUGAN Title: ***

INTERNAL USE ONLY

Submit Date: 8/1/2016

Status: A

Date: 8/10/2016

Final PDF Date: 8/10/2016

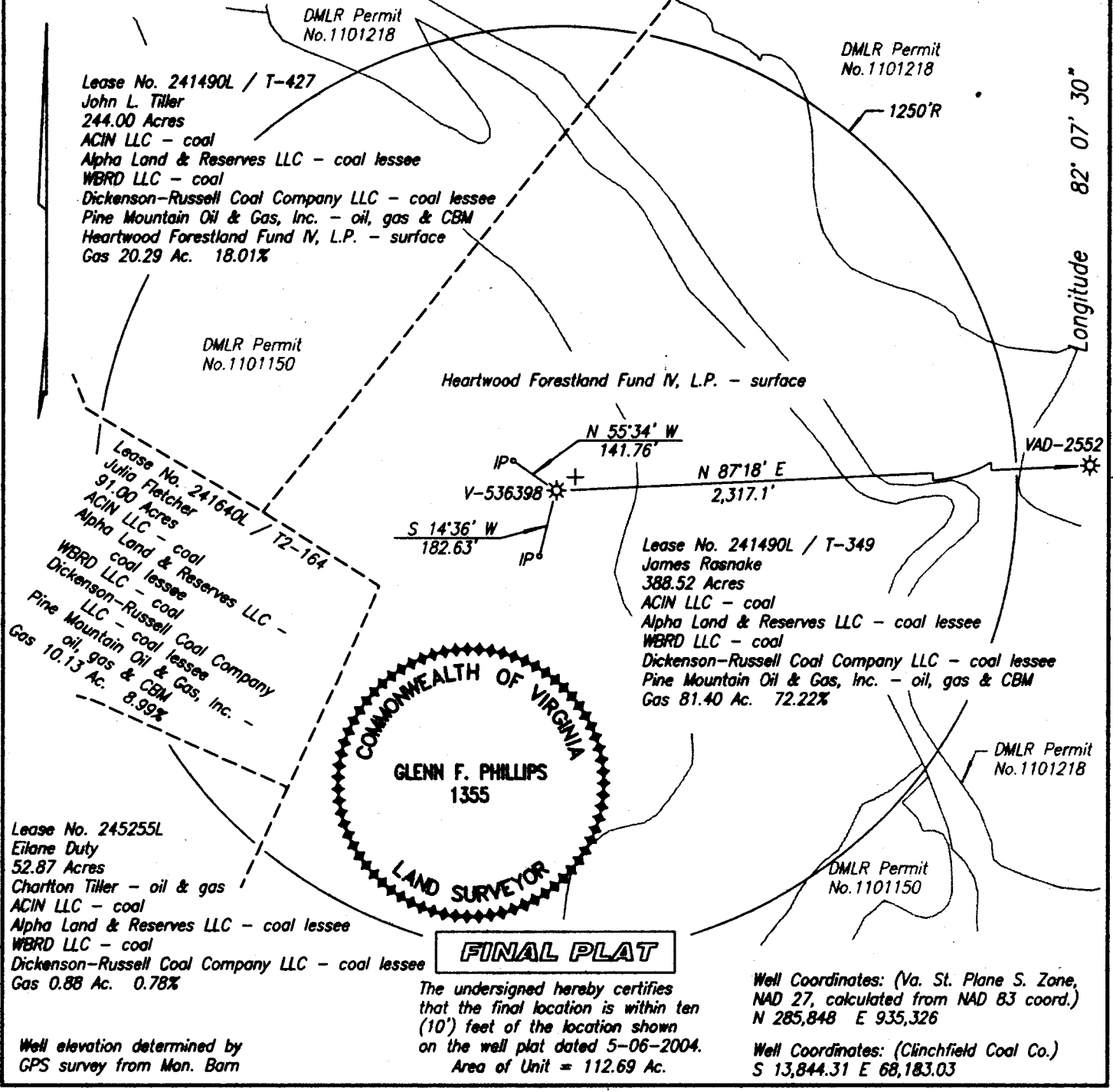
7,215'

Well Coordinates: (Geographic N27)
37.061927° -82.149666°

Latitude 37° 05' 00"

Longitude 82° 07' 30"

7,795'



FINAL PLAT

The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 5-06-2004. Area of Unit = 112.69 Ac.

Well Coordinates: (Va. St. Plane S. Zone, NAD 27, calculated from NAD 83 coord.)
N 285,848 E 935,326

Well Coordinates: (Clinchfield Coal Co.)
S 13,844.31 E 68,183.03

Well elevation determined by GPS survey from Mon. Barn

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER V-536398
 TRACT NO. T-349 ELEVATION 1,928.5' QUADRANGLE Duty
 COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 5-24-2005

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

Permit: 6321 Well: V536398

Drilling Report

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

Drilling Data

Date Drilling Commenced: 05/13/2005 Drilling Contractor: Gasco
Date Drilling Completed: 05/18/2005
Date Well Completed: 06/07/2005 Rig Type: Rotary: X Cable Tool:
DTD: 6,300.00
LTD: 6,312.00

Geological Data

Type	From / GPM per Inch
Fresh water	Went wet @ 120'

Coal Seams & Open Mines

Type	From
Coal	130'-31',210'-11',255'-56',408'-09',439'-40'
Coal	570'-71',610'-11',620'-621',703'-04',712'-13'
Coal	1390'-91',1415'-16'

Gas and Oil Shows

Gas Tests

Depth	Remarks
2,456	no show
3,300	no show
4,403	no show
5,052	no show

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

Permit: 6321 Well: V536398

Drilling Report

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

Drilling Data

Date Drilling Commenced: 05/13/2005 Drilling Contractor: Gasco
Date Drilling Completed: 05/18/2005
Date Well Completed: 06/07/2005 Rig Type: Rotary: X Cable Tool:
DTD: 6,300.00
LTD: 6,312.00

Geological Data

Type	From / GPM per Inch
Fresh water	Went wet @ 120'

Coal Seams & Open Mines

Type	From
Coal	130'-31',210'-11',255'-56',408'-09',439'-40'
Coal	570'-71',610'-11',620'-621',703'-04',712'-13'
Coal	1390'-91',1415'-16'

Gas and Oil Shows

Gas Tests

Depth	Remarks
2,456	no show
3,300	no show
4,403	no show
5,052	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>
198	1/4
387	1/4
575	1/4
763	1/4
952	1/4
1,141	1/4
1,330	1/4
1,519	1/4

Casing Data

<u>Casing Outside Diameter</u>	<u>Casing Interval</u>	<u>Hole Size</u>	<u>Cement used in Cu. ft.</u>	<u>Cmtd To Surface</u>	<u>Date Cemented</u>	<u>Cement Baskets</u>
20	0- 43	21 1/2				
16	0- 58	17 1/2				
11 3/4	0- 358	15	241.40	Y	05/14/2005	88
7	0- 1601	8 7/8	420.60	Y	05/16/2005	398
4 1/2	0- 6282	6 3/8	589.60	Y	05/18/2005	

Tubing Size Footage
 2 3/8 6,127.40

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
387	1/4
575	1/4
763	1/4
952	1/4
1,141	1/4
1,330	1/4
1,519	1/4

Casing Data

<u>Casing Outside Diameter</u>	<u>Casing Interval</u>	<u>Hole Size</u>	<u>Cement used in Cu. ft.</u>	<u>Cmtd To Surface</u>	<u>Date Cemented</u>	<u>Cement Baskets</u>
20	0- 43	21 1/2				
16	0- 58	17 1/2				
11 3/4	0- 358	15	241.40	Y	05/14/2005	88
7	0- 1601	8 7/8	420.60	Y	05/16/2005	398
4 1/2	0- 6282	6 3/8	589.60	Y	05/18/2005	

Tubing Size Footage
 2 3/8 6,127.40

Drillers Log

Permit: 6321

Well: V536398

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Base LEE	0.00	1,744.00	0.00
RVCF	2,372.00	2,528.00	156.00
AVIS	2,528.00	2,610.00	82.00
MXTN	3,172.00	3,337.00	165.00
LLIM	3,582.00	3,634.00	52.00
BGLM	3,634.00	4,437.00	803.00
WEIR	4,437.00	4,730.00	293.00
WEIR Sh	4,730.00	5,030.00	300.00
SNBY	5,030.00	5,070.00	40.00
BEREA	5,070.00	5,095.00	25.00
CLEV	5,095.00	0.00	0.00
LHRN	5,995.00	6,239.00	244.00
OLNG	6,239.00	0.00	0.00

Total Depth of Well: 6,300.00

Permitee: EQUITABLE PRODUCTION COMPANY (Company)

By: Victoria Duggan (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: 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 7.5%HCL	500

Final Production

After Stimulation

BOD

MCFD

Hours Tested

**Rock
Pressure**

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

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:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
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...

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

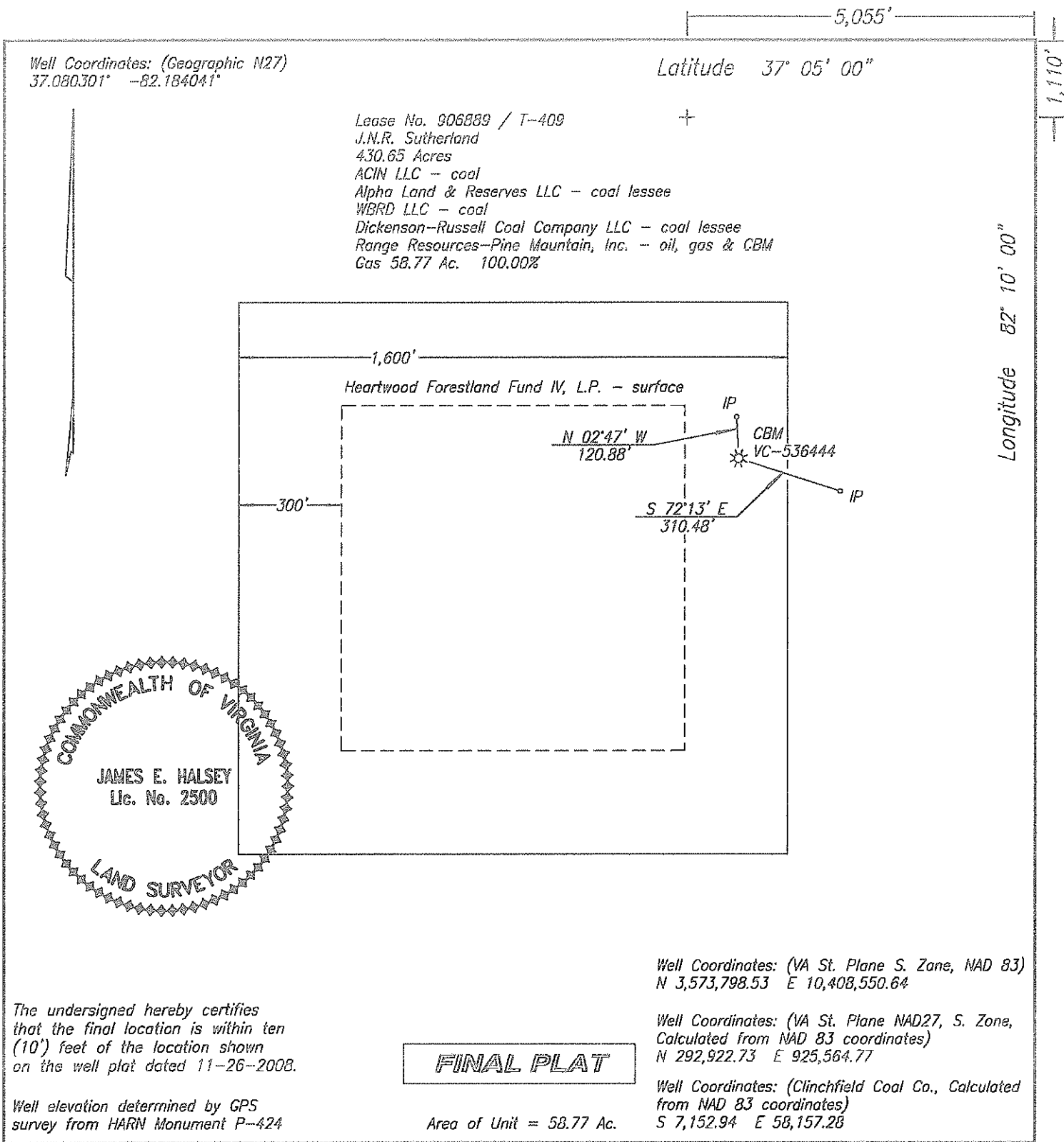
INTERNAL USE ONLY

Submit Date: 8/25/2009

Status: A

Date: 8/28/2009

Final PDF Date: 9/29/2009



WELL 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

+ 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**

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 and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</u>
174	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

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees 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 Data

Casing Outside Diameter	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: 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/GrtsyCrk/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

BOD

MCFD

Hours Tested

**Rock
Pressure**

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. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

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

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	<u>6/21/2009</u>	Drilling Contractor:	<u>Crossrock Drilling</u>
Date drilling completed:	<u>6/23/2009</u>	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	<u>2358.00</u>		
Log Total Depth (feet):	<u>2333.00</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>10407953.6600</u>	Final Plat State Plane X:	<u>10407953.2100</u>
Permitted State Plane Y:	<u>3572658.2800</u>	Final Plat State Plane Y:	<u>3572658.0400</u>

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

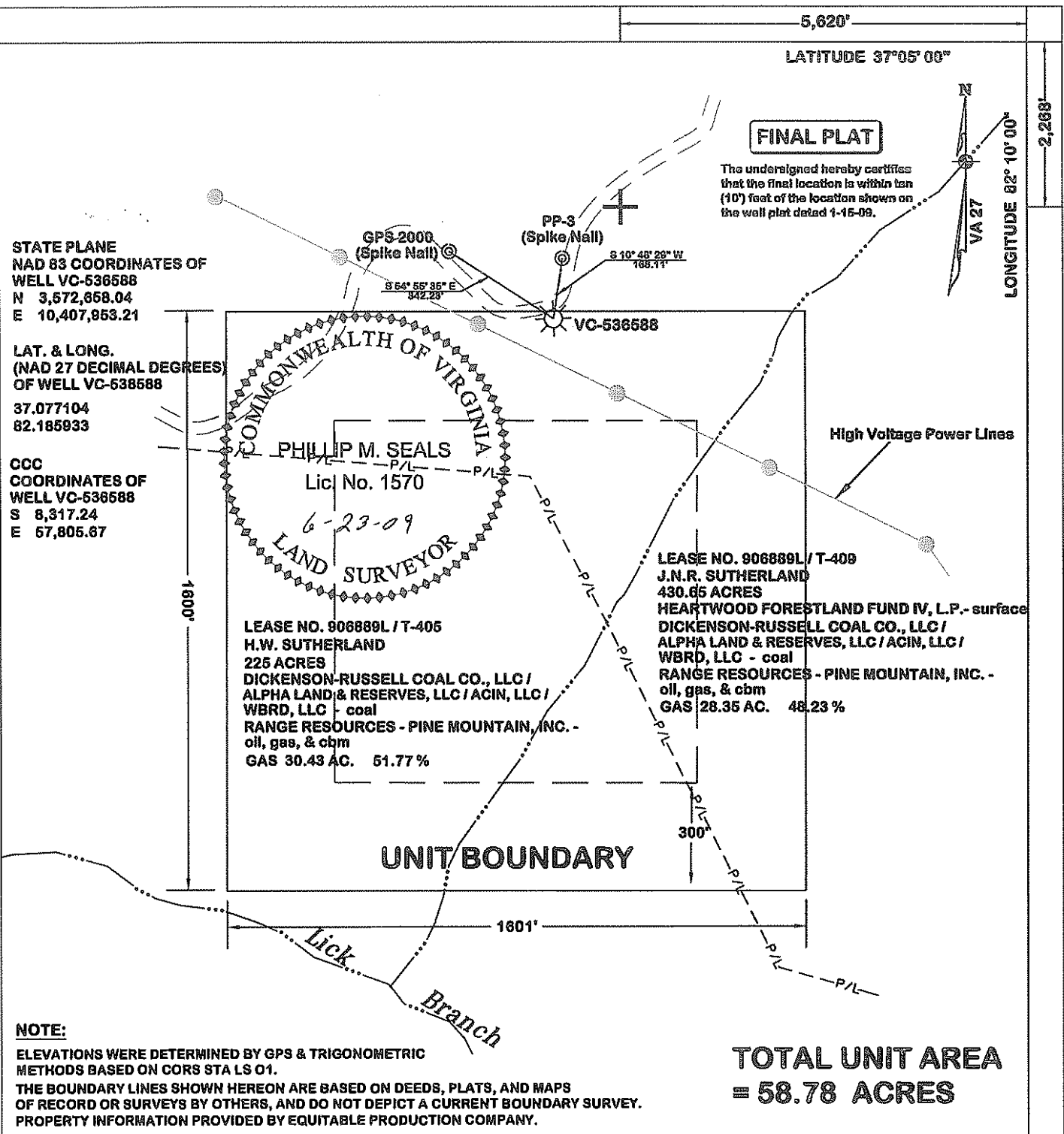
INTERNAL USE ONLY

Submit Date: 10/6/2009

Status: A

Date: 12/22/2009

Final PDF Date: 12/23/2009



WELL LOCATION PLAT

COMPANY EQUITABLE PRODUCTION CO. WELL NAME OR NUMBER VC-536588

TRACT NO. T-409 QUADRANGLE DUTY

DISTRICT Ervington

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

+ 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 (AFFIX SEAL)

1076.86
 Form DGO-GO-7
 Rev. 1-98

**Coal Seams & Open
Mines**

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 and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</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

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees 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 Data

Casing Outside Diameter	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

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
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 sand & shale	915.00 916.50	916.50 961.00	1.50 44.50
Upper Seaboard sand & shale	961.00 962.50	962.50 1,128.00	1.50 165.50
Greasy Creek sand & shale	1,128.00 1,130.08	1,130.08 1,192.00	2.08 61.92
Middle Seaboard sand & shale	1,192.00 1,193.58	1,193.58 1,240.50	1.58 46.92
Lower Seaboard sand & shale	1,240.50 1,242.42	1,242.42 1,296.50	1.92 54.08
Unnamed A sand & shale	1,296.50 1,296.83	1,296.83 1,311.00	0.33 14.17
Unnamed B sand & shale	1,311.00 1,311.25	1,311.25 1,335.00	0.25 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: 727
Company: Equitable Production Company
File Number: DI-1740
Operations Name: VC-536589 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>6/17/2007</u>
Driller's Total Depth:	<u>1,853</u>	Log's Total Depth:	<u>1,853</u>

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

2. Stimulation Record

Stimulated Not Stimulated Gob

Description	FileName
treatment summaries 536589	Stage 536589.doc

3. Final Production

Description	FileName
final production 536589	Final Production 536589.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 10/31/2007 5:53:53 AM (Company)

By: L. Todd Tetric Title: Director of Drilling (Signature)

_____	_____
_____	_____
_____	_____

Stage1

Date **06/09/2007**

FracType 70Q **Foam**
Zone Poca #2 & Poca #3

of Perfs 20

From/To 1,598 1,731

BD Press 2,968

ATP Psi 2,872
Avg Rate 24

Max Press Psi 3,554

ISIP Psi 2,310

10min SIP 1,912 5 min.
1.50

Frac Gradient

Sand Proppant 22.00

Water-bbl 99
SCF N2 167,875

Acid-gal 500 gal
10%MSA

Stage2

Date **06/09/2007**

FracType 70Q **Foam**
Zone X-Sm/ Poca #6

of Perfs 32

From/To 1,005 1,335

BD Press 3,031

ATP Psi		2,817	
Avg Rate		0	
Max Press Psi		3,543	
ISIP Psi		1,710	
10min SIP	1,418		5 min.
		1.50	
Frac Gradient			
Sand Proppant		35.00	
Water-bbl		147	
SCF N2		187,000	
Acid-gal	600	gal	
		10%MSA	

Stage3

Date		06/09/2007	
FracType	70Q	Foam	
Zone		Unnamed C/ Bckly/L	
		Hrspn/.	
# of Perfs		40	
From/To		881	981
BD Press		1,376	
ATP Psi		2,388	
Avg Rate		34	
Max Press Psi		2,961	
ISIP Psi		1,463	
10min SIP	1,301		5 min.
		1.70	
Frac Gradient			

Sand Proppant		69.33
Water-bbl		191
SCF N2		266,000
Acid-gal	800	gal 10%MSA

Stage4

Date 06/09/2007

FracType 70Q **Foam**
Zone C Seam/ Warcreek

of Perfs 24

From/To 806 844

BD Press 2,570

ATP Psi 2,071

Avg Rate 24

Max Press Psi 3,161

ISIP Psi 1,610

10min SIP 1,364 5 min.

2.00

Frac Gradient

Sand Proppant
30.00

Water-bbl 107

SCF N2 154,982

Acid-gal 600 gal
10%MSA

Final Production

Final Production if Gas Zones are commingled

After Stimulation

BOD

MCFD

Hours Tested

Rock Pressure

61

0

230



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: 800
 Company: Equitable Production Company
 File Number: DI-1740
 Operations Name: VC-536589 W/PL
 Operation Type: Coalbed/Pipeline
 Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 5/24/2007 Drilling Contractor: Gasco
 Date drilling completed: 5/30/2007 Rig Type: Rotary Cable Tool
 Driller's Total Depth (feet): 1,853
 Log Total Depth (feet): 1,853 Coal Seam At Total Depth POCAHONTAS #2

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

Permitted State Plane X 932,339 Final Plat State Plane X: 932,339
 Permitted State Plane Y: 284,657 Final Plat State Plane Y: 284,656

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
final plat 536589	VC-536589 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 536589	Coal Seams 536589.doc

Gas and Oil Shows

List of Attached Items:

Description	FileName
gas shows 536589	Gas and Oil Shows 536589.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 536589	Survey Results 536589.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
csg 536589	Casing Dat 536589.doc
tbg 536589	Tubing Size 536589.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 536589	Drillers Log 536589.doc

9. Comments

10. Signature

Permitee: Equitable Production Company Date: 10/31/2007 (Company)

Signed By: L. Todd Tetrick Title: Director of Drilling (Signature)

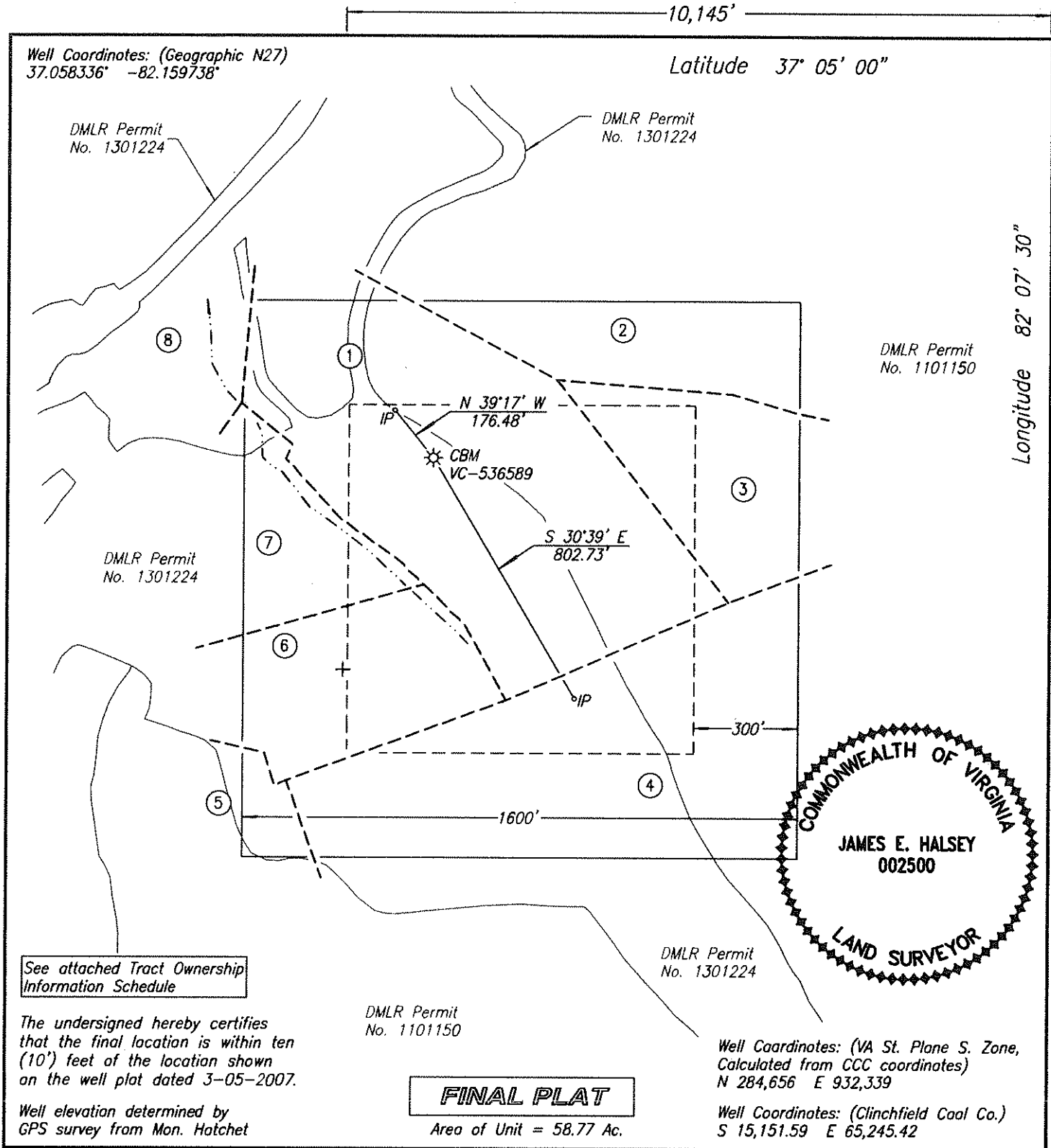
INTERNAL USE ONLY

Submit Date: 10/31/2007

Status: Inspr Approved

Date: 10/31/2007

Final PDF Date: 10/31/2007



WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-536589
 TRACT NO. LS. No. 241640/T2-173 ELEVATION 1,805.33' QUADRANGLE Duty
 COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 5-25-2007

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

Coal Seams & Open Mines

<u>Type</u>	<u>From</u>
Coal	49'-50',160'-61',220'-21',370'-71',484.5'-86.3'
Coal	532'-33.7';609'-13.7';673'-73.8';715.5'-17.5';781'-81.3';806'-07.3'
Coal	841.5'-843';881.5'-82.5';911.5'-16';949.5'-51.5';979'-79.5';1015.5'-17.5'
Coal	1156.5'-57';1330.5'-32.5';1438.5'-38.8';1598.5'-99.7'1728.5'-30'

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</u>
192	No Show
412	No Show
599	No Show
818	No Show
1,004	No Show
1,192	No Show
1,413	No Show

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
192	1/4
412	1/4
599	1/4
818	1/4
1,004	1/4
1,192	1/4
1,413	1/4
1,603	1/4
1,822	1/4
1,853	1/4

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	54	12 1/4				
7	315	8 7/8	106.20	y	05/29/2007	44
4 1/2	1809	6 1/2	339.15	y	05/30/2007	

Tubing
Size
2 3/8

5/8"

Footage

1,771.05

1778.5'

**Drillers
Log**

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
OverBurden	0.00	40.00	40.00
Sand Stone	40.00	49.00	9.00
Coal	49.00	50.00	1.00
Sand Stone	50.00	160.00	110.00
Coal	160.00	161.00	1.00
Sandy Shale	161.00	220.00	59.00
Coal	220.00	221.00	1.00
Sand Stone	221.00	370.00	149.00
Jawbone	370.00	371.00	1.00
Sand Stone	371.00	484.50	113.50
Middle Seaboard	484.50	486.30	1.80
sand & shale	486.30	532.00	45.70
Lower Seaboard	532.00	533.70	1.70
sand & shale	533.70	609.00	75.30
Unnamed A	609.00	613.70	4.70
sand & shale	613.70	673.00	59.30
Upper Horsepen	673.00	673.80	0.80
sand & shale	673.80	715.50	41.70
Middle Horsepen	715.50	717.50	2.00
sand & shale	717.50	781.00	63.50
C Seam Rider	781.00	781.30	0.30
sand & shale	781.30	806.00	24.70
C Seam	806.00	807.30	1.30
sand & shale	807.30	826.50	19.20
War Creek Rider	826.50	826.50	0.00
sand & shale	826.50	841.50	15.00
War Creek	841.50	843.00	1.50
sand & shale	843.00	881.50	38.50
Unnamed C	881.50	882.20	0.70
sand & shale	882.20	911.50	29.30
Beckley	911.50	916.00	4.50
sand & shale	916.00	949.50	33.50
Lower Horsepen	949.50	951.50	2.00
sand & shale	951.50	979.00	27.50
X Seam Rider	979.00	979.50	0.50
sand & shale	979.50	1,015.50	36.00
X Seam	1,015.50	1,017.50	2.00
sand & shale	1,017.50	1,156.50	139.00
Pocahontas #8	1,156.50	1,157.00	0.50
sand & shale	1,157.00	1,330.50	173.50

Pocahontas #6	1,330.50	1,332.50	2.00
sand & shale	1,332.50	1,438.50	106.00
Pocahontas #4	1,438.50	1,438.80	0.30
sand & shale	1,438.80	1,598.50	159.70
Pocahontas #3	1,598.50	1,599.70	1.20
sand & shale	1,599.70	1,728.50	128.80
Pocahontas #2	1,728.50	1,730.00	1.50
sand & shale	1,730.00	1,853.00	123.00



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: <u>Coalbed/Pipeline</u>	Date Well Completed: <u>5/14/2007</u>
Driller's Total Depth: <u>2,395</u>	Log's Total Depth: <u>2,395</u>

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

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)

By: Todd Tetrick Title: Director of Drilling (Signature)

_____	_____
_____	_____
_____	_____

Stage 1

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

Stage 2

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.
Frac Gradient		1.16	
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.
Frac Gradient		1.46	
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

BOD

MCFD

Hours Tested

**Rock
Pressure**

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: 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

9. Comments

coal seam info was uploaded instead of "gas shows" [ljs 10/30/07]
Corrected 10/31/07 [ljs]

10. Signature

Permitee: Equitable Production Company Date: 10/31/2007 (Company)

Signed By: Todd Tetrick Title: Director of Drilling (Signature)

INTERNAL USE ONLY	
Submit Date:	<u>10/31/2007</u>
Status:	<u>Inspr Approved</u>
	Date: <u>10/31/2007</u>
Final PDF Date:	<u>10/31/2007</u>

2,220'

Well Coordinates: (Geographic N27)
37.065769° -82.174363°

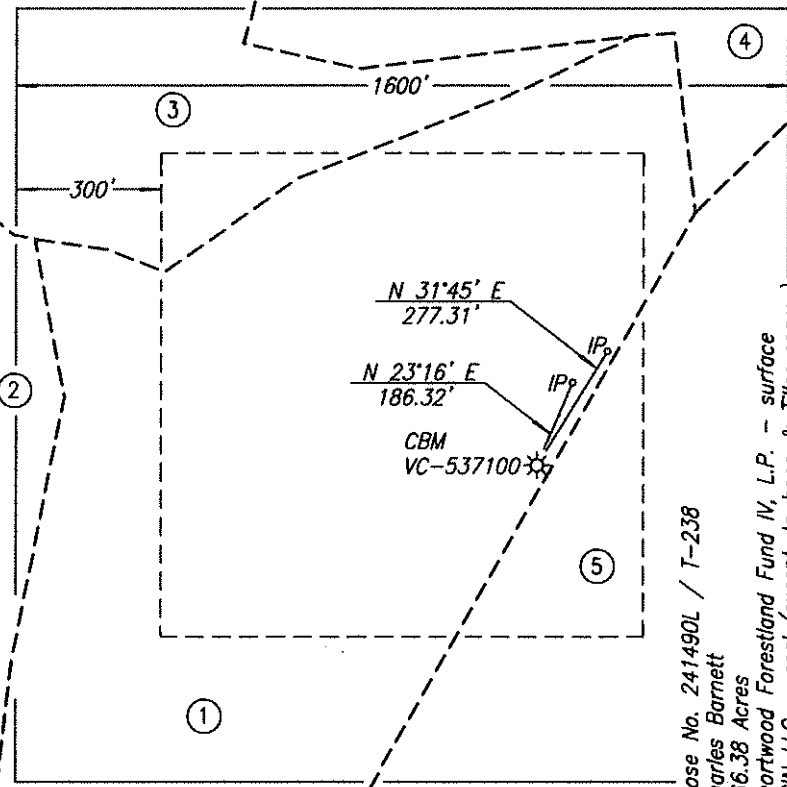
Latitude 37° 05' 00"

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%

Lease No. 244792L / TC-216
James Owens
446.46 Acres
Alpha Land & Reserves LLC - coal
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - (CBM)
Unleased
Corbett Glenn Anderson, et al - surface, oil & gas (CBM)
Gas 1.10 Ac. 1.87%

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
Cinchfield Cool Company - coal (Jawbone & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 14.59 Ac. 24.83%

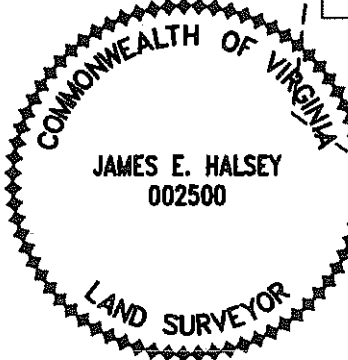


Lease No. 241640L / T2-151
Frank F. Kiser
47.00 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 31.54 Ac. 53.66%

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

Well Coordinates: (VA St. Plane S. Zone, Calculated from CCC coordinates)
N 287,526 E 928,180

Well Coordinates: (Cinchfield Cool Co.)
S 12,445.18 E 60,980.06



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-537100
TRACT NO. T2-151 ELEVATION 2,223.76' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton 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

Coal Seams & Open Mines

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 and Oil Shows

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

Survey Results

<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 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		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	

Tubing Size
2 3/8

Footage
2,268.75

Drillers
Log

<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: 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
-------------	----------

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)

By: L. Todd Tetric Title: Director of Drilling (Signature)

_____	_____
_____	_____
_____	_____

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.
Frac Gradient		2.04	
Sand Proppant		147.30	
Water-bbl		425	
SCF N2		569,834	
Acid-gal	1,000	gal	
		10%MSA	

Final Production

After Stimulation

BOD

MCFD

Hours Tested

**Rock
Pressure**

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: 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

9. Comments

10. Signature

Permitee: Equitable Production Company Date: 6/25/2007 (Company)

Signed By: L. Todd Tetrick Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 6/25/2007

