U.S. ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT: Class II-X
Permit Number UIC122X001

Pursuant to the Underground Injection Control ("UIC") regulations of the U.S. Environmental Protection Agency ("EPA") codified at Title 40 of the Code of Federal Regulations ("C.F.R.") Parts 124, 144, 146, and 147, Enterprise Products Operating, LLC, 1100 Louisiana Street, Houston, Texas 77002 ("Enterprise" or "Permittee") is hereby authorized to operate two Class II-X brine injection wells, the Overbaugh Philip #1 (American Petroleum Institute ("API") # 31-023-02308) and Harford Propane Storage #3 (API # 31-023-06778), located at approximately 42.421139 north latitude and -76.201144 west longitude, State Route 200, Harford Mills, New York 13835 into the Syracuse Formation with conditions set forth herein.

All references to Title 40 of the C.F.R. are to all regulations that are in effect on the date that this permit is effective. The following attachment is incorporated into this permit:

1. Plugging and Abandonment Plans

This permit shall become effective on August 8, 2012. This permit and the authorization to inject shall expire at midnight on August 8, 2022 unless terminated. It will also expire upon delegation of primary enforcement responsibility to the State of New York, unless that State chooses to adopt this permit as a State permit.

Signed this 27th day of JUNE 2012.

Dore LaPosta, Director
Division of Enforcement and Compliance Assistance

PART I.
GENERAL PERMIT COMPLIANCE

A. EFFECT OF PERMIT

The Permittee is allowed to engage in underground injection in accordance with the conditions of this permit. Notwithstanding any other provision of this permit, the Permittee authorized by this permit shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water ("USDWs"), if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. Parts 141 and 142 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit is prohibited. Compliance with this permit during its term constitutes compliance with Part C of the Safe Drinking Water Act ("SDWA"). Such compliance does not constitute a defense to any action brought for violation of Section 1431 of the SDWA, or any other common or statutory law or regulation. Pursuant to 40 C.F.R. §§144.35(b) and 144.35(c), issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this permit shall be construed to relieve the Permittee of any duties under applicable regulations.

B. PERMIT ACTIONS

1. Modification, Revocation, Reissuance and Termination

The Director may, for cause or upon request from the Permittee, modify, revoke and reissue, or terminate this permit in accordance with 40 C.F.R. §§144.12, 144.39, and 144.40. Also, the permit is subject to minor modifications for cause as specified in 40 C.F.R. §144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee, does not stay the applicability or enforceability of any permit condition.

2. Transfer of Permits

This permit is not transferable to any person except in accordance with 40 C.F.R. §144.38.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 C.F.R. Part 2 (Public Information) and §144.5, any information submitted to EPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 C.F.R. Part 2. Claims of confidentiality for the following information will be denied:

1) The name and address of the Permittee;
2) Information which deals with the existence, absence or level of contaminants in drinking water.

E. DUTIES AND REQUIREMENTS

1. Duty to Comply

Pursuant to 40 C.F.R. §144.51(a), the Permittee shall comply with all applicable UIC Program regulations and conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with 40 C.F.R. §144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. Such noncompliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act ("RCRA").

2. Penalties for Violations of Permit Conditions

Any person who violates a permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may be subject to such actions pursuant to RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

3. Continuation of Expiring Permits

a. Duty to Reapply: If the Permittee desires to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must submit a complete application for a new permit at least 180 days before this permit expires.

b. Permit Extensions: The conditions of an expired permit may continue in force only in accordance with 5 United States Code ("U.S.C.") 558(c) and 40 C.F.R. §144.37.

c. Effect: Permits continued under 5 U.S.C. 558(c) and 40 C.F.R. §144.37 remain fully effective and enforceable.

d. Enforcement: Pursuant to 40 C.F.R. §144.37(c), when the Permittee is not in compliance with the conditions of the expiring or expired permit, the Director may choose to do any or all of the following:

(1) Initiate enforcement action based upon the permit which has been continued;

(2) Issue a notice of intent to deny the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;

(3) Issue a new permit under 40 C.F.R. Part 124 with appropriate conditions; or

(4) Take other actions authorized by UIC regulations.

e. State Continuation: Pursuant to 40 C.F.R. §144.37(d), an EPA-issued permit does not continue in force beyond its expiration date under Federal law if at that time a State has primary enforcement authority under the SDWA. A State authorized to administer the UIC program may continue either EPA- or State-issued permits until the effective date of the new permits, if State law allows. Otherwise, the facility or activity is operating without a permit from the time of expiration of the old permit to the effective date of the new State-issued permit. Furthermore, if the State does not continue an EPA permit upon obtaining primary enforcement responsibility, the Permittee must obtain a State permit or be authorized to inject by State rule.

4. Need to Halt or Reduce Activity not a Defense

Pursuant to 40 C.F.R. §144.51(c), 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.

5. Duty to Mitigate

Pursuant to 40 C.F.R. §144.51(d), the Permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

6. Proper Operation and Maintenance

Pursuant to 40 C.F.R. §144.51(e), the Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that 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, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

7. Duty to Provide Information

Pursuant to 40 C.F.R. §144.51(h), the Permittee shall furnish to the Director, within a time specified, any information that the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The

Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

8. Inspection and Entry

Pursuant to 40 C.F.R. §144.51(i), the Permittee shall allow the Director, 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 are kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that are 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 or as otherwise authorized by the SDWA, any substances or parameters at any location.

