



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT: CLASS I NON-HAZARDOUS

Permit Number: IN-083-11-0009

Facility Name: IW-1

Pursuant to the provisions of the Safe Drinking Water Act, as amended 42 U.S.C. §§300f et seq., (commonly known as the SDWA) and implementing regulations promulgated by the U.S. Environmental Protection Agency (EPA) at Parts 124, 144, 146, and 147 of Title 40 of the Code of Federal Regulations (40 C.F.R.),

Scepter, Inc. of Waverly, Tennessee

is hereby authorized to continue operation of an existing Class I non-hazardous injection well located in Indiana, Knox County, T4N, R9W, Section 12, SW Quarter Section, for injection into the Salem Limestone, Harrodsburg Limestone, and Muldraugh Formation at depths between 1879 feet and 2285 feet upon the express condition that the permittee meet the restrictions set forth herein. The injection of any hazardous waste as identified in 40 C.F.R. Part 261 is prohibited.

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit becomes effective. The following attachments are incorporated into this permit: A, B, C, D, E, F, G, and H.

This permit shall become effective on _____, and shall remain in full force and effect during the life of the permit, unless this permit is revoked and reissued, terminated, or modified pursuant to 40 C.F.R. §§144.39, 144.40, or 144.41.

This permit and authorization to inject shall expire at midnight on _____, unless terminated prior to the expiration date.

Signed and Dated: _____

DRAFT

Tera L. Fong
Division Director, Water Division

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 provisions 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 injection, annulus or formation fluids into underground sources of drinking water (USDWs). The objective of this permit is to prevent the introduction of contaminants into USDWs if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. Part 141 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit is prohibited. For purposes of enforcement, 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 under Section 1431 of the SDWA, or any other common or statutory law other than Part C of the SDWA. 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 and Reissuance, and Termination** - The Director of the Water Division of the United States Environmental Protection Agency (EPA), hereinafter, the Director, may 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 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, Subpart B and 40 C.F.R. § 144.5, any information submitted to the 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, the EPA may make the information available to the public without further notice. If a claim is asserted, the information covered by such a claim will be disclosed by EPA only to the extent, and by means of the procedures set forth in 40 C.F.R. Part 2, Subpart B. Claims of confidentiality for the following information will be denied:

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

E. DUTIES AND REQUIREMENTS

1. **Duty to Comply** - The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit 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.
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. 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 wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit a complete application for a new permit at least 180 calendar days before this permit expires.
 - (b) **Permit Extensions** - The conditions of an expired permit may continue in force in accordance with 5 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** - 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 operation 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 the UIC regulations.
- (e) **State Continuation** - 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 responsibility 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 State-issued new permit. Furthermore, if the State does not continue the EPA permit upon obtaining primary enforcement responsibility, the permittee must obtain a new State permit or be authorized to inject by State rule. Failure to do so while continuing to operate the well constitutes unauthorized injection and is a violation subject to enforcement action.
4. **Need to Halt or Reduce Activity Not a Defense** - It shall not be a defense for the permittee in an enforcement action to claim 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** - The permittee shall take all timely and reasonable steps necessary to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
6. **Proper Operation and Maintenance** - The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, 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** - The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to

determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

8. **Inspection and Entry** - The permittee shall allow the Director or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
 - (a) Enter, at reasonable times, 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 facilities, equipment or operations regulated or required under this permit.
9. **Records**
 - (a) The permittee shall retain records and all monitoring information, including all calibration and maintenance records and all original 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, unless these materials are submitted to the Director as part of reporting requirements under this permit.
 - (b) 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. §§ 144.27, 144.28, and 144.31 for a period of at least three years from the date the permit application was signed.
 - (c) The permittee shall retain records concerning the nature and composition of all injected fluids until three years after the completion of plugging and abandonment of this injection well.
 - (d) The retention period specified in Part I(E)(9)(a) through (c) of this permit may be extended by request of the Director at any time. The permittee shall continue to retain records after the retention period specified in Part I(E)(9)(a) through (c) of this permit or any requested extension thereof expires unless the permittee 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 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** - Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The permittee shall use the methods described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846 available on EPA's website), or equivalent methods approved by the Director, to take representative samples. Monitoring results shall be reported at the intervals contained in Part II(D)(1) through (3) and Attachment A of this permit.
 - (a) 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 certain circumstances by other methods that have been approved by the Director.
 - (b) Sampling and analysis shall comply with the specifications of the Waste Analysis Plan required in Part II(C)(3) of this permit.
- 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** - The permittee shall give written notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted facility.
 - (b) **Anticipated Noncompliance** - The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

- (c) **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 by the permittee no later than 30 calendar days following each schedule date.
- (d) **Twenty-four Hour Reporting**
 - (1) The permittee shall report to the Director any permit noncompliance which may endanger human health or the environment. See, e.g., Part I(G)(5) of this permit. Any information shall be provided orally 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:
 - (i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; and
 - (ii) Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs; and
 - (iii) Any failure to maintain mechanical integrity.
 - (2) A written submission shall also be provided within five working 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.
- (e) **Other Noncompliance** - 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 Part I(E)(12)(d)(2) of this permit.
- (f) **Other Information** - When the permittee becomes aware of failure to submit any relevant facts in the permit application or that incorrect information was submitted in a permit application or in any report to the Director, the permittee shall submit such facts or corrected information within 10 calendar days.
- (g) **Report on Permit Review** - Within 30 calendar days of receipt of this permit, the permittee shall certify to the Director that he or she has read and is personally familiar with all terms and conditions of this permit.