Status: Inspr Approved

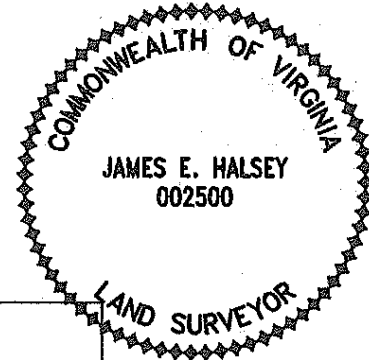
Date: 6/28/2007

Final PDF Date: 7/6/2007

Well Coordinates: (Geographic N27)
37.063226° -82.175776°

Latitude 37° 05' 00"

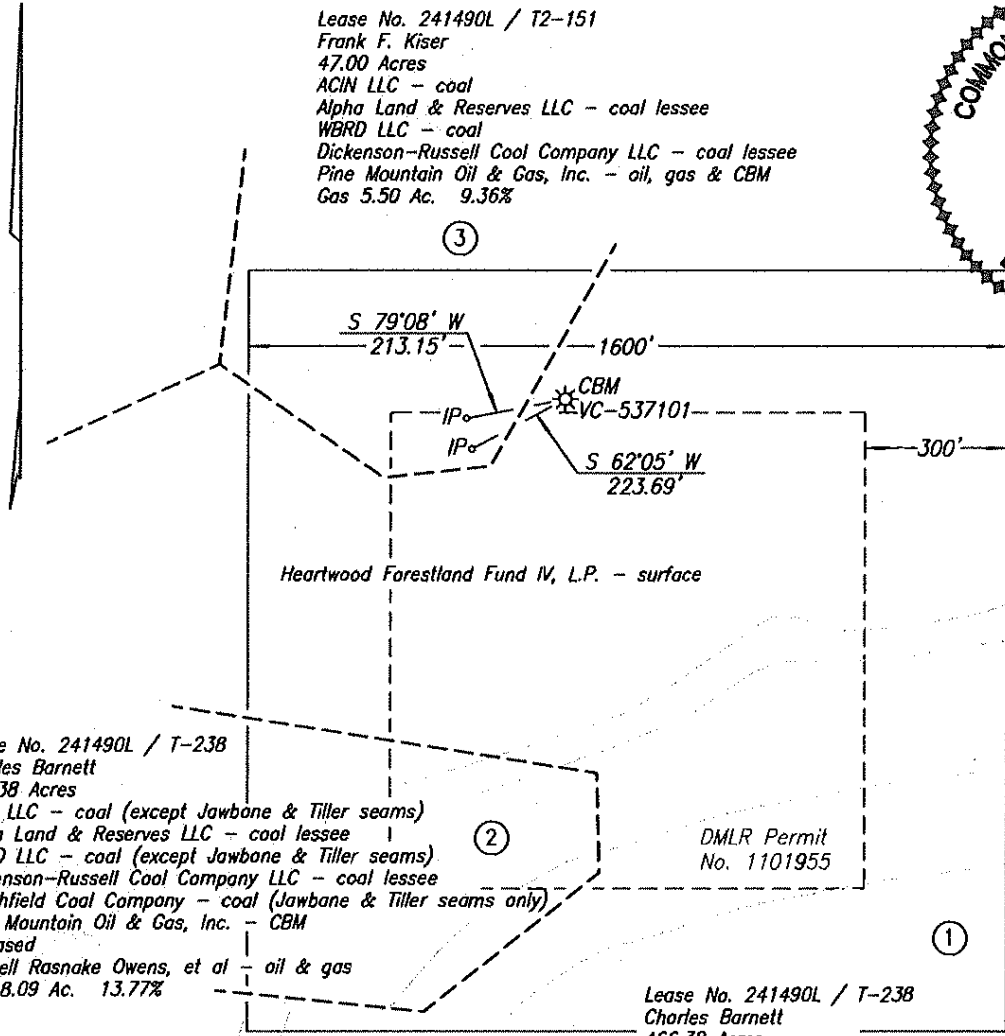
2,635'



Longitude 82° 10' 00"

7,325'

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%



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
Cinchfield Coal Company - coal (Jawbone & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - CBM
Unleased
Gaynell Rasnake Owens, et al - oil & gas
Gas 8.09 Ac. 13.77%

DMLR Permit No. 1101955

DMLR Permit No. 1101955

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
Cinchfield Coal Company - coal (Jawbone & Tiller seams only)
Pine Mountain Oil & Gas, Inc. - oil, gas & CBM
Gas 45.18 Ac. 76.87%

DMLR Permit No. 1101955

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

**Coal Seams & Open
Mines**

<u>Type</u>	<u>From</u>
Coal	80'-81',130'-31',310'-11',415'- 16',621'-25'
Coal	995'-96',1032'-33',1095'- 96',1220'-21',1405'-06'
Coal	1515'-18',1930'-31',2160'-61'
Open Mine	462'-70'

Gas and Oil Shows

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

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees 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 Data

Casing Outside Diameter	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

Drillers
Log

<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: 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
-------------	----------

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 Tetrick 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.
Frac Gradient			1.11	
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. 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

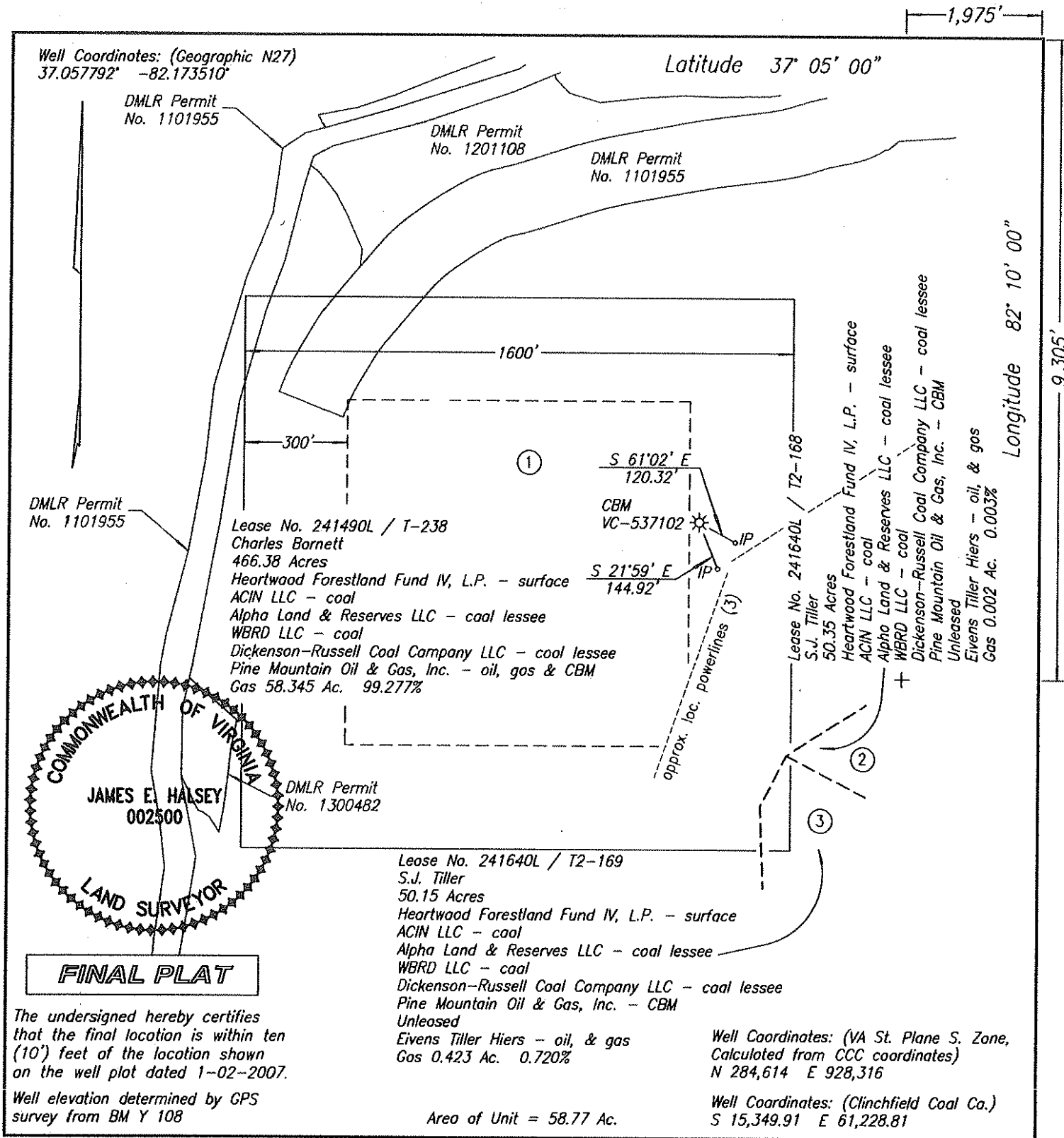
9. Comments

10. Signature

Permittee: Equitable Production Company Date: 12/13/2007 (Company)

Signed By: L. Todd Tetrick Title: Director of Drilling (Signature)

<hr/> <hr/> <hr/>	<hr/>
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FINAL PLAT

The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 1-02-2007.

Well elevation determined by GPS survey from BM Y 108

Lease No. 241490L / T-238
 Charles Barnett
 466.38 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 58.345 Ac. 99.277%

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
 Eivens Tiller Hiers - oil, & gas
 Gas 0.423 Ac. 0.720%

Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane S. Zone, Calculated from CCC coordinates)
 N 284,614 E 928,316

Well Coordinates: (Clinchfield Coal Co.)
 S 15,349.91 E 61,228.81

WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER VC-537102
 TRACT NO. LS. 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

Coal Seams & Open Mines

<u>Type</u>	<u>From</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>Remarks</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>Depth</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
Data**

Casing Outside Diameter	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	

Tubing
Size

2 3/8

5/8"

Footage

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: 10010
Company: EnerVest Operating, LLC
File Number: DI-2597
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coalbed/Pipeline	Date Well Completed: 11/10/2017
Driller's Total Depth: 1960.00	Log's Total Depth: 1954.00

Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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Water Protection Casing Cement Bond Log

Description	FileName
Cement Report	VCI-537355 Surface Csg Cement Chart.pdf

Stimulation Record

Stimulation Status: Stimulated GOB Not Stimulated Service Well

Chemical Disclosure submitted? On File

Final Fracturing Ingredient Status: Approved 96

Description	FileName
Perf Report	VCI-537355 Perf Report.pdf
Stimulation Report	VCI-537355 Stimulation Report.pdf

Final Production

Description	FileName
Final Production	VCI-537355 Final_Prod.xls

Comments

Notes:

Signature

Permittee: EnerVest Operating, LLC Date: 1/19/2018 (Company)
By: Laura Murray Title: Associate Landman (Signature)

INTERNAL USE ONLY

Submit Date: 1/19/2018
Status: _____ Date: 1/30/2018
Final PDF Date: 2/13/2018



Perforation Report

Asset Name	APPALACHIAN
Project	APPALACHIA SOUTH
Site	NORA
Well Common Name	537355
Operator	ENERVEST OPERATING, LLC
MD Top - MD Base	828.9 ft - 1,754.3 ft
Perf Length Gross	925.40 ft

Intervals

Report Date	Stage	Formation	MD top (ft)	MD base (ft)	Shot density (shot/ft)	# of Shots	Charge Phasing (°)	Carr size (in)	Charge weight (gram)	Charge Manufacturer	Hole Diameter
11/10/2017	STAGE 01	POCAHONTAS #02	1753	1754	3.00	6.000	60.00	2.500		Owens	0.32
11/10/2017	STAGE 01	POCAHONTAS #03	1696	1700	3.00	13.000	60.00	2.500		Owens	0.32
11/10/2017	STAGE 01	POCAHONTAS #03	1636	1637	3.00	6.000	60.00	2.500		Owens	0.32
11/10/2017	STAGE 02	POCAHONTAS #04	1542	1544	3.00	5.000	60.00	2.500		Owens	0.32
11/10/2017	STAGE 02	POCAHONTAS #05	1478	1480	3.00	4.000	60.00	2.500		Owens	0.32
11/10/2017	STAGE 02	POCAHONTAS #05	1441	1443	3.00	4.000	60.00	2.500		Owens	0.32
11/10/2017	STAGE 02	POCAHONTAS #06	1406	1409	3.00	7.000	60.00	2.500		Owens	0.32
11/10/2017	STAGE 03	POCAHONTAS #08	1205	1206	3.00	4.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 03	X SEAM	1075	1076	3.00	4.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 03	X SEAM	1056	1058	3.00	7.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 03	X SEAM RIDER	1041	1043	3.00	6.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 04	HORSEPEN LOWER	1014	1015	3.00	6.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 04	HORSEPEN LOWER	1008	1010	3.00	6.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 04	HORSEPEN LOWER	1001	1005	3.00	9.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 05	BECKLEY	967	970	3.00	7.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 05	BECKLEY	963	967	3.00	9.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 05	UNNAMED C	938	941	3.00	6.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 06	WAR CREEK	885	886	3.00	5.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 06	C SEAM	852	854	3.00	4.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 06	C SEAM	849	851	3.00	5.000	60.00	2.750		Owens	0.42
11/10/2017	STAGE 06	C SEAM	829	831	3.00	5.000	60.00	2.750		Owens	0.42



APPALACHIAN STIMULATION REPORT

Company / Asset	APPALACHIAN
Project / Basin	APPALACHIA SOUTH
Site / Field	NORA

Well common name:	537355	API no.:	4505102597
Well legal name:	VCI-537355	Bolo no.:	411002205
Wellbore name:	VCI-537355	Wellbore No.:	00
Report No.:	1	Report date:	11/11/2017
Job Date:	11/10/2017	Event type:	COMPLETION
Spud date:	10/31/2017	Event end date:	
Contractor:	C&J ENERGY SERVICES	Active datum:	GL @1,927.7ft (above Mean Sea Level)
Supervisor:	KEVIN DARBY		

Initial Wellhead Pressure (psi)	103.00
Water Source	FRESH

Summary for Stage No.: 1 - 11/10/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 1,635.9 ft	Frac Gradient: 1.6000 psi/ft
Interval Base MD: 1,754.3 ft	Breakdown Press: 2,683.00 psi
Stage Length: 118.4 ft	Breakdown Rate: 3.00 bbl/min
CO2 Energized Quality (%):	Max Rate: 48.40 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 46.00 bbl/min
No. of Perfs: 25	Max Treat. Press.: 3,828.00 psi
No. of Clusters: 3	Avg Treat. Press.: 3,761.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,978.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 11,700 lbm
	Total Propp. Format.: 11,700 lbm
	Slurry Vol: 152.30 bbl
	Clean Vol: 133.40 bbl
	Total Fluid Pumped: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
NITROGEN ENERGIZED		321900	
ACID	6.0		

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	11,700

Summary for Stage No.: 2 - 11/10/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 1,405.8 ft	Frac Gradient: 1.3900 psi/ft
Interval Base MD: 1,543.6 ft	Breakdown Press: 3,931.00 psi
Stage Length: 137.8 ft	Breakdown Rate: 4.80 bbl/min
CO2 Energized Quality (%):	Max Rate: 63.70 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 61.60 bbl/min
No. of Perfs: 20	Max Treat. Press.: 3,931.00 psi
No. of Clusters: 4	Avg Treat. Press.: 2,272.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,416.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 19,500 lbm
	Total Propp. Format.: 19,500 lbm
	Slurry Vol: 177.40 bbl
	Clean Vol: 150.30 bbl
	Total Fluid Pumped: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
NITROGEN ENERGIZED		302000	
ACID	6.0		

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	19,500

Summary for Stage No.: 3 - 11/10/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 1,040.8 ft	Frac Gradient: 1.4100 psi/ft
Interval Base MD: 1,206.3 ft	Breakdown Press: 2,381.00 psi
Stage Length: 165.5 ft	Breakdown Rate: 5.00 bbl/min
CO2 Energized Quality (%):	Max Rate: 57.00 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 53.80 bbl/min
No. of Perfs: 21	Max Treat. Press.: 3,440.00 psi
No. of Clusters: 4	Avg Treat. Press.: 2,766.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,097.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 27,900 lbm
	Total Propp. Format.: 27,900 lbm
	Slurry Vol: 220.20 bbl
	Clean Vol: 183.90 bbl
	Total Fluid Pumped: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
NITROGEN ENERGIZED		390000	
ACID	6.0		

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	27,900

Summary for Stage No.: 4 - 11/10/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 1,000.7 ft	Frac Gradient: 1.4500 psi/ft
Interval Base MD: 1,015.4 ft	Breakdown Press: 3,319.00 psi
Stage Length: 14.7 ft	Breakdown Rate: 3.80 bbl/min
CO2 Energized Quality (%):	Max Rate: 50.90 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 49.00 bbl/min
No. of Perfs: 21	Max Treat. Press.: 3,319.00 psi
No. of Clusters: 3	Avg Treat. Press.: 2,365.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,030.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 17,700 lbm
	Total Propp. Format.: 17,700 lbm
	Slurry Vol: 155.60 bbl
	Clean Vol: 130.30 bbl
	Total Fluid Pumped: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
ACID	6.0		
NITROGEN ENERGIZED		235700	

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	17,700

Summary for Stage No.: 5 - 11/10/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 938.2 ft	Frac Gradient: 1.4200 psi/ft
Interval Base MD: 969.6 ft	Breakdown Press: 1,611.00 psi
Stage Length: 31.4 ft	Breakdown Rate: 3.00 bbl/min
CO2 Energized Quality (%):	Max Rate: 46.70 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 45.00 bbl/min
No. of Perfs: 22	Max Treat. Press.: 2,910.00 psi
No. of Clusters: 3	Avg Treat. Press.: 2,079.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 938.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 34,600 lbm
	Total Propp. Format.: 34,600 lbm
	Slurry Vol: 240.60 bbl
	Clean Vol: 197.20 bbl
	Total Fluid Pumped: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
NITROGEN ENERGIZED		327700	
ACID	6.0		

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	34,600

Summary for Stage No.: 6 - 11/10/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 828.9 ft	Frac Gradient: 2.7800 psi/ft
Interval Base MD: 886.4 ft	Breakdown Press: 4,209.00 psi
Stage Length: 57.5 ft	Breakdown Rate: 3.00 bbl/min
CO2 Energized Quality (%):	Max Rate: 40.60 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 38.90 bbl/min
No. of Perfs: 19	Max Treat. Press.: 4,209.00 psi
No. of Clusters: 4	Avg Treat. Press.: 2,752.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 2,017.00 psi
Coil Tubing Used: No	10 Min ISIP: 1,240.00 psi
Tracer Used: No	5 Min ISIP: 1,372.00
	15 Min ISIP:
	Total Proppant: 21,400 lbm
	Total Propp. Format.: 21,400 lbm
	Slurry Vol: 148.00 bbl
	Clean Vol: 124.90 bbl
	Total Fluid Pumped: 0.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
NITROGEN ENERGIZED		277000	

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	21,400

Final Production After Stimulation		VCI-537355		
	BOD	MCFD	Hours Tested	Rock Pressure
Final/Commingled Zones				
Commingled		65	in-line	



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: 10067
Company: EnerVest Operating, LLC
File Number: DI-2597
Operations Name: VCI-537355 w/PL
Operation Type: Coalbed/Pipeline
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 10/31/2017 Drilling Contractor: Gasco #5
Date drilling completed: 11/1/2017 Rig Type: Rotary Cable
Driller's Total Depth (feet): 1960.00
Log Total Depth (feet): 1954.00 Coal Seam at Total Depth: POCAHONTAS #1

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

Permitted State Plane X: 10418136.9800 Final Plat State Plane X: 10418141.7900
Permitted State Plane Y: 3567037.9800 Final Plat State Plane Y: 3567042.2200

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
VCI-537355 Final Plat	VCI-537355 Final Plat.pdf

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	537355 Coals.xlsx

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Shows	537355 Shows.xlsx

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

List all logs run: GR/CDL/PE/DIL/Neu/TEMP/Audio

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
Surveys	537355 Survey.xlsx

6. Casing, Centralizers and Tubing Program

List of Attached Items:

Description	FileName
Casing, Centralizers and Tubing	537355 Casing.xlsx

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 @ 170'

8. Drillers Log

Compiled By: EnerVest Operating, LLC

List of Attached Items:

Description	FileName
Driller's Log	537355 DrillersLog.xlsx

9. Comments

10. Signature

Permitee: EnerVest Operating, LLC

Date: 1/10/2018

Signed By: Laura Murray

Title: Associate Landman

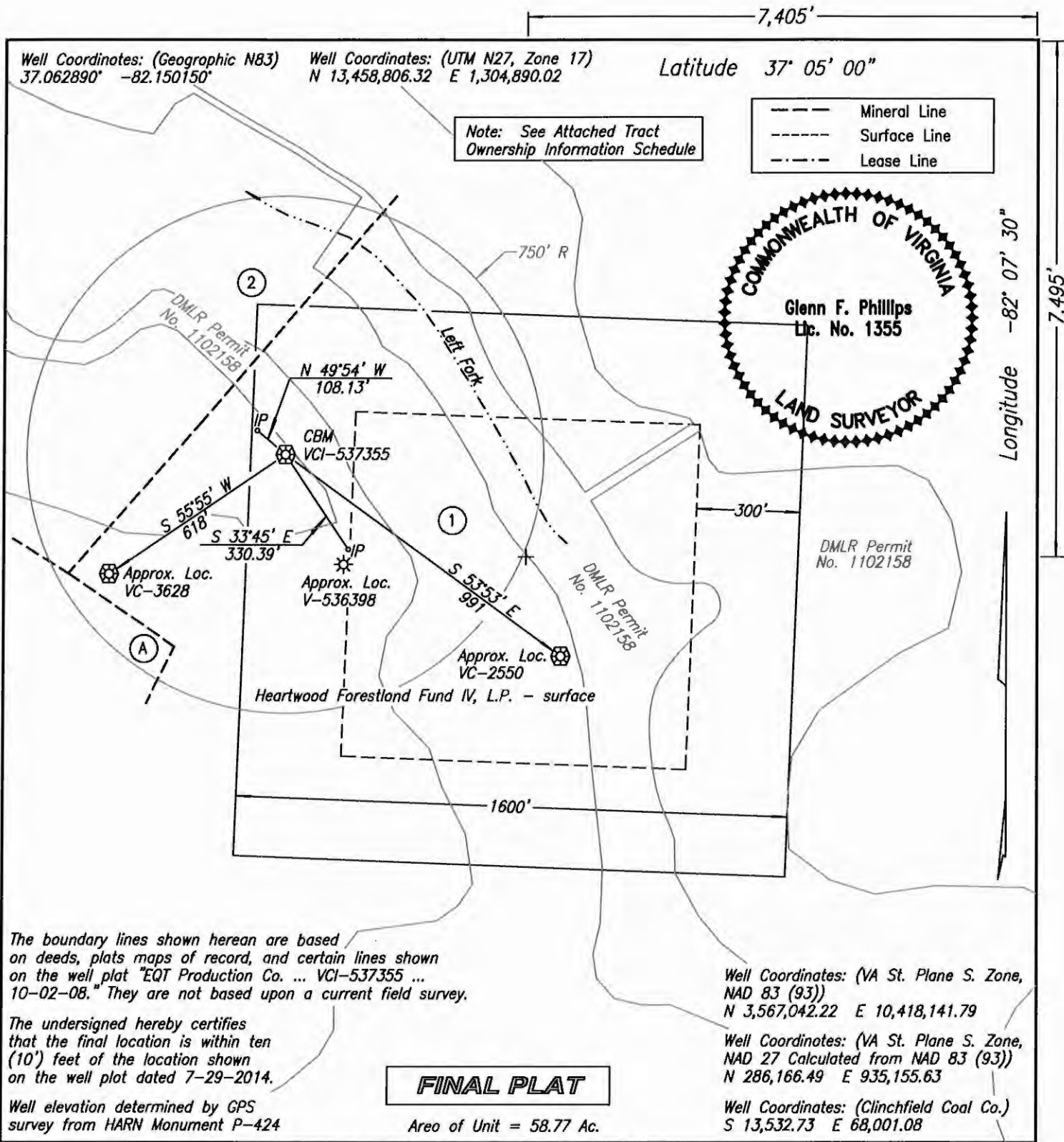
INTERNAL USE ONLY

Submit Date: 1/10/2018

Status: A

Date: 1/11/2018

Final PDF Date: 1/11/2018



Well Coordinates: (Geographic N83)
37.062890° -82.150150°

Well Coordinates: (UTM N27, Zone 17)
N 13,458,806.32 E 1,304,890.02

Latitude 37° 05' 00"

Note: See Attached Tract
Ownership Information Schedule

--- Mineral Line
- - - Surface Line
- · - Lease Line



The boundary lines shown herean are based on deeds, plats maps of record, and certain lines shown on the well plat "EQT Production Co. ... VCI-537355 ... 10-02-08." They are not based upon a current field survey.

The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 7-29-2014.

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 (93))
N 3,567,042.22 E 10,418,141.79

Well Coordinates: (VA St. Plane S. Zone, NAD 27 Calculated from NAD 83 (93))
N 286,166.49 E 935,155.63

Well Coordinates: (Clinchfield Coal Co.)
S 13,532.73 E 68,001.08

WELL LOCATION PLAT NORA GRID BJ-80

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VCI-537355
TRACT NO. James Rasnake ELEVATION 1,917.81' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 11-6-2017

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

VCI-537355 FINAL PLAT
TRACT OWNERSHIP INFORMATION SCHEDULE
11/6/2017

- 1 . T-349
James Rasnake
388.52 Acres
ACIN LLC - coal (except Tiller and Jawbone seams)
Paramont Contura, LLC - coal lessee
WBRD LLC - coal (except Tiller and Jawbone seams)
Dickenson-Russell Contura, LLC - coal lessee
Mullins Land & Mineral, Inc. - coal (Tiller and Jawbone seams only)
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 58.53 Ac. 99.59%

- 2 . T-427
John L. Tiller
244.00 Acres
ACIN LLC - coal (except Tiller and Jawbone seams)
Paramont Contura, LLC - coal lessee
WBRD LLC - coal (except Tiller and Jawbone seams)
Dickenson-Russell Contura, LLC - coal lessee
Mullins Land & Mineral, Inc. - coal (Tiller and Jawbone seams only)
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 0.24 Ac. 0.41%

- A . T2-164
Julia Fletcher
91.00 Acres
ACIN LLC - coal (except Tiller and Jawbone seams)
Paramont Contura, LLC - coal lessee
WBRD LLC - coal (except Tiller and Jawbone seams)
Dickenson-Russell Contura, LLC - coal lessee
Mullins Land & Mineral, Inc. - coal (Tiller and Jawbone seams only)
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

Coal seams			Well #	537355		
Names	Depth Top	Depth Bottom	Thickness	Mining in Area		Mined Out
				Yes	No	
Middle Seaboard	514.40	516.00	1.60		No	No
Lower Seaboard	558.80	560.80	2.00		No	No
Unnamed A	631.00	632.00	1.00		No	No
Unnamed A	636.60	637.60	1.00		No	No
Unnamed B	677.30	677.90	0.60		No	No
Upper Horsepen	717.50	718.20	0.70		No	No
Middle Horsepen	753.00	755.00	2.00		No	No
C Seam Rider	829.40	830.40	1.00		No	No
C Seam	849.00	850.10	1.10		No	No
C Seam	852.60	853.10	0.50		No	No
War Creek	885.00	885.90	0.90		No	No
Unnamed C	938.70	940.00	1.30		No	No
Beckley	963.00	966.20	3.20		No	No
Beckley	967.20	969.10	1.90		No	No
Lower Horsepen	1001.20	1004.10	2.90		No	No
Lower Horsepen	1008.30	1009.10	0.80		No	No
Lower Horsepen	1014.20	1014.90	0.70		No	No
X Seam Rider	1041.30	1042.90	1.60		No	No
X Seam	1056.10	1057.90	1.80		No	No
X Seam	1075.20	1075.80	0.60		No	No
Pocahontas #9	1152.30	1152.80	0.50		No	No
Pocahontas #8	1205.20	1205.80	0.60		No	No
Pocahontas #7	1251.90	1252.20	0.30		No	No
Pocahontas #6	1406.30	1408.10	1.80		No	No
Pocahontas #5 Rider	1441.70	1442.10	0.40		No	No
Pocahontas #5	1478.70	1479.20	0.50		No	No
Pocahontas #4	1542.10	1543.10	1.00		No	No
Pocahontas #3	1636.40	1636.90	0.50		No	No
Pocahontas #3	1696.10	1699.00	2.90		No	No
Pocahontas #2	1753.20	1753.80	0.60		No	No
Pocahontas #1	1861.50	1861.60	0.10		No	No

Survey Results

537355

Depth of Survey	Direction/Distance/Degree From True Vertical
192	1/4
380	1/4
568	1/2
758.00	1/2
948.00	1/4
1,136.00	1/2
1,325.00	1/2
1,515.00	1/2
1,705.00	1/2

Drillers Log			537355		
Geologic Age	Formation	General Lithology	Depth Top	Depth Bottom	Thickness
Pennsylvanian	Lee	Sand/Shale/Coal	0.00	514.40	514.40
Pennsylvanian	Lee	Middle Seaboard	514.40	516.00	1.60
Pennsylvanian	Lee	Sand/Shale/Coal	516.00	558.80	42.80
Pennsylvanian	Lee	Lower Seaboard	558.80	560.80	2.00
Pennsylvanian	Lee	Sand/Shale	560.80	631.00	70.20
Pennsylvanian	Lee	Unnamed A	631.00	632.00	1.00
Pennsylvanian	Lee	Sand/Shale	632.00	636.60	4.60
Pennsylvanian	Lee	Unnamed A	636.60	637.60	1.00
Pennsylvanian	Lee	Sand/Shale	637.60	677.30	39.70
Pennsylvanian	Lee	Unnamed B	677.30	677.90	0.60
Pennsylvanian	Lee	Sand/Shale	677.90	717.50	39.60
Pennsylvanian	Lee	Upper Horsepen	717.50	718.20	0.70
Pennsylvanian	Lee	Sand/Shale	718.20	753.00	34.80
Pennsylvanian	Lee	Middle Horsepen	753.00	755.00	2.00
Pennsylvanian	Lee	Sand/Shale	755.00	829.40	74.40
Pennsylvanian	Lee	C Seam Rider	829.40	830.40	1.00
Pennsylvanian	Lee	Sand/Shale	830.40	849.00	18.60
Pennsylvanian	Lee	C Seam	849.00	850.10	1.10
Pennsylvanian	Lee	Sand/Shale	850.10	852.60	2.50
Pennsylvanian	Lee	C Seam	852.60	853.10	0.50
Pennsylvanian	Lee	Sand/Shale	853.10	885.00	31.90
Pennsylvanian	Lee	War Creek	885.00	885.90	0.90
Pennsylvanian	Lee	Sand/Shale	885.90	938.70	52.80
Pennsylvanian	Lee	Unnamed C	938.70	940.00	1.30
Pennsylvanian	Lee	Sand/Shale	940.00	963.00	23.00
Pennsylvanian	Lee	Beckley	963.00	966.20	3.20
Pennsylvanian	Lee	Sand/Shale	966.20	967.20	1.00
Pennsylvanian	Lee	Beckley	967.20	969.10	1.90
Pennsylvanian	Lee	Sand/Shale	969.10	1001.20	32.10
Pennsylvanian	Lee	Lower Horsepen	1001.20	1004.10	2.90
Pennsylvanian	Lee	Sand/Shale	1004.10	1008.30	4.20
Pennsylvanian	Lee	Lower Horsepen	1008.30	1009.10	0.80
Pennsylvanian	Lee	Sand/Shale	1009.10	1014.20	5.10
Pennsylvanian	Lee	Lower Horsepen	1014.20	1014.90	0.70
Pennsylvanian	Lee	Sand/Shale	1014.90	1041.30	26.40
Pennsylvanian	Lee	X Seam Rider	1041.30	1042.90	1.60
Pennsylvanian	Lee	Sand/Shale	1042.90	1056.10	13.20
Pennsylvanian	Lee	X Seam	1056.10	1057.90	1.80
Pennsylvanian	Lee	Sand/Shale	1057.90	1075.20	17.30
Pennsylvanian	Lee	X Seam	1075.20	1075.80	0.60
Pennsylvanian	Lee	Sand/Shale	1075.80	1152.30	76.50
Pennsylvanian	Lee	Pocahontas #9	1152.30	1152.80	0.50
Pennsylvanian	Lee	Sand/Shale	1152.80	1205.20	52.40

Pennsylvanian	Lee	Pocahontas #8	1205.20	1205.80	0.60
Pennsylvanian	Lee	Sand/Shale	1205.80	1251.90	46.10
Pennsylvanian	Lee	Pocahontas #7	1251.90	1252.20	0.30
Pennsylvanian	Lee	Sand/Shale	1252.20	1406.30	154.10
Pennsylvanian	Lee	Pocahontas #6	1406.30	1408.10	1.80
Pennsylvanian	Lee	Sand/Shale	1408.10	1441.70	33.60
Pennsylvanian	Lee	Pocahontas #5 Rider	1441.70	1442.10	0.40
Pennsylvanian	Lee	Sand/Shale	1442.10	1478.70	36.60
Pennsylvanian	Lee	Pocahontas #5	1478.70	1479.20	0.50
Pennsylvanian	Lee	Sand/Shale	1479.20	1542.10	62.90
Pennsylvanian	Lee	Pocahontas #4	1542.10	1543.10	1.00
Pennsylvanian	Lee	Sand/Shale	1543.10	1636.40	93.30
Pennsylvanian	Lee	Pocahontas #3	1636.40	1636.90	0.50
Pennsylvanian	Lee	Sand/Shale	1636.90	1696.10	59.20
Pennsylvanian	Lee	Pocahontas #3	1696.10	1699.00	2.90
Pennsylvanian	Lee	Sand/Shale	1699.00	1753.20	54.20
Pennsylvanian	Lee	Pocahontas #2	1753.20	1753.80	0.60
Pennsylvanian	Lee	Sand/Shale	1753.80	1861.50	107.70
Pennsylvanian	Lee	Pocahontas #1	1861.50	1861.60	0.10
Pennsylvanian	Lee	Sand/Shale	1861.60	1960.00	98.40



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: 2359
Company: EQT Production Company
File Number: DI-2109
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coal Bed	Date Well Completed: 1/5/2010
Driller's Total Depth: 1459.00	Log's Total Depth: 1469.00

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 537412	Stage1.doc

3. Final Production

Description	FileName
Final Production 537412	Final Production.doc

4. Comments

Notes:

5. Signature

Permittee: EQT Production Company Date: 2/11/2010 (Company)

By: Michael D. Butcher Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 2/11/2010