9. Records

a. Pursuant to 40 C.F.R. §144.51(j)(2)(i), the Permittee shall retain records and all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit, for a period of at least three years from the date of the sample, measurement, or report.

b. Pursuant to 40 C.F.R. §144.51(j)(2)(i), the Permittee shall maintain records of all data required to complete the permit application form for this permit and any supplemental information submitted under 40 C.F.R. §144.31 for a period of at least three years from the date the application was signed. These periods may be extended by request of the Director at any time.

c. Pursuant to 40 C.F.R. §144.51(j)(2)(ii), the Permittee shall retain records concerning the nature and composition of all injected fluids until three years after the completion of plugging and abandonment which has been carried out in accordance with the attached plugging and abandonment plan, and is consistent with 40 C.F.R. §146.10.

d. Pursuant to 40 C.F.R. §144.51(j)(2)(ii), the Permittee shall continue to retain such records after the retention period specified by Paragraphs 9a. to 9c. above, unless he delivers the records to the Director or obtains written approval from the Director to discard the records.

e. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The name(s) of individual(s) who performed the sampling or measurements;

(3) A precise description of both sampling methodology and the handling (custody) of samples;

(4) The date(s) analyses were performed;

(5) The name(s) of individual(s) who performed the analyses;

(6) The analytical techniques or methods used; and

(7) The results of such analyses.

10. Monitoring

Pursuant to 40 C.F.R. §144.51(j), Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results shall be reported at the intervals specified in Part II Section D of this permit. Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 C.F.R. §136.3 or in Appendix III of 40 C.F.R. Part 261 or in certain circumstances by other methods that have been approved by the Director.

11. Signatory Requirements

All reports or other information, required to be submitted by this permit or requested by the Director, shall be signed and certified in accordance with 40 C.F.R. §144.32.

12. Reporting Requirements

a. Planned Changes: Pursuant to 40 C.F.R. §144.51(l)(1), the Permittee shall give written notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted facility relative to injection activity.

b. Anticipated Noncompliance: Pursuant to 40 C.F.R. §144.51(l)(2), the Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

c. Compliance Schedules: Pursuant to 40 C.F.R. §144.51(l)(5), 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 30 days following each schedule date.

d. Twenty-four Hour Reporting:

(1) Pursuant to 40 C.F.R. §144.51(l)(6), the Permittee shall report to the Director any noncompliance that may endanger health or the environment. Any such information shall be provided orally and/or by e-mail within 24 hours from the time the Permittee becomes aware of the circumstances. Such reports shall include, but not be limited to, the following information:

(a) Any monitoring or other information that indicates that any contaminant may cause an endangerment to a USDW; and

(b) Any noncompliance with a permit condition, or malfunction of the injection system, that may cause fluid migration into or between USDWs so as to cause a violation of primary drinking water regulations under 40 C.F.R. Parts 141 and 142 or otherwise adversely affect the health of persons.

e. Five Day Written Reporting: For any noncompliance subject to the reporting requirements in Paragraph 12.d.(1) above, a written submission shall also be provided within five 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, the anticipated time it is expected to

continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

f. Other Noncompliance: Pursuant to 40 C.F.R. §144.51(l)(7), the Permittee shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph 12.e. above.

g. Other Information: Pursuant to 40 C.F.R. §144.51(l)(8), when the Permittee becomes aware that he failed to submit any relevant facts in the permit application or submitted incorrect information in a permit application or in any report to the Director, the Permittee shall submit such facts or information within 10 days.

h. Conversion: Pursuant to 40 C.F.R. §144.51(n), the Permittee shall notify the Director 45 days prior to the conversion of any well(s) to an operating status other than an injection well.

i. Report on Permit Review: Within 30 days of the effective date of this permit, the Permittee shall report to the Director that he has read and is personally familiar with all terms and conditions of this permit.

j. Report Submittal:

(1) Written reports required under this Section shall be submitted to the address identified in Part II, Section D.1. of this permit.

(2) Oral/electronic reporting required under this Section shall be provided to:

(a) E-mail to: region2_uic@epa.gov

(b) Frank Brock: (212) 637-3762 and/or

(c) Nicole Kraft, Chief, Ground Water Compliance Section: (212) 637-3093 and/or

(d) Water Compliance Branch: (212) 637-3766.

F. COMMENCING INJECTION

As of the date of this permit the following requirements have been satisfied, therefore, the Permittee is authorized to continue injection activities

1. The following information concerning the injection formation has been submitted to the Director:
   a. fluid pressure
   b. temperature
   c. fracture pressure
   d. other physical and chemical characteristics of the injection matrix, and
   e. physical and chemical characteristics of the formation fluids

2. Mechanical integrity of the well has been demonstrated in accordance with Part I Section H of this permit;

3. Corrective action has been performed in accordance with Part I Section J of this permit; and

4. Construction:

a. All well construction, including any well rework activities, is complete.
b. The Permittee has submitted well construction or rework information to the Director.
c. The Director either:
(1) inspected or otherwise reviewed the injection wells and finds they are in compliance with the conditions of the permit; or
(2) did not provide to Permittee, within 13 days of the date of the Director's receipt of the notice of completion of construction, notification of his or her intent to inspect or otherwise review the injection wells.

G. PLUGGING AND ABANDONMENT

1. Notice of Plugging and Abandonment

Pursuant to 40 C.F.R. §144.51(n), the Permittee shall notify the Director no later than 45 days before conversion or abandonment of the well.

2. Plugging and Abandonment

The Permittee shall plug and abandon all wells consistent with 40 C.F.R. §146.10 and the Plugging and Abandonment Plan, which is hereby incorporated into this permit as Attachment 1. Pursuant to 40 C.F.R. §144.51(p), within 60 days after plugging a well, or by the date of the next quarterly report after plugging a well (whichever is earlier), the Permittee shall submit a report to the Director. The report shall be certified as accurate by the person who performed the plugging operation and shall consist of either:
a. A statement that the well was plugged in accordance with the plan in Attachment 1; or
b. If the actual plugging differed from the approved plan, a statement detailing the actual plugging and why the Director should approve such deviation. Any deviation, that may endanger USDWs, from a previously approved plan is cause for the Director to require the operator to replug the well.