F. PLUGGING AND ABANDONMENT

1. **Notice of Plugging and Abandonment** - The permittee shall notify the Director at least 60 calendar days before conversion or abandonment of the well. At the discretion of the Director, a shorter notice period may be allowed.
2. **Plugging and Abandonment** - The permittee must receive the approval of the Director before plugging the well and shall plug and abandon the well consistent with 40 C.F.R. § 144.52(a)(6) and 146.10, as provided for in the Plugging and Abandonment Plan contained in Attachment B of this permit. Within 60 calendar days after plugging a well, the permittee shall submit a Plugging and Abandonment report to the Director. The report shall be certified as accurate by the permittee and by the person who performed the plugging operation (if other than the permittee), and shall consist of either:
 - (a) A statement that the well was plugged in accordance with the Plugging and Abandonment Plan previously approved by the Director; or
 - (b) If the actual plugging differed from the approved plan, a statement defining the actual plugging and explaining the reason for the difference.
3. **Temporary Abandonment** - If the permittee ceases injection into the well for more than 24 consecutive months, the well is considered to be in temporary abandoned status. The permittee shall plug and abandon the well in accordance with the approved plan and 40 C.F.R. § 144.52 (a)(6) unless the permittee:
 - (a) Provides notice to the Director within 30 days of the end of the 24th consecutive month of temporary abandonment, and
 - (b) Describes actions or procedures, satisfactory to the Director, that the owner or operator will take to ensure that the well 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 by the Director.
4. **Revision of Plugging and Abandonment Plan** - If the permittee finds it necessary to change a Plugging and Abandonment Plan, a revised plan shall be submitted to the Director for approval at the time of the next monthly report.
5. **Standards for Well Closure** - Prior to plugging and abandoning the well:
 - (a) The permittee shall observe and record the pressure decay for a time specified by the Director and shall report this information to the Director.
 - (b) The permittee shall conduct appropriate mechanical integrity testing to ensure the integrity of that portion of the long string casing and cement that will be left in the ground after closure. Testing methods must include:

- (1) Pressure tests with liquid;
 - (2) Noise, temperature, or oxygen activation logs; or
 - (3) Any other test required by the Director.
- (c) Prior to well closure, the well shall be flushed with a buffer fluid.

G. **MECHANICAL INTEGRITY**

1. **Standards** - The injection well must have and maintain mechanical integrity consistent with 40 C.F.R. § 146.8(a)(1) and (2). Mechanical integrity demonstrations must be witnessed by an authorized representative of the Director unless an authorized representative informs the permittee that it is not possible to witness the test.
2. **Periodic Mechanical Integrity Testing** - The permittee shall conduct the mechanical integrity testing as follows:
 - (a) Long string casing, injection tubing and annular seal shall be tested by means of an approved pressure test in accordance with 40 C.F.R. § 146.8(b)(2). This test shall be performed upon completion of this well, and at least once every twelfth month beginning with the date of the last approved demonstration and whenever there has been a well workover in which tubing is removed from the well, the packer is reset, or when loss of mechanical integrity becomes suspected during operation;
 - (b) An approved temperature, noise, oxygen activation, or other approved log shall be run upon completion of this well and at least once every 60 months from the date of the last approved demonstration to test for movement of fluid along the bore hole. The Director may require such tests whenever the well is worked over.
 - (c) The permittee may request the Director to use any other test approved by the Director in accordance with the procedures in 40 C.F.R §146.8(d).
3. **Prior Notice and Reporting** - The permittee shall notify the Director of his or her intent to demonstrate mechanical integrity at least 30 calendar days prior to such demonstration. At the discretion of the Director a shorter time period may be allowed. Reports of mechanical integrity demonstrations which include logs must include an interpretation of results by a knowledgeable log analyst. The permittee shall report the results of a mechanical integrity demonstration within 45 calendar days after completion thereof.
4. **Gauges** - The permittee shall calibrate all gauges used in mechanical integrity demonstrations to an accuracy of not less than one-half percent of full scale, prior to each required test of mechanical integrity. A copy of the calibration certificate shall be submitted to the Director or his or her representative at the time of demonstration

and every time the gauge is calibrated. The gauge shall be marked in no greater than five psi increments.

5. **Loss of Mechanical Integrity** - If the permittee or the Director finds that the well fails to demonstrate mechanical integrity during a test, or fails to maintain mechanical integrity during operation, or that a loss of mechanical integrity as defined by 40 C.F.R. §§ 146.8(a)(1) and (2) is suspected during operation, the permittee shall halt the operation immediately and follow the reporting requirements as directed in Part I(E)(12) of this permit. The permittee shall not resume operation until mechanical integrity is demonstrated and the Director gives approval to recommence injection.
6. **Mechanical Integrity Testing on Request From Director** - The permittee shall demonstrate mechanical integrity at any time upon written notice from the Director.

H. **FINANCIAL RESPONSIBILITY**

1. **Financial Responsibility** - The permittee shall maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner consistent with 40 C.F.R. § 144.52(a)(7). The approved financial assurance mechanism is found in Attachment C of this permit.
 - (a) The permittee must maintain a written cost estimate, in current dollars, for the Plugging and Abandonment Plan as specified in 40 C.F.R. § 146.10. The plugging and abandonment cost estimate at any point in the life of the facility operation must equal the maximum cost of plugging and abandonment at that time.
 - (b) The permittee must adjust the cost estimate of plugging and abandonment for inflation within 30 calendar days after each anniversary of the first estimate. The inflation factor is the result of dividing the latest published annual Oil and Gas Field Equipment Cost Index by the index for the previous year.
 - (c) The permittee must revise the plugging and abandonment cost estimate whenever a change in the Plugging and Abandonment Plan increases the cost of plugging and abandonment.
 - (d) If the revised plugging and abandonment estimate exceeds the current amount of the financial assurance mechanism, the permittee shall submit a revised mechanism to cover the increased cost within 30 calendar days after the revision specified in Part I(H)(1)(b) and (c) of this permit.
 - (e) The permittee must keep on file at the facility a copy of the latest plugging and abandonment cost estimate prepared in accordance with 40 C.F.R. § 144.52(a)(7), during the operating life of the facility.
2. **Insolvency** - The permittee must notify the Director within 10 business days of any of the following events:

- (a) The bankruptcy of the trustee or issuing institution of the financial mechanism; or
 - (b) Suspension or revocation of the authority of the trustee institution to act as trustee; or
 - (c) The institution issuing the financial mechanism losing its authority to issue such an instrument.
3. **Notification** - The permittee must notify the Director by certified mail of the commencement of voluntary or involuntary proceedings under Title 11 (Bankruptcy), U.S. Code naming the owner or operator as debtor, within 10 business days after the commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification if he or she is named as debtor, as required under the terms of the guarantee.
4. **Establishing Other Coverage** - The owner or operator must establish other financial assurance or liability coverage acceptable to the Director, within 60 calendar days of the occurrence of the events in Part I(H)(2) or (3) of this permit.