Status: _____

Date: 5/19/2010

Final PDF Date: 6/1/2010

Stage 1

Date 12/08/2009

FracType 65Q Foam
Zone X Sm/L Hrspn

of Perfs 18

From/To 1,018 973

BD Press 1,465

ATP Psi 2,976

Avg Rate 32

Max Press Psi 3,515

ISIP Psi 1,451

10min SIP 1,138 5 min.
1.61

Frac Gradient

Sand Proppant 76.53

Water-bbl 188
SCF N2 150,665

Acid-gal gal 850
7.5%HCL

Stage 2

Date 12/08/2009

FracType 65Q Foam
Zone Beckley/Unnamed C

of Perfs 38

From/To 929 896

BD Press 2,152

ATP Psi 3,218

Avg Rate 40

Max Press Psi	3,690	
ISIP Psi	1,553	
10min SIP	1,094	5 min. 1.85
Frac Gradient		
Sand Proppant		278.09
Water-bbl	429	
SCF N2		409,079
Acid-gal	gal 7.5%HCL	350

Stage3

Date	12/08/2009	
FracType	65Q	Foam
Zone	WrCrk/M Hrspn/C Sm	
# of Perfs	26	
From/To	848	725
BD Press	2,927	
ATP Psi	3,420	
Avg Rate	37	
Max Press Psi	3,598	
ISIP Psi	1,634	
10min SIP	1,446	5 min. 2.23
Frac Gradient		
Sand Proppant		125.44
Water-bbl	212	
SCF N2		218,361

Acid-gal

gal
7.5% HCL

350

Final Production

After Stimulation

BOD

MCFD

Hours Tested

**Rock
Pressure**

Final Production if Gas Zones are commingled

32

0

105

TIL date: 1/29/2010



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:	<u>2407</u>
Company:	<u>EQT Production Company</u>
File Number:	<u>DI-2109</u>
Operations Name:	<u>VCI-537412</u>
Operation Type:	<u>Coal Bed</u>
Drilling Report Type:	<u>Original</u>

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	<u>11/18/2009</u>	Drilling Contractor:	<u>Gasco Drilling</u>
Date drilling completed:	<u>11/19/2009</u>	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	<u>1459.00</u>		
Log Total Depth (feet):	<u>1469.00</u>	Coal Seam At Total Depth	<u>X-SEAM</u>

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

Permitted State Plane X:	<u>10417361.9400</u>	Final Plat State Plane X:	<u>10417362.8500</u>
Permitted State Plane Y:	<u>3567295.3900</u>	Final Plat State Plane Y:	<u>3567295.2400</u>

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
Final Plat 537412	VCI-537412 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 537412	Coal Seams.doc

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Gas & Oil Shows 537412	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 537412	Survey Results.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
Casing 537412	Casing Data.doc
Tubing 537412	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 537412	Drillers Log.doc

9. Comments

10. Signature

Permitee: EQT Production Company Date: 2/11/2010

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

INTERNAL USE ONLY

Submit Date: 2/11/2010

Status: A

Date: 3/31/2010

Final PDF Date: 4/5/2010

TOTAL UNIT AREA

= 58.80 ACRES

- — — — — DENOTES MINERAL LINE
- - - - - DENOTES SURFACE LINE
- · — · — DENOTES SURFACE & MINERAL LINES

AS-DRILLED
STATE PLANE
NAD 27 COORDINATES
OF WELL VCI-537412
N 286418.20
E 934377.09
LAT 37.063390
LON -82.152992
NAD 83 COORDINATES
N 3567295.24
E 10417362.85

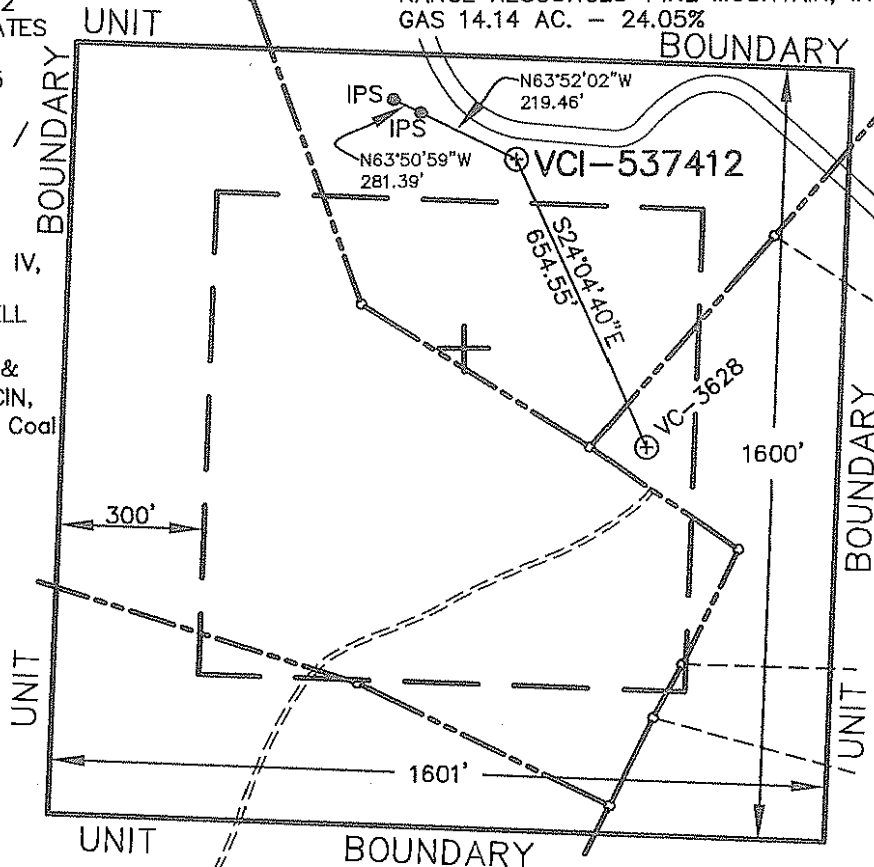
Lease No. 906889 /
T2-164
JULIA FLETCHER
91.00 ACRES
HEARTWOOD
FORESTLAND FUND IV,
LLC - Surface
DICKENSON-RUSSELL
COAL COMPANY,
LLC/ALPHA LAND &
RESERVES, LLC/ACIN,
LLC/WBRD, LLC - Coal
RANGE
RESOURCES-PINE
MOUNTAIN, INC. -
Oil, Gas & CBM
GAS 27.58 AC. -
46.90%

Lease No. 245255L
CHARLTON TILLER - Oil, Gas (CBM)
52.87 ACRES
Lease No. 906889 / T2-166
EILANE DUTY
53.00 ACRES
HEARTWOOD FORESTLAND FUND IV, LLC - Surface
DICKENSON-RUSSELL COAL COMPANY, LLC/ALPHA LAND
& RESERVES, LLC/ACIN, LLC/WBRD, LLC - Coal (CBM)
GAS 7.74 AC. - 13.17%

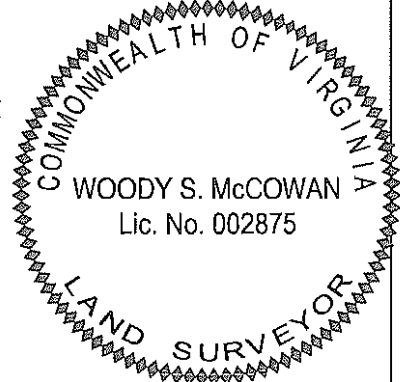
Lease No. 906889 / T-427
JOHN L. TILLER
244.00 ACRES
HEARTWOOD FORESTLAND FUND IV, LLC - Surface
DICKENSON-RUSSELL COAL COMPANY, LLC/ALPHA LAND &
RESERVES, LLC/ACIN, LLC/WBRD, LLC - Coal
RANGE RESOURCES-PINE MOUNTAIN, INC. - Oil, Gas & CBM
GAS 14.14 AC. - 24.05%

AS-DRILLED
CCC COORDINATES
OF WELL VCI-537412
S 13311.69
E 67212.92

Lease No. 906889 / T-349
JAMES RASNAKE
388.52 ACRES
HEARTWOOD FORESTLAND
FUND IV, LLC - Surface
DICKENSON-RUSSELL COAL
COMPANY, LLC/ALPHA LAND
& RESERVES, LLC/ACIN,
LLC/WBRD, LLC - Coal
RANGE RESOURCES-PINE
MOUNTAIN, INC. - Oil, Gas &
CBM
GAS 9.34 AC. - 15.88%



COORDINATES OF
BENCH MARK
N 3504914.8125
E 10370404.8448
ELEV. = 1753.40



NOTE !!!
WELL COORDINATES ARE BASED ON STATE PLANE NAD 83
COORDINATE SYSTEM. NAD 83 COORDINATES ARE MATHEMATICALLY
CONVERTED FROM CLINCHFIELD COAL COMPANY COORDINATES.
ELEVATIONS ARE BASED ON NGS CONTROL ST. PAUL 2.
PROPERTY INFORMATION PROVIDED BY EQUITABLE PRODUCTION
COMPANY. THE BOUNDARY LINES SHOWN HEREON ARE BASED ON
DEEDS, PLATS AND MAPS OF RECORD AND DO NOT DEPICT A
CURRENT BOUNDARY SURVEY.
THE WELL WILL BE DRILLED WITHIN 10' (TEN FEET) OF THE
PERMITTED COORDINATES.

WELL LOCATION PLAT

COMPANY EQT Production Company WELL NAME AND NUMBER VCI-537412(BJ-79)
TRACT No. LEASE NO. 906889 / T-427 ELEVATION 1853.13 (GPS) QUADRANGLE DUTY
COUNTY DICKENSON DISTRICT ERMINTON SCALE: 1" = 400' DATE NOVEMBER 23, 2009
THIS PLAT IS A NEW PLAT ; AN UPDATED PLAT ; OR A FINAL LOCATION PLAT x
PROPOSED TOTAL DEPTH OF WELL =

+ 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 Rasnake 11-23-09

(AFFIX SEAL)

T&L

LICENSED PROFESSIONAL ENGINEER OR LICENSED LAND SURVEYOR

**Coal Seams & Open
Mines**

Type

Coal

Coal

Coal

Coal

From

45'-46', 368'-69.17', 480'-
81.58', 525.5'-27.5',

597.5'-00.25', 725.5'-27.25',
794'-94.33',

816.5'-17.42', 847.5'--48',
896'-87.08',

922'-27.75', 73.5'-74.17',
1016'-17.25',

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</u>
195	No Show
380	No Show
600	No Show
821	No Show
1,010	No Show
1,199	No Show
1,419	No Show
1,459	No Show

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
195	1/4
380	1/4
600	1/4
821	1/4
1,010	1/4
1,199	1/4
1,419	1/4
1,459	1/4

Casing Data

Casing Outside Diameter	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
12 3/4	54	15 1/4				
7	343	8 7/8	103.84	y	11/19/2009	132
4 1/2	1147	6 1/2	265.00	y	11/19/2009	

Tubing Size

2 3/8

5/8"

Footage

1,097.80

1040

Drillers
Log

<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
Fill	0.00	45.00	45.00
Coal	45.00	46.00	1.00
sandstone	46.00	369.00	323.00
Greasy Creek	368.00	369.17	1.17
sand & shale	369.17	480.00	110.83
Middle Seaboard	480.00	481.58	1.58
sand & shale	481.58	525.50	43.92
Lower Seaboard	525.50	527.25	1.75
sand & shale	527.25	597.50	70.25
Unnamed A	597.50	600.25	2.75
sand & shale	600.25	725.50	125.25
Middle Horsepen	725.50	727.25	1.75
sand & shale	727.25	794.00	66.75
C Seam Rider	794.00	794.33	0.33
sand & shale	794.33	816.50	22.17
C Seam	816.50	817.42	0.92
sand & shale	817.42	847.50	30.08
War Creek	847.50	848.00	0.50
sand & shale	848.00	896.00	48.00
Unnamed C	896.00	897.08	1.08
sand & shale	897.08	922.00	24.92
Beckley	922.00	927.75	5.75
sand & shale	927.75	973.50	45.75
Lower Horsepen	973.50	974.17	0.67
sand & shale	974.17	1,016.00	41.83
X Seam	1,016.00	1,017.25	1.25
sand & shale	1,017.25	1,459.00	441.75



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: 9914
Company: EnerVest Operating, LLC
File Number: DI-2711
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coalbed/Pipeline	Date Well Completed: 6/8/2017
Driller's Total Depth: 2843.00	Log's Total Depth: 2840.00

Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
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Water Protection Casing Cement Bond Log

Description	FileName
537513 Cement Chart	VCI-537513 Cement Chart.pdf

Stimulation Record

Stimulation Status: Stimulated GOB Not Stimulated Service Well

Chemical Disclosure submitted? Date out of Range

Final Fracturing Ingredient Status: Approved 11

Description	FileName
Perf Report	VCI-537513 Perf Report.pdf
Stimulation Report	VCI-537513 Stimulation Report.pdf

Final Production

Description	FileName
Final Production	537513 Final_Prod.xls

Comments

Notes:

Ingredients are now listed on the Chemical Registry. [12/6/2017, gje]
Frac Focus has been corrected. [10/20/2017, lwmurray]
The API # was incorrect when the frac ingredients were uploaded to frad focus. Consequently, the ingredients cannot be downloaded to the chemical registry. [10/19/2017, gje]
Final Fracturing Ingredients updated. [9/26/2017, lwmurray]
Trade secret is not an acceptable designation, add the cement density report and frac ingredients need to be consistent among the various reports. [9/18/2017, gje]

Signature

Permittee: EnerVest Operating, LLC Date: 10/20/2017 (Company)
By: Laura Murray Title: Associate Landman (Signature)

INTERNAL USE ONLY	
Submit Date: <u>10/20/2017</u>	Date: <u>12/6/2017</u>
Status: _____	
Final PDF Date: <u>12/6/2017</u>	



537513

Report date: 6/8/2017

Perforation Report

Asset Name	APPALACHIAN
Project	APPALACHIA SOUTH
Site	NORA
Well Common Name	537513
Operator	ENERVEST OPERATING, LLC
MD Top - MD Base	624.0 ft - 1,749.2 ft
Perf Length Gross	1,125.20 ft

Intervals

Report Date	Stage	Formation	MD top (ft)	MD base (ft)	Shot density (shot/ft)	# of Shots	Charge Phasing (°)	Carr size (in)	Charge weight (gram)	Charge Manufacturer	Hole Diameter
05/31/2017	01	POCAHONTAS #03	1747	1749	3.00	7.000	60.00	2.500		Owens	0.32
05/31/2017	01	POCAHONTAS #05	1593	1597	3.00	12.000	60.00	2.500		Owens	0.32
05/31/2017	01	POCAHONTAS #06	1577	1579	3.00	6.000	60.00	2.500		Owens	0.32
05/31/2017	01	POCAHONTAS #06	1573	1575	3.00	6.000	60.00	2.500		Owens	0.32
05/31/2017	01	POCAHONTAS #06	1532	1535	3.00	9.000	60.00	2.500		Owens	0.32
06/07/2017	02	X SEAM	1218	1221	3.00	10.000	60.00	2.500		Owens	0.32
06/07/2017	02	X SEAM RIDER	1182	1184	3.00	6.000	60.00	2.500		Owens	0.32
06/07/2017	02	HORSEPEN LOWER	1150	1152	3.00	7.000	60.00	2.500		Owens	0.32
06/07/2017	03	BECKLEY	1109	1114	3.00	18.000	60.00	2.750		Owens	0.42
06/07/2017	03	UNNAMED C	1100	1102	3.00	6.000	60.00	2.750		Owens	0.42
06/07/2017	04	WAR CREEK	1049	1052	3.00	8.000	60.00	2.750		Owens	0.42
06/07/2017	04	C SEAM	998	1001	3.00	9.000	60.00	2.750		Owens	0.42
06/07/2017	04	C SEAM	979	981	3.00	6.000	60.00	2.750		Owens	0.42
06/07/2017	05	HORSEPEN MIDDLE	895	897	3.00	7.000	60.00	2.750		Owens	0.42
06/07/2017	05	HORSEPEN UPPER	867	869	3.00	7.000	60.00	2.750		Owens	0.42
06/07/2017	05	UNNAMED A	783	785	3.00	6.000	60.00	2.750		Owens	0.42
06/07/2017	06	SEABOARD LOWER	729	732	3.00	9.000	60.00	2.750		Owens	0.42
06/07/2017	06	SEABOARD MIDDLE	684	687	3.00	8.000	60.00	2.750		Owens	0.42
06/07/2017	06	GREASY CREEK	624	627	3.00	10.000	60.00	2.750		Owens	0.42



APPALACHIAN STIMULATION REPORT

Company / Asset	APPALACHIAN
Project / Basin	APPALACHIA SOUTH
Site / Field	NORA

Well common name:	537513	API no.:	4505102711
Well legal name:	VCI-537513	Bolo no.:	411114929
Wellbore name:	VCI-537513	Wellbore No.:	00
Report No.:	1	Report date:	6/8/2017
Job Date:	6/8/2017	Event type:	COMPLETION
Spud date:	5/19/2017	Event end date:	
Contractor:	C&J ENERGY SERVICES	Active datum:	RKB @1,722.6ft (above Mean Sea Level)
Supervisor:	KEVIN DARBY		

Initial Wellhead Pressure (psi)	98.00
Water Source	STREAM

Summary for Stage No.: 1 - 6/7/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 1,532.4 ft	Frac Gradient: 1.2200 psi/ft
Interval Base MD: 1,749.2 ft	Breakdown Press: 1,646.00 psi
Stage Length: 216.8 ft	Breakdown Rate: 3.00 bbl/min
CO2 Energized Quality (%):	Max Rate: 65.60 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 59.80 bbl/min
No. of Perfs: 40	Max Treat. Press.: 2,583.00 psi
No. of Clusters: 5	Avg Treat. Press.: 2,244.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,289.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 37,700 lbm
	Total Propp. Format.: 37,700 lbm
	Slurry Vol: 208.10 bbl
	Clean Vol: 175.90 bbl
	Treated Water Vol: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
ACID	6.0		
NITROGEN ENERGIZED		336600	

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	37,700

Summary for Stage No.: 2 - 6/7/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 1,150.2 ft	Frac Gradient: 1.3600 psi/ft
Interval Base MD: 1,221.4 ft	Breakdown Press: 1,675.00 psi
Stage Length: 71.2 ft	Breakdown Rate: 5.80 bbl/min
CO2 Energized Quality (%):	Max Rate: 59.30 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 54.50 bbl/min
No. of Perfs: 23	Max Treat. Press.: 3,272.00 psi
No. of Clusters: 3	Avg Treat. Press.: 2,254.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,099.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 30,700 lbm
	Total Propp. Format.: 30,700 lbm
	Slurry Vol: 189.20 bbl
	Clean Vol: 163.20 bbl
	Treated Water Vol: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
ACID	6.0		
NITROGEN ENERGIZED		320200	

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	30,700

Summary for Stage No.: 3 - 6/7/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 1,100.2 ft	Frac Gradient: 1.4800 psi/ft
Interval Base MD: 1,114.4 ft	Breakdown Press: 1,621.00 psi
Stage Length: 14.2 ft	Breakdown Rate: 5.80 bbl/min
CO2 Energized Quality (%):	Max Rate: 51.80 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 48.50 bbl/min
No. of Perfs: 24	Max Treat. Press.: 1,963.00 psi
No. of Clusters: 2	Avg Treat. Press.: 1,759.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,157.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 40,300 lbm
	Total Propp. Format.: 40,300 lbm
	Slurry Vol: 228.60 bbl
	Clean Vol: 194.40 bbl
	Treated Water Vol: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
ACID	6.0		
NITROGEN ENERGIZED		274400	

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	40,300

Summary for Stage No.: 4 - 6/7/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 979.2 ft	Frac Gradient: 1.6000 psi/ft
Interval Base MD: 1,051.6 ft	Breakdown Press: 4,189.00 psi
Stage Length: 72.4 ft	Breakdown Rate: 5.80 bbl/min
CO2 Energized Quality (%):	Max Rate: 46.60 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 42.30 bbl/min
No. of Perfs: 23	Max Treat. Press.: 4,077.00 psi
No. of Clusters: 3	Avg Treat. Press.: 2,170.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,189.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 29,600 lbm
	Total Propp. Format.: 29,600 lbm
	Slurry Vol: 160.10 bbl
	Clean Vol: 134.90 bbl
	Treated Water Vol: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
ACID	6.0		
NITROGEN ENERGIZED		221800	

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	29,600

Summary for Stage No.: 5 - 6/7/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 783.4 ft	Frac Gradient: 1.4200 psi/ft
Interval Base MD: 896.6 ft	Breakdown Press: 2,539.00 psi
Stage Length: 113.2 ft	Breakdown Rate: 5.90 bbl/min
CO2 Energized Quality (%):	Max Rate: 43.80 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 37.70 bbl/min
No. of Perfs: 20	Max Treat. Press.: 3,013.00 psi
No. of Clusters: 3	Avg Treat. Press.: 2,202.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 830.00 psi
Coil Tubing Used: No	10 Min ISIP:
Tracer Used: No	5 Min ISIP:
	15 Min ISIP:
	Total Proppant: 20,900 lbm
	Total Propp. Format.: 20,900 lbm
	Slurry Vol: 139.60 bbl
	Clean Vol: 121.90 bbl
	Treated Water Vol: 6.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
ACID	6.0		
NITROGEN ENERGIZED		188500	

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	20,900

Summary for Stage No.: 6 - 6/7/2017

Fluid System: ENERGIZED - SW/N2 TREATMENT	
Interval Top MD: 624.0 ft	Frac Gradient: 2.1800 psi/ft
Interval Base MD: 731.9 ft	Breakdown Press: 3,389.00 psi
Stage Length: 107.9 ft	Breakdown Rate: 5.80 bbl/min
CO2 Energized Quality (%):	Max Rate: 40.20 bbl/min
N2 Energized Quality (%): 70.000	Avg Rate: 37.00 bbl/min
No. of Perfs: 27	Max Treat. Press.: 2,230.00 psi
No. of Clusters: 3	Avg Treat. Press.: 2,085.00 psi
BP Removal Date:	Avg HHP:
Screened Out: No	ISIP: 1,185.00 psi
Coil Tubing Used: No	10 Min ISIP: 912.00 psi
Tracer Used: No	5 Min ISIP: 931.00
	15 Min ISIP:
	Total Proppant: 40,300 lbm
	Total Propp. Format.: 40,300 lbm
	Slurry Vol: 181.90 bbl
	Clean Vol: 148.60 bbl
	Treated Water Vol: 0.00 bbl

Fluids

Fluid name	Pumped (bbl)	Energized Fluid total	Density (ppg)
NITROGEN ENERGIZED		235100	

Proppants

Proppant name	Type	Size	Used (lbm)
WHITE	SAND	20/40	40,300

Final Production After Stimulation		VCI-537513		
	BOD	MCFD	Hours Tested	Rock Pressure
Final/Commingled Zones				
Commingled		54	in-line	



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: 9969
Company: EnerVest Operating, LLC
File Number: DI-2711
Operations Name: VCI-537513 w/PL
Operation Type: Coalbed/Pipeline
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 5/19/2017 Drilling Contractor: Gasco #5
Date drilling completed: 5/20/2017 Rig Type: Rotary Cable
Driller's Total Depth (feet): 2843.00
Log Total Depth (feet): 2840.00 Coal Seam at Total Depth: POCAHONTAS #1

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

Permitted State Plane X: 10406821.1200 Final Plat State Plane X: 10406820.4100
Permitted State Plane Y: 3571189.7100 Final Plat State Plane Y: 3571188.0000

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
VCI-537513 Final Plat	VCI-537513 Final Plat.pdf

VCI-537513 Plat Attachment	VCI-537513_ Final Plat Owner Info.pdf
----------------------------	---------------------------------------

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	537513 Coals.xlsx

Gas and Oil Shows:

List of Attached Items:

Description	FileName
Shows	537513 Shows.xlsx

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

List all logs run: GR/CDL/PE/DIL/Neu/TEMP/Audio

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
Surveys	537513 Survey.xlsx

6. Casing, Centralizers and Tubing Program

List of Attached Items:

Description	FileName
Casing, Centralizers and Tubing	537513 Casing.xlsx

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: EnerVest Operating, LLC

List of Attached Items:

Description	FileName
Driller's Log	537513 DrillersLog.xlsx

9. Comments

Check well coordinates on pg. 1. [7/18/2017, gje]
The well coordinates were not correctly transcribed onto page 1. Coordinates as shown place the well > 10 away from permitted location. [7/18/2017, gje]

10. Signature

Permittee: EnerVest Operating, LLC

Date: 8/15/2017

Signed By: Laura Murray

Title: Associate Landman

INTERNAL USE ONLY

Submit Date: 8/15/2017

Status: A

Date: 8/15/2017

Final PDF Date: 8/24/2017



6,695'

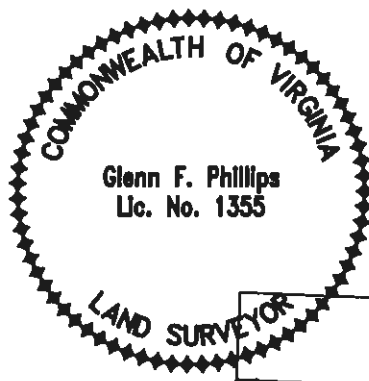
Well Coordinates: (Geographic N83)
37.073059° -82.189477°

Well Coordinates: (UTM N27, Zone 17)
N 13,462,649.14 E 1,293,465.42

Latitude 37° 05' 00"

3,780'

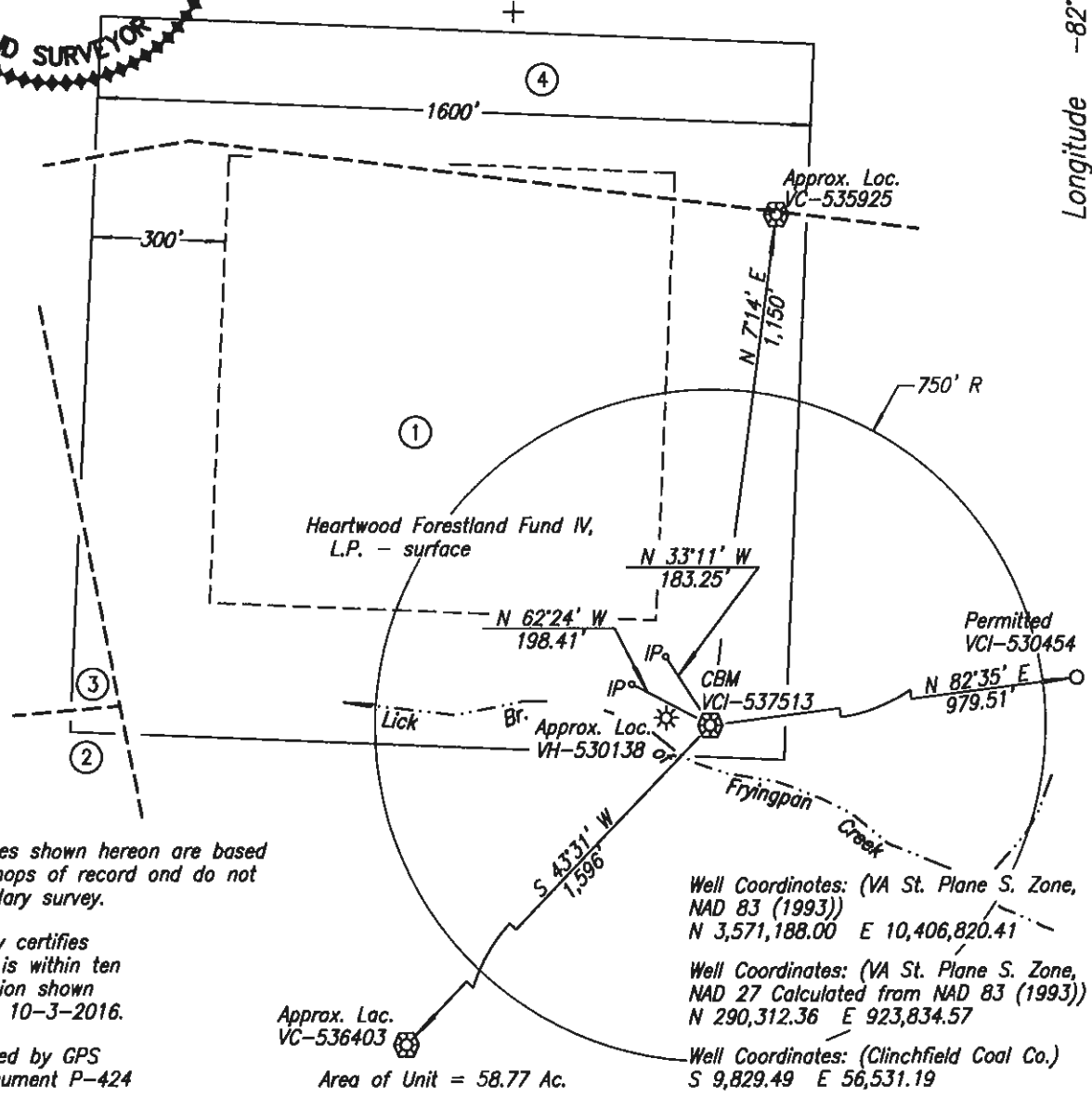
Longitude -82° 10' 00"



Note: See Attached Tract
Ownership Information Schedule

--- Mineral Line
- - - Surface Line
- · - Lease Line

FINAL PLAT



Note: The boundary lines shown hereon are based on deeds, plats and maps of record and do not depict a current boundary survey.

The undersigned hereby certifies that the final location is within ten (10') feet of the location shown on the well plat dated 10-3-2016.

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

Well Coordinates: (VA St. Plane S. Zone, NAD 83 (1993))
N 3,571,188.00 E 10,406,820.41
Well Coordinates: (VA St. Plane S. Zone, NAD 27 Calculated from NAD 83 (1993))
N 290,312.36 E 923,834.57
Well Coordinates: (Cinchfield Coal Co.)
S 9,829.49 E 56,531.19

WELL LOCATION PLAT NORA GRID BG-72

COMPANY EnerVest Operating, LLC WELL NAME AND NUMBER VCI-537513
TRACT NO. T-405 ELEVATION 1,715.03' QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 5-22-2017
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

VCI-537513 FINAL PLAT
TRACT OWNERSHIP INFORMATION SCHEDULE

5/22/2017

- 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 . T2-222
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%

Coal seams			Well #	537513		
Names	Depth	Depth	Thickness	Mining in Area		Mined Out
	Top	Bottom		Yes	No	
Jawbone	265.00	268.00	3.00	Yes	No	
Tiller	268.00	270.00	2.00	Yes	No	
Upper Seaboard A	415.10	416.30	1.20		No	No
Upper Seaboard	448.70	450.20	1.50		No	No
Greasy Creek	624.50	626.50	2.00		No	No
Middle Seaboard	684.70	686.10	1.40		No	No
Lower Seaboard	729.70	731.40	1.70		No	No
Unnamed A	783.90	784.40	0.50		No	No
Unnamed B	813.20	813.60	0.40		No	No
Upper Horsepen	867.20	868.30	1.10		No	No
Middle Horsepen	895.10	896.10	1.00		No	No
C Seam Rider	979.70	980.50	0.80		No	No
C Seam	998.70	1000.40	1.70		No	No
War Creek	1049.80	1051.10	1.30		No	No
Unnamed C	1100.70	1101.20	0.50		No	No
Beckley	1109.40	1113.90	4.50		No	No
Lower Horsepen	1150.70	1151.70	1.00		No	No
X Seam Rider	1182.80	1183.50	0.70		No	No
X Seam	1218.80	1220.90	2.10		No	No
Pocahontas #9	1280.50	1280.60	0.10		No	No
Pocahontas #8	1356.40	1356.60	0.20		No	No
Pocahontas #7	1425.00	1425.10	0.10		No	No
Pocahontas #6 Rider	1532.90	1534.40	1.50		No	No
Pocahontas #6	1573.60	1574.10	0.50		No	No
Pocahontas #6	1577.60	1578.10	0.50		No	No
Pocahontas #5 Rider	1593.40	1596.00	2.60		No	No
Pocahontas #5	1613.10	1613.20	0.10		No	No
Pocahontas #4	1680.50	1680.60	0.10		No	No
Pocahontas #3	1747.60	1748.70	1.10		No	No
Pocahontas #2	1783.00	1783.10	0.10		No	No
Pocahontas #1	1917.00	1917.40	0.40		No	No

Survey Results

537513

Depth of Survey	Direction/Distance/Degree From True Vertical
194	1/4
383	1/2
571	1/2
760	1/4
949.00	3/4
1,138.00	3/4
1,328.00	1/2
1,515.00	1/2
1,704.00	3/4
1,893.00	1
2,103.00	3/4

Drillers Log		537513			
Geologic Age	Formation	General Lithology	Depth Top	Depth Bottom	Thickness
Pennsylvanian	Lee	Sand/Shale/Coal	0.00	265.00	265.00
Pennsylvanian	Lee	Jawbone	265.00	268.00	3.00
Pennsylvanian	Lee	Tiller	268.00	270.00	2.00
Pennsylvanian	Lee	Sand/Shale	270.00	415.10	145.10
Pennsylvanian	Lee	Upper Seaboard A	415.10	416.30	1.20
Pennsylvanian	Lee	Sand/Shale	416.30	448.70	32.40
Pennsylvanian	Lee	Upper Seaboard	448.70	450.20	1.50
Pennsylvanian	Lee	Sand/Shale	450.20	624.50	174.30
Pennsylvanian	Lee	Greasy Creek	624.50	626.50	2.00
Pennsylvanian	Lee	Sand/Shale	626.50	684.70	58.20
Pennsylvanian	Lee	Middle Seaboard	684.70	686.10	1.40
Pennsylvanian	Lee	Sand/Shale	686.10	729.70	43.60
Pennsylvanian	Lee	Lower Seaboard	729.70	731.40	1.70
Pennsylvanian	Lee	Sand/Shale	731.40	783.90	52.50
Pennsylvanian	Lee	Unnamed A	783.90	784.40	0.50
Pennsylvanian	Lee	Sand/Shale	784.40	813.20	28.80
Pennsylvanian	Lee	Unnamed B	813.20	813.60	0.40
Pennsylvanian	Lee	Sand/Shale	813.60	867.20	53.60
Pennsylvanian	Lee	Upper Horsepen	867.20	868.30	1.10
Pennsylvanian	Lee	Sand/Shale	868.30	895.10	26.80
Pennsylvanian	Lee	Middle Horsepen	895.10	896.10	1.00
Pennsylvanian	Lee	Sand/Shale	896.10	979.70	83.60
Pennsylvanian	Lee	C Seam Rider	979.70	980.50	0.80
Pennsylvanian	Lee	Sand/Shale	980.50	998.70	18.20
Pennsylvanian	Lee	C Seam	998.70	1000.40	1.70
Pennsylvanian	Lee	Sand/Shale	1000.40	1049.80	49.40
Pennsylvanian	Lee	War Creek	1049.80	1051.10	1.30
Pennsylvanian	Lee	Sand/Shale	1051.10	1100.70	49.60
Pennsylvanian	Lee	Unnamed C	1100.70	1101.20	0.50
Pennsylvanian	Lee	Sand/Shale	1101.20	1109.40	8.20
Pennsylvanian	Lee	Beckley	1109.40	1113.90	4.50
Pennsylvanian	Lee	Sand/Shale	1113.90	1150.70	36.80
Pennsylvanian	Lee	Lower Horsepen	1150.70	1151.70	1.00
Pennsylvanian	Lee	Sand/Shale	1151.70	1182.80	31.10
Pennsylvanian	Lee	X Seam Rider	1182.80	1183.50	0.70
Pennsylvanian	Lee	Sand/Shale	1183.50	1218.80	35.30
Pennsylvanian	Lee	X Seam	1218.80	1220.90	2.10
Pennsylvanian	Lee	Sand/Shale	1220.90	1280.50	59.60
Pennsylvanian	Lee	Pocahontas #9	1280.50	1280.60	0.10
Pennsylvanian	Lee	Sand/Shale	1280.60	1356.40	75.80
Pennsylvanian	Lee	Pocahontas #8	1356.40	1356.60	0.20
Pennsylvanian	Lee	Sand/Shale	1356.60	1425.00	68.40
Pennsylvanian	Lee	Pocahontas #7	1425.00	1425.10	0.10