3. Inactive Wells

Pursuant to 40 C.F.R. §144.52(a)(6), after a cessation of injection for two years the Permittee shall plug and abandon the wells in accordance with Attachment 1 unless:
a. Notice is provided to the Director; and
b. The Notice describes the actions or procedures that the Permittee will take to ensure that the wells will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived in writing by the Director; and
c. The Director determines that the actions and procedures are satisfactory.

H. MECHANICAL INTEGRITY

1. Standards

All injection well(s) must have and maintain mechanical integrity consistent with 40 C.F.R. §146.8.

2. Prohibition Without Demonstration

The Permittee shall not inject into any well after the effective date of this permit if more than 5 years has elapsed since the last successful demonstration that the well has mechanical integrity in accordance with 40 C.F.R. §146.8. The Permittee shall notify the Director of his intent to demonstrate mechanical integrity at least 30 days prior to such demonstration. Mechanical integrity shall also be demonstrated any time the tubing is removed from the well or a loss of mechanical integrity appears to arise during operation. The Permittee shall notify the Director of his intent to demonstrate mechanical integrity of a reworked well at least 5 days prior to such demonstration. The Permittee shall report the results of a mechanical integrity demonstration within 90 days after completion.

3. Loss of Mechanical Integrity

If the Permittee or the Director finds that any well fails to demonstrate mechanical integrity during a test, or a loss of mechanical integrity as defined by 40 C.F.R. §146.8 becomes evident during operation, the operation shall be halted immediately and not be resumed until the Director gives approval to recommence injection.

4. Mechanical Integrity Request from Director

The Director may, by written notice, require the Permittee to demonstrate mechanical integrity at any time.

I. FINANCIAL RESPONSIBILITY

1. Financial Responsibility

The Permittee is required to maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner consistent with the UIC regulations (40 C.F.R. §144.52(a)(7)). A financial statement shall be updated annually, or upon request of the Director. If the acceptability of the financial demonstration should change the Permittee shall provide advanced notification to the Director. The Permittee shall not substitute an alternative demonstration of financial responsibility from that which the Director has approved, unless he or she has previously submitted evidence of that alternative demonstration to the Director and the Director notifies him or her that the alternative demonstration of financial responsibility is acceptable. The financial responsibility mechanism shall be updated upon request of the Director.

2. Insolvency

In the event of:

a. The bankruptcy of the trustee or the institution issuing the financial mechanism; or

b. The suspension or revocation of the authority of the trustee institution to act as trustee; or

c. The loss of authority of the institution issuing the financial mechanism to issue such an instrument, the Permittee must notify the Director within ten (10) business days. The owner or operator must establish other financial assurance or liability coverage acceptable to the Director within 60 days after such an event. An owner or operator must also notify the Director by certified mail of the commencement of voluntary or involuntary proceedings under U.S.C. Title 11 (Bankruptcy), naming the owner or operator as debtor, within 10 business days after the commencement of the proceedings. A guarantor or a corporate guarantee must make such a notification if it is named as debtor, as required under the terms of the guarantee.

J. CORRECTIVE ACTION REQUIREMENTS

1. Corrective Action Plan

Within the Area of Review no wells were identified that are improperly sealed, completed or abandoned. Therefore, no Corrective Action Plan was required from Permittee.

2. Upward Fluid Migration

Should upward fluid migration resulting from the injection activity authorized by this permit occur through any well, including but not limited to any previously unknown well and any known well previously determined to be properly sealed, completed or abandoned, all injection activity shall cease until all repairs necessary to prevent the upward fluid migration are completed. Any such upward fluid migration is a violation of the provisions of this permit and is subject to the reporting requirements of Part I Section E.12. Injection activities shall not resume until the Director has determined that the repairs are satisfactory and approves the resumption of injection in writing.

K. APPEAL OF PERMIT

1. General

Pursuant to 40 C.F.R §124.19, the Permittee may petition the Environmental Appeals Board to review this permit. This request must be made, in writing, within 30 days of issuance of this permit. The Permittee may appeal this permit based upon the following conditions:

a. If the Permittee supplied comments on the draft of this permit or participated in a public hearing concerning this permit, it may petition the Environmental Appeals Board to review any condition of this permit.

b. If the Permittee failed to supply public comments, it may petition for an administrative review only to the extent of the changes from the draft permit to the final permit.

2. Contents of Appeal

The petition shall include a statement of the reasons supporting the review, including a demonstration that any issues being raised were raised during the public comment period (including any public hearing) to the extent required by 40 C.F.R. Parts 124, 144, 146, and 147 and when appropriate, a showing that the condition in question is based on:

a. A finding or fact or conclusion of law which is clearly erroneous, or

b. An exercise of discretion or an important policy consideration which the Environmental Appeals Board should, in its discretion, review.

3. Prerequisite to Judicial Review

A petition to the Environmental Appeals Board, as described above, is, pursuant to 5 U.S.C. §704, a prerequisite to the seeking of judicial review of any final EPA action regarding this permit. For purposes of a judicial review under the UIC program, final EPA action occurs when a final permit decision is issued by EPA and EPA review procedures as stated in Part I Section K.2 above are exhausted. Final permit decisions shall be issued by the Regional Administrator:

a. When the Environmental Appeals Board issues notice to the Permittee that review has been denied;

b. When the Environmental Appeals Board issues a decision on the merits of the appeal and the decision does not include a remand of the proceedings; or

c. Upon the completion of remand proceedings if the proceedings are remanded, unless the Environmental Appeals Board's remand order specifically provides that appeal of the remand decision will be required to exhaust administrative remedies.

