AUTHORIZATION TO OPERATE AN
UNDERGROUND INJECTION CONTROL
(UIC) CLASS 2 INJECTION WELL
PERMIT NUMBER No. 2D08510284-002

ISSUE DATE: DRAFT **EXPIRATION DATE: DRAFT**

In compliance with provisions of the West Virginia Code, Chapter 22, Article 6, Article 11, and Article 12, as well as Legislative Rules, Title 47, Series 9, Series 13, Series 55 and Series 58, and Title 35 Series 1 and Series 4,

(Non-Commercial)

Jay-Bee Oil & Gas Inc.
429 Simonton Rd.
Ellenboro, WV 26346

FACILITY TYPE: Brine Disposal
WELL API No.: 47-085-10284
WELL NAME: Pluto 1A

is authorized by this permit to inject Class 2 fluids, that are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.

Injection is permitted into the Salina formation at a depth between 6847' to 7460'. The applicant will be permitted for injection into the Helderberg and Oriskany formations upon submission and approval of the information outlined in Part I, Section A, paragraphs 1 and 2 for those formations. Simultaneous injection into multiple formations is prohibited.

The Maximum Permitted Wellhead Injection Pressure (MIP) for the Salina formation is established as 4,024 psi. The minimum test pressure is 4,426 psi (4,024 x 1.1). If the injection formation is changed, a new MIP will be determined from an updated Well Operator's Report of Well Work (WR-35 Form) and a documented step rate test. Please note that the actual maximum injection pressure may be adjusted based on the most recent Pre-Operation Certificate (WR-37 Form).

The injection well is located in Clay District, Ritchie County, Ellenboro 7.5' Quadrangle. The coordinates for this injection well are: UTM NAD 83 (meters) Northing 4345809.6, Easting 492939.9, Latitude 39.2615922, Longitude -81.0818354

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

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

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

James Martin, Chief
WVDEP-Office of Oil and Gas

PART I

A. SPECIAL PERMIT CONDITIONS

1. **Injection Zones**. If the Permittee requests to change the injection zone to the Helderburg or Oriskany formation, the Permittee must submit maps showing the thickness and structure of the new injection zone and confining zone. Simultaneous injection into multiple formations is prohibited.

2. **Required Step Rate Test.** If the injection zone is changed, an accurately documented step rate test shall be performed on the desired injection zone by qualified personnel according to WVDEP-Office of Oil and Gas procedures as described in Attachment 4 of this permit. The results of all tests and an updated Well Operator's Report of Well Work (WR-35 Form) shall be submitted to WVDEP-Office of Oil and Gas for review and determination of a Maximum Wellhead Injection Pressure (MIP). A Mechanical Integrity Test (MIT) must be performed, and a completed Pre-Operation Certificate (WR-37 form) must be submitted prior to injection.

3. **Special Monitoring Conditions.** Monitoring of surrounding wells for communication will be conducted. Wells to be monitored are listed in Attachment 3 of this permit. The designated wells shall be inspected monthly for the duration of the permit. Any evidence of surface leakage or abnormal pressure shall be reported immediately to the WVDEP-Office of Oil and Gas. Pressures shall be recorded for all wells with gauges. Any report of possible communication from the well operator shall be immediately reported to the WVDEP-Office of Oil and Gas.

4. **Injectate Samples.** The Permittee shall sample, analyze and record the nature of the injected fluid for the parameters listed in TABLE 1 (Part IV.B.13) on a twelve (12) month schedule so that sampling will be completed at least once per calendar year, or upon request of the Chief, or whenever the Permittee observes or anticipates a change in the injection fluid, to yield representative data on their physical, chemical, or other relevant characteristics. New facilities shall submit a representative sample prior to the initiation of injection operations. The Permittee shall take the sample at or before the wellhead for analysis. Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize applicable analytical methods and test results shall be submitted to the WVDEP-Office of Oil and Gas with complete laboratory analysis data sheets (report). Any analysis of injectate with a specific gravity result greater than 1.2 shall be reported to the Chief within twenty-four (24) hours of the results.

PART II

B. FEES

1. **Annual Permit Fee.** Any person who holds a permit shall pay an annual permit fee in accordance with the provisions of Legislative Rule 47 CSR 9-7 each year. The annual permit fee for a Class 2 disposal well is twenty-five dollars ($25).

2. **Groundwater Protection Fee.** Any person who holds a permit shall pay an annual groundwater protection fee of seventy-five dollars ($75) each year for each Class 2D injection well in accordance with the provisions of Legislative Rule 47 CSR 55-3.

3. **Fees Paid in Full Requirement**. The permit becomes void if the annual permit fees have not been paid within one hundred and eighty (180) days of the due date. The Chief shall not reissue a permit until all annual permit fees due during prior terms have been paid in full.

PART III

A. REAPPLICATION

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

B. IMMEDIATE REPORTING

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

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

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

C. RIGHT OF APPEAL

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

D. EFFECT OF PERMIT

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

E. PERMIT ACTIONS

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

2. **Transfer of Permits.** This permit is not transferable to any person unless notice is first provided to the WVDEP-Office of Oil and Gas, and the Permittee complies with the requirements of Legislative Rule 47 CSR 13-13.17. The WVDEP-Office of Oil and Gas may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA.

F. SEVERABILITY

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

G. DURATION OF PERMIT

This permit and the authorization to inject are issued for a period of five (5) years unless terminated under Part III.E.1 of this permit. However, when through no fault of the Permittee the WVDEP-Office of Oil and Gas does not issue a new permit with an effective date on or before the expiration date of the previous permit and the Permittee has submitted a timely administratively complete application as required in Part III.A of this permit, which is a complete application for a new permit, the expired permit shall continue to remain fully effective and enforceable.

H. GENERAL REQUIREMENTS

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

2. **Duty to Reapply.** If the Permittee wishes to continue activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit as required in Part III.A of this permit at least one hundred and eighty (180) days before this permit expires.

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

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

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

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

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

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

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

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

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

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

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

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

i. For a corporation, by a responsible corporate officer of at least the level of vice-president;

ii. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

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

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

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

ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and

iii. The written authorization is submitted to, and approved by, the Chief.

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

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

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

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

12. **Confidentiality of Information.** In accordance with Legislative Rule 47 CSR 13-13.21, any information submitted to the State pursuant to this rule may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions, or in the case of other submissions, by stamping the words "CONFIDENTIAL BUSINESS INFORMATION" on each page containing such information. An affidavit or written request stating the need for requested confidential documents to remain confidential must also be submitted with the documents.

    a. If no claim is made at the time of submission, the State may make the information available to the public without further notice.

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

        i. The name and address of any permit applicant or Permittee; or

        ii. Information which deals with the existence, absence, or level of contaminants in drinking water.

13. **Monitoring Reports.** Monitoring results shall be reported at the intervals specified under Part IV.B of this permit.

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

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

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

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

PART IV

A. RECORD RETENTION

Required Records. The Permittee shall retain all records concerning the permitted underground injection well until three (3) years after completion of any plugging and abandonment. The Chief may require the Permittee/Operator to deliver the records to the Chief at the conclusion of the retention period.

