west virginia department of environmental protection

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

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

UIC Permit Draft

HG ENERGY, LLC
5260 DUPONT ROAD

PARKERSBURG, WV 26101

Re: Underground Injection Control (UIC)
Permit # 2R08700005AP

Dear Applicant:

Your application for the referenced Underground Injection Control (UIC) Permit has been reviewed and found to be complete. Please find enclosed a draft UIC permit and a public notice which are prescribed by Title 47, Series 13, Section 13.24 issued pursuant to WV Code Chapter 22, Article 11 and 12. You are required to have this notice published in its entirety, as a Class I legal advertisement in:

ROANE COUNTY REPORTER on MAY 1, 2017

Upon publication, you are required to send a copy of the affidavit of publication to:

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
Attn: Justin Nottingham

The cost of publication is also your responsibility.

If no comments are filed during the thirty (30) day commenting period for the public notice, a permit may be issued. If you have any questions, feel free to call me at (304) 926-0499 ext. 1654.

James A. Martin
Chief
Office of Oil and Gas

Enclosures as stated

UNDERGROUND INJECTION CONTROL PERMIT

For

HG Energy, LLC

Permit Number 2R08700005AP Clover

DRAFT

AUTHORIZATION TO OPERATE AN UNDERGROUND INJECTION CONTROL (UIC) CLASS II INJECTION WELLS ENHANCED RECOVERY PERMIT NUMBER # UIC 2R08700005AP

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

PERMITTEE / OPERATOR

NAME	HG Energy, LLC	FACILITY TYPE	Secondary Recovery
ADDRESS	5260 Dupont Rd.	WELL API #	(well list attached as "Appendix F")
ADDRESS	Parkersburg, WV 26101	FIELD NAME	Clover

is authorized by this permit to inject Class II fluids that are brought to the surface in connection with the permitted enhanced recovery system as well as make up water from the approved fresh water source(s) into the **Big Injun** formation provided those waters are not classified as a hazardous waste at the time of injection in accordance with the conditions set forth herein. The injection and producing wells are located in **Roane** County. The coordinates for the approximate center of the injection field are:

UTM NAD 83 Northing **4,286,116** and UTM NAD 83 Easting **475,604** (meters).

The maximum permitted wellhead injection pressure is established per well and shall at no time exceed **760 psi**.

The maximum permitted injection rate is established per well and shall at no time exceed **150 bbl/hr**.

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

Any person who holds a permit shall pay an annual permit fee in accordance with the provisions of Title 47 Series 9 Section 7 of the Legislative Rule. The first annual permit fee shall be remitted to the Office of Oil and Gas one (1) calendar year from the date of permit issuance; subsequent annual permit fees shall be remitted on or before the anniversary date of the permit issuance. The annual permit fee for a Class IIR injection well is ten dollars ($10.00) per injection well. The permit becomes void if the annual permit fee has not been paid within one hundred eighty (180) days of the due date. The Chief shall not reissue a permit until all annual permit fees due during prior terms of that permit have been paid in full.

Failure to pay the annual groundwater fee of fifty dollars ($50.00) per injection well for Class IIR injection wells as required by the West Virginia Code, Chapter 22, Article 11 and/or Article 12, shall be cause for revocation of this permit. The annual permit fee is due on the anniversary date of permit issuance and shall be paid on the anniversary date of issuance of this permit.

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

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

James Martin, Chief
Office of Oil and Gas

PART I

A. REAPPLICATION

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

B. IMMEDIATE REPORTING

The Permittee shall report any noncompliance which may endanger human health or the environment immediately after becoming aware of the circumstances by using the **WVDEP Emergency Spill line number, 1-800-642-3074**. Written submission shall also be provided within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, Permittee shall provide the anticipated time it is expected to continue; and the steps taken or planned to be taken to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported immediately:

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

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

C. RIGHT OF APPEAL

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

D. EFFECT OF PERMIT

The Permittee is allowed to engage in underground injection in accordance with the conditions of this permit based on an approved permit application. The Permittee shall not allow the underground injection activity authorized by this permit to cause or allow the movement of fluid containing any contaminant into underground sources of drinking water and may not cause a violation of any primary drinking water regulation or any health-based limit promulgated under 40 CFR Chapter 1, Part 142, of the Code of Federal Regulations, or of any water quality standard promulgated by the West Virginia Department of Environmental Protection/Division of Water and Waste Management. Any underground injection activity not authorized in this permit is prohibited. Compliance with the terms of this permit does not constitute a defense to any action brought under Part C and the imminent and substantial endangerment provisions in Part D of the Safe Drinking Water Act (SDWA) or any other common or statutory law for any breach of any other applicable legal duty.

E. PERMIT ACTIONS

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

2. Transfer of Permits. This permit is not transferable to any person unless notice is first provided to the Office of Oil and Gas and the Permittee complies with requirements of Legislative Rule 47 CSR 13-13.17. The Office of Oil and Gas may require modification or revocation and reissuance of the permit to change the

name of the Permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act (SDWA).

F. SEVERABILITY

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

G. DURATION OF PERMIT

This permit and the authorization to inject are issued for a period of five (5) years unless terminated under Part I Section H paragraph 11 of this permit. However, when through no fault of the Permittee the West Virginia Department of Environmental Protection does not issue a new permit with an effective date on or before the expiration date of the previous permit and the Permittee has submitted a timely administratively complete application as required in Part I section A of this permit, which is a complete application for a new permit, the expired permit shall continue to remain fully effective and enforceable.

H. GENERAL REQUIREMENTS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(1) For a corporation, by a responsible corporate officer of at least the level of vice-president;

(2) For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

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

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

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

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, and;

(3) The written authorization is submitted to, and approved by, the Chief.

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

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

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

    a. 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. A written request stating the need for requested confidential documents to remain confidential must also be submitted with the documents. If no claim is made at the time of submission, the State may make the information available to the public without further notice.