Pennsylvanian	Lee	Sand/Shale	1425.10	1532.90	107.80
Pennsylvanian	Lee	Pocahontas #6 Rider	1532.90	1534.40	1.50
Pennsylvanian	Lee	Sand/Shale	1534.40	1573.60	39.20
Pennsylvanian	Lee	Pocahontas #6	1573.60	1574.10	0.50
Pennsylvanian	Lee	Sand/Shale	1574.10	1577.60	3.50
Pennsylvanian	Lee	Pocahontas #6	1577.60	1578.10	0.50
Pennsylvanian	Lee	Sand/Shale	1578.10	1593.40	15.30
Pennsylvanian	Lee	Pocahontas #5 Rider	1593.40	1596.00	2.60
Pennsylvanian	Lee	Sand/Shale	1596.00	1613.10	17.10
Pennsylvanian	Lee	Pocahontas #5	1613.10	1613.20	0.10
Pennsylvanian	Lee	Sand/Shale	1613.20	1680.50	67.30
Pennsylvanian	Lee	Pocahontas #4	1680.50	1680.60	0.10
Pennsylvanian	Lee	Sand/Shale	1680.60	1747.60	67.00
Pennsylvanian	Lee	Pocahontas #3	1747.60	1748.70	1.10
Pennsylvanian	Lee	Sand/Shale	1748.70	1783.00	34.30
Pennsylvanian	Lee	Pocahontas #2	1783.00	1783.10	0.10
Pennsylvanian	Lee	Sand/Shale	1783.10	1917.00	133.90
Pennsylvanian	Lee	Pocahontas #1	1917.00	1917.40	0.40
Pennsylvanian	Lee	Sand/Shale	1917.40	2103.00	185.60



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: 724
Company: Equitable Production Company
File Number: DI-1748
Operations Name: V-537713 W/PL
Operation Type: Gas/Pipeline
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type:	<u>Gas/Pipeline</u>	Date Well Completed:	<u>6/15/2007</u>
Driller's Total Depth:	<u>5,195</u>	Log's Total Depth:	<u>5,234</u>

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

2. Stimulation Record

Stimulated Not Stimulated Gob

Description	FileName
treatment sumamry 537713	Stage 537713.doc

3. Final Production

Description	FileName
final production 537713	Final Production 537713.doc

4. Comments

Notes:

5. Signature

Permittee: Equitable Production Company Date: 10/30/2007 7:43:43 AM (Company)

By: L. Todd Tetric Title: Director of Drilling (Signature)

_____	_____
_____	_____
_____	_____

Stage1

Date		06/13/2007	
FracType	75Q	Foam	
Zone		Weir	
# of Perfs		28	
From/To		4,622	4,647
BD Press		166	
ATP Psi		2,291	
Avg Rate		26	
Max Press Psi		2,400	
ISIP Psi		1,870	
10min SIP	1,611		5 min.
		0.53	
Frac Gradient			
Sand Proppant		563.17	
Water-bbl		268	
SCF N2		568,973	
Acid-gal	500	gal	
		7.5%	

Stage2

Date		06/13/2007	
FracType		Acid	
Zone		Big Lime	
# of Perfs		28	
From/To		4,148	4,209
BD Press		1,844	

ATP Psi		1,832	
Avg Rate		13	
Max Press Psi		2,359	
ISIP Psi		2,160	
10min SIP	2,030		5 min.
		0.65	
Frac Gradient			
Sand Proppant		0.00	
Water-bbl		87	
SCF N2		50,064	
Acid-gal	4,350	gal	
		15% HCL	

Stage3

Date		06/13/2007	
FracType	75Q	Foam	
Zone		Ravenclyff	
# of Perfs		27	
From/To		2,433	2,454
BD Press		829	
ATP Psi		2,096	
Avg Rate		20	
Max Press Psi		2,673	
ISIP Psi		1,576	
10min SIP	1,358		5 min.
		0.78	
Frac Gradient			
Sand			

Proppant

500.02

Water-bbl

290

SCF N2

420,531

Acid-gal

1,000

gal
15% HCL

Final Production

Final Production if Gas Zones are commingled

After Stimulation

BOD

MCFD

Hours Tested

Rock Pressure

677

0

800



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: 797
 Company: Equitable Production Company
 File Number: DI-1748
 Operations Name: V-537713 W/PL
 Operation Type: Gas/Pipeline
 Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 5/31/2007 Drilling Contractor: Gasco
 Date drilling completed: 6/4/2007 Rig Type: Rotary Cable Tool
 Driller's Total Depth (feet): 5,195
 Log Total Depth (feet): 5,234 Formation At Total Depth Cleveland Shale

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

Permitted State Plane X 934,580 Final Plat State Plane X: 934,583
 Permitted State Plane Y: 283,120 Final Plat State Plane Y: 283,121

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
final plat 537713	V-537713 final plat.tif

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
193	1/4	INCH

Salt Water At:

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

Coal Seams

List of Attached Items:

Description	FileName
coal seams 537713	Coal Seams 537713.doc

Gas and Oil Shows

List of Attached Items:

Description	FileName
gas shows 537713	Gas and Oil Shows 537713.doc

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

List all logs run: GR/Density/Induction/Temp/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 537713	Survey Results 537713.doc

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
csg 537713	Casing Dat 537713.doc
tbg 537713	Tubing Size 537713.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.

9 5/8" casing was grouted to surface

8. Drillers Log

Compiled By: _____

List of Attached Items:

Description	FileName
drillers log 537713	Drillers Log 537713.doc

9. Comments

Inspection report indicates the 9 5/8" cement job was a balance; this needs to be noted under "Remarks" [ljs 10/31/07]
Corrected 10/31/07 [ljs]

10. Signature

Permitee: Equitable Production Company Date: 10/31/2007 (Company)

Signed By: L. Todd Tetrick Title: Director of Drilling (Signature)

<hr/> <hr/> <hr/> <hr/>	<hr/>
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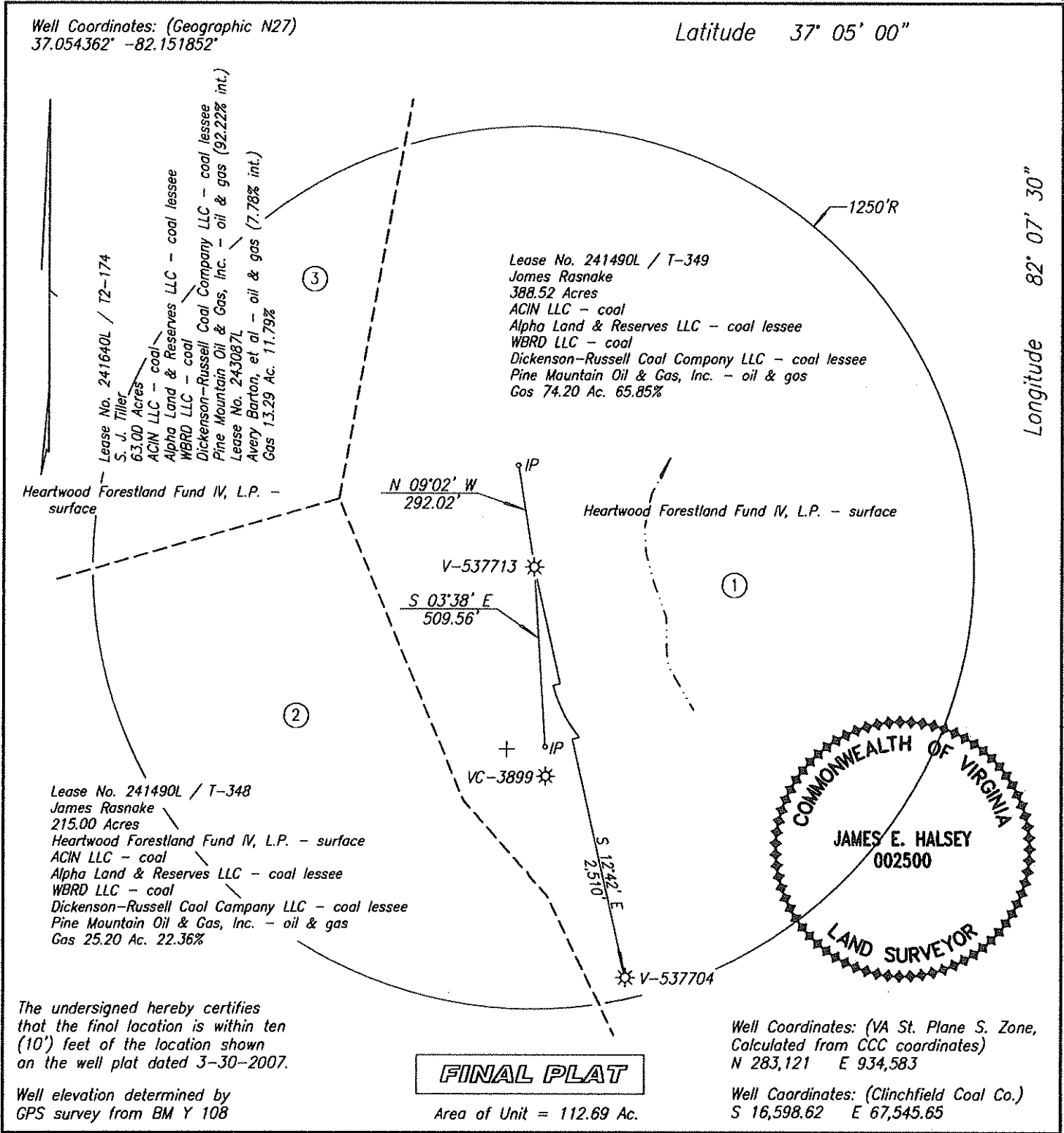
7,850'

Well Coordinates: (Geographic N27)
37.054362° -82.151852°

Latitude 37° 05' 00"

Longitude 82° 07' 30"

10,550'



WELL LOCATION PLAT

COMPANY Equitable Production Company WELL NAME AND NUMBER V-537713
 TRACT NO. Lse. No. 241490L/T-349 ELEVATION 1,955.80' QUADRANGLE Duty
 COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 6-04-2007

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

Coal Seams & Open Mines

Type

Coal

Coal

From

193'-94',225'-26',500'-01',640'-41',840'-41'

885'-86',990'-91',1090'-91',1250'-51',1470'-71'

**Gas and
Oil Shows**

Gas Tests

<u>Depth</u>	<u>Remarks</u>
193	NS
412	NS
600	NS
818	NS
1007	NS
1197	NS
1414	NS
1601	NS
1715	NS
2,356	TSTM
4,400	TSTM
4,450	TSTM
5,195	TSTM

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees From True Vertical</u>
193	1/4
412	1/4
600	1/4
818	1/4
1,007	1/4
1,197	1/4
1,414	1/4
1,601	1/4
1,715	1/4

Casing Data

Casing Outside Diameter	Casing Interval	Hole Size	Cement used in Cu. ft.	Cmtd To Surface	Date Cemented	Cement Baskets
12 3/4	63	15				
9 5/8	314	12 1/4	273.76	y	05/31/2007	182
7	1688	8 7/8	387.60	y	06/01/2007	353 & 359
4 1/2	4748	6 3/8	453.25	n	06/04/2007	

Tubing
Size
2 3/8

Footage
4,631.50

Drillers
Log

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
OverBurden	0.00	40.00	40.00
Sand Stone	40.00	193.00	153.00
Coal	193.00	194.00	1.00
Sandy Shale	194.00	225.00	31.00
Coal	225.00	226.00	1.00
Sandy Shale	226.00	390.00	164.00
Sand Stone	390.00	500.00	110.00
Coal	500.00	501.00	1.00
Sandy Shale	501.00	640.00	139.00
Coal	640.00	641.00	1.00
Sandy Shale	641.00	840.00	199.00
Coal	840.00	841.00	1.00
Sandy Shale	841.00	885.00	44.00
Coal	885.00	886.00	1.00
Sand Stone	886.00	990.00	104.00
Coal	990.00	991.00	1.00
Sandy Shale	991.00	1,090.00	99.00
Coal	1,090.00	1,091.00	1.00
Sand Stone	1,091.00	1,185.00	94.00
Sandy Shale	1,185.00	1,250.00	65.00
Coal	1,250.00	1,251.00	1.00
Sand Stone	1,251.00	1,470.00	219.00
Coal	1,470.00	1,471.00	1.00
Sandy Shale	1,471.00	1,500.00	29.00
Sand Stone	1,500.00	1,645.00	145.00
Sandy Shale	1,645.00	1,960.00	315.00
Red Rock	1,960.00	1,980.00	20.00
Sand Stone	1,980.00	2,090.00	110.00
Sandy Shale	2,090.00	2,349.00	259.00
RVCF	2,349.00	2,456.00	107.00
AVIS	2,538.00	2,621.00	83.00
MXTN	3,208.00	0.00	0.00
LLIM	3,608.00	3,677.00	69.00
BGLM	3,677.00	4,445.00	768.00
WEIR	4,445.00	4,727.00	282.00
WEIR Sh	4,727.00	5,023.00	296.00
SNBY	5,023.00	5,078.00	55.00
BEREA	5,078.00	5,086.00	8.00
CLEV	5,086.00	0.00	0.00



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: 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
-------------	----------

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

Stage 1

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

Stage 2

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/Wrcrk/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

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:	<u>2156</u>
Company:	<u>EQT Production Company</u>
File Number:	<u>DI-2243</u>
Operations Name:	<u>VC-537794</u>
Operation Type:	<u>Coal Bed</u>
Drilling Report Type:	<u>Original</u>

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	<u>8/15/2009</u>	Drilling Contractor:	<u>Crossrock Drilling</u>
Date drilling completed:	<u>8/18/2009</u>	Rig Type:	<u>R Rotary</u> <u>F Cable</u>
Driller's Total Depth (feet):	<u>2376.00</u>		
Log Total Depth (feet):	<u>2392.00</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>10409620.9900</u>	Final Plat State Plane X:	<u>10409621.1000</u>
Permitted State Plane Y:	<u>3573508.6100</u>	Final Plat State Plane Y:	<u>3573508.4200</u>

Plat Previously Submitted Or... F

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

Permitee: 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

Well Coordinates: (Geographic N27)
37.079620° -82.180335°

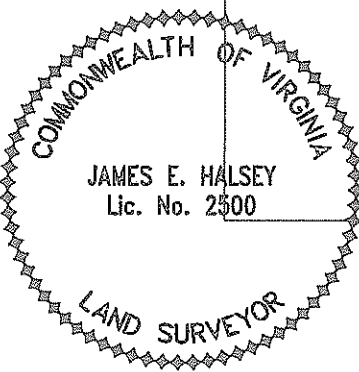
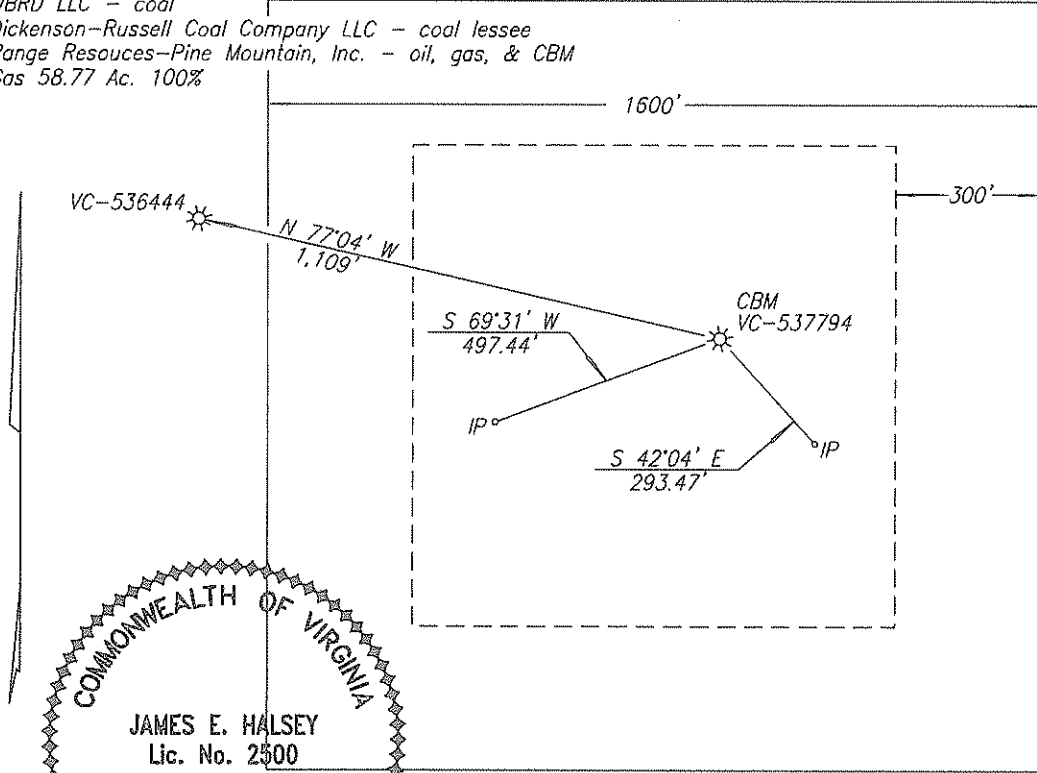
Latitude 37° 05' 00"

+

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.

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 Resouces-Pine Mountain, Inc. - oil, gas, & CBM
Gas 58.77 Ac. 100%

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 Ervinton SCALE 1" = 400' DATE 8-17-2009
This Plat is a new plat ; on 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**

Type

Coal

Coal

Coal

Coal

From

106'-07',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 and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</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 Data

Casing Outside Diameter	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
Log

<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 sand & shale	923.50 924.75	924.75 967.00	1.25 42.25
Upper Seaboard sand & shale	967.00 968.00	968.00 1,152.00	1.00 184.00
Greasy Creek sand & shale	1,152.00 1,155.58	1,155.58 1,204.00	3.58 48.42
Middle Seaboard sand & shale	1,204.00 1,205.50	1,205.50 1,254.00	1.50 48.50
Lower Seaboard sand & shale	1,254.00 1,255.67	1,255.67 1,325.00	1.67 69.33
Unnamed A sand & shale	1,325.00 1,325.83	1,325.83 1,370.00	0.83 44.17
Unnamed B sand & shale	1,370.00 1,370.67	1,370.67 1,390.50	0.67 19.83
Upper Horsepen sand & shale	1,390.50 1,391.67	1,391.67 1,420.50	1.17 28.83
Middle Horsepen sand & shale	1,420.50 1,421.33	1,421.33 1,500.50	0.83 79.17
C Seam Rider sand & shale	1,500.50 1,500.92	1,500.92 1,523.50	0.42 22.58
C Seam sand & shale	1,523.50 1,524.83	1,524.83 1,565.00	1.33 40.17
War Creek sand & shale	1,565.00 1,567.00	1,567.00 1,631.00	2.00 64.00
Beckley sand & shale	1,631.00 1,634.67	1,634.67 1,681.50	3.67 46.83
Lower Horsepen sand & shale	1,681.50 1,682.75	1,682.75 1,727.50	1.25 44.75
X Seam sand & shale	1,727.50 1,729.08	1,729.08 1,796.00	1.58 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: 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
-------------	----------

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

Stage 1

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

Stage 2

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

BOD

MCFD

Hours Tested

**Rock
Pressure**

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:	<u>2125</u>
Company:	<u>EQT Production Company</u>
File Number:	<u>DI-2198</u>
Operations Name:	<u>VC-537795</u>
Operation Type:	<u>Coal Bed</u>
Drilling Report Type:	<u>Original</u>

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	<u>6/24/2009</u>	Drilling Contractor:	<u>Crossrock Drilling</u>
Date drilling completed:	<u>6/27/2009</u>	Rig Type:	<u>R Rotary</u> <u>F Cable</u>
Driller's Total Depth (feet):	<u>2387.00</u>		
Log Total Depth (feet):	<u>2397.00</u>	Coal Seam At Total Depth	<u>POCAHONTAS #5</u>

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

Permitted State Plane X:	<u>10409336.6500</u>	Final Plat State Plane X:	<u>10409336.2700</u>
Permitted State Plane Y:	<u>3572179.4300</u>	Final Plat State Plane Y:	<u>3572179.0200</u>

Plat Previously Submitted Or... F

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

Permitee: 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°

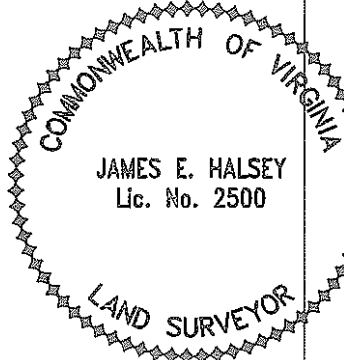
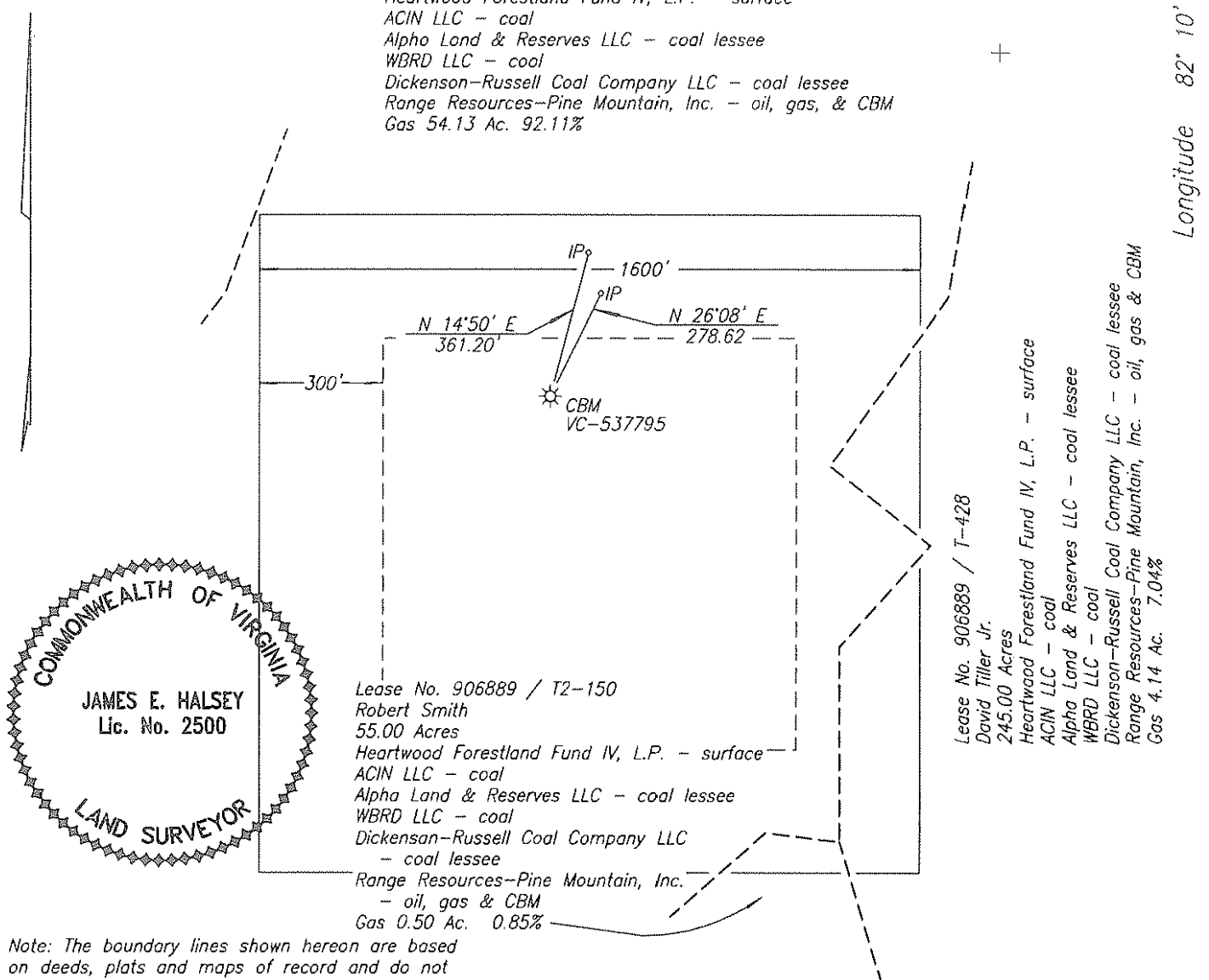
Lease No. 906889 / T-409
J.N.R. Sutherland
430.65 Acres
Heartwood Forestland Fund IV, L.P. - surface
ACIN LLC - coal
Alpha Land & Reserves LLC - coal lessee
WBRD LLC - coal
Dickenson-Russell Coal Company LLC - coal lessee
Range Resources-Pine Mountain, Inc. - oil, gas, & CBM
Gas 54.13 Ac. 92.11%

Latitude 37° 05' 00"

Longitude 82° 10' 00"

4,190'

2,700'



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
Range Resources-Pine Mountain, Inc.
- oil, gas & CBM
Gas 0.50 Ac. 0.85%

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
Range Resources-Pine Mountain, Inc. - oil, gas & CBM
Gas 4.14 Ac. 7.04%

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

**Coal Seams & Open
Mines**

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 and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</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

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees 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 Data

Casing Outside Diameter	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'

Drillers
Log

<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: 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
-------------	----------

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

BOD

MCFD

Hours Tested

**Rock
Pressure**

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. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	<u>2238</u>
Company:	<u>EQT Production Company</u>
File Number:	<u>DI-2213</u>
Operations Name:	<u>VC-537798</u>
Operation Type:	<u>Coal Bed</u>
Drilling Report Type:	<u>Original</u>

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	<u>6/27/2009</u>	Drilling Contractor:	<u>Crossrock Drilling</u>
Date drilling completed:	<u>6/29/2009</u>	Rig Type:	<u>R Rotary</u> <u>F Cable</u>
Driller's Total Depth (feet):	<u>2397.00</u>		
Log Total Depth (feet):	<u>2408.00</u>	Coal Seam At Total Depth	<u>UNNAMED</u>

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

Permitted State Plane X:	<u>10410546.9000</u>	Final Plat State Plane X:	<u>10410546.3900</u>
Permitted State Plane Y:	<u>3571814.0500</u>	Final Plat State Plane Y:	<u>3571814.2000</u>

Plat Previously Submitted Or... F

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

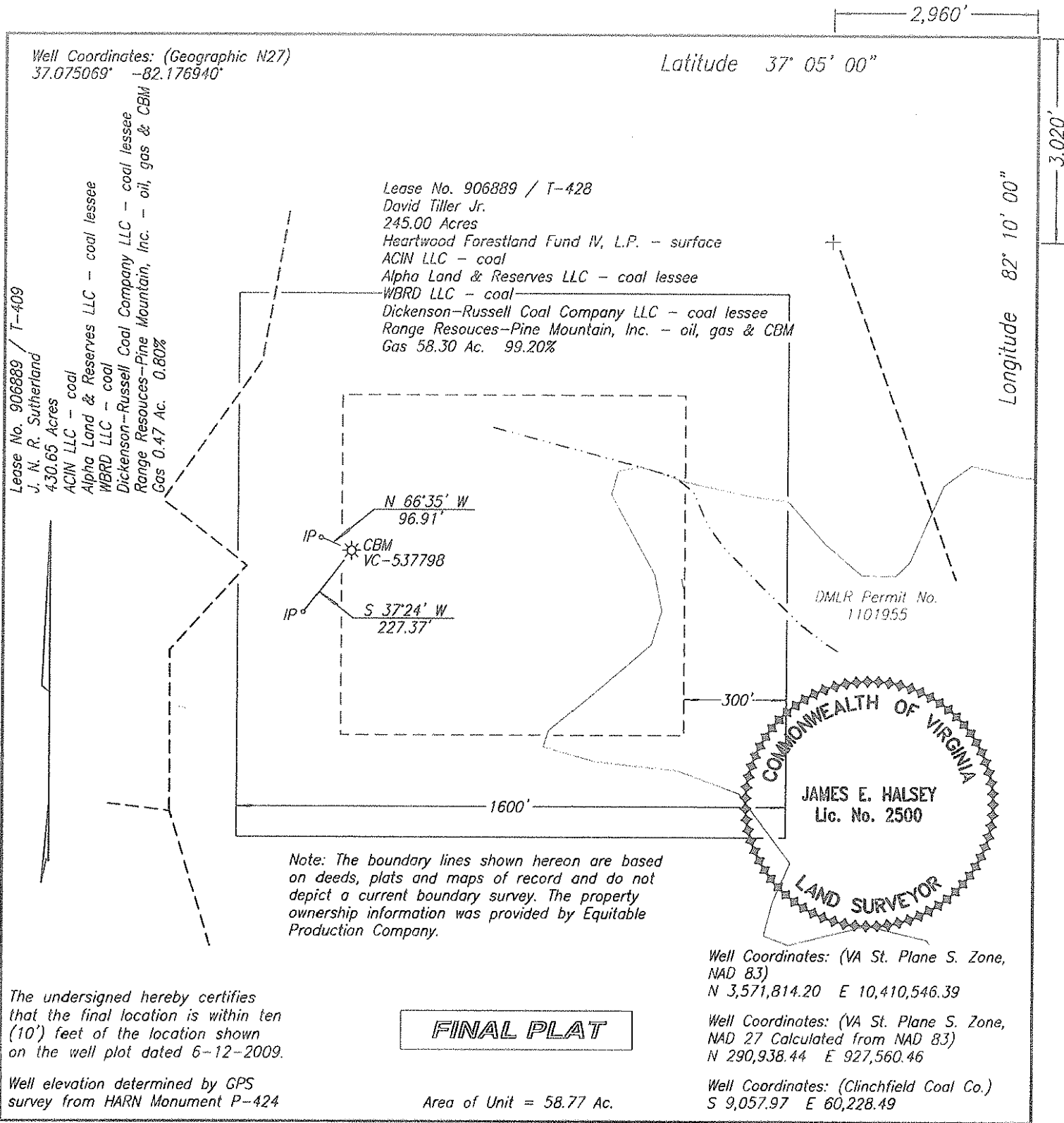
INTERNAL USE ONLY

Submit Date: 1/19/2010

Status: A

Date: 3/30/2010

Final PDF Date: 4/5/2010



Well Coordinates: (Geographic N27)
 37.075069° -82.176940°

Latitude 37° 05' 00"

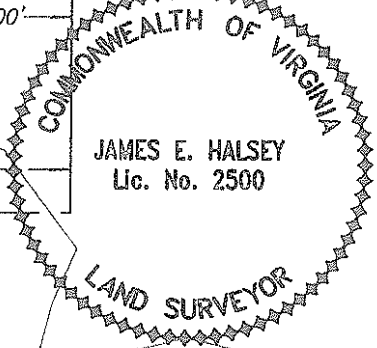
Longitude 82° 10' 00"

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 0.47 Ac. 0.80%

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
 Range Resources-Pine Mountain, Inc. - oil, gas & CBM
 Gas 58.30 Ac. 99.20%

N 66°35' W
 96.91'
 IP
 * CBM
 VC-537798
 S 37°24' W
 227.37'
 IP

DMLR Permit No.
 1101955



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.

FINAL PLAT

Well Coordinates: (VA St. Plane S. Zone, NAD 83)
 N 3,571,814.20 E 10,410,546.39

Well Coordinates: (VA St. Plane S. Zone, NAD 27 Calculated from NAD 83)
 N 290,938.44 E 927,560.46

Well Coordinates: (Clinchfield Coal Co.)
 S 9,057.97 E 60,228.49

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

Area of Unit = 58.77 Ac.

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 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	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 and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</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

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees 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 Data

Casing Outside Diameter	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

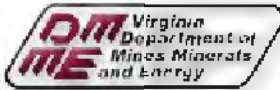
2,304.55

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: 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
-------------	----------

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.