B. MONITORING REQUIREMENTS

1. **Special Monitoring Conditions.** Monitoring of surrounding wells for communication will be conducted. Wells to be monitored are listed in Attachment 3 of this permit. The designated wells shall be inspected monthly for the duration of the permit. Any evidence of surface leakage or abnormal pressure shall be reported immediately to the WVDEP-Office of Oil and Gas. Pressures shall be recorded for all wells with gauges. Any report of possible communication from the well operator shall be immediately reported to the WVDEP-Office of Oil and Gas.

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

3. **Monitoring Devices.** The Permittee shall install and maintain in good operating condition:

   a. A method or mechanism on the injection line(s) for obtaining a representative sample of injection fluids;

   b. Devices to continuously measure and record injection pressure, flow rates, injection and production volumes;

c. Pressure gauges shall be of a design that provides a full pressure range of at least fifty (50) percent (%) greater than the anticipated operating pressure and a certified deviation accuracy of five (5) percent (%) or less throughout the operating pressure range; and

d. Flow meters shall measure cumulative volumes and be certified for a deviation accuracy of five (5) percent (%) or less throughout the range of rates allowed by the permit.

4. **Wellhead Pressure Gauge.** A wellhead pressure gauge shall be installed and maintained on the injection tubing to facilitate inspection and ensure compliance of the maximum wellhead injection pressures as approved on WVDEP-Office of Oil and Gas WR-37 Form. A daily reading of the maximum wellhead injection pressure shall be taken and reported on WR-40 Form.

5. **Daily Monitoring.** The Permittee shall daily monitor all the casing annuli with pressure sensitive devices or with such a method as approved or required by the WVDEP-Office of Oil and Gas to allow early detection of any leaks from the packer, injection zone or casing. The Permittee shall also monitor the daily maximum injection pressure, volume, and rate daily. This information shall be reported monthly using the WVDEP-Office of Oil and Gas electronic WR-40 Form. Submittal shall be through the WVDEP Electronic Submittal System (ESS): https://apps.dep.wv.gov/eplogin.cfm

6. **Monitoring Records.** Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;

   b. The individual(s) who performed the sampling or measurements;

   c. The date(s) analysis(es) were performed;

   d. Individual(s) who performed the analyses;

   e. The analytical techniques or methods used; and

   f. The results of such analyses.

7. **Injection Well Mechanical Integrity Testing (MIT).** The Permittee shall conduct a mechanical integrity test of the injection well at a minimum frequency of once every five (5) years per Legislative Rule 35 CSR 4-7.7.b. The Permittee shall notify the Chief of his or her intent to conduct a mechanical integrity test of the well no less than twenty-four (24) hours prior to such test. The maximum wellhead injection pressure is **4,024** psi for the Salina formation. The pressure requirement of a mechanical integrity test on a well is a pressure of at least one hundred and ten (110) percent (%) or 1.1 times the maximum injection pressure. The minimum test pressure is **4,426** (4,024 x 1.1). The pressure must be held for a period of at least twenty (20) minutes with no more than five (5) percent (%) pressure loss to be approved for injection operations. Maximum Wellhead Injection Pressures (MIP) for other formations to be determined after well completion and performance of a documented step rate test. The Permittee must submit a Pre-Operation Certificate (WR-37 Form) with the pressure recording

graph/chart as an attachment to the Office of Oil and Gas within thirty (30) days of each mechanical integrity test being conducted. Upon failure of a mechanical integrity test or expiration of the five (5) year mechanical integrity test regulatory period, the Permittee shall cease operation/injection and shut-in the well immediately until successfully repaired, tested, or permanently plugged and abandoned per regulation. Any MIT test that fails must be documented on a separate WR-37 Form. If repaired, the well must be re-tested and an updated WR-37 Form with pressure recording graph/chart must be submitted to the WVDEP-Office of Oil and Gas for approval.

8. **Pump Line Mechanical Integrity Testing (MIT).** The Permittee shall conduct a mechanical integrity test of all pump line(s) from the holding tanks to the injection well at a minimum frequency of once every five (5) years. The Operator has the option of testing the pump line simultaneously with a well or separately. The Permittee shall notify the Chief of his or her intent to conduct a mechanical integrity test of the pump line(s) no less than twenty-four (24) hours prior to such test. The pump line integrity test shall pressurize the injection pump line(s) to at least one hundred (100) psi greater than the maximum permitted wellhead injection pressure for a minimum of twenty (20) minutes, allowing for no more than five (5) percent (%) loss after completion. The minimum test pressure for the pipeline is **4,526** (4,426 + 100) for the Salina formation. Pump line test pressures for other formations to be determined after well completion and performance of a documented step rate test. The Permittee must submit a Pre-Operation Certificate WR-37 Form with the pressure test recording graph/chart as an attachment to the WVDEP-Office of Oil and Gas within thirty (30) days of each mechanical integrity test being conducted. Upon failure of a mechanical integrity test or expiration of the five (5) year mechanical integrity test regulatory period, the Permittee shall cease operation/injection and shut-in the well immediately until successfully repaired or replaced and then tested. Any MIT test that fails must be documented on a separate WR-37 Form. If repaired, the line must be re-tested and an updated WR-37 Form with pressure recording graph/chart must be submitted to the Office of Oil and Gas for approval. Any change made to the pump line fittings or piping will require integrity pressure testing. All Office of Oil and Gas forms, including the WR-37 Form can be found on the Office of Oil and Gas webpage: http://www.dep.wv.gov/oil-and-gas/GI/Forms/Pages/default.aspx

9. **Additional MIT Requirements.** In addition to the above requirement, a mechanical integrity test demonstration shall be conducted whenever protective casing or tubing is removed from the well, the packer is replaced or reseated, if a well failure is likely, or as requested by the Chief. The Permittee may continue operation only if they have successfully demonstrated to the Chief the mechanical integrity of the permitted well. The Permittee shall cease injection operations if a loss of mechanical integrity becomes evident or if mechanical integrity cannot be demonstrated. The Permittee shall notify the county inspector within 24 hours of the loss of mechanical integrity.

10. **Environmental Measurements**. All environmental measurements required by the permit, including but not limited to, measurements of pressure, temperature, mechanical, and chemical analyses shall be done in accordance with state guidance on quality assurance. All analysis must be performed by a West Virginia certified laboratory. Certified laboratories can be found on the WVDEP webpage at http://www.dep.wv.gov/WWE/Programs/lab/Pages/default.aspx

11. **Manifest Records.** The Permittee shall maintain a record (manifest) of every load of fluid received. The record shall include the hauler's name and signature, the Operator's name and signature, API number for the well the fluid was collected, the location from where the load was obtained and the volume of the load and whether the load of fluid delivered was a split load. If the load was a split load, each Operator's name and location shall be listed and, if possible, the volumes of fluid received from each Operator documented. This information shall be maintained on the WVDEP-Office of Oil and Gas approved Class 2 disposal manifest form example, as attached to this permit.

12. **Contract Haulers.** No hauler whose trucks do not belong to the UIC Operator shall be permitted without approval by the Office of Oil and Gas. For approval, the Permittee shall designate by letter to the WVDEP-Office of Oil and Gas, any third-party hauler proposed to be used for the transportation of fluids to the facility. The third-party hauler may not commence transportation of fluids to the facility until approved by the WVDEP-Office of Oil and Gas. All delivery manifest requirements must still be met.