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

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

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

13. Monitoring Reports. Monitoring results shall be reported at the intervals specified elsewhere in 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. It shall be unlawful for any person, unless an authorization has been issued by a groundwater regulatory agency, to allow crude oil, or any petroleum product derived from crude oil, or seepage, or natural gas, or condensate, or salt water, or any chemical mixture which may impact groundwater quality to escape from any well, pipeline, impoundment, storage tank, treatment unit, or storage container, or be allowed to flow onto or under the land surface in such a manner that could impact groundwater quality.

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

PART II

A. RECORD RETENTION

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

B. MONITORING REQUIREMENTS

1. Samples and measurements taken for the purpose of monitoring shall be representative of the

monitored activity. The method used to obtain a representative sample of the fluid to be analyzed and the procedure for analysis of the sample shall be in accordance with test procedures approved under Code of Federal Regulations 40 CFR 136.3, unless otherwise approved by the Chief. The Permittee shall identify the types of tests and methods used to generate the monitoring data.

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

    a. A sample port with locking valve must be installed and maintained on the discharge line between the injection pump and the wellhead for the purpose of obtaining representative samples of injection fluids; and

    b. Devices to continuously measure and record injection pressure, flow rates, injection and production volumes, subject to the following:

        i. Pressure gauges shall be of a design to provide:

            1. A full pressure range of at least fifty (50) percent greater than the anticipated operating pressure; and

            2. A certified deviation accuracy of five (5) percent or less throughout the operating pressure range.

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

3. 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.

4. 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.

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

6. Injection fluids from sources will be analyzed to yield representative data on their physical, chemical, or other relevant characteristics. The Permittee shall take samples at or before the wellhead for analysis. Samples and measurements shall be representative of the monitored activity. The Permittee shall take samples at or before the wellhead for analysis. The Permittee shall utilize applicable analytical methods. The Permittee shall sample, analyze and record the nature of all the injected fluid for the parameters listed in TABLE 1 below at the initiation of the injection operation, on an annual basis, and upon request by the Chief or whenever the Permittee observes or anticipates a change in the injection fluid. Test results shall be submitted to OOG with laboratory analysis data sheets (report).

TABLE 1

-pH	-Manganese
-Specific Gravity	-Total Dissolved Solids
-Barium	-Hydrogen Sulfide
-Specific Conductance	-Sodium
-Iron	-Alkalinity
-Magnesium	-Hardness
-Chloride	-Total Organic Carbon (TOC)
-Dissolved Oxygen	

7. Any analysis result of specific gravity greater than 1.2 shall be reported to the Chief within twenty-four (24) hours of the results.

8. Within thirty (30) days of permit issuance date, the permittee shall designate stream monitoring points adjacent to the injection well facility (tank battery). These monitoring points, one upstream and one downstream of the injection wells' location shall be sampled for the parameters listed in Table 1 on a nine (9) month schedule and reported to the WVDEP Office of Oil and Gas, accompanied by a map identifying the sampling points and corresponding coordinates.

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

10. Pipeline Mechanical Integrity Testing (MIT): All pipeline(s) from the injection pump to the injection well shall be tested for integrity at least once every five (5) years with the results reported on the WR-37 Form along with the pressure test recording graph/chart and then submitted to the Office of Oil and Gas within thirty (30) days. The pipeline integrity test shall pressurize the injection pipeline(s) to 100 psi greater than the maximum permitted wellhead injection pressure for a minimum of thirty (30) minutes, allowing for no more than five (5) percent loss after completion. The Permittee shall notify the Chief of his or her intent to conduct an integrity test of the pipeline(s) no less than twenty-four (24) hours prior to such test. Upon failure of a mechanical integrity test or expiration of the five (5) year mechanical integrity test regulatory period, the Permittee shall cease operation/injection and shut-in the well immediately until successfully repaired, replaced and then tested. Repairs shall be completed by the Permittee and approved by the Office of Oil and Gas prior to resuming operations. All repairs shall be completed within ninety (90) days of the failure date. If repaired, the line must be re-tested and an updated WR-37 Form with pressure recording graph/chart must be submitted to the Office of Oil and Gas for approval. Any change made to the pipeline fittings or piping will require integrity pressure testing. All Office of Oil and Gas forms, including the WR-37 form can be found on the Office of Oil and Gas webpage: http://www.dep.wv.gov/oil-and-gas/GI/Forms/Pages/default.aspx.

11. Injection Well Mechanical Integrity Testing (MIT): The Permittee shall conduct a mechanical integrity test of the injection well at a minimum frequency of once every five (5) years per Legislative Rule 35 CSR 4-7.7.b. The Permittee shall notify the Chief of his or her intent to conduct a mechanical integrity test no less than twenty-four (24) hours prior to such demonstration. The Permittee must submit a WR-37 Form to the Office of Oil and Gas within thirty (30) days of each mechanical integrity test conducted. When a pressure test is conducted the Permittee must submit a pressure recording graph/chart as an attachment to the WR-37 Form. The pressure requirement of a mechanical integrity test on a well is a pressure of at least 150% or 1.5 times the maximum injection pressure. The pressure must be held for a period of at least 20 minutes with no more than 5% pressure loss in order to be approved for injection operations. Upon failure of a mechanical integrity test or expiration of the five (5) year mechanical integrity test regulatory period, the Permittee shall cease operation/injection and shut-in the well immediately until successfully repaired, tested or permanently plugged and abandoned per regulation. Each mechanical integrity test failure must be documented on the WR-37 Form and submitted with any pressure recording graph/chart. Corrective action for repairs shall be completed for approval by the Office of Oil and Gas and be conducted within ninety (90) days of the failure

date. If repaired, the well must be re-tested and an updated WR-37 Form with any pressure recording graph/chart must be submitted to the Office of Oil and Gas for approval.

12. 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 well failure is likely, or as requested by the Chief. The Permittee may continue operation only if he or she has successfully demonstrated to the Chief the mechanical integrity of the permitted well. The Permittee shall cease injection operations if a loss of mechanical integrity becomes evident or if mechanical integrity cannot be demonstrated.