I. **CORRECTIVE ACTION**

1. **Compliance** - The permittee shall comply with 40 C.F.R. §§ 144.55 and 146.7.
2. **Corrective Action Plan** - The permittee shall file a Corrective Action Plan for approval by the Director within 30 days of a written determination by the Director that improperly plugged, completed, or abandoned wells, or wells for which plugging or completion information is unavailable, are present in the area of review and penetrate the confining zone of the permitted well, as defined in the administrative record for this permit.
3. **Prohibition of Movement of Fluids into USDWs** Should upward migration of fluids through the confining zone of this permitted well be discovered within the two mile area of review due to injection activities at this facility, and should this migration of fluids cause the introduction of any contaminant into a USDW pursuant to 40 C.F.R. § 144.12, the permittee shall immediately cease injection into this well until the situation has been corrected and reauthorization to inject has been given by the Director.

PART II
WELL SPECIFIC CONDITIONS FOR UIC PERMITS

A. CONSTRUCTION

1. **Siting** – All Class I wells shall be sited in such a fashion that they inject into a formation which is beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.
2. **Casing and Cementing** - Notwithstanding any other provisions of this permit, the permittee shall case and cement the well in such a manner so as to prevent the movement of fluids into or between USDWs for the expected life of the well. The casing and cement used in the construction of this well are shown in Attachment E of this permit and in the administrative record for this permit. Any change shall be submitted for approval by the Director before installation.
3. **Tubing and Packer Specifications** - The permittee shall inject only through tubing with a packer set within the long string casing at a point within or below the confining zone. The tubing and packer used in the well are represented in engineering drawings contained in Attachment E of this permit. Any changes shall be submitted by the permittee for the approval of the Director before installation.
4. **Wellhead Specification** - The permittee shall install and maintain a female coupling and valve on the wellhead, to be used for independent injection pressure readings. Further, the permittee shall install a sampling port for waste sampling consistent with the permittee's waste sampling procedures, if applicable.

B. OPERATIONS

1. **Injection Pressure Limitation** - Except during stimulation, the permittee shall not cause or permit the injection pressure at the wellhead to exceed the maximum limitation which is specified in Attachment A of this permit. In no case shall injection pressure initiate fractures or propagate existing fractures in the confining zone or cause the movement of injection or formation fluids into a USDW. Prior to performing any stimulation and /or fracturing of the well, the permittee is required to submit procedures to the Permits Branch for review and approval. A list of all products to be used for the test along with their chemical composition must also be submitted.
2. **Additional Injection Limitation** - No waste streams other than those identified in Attachment F of this permit shall be injected. Every twelfth month the permittee shall submit a certified statement attesting to compliance with this requirement.
3. **Annulus Fluid and Pressure** - The permittee shall fill the annulus between the tubing and the long string casing with a fluid approved by the Director and identified in the administrative record of this permit. Any change in the annulus fluid, except during workovers or times of annulus maintenance, shall be submitted by the permittee for the approval of the Director before replacement. Except during

workovers, the permittee shall maintain a positive pressure on the annulus as specified in Attachment A of this permit.

4. **Annulus/Tubing Pressure Differential** - Except during workovers or times of annulus maintenance, the permittee shall maintain, over the entire length of the tubing, a pressure differential between the tubing and annulus as specified in Attachment A of this permit.
5. **Automatic Warning and Automatic Shut-off System** - The permittee shall continuously operate and maintain an automatic warning and automatic shut-off system to stop injection in any of the following situations:
 - (a) Pressure changes in the annulus or annulus/tubing differential signifying or identifying possible deficiencies in mechanical integrity; or
 - (b) Injection pressure, annulus pressure, or annulus/tubing differential pressure reaches the pressure limits as specified in Attachment A of this permit.

A trained operator must be on site and within perceptible distance of the alarm at all times when the well is operating. The permittee must test the automatic warning and automatic shut-off system at least every twelfth month. This test must involve subjecting the system to simulated failure conditions and must be witnessed by the Director or his or her representative unless the Director waives this requirement.

6. **Precautions to Prevent Well Blowouts** - In order to prevent the migration of fluids into underground sources of drinking water, the permittee shall maintain on the well at all times a pressure which will prevent the return of the injection fluid to the surface. The well bore must be filled with a high specific gravity fluid during workovers to maintain a positive (downward) gradient and/or a plug shall be installed which can resist the pressure differential. A blowout preventer must be kept in proper operational status during workovers. In cases where the injected wastes have the potential to react with the injection formation to generate gases, the permittee shall follow the procedures below to assure that a backflow or blowout does not occur:
 - (1) Limit the temperature, pH or acidity of the injected waste; and
 - (2) Develop procedures necessary to assure that pressure imbalances do not occur.

C. TESTING AND MONITORING

1. **Sampling Point** - The injection fluid samples shall be taken at the sampling location as specified in Attachment A of this permit.
2. **Continuous Monitoring Devices** - The permittee shall maintain continuous monitoring devices and use them to monitor injection pressure, flow rate, and the pressure on the annulus between the tubing and the long string of casing. If the well

is equipped with a fluid level indicator, the permittee shall monitor the fluid level daily. The monitoring results shall be submitted to the Director as specified in Part II(D) of this permit. The permittee shall maintain for EPA's inspection at the facility an appropriately scaled, continuous record of these monitoring results as well as original copies of any digitally recorded information pertaining to these operations.