13. **Injectate Samples.** The Permittee shall sample, analyze and record the nature of the injected fluid for the parameters listed in TABLE 1 (Part IV.B.13) on a twelve (12) month schedule so that sampling will be completed at least once per calendar year, or upon request of the Chief, or whenever the Permittee observes or anticipates a change in the injection fluid, to yield representative data on their physical, chemical, or other relevant characteristics. New facilities shall submit a representative sample prior to the initiation of injection operations. The Permittee shall take the sample at or before the wellhead for analysis. Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize applicable analytical methods and test results shall be submitted to the WVDEP-Office of Oil and Gas with complete laboratory analysis data sheets (report). Any analysis of injectate with a specific gravity result greater than 1.2 shall be reported to the Chief within twenty-four (24) hours of the results.

TABLE 1

Aluminum	Iron	pH
Arsenic	Manganese	Specific Gravity
Barium	Sodium	Total Dissolved Solids (TDS)
Bromide	Strontium	
Calcium	Sulfate	Radium-226 and Radium 228
Chloride		Gross Alpha and Gross Beta

C. REPORTING AND NOTIFICATION REQUIREMENTS

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

2. **Other Noncompliance.** The Permittee shall report all instances of noncompliance not reported under paragraphs Part III.B.1 and 2, and Part IV.C.1 of this permit, at the time monitoring reports are submitted. The report shall contain the information listed in Part III.B of this permit. The Permittee shall report all other instances of noncompliance in writing within ten (10) days of the time the Permittee becomes aware of the circumstances. The reports shall contain the information listed in this permit.

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

4. **Conversion and Abandonment Notification.** The Operator shall provide written notification to the Chief prior to conversion or abandonment of the well or in the case of area/enhanced recovery permits before closure of the project, per Legislative Rule 47 CSR 13-13.6.e. Notice should be given at least thirty (30) days prior to any conversion, abandonment or alteration. Notice shall also be given prior to the addition, reduction, or conversion of wells within an area/enhanced recovery permit.

5. **Cessation of Injection Activity.** Any well which is not in use for a period of twelve (12) consecutive months shall be presumed to have been abandoned and shall promptly be plugged by the Operator in accordance with the provisions in West Virginia Code, Chapter 22, Article 6, Section 24 (WV Code §22-6-24) unless the Operator furnishes satisfactory proof to the Chief that there is a bona fide future use for such well. All lines shall be completely drained of all fluids and the wellhead shut-in anytime injection operations cease for a period of greater than ninety (90) days. The WVDEP-Office of Oil and Gas must be contacted at least twenty-four (24) hours prior to the cessation shut-in process.

6. **Certification of Permit Review.** Within thirty (30) days of receipt of this permit, the Permittee shall report to the Chief that he or she has read and understands and accepts all terms and conditions of the permit. The Permit Certification Document is included as an attachment of this permit, and must be signed, dated and submitted to the Office of Oil and Gas.

7. **Duty of Owner/Operator to Report Discharges.** The Owner or Operator or person in charge of a facility subject to this rule from which a reportable discharge, as described in Legislative Rule 35 CSR 1-3.3, occurs shall notify the Office of Oil and Gas by calling the Emergency Spill number **800-642-3074** immediately; but in no case, later than twenty-four (24) hours after becoming aware of the discharge.

PART V

A. OPERATING REQUIREMENTS

1. **Permit Documents On-Site.** The UIC Permit and all attachments must be kept on location at all times.

2. **Non-Commercial Permits.** The facility is permitted as a Non-Commercial operation and may inject Class 2 compliant fluids sourced only from wells owned by the Permittee.

3. **Authorized Injection Fluids.** The Permittee shall not inject any hazardous substances, as defined by 40 CFR §261, or any other fluid, other than the Class 2 fluids produced solely in association with oil and gas production operations. This permit is for authorization of injection of only fluids as defined for Class 2 wells in Legislative Rule 47 CSR 13-4.2. Accepting any fluid that is not Class 2 compliant is grounds for enforcement action and/or revocation of this permit.

4. **Injection Zones**. Injection is permitted into the Salina formation at a depth between 6847' to 7460'. The applicant will be permitted for injection into the Helderberg and Oriskany formations upon submission of maps showing the thickness and structure of the new injection zone and confining zone. Simultaneous injection into multiple formations is prohibited.

5. **Required Step Rate Test.** If the injection zone is changed, an accurately documented step rate test shall be performed on the desired injection zone by qualified personnel according to WVDEP-Office of Oil and Gas procedures as described in Attachment 4 of this permit. The results of all tests and an updated Well Operator's Report of Well Work (WR-35 Form) shall be submitted to WVDEP-Office of Oil and Gas for review and determination of a Maximum Wellhead Injection Pressure (MIP). A Mechanical Integrity Test (MIT) must be performed, and a completed Pre-Operation Certificate (WR-37 form) must be submitted prior to injection.

6. **Required Barrel Counter.** The Permittee shall install and maintain a barrel counter, or other means of flow volume metering, on the injection line. The results are to be recorded and reported on the WR-40 Form.

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

8. **Duty to Monitor or Plug Non-Cemented Wells That Penetrates the Injection Zone Within the AOR.** Any well with an inactive and/or abandoned status that penetrates the injection zone within the permitted Area of Review (AOR), that does not have cemented casing through the injection zone, shall be monitored immediately by a method approved by the WVDEP-Office of Oil and Gas or properly plug such wells as necessary.

9. **Corrective Action.** The Permittee must satisfy the requirements of the Office of Oil and Gas regarding any corrective action needed on all known wells penetrating the injection zone within the permitted Area of Review. This must be done in a manner which satisfies the requirements of Legislative Rule 47 CSR 13-13.9.

10. **Cement Evaluation Analysis.** After conducting a cement squeeze job in an open hole, or after any well cement repair, the Permittee shall submit cementing records and cement evaluation logs that demonstrate the isolation of the injection interval(s). The analysis shall include a spherically focused tool, run after the long-string casing is set and cemented, which enables the evaluation of the bond between cement and casing as well as of the bond between cement and formation. A written narrative report summarizing the work and interpretation of the results shall be submitted with all available records including an updated Well Operator's Report of Well Work (WR-35 Form) and updated well schematic. The Permittee may not commence or recommence injection until it has received written approval from the WVDEP-Office of Oil and Gas that such a demonstration is satisfactory.

11. **Loading/Unloading Stations.** Loading and unloading stations shall have spill prevention and control facilities and procedures as well as secondary containment. Spill containment and cleanup equipment shall be readily accessible.

12. **Above Ground Storage Tanks.**

    a. The Permittee shall ensure that secondary containment for existing above ground storage tank(s) shall be adequately designed and constructed to be sufficiently impervious to prevent the released substance from penetrating the containment structure until the release can be detected and recovered, but in no case, shall that time be less than seventy-two (72) hours. The secondary containment structure shall have capacity to contain at least one hundred and ten (110) percent (%) volume of the largest tank. If tank batteries or tanks are connected in series by manifold, the combined volume of the tanks must be considered if the tanks are capable of simultaneous release. The combined capacity of the tanks connected by manifold shall be considered unless the tanks are operated in a manner that prevents fluids from flowing from one tank to another under any conditions.