13. The hydrostatic fluid level in production wells within the developed area shall be measured and documented no less frequent that every ninety (90) days. A complete record of the fluid level depths shall be maintained by the Permittee. In the event that a producing well exhibits a fluid level above sea level elevation then OOG must be contacted within twenty-four (24) hours and a remedial plan shall be submitted to OOG with ten (10) days.

C. REPORTING AND NOTIFICATION REQUIREMENTS

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

2. Other Noncompliance. The Permittee shall report all instances of noncompliance not reported under paragraphs Part I Section B, and Part II Section C Paragraph 3 of this permit, at the time monitoring reports are submitted. The report shall contain the information listed in Part I Section B of this permit. The Permittee shall report all other instances of noncompliance in writing within ten (10) days of the time the Permittee becomes aware of the circumstances. The reports shall contain the information listed in this permit.

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

4. The Permittee shall provide written notification to the Chief prior to conversion or abandonment of the well or in the case of area 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 should also be given prior to the addition or reduction of wells within an area 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 Permittee in accordance with the provisions in Chapter 22, Article 6 Section 24 of the West Virginia Code, unless the Permittee furnishes satisfactory proof to the Chief that there is a bona fide future use for such well. All lines shall be completely drained of all fluids and the wellhead shut-in anytime injection operations cease for a period of greater than ninety (90) days. The Office of Oil and Gas must be contacted at least twenty-four (24) hours prior to the cessation shut-in process.

6. Report on 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.

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

PART III

A. OPERATING REQUIREMENTS

1. The UIC Permit and all attachments must be kept on location at all times.

2. Injection Fluid. The Permittee shall not inject any hazardous substances, as defined by Code of Federal Regulations 40 CFR 261, or any other fluid, other than the Class II fluids produced solely in association with oil and gas production operations.

3. The Permittee shall install and maintain a barrel counter, or other means of flow volume metering, on the injection line at each well head. The results are to be recorded and reported on the WR-40.

4. Within ninety (90) days of the effective date of this permit, a groundwater monitoring plan shall be submitted to OOG for review and approval. Upon OOG approval the groundwater monitoring plan shall be incorporated into this permit.

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

6. Corrective Action. The applicant must satisfy the requirement of the Office of Oil and Gas regarding any corrective action needed on all known wells penetrating the injection zone within the area of review. This must be done in a manner which satisfies the requirements of Legislative Rule 47 CSR 13-13.9.

7. Any well that penetrates the injection zone with an inactive and/or abandoned status within the permitted Area of Review, that does not have cement casing through the injection zone, shall be monitored immediately by a method approved by the Office of Oil and Gas, as well as properly plug and abandon such wells, as necessary.

8. Cement Evaluation Analysis. After conducting a cement squeeze job in an open hole, or after any well cement repair for the well-constructed under this permit, the Permittee shall submit cementing records and cement evaluation logs that demonstrate the isolation of the injection interval. The analysis shall include a spherically-focused tool, run after the long-string casing is set and cemented, which enables the evaluation of the bond between cement and casing as well as of the bond between cement and formation. The Permittee may not commence or recommence injection until it has received written notice from OOG that such a demonstration is satisfactory.

9. Loading and unloading stations if applicable shall have spill prevention and control facilities and procedures as well as secondary containment. Spill containment and cleanup equipment shall be readily accessible.

10. 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 will that time be less than seventy-two (72) hours.

11. The above ground storage tank(s) associated with this underground injection facility shall have secondary containment sufficient capacity to contain 110% volume of the largest tank. Tank batteries or tanks 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 flowing from one tank to another under any conditions.

12. Above ground tanks connected in series by 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

point in time shall the combined volume be accessible through the manifold system exceed the capacity of the secondary containment without someone being on site to monitor.

13. 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. Contact the county floodplain manager to confirm.

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

15. 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.

16. Sumps containing materials which have the potential to contaminate groundwater shall be designed, constructed, and operated utilizing leak detection or secondary containment, or other appropriate controls that are capable of preventing groundwater contamination.

17. Within thirty (30) days of issuance of the final version of this permit, the Permittee shall contact the West Virginia Department of Environmental Protection/Division of Air Quality to complete a permit determination. The following web link will provide access for filing: http://www.dep.wv.gov/daq/permitting/Pages/nsr-forms.aspx .

18. The injection wells in this field are identified in Appendix F form "Area Permit Wells". Additional wells may be added for injection with approval of the Office of Oil and Gas through the regular permitting process and subsequent area of review evaluation, for each well.

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

20. Facility Security. The gate on the access road to the site shall be closed and locked at all times when there is not a company representative at the facility. All valves, water drains, containment areas, and storage areas shall be secured and locked utilizing locking devises and/or plugs. During the life of this permit all gates and access points shall be secured and locked while no representative is at the facility. All visitors must check in upon arriving at the facility. Haulers (if used) shall not be allowed to off load without the proper paperwork and documentation.

B. PLUGGING AND ABANDONMENT

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

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

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

4. 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.

PART IV

A. SITE SPECIFIC CONDITIONS

1. Appendix A: Injection Well Forms.
2. Appendix F: Area Permit Wells.
3. Appendix H: Groundwater Protection Plan (GPP) The GPP shall be maintained and updated as necessary to protect groundwater quality.
4. Appendix I: Requirement for Financial Responsibility to plug/abandoned an injection well.
5. Attachment 1: Plugging and Abandonment Plan(s).
6. Attachment 2: Site/Facility Diagram(s).

(4/25)

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION Big Injun

Depth 2050 Feet (top) 2080 Feet (bottom) (varies by well)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2200 Feet

3) Approximate water strata depths: Fresh 80 Feet Salt 1800 Feet

4) Approximate coal seam depths: None

5) Is coal being mined in the area? Yes [ ] No [X]

6) Virgin reservoir pressure in target formation 1250 psig Source Estimated

7) Estimated reservoir fracture pressure 2650 psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 350

Injection pressure (psig) 760 (varies by well)

Bottom hole pressure (psig) 1649

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

Fresh water & produced water from Big Injun.
Chemicals necessary to control water quality as necessary will be added.