3. **Waste Analysis Plan** - The permittee shall comply with the written Waste Analysis Plan which describes the procedures used to monitor the nature of injected fluids and the procedures which will be carried out to comply with Part (I)(E)(10) of the permit. A copy of the approved plan shall also be kept at the facility.
4. **Prior Notice** - The permittee shall notify the Director of his or her intent to perform any tests required by this permit at least 30 calendar days prior to such activities. The permittee shall either follow the prescribed test procedures found in Attachment G of this permit or submit written procedures for approval at least 30 calendar days prior to the testing. If the submitted procedures are not appropriate for approval, EPA will require the permittee to submit new proposed test procedures for approval, or add appropriate conditions to the submitted procedures. At the discretion of the Director, a shorter time period may be allowed.
5. **Reporting** - All reports of well tests which include logs must include an interpretation of results by a knowledgeable log analyst. Reports on ambient reservoir pressure monitoring must include an interpretation of the results by a knowledgeable pressure transient test analyst. The reports should explain all anomalies in the data and variations in the procedures. The permittee shall report the results of any tests required by this permit within 45 calendar days after the tests are completed.
6. **Ambient Monitoring** - The permittee shall monitor the pressure buildup in the injection zone initially upon completion of the well, and at least once every twelfth month thereafter, including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve. From this observation, the permittee shall submit a report including at least a calculation of pressure build-up in the injection zone, injection zone transmissivity, and wellbore skin factor.
7. **Temperature Monitoring** - The permittee shall monitor injectate temperature at least once daily on each day during which injection occurs. If injection occurs during more than one eight-hour period in a day, temperature must be recorded at least once every six hours. The monitoring results shall be submitted to the Director as specified in Part II(D)(1)(f) of this permit.

D. REPORTING REQUIREMENTS

The permittee shall submit all required reports to the Director at:

**United States Environmental Protection Agency
Attn: Underground Injection Control (WP-16J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590**

1. **Monthly Reports** - The permittee shall submit monthly reports of the following information no later than the end of the month following the reporting period:
 - (a) A tabulation of maximum injection pressure, a daily measurement of annulus tank fluid level, and minimum differential between simultaneous measurements of injection pressure and annulus pressure for each day of the month;
 - (b) Appropriately scaled graphs showing injection pressure and flow rate and annulus tank fluid level. One graph must include, at a minimum, daily maximum injection pressure and daily average flow rate, on a single, monthly chart.
 - (c) A statement of the total volumes of the fluid injected to date, in the current calendar year, and the current month;
 - (d) A tabulation of the dates, amounts and types of liquid added to or removed from the annulus system during the month, and the cumulative additions and cumulative subtractions for the current month and each of the past 12 months;
 - (e) Any noncompliance with conditions of this permit, including but not limited to:
 - (1) Any event that exceeds operating parameters for annulus pressure or injection pressure or annulus/tubing differential as specified in the permit; or
 - (2) Any event which triggers an alarm or shutdown device required in Part II(B)(5) of this permit.
 - (f) The monthly average of the measured values of injectate temperature. If temperature measurements are recorded when the well is not injecting, those measurements will not be included in calculating the monthly average. Records of all temperature measurements must be maintained in accordance with Part I(E)(9)(a) of this permit.
2. **Quarterly Reports** – The permittee shall report at least every quarter the results of the injection fluid analyses specified in the Waste Analysis Plan attached to this

permit. This report must include statements showing that the requirements of Part I(E)(10) and Part II(C)(3) have been met.

3. **Annual Reports** - The permittee shall report the following at least every twelfth month:
 - (a) Results of ambient monitoring required by 40 C.F.R. § 146.13(d)(1) and Part II(C)(4) of this permit; and
 - (b) A certified statement attesting that no waste streams other than those identified in Attachment F of this permit were injected into the well.
4. **Reports on Well Tests and Workovers** - Within 45 calendar days after the activity, the permittee shall report to the Director the results of demonstrations of mechanical integrity, any well workover, and/or results of other tests required by this permit.

**PART III
ATTACHMENTS**

These attachments include, but are not limited to, permit conditions and plans concerning operating procedures, monitoring and reporting, as required by 40 C.F.R. Parts 144 and 146. The permittee shall comply with these conditions and adhere to these plans as approved by the Director, as follows:

- A. SUMMARY OF OPERATING, MONITORING AND REPORTING REQUIREMENTS (ATTACHED)**
- B. PLUGGING AND ABANDONMENT PLAN (ATTACHED)**
- C. FINANCIAL ASSURANCE MECHANISM (ATTACHED)**
- D. CONTINGENT CORRECTIVE ACTION (ATTACHED)**
- E. CONSTRUCTION DETAILS (ATTACHED)**
- F. SOURCE AND ANALYSIS OF WASTE (ATTACHED)**
- G. TESTING PROCEDURES (ATTACHED)**
- H. WASTE ANALYSIS PLAN (ATTACHED)**

ATTACHMENT A
SUMMARY OF OPERATING, MONITORING AND REPORTING REQUIREMENTS

CHARACTERISTIC	LIMITATION	MINIMUM MONITORING FREQUENCY	MINIMUM REPORTING FREQUENCY
Injection Pressure	200 psig maximum*	continuous	monthly
Annulus Pressure	100 psig minimum	continuous	monthly
Annulus/Tubing Differential	100 psig minimum above operating injection pressure	continuous	monthly
Injection Rate	32 gpm**	continuous	monthly
Cumulative Volume		continuous	monthly
Temperature**		daily***	monthly
Annulus Fluid Level		daily	monthly
pH, Eh, and Specific Gravity		daily	monthly
Annulus Fluid Loss		monthly	monthly
Chemical Composition of Injected Fluids		****	quarterly
Physical Characteristics of Injected Fluids		****	quarterly

Sampling Location: The sample location is at the wellhead

* The maximum injection pressure was determined using the following formula:

$$[\{\text{fracture gradient} - (0.433 \text{ psi/ft} \times \text{specific gravity})\} \times \text{depth}] - 14.7 \text{ psi.}$$

The maximum injection pressure is dependent upon depth, specific gravity of the injection fluid, and fracture gradient of the injection zone. The Salem Limestone at 1879 feet was used as the depth and a specific gravity of 1.20 was used for the injection fluid. A fracture gradient of 0.634 psi/ft was used based on the results of a step rate test following initial well completion.

**The maximum injection rate is a corrective action measure to prevent fluid from reaching an improperly constructed well in the area of review for the foreseeable future. (See Attachment D).