Frac Gradient 2.40

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

BOD

MCFD

Hours Tested

**Rock
Pressure**

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. 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: Rotary 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

Permitee: Equitable Production Company Date: 11/13/2008

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

INTERNAL USE ONLY

Submit Date: 11/13/2008

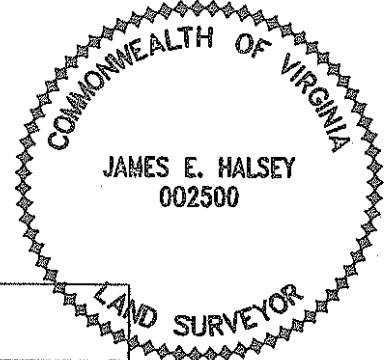
Status: A

Date: 11/26/2008

Final PDF Date: 3/25/2009

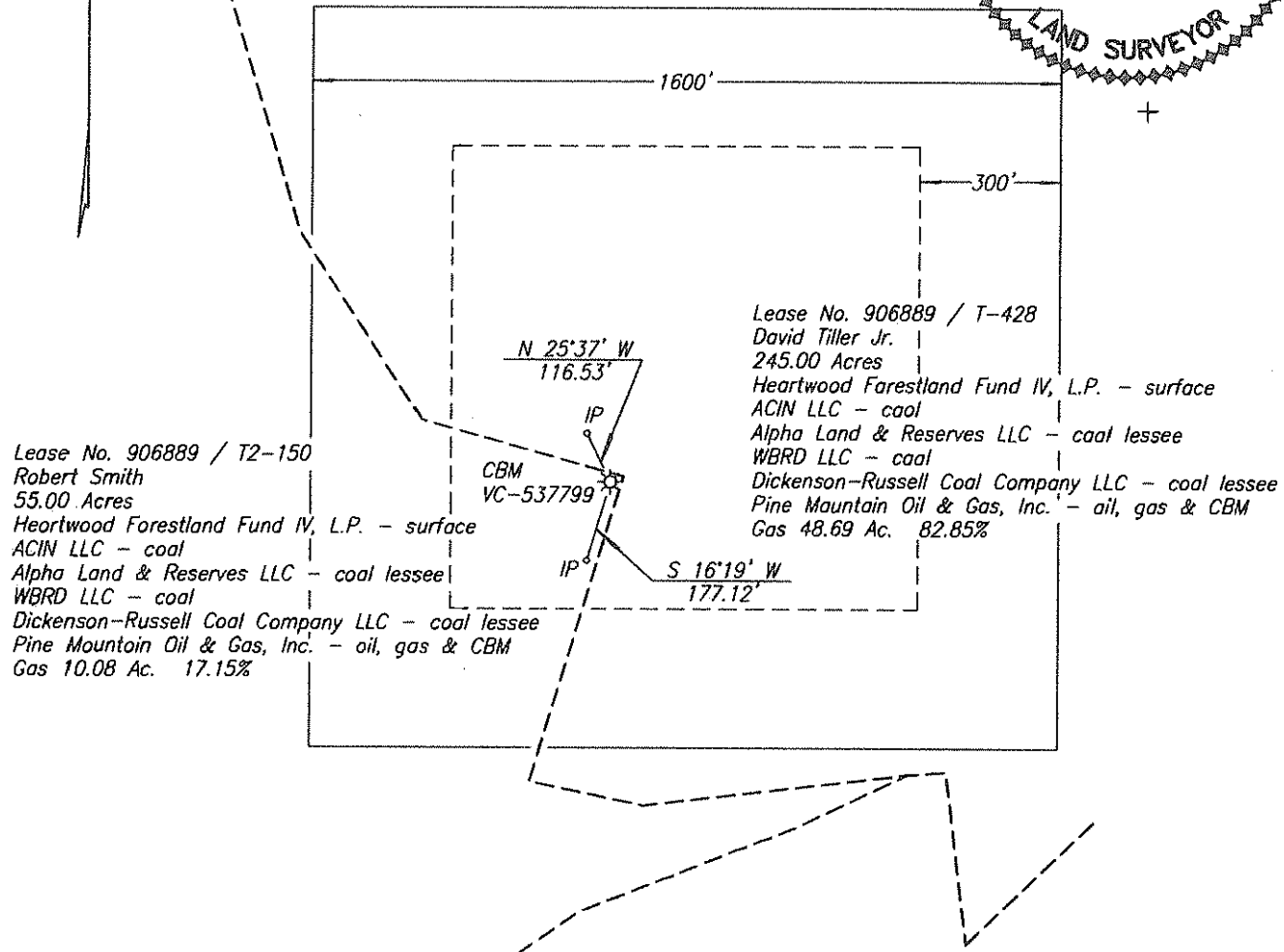
Well Coordinates: (Geographic N27)
37.069944° -82.175869°

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%

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

**Coal Seams & Open
Mines**

<u>Type</u>	<u>From</u>
Coal	85'-6', 320'-21', 410'-11', 630'-31', 655'-56',
Coal	803'-04.1', 882'-83.5', 904.5'-05.7', 1091.5'-
	94.', 1158.5'-60.3', 1209'-11.4',
Coal	1280'-82.7', 1338.5'-40.8', 1453.5'-54.2',
	1465'-66', 1506'-07',
Coal	1536'-37.3', 1567'-70.8', 1704.5'-06.3',
	2000.5'-02', 2236'-37.1'
Open Mine	690'-95'

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</u>
196	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

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees 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 Data

Casing Outside Diameter	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"

Drillers
Log

<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: 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
-------------	----------

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 7.5%HCL	850

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. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9700

Tracking Number:	<u>2212</u>
Company:	<u>EQT Production Company</u>
File Number:	<u>DI-2245</u>
Operations Name:	<u>VC-537802</u>
Operation Type:	<u>Coal Bed</u>
Drilling Report Type:	<u>Original</u>

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	<u>8/18/2009</u>	Drilling Contractor:	<u>Crossrock Drilling</u>
Date drilling completed:	<u>9/21/2009</u>	Rig Type:	<u>R Rotary</u> <u>F Cable</u>
Driller's Total Depth (feet):	<u>2186.00</u>		
Log Total Depth (feet):	<u>2193.00</u>	Coal Seam At Total Depth	<u>POCAHONTAS #2</u>

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

Permitted State Plane X:	<u>10412601.6500</u>	Final Plat State Plane X:	<u>10412602.2800</u>
Permitted State Plane Y:	<u>3569540.8700</u>	Final Plat State Plane Y:	<u>3569540.9300</u>

Plat Previously Submitted Or... F

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

Permitee: 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

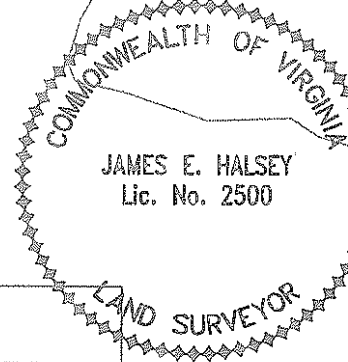
Final PDF Date: 1/14/2010

840'

Well Coordinates: (Geographic N27)
37.069050° -82.169596°

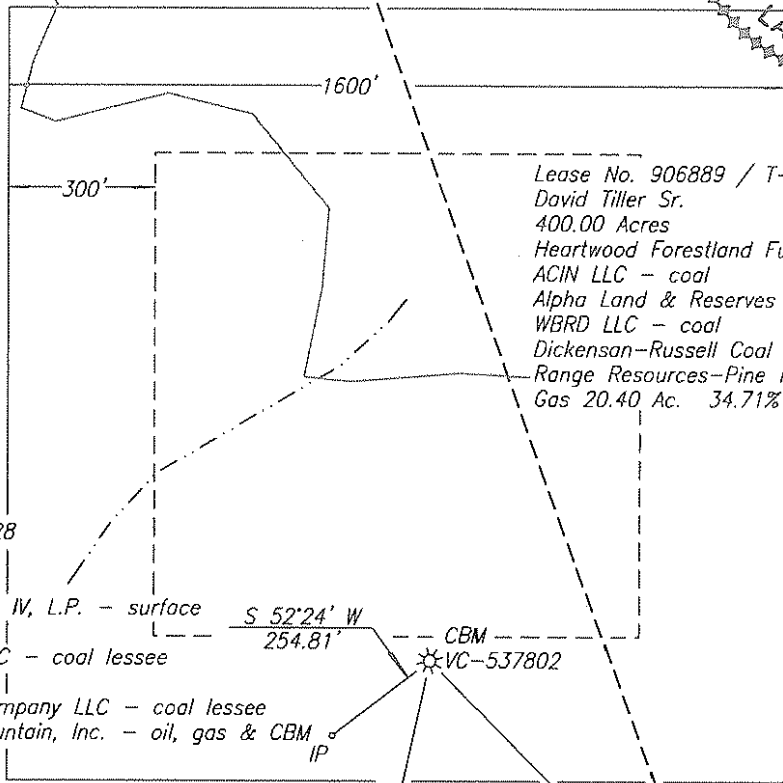
Latitude 37° 05' 00"

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.



5,200'
Longitude 82° 10' 00"

DMLR PN
1101955



Lease No. 906889 / T-432
David Tiller Sr.
400.00 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 & CBM
Gas 20.40 Ac. 34.71%

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
Range Resources-Pine Mountain, Inc. - oil, gas & CBM
Gas 38.37 Ac. 65.29%

DMLR PN
1101955

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.

FINAL PLAT

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

Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane S. Zone, NAD 83)
N 3,569,540.93 E 10,412,602.28

Well Coordinates: (VA St. Plane S. Zone, NAD 27 Calculated from NAD 83)
N 288,665.22 E 929,616.28

Well Coordinates: (Clinchfield Coal Co.)
S 11,249.61 E 62,370.65

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 Ervinton SCALE 1" = 400' DATE 8-19-2009
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

**Coal Seams & Open
Mines**

<u>Type</u>	<u>From</u>
Coal	109'-10',160'-61',197'-99',338'-39',520'-25',553'-54'
Coal	599.5'-00.33',695.5'-96.67',718.5'-19.33',908.5'-10.58',980.5'-82.25',1031'-33'
Coal	1095.5'-98.33',1139.5'-40.17',1193'-94.17',1272'-72.67',1290'-90.92',1329'-30.25
Coal	1395'-98.5',1499.5'-00.42',1514.5'-16.5',1829.5'-30.67',2064'-67.42'
Open Mine	498'-01'

Gas and Oil Shows

Gas Tests

<u>Depth</u>	<u>Remarks</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

**Survey
Results**

<u>Depth</u>	<u>Direction/Distance/Degrees 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 Data

Casing Outside Diameter	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

Drillers
Log

<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: 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:	Coalbed/Pipeline	Date Well Completed:	12/2/2006
Driller's Total Depth:	2,193	Log's Total Depth:	2,206

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

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 Tetric 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.
Frac Gradient	1.70	

Sand Proppant		78.00
Water-bbl		251
SCF N2		275,000
Acid-gal	1,000	gal 10%MSA

Stage5

Date	11/18/2006
-------------	-------------------

FracType	70Q	Foam	M&L Sbrd	
Zone				
# of Perfs			28	
From/To			907	966
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	

Final Production

Final Production if Gas Zones are commingled

**After
Stimulation**

BOD

MCFD

**Hours
Tested**

68

0



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

9. Comments

10. Signature

Permitee: Equitable Production Company Date: 4/5/2007 (Company)

Signed By: L. Todd Tetrick Title: Director of Drilling (Signature)

INTERNAL USE ONLY

Submit Date: 4/5/2007

Status: Inspr Approved

Date: 4/9/2007

Final PDF Date: 4/9/2007

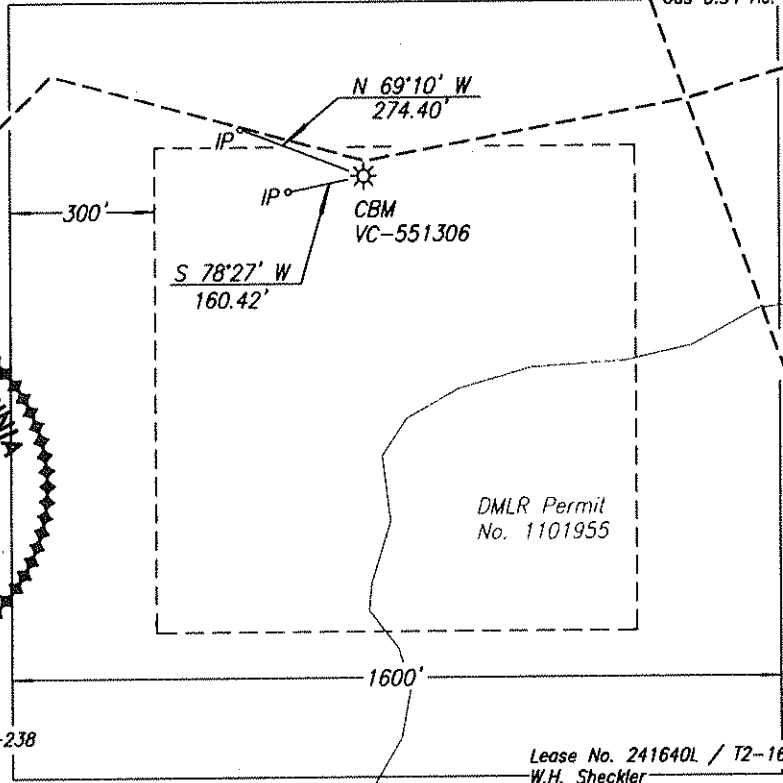
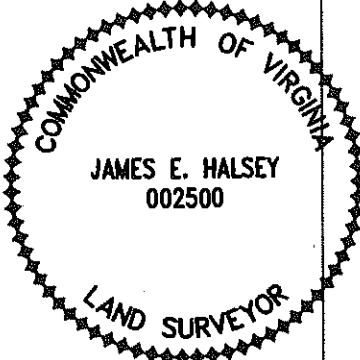
-975'

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%



DMLR Permit No. 1101955

DMLR Permit No. 1101955

Lease No. 241490L / T-238
 Charles Barnett
 486.38 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
 + 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	

Tubing
Size
2 3/8

Footage
2,075.70

Drillers
Log

<u>Formation Name</u>	<u>Depth Top</u>	<u>Depth Bottom</u>	<u>Formation Thickness</u>
Upper Horsepen sand & shale	677.00	678.50	1.50
Upper Seaboard sand & shale	678.50	1,129.00	450.50
Greasy Creek sand & shale	700.50	701.50	1.00
Middle Seaboard sand & shale	701.50	852.00	150.50
Lower Seaboard sand & shale	852.00	852.00	0.00
Unnamed A sand & shale	852.00	907.00	55.00
Middle Horsepen sand & shale	907.00	910.50	3.50
C Seam sand & shale	910.50	963.50	53.00
War Creek Rider sand & shale	963.50	965.30	1.80
Unnamed C sand & shale	965.30	1,015.80	50.50
Beckley sand & shale	1,015.80	1,018.10	2.30
Lower Horsepen sand & shale	1,018.10	677.00	0.00
X Seam sand & shale	1,129.00	1,130.00	1.00
Pocahontas #9 sand & shale	1,130.00	1,212.00	82.00
Pocahontas #8 sand & shale	1,212.00	1,212.80	0.80
Pocahontas #6 sand & shale	1,212.80	1,266.00	53.20
Pocahontas #5 sand & shale	1,266.00	1,266.40	0.40
Pocahontas #5 Rider sand & shale	1,266.40	1,282.00	15.60
Pocahontas #5 sand & shale	1,282.00	1,283.00	1.00
Pocahontas #5 sand & shale	1,283.00	1,321.00	38.00
Pocahontas #5 sand & shale	1,321.00	1,322.20	1.20
Pocahontas #5 sand & shale	1,322.20	1,355.00	32.80
Pocahontas #5 sand & shale	1,355.00	1,356.00	1.00
Pocahontas #5 sand & shale	1,356.00	1,386.80	30.80
Pocahontas #5 sand & shale	1,386.80	1,390.80	4.00
Pocahontas #5 sand & shale	1,390.80	1,459.00	68.20
Pocahontas #5 sand & shale	1,459.00	1,459.80	0.80
Pocahontas #5 sand & shale	1,459.80	1,493.50	33.70
Pocahontas #5 sand & shale	1,493.50	1,495.30	1.80
Pocahontas #5 sand & shale	1,495.30	1,546.00	50.70
Pocahontas #5 sand & shale	1,546.00	1,546.00	0.00
Pocahontas #5 sand & shale	1,546.00	1,591.00	45.00
Pocahontas #5 sand & shale	1,591.00	1,591.00	0.00
Pocahontas #5 sand & shale	1,591.00	1,783.00	192.00
Pocahontas #5 sand & shale	1,783.00	1,783.00	0.00
Pocahontas #5 sand & shale	1,783.00	1,806.50	23.50
Pocahontas #5 sand & shale	1,806.50	1,807.50	1.00
Pocahontas #5 sand & shale	1,807.50	1,822.00	14.50
Pocahontas #5 sand & shale	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: 8855
Company: EnerVest Operating, LLC
File Number: DI-0838
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coal Bed	Date Well Completed: 7/15/1997
Driller's Total Depth: 1801.00	Log's Total Depth: 1811.00

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	5DI_0838_VC_3628_EQTPN_DICKENSON.pdf

3. Final Production

Description	FileName
FINAL	5DI_0838_VC_3628_EQTPN_DICKENSON.pdf

4. Comments

Notes:

MATERIAL INSERTED BY DGO [5/3/2016, jhh]

5. Signature

Permittee: EnerVest Operating, LLC Date: 5/3/2016 (Company)

By: JOSEPH A. AWNY Title: ENGINEER (Signature)

INTERNAL USE ONLY

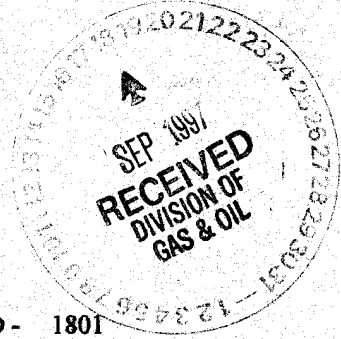
Submit Date: 5/3/2016

Status: _____

Date: 8/19/2016

Final PDF Date: 8/19/2016

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
540/676-5423



COMPLETION REPORT

WELL TYPE: Oil ___ Gas ___ Coalbed Methane X or Injection ___ well

Date Well Completed: 7/15/97 Total Depth of Well: LTD - 1811 DTD - 1801

Attach the Drilling Report; if not previously submitted. In addition, submit any changes in casing or tubing that were approved after the Drilling Report was submitted.

STIMULATION RECORD

Zone 1: COAL SEAMS* Formation Stimulated With: 70Q FOAM W/
14800# 12/20 SAND - 596000 SCF N2 - 540 BF

Perforated:	<u>908.5</u>	to:	<u>1213</u>	No. of Perforations:	<u>14</u>	Size:	<u>0.34"</u>
Formation Broke Down at:	<u>2187</u>	PSIG		Average Injection Rate:	<u>48</u>		<u>BPM</u>
ISIP:	<u>1565</u>	PSIG 5 Min SIP:	<u>1584</u>	PSIG Average Injection Pressure			<u>3517</u>
Date Stimulated:	<u>7/11/97</u>						

* M HORSEPEN, C-SEAM RIDER, C-SEAM, WARCREEK, UNNAMED "C", BECKLEY, X-SEAM

Zone 2: _____ Formation Stimulated With: _____

Perforated:	_____	to:	_____	No. of Perforations:	_____	Size:	_____
Formation Broke Down at:	_____	PSIG		Average Injection Rate:	_____		_____
ISIP:	_____	PSIG 5 Min SIP:	_____	PSIG Average Injection Pressure			_____
Date Stimulated:	_____						

Zone 3: _____ Formation Stimulated With: _____

Perforated:	_____	to:	_____	No. of Perforations:	_____	Size:	_____
Formation Broke Down at:	_____	PSIG		Average Injection Rate:	_____		_____
ISIP:	_____	PSIG 5 Min SIP:	_____	PSIG Average Injection Pressure			_____
Date Stimulated:	_____						

FINAL PRODUCTION:

	_____	Natural	<u>X</u>	After Stimulation		
	<u>BOD</u>	<u>MCFD</u>	<u>HOURS TESTED</u>	<u>ROCK PRESSURE</u>	<u>HOURS TESTED</u>	
Zone (1)						
Zone (2)						
Zone (3)						
Final Production if Gas						
Zones are Commingled	<u>33</u>	<u>MCFD</u>	<u>6</u>	<u>Hours Tested</u>	<u>200</u>	<u>PSIG</u>
					<u>48</u>	<u>Hours Tested</u>

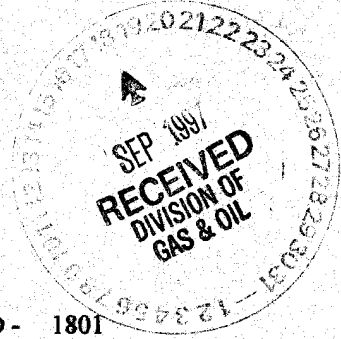
*Use additional sheets with this format, if more than three (3) zones were stimulated.

Permittee: EQUITABLE RESOURCES ENERGY COMPANY (Company)

By: Joseph B. [Signature] (Signature)

ENTERED

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
540/676-5423



COMPLETION REPORT

WELL TYPE: Oil Gas Coalbed Methane or Injection well

Date Well Completed: 7/15/97 Total Depth of Well: LTD - 1811 DTD - 1801

Attach the Drilling Report; if not previously submitted. In addition, submit any changes in casing or tubing that were approved after the Drilling Report was submitted.

STIMULATION RECORD

Zone 1: COAL SEAMS* Formation Stimulated With: 70Q FOAM W/
14800# 12/20 SAND - 596000 SCF N2 - 540 BF

Perforated:	<u>908.5</u>	to:	<u>1213</u>	No. of Perforations:	<u>14</u>	Size:	<u>0.34"</u>
Formation Broke Down at:	<u>2187</u>	PSIG		Average Injection Rate:	<u>48</u>		<u>BPM</u>
ISIP:	<u>1565</u>	PSIG 5 Min SIP:	<u>1584</u>	PSIG Average Injection Pressure			<u>3517</u>
Date Stimulated:	<u>7/11/97</u>						

* M HORSEPEN, C-SEAM RIDER, C-SEAM, WARCREEK, UNNAMED "C", BECKLEY, X-SEAM

Zone 2: _____ Formation Stimulated With: _____

Perforated:	_____	to:	_____	No. of Perforations:	_____	Size:	_____
Formation Broke Down at:	_____	PSIG		Average Injection Rate:	_____		_____
ISIP:	_____	PSIG 5 Min SIP:	_____	PSIG Average Injection Pressure			_____
Date Stimulated:	_____						

Zone 3: _____ Formation Stimulated With: _____

Perforated:	_____	to:	_____	No. of Perforations:	_____	Size:	_____
Formation Broke Down at:	_____	PSIG		Average Injection Rate:	_____		_____
ISIP:	_____	PSIG 5 Min SIP:	_____	PSIG Average Injection Pressure			_____
Date Stimulated:	_____						

FINAL PRODUCTION:

	_____	Natural	<u>X</u>	After Stimulation		
	<u>BOD</u>	<u>MCFD</u>	<u>HOURS TESTED</u>	<u>ROCK PRESSURE</u>	<u>HOURS TESTED</u>	
Zone (1)						
Zone (2)						
Zone (3)						
Final Production if Gas						
Zones are Commingled	<u>33</u>	<u>MCFD</u>	<u>6</u>	<u>Hours Tested</u>	<u>200</u>	<u>PSIG</u>
					<u>48</u>	<u>Hours Tested</u>

*Use additional sheets with this format, if more than three (3) zones were stimulated.

Permittee: EQUITABLE RESOURCES ENERGY COMPANY (Company)

By: Joseph B. [Signature] (Signature)

ENTERED



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: 8924
Company: EnerVest Operating, LLC
File Number: DI-0838
Operations Name: VC-3628
Operation Type: Coal Bed
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 7/8/1997 Drilling Contractor: UNION DRILLING
Date drilling completed: 7/11/1997 Rig Type: Rotary Cable
Driller's Total Depth (feet): 1801.00
Log Total Depth (feet): 1811.00 Coal Seam At Total Depth: Pocahontas

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

Permitted State Plane X: 10417630.0000 Final Plat State Plane X: 10417629.8910
Permitted State Plane Y: 3566697.6300 Final Plat State Plane Y: 3566697.6380

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
PLAT	1DI_0838_VC_3628_EQTPN_DICKENSON.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
675	DAMP	

Salt Water At:

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

Coal Seams:

List of Attached Items:

Description	FileName
COAL	2DI_0838_VC_3628_EQTPN_DICKENSON.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
GAS	2DI_0838_VC_3628_EQTPN_DICKENSON.pdf

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

List all logs run: DEN/TEMP/GR

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	3DI_0838_VC_3628_EQTPN_DICKENSON.pdf

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
CASING	3DI_0838_VC_3628_EQTPN_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	4DI_0838_VC_3628_EQTPN_DICKENSON.pdf

9. Comments

MATERIAL INSERTED BY DGO [5/3/2016, jhh]

10. Signature

Permittee: EnerVest Operating, LLC Date: 5/3/2016

Signed By: JOSEPH A. AWNY Title: ENGINEER

INTERNAL USE ONLY	
Submit Date: <u>5/3/2016</u>	
Status: <u>A</u>	Date: <u>8/19/2016</u>
Final PDF Date: <u>8/19/2016</u>	

THE PURPOSE OF THIS PLAT IS TO SHOW THE PROPOSED WELL, ITS COORDINATES, AND ELEVATION. PROPERTY LINE INFORMATION, SURFACE OWNERSHIP AND MINERAL OWNERSHIP ARE BASED ON PRELIMINARY INFORMATION PROVIDED BY EQUITABLE RESOURCES AND IS SUBJECT TO CHANGE BEFORE FINAL APPROVAL.

Latitude 37°05'00"
 7,875'
 Longitude 82°07'30"

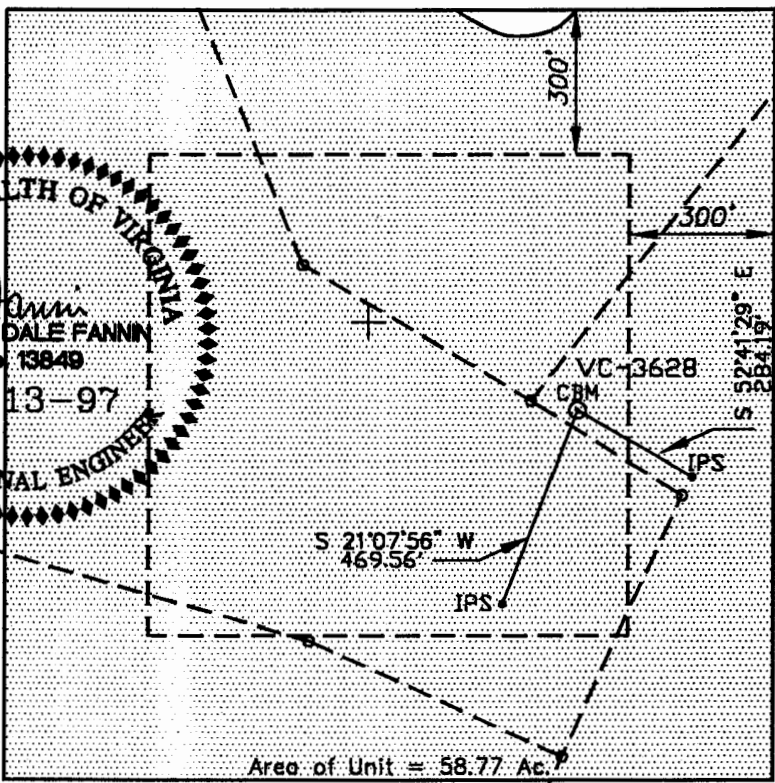
Ls. # PO-148, T-427
 John Tiller Tr.
 244 Ac.
 CLINCHFIELD COAL COMPANY/
 PYXIS RESOURCES COMPANY - COAL AND SURFACE
 PINE MOUNTAIN OIL AND GAS - OIL AND GAS
 Gas 14.60 Ac., 24.84%

Ls. # PO-1042, T2-164
 Julia Fletcher Tr.
 91 Ac.
 CLINCHFIELD COAL COMPANY/
 PYXIS RESOURCES COMPANY - COAL AND SURFACE
 PINE MOUNTAIN OIL AND GAS - OIL AND GAS
 Gas 21.82 Ac., 37.13%

Ls. # PO-148, T-349
 James Rasnake Tr.
 388.52 Ac.
 CLINCHFIELD COAL COMPANY/
 PYXIS RESOURCES COMPANY - COAL AND SURFACE
 PINE MOUNTAIN OIL AND GAS - OIL AND GAS
 Gas 16.81 Ac., 28.61%

COMMONWEALTH OF VIRGINIA
Robert Dale Fanni
 ROBERT DALE FANNI
 No. 13849
 12-13-97
 PROFESSIONAL ENGINEER

DMLR PERMIT #1101150



Ls. # 241640L, T2-166
 Eilane Duty Tr.
 53 Ac./T2-166
 CLINCHFIELD COAL COMPANY/
 PYXIS RESOURCES COMPANY - COAL AND SURFACE
 Ls. # 245255L, T2-166
 Charlton Tiller - OIL AND GAS
 53 Ac./T2-166
 Gas 5.53 Ac., 9.42%

Area of Unit = 58.77 Ac.

1600'
 Unit Boundary

FINAL

WELL COORDINATES ARE BASED ON CLINCHFIELD COAL COMPANY'S COORDINATE SYSTEM.
 STATE PLANE COORDINATES ARE CALCULATED FROM CLINCHFIELD COAL COMPANY COORDINATES.
 WELL ELEVATION IS BASED ON TRIG LEVELING FROM CLINCHFIELD'S 'RIDGE' MONUMENT.
 WELL COORDINATES: State Plane Coords. N 285,820.62 E 934,644.12
 Clinchfield Coal Co. Coords. S 13,930.98 E 67,491.95

PROPERTY LINES:
 SOLID LINE = SURVEYED
 BROKEN LINES = NON-SURVEYED

WELL LOCATION PLAT

COMPANY Equitable Resources Energy Company WELL NAME AND NO. VC-3628
 TRACT NO. T-349 ELEVATION: 2075.25' (Trig.) QUADRANGLE: DUTY, VA
 COUNTY: Dickenson DISTRICT: Ervinton SCALE: 1"=400' DATE: 12-13-97

This plat is a new plat___; an updated plat___; or a final location plat X **FINAL**
 + Denotes the location of a well on United States topographic Maps, scale 1 to 24,000, latitude and the longitude lines being represented by border lines as shown.

Robert Dale Fanni

Department of Mines, Minerals and Energy
Division of Gas and Oil

Operations Name: J RASNAKE
Permit #: 3337

Well #: VC3628
VA File #: DI-0838

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
540/676-5423

DRILLING REPORT

Pursuant to VR-480-05-22.1, § 1.36, the undersigned Permittee submits this report on Well VCP3628 in the
ERVINTON District of the DICKENSON County, Virginia on 12TH day,
SEPTEMBER month, 1997.

LOCATION

County: DICKENSON District: ERVINTON
Surface Elevation: 2074.0 Elev of Kelly Bushing: 2084.0 Quadrangle: DUTY
7980 Ft. S of Latitude 37 05 00 and 7875 Ft. W of Longitude 82 07 30

DRILLING DATA

Date Drilling Commenced: 7/8/97 Drilling Contractor: UNION DRILLING
Date Drilling Completed: 7/11/97 Rig Type: X Rotary Cable Tool
Total Depth of Well: LTD - 1811 DTD - 1801

GEOLOGICAL DATA

Fresh Water at:	675	feet	DAMP	GPM	feet	GPM
		feet		GPM	feet	GPM
		feet		GPM	feet	GPM
Salt Water at:		feet		GPM	feet	GPM
		feet		GPM	feet	GPM
		feet		GPM	feet	GPM

COAL SEAMS:

NAME	TOP	BOTTOM	THICKNESS	MINING IN AREA		
				YES	NO	MINED OUT
M SEABOARD	677	679	2			
L SEABOARD	721	723	2			
M HORSEPEN	908	910	2			
BECKLEY	1109	1115	6			
X-SEAM	1211	1213	2			
POCO #6	1565	1567	2			

GAS AND OIL SHOWS:

<u>FORMATION</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>IPF (MCFD/BOPD)</u>	<u>PRESSURE</u>	<u>HOURS TESTED</u>
------------------	------------	---------------	------------------	------------------------	-----------------	---------------------

Department of Mines, Minerals and Energy
Division of Gas and Oil

Operations Name: J RASNAKE
Permit #: 3337

Well #: VC3628
VA File #: DI-0838

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
540/676-5423

DRILLING REPORT

Pursuant to VR-480-05-22.1, § 1.36, the undersigned Permittee submits this report on Well VCP3628 in the
ERVINTON District of the DICKENSON County, Virginia on 12TH day,
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Surface Elevation: 2074.0 Elev of Kelly Bushing: 2084.0 Quadrangle: DUTY
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Date Drilling Completed: 7/11/97 Rig Type: X Rotary Cable Tool
Total Depth of Well: LTD - 1811 DTD - 1801

GEOLOGICAL DATA

Fresh Water at:	675	feet	DAMP	GPM	feet	GPM
		feet		GPM	feet	GPM
		feet		GPM	feet	GPM
Salt Water at:		feet		GPM	feet	GPM
		feet		GPM	feet	GPM
		feet		GPM	feet	GPM

COAL SEAMS:

<u>NAME</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>MINING IN AREA</u>		
				<u>YES</u>	<u>NO</u>	<u>MINED OUT</u>
M SEABOARD	677	679	2			
L SEABOARD	721	723	2			
M HORSEPEN	908	910	2			
BECKLEY	1109	1115	6			
X-SEAM	1211	1213	2			
POCO #6	1565	1567	2			

GAS AND OIL SHOWS:

<u>FORMATION</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>IPF (MCFD/BOPD)</u>	<u>PRESSURE</u>	<u>HOURS TESTED</u>
------------------	------------	---------------	------------------	------------------------	-----------------	---------------------

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

ELECTRIC LOGS AND SURVEYS

List logs run on wellbore: GR/ DEN/TMP

Did log disclose vertical location of a coal seam? Yes X No

SURVEY RESULTS

<u>DEPTH OF SURVEY</u>	<u>DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL</u>	<u>DEPTH OF SURVEY</u>	<u>DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL</u>
400	1/2°	1557	3/4°
560	1/2°	1600	3/4°
600	1/2°	1627	3/4°
800	3/4°		
865	3/4°		
1000	3/4°		
1147	3/4°		
1200	3/4°		
1349	3/4°		
1400	3/4°		

CASING AND TUBING

	<u>SIZE</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>LENGTH</u>	<u>CEMENT USED IN CU/FT</u>	<u>DATE CEMENTED</u>	<u>PACKERS OR BRIDGE PLUGS</u>		
							<u>KIND</u>	<u>SIZE</u>	<u>SET AT</u>
<u>Conductor</u>	11 3/4		160	160	GROUTED				
<u>Surface</u>									
<u>Water Protection</u>	8 5/8		320	310	108(127)	7/9/97			
<u>Coal Protection</u>									
<u>Other Casing and Tubing Left in Well</u>	4 1/2		1749	1739	390(503)	7/11/97			
	1 1/2		1342.85						

Liners

REMARKS: Shut down, fishing jobs, depths and dates, caving, lost circulation, etc.

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

ELECTRIC LOGS AND SURVEYS

List logs run on wellbore: GR/ DEN/TMP

Did log disclose vertical location of a coal seam? Yes X No

SURVEY RESULTS

<u>DEPTH OF SURVEY</u>	<u>DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL</u>	<u>DEPTH OF SURVEY</u>	<u>DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL</u>
400	1/2°	1557	3/4°
560	1/2°	1600	3/4°
600	1/2°	1627	3/4°
800	3/4°		
865	3/4°		
1000	3/4°		
1147	3/4°		
1200	3/4°		
1349	3/4°		
1400	3/4°		

CASING AND TUBING

	<u>SIZE</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>LENGTH</u>	<u>CEMENT USED IN CU/FT</u>	<u>DATE CEMENTED</u>	<u>PACKERS OR BRIDGE PLUGS KIND SIZE SET AT</u>
<u>Conductor</u>	11 3/4		160	160	GROUTED		
<u>Surface</u>							
<u>Water Protection</u>	8 5/8		320	310	108(127)	7/9/97	
<u>Coal Protection</u>							
<u>Other Casing and Tubing Left in Well</u>	4 1/2		1749	1739	390(503)	7/11/97	
	1 1/2		1342.85				

Liners

REMARKS: Shut down, fishing jobs, depths and dates, caving, lost circulation, etc.