Temperature of injected fluid: (°F) Approx. 70°F.

10) FILTERS (IF ANY)

Cartridge filters at injection facility and wellhead cartridge filters on each well.

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

Corrosion control as necessary to maintain mechanical integrity.

Received

MAY 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

(4/25)

TYPE 1

APPENDIX A (cont.)

12. Casing and Tubing Program

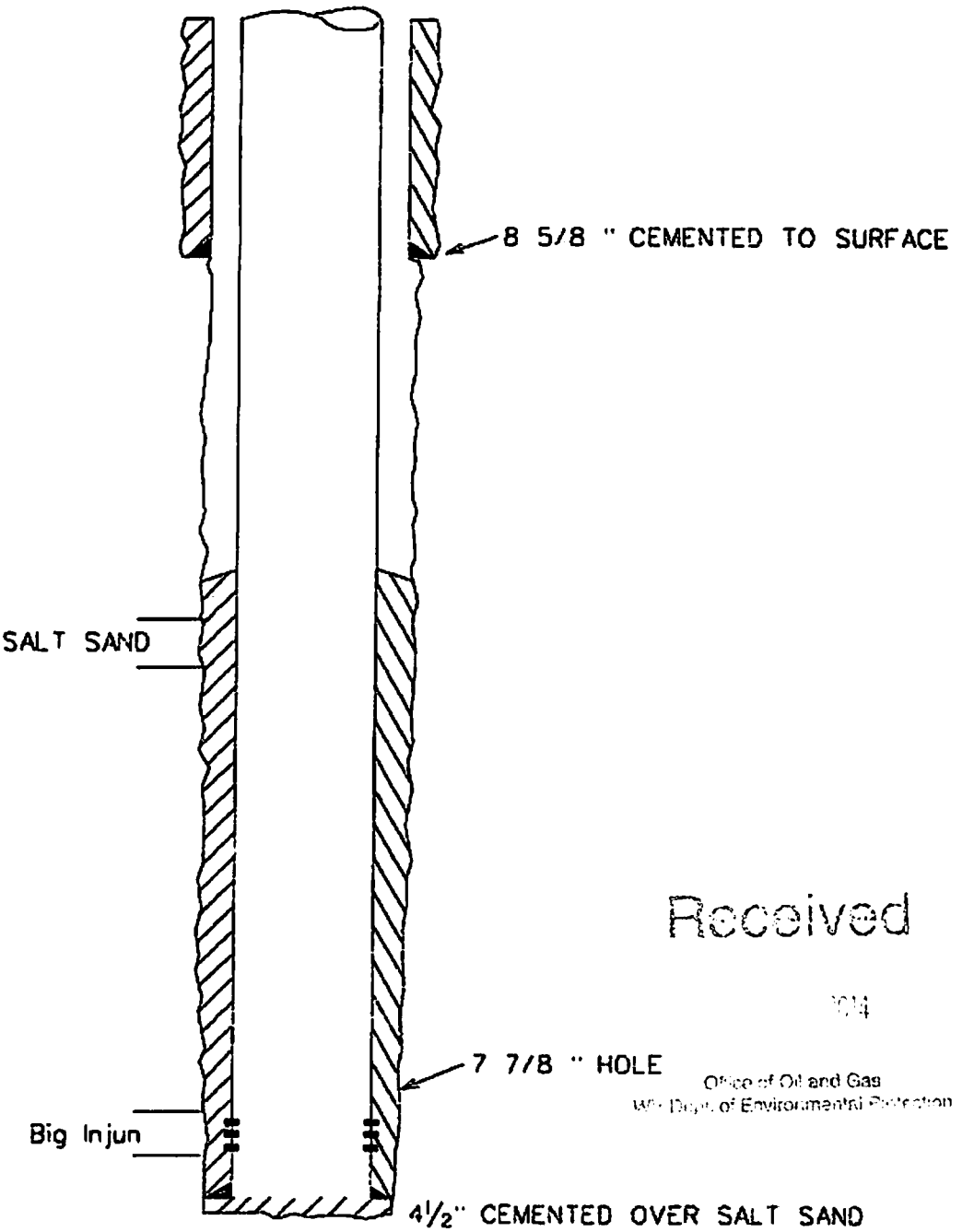
TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	8-5/8	W	LS	24	314	314	CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4-1/2	N	J-55	10.5	2085	2085	180
Tubing	2-3/8	N	J-55	4.6	1978	1978	
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water	11"	8-5/8	.264	1340	Reg Neat	1.18	Y
Coal							
Intermediate 1							
Intermediate 2							
Production	7-7/8"	4-1/2	.224	4790	50/50 Pozmix	1.21	N
Tubing		2-3/8	.190	7700			
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	Parmaco Tension			
Sizes:	4-1/2 x 2-3/8"			
Depths Set:	1978			

TYPE 1

CLOVER
Injector Completion
(May be directionally drilled)



10/9/14

(4/25)

TYPE 2

APPENDIX A (cont.)