L. DEFINITIONS

1. Application

Application means the EPA standard national forms for applying for a permit, including any additions, revisions or modifications to the forms; or forms approved by EPA for use in approved States, including any approved modifications or revisions.

2. Aquifer

Aquifer means a geological "formation", group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

3. Casing

Casing means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous formations, or to prevent water, gas, or other fluid from entering or leaving the hole.

4. Cementing

Cementing means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.

5. Class II Well

Class II Well means a well which injects fluids:

a. Which are brought to the surface in connection with conventional oil or natural gas production or natural gas storage operations 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; or

b. For enhanced recovery of oil or natural gas; or

c. For storage of hydrocarbons which are liquid at standard temperature and pressure.

6. Compliance Schedule

Compliance Schedule means a schedule or remedial measures included in a "permit" including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with the "appropriate Act and regulations".

7. Composite Sample

Composite Sample means a combination of not less than 8 portions, of at least 100 milliliters, collected over the full time period specified in this permit. The composite sample must be flow proportioned by either time interval between each aliquot or by volume as it relates to effluent flow at the time of sampling or total flow since collection of the previous aliquot. Aliquots may be collected manually or automatically.

8. Confining Zone

Confining Zone means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection zone.

9. Contaminant

Contaminant means any physical, chemical, biological, or radiological substance or matter in water.

10. Daily Average of Parameter Monitored Continuously

Daily Average of Parameter Monitored Continuously means the sum of values observed and recorded periodically as specified in this permit, divided by the total number of values observed and recorded during that day.

11. Daily Average of Parameters Not Monitored Continuously

Daily Average of Parameters Not Monitored Continuously means the sum of all daily observed and recorded values divided by the total number of values observed and recorded during that day.

12. Daily or Monthly Maximum Value

Daily or Monthly Maximum Value means the highest value recorded during the day or month, respectively. For continuously monitored parameters the highest value recorded is the highest instantaneous value for the continuous monitoring recording.

13. Daily or Monthly Minimum Value

Daily or Monthly Minimum Value means the lowest value recorded during the day or month, respectively. For continuously monitored parameters, the lowest value recorded is the lowest instantaneous value from the continuous monitoring recording.

14. Director

Director means the Director of the Division of Enforcement and Compliance Assistance, EPA Region 2, unless at some time in the future the State receives authority to administer the UIC program and assumes jurisdiction over the permit; at which time, the Director of the State program receiving authorization becomes the Director.

15. Drilling Mud

Drilling Mud means a heavy suspension used in drilling an "injection well", introduced down the drill pipe and through the drill bit.

16. Exempted Aquifer

Exempted Aquifer means an "aquifer" or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures in 40 C.F.R. §144.7.

17. Facility or Activity

Facility or Activity means any UIC "injection wells", or any other facility or activity that is subject to regulation under the UIC program.

18. Fault

Fault means a surface or zone of rock fracture along which there has been displacement.

19. Flow Rate

Flow Rate means the volume per unit time given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine or passes along a conduit or channel.

20. Fluid

Fluid means any material or substance which flows or moves whether in a semi-solid, liquid, sludge, gas, or any other form or state.

21. Formation

Formation means a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

22. Formation Fluid

Formation Fluid means "fluid" present in a “formation" under natural conditions as opposed to introduced fluids, such as "drilling mud".

23. GPM

GPM means gallons per minute.

24. Grab Sample

Grab Sample means a single portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the monitored activity.

25. Injection Tubing or Tubing

Injection Tubing or Tubing means a system of pipes, of appropriate material, inserted into the well through the casing to convey the injection fluid to the injection zone and to prevent casing degradation.

26. Injection Zone

Injection Zone means a geological "formation", group of formations, or part of a formation receiving fluids through a well.

27. Monthly Average of Parameters Monitored Continuously

Monthly Average of Parameters Monitored Continuously means the sum of values observed and recorded periodically as specified in this permit, divided by the total number of values observed and recorded during that month.

28. Monthly Average of Parameters Monitored Daily

Monthly Average of Parameters Monitored Daily means the sum of all daily observed and recorded values divided by the total number of values observed and recorded during that month.

29. Owner or Operator

Owner or Operator means the owner or operator of any "facility or activity" subject to regulation under the UIC program.

30. Packer

Packer means a device lowered into a well to produce a fluid tight seal.

31. Person

Person means an individual, association, partnership, corporation, municipality, State, Federal or Tribal agency, or an agent or employee thereof.

32. Plugging

Plugging means the act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation.

33. Pressure

Pressure means the total load or force per unit area acting on a surface.

34. PSIA

PSIA means pound per square inch absolute.

35. PSIG

PSIG means pounds per square inch gauge.

36. SDWA

SDWA means the Safe Drinking Water Act ~Pub. L. 93-523, as amended.

37. Site

Site means the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

38. Surface Casing

Surface Casing means the second string of well casing to be installed in the well, to at least below the base of all underground sources of drinking water, as a means of protection from leaks and operational damage.

39. Total Dissolved Solids (TDS)

Total Dissolved Solids (TDS) means the total dissolved (filterable) solids as determined by use of the method specified in 40 C.F.R. Part 136.

40. UIC

UIC means the Underground Injection Control Program under Part C of the SDWA, including an approved State program.

41. Underground Injection

Underground Injection means a "well injection".