DRILLER'S LOG

Compiled by: ENGINEERING

AGE	FORMATION	GENERAL LITHOLOGY	COLOR	DEPTH		THICKNESS	REMARKS
				TOP	BOTTOM		
PENN	SAND, SHALE & THIN COALS	M SEABOARD		0	677	677	
		L SEABOARD		677	679	2	
	SAND, SHALE & THIN COALS	M HORSEPEN		679	721	42	
		BECKLEY		721	723	2	
	SAND, SHALE & THIN COALS	X-SEAM		723	908	185	
		POCO #6		908	910	2	
	SAND, SHALE & THIN COALS			910	1109	199	
				1109	1115	6	
	SAND, SHALE & THIN COALS			1115	1211	96	
				1211	1213	2	
	SAND, SHALE & THIN COALS			1213	1565	352	
				1565	1567	2	
	SAND, SHALE & THIN COALS			1567	1811	244	

LOGGER'S TOTAL DEPTH

1811

Permittee: EQUITABLE RESOURCES ENERGY COMPANY (Company)

By:  (Signature)



Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Drawer 159, Lebanon, VA 24266
Telephone: (276) 415-9650

Tracking Number: 3637
Company: EQT Production Company
File Number: DI-1002
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coalbed/Pipeline	Date Well Completed: 8/8/2000
Driller's Total Depth: 1878.00	Log's Total Depth: 1885.00

1. Changes In Casing/Tubing from Approved Drilling Report

Description	FileName
-------------	----------

2. Stimulation Record

Stimulation Status: Stimulated GOB Not Stimulated Service Well

Description	FileName
DI-1002 Stimulation	DI-1002 Stimulation & Final Prod.pdf

3. Final Production

Description	FileName
DI-1002 Final Prod	DI-1002 Stimulation & Final Prod.pdf

4. Comments

Notes:

Approved [3/6/2013, bdb]
Material inserted by DGO [2/5/2013, jhh]

5. Signature

Permittee: EQT Production Company Date: 2/5/2013 (Company)

By: EQT Title: xxxxx (Signature)

INTERNAL USE ONLY

Submit Date: 2/5/2013

Status: Approved

Date: 3/6/2013

Final PDF Date: 3/6/2013

Permit: 4476 Well: VC-4371

Department of Mines, Minerals and Energy
Division of Gas and Oil
P O Box 1416
Abingdon, Virginia 24210
540-676-5423

COMPLETION REPORT

Well Type: Gas Well
Date Well Completed: 8/8/2000 **Total Depth of Well:** 1878 **LTD:** 1885

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: L & M Seaboard/M & L Horsepen/C Seam/Warcreek/Unnamed C/Beckley/X Seam
Formation Stimulated With: 70 Q Foam
Perforated: 761 to 1306.5 No. of Perforations: 18 Perforation Size: 0.34"
Formation Broke Down at: 1204 PSIG Average Injection Rate: 61 BPM
ISIP: 1800 PSIG 5 Min SIP: 838 PSIG Average Downhole Injection Pressure: 3233 PSIG
Stimulated: Yes: X No: Date Stimulated: 8/7/2000

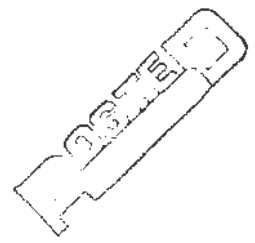
Zone 2:
Formation Stimulated With:
Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes No Date Stimulated:

Zone 3:
Formation Stimulated With:
Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes 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 Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes No Date Stimulated:

<u>FINAL PRODUCTION:</u>	<u>After Stimulation</u>		<u>HOURS TESTED</u>	<u>ROCK PRESSURE</u>	<u>HOURS TESTED</u>
	<u>BOD</u>	<u>MCFD</u>			
Final Production if Gas Zones are Commingled:		<u>37</u>		<u>90</u>	

PERMITTEE: EQUITABLE PRODUCTION COMPANY (Company)
BY: Clark A. Davis (Signature)



Permit: 4476 Well: VC-4371

Department of Mines, Minerals and Energy
Division of Gas and Oil
P O Box 1416
Abingdon, Virginia 24210
540-676-5423

COMPLETION REPORT

Well Type: Gas Well
Date Well Completed: 8/8/2000 **Total Depth of Well:** 1878 **LTD:** 1885

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: L & M Seaboard/M & L Horsepen/C Seam/Warcreek/Unnamed C/Beckley/X Seam
Formation Stimulated With: 70 Q Foam
Perforated: 761 to 1306.5 No. of Perforations: 18 Perforation Size: 0.34"
Formation Broke Down at: 1204 PSIG Average Injection Rate: 61 BPM
ISIP: 1800 PSIG 5 Min SIP: 838 PSIG Average Downhole Injection Pressure: 3233 PSIG
Stimulated: Yes: X No: Date Stimulated: 8/7/2000

Zone 2:
Formation Stimulated With:
Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes No Date Stimulated:

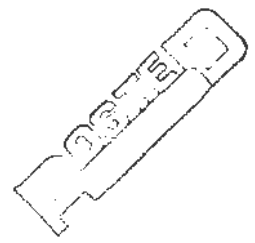
Zone 3:
Formation Stimulated With:
Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes No Date Stimulated:

Zone 4:
Formation Stimulated With:
Perforated: to No. of Perforations: Perforation Size:
Formation Broke Down at: PSIG Average Injection Rate: BPM
ISIP: PSIG Min SIP PSIG Average Downhole Injection Pressure: PSIG
Stimulated: Yes No Date Stimulated:

FINAL PRODUCTION:

	<u>After Stimulation</u>		<u>HOURS</u>	<u>ROCK</u>	<u>HOURS</u>
	<u>BOD</u>	<u>MCFD</u>	<u>TESTED</u>	<u>PRESSURE</u>	<u>TESTED</u>
Final Production if Gas Zones are Commingled:		<u>37</u>		<u>90</u>	

PERMITTEE: EQUITABLE PRODUCTION COMPANY (Company)
BY: [Signature] (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:	<u>3647</u>
Company:	<u>EQT Production Company</u>
File Number:	<u>DI-1002</u>
Operations Name:	<u>VC-4371 W/PL</u>
Operation Type:	<u>Coalbed/Pipeline</u>
Drilling Report Type:	<u>Original</u>

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced:	<u>7/23/2000</u>	Drilling Contractor:	<u>Union Drilling</u>
Date drilling completed:	<u>7/27/2000</u>	Rig Type:	<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable
Driller's Total Depth (feet):	<u>1878.00</u>		
Log Total Depth (feet):	<u>1885.00</u>	Coal Seam at Total Depth:	<u>X-SEAM</u>

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

Permitted State Plane X:	<u>10416803.9000</u>	Final Plat State Plane X:	<u>10416804.1980</u>
Permitted State Plane Y:	<u>3565367.0200</u>	Final Plat State Plane Y:	<u>3565367.8920</u>

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
DI-1002 Plat	DI-1002 Plat.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
170	damp	

Salt Water At:

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

Coal Seams:

List of Attached Items:

Description	FileName
DI-1002 Coal Seams	DI-1002 Drillers Log & Coal Seams.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
DI-1002 Gas	DI-1002 Gas Shows.pdf

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

List all logs run: GR, Density, Temp, Enhanced Coal Log

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
DI-1002 Survey	DI-1002 Survey & Casing.pdf

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
DI-1002 Casing	DI-1002 Survey & Casing.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: Geologist

List of Attached Items:

Description	FileName
DI-1002 Drillers Log	DI-1002 Drillers Log & Coal Seams.pdf

9. Comments

Approved [3/6/2013, bdb]
Material inserted by DGO [2/5/2013, jhh]

10. Signature

Permitee: EQT Production Company

Date: 2/5/2013

Signed By: EQT

Title: xxxxx

INTERNAL USE ONLY

Submit Date: 2/5/2013

Status: A

Date: 3/6/2013

Final PDF Date: 3/6/2013



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: 8712
Company: EnerVest Operating, LLC
File Number: DI-0687
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coal Bed	Date Well Completed: 4/23/1993
Driller's Total Depth: 2445.00	Log's Total Depth: 2441.00

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	5DI0687_VC_2277_EQTPN_DICKENSON.pdf

3. Final Production

Description	FileName
FINAL	5DI0687_VC_2277_EQTPN_DICKENSON.pdf

4. Comments

Notes:

MATERIAL INSERTED BY DGO [3/29/2016, jhh]

5. Signature

Permittee: EnerVest Operating, LLC Date: 3/29/2016 (Company)

By: JOSEPH A. AWNY Title: ENGINEER (Signature)

INTERNAL USE ONLY

Submit Date: 3/29/2016

Status: _____

Date: 8/11/2016

Final PDF Date: 8/11/2016

D1-687

Department of Mines, Minerals and Energy
Division of Gas and Oil

Operations Name: J.N.R. SUTHERLAND VCP2277
Permit #: 2366

Department of Mines, Minerals and Energy
Division of Gas and Oil
P. O. Box 1416
Abingdon, Virginia 24210
703/676-5423



COMPLETION REPORT

ENTERED
2441' DTB=2445'

WELL TYPE: Oil ___ Gas ___ Coalbed Methane X or Injection ___ well

Date Well Completed: 4-23-93 Total Depth of Well: 2441' DTB=2445'

Attach the Drilling Report, if not previously submitted. In addition, submit any changes in casing or tubing that were approved after the Drilling Report was submitted.

STIMULATION RECORD

Zone 1: COAL SEAMS* Formation Stimulated With: 70 Q FOAM
W/16000 # 12/20 SAND - 859300 SCF N2 - 2128 BF

Perforated: 1270 TO 2283.5 No. of Perforations: 17 Perforation Size: .34"
Formation Broke Down at: 1580 PSIG Average Injection Rate: 19.2 BPM (64DH)
ISIP 1731 PSIG 5 MIN SIP 1538 PSIG Average Injection Pressure 3200 PSIG
Date Stimulated 4-23-93

*L. SEABOARD, C-SEAM, WARCREEK, BECKLEY, X-SEAM, POCO #6, POCO #3

Zone 2: _____ Formation Stimulated With: _____

Perforated: _____ TO _____ No. of Perforations: _____ Perforation Size: _____
Formation Broke Down at: _____ PSIG Average Injection Rate: _____
ISIP _____ PSIG _____ MIN SIP _____ PSIG Average Injection Pressure _____ PSIG
Date Stimulated _____

Zone 3: _____ Formation Stimulated With: _____

Perforated: _____ TO _____ No. of Perforations: _____ Perforation Size: _____
Formation Broke Down at: _____ PSIG Average Injection Rate: _____
ISIP _____ PSIG _____ MIN SIP _____ PSIG Average Injection Pressure _____ PSIG
Date Stimulated _____

FINAL PRODUCTION: _____ Natural _____ X After Stimulation
BOD MCFD HOURS TESTED ROCK PRESSURE HOURS TESTED

Zone (1) _____
Zone (2) _____
Zone (3) _____

Final Production if Gas Zones are Commingled 67 MCFD 6 Hours Tested 225 PSIG 48 Hours Tested

* Use additional sheets with this format, if more than three (3) zones were stimulated.

Permittee: EQUITABLE RESOURCES EXPLORATION (Company)

By: Joseph L. Perry (Signature)

D1-687

Department of Mines, Minerals and Energy
Division of Gas and Oil

Operations Name: J.N.R. SUTHERLAND VCP2277
Permit #: 2366

Department of Mines, Minerals and Energy
Division of Gas and Oil
P. O. Box 1416
Abingdon, Virginia 24210
703/676-5423



COMPLETION REPORT

WELL TYPE: Oil ___ Gas ___ Coalbed Methane X or Injection ___ well

Date Well Completed: 4-23-93 Total Depth of Well: 2445' DTB=2445'

ENTERED

Attach the Drilling Report, if not previously submitted. In addition, submit any changes in casing or tubing that were approved after the Drilling Report was submitted.

STIMULATION RECORD

Zone 1: COAL SEAMS* Formation Stimulated With: 70 Q FOAM
W/16000 # 12/20 SAND - 859300 SCF N2 - 2128 BF

Perforated: 1270 TO 2283.5 No. of Perforations: 17 Perforation Size: .34"
Formation Broke Down at: 1580 PSIG Average Injection Rate: 19.2 BPM (64DH)
ISIP 1731 PSIG 5 MIN SIP 1538 PSIG Average Injection Pressure 3200 PSIG
Date Stimulated 4-23-93

*L. SEABOARD, C-SEAM, WARCREEK, BECKLEY, X-SEAM, POCO #6, POCO #3

Zone 2: _____ Formation Stimulated With: _____

Perforated: _____ TO _____ No. of Perforations: _____ Perforation Size: _____
Formation Broke Down at: _____ PSIG Average Injection Rate: _____
ISIP _____ PSIG _____ MIN SIP _____ PSIG Average Injection Pressure _____ PSIG
Date Stimulated _____

Zone 3: _____ Formation Stimulated With: _____

Perforated: _____ TO _____ No. of Perforations: _____ Perforation Size: _____
Formation Broke Down at: _____ PSIG Average Injection Rate: _____
ISIP _____ PSIG _____ MIN SIP _____ PSIG Average Injection Pressure _____ PSIG
Date Stimulated _____

FINAL PRODUCTION: _____ Natural _____ X After Stimulation
BOD MCFD HOURS TESTED ROCK PRESSURE HOURS TESTED

Zone (1) _____
Zone (2) _____
Zone (3) _____

Final Production if Gas Zones are Commingled 67 MCFD 6 Hours Tested 225 PSIG 48 Hours Tested

* Use additional sheets with this format, if more than three (3) zones were stimulated.

Permittee: EQUITABLE RESOURCES EXPLORATION (Company)

By: Joseph L. Perry (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: 8779
Company: EnerVest Operating, LLC
File Number: DI-0687
Operations Name: VC-2277
Operation Type: Coal Bed
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 4/13/1993 Drilling Contractor: UNION DRILLING
Date drilling completed: 4/17/1993 Rig Type: Rotary Cable
Driller's Total Depth (feet): 2445.00
Log Total Depth (feet): 2441.00 Coal Seam At Total Depth: Pocahontas

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

Permitted State Plane X: 10409237.0000 Final Plat State Plane X: 10409235.4700
Permitted State Plane Y: 3575182.1600 Final Plat State Plane Y: 3575182.1640

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
PLAT	1DI0687_VC_2277_EQTPN_DICKENSON.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
103	1/4	INCH

Salt Water At:

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

Coal Seams:

List of Attached Items:

Description	FileName
COAL	2DI0687_VC_2277_EQTPN_DICKENSON.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
GAS	2DI0687_VC_2277_EQTPN_DICKENSON.pdf

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

List all logs run: GR/PDS/TEMP

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	3DI0687_VC_2277_EQTPN_DICKENSON.pdf

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
CASING	3DI0687_VC_2277_EQTPN_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	4DI0687_VC_2277_EQTPN_DICKENSON.pdf

9. Comments

MATERIAL INSERTED BY DGO [3/29/2016, jhh]

10. Signature

Permittee: EnerVest Operating, LLC Date: 3/29/2016

Signed By: JOSEPH A. AWNY Title: ENGINEER

INTERNAL USE ONLY	
Submit Date: <u>3/29/2016</u>	
Status: <u>A</u>	Date: <u>8/11/2016</u>
Final PDF Date: <u>8/11/2016</u>	

4,400'

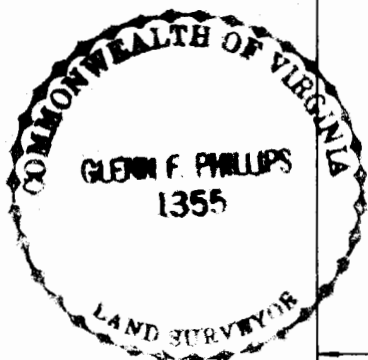
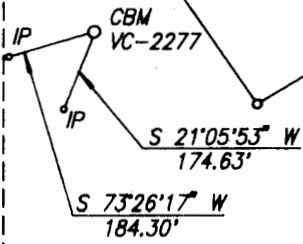
Latitude 37° 07' 30"

Lease No. PO-148 / T-389
S. D. Sutherland
76.30 Acres
Clinchfield Coal Company /
Pyxis Resources Company - surface & coal
Pine Mountain Oil & Gas, Inc. - oil & gas
gas 8.14 Ac. 13.85%

Longitude 82° 10' 00"

Adverse
oil & gas
gas 8.55 Ac. 14.55%

Henry Sutherland - oil & gas
8.55 Acres
gas 8.55 Ac. 14.55%



Lease No. PO-148 / T-409
J. N. R. Sutherland
430.65 Acres
Clinchfield Coal Company /
Pyxis Resources Company - surface & coal
Pine Mountain Oil & Gas, Inc. - oil & gas
gas 42.08 Ac. 71.60%

FINAL PLAT

Well Coordinates: (Va. State Plane, S. Zone)
Calculated from CCC coordinates
N 294,305 E 926,250

+

Well Coordinates: (Clinchfield Coal Company)
S 5,746.52 E 58,787.88

Well elevation determined by trigonometric leveling from BM 1631 VA

Area of Unit = 58.77 Ac.

WELL LOCATION PLAT

COMPANY Equitable Resources Exploration, Inc. WELL NAME AND NUMBER VC-2277
TRACT NO. PO-148 / T-409 ELEVATION 2201.49 QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 7-02-1993

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
 703/676-5423

DRILLING REPORT

Pursuant to VR-480-05-22.1, § 1.36, the undersigned Permittee submits this report on Well VCP2277 in the ERVINTON District of the DICKENSON County, Virginia on 14th day, JUNE month, 19 93.

LOCATION

County: DICKENSON District: ERVINTON
 Surface Elevation: 2204.41' Elevation of Kelly Bushing: 2214.41' Quadrangle: DUTY
14825 FT. S. of Latitude 37° 07' 30" and 4400 FT. W. of Longitude 82° 10' 00"

Attach a final location plat as required by VR 480-05-22.1, § 1.36.

DRILLING DATA

Date Drilling Commenced: 4-13-93 Drilling Contractor: UNION DRILLING
 Date Drilling Completed: 4-17-93 Rig Type: Rotary Cable Tool
 Total Depth of Well: LTD=2441 DTD=2445

GEOLOGICAL DATA

Fresh Water at: 103 Feet 1/4" STREAM GPM _____ Feet _____ GPM
 _____ Feet _____ GPM _____ Feet _____ GPM
 Salt Water at: _____ Feet _____ GPM _____ Feet _____ GPM
 _____ Feet _____ GPM _____ Feet _____ GPM

COAL SEAMS:

NAME	TOP	BOTTOM	THICKNESS	MINING IN AREA		
				YES	NO	MINED OUT
U. SEABOARD	980	982	2			
GREASY CREEK	1162	1164	2			
L. SEABOARD	1270	1272	2			
BECKLEY	1651	1654	3			
POGO #3	2282	2284	2			

GAS AND OIL SHOWS: NONE REPORTED

FORMATION	TOP	BOTTOM	THICKNESS	IPF (MCFD/BOPD)	PRESSURE	HOURS TESTED

Department of Mines, Minerals and Energy
Division of Gas and Oil
P. O. Box 1416
Abingdon, Virginia 24210
703/676-5423

DRILLING REPORT

Pursuant to VR-480-05-22.1, § 1.36, the undersigned Permittee submits this report on Well VCP2277 in the ERVINTON District of the DICKENSON County, Virginia on 14th day, JUNE month, 19 93.

LOCATION

County: DICKENSON District: ERVINTON
Surface Elevation: 2204.41' Elevation of Kelly Bushing: 2214.41' Quadrangle: DUTY
14825 FT. S. of Latitude 37° 07' 30" and 4400 FT. W. of Longitude 82° 10' 00"

Attach a final location plat as required by VR 480-05-22.1, § 1.36.

DRILLING DATA

Date Drilling Commenced: 4-13-93 Drilling Contractor: UNION DRILLING
Date Drilling Completed: 4-17-93 Rig Type: Rotary Cable Tool
Total Depth of Well: LTD=2441 DTD=2445

GEOLOGICAL DATA

Fresh Water at: 103 Feet 1/4" STREAM GPM _____ Feet _____ GPM
_____ Feet _____ GPM _____ Feet _____ GPM
Salt Water at: _____ Feet _____ GPM _____ Feet _____ GPM
_____ Feet _____ GPM _____ Feet _____ GPM

COAL SEAMS:

NAME	TOP	BOTTOM	THICKNESS	MINING IN AREA		
				YES	NO	MINED OUT
U. SEABOARD	980	982	2			
GREASY CREEK	1162	1164	2			
L. SEABOARD	1270	1272	2			
BECKLEY	1651	1654	3			
POGO #3	2282	2284	2			

GAS AND OIL SHOWS: NONE REPORTED

FORMATION	TOP	BOTTOM	THICKNESS	IPF (MCFD/BOPD)	PRESSURE	HOURS TESTED

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

ELECTRIC LOGS AND SURVEYS

List logs run on wellbore: GR/PDS/TEMP

Did log disclose vertical location of a coal seam? Yes X No

SURVEY RESULTS

DEPTH OF SURVEY	DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL	DEPTH OF SURVEY	DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL
228	1/4°	1877	1/2°
414	0°	2098	1/2°
620	3/4°	2319	1/2°
826	3/4°		
1024	3/4°		
1211	1/2°		
1433	1/2°		
1650	1/2°		

CASING AND TUBING

	SIZE	TOP	BOTTOM	LENGTH	CEMENT USED (IN CU/FT)	DATE CEMENTED	PACKERS OR BRIDGE PLUGS KIND SIZE SET AT
<u>Conductor</u>	13 3/8"		29'	21'			
<u>Surface</u>	8 5/8"		802'	792'	325(384)	4-14-93	

Water Protection

Coal Protection

<u>Other Casing</u>	4 1/2"		2352'	2342'	524(676)	4-17-93	
<u>and Tubing Left in Well</u>	2 3/8"		2321.7'				

Liners

REMARKS: Shut down, fishing jobs, depths and dates, caving, lost circulation, etc.

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

ELECTRIC LOGS AND SURVEYS

List logs run on wellbore: GR/PDS/TEMP

Did log disclose vertical location of a coal seam? Yes X No

SURVEY RESULTS

DEPTH OF SURVEY	DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL	DEPTH OF SURVEY	DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL
228	1/4°	1877	1/2°
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620	3/4°	2319	1/2°
826	3/4°		
1024	3/4°		
1211	1/2°		
1433	1/2°		
1650	1/2°		

CASING AND TUBING

	SIZE	TOP	BOTTOM	LENGTH	CEMENT USED (IN CU/FT)	DATE CEMENTED	PACKERS OR BRIDGE PLUGS KIND SIZE SET AT
<u>Conductor</u>	13 3/8"		29'	21'			
<u>Surface</u>	8 5/8"		802'	792'	325(384)	4-14-93	

Water Protection

Coal Protection

<u>Other Casing</u>	4 1/2"		2352'	2342'	524(676)	4-17-93	
<u>and Tubing Left in Well</u>	2 3/8"		2321.7'				

Liners

REMARKS: Shut down, fishing jobs, depths and dates, caving, lost circulation, etc.

DRILLER'S LOG

Compiled by ENGINEERING

GEOLOGIC AGE	GENERAL FORMATION	GENERAL LITHOLOGY	COLOR	DEPTH		THICKNESS	REMARKS
				TOP	BOTTOM		
PENNSYLVANIAN	SAND, SHALE & THIN COALS			0	980	980	
	UPPER SEABOARD COAL			980	982	2	
	SAND, SHALE & THIN COALS			982	1162	180	
	GREASY CREEK			1162	1164	2	
	SAND, SHALE & THIN COALS			1164	1270	106	
	LOWER SEABOARD COAL			1270	1272	2	
	SAND, SHALE & THIN COALS			1272	1651	379	
	BECKLEY COAL			1651	1654	3	
	SAND, SHALE & THIN COALS			1654	2282	628	
	POCO #3 COAL			2282	2284	2	
	SAND, SHALE & THIN COALS			2284	2441	157	
	LOGGER'S DEPTH				2441		

Permittee: EQUITABLE RESOURCES EXPLORATION (Company)

By: Joseph A. Deany (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: 8887
Company: EnerVest Operating, LLC
File Number: DI-0872
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coal Bed	Date Well Completed: 3/18/1998
Driller's Total Depth: 1635.00	Log's Total Depth: 1641.00

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	5DI0872_VC2549_EQTPN_DICKENSON.pdf

3. Final Production

Description	FileName
FINAL	5DI0872_VC2549_EQTPN_DICKENSON.pdf

4. Comments

Notes:

MATERIAL INSERTED BY DGO [5/10/2016, jhh]

5. Signature

Permittee: EnerVest Operating, LLC Date: 5/10/2016 (Company)

By: JAMES G. CREED Title: *** (Signature)

INTERNAL USE ONLY

Submit Date: 5/10/2016

Status: _____

Date: 8/12/2016

Final PDF Date: 8/12/2016

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
540/676-5423

COMPLETION REPORT

WELL TYPE: COALBED METHANE

Date Well Completed 03/18/1998 Total Depth of Well: LTD - 1641 DTD - 1635

Attach the Drilling Report; if not previously submitted. In addition, submit any changes in casing or tubing that were approved after the Drilling Report was submitted.

STIMULATION RECORD

Zone 1 : M HORS, CSEAM, WARCK, UNC, BECKLY, L HORS, XSEAM

Formation Stimulated With: 70Q FOAM

Total Sand Used: 17790 lbs Sand Size: 12/20 Total Acid: 0 gal. Acid Strength:

N2 Used: 580900 SCF Total Fluid Injected: 542 bbls.

Perforated: 562 to 821 No. of Perforations: 15 Size: 0.34 "

Formation Broke Down at: 1455 PSIG Average Injection Rate: 69 BPM

ISIP: 1465 PSIG 5 Min SIP: 1107 PSIG Average Injection Pressure: 3552

Date Stimulated: 03/18/1998

FINAL PRODUCTION: _____ Natural X After Stimulation
BOD MCFD HOURS TESTED ROCK PRESSURE HOURS TESTED

Final Production If Gas
Zones are Commingled 36 MCF 6 Hours Tested 230 PSIG 48 Hours Tested

Permittee: Equitable Resources Energy Company (Company)

By: James M. Reed (Signature)

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
540/676-5423

COMPLETION REPORT

WELL TYPE: COALBED METHANE

Date Well Completed 03/18/1998 Total Depth of Well: LTD - 1641 DTD - 1635

Attach the Drilling Report; if not previously submitted. In addition, submit any changes in casing or tubing that were approved after the Drilling Report was submitted.

STIMULATION RECORD

Zone 1 : M HORS, CSEAM, WARCK, UNC, BECKLY, L HORS, XSEAM

Formation Stimulated With: 70Q FOAM

Total Sand Used: 17790 lbs Sand Size: 12/20 Total Acid: 0 gal. Acid Strength:

N2 Used: 580900 SCF Total Fluid Injected: 542 bbls.

Perforated: 562 to 821 No. of Perforations: 15 Size: 0.34 "

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ISIP: 1465 PSIG 5 Min SIP: 1107 PSIG Average Injection Pressure: 3552

Date Stimulated: 03/18/1998

FINAL PRODUCTION: _____ Natural X After Stimulation
BOD MCFD HOURS TESTED ROCK PRESSURE HOURS TESTED

Final Production If Gas
Zones are Commingled 36 MCF 6 Hours Tested 230 PSIG 48 Hours Tested

Permittee: Equitable Resources Energy Company (Company)

By: James M. Reed (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: 8956
Company: EnerVest Operating, LLC
File Number: DI-0872
Operations Name: VC-2549
Operation Type: Coal Bed
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 3/2/1998 Drilling Contractor: UD 15
Date drilling completed: 3/5/1998 Rig Type: Rotary Cable
Driller's Total Depth (feet): 1635.00
Log Total Depth (feet): 1641.00 Coal Seam At Total Depth: Pocahontas

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

Permitted State Plane X: 10418616.0000 Final Plat State Plane X: 10418615.7910
Permitted State Plane Y: 3567762.0700 Final Plat State Plane Y: 3567762.0770

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
PLAT	1DI0872_VC2549_EQTPN_DICKENSON.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
1090	1/4	INCH
170	1	INCH
775	DAMP	

Salt Water At:

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

Coal Seams:

List of Attached Items:

Description	FileName
COAL	2DI0872_VC2549_EQTPN_DICKENSON.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
GAS	2DI0872_VC2549_EQTPN_DICKENSON.pdf

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

List all logs run: NA

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
-------------	----------

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
CASING	NO CASING INFORMATION.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
LOG	4DI0872_VC2549_EQTPN_DICKENSON.pdf

9. Comments

MATERIAL INSERTED BY DGO [5/10/2016, jhh]

10. Signature

Permitee: EnerVest Operating, LLC Date: 5/10/2016

Signed By: JAMES G. CREED Title: ***

INTERNAL USE ONLY

Submit Date: 5/10/2016

Status: A

Date: 8/12/2016

Final PDF Date: 11/30/2016

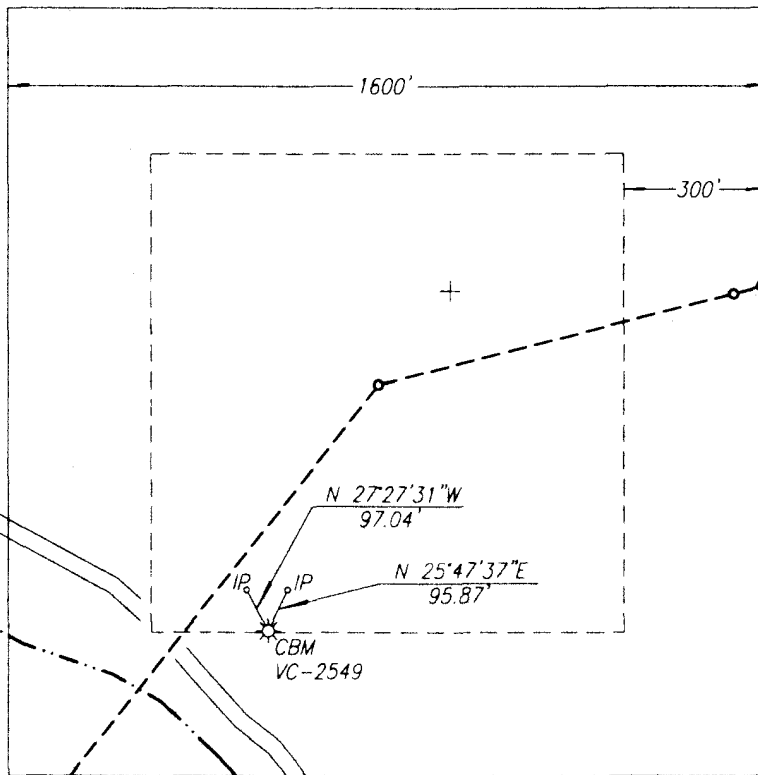
6,910'

Latitude 37° 05' 00"

Lease No. 241490L / T-427
John L. Tiller
244.0 Acres
Clinchfield Coal Company /
Pyxis Resources Company - coal
Pine Mountain Oil & Gas, Inc. - oil & gas
Gas 35.30 Ac. 60.07%

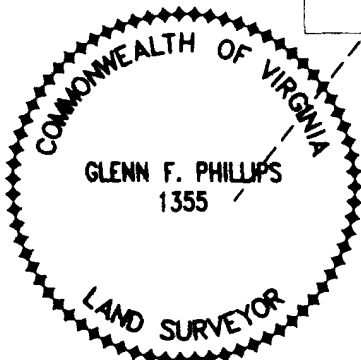
6,720'

Longitude 82° 07' 30"



Lease No. 241490L / T-572
J. W. Barton
236.0 Acres
Clinchfield Coal Company /
Pyxis Resources Company - coal
Pine Mountain Oil & Gas, Inc. - oil & gas
Gas 0.02 Ac. 0.03%

Lease No. 241490L / T-349
James Rasnake
388.52 Acres
Clinchfield Coal Company /
Pyxis Resources Company - surface & coal
Pine Mountain Oil & Gas, Inc. - oil & gas
Gas 23.45 Ac. 39.90%



Well elevation determined by trigonometric leveling from U.S. Army Corp. BM 1B

FINAL PLAT

Area of Unit = 58.77 Ac.

Well Coordinates: (VA St. Plane S. Zone,
Calculated from CCC coordinates)
N 286,885 E 935,630

Well Coordinates: (Clinchfield Coal Co.)
S 12,796.84 E 68,446.41

WELL LOCATION PLAT

COMPANY Equitable Resources Energy Company WELL NAME AND NUMBER VC-2549
TRACT NO. T-349 ELEVATION 1717.68 QUADRANGLE Duty
COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 5-20-1998

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.

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
540/676-5423

DRILLING REPORT

Pursuant to VR-480-05-22.1 § 1.36, the undersigned Permittee submits this report on Well VCP2549 in the ERVINTON District of DICKENSON County, Virginia on the 9 day, September month, 1998 .

LOCATION

County: Dickenson District: ERVINTON
Surface Elevation: 1717.78 Elev of Kelly Bushing: 1727.78 Quadrangle: DUTY
6720 Ft. S of Latitude 37 ° 05 ' 00 " and 6910 Ft. W of Longitude 82 ° 07 ' 30 "

DRILLING DATA

Date Drilling Commenced: 03/02/1998 Drilling Contractor: UD 15
Date Drilling Completed: 03/05/1998 Rig Type: X Rotary Cable Tool
Total Depth of Well: LTD - 1641 DTD - 1635

GEOLOGICAL DATA

Fresh Water at:
170 feet 1" STREAM 775 feet DAMP
1090 feet 1/4" STREAM

Salt Water at:

COAL SEAMS:

<u>NAME</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>MINING IN AREA</u>		
				<u>YES</u>	<u>NO</u>	<u>MINED OUT</u>
L SEABOARD	373	375	2			
UNNAMED A	443	445	2			
BECKLY	762	770	8			
L HORSEPEN	814	821	7			
X SEAM	862	864	2			

GAS AND OIL SHOWS:

<u>FORMATION</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>IPF (MCFD/BOPD)</u>	<u>PRESSURE</u>	<u>HOURS TESTED</u>
------------------	------------	---------------	------------------	------------------------	-----------------	---------------------

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
540/676-5423

DRILLING REPORT

Pursuant to VR-480-05-22.1 § 1.36, the undersigned Permittee submits this report on Well VCP2549 in the ERVINTON District of DICKENSON County, Virginia on the 9 day, September month, 1998 .