*** Frequency of temperature measurements will be in accordance with Section II(C)(5) of this permit. Reporting of injectate temperature will be in accordance with Section II(D)(1)(f) of this permit.

**** As specified in the Waste Analysis Plan attached to this permit.

SEISMICITY RESPONSE

Prior to commencing injection, the permittee shall subscribe to the U.S. Geological Survey Earthquake Notification Service to receive notification of seismic events within 100 kilometers (62 miles) of the well. If the well is not purely vertical, the midpoint between the surface-hole and bottom-hole locations shall be used as the center of the circle. The appropriate response to seismic events depends on the Moment Magnitude (M_w) of the seismic event according to the following protocol.

As described below, after a seismic event has been identified, the permittee must make a decision regarding the level of impact a given event could have on injection site operations, whether a response is required, and what the appropriate response will be. This decision and response framework will rely on existing seismic monitoring networks coordinated by the U.S. Geological Survey, followed by a technical evaluation of the injection well by the permittee in order to reduce the likelihood of injectate leaving the injection zone. Identification of events with sufficient Moment Magnitude (M_w) that are located within 100 km (62.14 miles) of the injection site can be accomplished through the U.S. Geological Survey's web site. [In the case of a well with a deviated or horizontal component, the midpoint between the surface-hole location and the bottom-hole location should be used as the center of the circle.] The operational protocol for responding to events will follow a "traffic light" approach (modified after Zoback 2012; National Research Council 2013) that uses three operational states:

GREEN: Seismic events not recorded or $M_w < 3.5$: Continue normal well injection operations.

YELLOW: Seismic events with Moment Magnitude $3.5 < M_w < 5.0$ are observed within a 100 km (62.14 Miles) radius of the site: Injection operations must cease. The permittee will notify the EPA UIC Program Director of any such event within 24 hours, providing information on the status of the injection site. Within 45 days the permittee will evaluate the mechanical integrity of the internal well systems (Part 1) via a well test approved by the Director. If the well fails the mechanical integrity test or the permittee identifies any problems with the system that might impact underground sources of drinking water (USDW), the injection well must remain shut-in and the permittee must submit a written report as soon as possible but no later than five days from the time the permittee becomes aware of the circumstances. The written submittal shall contain a description of the noncompliance 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. Upon completion of the steps to ensure mechanical integrity and the subsequent mechanical integrity demonstration, the permittee must submit the results and any other required documentation to EPA's office for final written approval. If the well has mechanical integrity and no problems that might impact USDWs are detected, the permittee must provide proof of those findings to the Director. Injection operations shall not be resumed until the Director gives written approval to recommence injection.

RED: Moment Magnitude 5.0 or greater seismic events are observed within a 100 km (62.14 Miles) radius of the site. Injection operations must cease. The permittee will notify the EPA UIC Program Director of any such event within 24 hours, providing information on the status of the injection site. Within 45 days the permittee will evaluate the integrity of the internal well systems by performing a Part 1 well test approved by the Director, as well as perform an evaluation of the external mechanical integrity of the well pursuant (Part 2) to 40 C.F.R. Part 146.8. If the well fails either mechanical integrity test or the permittee identifies any problems with the system that might impact a USDW, the injection well must remain shut-in and the permittee must submit a written report as soon as possible but no later than five days from the time the permittee becomes aware of the circumstances. The written submittal shall contain a description of the noncompliance 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. Upon completion of the steps to ensure mechanical integrity and the subsequent mechanical integrity demonstration, the permittee must submit the results and any other required documentation to our office for final approval. Injection operations shall not be resumed until the Director gives written approval to recommence injection.

ATTACHMENT B

PLUGGING AND ABANDONMENT PLAN

FORM Q-1

OMB No. 2040-0042

Approval Expires 12/31/2018



United States Environmental Protection Agency
Washington, DC 20460

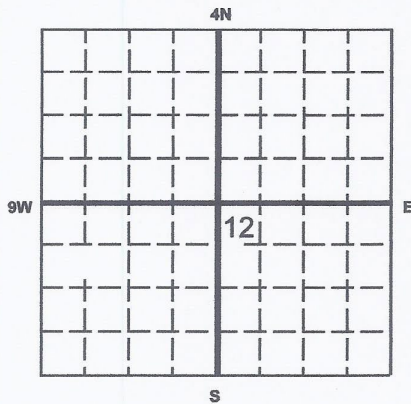
PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility

Contact: Scepter, Inc., 6467 N. Scepter Road, Bicknell, IN, 47512
Well Location: 7800 N. Bruce Road, Knox County, IN

Name and Address of Owner/Operator

Scepter, Inc. (Garney B. Scott, III)
1485 Scepter Lane, Waverly, TN, 37185

Locate Well and Outline Unit on
Section Plat - 640 Acres

State

TN

County

Knox

Permit Number

IN-083-1I-0009

Surface Location Description

☐ 1/4 of ☐ 1/4 of ☐ 1/4 of ☐ SW 1/4 of Section 12 Township 4N Range 9W

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

Surface

Location 300 ft. from (N/S) SE Line of quarter section
and 1750 ft. from (E/W) W Line of quarter section.

TYPE OF AUTHORIZATION

- ☒ Individual Permit
☐ Area Permit
☐ Rule

Number of Wells 1

Lease Name

WELL ACTIVITY

- ☒ CLASS I
☐ CLASS II
☐ Brine Disposal
☐ Enhanced Recovery
☐ Hydrocarbon Storage
☐ CLASS III

Well Number IW-1

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
5.5	15.5	1889	1889	8"
8-5/8	24	595	595	13"

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒ The Balance Method
☐ The Dump Bailer Method
☐ The Two-Plug Method
☐ Other

CEMENTING TO PLUG AND ABANDON DATA:

	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	8	5					
Depth to Bottom of Tubing or Drill Pipe (ft)	2166	1900					
Sacks of Cement To Be Used (each plug)	111	218					
Slurry Volume To Be Pumped (cu. ft.)	131	257					
Calculated Top of Plug (ft.)	1900	0					
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.6	15.6					
Type Cement or Other Material (Class III)	A	A					

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)

From	To	From	To
NA	NA		

Estimated Cost to Plug Wells

\$36,451 - Form Q-3 of renewal application

Certification

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

Name and Official Title (Please type or print)

Garney B. Scott III, President, Scepter, Inc.