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

    c. All above ground storage tanks within the floodplain, as defined by the Federal Emergency Management Agency "FEMA" 100-year floodplain map, shall be anchored significantly enough to prevent movement in the case of a high-water flood event. The Permittee should contact the county floodplain manager to confirm the floodplain status of the tank(s) location(s).

13. **Wellhead Reinforcement.** All wellheads shall be reinforced or otherwise armored to protect against accidental collisions, if so positioned where collision could be possible.

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

15. **Sumps.** Sumps containing materials which have the potential to contaminate groundwater shall be designed, constructed, and operated utilizing secondary containment, or other appropriate controls that can prevent groundwater contamination.

16. **Facility Security.** All valves, water drains, containment areas, and storage areas shall be secured and locked utilizing locking devices and/or plugs. All gates and access points shall be secured and locked while no representative is at the facility.

17. **Duty to Drain Injection Pump Lines.** All lines shall be completely drained of all fluids and the wellhead shut-in anytime injection operations cease for a period of greater than ninety (90) days. The WVDEP-Office of Oil and Gas must be contacted at least twenty-four (24) hours prior to the cessation shut-in process.

C. PLUGGING AND ABANDONMENT

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

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

3. Pursuant to Legislative Rule 47 CSR 13-13.7.f, the Permittee's plugging and abandonment plan shall be incorporated into the UIC permit. See Attachment 1.

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

PART VI

A. SITE SPECIFIC CONDITIONS

1. Appendix A: Specific Operational Conditions / Well Construction

2. Appendix H: Groundwater Protection Plan (GPP)

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

4. Attachment 1: Plugging and Abandonment Plan
5. Attachment 2: Site/Facility Diagram
6. Attachment 3: Monitoring Well List and Map
7. Attachment 4: WVDEP-Office of Oil and Gas – Step Rate Test Procedure
8. Class 2 Manifest
9. Right of Appeal
10. UIC Permit Certification of Review Document

(4/25)

4708510284

APPENDIX A

Injection Well Form

Pluto 1A

1) GEOLOGIC TARGET FORMATION: Salina Formation

Depth: 6846 Feet (top) 7476 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 7877 Feet

3) Approximate water strata depths: Fresh 90 - 134 Feet Salt 964 Feet

4) Approximate coal seam depths: N/A

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation ~3000 psig Source Salina

7) Estimated reservoir fracture pressure Unknown psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour): 85 bbl Avg

Injection volume (bbl/day): 650 bbl/day Avg

Injection pressure (psig): 4024

Bottom hole pressure (psig): 6897 est. (Salina)

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

Class 2 compliant fluids, acid sticks at 1 stick per 1000 bbls or as needed. See attached sample analysis.

Temperature of injected fluid: (°F): ambient

10) FILTERS (IF ANY)

60 micron filter system

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

Insulated Hammer Union at top of well.

4708510284

APPENDIX A (cont.) Pluto 1A

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	18 5/8"	New	H40	N/A	30	30"	Grout
Fresh Water	13 3/4"	New	J55	40#	310	310	310cf CTS
Coal	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Intermediate 1	8 5/8"	New	J55	24#	2064	2064	621cf CTS
Intermediate 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Production	5 1/2"	New	P110	20#	7718	7718	1558cf 770ft
Tubing	2 7/8"	New	L80	6.5#	6800	6800	None
Liners	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor	20"	18 5/8"	.495	3000 lbs	Class A	N/A	Y
Fresh Water	17 1/2"	13 3/8"	.333	1500 lbs	Class A	1.20	Y
Coal	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Intermediate 1	11"	8 5/8"	.264	2950 lbs	Class A	1.19	Y
Intermediate 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Production	7 7/8"	5 1/2"	.304	15000 lbs	Class A	1.17	N
Tubing		2 7/8"	.217	7260 lbs	N/A	N/A	N/A
Liners	N/A	N/A	N/A	N/A	N/A	N/A	N/A

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	Mechanical / Hornet			
Sizes:	5 1/2" x 2 7/8"			
Depths Set:	6800			