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	9-5/8	N	LS	32	384	384	CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	7	N	J-55	23	2489	2489	130
Tubing							
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water	12-3/8	9-5/8	.312	2270	Reg Neat	1.18	Y
Coal							
Intermediate 1							
Intermediate 2							
Production	8-3/4	7	.317	4360	Reg Neat	1.18	N
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:				
Sizes:				
Depths Set:				

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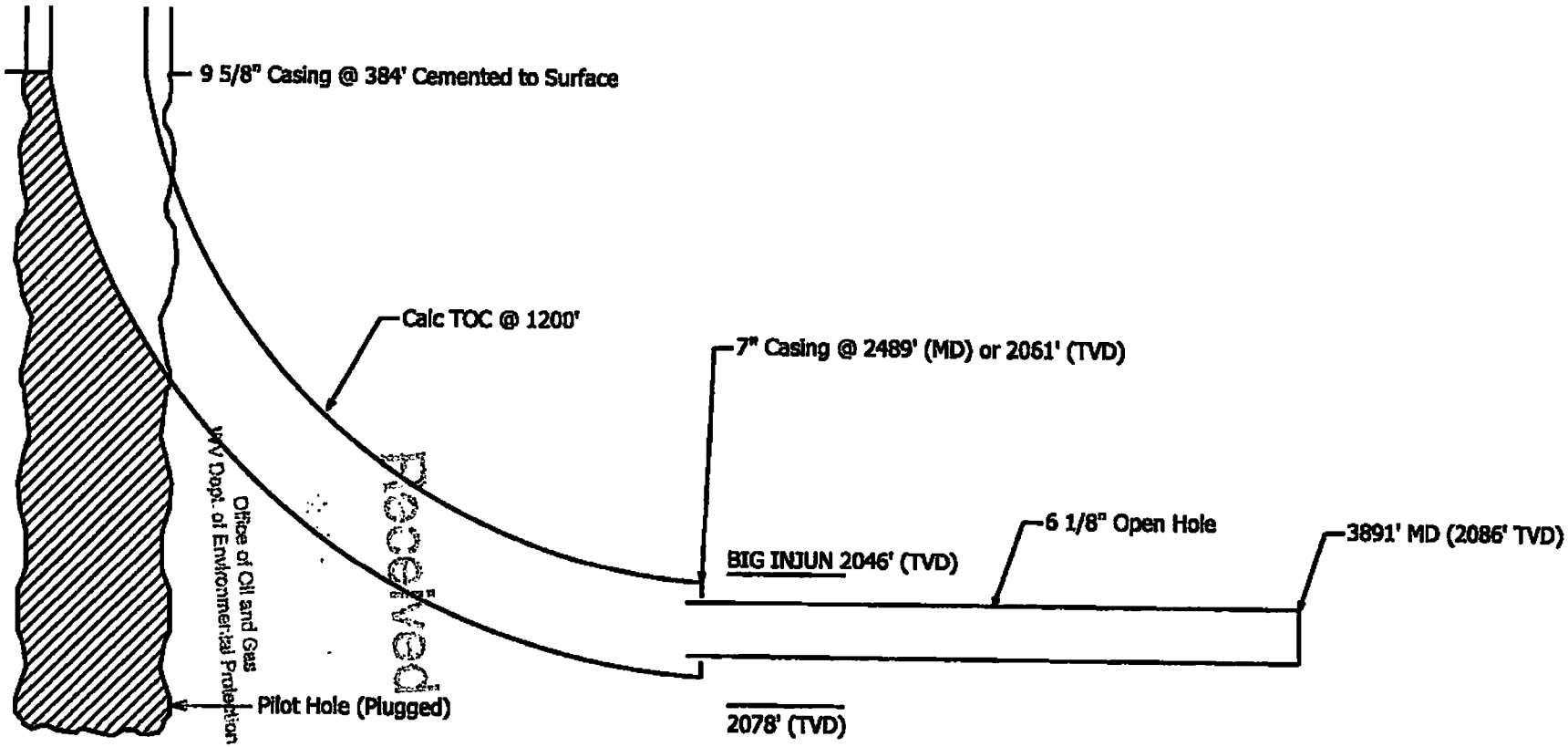
NOV 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

CLOVER FIELD
AW Edgell #100

Wellbore Schematic (Type 2)

API 47-087-04481



DRAWING NO TO SCALE
10/9/14

(4/25)

TYPE 3

APPENDIX A (cont.)

12. Casing and Tubing Program

	TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
	Conductor							
	Fresh Water							
*	Coal	7"	N	LS	17	350		CTS
	Intermediate 1							
	Intermediate 2							
*	Production	4-1/2	N	J-55	10.5	2100		180
*	Tubing	2-3/8	N	J-55	4.6			
	Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal	8-3/4	7	.231	1500	Reg Neat	1.18	Y
Intermediate 1							
Intermediate 2							
Production	6-1/2	4-1/2	.224	4790	50/50 Pozmix	1.21	N
Tubing		2-3/8	.190	7700			
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	Parmaco Tension			
Sizes:	2-3/8" x 4-1/2"			
Depths Set:	Approx. 100' above Big Injun Sand			