42. Underground Source of Drinking Water ("USDW")

Underground Source of Drinking Water or USDW means an aquifer or its portion:

a. Which supplies any public water system; or

b. Which contains a sufficient quantity of ground water to supply a public water system: and

(1) Currently supplies drinking water for human consumption; or

(2) Contains fewer than 10,000 mg/l total dissolved solids; and
(3) Which is not an exempted aquifer.

43. Well

Well means a bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or, a dug hole whose depth is greater than the largest surface dimension; or, an improved sinkhole; or, a subsurface fluid distribution system.

44. Well Injection

Well Injection means the subsurface emplacement of fluids through a well.

45. Well Monitoring

Well Monitoring means the measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

46. Well Plug

Well Plug means a watertight and gas tight seal installed in a borehole or well to prevent movement of fluids.

47. Well Stimulation

Well Stimulation means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected, thus making it possible for wastewater to move more readily into the formation, and includes (1) surging, (2) jetting, (3) blasting (4) acidizing, and (5) hydraulic fracturing.

PART II.

WELL-SPECIFIC CONDITIONS

A. Construction Requirements

1. Notwithstanding any other provision of this permit, the injection wells shall only inject into a formation(s) which is separated from any USDW by a confining zone that is free of known open faults or fractures within the Area of Review.

2. Casing and Cementing

These injection wells represent existing brine injection wells. The wells are cased and cemented as follows:

Casing or Tubing String/Well	Overbaugh Philip #1	Harford Propane Storage #3
Surface Casing	16 inch @100 feet, cemented to surface	16 inch @102.4 feet, cemented to surface
Intermediate Casing	11-3/4 inch @500 feet, cemented to surface	11-3/4 inch @ 524.5 feet, cemented to surface
Production Casing	8-5/8 inch @ 2819 feet, cemented to surface	8-5/8 inch @ 2992 feet, cemented to surface
Liner	7 inch @ 2802 feet, cemented to surface	N/A
Brine Tubing String	4-1/2" @ 3087 feet	5-1/2 inch @ 3191 feet

The wells will be cased and cemented to prevent the movement of fluids into or between USDWs. The casing and cement used in the rework of any well shall be designed for the life expectancy of the well.

B. Operating Requirements

1. Injection Formation

Injection shall be limited to the Syracuse Formation, which is approximately 350 feet thick. The top of the Syracuse Formation lies at a depth of approximately 3000 feet below the surface.

2. Injection Pressure Limitations

Maximum injection pressure at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the confining zone or cause the migration of injection or formation fluids into a USDW. **Except during mechanical integrity testing, the brine injection pressure gradient and maximum brine injection pressure measured at the production casing seat shall not exceed the applicable value in the**

below table:

CAVERN NUMBER	MAXIMUM PRESSURE GRADIENT TO THE CASING SEAT (psi/ft)	MAXIMUM BRINE INJECTION PRESSURE MEASURED AT CASING SEAT (psi)
1	**0.65**	**1821**
3	**0.62**	**1855**

3. Injection Fluid Limitation

Injection fluid shall be limited to brine drawn from the bottom of the existing brine pond. Injection of fresh water is only authorized for injection well maintenance purposes, e.g. the removal of salt buildup in tubing. Injection of fresh water or any other fluid for any other purpose including, but not limited to, active expansion of the storage cavern(s) is not authorized.

4. Additional Injection Limitations

Injection between the outermost casing protecting USDWs and the well bore is prohibited, as is injection into any USDW.

5. Cavern Size, Volume and Spacing Limitations

a. Cavern size shall be limited to the following maximum average cavern diameter and volume:

CAVERN NUMBER	MAXIMUM AVERAGE CAVERN DIAMETER (FEET)	MAXIMUM VOLUME (BARRELS*)
1	383	654,000
3	212	406,000

* 1 Barrel = 42 U.S. Gallons

b. The pillar width to cavern diameter ratios (P/Ds) and minimum cavern spacing shall not be less than the minimum values modeled in the study titled "Geomechanical Modeling of the New York LP Caverns at Projected P/Ds of 0.6 Between Wells No. 1 and No. 2 and 0.5 Between Wells No. 1 and No. 3" dated January 27, 2006.

c. Should the above-specified cavern volume, diameter, P/Ds and/or spacing limitations be violated, the violation shall be reported pursuant to the reporting requirements of Part I Section E.12 of this permit. EPA may require additional actions, including but not limited to testing and modeling, as may be necessary to assure that continued operation of the storage caverns will not endanger USDWs.

C. Monitoring Requirements

1. Mechanical Integrity Demonstration Frequency and Procedures

a. Permittee shall perform a mechanical integrity test ("MIT") on the injection wells at the following intervals:

(1) No later than 5 years after the date of the last successful MIT. **For this Permittee, the last successful mechanical integrity demonstrations for the Overbaugh Philip #1 and Harford Propane Storage #3 were on June 23, 2011 and July 11, 2011, respectively.**

(2) No later than 180 days after the date of an MIT failure or date a lack of mechanical integrity was otherwise identified.

(3) At other times as required by the Director.

b. Any well that has failed an MIT or has been found to lack mechanical integrity shall:

(1) cease brine injection immediately.

(2) be repaired and re-tested pursuant to Paragraph C.1.a.2 above.

c. MITs shall be performed utilizing the following procedures:

(1) No Significant Leak Demonstrations:

(a) Permittee shall continue to use the modified Water – Brine Interface MIT method as detailed in the July 2011 report titled "Mechanical Integrity Test Report Enterprise Products Operating, LLC, Storage Well No. 3 Harford Mills Facility Cortland County, New York June 8-July 11, 2011".

(b) The MITs shall be designed to achieve minimum detectable leak rates ("MDLR") of less than 100 barrels ("bbls") per year for the casing test and 1,000 bbls per year for the cavern test.