Cast Iron Bridge Plug over Newburg set at 7460

Well Bore Diagram

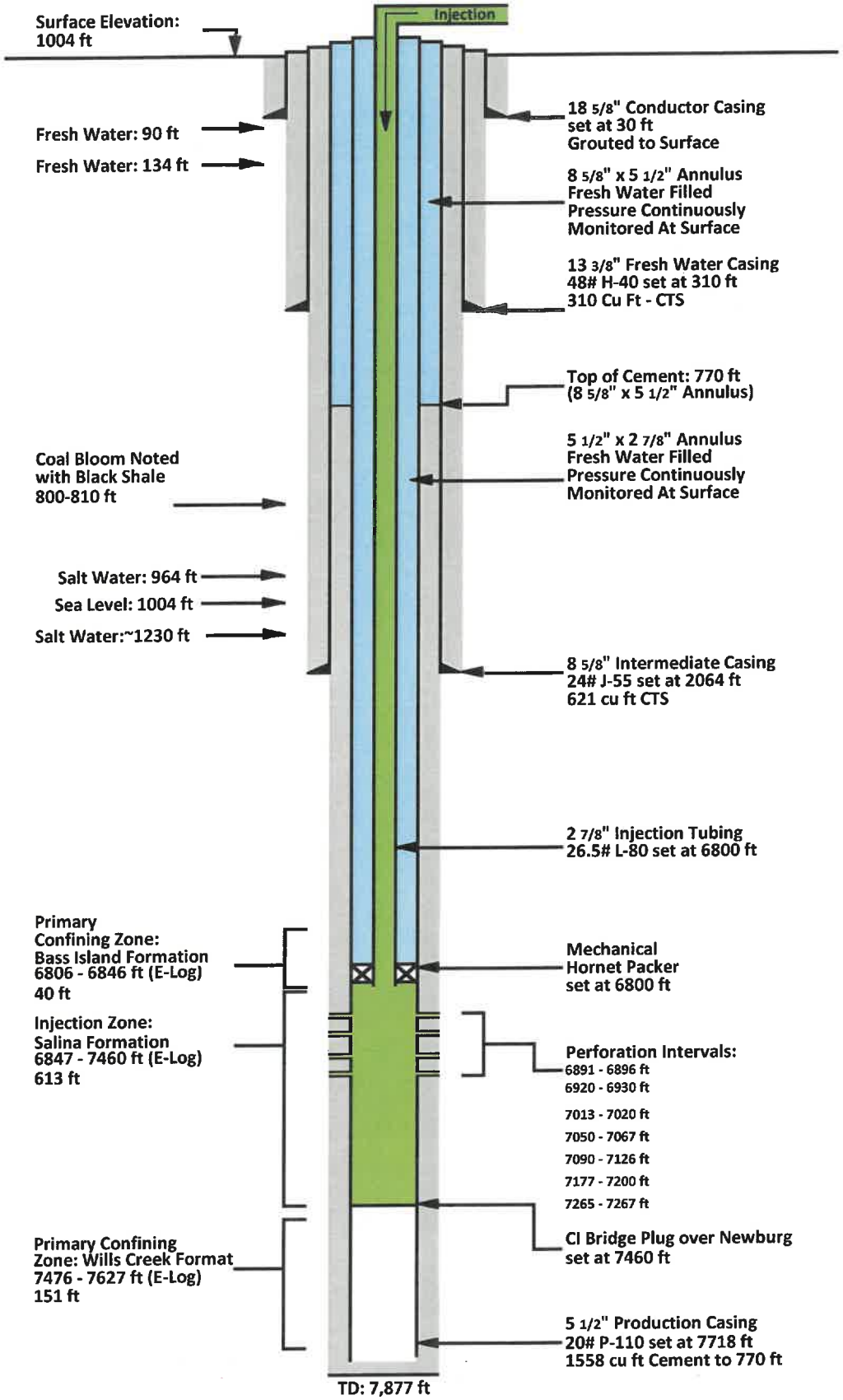
Pluto #1A

API 47-085-10284

Jay Bee Oil & Gas, Inc.

UIC 2D08510284001

(Well Drilled: July 18, 2020)



APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: Jay-Bee Oil & Gas, Inc. - Pluto 1A

County: Ritchie

Facility Location:

Postal Service Address:	429 Simonton Rd>		
Ellenboro, WV 26337			
Latitude :	39.2615922	Longitude:	-81.0818354

Contact Information:

Person:	Emily Potesta
Phone Number:	304-628-3111
E-mail Address:	epotesta@jaybeeoil.com

Date: 6/10/2024

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

1. Injection of brine water produced from local brine water wells, stored in tanks.
2. Diesel, engine oil, hydraulic oil from trucks on site for loading/unloading.
3. Diesel, engine oil, hydraulic oil from pumps on site for disposal.

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

Loading and unloading of trucks will occur on a concrete pad, that is diked for containment . The pumps will be permanently set in this concrete containment. The tanks storing production water will also be on the concrete containment. All fluids captured in this concrete containment will be captured in a separate tank and disposed of at facility capable of handling material captured.

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

All equipment will be reviewed for containment ability first. The concrete containment will be built for expansion, in case the equipment would require containment. All equipment will be reviewed by the engineering company involved in building our facility.

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

Activities will include capturing of all fluids stored in water trucks, including but not limited to: Unloading of stored brine water in storage tank on truck, storage of hydraulic fluid and diesel exhaust fluid stored directly on the truck. Storage of engine oil for the downhole pump used of disposal.

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

N/A

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

No waste material will be used for de-icing or fill material on the property unless allowed by another state or federal rule.

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

During the construction phase of the location, all employees will have daily communication regarding the integrity of silt fence, including proper installation. Post construction one on one employee training will include:

-Proper containment cleanup (since the facility will be concrete)
-Proper connect and disconnect of connections to unloading brine trucks.
-Proper communication of the spill hotline, in case of emergency.
-Discussion of proper pre and post trip inspections on trucks at the facility.
-Proper understanding of the loadout procedures at the facility.
-Daily inspection of the disposal well head , including pressures.
-Proper inspection and operation of the tanks and pump(s) at the facility.

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

Daily Inspections - Pump, Tanks, and Equipment inspections for leak and working ability. Weekly Inspections - Containment integrity at unload site. Tank integrity, Wellhead integrity.

Signature: _____

Date: 6-10-2024

APPENDIX I

Requirement for Financial Responsibility to Plug/Abandon an Injection Well

In accordance with WV Code 47CSR13.13.7.g, all UIC permits shall require the permittee to maintain financial responsibility and resources to close, plug, and abandon underground injection wells in a manner prescribed by the Chief. The permittee must show evidence of financial responsibility to the Chief by submission of a surety bond, or other adequate assurance, such as a financial statement or other material acceptable to the Chief. This certification must be signed by one of the following:

1. For a corporation: by a principle corporate officer of at least the level of vice-president;
2. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
3. For a municipality, State, Federal, or other public agency: by either a principle executive officer or ranking elected official;
4. Or a duly authorized representative in accordance with 47CSR13.13.11.b.
   (A person may be duly authorized by one of the primary entities (1-3) listed above by submitting a written authorization to the Chief of the WVDEP Office of Oil and Gas designating an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

Jay-Bee Oil & Gas, Inc.

(Company Name)

2D8510284

(UIC Permit Number)

I certify in accordance with 47CSR13.13.7.g., that the company/permit holder cited above will maintain financial responsibility and resources to close, plug, and abandon underground injection wells(s) in a manner prescribed by the Chief of the Office of Oil and Gas and that documents to support this requirement are on record with the same.

Jonathan Morgan

(Print Name)

COO

(Print Title)

RECEIVED
Office of Oil and Gas
NOV 06 2023
WV Department of
Environmental Protection

(Signature)

11/2/23

(Date)

Attachment 1

`

Jay-Bee Oil & Gas

Basic Plugging Proposal
UIC Permit Application (2D08510284)-per section 12
Well Name: Pluto # 1A
API Number: 47-085-10284-00-00

Prepared by:
Austin Clark
Date: 5/20/2024

Well:	**Pluto 1A**
County:	**Ritchie**
District:	**Clay**
API:	**47-085-10284**
AFE:	**NA**
Location Coordinates:	**39.261592, 81.081835**
Address:	**429 Simonton Road Ellenboro 26346**