Signature

Date Signed

10/12/19

ATTACHMENT C
FINANCIAL ASSURANCE MECHANISM

Scepter, Inc. has demonstrated adequate financial responsibility to properly plug and abandon the Class I non-hazardous well. Scepter, Inc. has supplied a Letter of Credit for the closure amount as determined by a third-party estimate for plugging and abandonment and a Standby Trust Agreement. The Letter of Credit, Standby Trust, and third-party plugging and abandonment cost estimate are part of the Administrative Record for this permit.

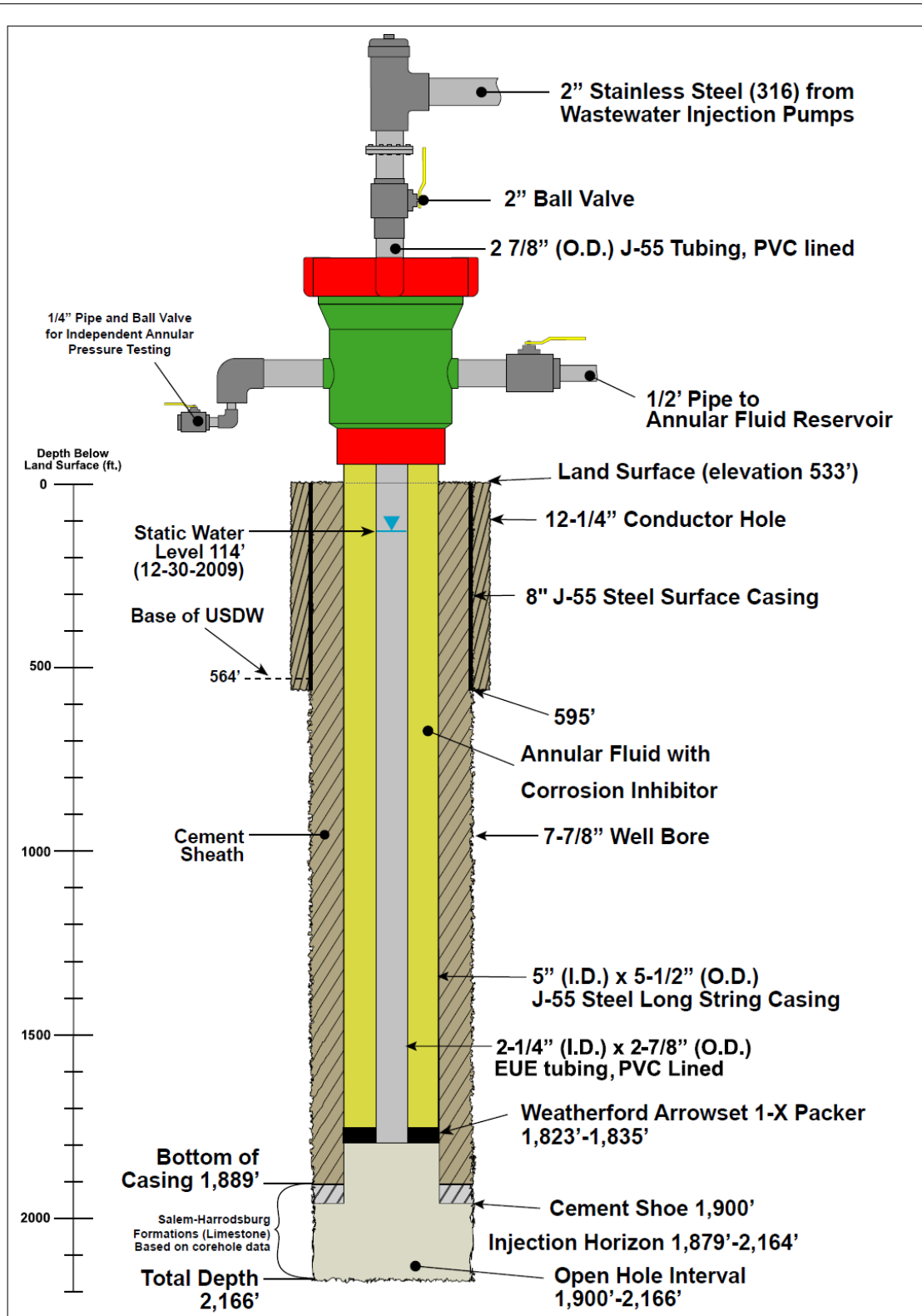
ATTACHMENT D
CONTINGENT CORRECTIVE ACTION

EPA's review determined that one of the wells in the area of review (AoR) is not constructed and plugged so as to prevent fluid movement into the underground source of drinking water. To evaluate corrective action, EPA applied its ULTRACONE spreadsheet model to determine the zone of endangering influence around the Scepter, Inc. IW-1 well and the potential for injected fluid to reach the AoR well in question. Using the model, EPA determined that a maximum injection rate of 32 gallon-per-minute (gpm), as included in the Scepter, Inc. 2019 application, is sufficient to prevent fluid from reaching the AoR well in question for the foreseeable future. Therefore, EPA includes a 32 gpm limit in Attachment A as an operating condition for this permit. (The ULTRACONE results are part of the Administrative Record for this permit.)

Should upward fluid migration be detected through the well bore of any previously unknown, improperly plugged, completed or abandoned well in the area of review due to injection of permitted fluid, injection will immediately cease, and EPA will be notified as required in Part I(E)(12)(d) of this permit. A Corrective Action Plan shall then be submitted as required in Part I(I)(2) of this permit.

Should a well failure occur in the IW-1 injection well, Scepter, Inc. will shut the well in and follow the proper regulatory notification and repair procedures as required by Part I(E)(12)(d) of this Permit.