(c) The well and cavern pass the MIT if the actual leak rates are not equal to or greater than the MDLRs.

(d) The MIT test pressures, as measured at the production casing seat, shall be in accordance with the following table:

CAVERN NUMBER	MIT PRESSURE GRADIENT TO THE CASING SEAT (psi/ft)	MIT PRESSURE MEASURED AT CASING SEAT (psi)
1	0.67	1877
3	0.64	1915

(2) Absence of Significant Fluid Migration Demonstrations: In order to demonstrate that there are no channels in the cement or adjacent to the wellbore, the following information shall be submitted:

(a) Cementing records demonstrating the quantity of cement and the depth interval of the cement that has been placed outside each casing string.

(b) Copies of any other logs or tests, as may be required by this permit and/or by any state or local permit, that are run to evaluate the casing, cement and/or wellbore condition.

(3) Other testing procedures with the prior approval of EPA.

2. Injection and Injectate Monitoring Requirements: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The Permittee shall monitor the injection activities as follows:

a. Injection Pressure: Brine injection pressure shall be monitored at least once daily at each wellhead during brine injection activities.

b. Injection Volume: Injected brine volume shall be monitored at least once daily for each storage cavern.

c. Brine salt saturation: Permittee shall measure brine salt saturation at least once weekly during brine injection operations. Monitoring can be done either at each wellhead or at a common manifold.

3. Cavern Size Monitoring Requirements: Sonar Surveys, or a similar test approved by the Director, shall be run at the following frequencies to determine cavern dimensions and total volume:

a. Once every 10 years.

b. Within 90 days after a determination is made that the cavern has reached its maximum permitted volume and or cavern span (as determined by calculation or other method) if a sonar survey or a similar test approved by the Director has not been run within the last 5 years.

c. Prior to plugging and abandoning any well covered by this permit if a sonar survey or a similar test approved by the Director has not been run within the last 5 years.

d. At other times as deemed necessary by the Director to demonstrate compliance with the terms of this permit.

e. All Sonar Surveys and/or other test results shall be accompanied by an interpretive report including, at a minimum:

(1) Determination of cavern dimensions including, but not limited to, average maximum cavern diameter.

(2) Determination of current total cavern volume including any rubble pile.

(3) Proximity to other caverns.

(4) Whether the newly acquired data is consistent with expected cavern growth rates and the conclusions drawn in the January 2006 report "Geomechanical Modeling of the New York LP Caverns at Projected P/Ds of 0.6 Between Wells No. 1 and No. 2 and 0.5 Between Wells No. 1 and No. 3"

For this permittee the last sonar surveys of the storage caverns were run on May 9, 2011.

4. Subsidence Monitoring Requirements

a. Permittee shall conduct subsidence surveys of each of the benchmarks identified in the 2011 subsidence monitoring results report at the following frequencies:

(1) Once every four years.

(2) At any time that subsidence is detected or suspected to be occurring.

(3) At other times as deemed necessary by the Director to demonstrate compliance with the terms of this permit.

b. The results of each subsidence survey shall be accompanied by an interpretive report that highlights any subsidence issues and, if applicable, provides proposed corrective actions for review and approval by the Director.

For this permittee the last subsidence monitoring survey was run on April 11, 2011.

5. Water Well Monitoring Requirements:

Once per calendar quarter, water samples shall be obtained from the below-listed on-site water supply well and analyzed for chlorides and total dissolved solids, utilizing a New York State certified laboratory. The well name and location are taken from Figure 1 of Attachment 5 of Permittee's December 15, 2011 submittal of additional information.

WATER WELL NAME	WATER WELL LOCATION
WW2	Approximately 30 feet west of Harford Propane Storage #3

D. **Reporting Requirements**

1. Quarterly Reports

Permittee shall submit quarterly reports to the Director containing the results of monitoring data specified in Part II Section C of this permit. Injection and injectate monitoring results, required pursuant to Part II, Section C.2. of this permit, shall be reported on EPA Form 7520-8. Quarterly reports shall be submitted no later than January 31, April 30, July 31 and October 31. The reports shall be mailed to:

Director, Division of Enforcement and Compliance Assistance
U.S. Environmental Protection Agency
290 Broadway, 21st Floor
New York, New York 10007-1866
Attn.: Chief, Ground Water Compliance Section

A signed certification shall accompany and be attached to the submitted monitoring reports. The signed certification shall include the following statement:

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 C.F.R. §144.32)

2. Reports on Well Tests and Workovers

In the first quarterly report after the activity occurs, Permittee shall report to the Director the results of the following:

a. Mechanical integrity tests (if not previously submitted);
b. Subsidence Surveys;
c. Sonar Surveys;

d. Water well monitoring results and
e. Other tests required by this permit.

E. **Plugging and Abandonment**

1. The Permittee shall plug and abandon the well as provided in the approved plugging and abandonment plans incorporated as Attachment #1 of this permit and in accordance with the provisions of Part I Section G of this permit.

2. Plugging and abandonment shall be conducted in such a manner that movement of fluids into an underground source of drinking water and movement of water from one underground source of drinking water into another is prevented.

F. **Financial Responsibility**

1. The Permittee shall maintain continuous compliance with the requirement to maintain financial responsibility and resources to close, plug and abandon the underground injection well in an amount equal to or more than the most recent third party plugging cost estimate and in accordance with the provisions of Part I Section I of this permit. An injection well must have established a financial mechanism before it can be drilled.

2. Should the Permittee utilize the financial statement option for demonstrating financial responsibility, the financial statement mechanism must be updated annually.