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County: Dickenson District: ERVINTON
Surface Elevation: 1717.78 Elev of Kelly Bushing: 1727.78 Quadrangle: DUTY
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170 feet 1" STREAM 775 feet DAMP
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<u>NAME</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>MINING IN AREA</u>		
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L SEABOARD	373	375	2			
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L HORSEPEN	814	821	7			
X SEAM	862	864	2			

GAS AND OIL SHOWS:

<u>FORMATION</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>IPF (MCFD/BOPD)</u>	<u>PRESSURE</u>	<u>HOURS TESTED</u>
------------------	------------	---------------	------------------	------------------------	-----------------	---------------------

NO CASING INFORMATION

DRILLER'S LOG

Compiled by: Engineering

<u>AGE</u>	<u>FORMATION*</u>	<u>GENERAL LITHOLOGY</u>	<u>COLOR</u>	<u>DEPTH</u>		<u>THICKNESS</u>	<u>REMARKS</u>
				<u>TOP</u>	<u>BOTTOM</u>		
PENN	L SEABOARD			373	375	2	
PENN	UNNAMED A			443	445	2	
PENN	BECKLY			762	770	8	
PENN	L HORSEPEN			814	821	7	
PENN	X SEAM			862	864	2	
	LOGGER'S TOTAL DEPTH				1641		

*Formations between coal seams are Sand, Shale and Thin Coals

Permittee: Equitable Resources Energy Company (Company)

By:  (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: 8801
Company: EnerVest Operating, LLC
File Number: DI-0792
Completion Report Type: Original

COMPLETION REPORT (DGO-GO-15)

Well Type: Coal Bed	Date Well Completed: 5/31/1996
Driller's Total Depth: 1333.00	Log's Total Depth: 1341.00

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	5DI0792_VC2550_EQTPN_DICKENSON.pdf

3. Final Production

Description	FileName
FINAL	5DI0792_VC2550_EQTPN_DICKENSON.pdf

4. Comments

Notes:

MATERIAL INSERTED BY DGO [4/27/2016, jhh]

5. Signature

Permittee: EnerVest Operating, LLC Date: 4/27/2016 (Company)

By: JOSEPH A. AWNY Title: ENGINEER (Signature)

INTERNAL USE ONLY

Submit Date: 4/27/2016

Status: _____

Date: 8/12/2016

Final PDF Date: 8/12/2016

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
703/676-5423



COMPLETION REPORT

WELL TYPE: Oil Gas Coalbed Methane or Injection well

Date Well Completed: 5-31-96 Total Depth of Well: LTD = 1341 DTD = 1333

Attach the Drilling Report; if not previously submitted. In addition, submit any changes in casing or tubing that were approved after the Drilling Report was submitted.

STIMULATION RECORD

Zone 1: COAL SEAMS* Formation Stimulated With: 70Q FOAM
W/21650# 12/20 SAND - 1,160,820 SCF N2 - 688 BF
Perforated: 394.5 to 822.5 No. of Perforations: 16 Perforation size: .34
Formation Broke Down at: 1620 PSIG Average Injection Rate: 19.2 (DH) BPM
ISIP: 633 PSIG 5 Min SIP: 554 PSIG Average Injection Pressure: 2794
Date Stimulated: 5-31-96

* UNNAMED "A", U.HORSEPEN, M.HORSEPEN, C-SEAM RIDER, C-SEAM, WARCREEK, UNNAMED "C", BECKLEY, L HORSEPEN, X-SEAM

Zone 2: Formation Stimulated With:
Perforated: to No. of Perforations: Perforation size:
Formation Broke Down at: PSIG Average Injection Rate:
ISIP: PSIG Min SIP: PSIG Average Injection Pressure:
Date Stimulated:

Zone 3: Formation Stimulated With:
Perforated: to No. of Perforations: Perforation size:
Formation Broke Down at: PSIG Average Injection Rate:
ISIP: PSIG Min SIP: PSIG Average Injection Pressure:
Date Stimulated:

FINAL PRODUCTION: Natural X After Stimulation
BOD MCFD HOURS TESTED ROCK PRESSURE HOURS TESTED

Zone (1)
Zone (2)
Zone (3)
Final Production if Gas Zones are Commingled 62 MCFD 6 Hours Tested 94 PSIG 48 Hours Tested

* Use additional sheets with this format, if more than three (3) zones were stimulated.

Permittee: EQUITABLE RESOURCES EXPLORATION (Company)
By: Joseph A. [Signature] (Signature)

Department of Mines, Minerals and Energy
Division of Gas and Oil
P.O. Box 1416
Abingdon, Virginia 24210
703/676-5423



COMPLETION REPORT

WELL TYPE: Oil Gas Coalbed Methane or Injection well

Date Well Completed: 5-31-96 Total Depth of Well: LTD = 1341 DTD = 1333

Attach the Drilling Report; if not previously submitted. In addition, submit any changes in casing or tubing that were approved after the Drilling Report was submitted.

STIMULATION RECORD

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Zone 2: Formation Stimulated With:
Perforated: to No. of Perforations: Perforation size:
Formation Broke Down at: PSIG Average Injection Rate:
ISIP: PSIG Min SIP: PSIG Average Injection Pressure:
Date Stimulated:

Zone 3: Formation Stimulated With:
Perforated: to No. of Perforations: Perforation size:
Formation Broke Down at: PSIG Average Injection Rate:
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Permittee: EQUITABLE RESOURCES EXPLORATION (Company)

By: Joseph A. [Signature] (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: 8870
Company: EnerVest Operating, LLC
File Number: DI-0792
Operations Name: VC-2550
Operation Type: Coal Bed
Drilling Report Type: Original

DRILLING REPORT (DGO-GO-14)

1. Drilling Data

Date drilling commenced: 5/24/1996 Drilling Contractor: UNION DRILLING
Date drilling completed: 5/26/1996 Rig Type: Rotary Cable
Driller's Total Depth (feet): 1333.00
Log Total Depth (feet): 1341.00 Coal Seam At Total Depth: Pocahontas

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

Permitted State Plane X: 10418943.0000 Final Plat State Plane X: 10418943.0000
Permitted State Plane Y: 3566459.0300 Final Plat State Plane Y: 3566459.0000

Plat Previously Submitted Or...

List of Attached Items:

Description	FileName
PLAT	1DI0792_VC2550_EQTPN_DICKENSON.pdf

3. Geological Data

Fresh Water At:

Depth (in feet)	Rate	Unit of Measure
1025	DAMP	
70	1	INCH

Salt Water At:

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

Coal Seams:

List of Attached Items:

Description	FileName
COAL	2DI0792_VC2550_EQTPN_DICKENSON.pdf

Gas and Oil Shows:

List of Attached Items:

Description	FileName
GAS	2DI0792_VC2550_EQTPN_DICKENSON.pdf

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

List all logs run: DEN/TEMP/GR

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	3DI0792_VC2550_EQTPN_DICKENSON.pdf

6. Casing and Tubing Program

List of Attached Items:

Description	FileName
CASING	3DI0792_VC2550_EQTPN_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	4DI0792_VC2550_EQTPN_DICKENSON.pdf

9. Comments

MATERIAL INSERTED BY DGO [4/27/2016, jhh]

10. Signature

Permitee: EnerVest Operating, LLC Date: 4/27/2016

Signed By: JOSEPH A. AWNY Title: ENGINEER

INTERNAL USE ONLY

Submit Date: 4/27/2016

Status: A

Date: 8/12/2016

Final PDF Date: 8/12/2016

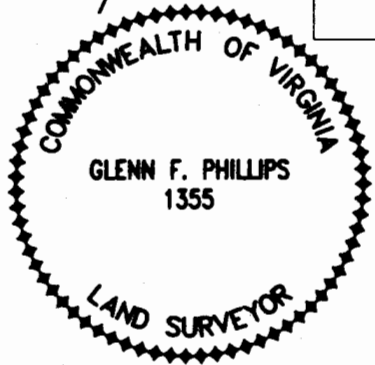
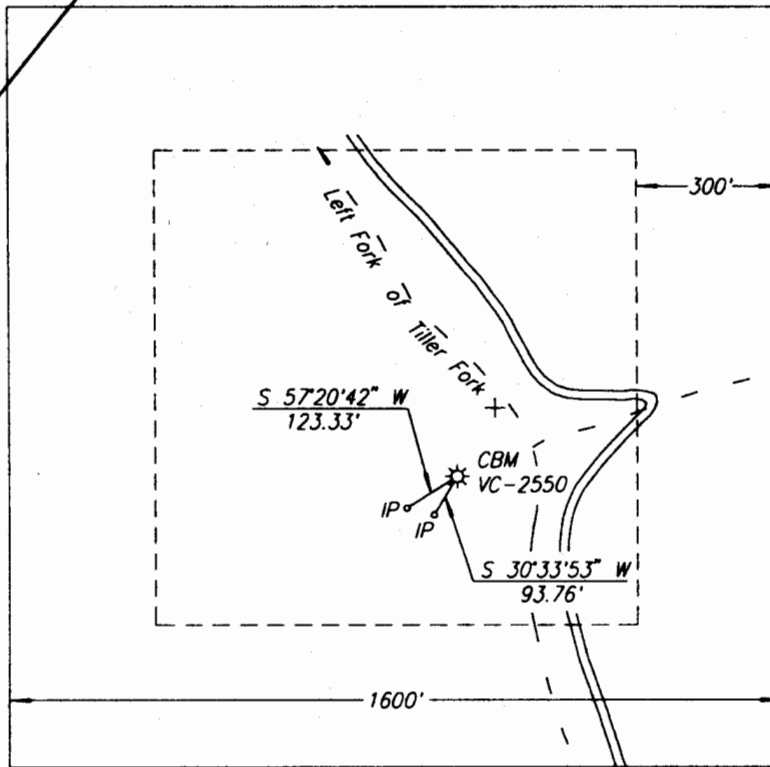
Lease No. PO-148 / T-427
 John L. Tiller
 244.0 Acres
 Clinchfield Coal Company /
 Pyxis Resources Company - coal
 Pine Mountain Oil & Gas, Inc. - oil & gas
 gas 0.24 Ac. 0.41%

Latitude 37° 05' 00"

JE
6/10/86

Longitude 82° 07' 30"

8,000'



Lease No. PO-148 / T-349
 James Rasnake
 388.52 Acres
 Clinchfield Coal Company /
 Pyxis Resources Company - surface & coal
 Pine Mountain Oil & Gas, Inc. - oil & gas
 gas 58.53 Ac. 99.59%

FINAL PLAT

Well Coordinates: (Va St. Plane S. Zone,
 Calculated from CCC coordinates)
 N 285,582 E 935,957

Well Coordinates: (Clinchfield Coal Co.)
 S 14,085.91 E 68,823.62

Well elevation determined by trigonometric leveling from U.S. Army Corp. BM 1B

Area of Unit = 58.77 Ac.

WELL LOCATION PLAT

COMPANY Equitable Resources Exploration WELL NAME AND NUMBER VC-2550
 TRACT NO. PO-148 / T-349 ELEVATION 1699.81 QUADRANGLE Duty
 COUNTY Dickenson DISTRICT Ervinton SCALE 1" = 400' DATE 5-30-1986

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

Glenn F. Phillips
 Licensed Professional Engineer or Licensed Land Surveyor



Department of Mines, Minerals and Energy
 Division of Gas and Oil
 P. O. Box 1410
 Abingdon, Virginia 24210
 703/676-5423

DRILLING REPORT

Pursuant to VR-480-05-22.1, § 1.36, the undersigned Permittee submits this report on Well VCP2550 in the ERVINTON District of the DICKENSON County, Virginia on 6TH day, AUGUST month, 1996.

LOCATION

County: DICKENSON District: ERVINTON
 Surface Elevation: 1699.90 Elevation of Kelly Bushing: 1709.90 Quadrangle: DUTY
8000 FT S. of Latitude 37° 05' 00" and 6560 FT W. of Longitude 82° 07' 30"

Attach a final location plat as required by VR 480-05-22.1, § 1.36.

DRILLING DATA

Date Drilling Commenced: 05-24-96 Drilling Contractor: Union Drilling
 Date Drilling Completed: 05-26-96 Rig Type: Rotary Cable Tool
 Total Depth of Well: LTD=1341 DTD=1333

GEOLOGICAL DATA

Fresh Water at:	70 feet	1" STREAM	GPM	feet	GPM
	1025 feet	DAMP	GPM	feet	GPM
Salt Water at:	feet		GPM	feet	GPM
	feet		GPM	feet	GPM

COAL SEAMS:

<u>NAME</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>MINING IN AREA</u>		
				<u>YES</u>	<u>NO</u>	<u>MINED OUT</u>
UNNAMED "A" (SPLIT)	395	399	4			
MIDDLE HORSEPEN	512	514	2			
BECKLEY (SPLIT)	708	714	6			

GAS AND OIL SHOWS:

<u>FORMATION</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>THICKNESS</u>	<u>IPF (MCFD/BOPD)</u>	<u>PRESSURE</u>	<u>HOURS TESTED</u>
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Department of Mines, Minerals and Energy
 Division of Gas and Oil
 P. O. Box 1410
 Abingdon, Virginia 24210
 703/676-5423

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Cuttings or samples are available for examination by a member of the Virginia Division of Mineral Resources
 Cuttings or samples have been furnished to the Virginia Division of Mineral Resources

ELECTRIC LOGS AND SURVEYS

List logs run on wellbore: DEN/TMP/GR

Did log disclose vertical location of a coal seam? Yes No

SURVEY RESULTS

<u>DEPTH OF SURVEY</u>	<u>DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL</u>	<u>DEPTH OF SURVEY</u>	<u>DIRECTION/DISTANCE/DEGREES FROM TRUE VERTICAL</u>
174	3/4°	1146	1/2°
182	3/4°	1333	3/4°
200	3/4°		
396	1-1/4°		
593	3/4°		
619	3/4°		
820	3/4°		
1020	3/4°		

CASING AND TUBING

	<u>SIZE</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>LENGTH</u>	<u>CEMENT USED (IN CU/FT)</u>	<u>DATE CEMENTED</u>	<u>PACKERS OR BRIDGE PLUGS KIND SIZE SET AT</u>
<u>Conductor</u>							
<u>Surface</u>	11-3/4"		31'	34'			
<u>Water Protection</u>	8-5/8"		348'	338'	100(118)	5-25-96	
<u>Coal Protection</u>							
<u>Other Casing and Tubing Left in Well</u>	4 1/2" 2 3/8"		1316' 1262'	1306'	200(252)	5-26-96	

Liners

REMARKS: Shut down, fishing jobs, depths and dates, caving, lost circulation, etc.

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

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CASING AND TUBING

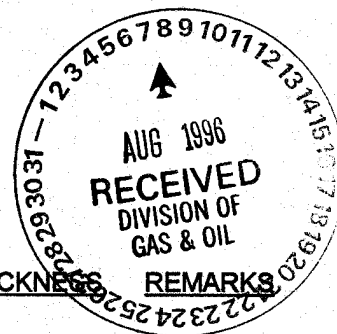
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Liners

REMARKS: Shut down, fishing jobs, depths and dates, caving, lost circulation, etc.

DRILLER'S LOG

Compiled by Engineering



<u>AGE</u>	<u>FORMATION</u>	<u>GENERAL LITHOLOGY</u>	<u>COLOR</u>	<u>DEPTH</u>		<u>THICKNESS</u>	<u>REMARKS</u>
				<u>TOP</u>	<u>BOTTOM</u>		
Pennsylvanian	Sand, Shale & Thin Coals			0	395		
	UNNAMED "A" (SPLIT)			395	399	4	
	Sand, Shale & Thin Coals			399	512	113	
	MIDDLE HORSEPEN			512	514	2	
	Sand, Shale & Thin Coals			514	708	194	
	BECKLEY (SPLIT)			708	714	6	
	Sand, Shale & Thin Coals			714	1341	627	
	Logger's Total Depth					1341	

Permittee: EQUITABLE RESOURCES EXPLORATION (Company)

By: Joseph A. [Signature] (Signature)

United States Environmental Protection Agency
Underground Injection Control (UIC) Program
Class II Permit Application Completeness Review Checklist

Permit Number:
Well Name:
Well Type: <input type="checkbox"/> Class II EOR <input type="checkbox"/> Class II SWD <input type="checkbox"/> Class II Commercial SWD
Permit Applicant:
Date Application Received:
Application Reviewed By:
CHECK BOX IF ITEM IS PROVIDED; IF NOT APPLICABLE, WRITE "NA"
<input type="checkbox"/> Completed Permit Application Form 7520-6, including signature of an authorized representative
Attachment A. Maps and Area of Review
<input type="checkbox"/> I. Well Location(s) and Permitted Area Description (if area permit) (40 CFR 144.26; 144.33)
<input type="checkbox"/> II. Area of Review Size Determination – fixed radius or equation (40 CFR 144.6)
<p>III. Maps (40 CFR 144.31; 146.24)</p> <p>Topographic Map extending one-mile beyond facility property boundary showing:</p> <p><input type="checkbox"/> injection well, well pad, and project area</p> <p><input type="checkbox"/> area of review boundary</p> <p><input type="checkbox"/> outcrops of injection and confining formation, <i>if present</i></p> <p><input type="checkbox"/> surface water intake and discharge structures, <i>if present</i></p> <p><input type="checkbox"/> hazardous waste treatment, storage or disposal facility, <i>if present</i></p> <p>Map showing within ¼ - mile beyond facility property boundary or AOR (whichever is larger):</p> <p><input type="checkbox"/> name and location of production wells, injection wells, abandoned wells, dry holes, and all water wells, noting its type (public water system, domestic drinking water, stock, etc.), <i>if present</i></p> <p><input type="checkbox"/> springs and surface bodies of waters, <i>if present</i></p> <p><input type="checkbox"/> mines (surface and subsurface) and quarries, <i>if present</i></p> <p><input type="checkbox"/> residences, schools, hospitals, and roads, <i>if present</i></p>
<p>IV. Area of Review (AOR) Wells and Corrective Action Plan (CAP) (40 CFR 144.55; 146.24)</p> <p><input type="checkbox"/> tabulation of AOR wells, <i>if present</i></p> <p><input type="checkbox"/> well bore diagrams, CBL, completion records of AOR wells, <i>if available</i></p> <p><input type="checkbox"/> AOR CAP, <i>if applicable</i></p>
<p>V. Landowner Information (40 CFR 144.31 and part 147)</p> <p><input type="checkbox"/> list of landowners and address within ¼-mile</p> <p><input type="checkbox"/> evidence of notification to landowner of intent to apply for permit, <i>if applicable</i></p>
Attachment B. Geological and Geophysical Information
<p>I. Geological Data (40 CFR 146.24)</p> <p><input type="checkbox"/> list of formations from surface to the base of the injection well, identifying all the USDWs and confining and injection zone(s). List includes the lithologic description, geological name, thickness, depth, and total dissolved solids (TDS) concentrations from these formations, <i>if known</i></p> <p><input type="checkbox"/> source of information for the geologic data and formation TDS</p>

- porosity and permeability of injection formation, *if available*
- geological cross-sections, *if available*
- known or suspected faults and fracture systems within AOR. If identified, provide proximity to the injection zone and affect fault/fracture system may have on the injection activities
- history of seismic activity in the area and proximity to crystalline (i.e., granitic) basement, *if applicable*

II. Formation Testing Plan (40 CFR 146.22)

- fluid pressure
- estimated fracture pressure
- physical and chemical characteristics of the injection zone

Attachment C. Well Construction/Conversion Information

I. Well Schematic Diagram (40 CFR 146.24)

Detailed proposed well schematic diagram that includes:

- identification of USDWs and confining and injection zones
- casing and cementing details, including demonstrated or calculated top of cement
- tubing and packer, *if applicable*
- open hole or perforated intervals
- surface trace, *if horizontal or deviated well*

If conversion to injection well:

- current well schematic diagram

II. Well Construction or Conversion Procedures (40 CFR 144.52; 146.22; 146.24)

Description of well construction or conversion procedures that includes:

- proposed logs and other tests conducted during the drilling and construction of new well(s)
- proposed stimulation plan(s), *if applicable*
- description of alarms and shut-down systems at the well, *if applicable*

If conversion to injection well:

- well completion and cementing records
- previously run logs/tests

Attachment D. Injection Operation and Monitoring Program (40 CFR 146.23; 146.24)

- flow diagram of fluid flow through facility
- contingency plan(s) to respond to with well failures
- drawing of the surface construction
- location of monitoring ports (show on the map(s) referenced in section A.III. above)
- description of sampling and monitoring devices to monitor the nature of the injected fluids, injection pressure, annulus pressure (if applicable), flowrate, and cumulative volume
- description of manifold monitoring program and how the program is comparable to individual well monitoring

Operating Data Information:

- average and maximum daily rate and volume of fluids to be injected
- average and maximum injection pressure
- source(s) of injection fluids (including field and formation names)
- proposed annular fluid, *if applicable*
- analysis of the chemical and physical characteristics of the injection fluid. At a minimum, this should include pH, specific gravity, TDS, and conductivity

Attachment E. Plugging and Abandonment (P&A) Plan (40 CFR 144.31; 144.51; 146.24)

- P&A plan of the well on EPA Form 7520-19

P&A diagram that includes:

- type, and number of plugs to be used
- placement of each plug including the elevation of top and bottom
- type, grade, and quantity of cement to be used
- method of placement of the plugs
- at least one cost estimates from an independent firm in the business of plugging and abandoning wells for third party (EPA) to complete proposed P&A plan

Attachment F. Financial Assurance (40 CFR 144.52)

- evidence of financial resources, such as a surety bond or financial statement, necessary to close, plug, or abandon the well

Attachment G. Site Security and Manifest Requirements (Commercial Wells Only; Form 7520)

- site security plan
- description of manifest system

Attachment H. Aquifer Exemption (AE) (40 CFR 144.7; 146.4)

- supporting documentation for proposed AE, *if applicable*

Attachment I. Existing EPA Permits (40 CFR 144.31)

- list of existing EPA permits, *if applicable*

Attachment J. Description of Business (40 CFR 144.31)

- description of the nature of the business

Attachment K. Optional Additional Project Information (40 CFR 144.4)

- The Wild and Scenic Rivers Act, 16 U.S.C. 1273 et seq.
list of national wild and scenic rivers that may be impacted by the activities associated with proposed project, *if applicable*
- The National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq.
list of properties listed or eligible for listing in the National Register of Historic Places. If available, historic and cultural resource survey(s) that have been conducted, *if applicable*
- The Endangered Species Act, 16 U.S.C. 1531 et seq.
list of endangered or threatened species that may be affected by the activities associated with proposed project. If available, previous endangered or threatened species surveys that have been conducted, *if applicable*
- The Coastal Zone Management Act, 16 U.S.C. 1451 et seq.
list of coastal zones that may be affected by the activities associated with the proposed project, *if applicable*



November 2, 2023

Mr. James C. Bennett
Source Water & UIC Section
Water Division
U.S. EPA Region 3
Four Penn Center
1600 John F. Kennedy Blvd.
Philadelphia, PA 19103

Mr. Bennett:

EnerVest is submitting this **response to the NOD** from October 25, 2023 on permit application to renew Permit #VAS2D932BDIC Class II-D fluid disposal well in the Cane Creek area of Dickenson County, Virginia.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Lawson'.

Jon Lawson
HSE Specialist
jlawson@enervest.net



UNDERGROUND INJECTION CONTROL

**Response to NOD dated 10/25/2023
PERMIT RENEWAL APPLICATION**

FOR CLASS II-D PRODUCTION FLUID DISPOSAL WELL

**EXISTING WELL VS-535517
EPA # VAS2D932BDIC**

NORA FIELD
DICKENSON COUNTY, VIRGINIA

November 2, 2023



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III**

Four Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, Pennsylvania 19103-2852

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

Re: Notice of Deficiency; EnerVest Permit Renewal Application; VAS2D932BDIC
Underground Injection Control (UIC) Program; Well No. VWD-535517

Dear Mr. Lawson:

On September 13, 2023, the U.S. Environmental Protection Agency (EPA) received your renewal application for the Class IID disposal injection well VWD-535517 located at the Nora Field, Ervinton District, Dickenson County, Virginia.

The completeness review for this application began on October 17, 2023 and overall, the application is comprehensive and the required attachments and accompanying information have been submitted to EPA. However, EPA would like EnerVest to submit some additional information to address certain deficiencies before we can continue processing the application. The deficiencies are as follows:

1. Attachment A

There are "active groundwater points" on the topographic map submitted as part of the application and these are assumed to be drinking water wells. However, there does not seem to be a tabulated list of these wells. This list should note the permit number, well owner, date drilled (if known), total depth, known use of the wells (whether domestic, agricultural, etc.) and any other known information pertaining to the wells.

Tabulation of the coal-bed methane and conventional wells was submitted as part of Appendix C. While the table lists the well names, types and depths; the table does not identify American Petroleum Institute (API) numbers, operators, dates drilled or the current status of the wells.

2. Attachment B

The lowermost underground source of drinking water (USDW) is not identified. The name of the USDW as well as the depth of the top and bottom of the aquifer should be identified. Please indicate the source of this information.

3. Attachment C

The lowermost USDW should be included on the schematic of the injection well.



4. Attachment D

Attachment D was not included with the application. At a minimum, please submit average and maximum daily rate and volume of fluids to be injected, average and maximum injection pressure, source(s) of injection fluids and an analysis of the chemical and physical characteristics of the injection fluid.

5. Attachment E

The third-party plugging estimate that was submitted from Eagle Well Service Inc. did not include a specific well number in the estimate. Please request another estimate with this information so EPA can ensure that the estimate is for the VWD-535517 injection well.

Please send the requested information to Kevin Rowsey at R3_UIC_Mailbox@epa.gov. Once EPA has received the necessary information, we can proceed with the technical review of the application. Thank you for your cooperation on this matter. If you have any questions or concerns, please contact Kevin at 215-814-5463.

Sincerely,

James C. Bennett, Jr., Chief
Source Water & UIC Section
Drinking Water & Source Water Protection Branch

Response to NOD

1. Attachment A –

The active groundwater monitoring points on the map are from Virginia Energy's Division of Mine Land Repurposing groundwater monitoring related to surrounding active surface coal mines. Most are underdrain monitoring below valley fills.

No drinking water wells exist within the Area of Review. For your information, the monitoring point information and recent data are included for the monitoring well.

Appendix C – updated the AOR gas well table to include API number, operator, date drilled and current status.

2. Attachment B –
USDW identified.

USDWs within the Area of Review for the Injection Well are generally located within the unconsolidated alluvium/colluvium deposits and the associated Norton Formation along local stream elevation. Furthermore, groundwater is typically found at depths between 0 to 500 feet below ground surface. The surface casing of VWD-535517 extends to 1509 feet below ground surface with cement back to surface to protect groundwater.

3. Attachment C –
Updated schematic with USDW

4. Attachment D –
The operating data is now included.

5. Attachment E –
Updated bid with VWD-535517 permit number included.

APPENDIX C

- UPDATED AOR WELL DATA TO INCLUDE API, DRILL DATE, OPERATOR, AND STATUS

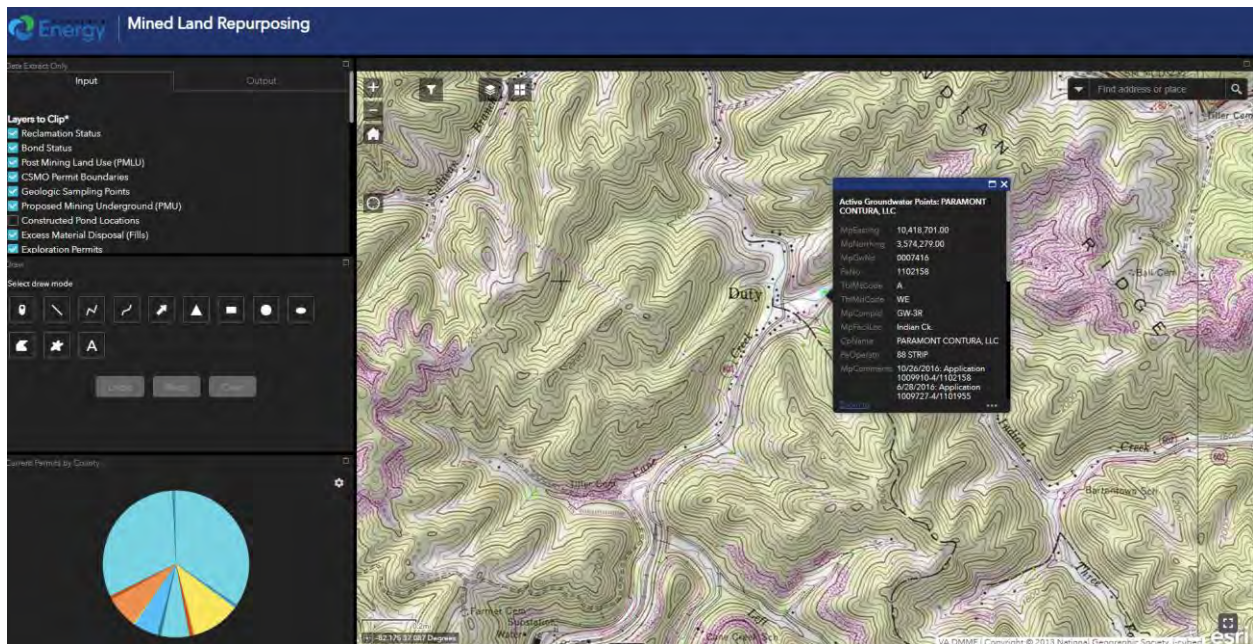
APPENDIX C AOR WELLS

CBM within 1-mile								
	Well		Type	Depth	API	Operator	Date Drilled	Current Status
1	VC-537802		CBM	2193	45-051-0224500	EnerVest Operating	8/18/2009	Producing
2	VC-551306		CBM	2206	45-051-0157300	EnerVest Operating	10/31/2006	Producing
3	VC-537799		CBM	2370	45-051-0183500	EnerVest Operating	10/29/2007	Producing
4	VC-537798		CBM	2408	45-051-0221300	EnerVest Operating	6/27/2009	Producing
5	VC-537100		CBM	2395	45-051-0165100	EnerVest Operating	4/24/2007	Producing
6	VC-537101		CBM	2239	45-051-0164900	EnerVest Operating	1/20/2007	Producing
7	VC-502553		CBM	1627	45-051-0155100	EnerVest Operating	8/16/2006	Producing
8	VC-537794		CBM	2392	45-051-0224300	EnerVest Operating	8/15/2009	Producing
9	VC-537795		CBM	2397	45-051-0219800	EnerVest Operating	6/24/2009	Producing
10	VCI-537412		CBM	1469	45-051-0210900	EnerVest Operating	11/18/2009	Producing
11	VC-536589		CBM	1853	45-051-0174000	EnerVest Operating	5/24/2007	Producing
Conv within 1-mile								
1	V-536397		Conv	6023	45-051-0130400	EnerVest Operating	3/21/2005	Producing
2	V-530051		Conv	5080	45-051-0232200	EnerVest Operating	11/10/2009	Producing
3	V-537713		Conv	5234	45-051-0174800	EnerVest Operating	5/31/2007	Producing
CBM within 1.25-mile								
1	VC-536444		CBM	2529	45-051-0213100	EnerVest Operating	3/26/2009	Producing
2	VC-536588		CBM	2333	45-051-0217900	EnerVest Operating	6/21/2009	Producing
3	VCI-537513		CBM	2104	45-051-0271100	EnerVest Operating	5/19/2017	Producing
4	VC-537102		CBM	2364	45-051-0174300	EnerVest Operating	6/24/2007	Producing
5	VCI-537355		CBM	1960	45-051-0259700	EnerVest Operating	10/31/2017	Producing
6	VC-704371		CBM	1885	45-051-0100200	EnerVest Operating	7/23/2000	Producing
7	VC-2549		CBM	1641	45-051-0087200	EnerVest Operating	3/2/1998	Producing
8	VC-2550		CBM	1341	45-051-0079200	EnerVest Operating	5/24/1996	Producing
9	VC-2277		CBM	2441	45-051-0068700	EnerVest Operating	4/13/1993	Producing

10	VC-703628		CBM	1811	45-051-0083800	EnerVest Operating	7/8/1997	Producing
Conv within 1.25-mile								
1	V-536398		Conv	6312	45-051-0128100	EnerVest Operating	5/13/2005	Producing

MAP

- EXPLANATION OF “ACTIVE GROUNDWATER POINTS” ON MAP. NO DRINKING WATER WELLS EXIST IN AREA OF REVIEW, GROUNDWATER POINTS ARE MINING RELATED MONITORING.
- EXAMPLE MINING MONITORING WELL INFORMATION AND DATA



COAL MINE PERMIT
GROUNDWATER MONITORING WELL



Commonwealth of Virginia
Virginia Department of Energy
Mined Land Repurposing
3405 Mountain Empire Road, Big Stone Gap, VA 24219
Telephone: (276) 523-8100

MPID Info

MPID: 0007416

Added: 10/26/2016

Deleted:

Latitude:

Longitude:

Northing: 3574279.000000

Easting: 10418701.000000

Type: WE-WELL

Status: A-ACTIVE

Company Id: GW-3R

Facility/Location: Indian Ck.

Elevation: 1500.00

Freq.: 3

Limit Code:

Comment: 10/26/2016: Application 1009910-4/1102158
6/28/2016: Application 1009727-4/1101955
02/03/11: RA Application 1007222-2/1101955 ADDS WE SITE
GW-3R, MPID 0007416, replaces GW-3, MPID 0006256.