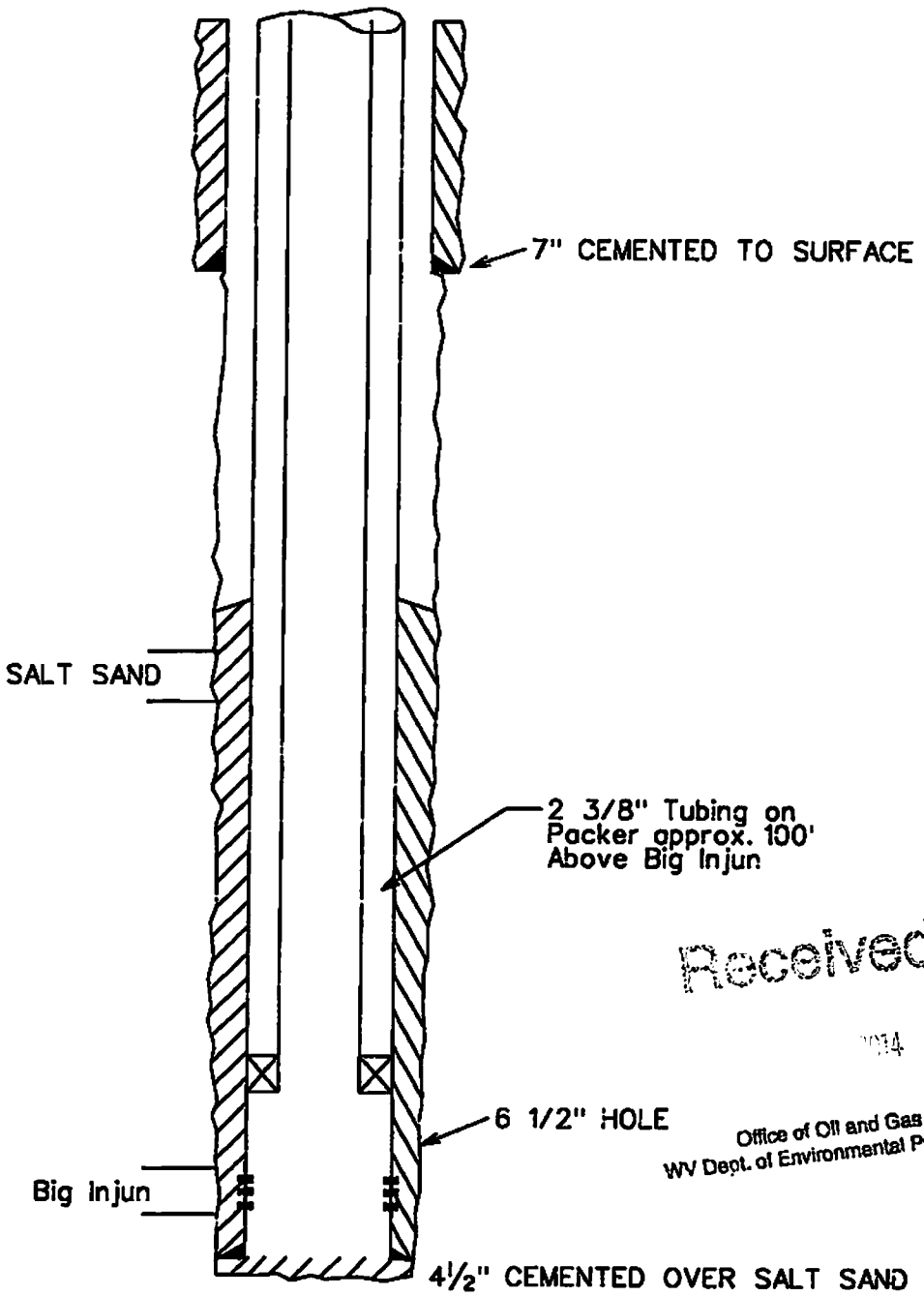
* Depths of casing will vary.

TYPE 3

CLOVER

Injector Completion

(May be directionally drilled)



10/9/14

		APPENDIX F		2208700005AP
Updated 7/18/16		Area Permit Wells		Claver
	Well Type	Well Status		
	(Injection,	(Active,		
API #	Production,	Abandoned,	Northing (UTM	Easting (UTM
	Observation,	Shut-in,	NAD 83 Meters)	NAD 83 Meters)
	Monitoring)	Plugged)		
47-087-03016	Producer	Plugged	4,285,046	475,225
47-087-03077	Producer	Plugged	4,284,867	475,163
47-087-02434	Producer	Plugged	4,285,744	475,242
47-087-03060	Producer	Inactive	4,285,930	475,287
47-087-02440	Producer	Active	4,286,557	475,128
47-087-00965	Producer	Active	4,287,260	475,101
47-087-01094	Producer	Inactive	4,286,998	475,030
47-087-01120	Producer	Active	4,287,167	474,803
47-087-03046	Producer	Active	4,285,613	475,953
47-087-02509	Producer	Active	4,285,905	475,890
47-087-02519	Producer	Active	4,284,573	476,008
47-087-03037	Producer	Active	4,284,705	475,826
47-087-03089	Producer	Active	4,285,493	475,842
47-087-02533	Producer	Active	4,286,700	475,677
47-087-03081	Producer	Inactive	4,286,211	475,816
47-087-02534	Producer	Active	4,286,474	475,962
47-087-02998	Producer	Active	4,286,218	476,120
47-087-03172	Producer	Active	4,286,672	476,228
47-087-02552	Producer	Active	4,286,694	475,203
47-087-03017	Producer	Plugged	4,285,604	475,479
47-087-03079	Producer	Active	4,285,493	475,176
47-087-02615	Producer	Active	4,286,848	476,077
47-087-03085	Producer	Active	4,285,728	476,237
47-087-02765	Producer	Active	4,284,822	475,700
47-087-03039	Producer	Plugged	4,285,156	475,743
47-087-03021	Producer	Active	4,285,674	475,180
47-087-03080	Producer	Active	4,286,854	475,717
47-087-03065	Producer	Active	4,287,068	475,514
47-087-03166	Producer	Active	4,287,186	475,753
47-087-02706	Producer	Active	4,286,981	475,356
47-087-03073	Producer	Active	4,286,792	475,176
47-087-04075	Producer	Plugged	4,284,228	475,505
47-087-04208	Producer	Active	4,283,803	475,788
47-087-03064	Producer	Inactive	4,285,813	475,759
47-087-03028	Producer	Active	4,285,088	474,778