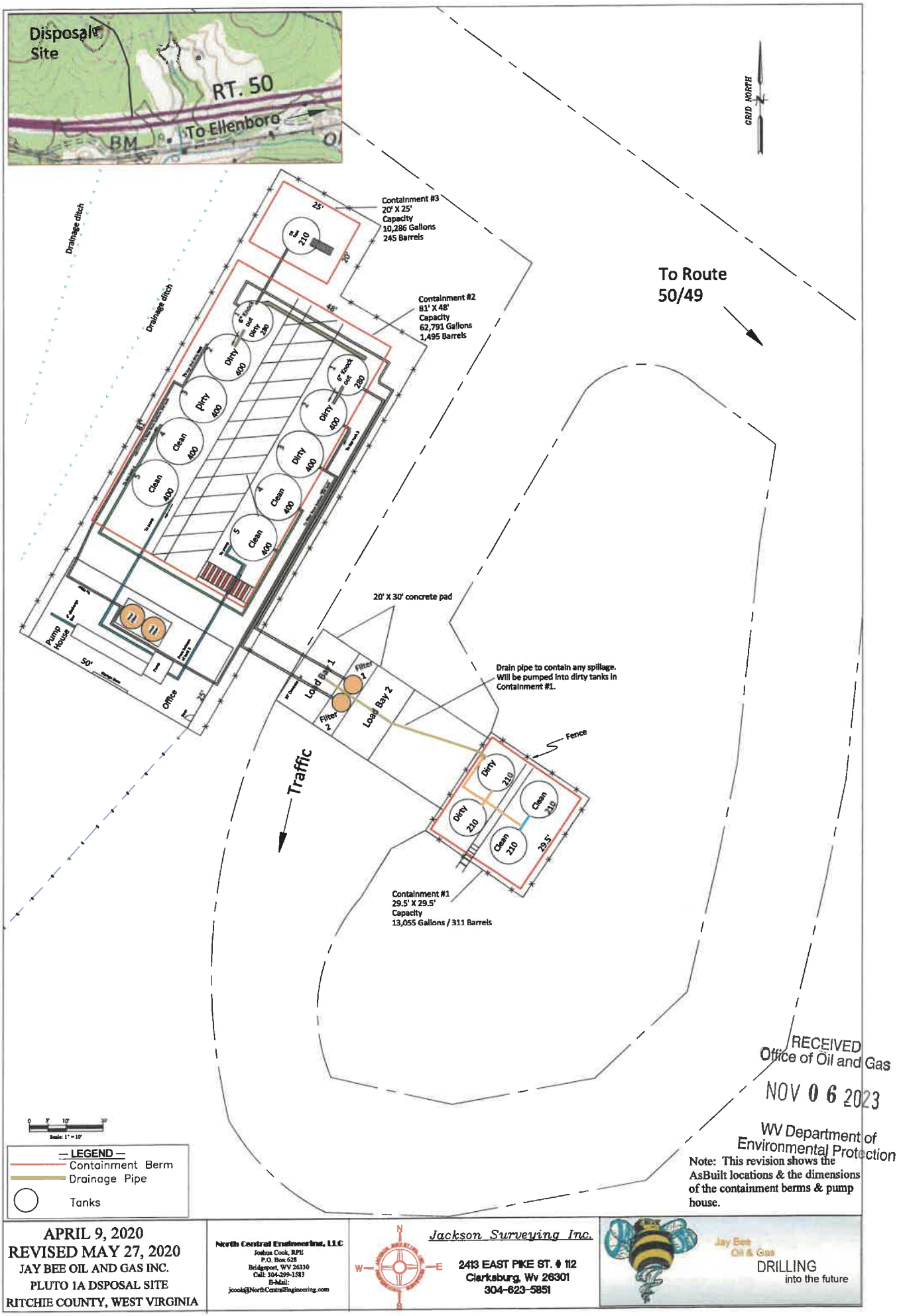
Date Drilled:	
Surface Elevation:	1202'
Surface Equipment:	Tubing, Valves, Tubing Head
Injection Formation:	Salina
Perforations:	6891'-7267', 7634'-7664', 7704'-7717'
8.375" TD:	7877'
16" Conductor:	30'
11.75" Surface:	310'
5.5" Production:	7700'
2.875" Injection Tubing	6800'

***Note: A 6% Bentonite Gel Spacer is to be used in-between each cement plug. All cement is to be CLASS A mixed at 15.6#*

Plugging Proposal: w/1.18 cf/sx or CLASS A w/2% CaCl

1. MIRU Workover rig. RU BOP's. Baker J-Style Packer @ 6800'. Release packer. Pull 2-7/8" Injection Tubing.
2. Set Retrievable 5.5" Plug.
3. ND Tubing head, and NU BOP's. Rig back up on well.
4. RIH and pull 5.5" Retrievable plug.
5. RIH with mill to millout 5.5' CIBP.
6. **Proceed to Cement from bottom of well to top following all current WV O&G State P&A Requiments.**
7. Rig down Service Rig and pull off of well.
8. Move off service rig and all surface equipment.
9. Begin reclamation process, seed and mulch. Check with WV if any additional work is needed.
10. Install monument per state guidelines, *"monument or marker consisting of a length of pipe (minimum diameter size six inches (6")) filled with concrete (or the equivalent thereof if approved by the Chief) shall be erected over the well. The marker shall extend no less than thirty inches (30") above the surface and not less than ten feet (10') below the surface and into the well, and shall be sealed with concrete for the purpose of making the marker permanent. The API well identification number, as described above, shall be attached or stamped in a permanent manner to the monument, and the numbering shall be no less than one half inch (1/2") in height and detectable by any interested person approaching the marker*".

Attachment 2



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Office of Oil and Gas
NOV 06 2023
WV Department of
Environmental Protection

Note: This revision shows the AsBuilt locations & the dimensions of the containment berms & pump house.

APRIL 9, 2020
REVISED MAY 27, 2020
JAY BEE OIL AND GAS INC.
PLUTO 1A DSPOSAL SITE
RITCHIE COUNTY, WEST VIRGINIA

North Central Engineering, LLC
Joshua Cook, RPE
P.O. Box 628
Bridgeport, WV 26330
Cell: 304-299-1583
E-Mail:
jcook@NorthCentralEngineering.com

Jackson Surveying Inc.
2413 EAST PIKE ST. # 112
Clarksburg, Wv 26301
304-623-5851

Jay Bee Oil & Gas
DRILLING
into the future

Attachment 3
Monitoring Well List

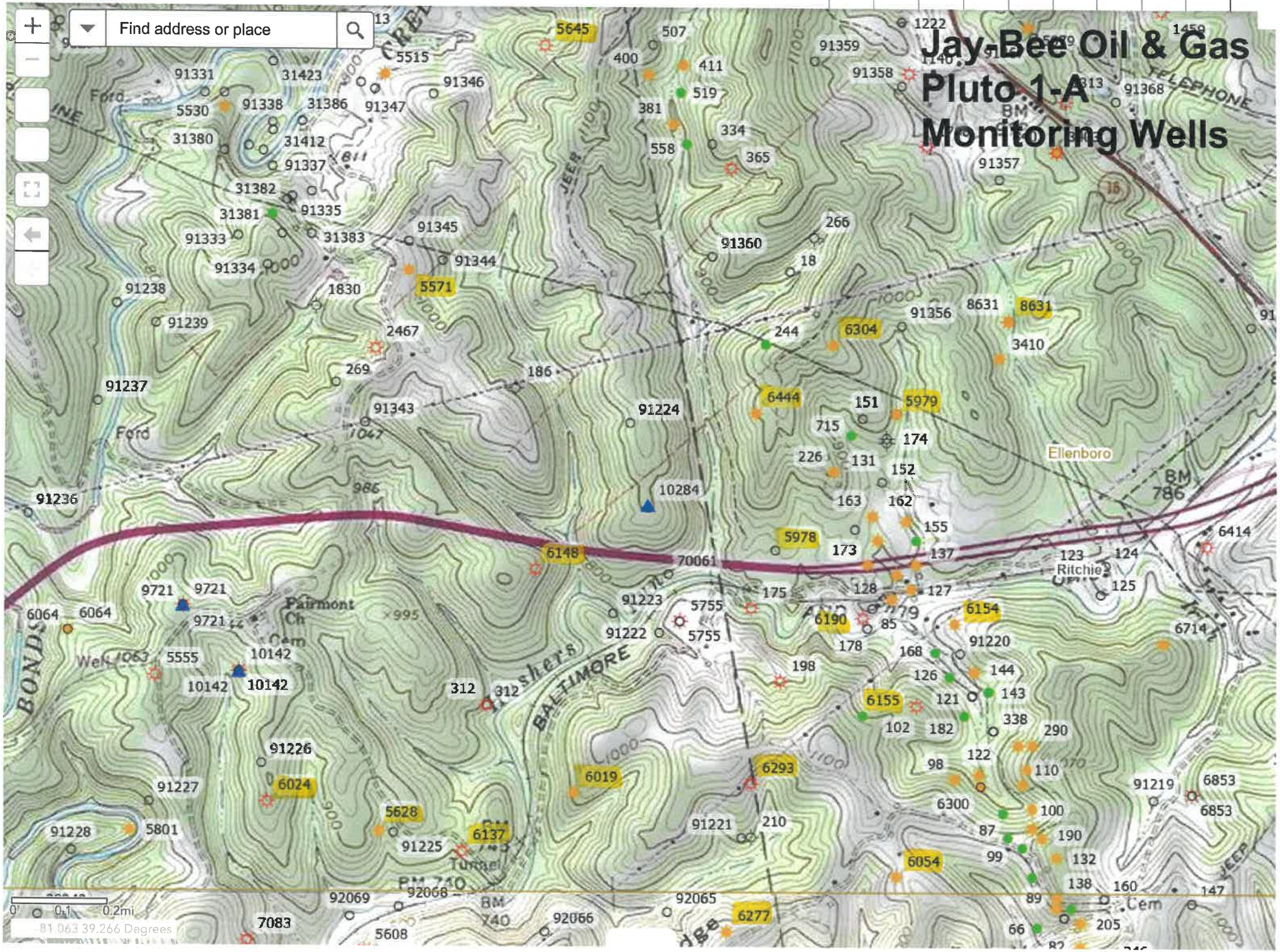
Jay-Bee Oil & Gas , Inc
UIC Permit 2D08510284
Pluto 1A