ATTACHMENT E CONSTRUCTION DETAILS



SCEPTER
INJECTION WELL
KNOX COUNTY, INDIANA

CLASS I INJECTION WELL IW-1 AS-BUILT
COMPLETED 12/01/2009, NEW PACKER 3/1/2011

AECOM
FIGURE
M-1

ATTACHMENT F
SOURCE AND ANALYSIS OF WASTE

According to the application:

Scepter, Inc generates salt cake and other aluminum production wastes from the aluminum recovery process... While salt cake is the primary landfilled waste stream by volume, other Scepter process and maintenance derived wastes are disposed in the landfill such as furnace baghouse dust, cooling tower cleanout sludge, spent furnace refractory and calcium aluminate baghouse dust. Baghouse Dust is the collected particulate from the rotary furnace's gas exhaust and its primary constituents are similar; however, this material comprises of only about 10% or less of the material disposed in the landfill.

These materials are disposed of in Scepter's landfill, which is dedicated to receive waste from Scepter's secondary aluminum recovery process. The landfill is constructed with a liner and leachate collection system. The water currently injected into the injection well is leachate that is pumped from the leachate collection system.

A representative analysis of the leachate fluid for injection is included in the October 11, 2019 application and is therefore part of the Administrative Record for this permit.

ATTACHMENT G TESTING PROCEDURES

Standard Annulus Pressure Test

1. Ensure the packer is set within 100 feet of the top of the injection zone. Packers not set within 100 feet of the top of the injection zone will be evaluated by EPA on a case-by-case basis. Note any approved deviations from previously reported well construction.
2. Document the test using a mechanical or digital device or a service company job record which records the value of the parameters of interest as measured during the test.
 - a. Submit along with the test results a gauge calibration certificate for the mechanical or digital device used to record test parameters. All calibration (for new or recalibrated gauges) must have been performed within a year prior to the test.
 - b. Place a gauge on the wellhead to measure pressure. If a recording device is used, the recording device serves to verify the data witnessed on the wellhead gauge.
 - c. Use an appropriately scaled mechanical gauge which has a measurement range that is 1.2 – 2 times the maximum pressure measured or a 1 psi resolution digital gauge with sufficient full scale.
 - d. Measure and document pressure using a gauge and/or a digital record and/or a chart record that can be read with sufficient accuracy to identify pressure change which would result in a failure of the test and to record accurate values during the test interval. For example, if the test pressure is 300 psig, the gauge and/or chart record should be marked in increments of 5 psi or less.
3. Verify that the tubing/casing annulus is full of liquid. No unapproved fluid or substance that may affect test outcomes are allowed. Measure and report the volume of liquid added to the annulus during pressurization (if any). If an annulus tank is pressurized with nitrogen to pressurize the well, record the liquid displaced from the tank into the well annulus.
4. Stabilize the temperature of the well and the annulus liquid, either by ceasing injection or injecting at a constant fixed rate. Ensure that the wellhead injection tubing pressure is at least 100 psi different from the annulus test pressure.
5. Pressurize the annulus to the greater of 300 psig or the maximum permitted injection pressure plus 100 psi. A positive pressure differential of greater than 100 psi should be maintained between the annulus and the injection tubing. If EPA does not approve any deviations from this criteria prior to testing, the test results might not be considered a sufficient demonstration of mechanical integrity and a new test would then be needed. A net gain or loss of more than 3% during the test indicates the well does not have mechanical integrity. Following pressurization, isolate the annular system from its pressure source and, if present, the sealpot or surge tank being sure to prevent any leaking across the shut-off valves.
6. Test for at least 60 minutes. Note the time, the annulus pressure, and the injection/tubing pressure at the start of the test and measure and note these same parameters at least every 10 minutes thereafter up to the end of the required test duration.
7. Send a report of the testing including any other data or documents available at the conclusion of the test which support the test results, such as gauge calibration certification, third-party service ticket, and/or original chart/digital recordings, to EPA per the reporting requirements of the permit.
8. If the tested well was reworked in association with the test, submit a rework record.

9. Include the certification statement and signature on the transmittal letter or on the individual MIT results form and, if submitted, the rework record to comply with the requirements of 40 CFR § 144.32(b).

Fall-Off Test

1. Injection of normal injectate at the normal rate is preferred.
2. The injection period should be at least 50% longer than the planned shutin time, or at minimum as long as operationally possible. During this time injection at a constant rate (+/- 10%) should be attempted.
3. The pressure gauge utilized for the pressure transient test shall have been calibrated no more than one year prior to the test date.
4. Place the pressure gauge downhole at approximately the top of the permitted injection zone at least one hour prior to ceasing injection.
5. Following at least one hour of pressure data collection during injection, shut-in the well as quickly as possible.
6. Collect data at a frequency of at least one data point every 10 seconds for at least the first five minutes after shut-in; between five and 30 minutes at no less than one reading every 30 seconds; and the operator can reduce frequency as required after 30 minutes.
7. End pressure measurements when pressure is relatively stable, when operational necessity dictates, when sufficient radial flow dominated data has been collected to allow evaluation of kh and extrapolation of pressure to infinite shut-in time is possible, or if boundary effects are observed.
8. The test shall include a written report by a knowledgeable well test analyst. Such report must explain any anomalies shown in the results.
9. The test report shall include an up-to-date well schematic, a copy of the dated calibration certificate for the gauge utilized, and digital pressure data on CD/flash drive/email in a spreadsheet format.
10. The test report shall include a tabulation of values for the following background parameters: EPA permit number, porosity, net thickness (ft), viscosity (cp), formation compressibility (per psi), long string casing inner diameter (in), open hole diameter (in), and Kelly bushing elevation (ft). The test report shall also include a tabulation of values for the following test specific parameters: test start date/time, test end date/time, test length (hr), depth reference (Kelly bushing or ground level), specific gravity of test fluid, test fluid compressibility (per psi), gauge depth (ft), gauge calibration date, pressure required to maintain tubing fluid to the surface (psi), final tubing fluid level (ft), final flow rate immediately prior to shutin (gpm), cumulative volume injected since last pressure equalization (gal), permeability-thickness (md-ft), skin factor, radius of investigation (ft), final measured flowing pressure (psi), final measured shut-in pressure (psi), and p* pressure (psi). Pressure gauge units (psia or psig) shall be specified.
11. The test must conclusively demonstrate its objectives and satisfy the Director to be considered a completed test.