Attachment #1

Plugging and Abandonment Plans

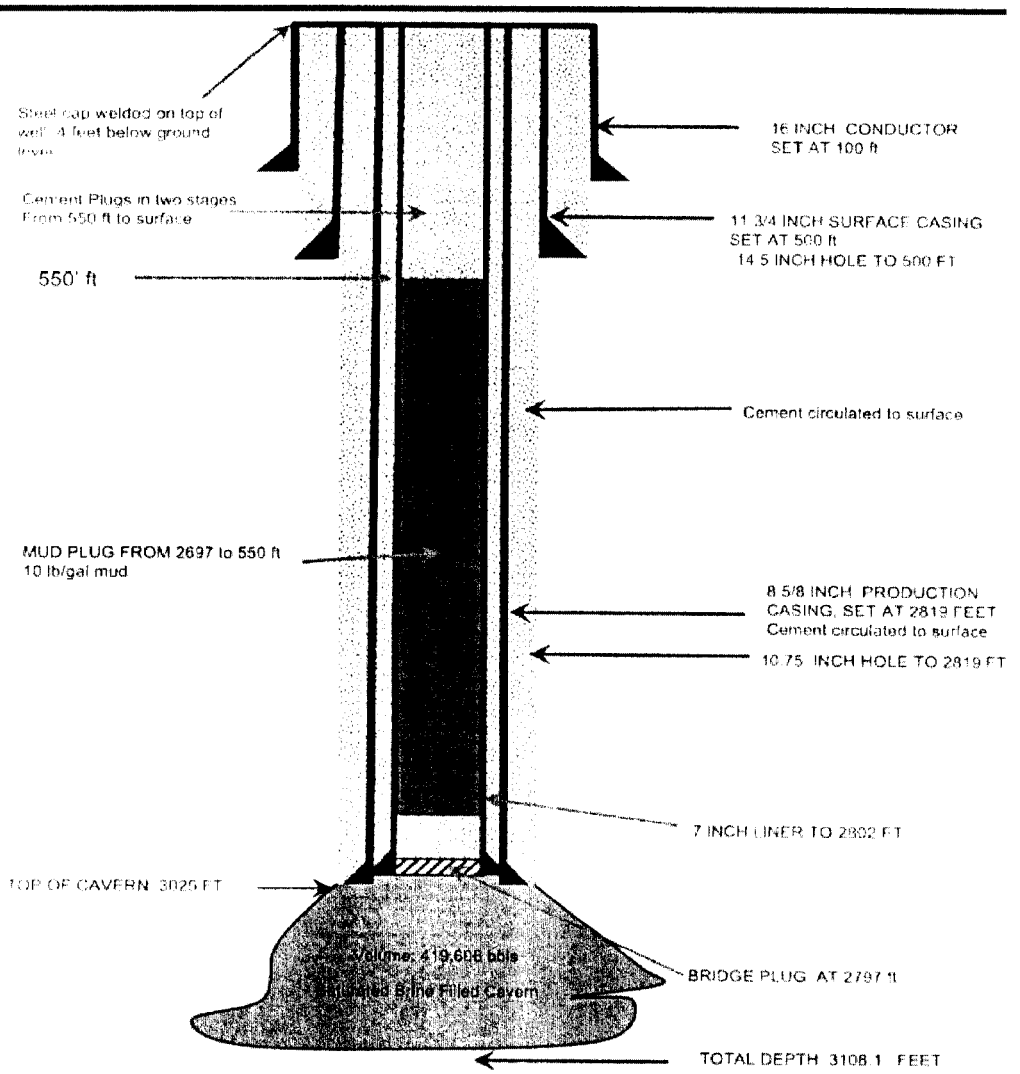
Plug and Abandon Procedure for Harford Well #1
HARFORD MILLS, CORTLAND COUNTY, NY

1. Completely remove all product from the cavern and fill with saturated brine.
2. Move in and rig up an appropriate size and capacity workover rig.
3. Pull and lay down the 4 *V** hanging string.
4. Run in hole with wireline and set a 7 " Bridge Plug ± 5' above the innermost cemented casing at (~ 2797 feet)
5. Run in hole with workstring and tag bridge plug. Pick up 5 feet and dump 100' Cement Plug: 14.6 sacks Class C cement w/ 2% gel or 13 sacks Class H Cement w/ 2% gel. Pull workstring up to 100 feet above calculated top of plug and circulate well clean with 10 lb/gal freshwater mud.
6. WOC 24 hrs. Tag cement with work string to confirm plug length. Top out with additional cement if necessary.
7. Pull up to ~550'depth and dump 14.6 sacks Class C cement w/ 2% gel or 13 sacks Class H Cement w/ 2% gel 100'cement plug. Pull workstring up 100 ft above calculated top of plug. Circulate well clean with fresh water.
8. WOC 24 hours. Tag cement with work string to confirm plug length. Top out with additional cement if necessary.
9. Pull up workstring to 100' depth. Pump 65.7 sacks Class C cement w/ 2% gel or 13 sacks Class H Cement w/ 2% gel, cement until it returns to surface.
10. POOH. Top off cement. WOC for 72 hrs.
11. Dig out cellar 6' deep.
12. Cut off wellhead and casing at least 4' below surface.
13. Weld Top Plate on outer casing.
14. Prepare an 8-10' pole by welding on one end of pole a metal sign with Well ID # and Plugging Date on sign.
15. Weld other end of pole to the plate on top of well.
16. Backfill hole and grade to original ground surface.
17. Rig down and clean up.