Well to be Monitored

	API No.	Well Name	Operator	Formation / Depth	TD	Well Use	Status
1	4708505571	Everett Mason No.2	J.L. Dunn	Devonian Sh - 3610-3696	4296	Gas/Oil Production	Abandonded
2	4708505628	Maxine & Foster Smith No.1	WV Mineral Group LLC	Marcellus Sh - 5184-5910	5926	Gas Production	Abandonded
3	4708505645	Everett Mason No.1	P & C Oil & Gas, Inc.	Ohio Sh - 3604-3614	4514	Gas/Oil Production	Active
4	4708505978	EPI-1	Mountian State Well Tending	Marcellus Sh - 5880	5970	Gas/Oil Production	Abandonded
5	4708505979	EPI-2	Mountian State Well Tending	Speachley-Benson - 2694-4994	6095	Gas/Oil Production	Abandonded
6	4708506019	Cross No.1	Allied Energy, Inc.	Devonian Sh - 3376-4885	4980	Gas Production	Abandonded
7	4708506024	Smith No.2	R.L. & W.F. Zickefoose	Marcellus Sh - 2499-4962	5059	Gas Production	Active
8	4708506054	McVay No.2	Allied Energy, Inc.	Brallier Sh - 2975-3130	3130	Gas/Oil Production	Abandonded
9	4708506137	A.J. Rexroad 1-A	Lucas Well Service, Inc.	Marcellus Sh - 4685-5678	5722	House Gas	Abandonded
10	4708506148	Hosea Grimes No.1	Allied Energy, Inc.	Hamilton Sh - 5122-5784	5784	Gas Production	Abandonded
11	4708506154	EPI-7	Adams Energy LLC	Speachley - 2652-3510	3510PB	Gas Production	Active
12	4708506155	EPI-8	Adams Energy LLC	Benson-Speachley - 3535-4360	5108	Gas Production	Active
13	4708506190	Russel Richards No.1	Allied Energy, Inc.	Hamilton Sh - 5446	5526	Gas/Oil Production	Abandonded
14	4708506277	H-1378	Postrock Eastern Production LLC	Devonian Sh - 3872-4100	4288	Gas Production	Abandonded
15	4708506293	Benjamin McVay No.1	Allied Energy, Inc.	Hamilton Sh - 5700	5839	Gas Production	Abandonded
16	4708506304	EPI-13	Mountian State Well Tending	Devonian Sh - 3600-5010	5010	Gas Production	Abandonded
17	4708506444	EPI-12	Mountian State Well Tending	Devonian Sh - 4240-4620	5007	Gas Production	Abandonded
18	4708508631	Dawson-Fox No.3	Term Energy Corporation	Maxton-3rd Salt - 1524-1639	1698	Gas/Oil Production	Active

Monitoring Well Locations

	API No.	Well Name	Latitude	Longitude		Easting	Northing
1	4708505571	Everett Mason No.2	39.268520	-81.091002		492149.8	4346581.6
2	4708505628	Maxine & Foster Smith No.1	39.251870	-81.092119		492051.6	4344730.9
3	4708505645	Everett Mason No.1	39.275213	-81.085779		492601.1	4347321.5
4	4708505978	EPI-1	39.260276	-81.076941		493362.0	4344663.1
5	4708505979	EPI-2	39.264336	-81.072280		493764.5	4346113.4
6	4708506019	Cross No.1	39.253025	-81.084659		492695.4	4344859.1
7	4708506024	Smith No.2	39.252735	-81.096409		491681.5	4344827.9
8	4708506054	McVay No.2	39.250560	-81.072274		493763.8	4344584.6
9	4708506137	A.J. Rexroad 1-A	39.251285	-81.088949		492325.1	4344666.3
10	4708506148	Hosea Grimes No.1	39.259696	-81.086151		492567.4	4345599.5
11	4708506154	EPI-7	39.258101	-81.070039		493957.3	4345421.3
12	4708506155	EPI-8	39.255345	-81.073582		493651.4	4345115.7
13	4708506190	Russel Richards No.1	39.258246	-81.073583		493651.6	4345437.6
14	4708506277	H-1378	39.258919	-81.078801		493200.5	4344402.9
15	4708506293	Benjamin McVay No.1	39.253315	-81.077871		493281.2	4344890.7
16	4708506304	EPI-13	39.266367	-81.074706		493555.4	4346338.9
17	4708506444	EPI-12	39.264336	-81.077690		493297.8	4346113.8
18	4708508631	Dawson-Fox No.3	39.267092	-81.067990		494134.8	4346418.9


Find address or place
Jay-Bee Oil & Gas
Pluto 1-A
Monitoring Wells
Ellenboro
Ritchie
Fairmont
Ch
Cem
BALTIMORE
BONDS
Ford
Tunnel
TELEPHONE
JEEP
0 0.1 0.2mi
81.063 39.266 Degrees

Attachment 4

west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, SE
Charleston, WV 25304
Phone (304) 926-0450

Harold D. Ward, Cabinet Secretary
dep.wv.gov

STEP-RATE TEST PROCEDURE

March 3, 2025

PURPOSE:

The purpose of this document is to provide a guideline for the acquisition of a Step Rate Test (SRT). These procedures are consistent with acceptable oilfield practices. Test results may be used by the WVDEP Office of Oil and Gas (UIC) to determine a Maximum Surface Injection Pressure (MSIP) to provide for the protection of the underground sources of drinking water at an injection well having mechanical integrity. Attached is an example form that you may use as a reference to record data from your test.