2R0870005AP
Clover

APPENDIX F
Area Permit Wells

API #	Well Type (Injection, Production, Observation, Monitoring)	Well Status (Active, Abandoned, Shut-in, Plugged)	Northing (UTM NAD 83 Meters)	Easting (UTM NAD 83 Meters)
47-087-01956	Producer	Active	4,284,855	474,827
47-087-02866	Producer	Active	4,286,513	475,631
47-087-02868	Producer	Inactive	4,286,161	475,699
47-087-03066	Producer	Active	4,286,449	475,459
47-087-02870	Producer	Active	4,286,150	475,488
47-087-02871	Producer	Active	4,286,087	475,284
47-087-03015	Producer	Active	4,286,079	475,045
47-087-02979	Producer	Active	4,286,346	474,939
47-087-01744	Producer	Inactive	4,286,287	475,395
47-087-03062	Producer	Inactive	4,286,638	475,545
47-087-02873	Producer	Active	4,286,461	475,731
47-087-04724	Injection	Active	4,284,733	475,517
47-087-04089	Injection	Inactive	4,286,027	475,400
47-087-04481	Injection	Active	4,286,116	475,865
47-087-02975	Injection	Active	4,286,202	475,604
47-087-02083	Observation	Active	4,285,951	475,790
47-087-02973	Observation	Active	4,286,080	475,773
47-087-02872	Observation	Active	4,286,872	475,504
47-087-02397	Producer	Plugged	4,284,773	475,276
47-087-02525	Producer	Plugged	4,285,336	475,878
47-087-02526	Producer	Plugged	4,285,612	475,603
47-087-03165	Producer	Plugged	4,286,367	475,783
47-087-02537	Producer	Plugged	4,286,137	476,345
47-087-03012	Producer	Plugged	4,287,330	475,458
47-087-02712	Producer	Plugged	4,285,736	475,512
47-087-04765	Injection	Active	4,285,298	476,298
47-087-04766	Injection	Active	4,284,965	476,013
47-087-04767	Injection	Active	4,285,512	476,167
47-087-04768	Injection	Active	4,284,248	475,487
47-087-04781	Injection	Active	4,284,921	474,794
47-087-04782	Injection	Active	4,285,239	474,862
47-087-04746	Producer	Active	4,285,385	475,009
47-087-04748	Producer	Active	4,285,120	475,300
47-087-04750	Producer	Active	4,285,360	475,286
47-087-04752	Producer	Active	4,285,441	475,629

		APPENDIX F		2R0870000SAP
		Area Permit Wells		Clover
	Well Type	Well Status		
	(Injection,	(Active,		
API #	Production,	Abandoned,	Northing (UTM	Easting (UTM
	Observation,	Shut-in,	NAD 83 Meters)	NAD 83 Meters)
	Monitoring)	Plugged)		
47-087-04769	Producer	Active	4,284,477	475,012
47-087-04770	Producer	Active	4,284,797	475,301
47-087-04771	Producer	Active	4,284,766	475,914
47-087-04772	Producer	Active	4,284,480	475,928
47-087-04773	Producer	Active	4,284,448	475,612
47-087-04774	Producer	Active	4,284,484	475,354
47-087-04775	Producer	Active	4,285,138	475,569
47-087-04777	Producer	Active	4,285,108	466,809
47-087-04778	Producer	Active	4,284,852	474,980
47-087-04779	Producer	Active	4,285,378	475,951
47-087-04783	Producer	Active	4,285,045	474,997
47-087-04745	Injection	Active	4,285,549	475,173
47-087-04747	Injection	Active	4,285,555	474,860
47-087-04749	Injection	Active	4,285,227	475,151
47-087-04751	Injection	Active	4,285,543	475,446
47-087-04753	Injection	Active	4,285,245	475,464
47-087-04754	Injection	Active	4,285,234	475,776
47-087-04755	Injection	Active	4,285,522	475,789
47-087-04780	Injection	Active	4,284,323	475,780
47-087-04757	Injection	Active	4,284,632	474,820
47-087-04758	Injection	Active	4,284,991	475,725
47-087-04759	Injection	Active	4,284,937	475,484
47-087-04760	Injection	Active	4,284,321	475,184
47-087-04761	Injection	Active	4,284,292	474,946
47-087-04762	Injection	Active	4,284,660	475,137
47-087-04763	Injection	Active	4,284,611	475,788
47-087-04764	Injection	Active	4,284,667	476,077
47-087-04724	Injection	Active	4,284,944	475,167
Page 3 of 3				

APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: Clover Waterflood

County: Roane

Facility Location:

Postal Service Address:	NA	
Latitude and Longitude:	38.727907	81.281486

Contact Information:

Person:	Roger Heldman
Phone Number:	304-420-1107
E-mail Address:	rheldman@hgenergyllc.com

Date: 10/21/14

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

Tank failure/leak
Pipleine leak

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

Secondary containment around tanks
Pipelines routinely patrolled for leaks

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

No new equipment or operations are anticipated for this facility.

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

This facility is covered by existing UIC permit

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

There are no known ground water quality issues in this area. This facility is remotely located with very few USDWs in the area.

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 is or will be used for deicing or fill material.

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.

The operators of this facility are instructed to routinely monitor tank conditions, secondary containment condition, and patrol injection lines.

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

Dikes, pipelines, and injection equipment will be inspected at a minimum of every 90 days.

Signature: [signature]

Date: 10/21/14

(4/25)

APPENDIX I

Requirement for Financial Responsibility to Plug/Abandon an Injection Well

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

From: HG Energy, LLC
5260 Dupont Road
Parkersburg, WV 26101

Date: 10/10/14

Subject: Underground Injection Control (UIC) Permit Application
2R08704AP 2R0870000SAP "Clover"
Requirement for Financial Responsibility

SN 4/28/17

I, Eric Grayson, verify in accordance with 47CSR13-13.7.g., that I will maintain financial responsibility and resources to close, plug, and abandon underground injection wells(s) in a manner prescribed by the Chief of the Office of Oil and Gas.

Name: Eric Grayson
Signature: [signature]
Date: 10/30/14

Attachment 1

Clover Field Plugging and Abandonment Plan for Type 1, Type 2 and Type 3.