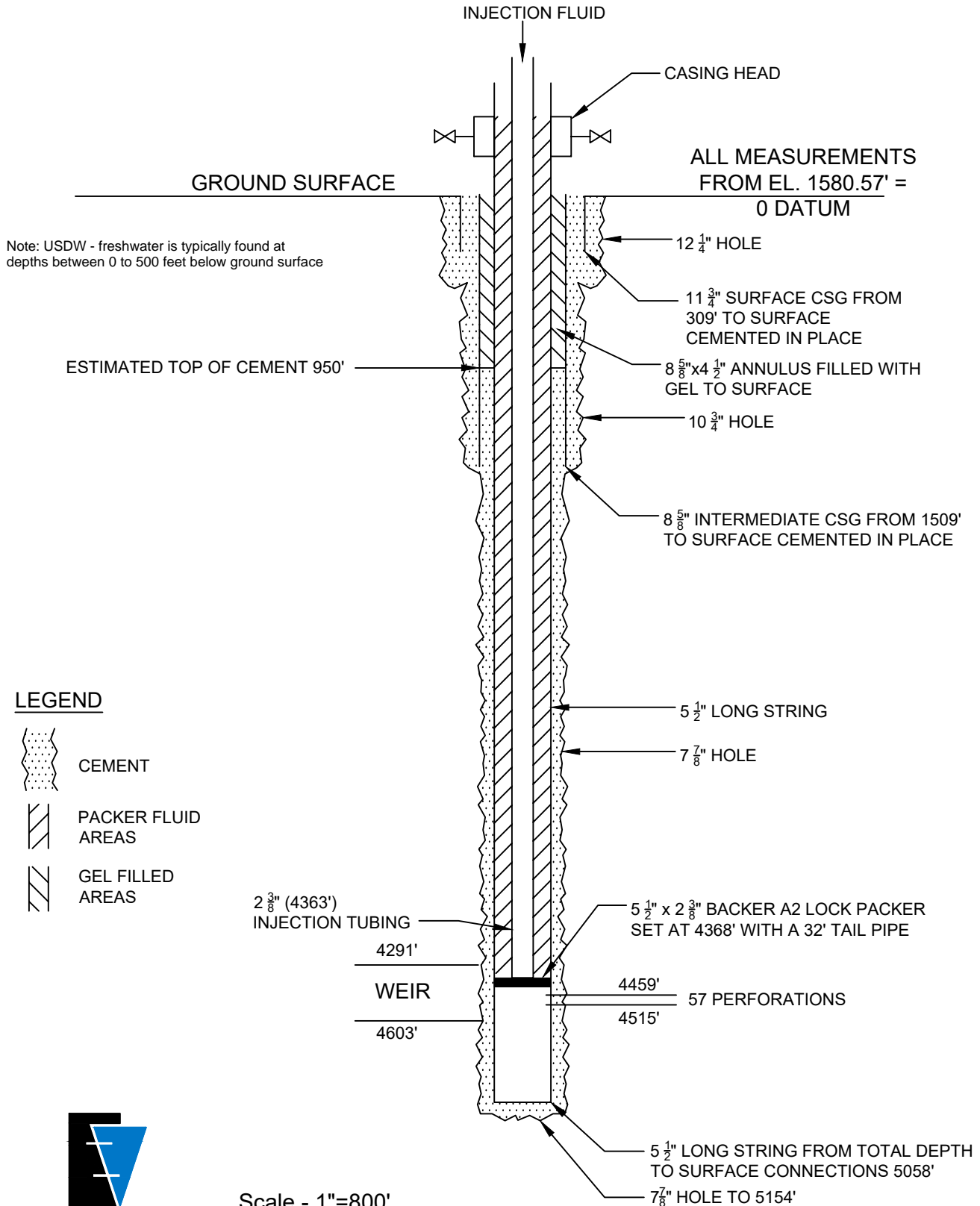
Trans	MPID	Sampled	Time	Received	Type	Depth	pH	Iron	Manganese	TSS	App	Col	Temp	Acid	Alka	Conduc Microm	TDS	Sulf	Hard	Chlor	Lab
0892	0007416	2/13/2012	12:02	5/1/2012		4	7.1				1	A	8			454					1
0893	0007416	2/23/2012	12:46	5/1/2012		4	7.1				1	A	9			481					1
0894	0007416	3/13/2012	10:28	5/1/2012		3	7.1				1	A	10			505					1
0895	0007416	3/26/2012	13:20	5/1/2012		4	7.1				1	A	13			499					1
0891	0007416	1/25/2012	11:09	5/1/2012		4	7				1	A	9			470					1
0890	0007416	1/9/2012	14:29	5/1/2012		4	7.1	0.4	0	0	1	A	10	0	168	434	254	7	84	31	1
0921	0007416	12/22/2011	15:04	2/3/2012		4	7.1				1	A	12			435					1
0920	0007416	12/15/2011	11:21	2/3/2012		4	6.9				1	A	11			441					1
0919	0007416	11/23/2011	12:49	2/3/2012		4	7.2				1	A	12			428					1
0918	0007416	11/14/2011	10:49	2/3/2012		5	7.4				1	A	13			412					1
0917	0007416	10/18/2011	11:03	2/3/2012		4	7.4				1	A	16			368					1
0916	0007416	10/10/2011	12:00	2/3/2012		5	7.3	0.2	0	0	1	A	16	0	218	364	210	4	64	4	1
0916	0007416	9/27/2011	12:09	11/2/2011		5	7.4				1	A	18			365					1
0915	0007416	9/16/2011	12:07	11/2/2011		5	7.6				1	A	18			367					1
0914	0007416	8/19/2011	11:46	11/2/2011		5	7.7				1	A	21			388					1
0913	0007416	8/9/2011	13:12	11/2/2011		5	7.6				1	A	22			380					1
0912	0007416	7/20/2011	11:08	11/2/2011		5	7.6				1	A	22			379					1
0911	0007416	7/12/2011	11:35	11/2/2011		4	7.8	0.3	0	0	1	A	20	0	198	377	186	7	64	7	1
0878	0007416	6/16/2011	10:42	8/3/2011		5	7.5				1	A	19			388					1
0877	0007416	6/7/2011	09:54	8/3/2011		5	7.7				1	A	20			407					1
0876	0007416	5/23/2011	09:00	8/3/2011		5	7.4				1	A	15			410					1
0875	0007416	5/16/2011	11:25	8/3/2011		5	7.8				1	A	16			421					1
0874	0007416	4/15/2011	13:05	8/3/2011		4	7.3				1	A	13			408					1
0873	0007416	4/5/2011	14:02	8/3/2011		3	7.7	0.8	0	0	1	A	11	0	184	421	206	6	76	15	1
0860	0007416	3/24/2011	13:15	5/2/2011		4	7.7				1	A	11			404					1
0859	0007416	3/8/2011	10:47	5/2/2011		4	7.5				1	A	10			434					1
0858	0007416	2/18/2011	09:32	5/2/2011		5	7.6				1	A	10			441					1
0857	0007416	2/8/2011	11:13	5/2/2011		5	7.9	0.4	0	0	1	A	10	0	192	346	198	3	72	6	1
0896	0007416	4/4/2012	11:00	7/30/2012		4	7.1	0.8	0.1	0	1	A	13	0	162	493	332	3	100	50	1
0786	0007416	4/25/2013	08:58	8/5/2013		3	6.4				1	A	13			257					1
0787	0007416	5/7/2013	14:54	8/5/2013		4	7				1	A	14			543					1
0788	0007416	5/23/2013	11:26	8/5/2013		4	7.1				1	A	18			535					1
0789	0007416	6/14/2013	10:05	8/5/2013		4	7.1				1	A	19			546					1
0790	0007416	6/25/2013	11:26	8/5/2013		4	7.1				5	A	20			546					1
0897	0007416	4/24/2012	14:14	7/30/2012		4	7.1				1	A	12			490					1
0898	0007416	5/14/2012	13:22	7/30/2012		4	7				1	A	16			516					1
0899	0007416	5/23/2012	14:06	7/30/2012		4	7				1	A	17			522					1
0900	0007416	6/11/2012	12:26	7/30/2012		4	6.6				1	A	17			531					1
0901	0007416	6/21/2012	10:02	7/30/2012		5	6.9				1	A	18			520					1
0904	0007416	7/5/2012	10:42	11/13/2012		4	7	1	0.1	0	1	A	18	0	164	540	290	1	132	60	1
0905	0007416	7/19/2012	12:35	11/13/2012		4	7				1	A	21			544					1
0906	0007416	8/10/2012	13:05	11/13/2012		4	7.2				1	A	21			548					1
0907	0007416	8/23/2012	12:10	11/13/2012		5	7				1	A	19			546					1
0908	0007416	9/10/2012	11:36	11/13/2012		5	6.8				1	A	19			528					1
0909	0007416	9/24/2012	12:01	11/13/2012		4	7.2				1	A	16			524					1
0852	0007416	10/8/2012	12:36	2/4/2013		4	7.1	0.6	0.1	3	1	A	15	0	224	487	282	5	120	38	1
0853	0007416	10/22/2012	10:09	2/4/2013		5	7				1	A	14			489					1
0854	0007416	11/13/2012	14:17	2/4/2013		4	7.2				1	A	13			501					1
0855	0007416	11/21/2012	12:34	2/4/2013		5	7.1				1	A	12			515					1
0856	0007416	12/11/2012	10:09	2/4/2013		5	6.9				1	A	11			505					1
0857	0007416	12/18/2012	10:39	2/4/2013		4	6.9				1	A	11			530					1
0852	0007416	1/14/2013	12:02	5/2/2013		4	6.9	0.7	0.1	4	1	A	10	0	189	535	366	2	108	45	1
0853	0007416	1/27/2013	12:26	5/2/2013		3	6.3				1	A	8			543					1
0854	0007416	2/5/2013	13:24	5/2/2013		4	7.2				1	A	9			532					1
0855	0007416	2/20/2013	13:26	5/2/2013		4	7				1	A	8			530					1
0856	0007416	3/7/2013	13:46	5/2/2013		5	6.9				1	A	8			532					1
0857	0007416	3/26/2013	12:09	5/2/2013		4	7				2	B	8			557					1
0785	0007416	4/8/2013	13:58	8/5/2013		4	7.1	5.7	0.1	26	5	B	10	0	167	548	432	4	100	53	1
0736	0007416	7/10/2013	11:37	11/4/2013		4	7	1	0.1	7	5	A	17	0	160	556	344	3	120	47	1
0748	0007416	7/22/2014	13:51	11/3/2014		8	7.2				1	A	18			530					1
0749	0007416	8/14/2014	12:05	11/3/2014		7	7.3				1	A	17			533					1
0750	0007416	8/25/2014	13:50	11/3/2014		8	7.4				1	A	18			537					1
0751	0007416	9/18/2014	14:44	11/3/2014		8	7.3				1	A	18			548					1
0752	0007416	9/26/2014	09:14	11/3/2014		7	6.9				5	A	17			544					1
0737	0007416	7/18/2013	11:41	11/4/2013		4	7				1	A	21			561					1
0738	0007416	8/7/2013	12:53	11/4/2013		4	7.3				1	A	20			554					1
0739	0007416	8/15/2013	11:22	11/4/2013		4	7.2				1	A	19			548					1
0740	0007416	9/9/2013	13:35	11/4/2013		3	7.1				1	A	19			542					1
0741	0007416	9/18/2013	13:32	11/4/2013		4	7.2				1	A	17			541					1
0761	0007416	10/7/2013	11:16	2/3/2014		8	7.1	1	0.1	4.8	1	A	16	0	164	546	322	3	152	41	1
0762	0007416	10/16/2013	10:32	2/3/2014		7	6.9				5	A	16			538					1
0763	0007416	11/5/2013	10:57	2/3/2014		6	7.2				1	A	15			537					1

ATTACHMENT C

- NOTE ADDED REGARDING USDW ON UIC SCHEMATIC

VWD-535517 SWD DOWNHOLE SCHEMATIC

Permit # VAS2D932BDIC API # 45-051-01144 VA File # DI-1144



Scale - 1"=800'
 Hole & Casing Exaggerated
 Date: 9/8/23

ATTACHMENT B

- NARRATIVE ADDED REGARDING USDW IN AREA OF REVIEW

Virginia Energy Division of Mine Land Repurposing Mapping

Mined Land Repurposing



EnerVest works closely with the mining company to ensure seamless operations.

8.0 LOWERMOST UNDERGROUND SOURCE OF DRINKING WATER (USDW)

USDWs within the Area of Review for the Injection Well are generally located within the unconsolidated alluvium/colluvium deposits and the associated Norton Formation along local stream elevation. Furthermore, groundwater is typically found at depths between 0 to 500 feet below ground surface. The surface casing of VWD-535517 extends to 1509 feet below ground surface with cement back to surface to protect groundwater.

ATTACHMENT D

- MONITORING DATA WITH DAILY AND AVERAGE RATES
- BIENNIAL FLUID CHEMISTRY FROM 2023

1.0 OPERATION DATA

The injection fluid to be injected into Well VWD-535517 (VAS2D932BDIC) will be treated produced fluids from EnerVest's Virginia Nora Field Operations. No other fluids for disposal will be injected in this well. The injection wells are operated, inspected, and maintained by dedicated injection well staff and facility manager that have round-the-clock access to pressures and flow rates with alarms.

2.0 FLOW RATES

The average and maximum daily rates and volume of the treated production fluids to be injected are:

- **Average Daily Flow – 35,841.76 gallons (853.37 bbls) per 24 hours in 2022**
- **Maximum Daily Flow – 75,000 gallons per 24 hours (not to exceed 55,000 bbls in a month)**

3.0 INJECTION PRESSURES

Using the calculated maximum Weir injection pressure for Well VAS2D932BDIC and applying the safety factor, the following average and maximum injection pressures at the surface are:

- **2022 Average Monthly Maximum Injection Pressure – 1082 psig (surface pressure)**
- **1087 psig (recorded Max surface pressure in 2022),**
- **Maximum Injection Pressure –1215 psi (Max Surface Injection Pressure)**

4.0 INJECTION FLUID

The injection fluid to be injected into Well VWD-535517 (VAS2D932BDIC) will be treated produced fluids from EnerVest's Virginia Nora Field Operations. No other fluids for disposal will be injected in this well.

Annulus fluid is a mixture of water and C&J Energy Service's commercially available Packer Fluid, which contains a biocide, corrosion inhibitor, and oxygen scavenger.

The analysis of injection fluid is taken bi-annually, the 2023 sample results are included in this attachment.



RptVer-09-27-22

ENVIRONMENTAL MONITORING, INCORPORATED

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

Certificate of Analysis

Page: 1 of 2

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

Report Date: 02/16/2023

Lab Sample No.: **1933460**

Client No.: 3096

EMI Project No.: 160

Date Received: 01/30/2023

Date Collected: 01/30/2023

Time Collected: 1044

Sample Matrix: AQ

Collected By: BAKER, BRANDON

EMI No. 51777
Sample Identification: 3096.160 CANE CREEK 535517

Site Description: INJECTION WELL MONITORING

Flow if Available (GPM): Depth if Available (Ft): Temp. if Available (C): 8.0 Analysis Package Code: BF4 Type of Sample: Grab

Case Narrative: The analysis of EMI sample number 1933460 was obtained under standard operating conditions unless otherwise indicated. For QA Flag descriptions see attachment.

Summary of Analytical Results

Method Parameter	Sample Result	Units	MDL	RL	Date Analyzed	Time Analyzed	Analyst
EPA 200.7 Rev 4.4 1994							
Barium, Total	1217	mg/l	0.100	3.00	2/2/2023	1354	AWM
Iron, Total	31.7	mg/l	0.800	5.00	2/2/2023	1354	AWM
Magnesium, Total	1347	mg/l	5.00	50.0	2/2/2023	1354	AWM
Manganese, Total	1.39 J	mg/l	0.500	5.00	2/2/2023	1354	AWM
Sodium, Total	28690	mg/l	7.40	50.0	2/2/2023	1354	AWM
SM 2320B-4c-2011							
Alkalinity	43.1	mg/l CaCO3	4.00	4.00	1/31/2023	853	THR
SM 2340 B-2011							
Hardness, Total (by Calculation)	21585	mg/l CaCO3	0.363	1.00	2/2/2023	1726	PGM
SM 2510B-2011							
Conductivity	182400	umhos/cm	1000	1000	1/31/2023	1005	KLM
SM 2540 C-2015							
Total Dissolved Solids	95450 DC	mg/l	25.0	25.0	1/31/2023	703	KLM
SM 2710 F-2011							
Specific Gravity (Not NELAP) (Not WV)	1.07				1/31/2023	1400	KBL
SM 4500 Cl B-2011							
Chloride	69978	mg/l	796	1000	1/31/2023	1201	KBL
SM 4500 S2-F-2011							
Sulfide	BDL	mg/l	1.37	2.00	2/2/2023	1435	THR
SM 4500-H+B-2011							
pH (Not NELAP) (Not WV)	6.00	STD			1/30/2023	1048	FLD



RptVer-09-27-22

ENVIRONMENTAL MONITORING, INCORPORATED

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

Certificate of Analysis

02/16/2023

Page: 2 of 2

EMI No. 51777

Sample Identification: 3096.160 CANE CREEK 535517

Lab Sample No.: **1933460**

Summary of Analytical Results Summary of Analytical Results - Continued

Method Parameter	Sample Result	Units	MDL	RL	Date Analyzed	Time Analyzed	Analyst
SM 4500-O G-2011							
Dissolved Oxygen (Not NELAP) (Not WV)	4.04	mg/l			1/30/2023	1044	FLD

END OF EMI SAMPLE NUMBER 1933460 CERTIFICATE

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 unless indicated otherwise. 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



2790 Whitten Road, Memphis, TN 38133
 Main 901.213.2400 ° Fax 901.213.2440
 www.waypointanalytical.com

25447

Environmental Monitoring Inc.
 Ms. Missy Collins
 5730 Industrial Park Road
 Norton , VA 24273

Project Project #:3096.160
 Information :

Report Date : 02/13/2023
 Received : 02/03/2023

Connie Cook

Report Number : **23-034-0157**

REPORT OF ANALYSIS

Connie Cook
 Project Manager

Lab No : **82665**

Matrix: **Aqueous**

Sample ID : **1933460-Cane Creek**

Sampled: **1/30/2023 10:44**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
TOC	1.10	mg/L	1.00	1	02/11/23 08:40	CJD	5310C-2014

**Qualifiers/
 Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

QA_FLAGS and Definitions

<u>CODE</u>	<u>DESCRIPTION</u>
AB	Analyte found in Method Blank
BDL	Below detection limit
BQ	Batch QC is outside acceptable range
DC	Duplicate did not meet method criteria; method process in control
EV	Estimated value; outside of calibration range
FC	Failure to comply with current SOP
FLD	Field Technician
HE	Parameter holding time has been exceeded
IV	Insufficient sample volume
J	Estimated value below Report Limit
MI	Matrix Interference - Final result may not be representative
MR	Multiple runs were used to determine the result (an Average)
MSF	Matrix Spike Failure - analyte concentration is disproportionate to spike level; method in control
NA	Result for this analyte is not available
P	Sample container not properly preserved
QR	Additional quality evaluation performed
R	Sample results rejected due to deficiencies in QC or method performance
SV	Volume indicated by method not used
T	Possible toxicity which is expected to influence reported value
XI	Matrix required alternate internal reference standard

SAMPLE LOG SHEET AND CHAIN OF CUSTODY
ENVIRONMENTAL MONITORING, INC
 5730 INDUSTRIAL PARK RD * NORTON VA 24273 * 276-679-8544

C089484

PROJECT: Enervest Injection Well Project

ROUTE #: 3096.160 DATE SAMPLED: 1-30-23

SAMPLED BY: Brandon Baker EMP. ID # 3397

LAB NO.	EMI NO.	SEQ #	SAMPLE I.D.	NO. CONT	HNO ₃	TIME	TEMP °C	3 PT pH CAL	pH TIME	Dup pH / Temp	T/B RB	FIELD pH	D.O.	APP CODE	COLOR CODE	ANAL CODE	COMMENTS
1933460	51777	120.	CANE CREEK 535517	6	✓	10:44	8	-	10:48	-	-	6.0	4.04	1 B	B	BE4/ND	
461	51776	121.	HAYSI 23606	6	✓	11:42	7	-	11:45	6.3	7.1	6.3	2.46	1 B	B	BE4/ND	
462	51779	122.	P-143-T	6	✓	09:30	9	-	09:39	-	-	6.2	1.46	2 B	B	BE4/ND	
463	51778	123.	P-171	6	✓	08:44	8	✓	08:49	5.8	7.1	5.8	2.12	1 B	B	BE4/ND	P.O. DVP - 2.10

All samples requiring pH preservation were verified to be as indicated on COC by MLS
 Date: 1/30/23 Time: 1833

- Bottle list:
 (1) ½ gallon plain
 (1) 16 oz. HNO₃
 (1) 32 oz. NaOH / ZN ACE
 (3) 40 ML VOA'S H3PO4

* D.O. meter #1336 calibrated 1/30/23 by DWP

THIS ALSO HAS DISSOLVED OXYGEN, SO WILL NEED TO CALIBRATE METER MORING OF SAMPLING.

BIN # 23 EMI pH Meter # 1277

CHECKED BY: BEB Number of Containers this COC#: 24

Relinquished by: [Signature] Date: 1/30/23 Time: 13:31 Received by: Lab cooler

Relinquished by: JAS Cooper Date: 1/30/23 Time: 1831 Received by: [Signature]

- APPEARANCE CODES
 1. Clear
 2. Slightly Turbid
 3. Moderately Turbid
 4. Very Turbid
 5. Visible Suspended Matter
- COLOR CODES
 A. Natural
 B. Brown to Red
 C. Gray
 D. Black
 E. Other

2/13/2023

Environmental Monitoring Inc.
Ms. Missy Collins
5730 Industrial Park Road
Norton, VA, 24273

Ref: Analytical Testing
Lab Report Number: 23-034-0157
Client Project Description: Project #:3096.160

Dear Ms. Missy Collins:
Waypoint Analytical, LLC. received sample(s) on 2/3/2023 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method. Where the laboratory was not responsible for the sampling stage (refer to the chain of custody) results apply to the sample as received.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,



Connie Cook
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.



Certification Summary

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/28/2023
Arkansas	State Program	88-0650	02/07/2023
California	State Program	2904	06/30/2023
Florida	State Program - NELAP	E871157	06/30/2023
Georgia	State Program	C044	02/18/2023
Georgia	State Program	04015	06/30/2023
Illinois	State Program - NELAP	200078	10/10/2023
Kentucky	State Program	80215	06/30/2023
Kentucky	State Program	KY90047	12/31/2023
Louisiana	State Program - NELAP	LA037	12/31/2023
Louisiana	State Program - NELAP	04015	06/30/2023
Mississippi	State Program	MS	02/11/2023
North Carolina	State Program	47701	07/31/2023
North Carolina	State Program	415	12/31/2023
Pennsylvania	State Program - NELAP	68-03195	05/31/2023
South Carolina	State Program	84002	06/30/2023
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2023
Virginia	State Program	00106	06/30/2023
Virginia	State Program - NELAP	460181	09/14/2023

Sample Summary Table

Report Number: 23-034-0157
Client Project Description: Project #:3096.160

Lab No	Client Sample ID	Matrix	Date Collected	Date Received
82665	1933460-Cane Creek	Aqueous	01/30/2023 10:44	02/03/2023
82666	1933461- Haysi	Aqueous	01/30/2023 11:42	02/03/2023
82667	1933462- P-143-T	Aqueous	01/30/2023 09:30	02/03/2023
82668	1933463 P-171	Aqueous	01/30/2023 08:44	02/03/2023

Client: Environmental Monitoring Inc.
Project: Project #:3096.160
Lab Report Number: 23-034-0157
Date: 2/13/2023

CASE NARRATIVE

Total Organic Carbon Method 5310C-2014

Sample 82666 (1933461- Haysi)

Analyte: TOC

QC Batch No: L663556/L663538

The sample was diluted due to the nature of the sample matrix. Reporting limits have been adjusted accordingly.

Sample 82667 (1933462- P-143-T)

Analyte: TOC

QC Batch No: L663556/L663538

The sample was diluted due to the nature of the sample matrix. Reporting limits have been adjusted accordingly.

Quality Control Data

Client ID: Environmental Monitoring Inc.
Project Description: Project #:3096.160
Report No: 23-034-0157

QC Prep: L663538 **QC Analytical Batch(es):** L663556
QC Prep Batch Method: 5310C-2011 **Analysis Method:** 5310C-2014
Analysis Description: Total Organic Carbon

Lab Reagent Blank LRB-L663538 Matrix: AQU
 Associated Lab Samples: 82665, 82666, 82667, 82668

Parameter	Units	Blank Result	MQL	Analyzed
TOC	mg/L	< 1.00	1.00	02/10/23 23:50

Laboratory Control Sample LCS-L663538

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits
TOC	mg/L	5.00	5.28	106	85-115

Duplicate L 82136-DUP-L663538

Parameter	Units	Result	DUP Result	RPD	Max RPD	Analyzed
TOC	mg/L	20.7	20.6	0.4	15.0	02/11/23 05:31

Matrix Spike L 82247-MS-L663538

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	%Rec Limits	Max RPD
TOC	mg/L	50.3	25.0		76.7		106	85-115	

Shipment Receipt Form

Customer Number: **25447**

Customer Name: **Environmental Monitoring Inc.**

Report Number: **23-034-0157**

Shipping Method

<input type="radio"/> Fed Ex	<input type="radio"/> US Postal	<input type="radio"/> Lab	<input type="radio"/> Other :	<input type="text"/>
<input checked="" type="radio"/> UPS	<input type="radio"/> Client	<input type="radio"/> Courier	Thermometer ID:	<input type="text" value="T135"/>

Shipping container/cooler uncompromised?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Number of coolers/boxes received	<input type="text" value="1"/>		
Custody seals intact on shipping container/cooler?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Present
Custody seals intact on sample bottles?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Present
Chain of Custody (COC) present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC agrees with sample label(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC properly completed	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Samples in proper containers?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sample containers intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sufficient sample volume for indicated test(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
All samples received within holding time?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler temperature in compliance?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Water - Sample containers properly preserved	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
Water - VOA vials free of headspace	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Trip Blanks received with VOAs	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Soil VOA method 5035 – compliance criteria met	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
<input type="checkbox"/> High concentration container (48 hr)		<input type="checkbox"/> Low concentration EnCore samplers (48 hr)	
<input type="checkbox"/> High concentration pre-weighed (methanol -14 d)		<input type="checkbox"/> Low conc pre-weighed vials (Sod Bis -14 d)	
Special precautions or instructions included?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Comments:

Signature:

Date & Time:

Client Name/Address
EMT

Client Project Manager/Contact
Missy Collins

Billing Information
RUSH - Additional charges apply
Special Detection Limit(s)
Date Results Needed

Method of Shipment
Fed Ex USPS
Courier Client Drop Off
Other

Matrix Key
WW - Wastewater GW - Groundwater
DW - Drinking Water S - Soil / Solid O - Oil
P - Product M - Misc

Project Description

Project Number
3096.160

Project Manager/Contact
Project/Site Location (City/State)
Project Manager Phone #
Project Manager Email
Purchase Order Number
Site/Facility ID #

Date	Time	Sample Identification	Number of Containers	Matrix (Refer to Key)	(Grab or Composite)	Required Analysis / Preservative		Comments/Notes
11/30/23	1044	1933460 Lane Creek	3	WWG	X			
11/30/23	1142	1933461 Haysi	3	WWG	X			
11/30/23	930	1933462 P-143-T	3	WWG	X			
11/30/23	844	1933463 P-171	3	WWG	X			

Waypoint ANALYTICAL
2790 Whitten Road
Memphis, TN 38133
(901) 213-2400

Unless noted, all containers per Table II of 40 CFR Part 136.

For Laboratory Use Only

Sampled by (Name - Print)
B. Baker

Relinquished by: (SIGNATURE)
Missy Collins

Relinquished by: (SIGNATURE)

Relinquished by: (SIGNATURE)

Client Remarks/Comments

Date Time
2-23-23 1030

Received by: (SIGNATURE)

Date Time

Received by: (SIGNATURE)

Date Time

Received by: (SIGNATURE)
Judy Baker

Date Time
2-23-23 957



ATTACHMENT E

UPDATED PLUGGING ESTIMATE WITH WELL NUMBER INCLUDED.



EAGLE WELL SERVICE INC

SALYERSVILLE, KY

CONTACT

Eagle Well Service Inc
PO Box 1666
Salysersville, KY 41465
(606) 349-4141

October 31, 2023

Mr. Landon,

Eagle Well Service Inc, would like to submit the following bid to plug Enervest Operating's salt water disposal well VWD-535517 (UIC Permit VAS2D932BDIC) in Virginia for a turnkey price of **\$96,500.00**

This turnkey bid will include:

Rig time and labor

- Up to 8 days total to include rig time and labor along with power swivel, mills, and mud pump

Cementing services – cement mixing and pumping equipment

Cement – Class A (Class L) with 2% gel and 2% CaCl

Wireline services – including Cast Iron Bridge plug, perforating and casing cutting as listed in plugging procedure.

All hauling to and from location and well fluid disposal

All labor per deim and lodging

If changes to the plugging procedure are made, this bid will be adjusted accordingly. If you should have any questions, please do not hesitate to call. Thank you for this opportunity to quote this job for you!

Sincerely,
Brent Wright
Eagle Well Service Inc.
Cell: (740) 502-6171

From: [Lawson, Jon](#)
To: [Rowsey, Kevin \(he/him/his\)](#)
Cc: [Rectenwald, David](#)
Subject: RE: Maximum Allowable Injection Pressure Questions - VAS2D932BDIC
Date: Wednesday, January 31, 2024 8:44:24 AM
Attachments: [image009.png](#)
[image013.png](#)
[image014.png](#)
[image017.png](#)
[image018.png](#)
[image021.png](#)

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Ian has it, he is in my office today and we are about to finish up and send to you.

From: Rowsey, Kevin (he/him/his) <rowsey.kevin@epa.gov>
Sent: Wednesday, January 31, 2024 8:43 AM
To: Lawson, Jon <jlawson@EnerVest.net>
Cc: Rectenwald, David <Rectenwald.Dave@epa.gov>
Subject: RE: Maximum Allowable Injection Pressure Questions - VAS2D932BDIC

Hi Jon,

Do you have any updates on the MAIP? I'm still working on permit language and the Statement of Basis but I figured I'd check in with you.

Thanks,

Kevin Rowsey
Pronouns (he/him/his)
Underground Injection Control
US EPA Mid-Atlantic Region
Phone 215-814-5463
Email rowsey.kevin@epa.gov



From: Lawson, Jon <jlawson@EnerVest.net>
Sent: Monday, January 08, 2024 12:50 PM
To: Rowsey, Kevin (he/him/his) <rowsey.kevin@epa.gov>
Cc: Rectenwald, David <Rectenwald.Dave@epa.gov>
Subject: RE: Maximum Allowable Injection Pressure Questions - VAS2D932BDIC

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I spoke with him this morning regarding this UIC. He has been looking at it and we scheduled a meeting Wednesday to discuss.

I'll follow up with you after I see where he is on the calculations.

Thanks

Jon

From: Rowsey, Kevin (he/him/his) <rowsey.kevin@epa.gov>

Sent: Monday, January 8, 2024 11:45 AM

To: Lawson, Jon <jlawson@EnerVest.net>

Cc: Rectenwald, David <Rectenwald.Dave@epa.gov>

Subject: RE: Maximum Allowable Injection Pressure Questions - VAS2D932BDIC

Hi Jon,

Do you know if Ian has been working on those calculations for the MAIP? I'm still continuing to process the renewal permit but I just wanted to touch base with you and see if there were any updates.

Thanks,

Kevin Rowsey

Pronouns (he/him/his)

Underground Injection Control

US EPA Mid-Atlantic Region

Phone 215-814-5463

Email rowsey.kevin@epa.gov



From: Lawson, Jon <jlawson@EnerVest.net>

Sent: Wednesday, December 13, 2023 3:37 PM

To: Rowsey, Kevin (he/him/his) <rowsey.kevin@epa.gov>

Cc: Rectenwald, David <Rectenwald.Dave@epa.gov>

Subject: RE: Maximum Allowable Injection Pressure Questions - VAS2D932BDIC

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Kevin,

Yes that is correct The Dickenson Star is newspaper for the county.

| **Jon Lawson, CSP**



Sr. HSE Specialist at EnerVest
Operating

Phone: 276-730-5617

Email: jlawson@enervest.net

809 Happy Valley Dr.
Clintwood, VA 24228

www.enervest.net



From: Rowsey, Kevin (he/him/his) <rowsey.kevin@epa.gov>

Sent: Wednesday, December 13, 2023 3:36 PM

To: Lawson, Jon <jlawson@EnerVest.net>

Cc: Rectenwald, David <Rectenwald.Dave@epa.gov>

Subject: RE: Maximum Allowable Injection Pressure Questions - VAS2D932BDIC

Hi Jon, would The Dickenson Star be the best newspaper to use for the public notice for the Cane Creek well?

Kevin Rowsey

Pronouns (he/him/his)

Underground Injection Control

US EPA Mid-Atlantic Region

Phone 215-814-5463

Email rowsey.kevin@epa.gov



From: Lawson, Jon <jlawson@EnerVest.net>

Sent: Monday, November 27, 2023 11:29 AM

To: Rowsey, Kevin (he/him/his) <rowsey.kevin@epa.gov>

Cc: Rectenwald, David <Rectenwald.Dave@epa.gov>

Subject: RE: Maximum Allowable Injection Pressure Questions - VAS2D932BDIC

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Completion Report Attached.

Yes the well was a foam frac.



Jon Lawson, CSP

Sr. HSE Specialist at EnerVest
Operating

Phone: 276-730-5617

Email: jlawson@enervest.net

809 Happy Valley Dr.
Clintwood, VA 24228

www.enervest.net



From: Rowsey, Kevin (he/him/his) <rowsey.kevin@epa.gov>

Sent: Monday, November 27, 2023 10:54 AM

To: Lawson, Jon <jlawson@EnerVest.net>

Cc: Rectenwald, David <Rectenwald.Dave@epa.gov>

Subject: Maximum Allowable Injection Pressure Questions - VAS2D932BDIC

Jon, do you happen to have the completion report for the Cane Creek UIC well?

I'm struggling a little bit with setting the injection pressure in the renewal permit. The last time this permit was issued, we based the maximum surface pressure on an ISIP of 1,400 psi, a SG of 1.08, and a depth to the injection formation of 3,980 feet. However, you submitted that the ISIP for the Weir formation to be 1,941 psi and the depth to the Weir formation to be 4,459 feet with a SG of 1.07.

I'm assuming the well was fractured with foam, so that may be why 1,400 was used in 2013 as the ISIP. There's just a bit of a disconnect and I wanted to see if you have any additional information. I want to build language into the permit that allows for EnerVest to inject at a higher pressure if they encounter a SG higher than that used to calculate the maximum injection pressure as long as you stay under the bottom-hole pressure.

Kevin Rowsey

Pronouns (he, him, his)

Underground Injection Control

US EPA Mid-Atlantic Region

Phone 215-814-5463

Email rowsey.kevin@epa.gov



From: [Lawson, Jon](#)
To: [Rowsey, Kevin \(he/him/his\)](#); [Rectenwald, David](#)
Cc: [Landon, Ian](#)
Subject: Summary sheet
Date: Wednesday, January 31, 2024 10:45:43 AM
Attachments: [image001.png](#)
[image002.png](#)
[Copy of 535517 Cane Creek SWD_BHP calculations1 \(003\).pdf](#)

Caution: This email originated from outside EPA, please exercise additional caution when deciding whether to open attachments or click on provided links.

Use the attached – to ensure we are on same tab.



Jon Lawson, CSP

Sr. HSE Specialist at EnerVest
Operating

Phone: 276-730-5617

Email: jlawson@enervest.net

809 Happy Valley Dr.
Clintwood, VA 24228

www.enervest.net



535517 Cane Creek SWD

UIC Permit #: VAS2D932BDIC

Adjusted top of Weir depth from 4281 ft (pre drilling estimate) to 4300 ft (actual depth per completion report)

Formation Depth 4300 Ft Depth: top Weir - completion report

ISIP 1400 Psi

SG 1.0 (Fresh water utilized for breakdown)

Calculated BHP 3262 Psi Greater than permitted 3253 psi BHP - utilize 3253 psi

$BHP = ISIP + (Formation\ Depth * Specific\ Gravity * 0.433)$

Permitted BHP 3253 Psi

Injection Fluid SG 1.1

Injection Pressure 1205 Psi

$Injection\ Pressure = BHP - (Formation\ Depth * Injection\ fluid\ SG * 0.433)$