Step rate test results must be documented with the service company or other appropriate (acceptable) records and/or charts, and the test should be witnessed by a WVDEP Office of Oil and Gas Environmental inspector. Arrangements may be made by contacting the WVDEP Office of Oil and Gas (UIC) at toll-free number 304-926-0499.

STEP-RATE TEST PROCEDURE:

1) The well should be shut in long enough prior to testing such that the bottom hole pressures approximate shut-in formation pressures. If the shut-in well flows to the surface, the wellhead injection string should be equipped with a gauge and the static surface pressure read and recorded.

2) A series of successively higher injection rates are determined using guidelines below, and the elapsed time and pressure values are read and **recorded for each rate and time step. Each rate step should last exactly as long as the preceding rate**. If stabilized pressure values are not obtained within the rate steps suggested below, the test results may be considered as inconclusive.

Formation Permeability (md)	*Total time per rate-step (min)*
≤ 5 md	60 min
≥ 10 md	30 min

3) Suggested injection rates:

5%
10%
20%
40% **Of Anticipated Maximum Injection Rate**
60%
80%
100%

4) Injection rates should be controlled with a constant flow regulator that has been tested prior to use. A throttling device is not considered sufficient.

5) Flow rates should be measured with a calibrated turbine flowmeter.

6) Record injection rates using a chart recorder or a strip chart.

7) Measure pressures with a down hole pressure bomb. If a surface gauge is used, the test pressures must be corrected for the estimated friction loss at each particular flow rate.

8) Measure and record injection pressures with a gauge or recorder (for immediate test results). **Record each time step and corresponding pressure.**

9) A plot of injection rates and the corresponding stabilized pressure values should be graphically represented as a constant slope straight line to a point at which the formation fracture, or "breakdown", pressure is exceeded. The slope of this subsequent straight line should be less than that of the before-fracture straight line (see example).

10) If the formation fracture pressure has definitively been exceeded, as evidenced by at least two injection rate-pressure combinations greater than the breakdown pressure, the injection pump can be stopped, and the line valve closed, and pressure allowed to bleed-off into the injection zone. There will occur a significant instantaneous pressure drop (Instantaneous Shut-in Pressure or ISIP), after which the pressure values will level out. This ISIP value must be read and recorded. The ISIP obtained in this manner may be considered to be the minimum pressure required to hold open a fracture in this formation at this well.

11) Once the ISIP is obtained, the SRT is concluded.

12) In the event that the breakdown pressure was not obtained at the maximum test injection pressure utilized, the test results may indicate that the formation is accepting fluids without fracturing.

EXAMPLE STEP RATE TEST DATA

Well: _____ ***Date:*** _____ ***Operator:*** _____

STEP #1 Test Rate (5% *of maximum rate*) _____(*bbl/min*)

Time (*min*):

Pressure (psi):

STEP #2 Test Rate (10% *of maximum rate*) _____(*bbl/min*)

Time (*min*):

Pressure (psi):

STEP #3 Test Rate (20% *of maximum rate*)_____(*bbl/min*)

Time (*min*):

Pressure (psi):

STEP #4 Test Rate (40% *of maximum rate*)_____(*bbl/min*)

Time (*min*):

Pressure (psi):

STEP #5 Test Rate (60% *of maximum rate*)_____(*bbl/min*)

Time (*min*):

Pressure (psi):

STEP #6 Test Rate (80% *of maximum rate*)_____(*bbl/min*)

Time (*min*):

Pressure (psi):

STEP #7 Test Rate (100% *of maximum rate*)_____(*bbl/min*)

Time (*min*):

Pressure (psi):

ISIP: _____(psi)

Test Run / Witnessed By: _____

EXAMPLE STEP RATE TEST

The following is an example of a Step-Rate Test with tabular and graphic results. The step-rate test data and graphic results of the test are on the following pages.

The operator of Anywell #1 set up an SRT for the following conditions:

A) Maximum anticipated injection rate was **4** bbl/min.

B) Following the recommended test procedures, the operator planned on using these rates for the test:

1) **5**% of 4 bbl/min = **0.2** bbl/min

2) **10**% of 4 bbl/min = **0.4** bbl/min

3) **20**% of 4 bbl/min = **0.8** bbl/min

4) **40**% of 4 bbl/min = **1.6** bbl/min

5) **60**% of 4 bbl/min = **2.4** bbl/min

6) **80**% of 4 bbl/min = **3.2** bbl/min

7) **100**% of 4 bbl/min = **4.0** bbl/min

C) The formation permeability is estimated as **100** md, therefore each step will last for 30 minutes.

For this test, the injection formation broke down at approximately 1200 psi, and the ISIP was listed as 1000 psi.

Because the injection formation will part at 1000 psi, the maximum injection pressure will be held to the ISIP. If the formation had not broken down at 1200 psi, the maximum allowable injection pressure would be the maximum pressure obtained during the test.

EXAMPLE STEP RATE TEST DATA

Well: *ANYWELL #1* ***Date:*** *3-20-2024* ***Operator:*** Lotsa Oil Company

STEP #1 Test Rate (5*% of maximum rate*) **0.2 (*bbl/min*)**

Time (*min*):	0	5	10	15	20	25	30
Pressure (psi):	0	90	95	98	99	100	100

STEP #2 Test Rate (10*% of maximum rate*) **0.4 (*bbl/min*)**

Time (*min*):	0	5	10	15	20	25	30
Pressure (psi):	80	170	185	195	199	200	200

STEP #3 Test Rate (20*% of maximum rate*) **0.8 (*bbl/min*)**

Time (*min*):	0	5	10	15	20	25	30
Pressure (psi):	190	325	385	392	398	399	400

STEP #4 Test Rate (40*% of maximum rate*) **1.6 (*bbl/min*)**

Time (*min*):	0	5	10	15	20	25	30
Pressure (psi):	380	700	790	792	795	798	802

STEP #5 Test Rate (60*% of maximum rate*) **2.4 (*bbl/min*)**

Time (*min*):	0	5	10	15	20	25	30
Pressure (psi):	750	990	1030	1090	1150	1180	1201

STEP #6 Test Rate (80*% of maximum rate*) **3.2 (*bbl/min*)**

Time (*min*):	0	5	10	15	20	25	30
Pressure (psi):	1100	1200	1326	1370	1390	1395	1400

STEP #7 Test Rate (100*% of maximum rate*) **4.0 (*bbl/min*)**

Time (*min*):	0	5	10	15	20	25	30
Pressure (psi):	1350	1450	1500	1530	1570	1590	1600

ISIP: 1000 (psi)

Test Run / Witnessed By: Alan Testor

Class II Manifest

UIC # _____

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

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

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

RIGHT OF APPEAL

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

Underground Injection Control Permit

PERMIT CERTIFICATION DOCUMENT

West Virginia Department of Environmental Protection
Office of Oil and Gas

Permit ID No.: 2D08510284002

Permit Name: Jay-Bee Oil & Gas, Inc.

In accordance with Part 2, Reporting and Notification Requirements, I hereby certify that I have read and personally familiar with all the terms and conditions of this permit.

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

_____
Signature

_____
Name and Title (Type or Print)

_____
Date

STEP-RATE TEST EXAMPLE

ANY WELL #1