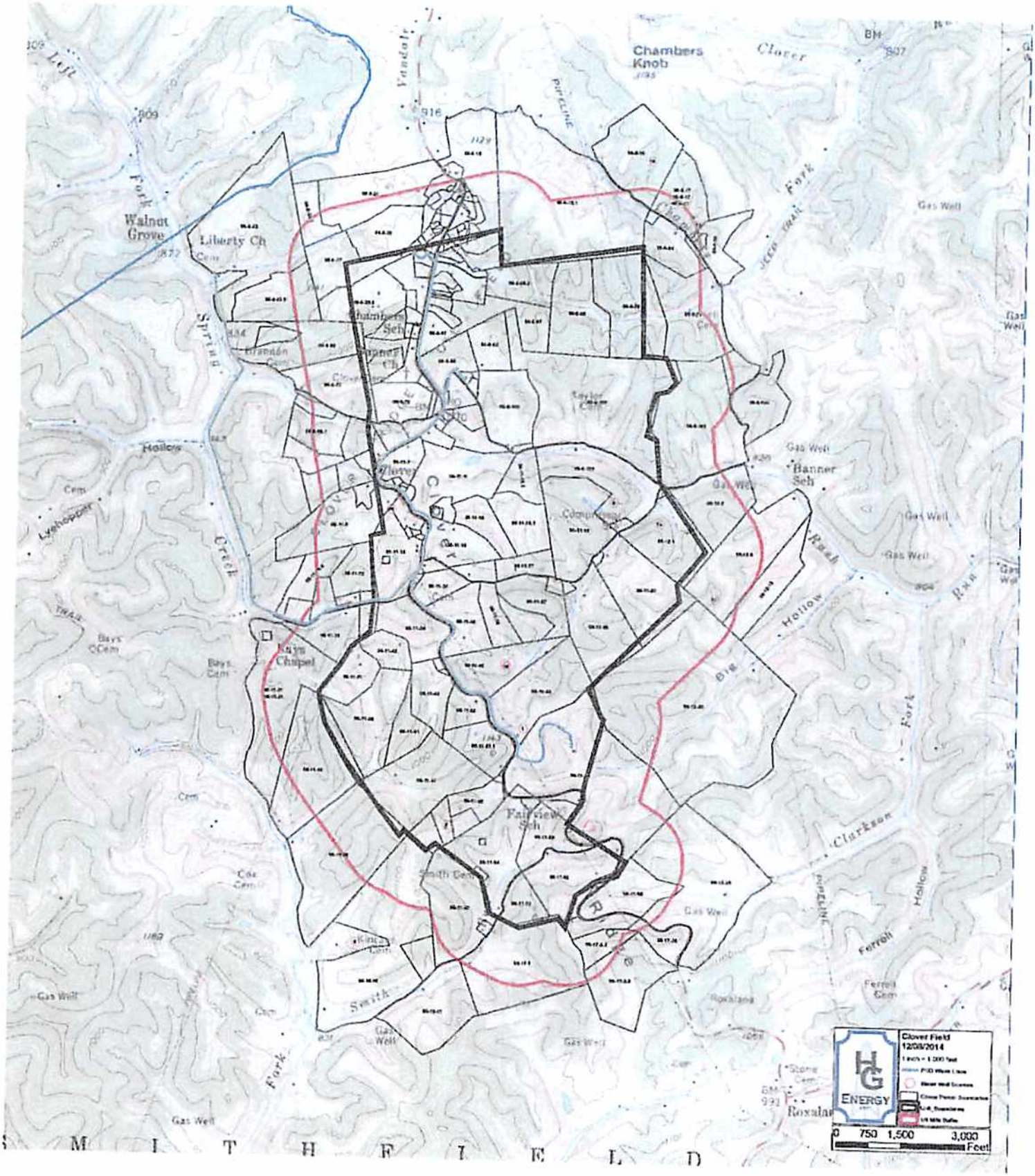
For the Plugging and Abandonment of Type 1 injection wells HG Energy plans to set a minimum 100' cement plug directly above the Big Injun perforations (2143'-2153'). The 4 1/2" casing would be free pointed, cut and removed (approximately 1000'). A minimum 100' cement plug set from 50' below the cut to 0' above the casing cut. A 100' cement plug set at elevation (unless covered by the above mentioned plug). After removing the 4 1/2" casing a cement plug (100') will be set across the base of the 8 5/8" surface casing and an additional 100' plug at the top of the 8 5/8" casing. 6% gel will be placed between the cement plugs.

For the plugging and abandonment of the Type 2 injection well a bridge plug will be set at the base of the 7" casing with a minimum 100' cement plug on top of it. The 7" casing would be free pointed, cut, and removed (approximately 1200') a minimum 100' cement plug set from 50' below casing cut to 50' above casing cut. A 100' cement plug set at elevation (unless covered by the above mentioned plug). After removing the 7" casing a cement plug (100') will be set across the base of the 9 5/8" surface casing and an additional 100' plug at the top of the 9 5/8" casing. 6% gel will be placed between the cement plugs.

For plugging and abandonment of Type 3 injection wells HG Energy plans to set a minimum 100' cement plug above the Big Injun perforations. The 4 1/2" casing on all but one of these wells was cemented with enough cement to bring cement back to surface. The cement jobs and cement bond logs indicate cement tops of 0'- 600' on these wells. The 4 1/2" casing would be cut and removed at the free point and the appropriate amount of cement utilized to set a minimum 100' cement plug at this casing cut or to set a 100' minimum surface plug at the surface. This would be dependent on the free point / TOC on the casing. 6% gel will be placed between the cement plugs. The one Type 3 well with less cement fill up would be plugged in the same manner as the Type 1 well above.

All three types of injection wells have surface casing run below the USDW depth and cemented back to surface. The long string casing is cemented from TD to at least several hundred feet above the Big Injun or in most cases back at least into the surface casing. The first cement plug is located directly above the injection zone which seals the wellbore from any upward migration. In the case of the Type 1 and 2 wells the additional plugs a (at the casing cuts, surface casing seat, and at the surface) help to assure if the first plug should fail there are a minimum of two additional cement plugs to stop any upward migration of fluids. The Type 3 wells with the long string of casing cemented into the surface casing provides even more protection from potential migration. If the bottom plug should fail there is a string of casing cemented from TD to at least into the surface casing. That surface casing is set below the USDW depth and cemented to surface. If there was a failure of the bottom plug and fluid migrated upward through the casing there will be a minimum 100' cement plug located at the depth the long string was cut and removed or at the top of the long sting of casing.

Attachment # 2



RIGHT OF APPEAL

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

Underground Injection Control Permit

CERTIFICATION DOCUMENT

West Virginia Department of Environmental Protection
Office of Oil and Gas

Permit Id: 2R08700005AP Clover

Permit Name: HG ENERGY, LLC

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

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

_____

Signature

_____

Name and Title (Type or Print)

_____

Date