PB Energy Storage Services, Inc.
A Parsons Brinckerhoff Company

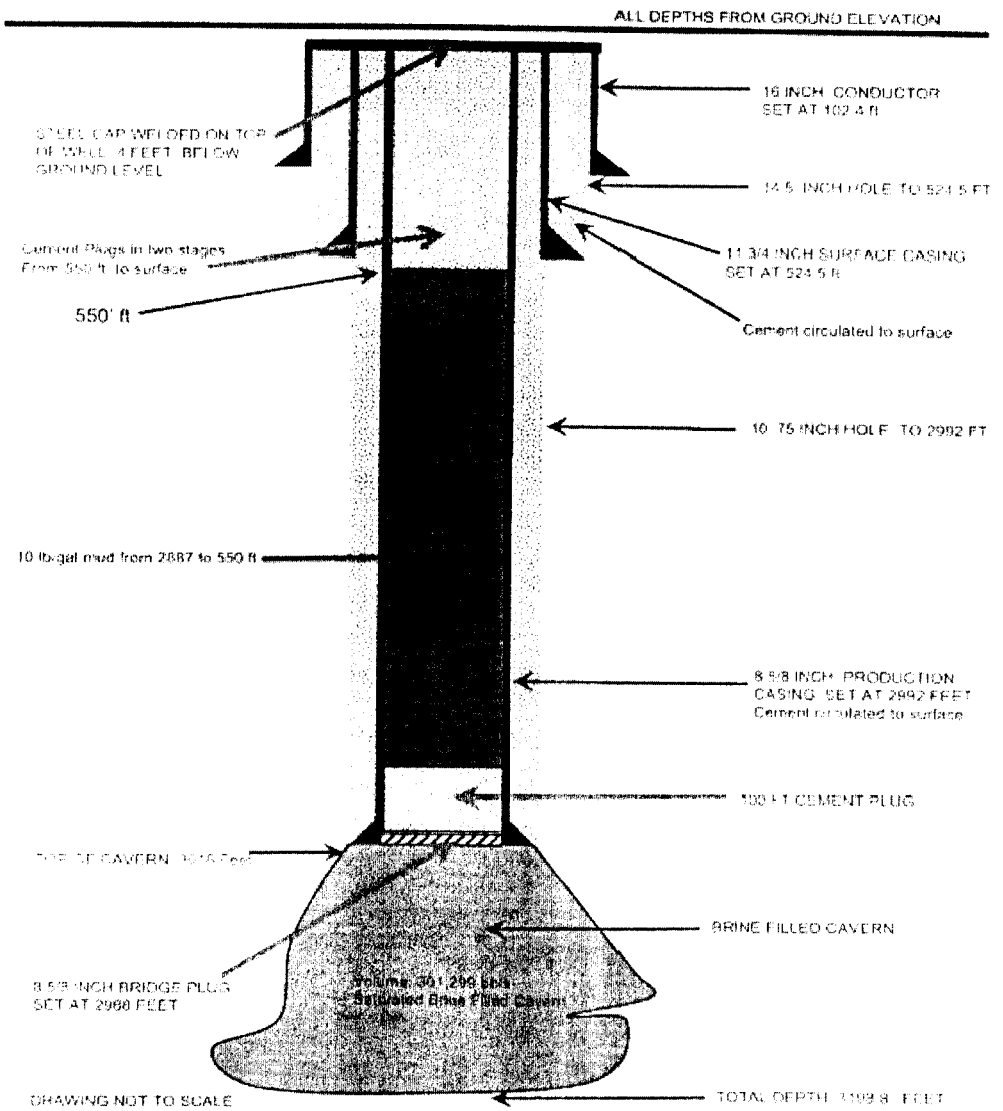
ENTERPRISE PRODUCTS, LP
HARFORD MILLS LPG FACILITY
HARFORD WELL # 1
CORTLAND COUNTY, NEW YORK

ALL DEPTHS FROM GROUND ELEVATION



Plug and Abandon Plan for Harford Well # 3
HARFORD MILLS, CORTLAND COUNTY, NY

1. Completely remove all product from the cavern and fill with saturated brine
2. Move in and rig up an appropriate size and capacity workover rig.
3. Pull and lay down the 5 *Yz"* hanging string.
4. Run in hole with wireline and set an 8 5/8 " Bridge Plug ± 5' above innermost cemented casing (~ 2987 feet).
5. Dump 100' Cement Plug: 22.66 sacks Class C Cement w/ 2% gel or 20.4 sacks Class H Cement w/ 2% gel for 8.5" casing. Pull workstring up to 100 feet above calculated top of plug and circulate well clean with 10 lb/gal fresh water mud.
6. WOC 24 hrs. Tag cement with work string to confirm plug length. Top out with additional cement if necessary.
7. Pull up to ~550'depth and dump 100' cement plug: 22.66 sacks Class C Cement w/ 2% gel or 20.4 sacks Class H Cement w/ 2% gel. Pull workstring up 100 ft above calculated top of plug. Circulate well clean with fresh water. Dispose of used mud as appropriate.
8. WOC 24 hours. Tag cement with work string to confirm plug length. Top out with additional cement if necessary.
9. Pull up work string 10 feet above top of plug. Pump 102 sacks Class C cement with 2% gel or 92 sacks Class H cement with 2% gel until it returns to surface.
10. POOH. Top off cement. WOC 72 hrs.
11. Dig out cellar 6' deep.
12. Cut off wellhead and casing at least 4' below surface.
13. Weld Top Plate on outer casing.
14. Prepare an 8-10' pole by welding on one end of pole a metal sign with Well ID # and Plugging Date on sign.
15. Weld other end of pole to the plate on top of well.
16. Fill hole back to original ground surface and grade.
17. Rig down and clean up.

PB Energy Storage Services, Inc.

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HARFORD WELL No. 3
CORTLAND COUNTY, NEW YORK