Temperature Log

1. To conduct a static temperature log, the well must be shut in for at least 36 hours, or longer if temperature stabilization based on previous logs requires more time.
2. If the well cannot be shut in for 36 hours, shut in for as long as possible and run two logs at least six hours apart.

3. Calibrate the temperature tool in a bucket of ambient temperature water and a bucket of ice water immediately prior to conducting the test.
4. Log from the top of the well to the bottom, recording both temperature and natural gamma ray activity.
5. Record log data at least once per foot.
6. Logging speed shall not exceed 30 feet per minute. Reduce speed to 20 feet per minute in air-filled well bores.
7. The test shall include a written report by a knowledgeable log analyst. Such report must explain any anomalies shown in the results.
8. The test report shall include an up-to-date well schematic, digital logging data on CD/flash drive/email in a spreadsheet format, and a plot of the logging activity.
9. The test report shall include a tabulation of values for the following background parameters: EPA permit number, long string casing length (ft), tubing and/or tail pipe lowermost depth (ft), top of open hole or uppermost perforation (ft), well total depth (ft), plugged back total depth or top of fill depth (ft), Kelly bushing elevation (ft), depth to top of confining zone (ft), and depth to top of permitted injection zone (ft). The test report shall also include a tabulation of values for the following test specific parameters: test date, depth reference (Kelly bushing or ground level), date of last injection, temperature of last injected fluid (F), elapsed time since last injection (hr), volume injected into the well in the past year (gal), names and depths of any other injection formations used at the site, temperatures logged by the tool and thermometer during calibration (F), depth to fluid level in the tubing (ft), depth to top of receptive strata (ft), and depth to bottom of receptive strata (ft).
10. The test must conclusively demonstrate its objectives and satisfy the Director to be considered a completed test.

**ATTACHMENT H
WASTE ANALYSIS PLAN**

**Scepter, Inc. Class I Non-Hazardous IW-1 in Knox County, Indiana
Underground Injection Control (UIC) Program Permit IN-083-1I-0009**

1. Section 1 Introduction

This Waste Analysis Plan (WAP) for the Class I Injection Well at the Scepter, Inc. (Scepter) Restricted Waste Site, Type I solid waste disposal facility located near Bicknell in Knox County, Indiana is prepared in accordance with the applicable provisions of Title 40 of the Code of Federal Regulations (40 CFR) Part 146--*Underground Injection Control Program: Criteria And Standards* and EPA Region 5 UIC Guidance #8 entitled *Preparing a Waste Analysis Plan at Class I Injection Well Facilities* (January 21, 1994). The provisions of 40 CFR 146.13(b), Monitoring Requirements, apply to the subject non-hazardous waste injection well, and the provisions of 40 CFR 146.13(b)(1) apply to this WAP.

This WAP is responsive to 40 CFR 146.13(b)(1), which prescribes that the injected fluids be analyzed with sufficient frequency to yield representative data of their characteristics. It does not specifically require owners or operators of Class I wells injecting non-hazardous waste, such as the subject well, to develop and follow an approved written waste analysis plan. However, the owner/operator of the subject Class I, non-hazardous waste injection well recognized the value and importance of a written and approved waste analysis plan, and has prepared, and submitted for approval, this waste analysis plan (WAP) on those bases.

A copy of this WAP will be retained on-site and be available for review by those persons performing tasks included in this WAP.

The WAP includes the following elements:

- 1) Introduction
- 2) Waste Characterization
 - a) Non-hazardous Waste - Minimum Requirements
 - i) Demonstrating Absence of Characteristic Hazardous Waste
 - (1) Corrosivity
 - (2) Reactivity
 - (3) Ignitability
 - (4) Toxicity (TCLP)
 - ii) pH
 - iii) Redox potential (Eh)
 - iv) Specific Conductance
 - v) Specific Gravity
 - vi) Temperature
 - vii) Wellhead Total Dissolved Solids (TDS)
 - viii) Wellhead Total Organic Carbon (TOC)
 - ix) Other Major Constituents (greater than 0.01% by mass)
 - x) Other Analytes

- 3) Waste Re-Characterization
- 4) Sampling Method
- 5) Analytical Methods
- 6) Quality Assurance and Quality Control

2. Section 2 Waste Characterization

Representative injectate samples shall be analyzed for the analytes prescribed in this section at the frequency prescribed in this section.

2.1 DEMONSTRATING ABSENCE OF CHARACTERISTIC HAZARDOUS WASTE

The operator of the subject Class I non-hazardous injection well shall test a representative injectate sample for the four characteristics of a hazardous waste, (1) ignitability (D001), (2) corrosivity (D002), (3) reactivity (D003), and (4) toxicity (D004- D043), according to the methods prescribed by 40 CFR Part 261 Subpart C, on an annual basis in order to demonstrate that the injectate continues to contain no characteristically hazardous waste. The detection thresholds shall be less than or equal to the regulated levels specified in 40 CFR Part 261 Subpart C.

Rational for the annual monitoring frequency includes:

- The injectate (landfill leachate) has a long analytical history of demonstrating that it does not exhibit the characteristics of a hazardous waste as defined by 40 CFR Part 261 as evidenced by *Annual Leachate Generation Reports* sent to IDEM since 1997.
- The solid waste from which the injectate is derived is not subject to new sources or significant change in composition.

2.2 ANALYTES AND MONITORING FREQUENCY

The operator of the subject Class I non-hazardous injection well shall test a representative injectate sample for the following analytes at not less than the prescribed frequency according to the analytical methods prescribed in EPA's publication SW-846 *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA publication EPA 600/4-79/020 *Methods for Chemical Analysis of Water and Wastes*, or other appropriate standard:

<u>Analyte</u>	<u>Minimum Monitoring Frequency</u>
pH (may substitute with field pH log) Eh	Daily (if injection occurs)
(may substitute with field Eh log)	Daily (if injection occurs)
Specific Conductance (may substitute with field log)	Daily (if injection occurs)
Temperature (may substitute with field log)	Daily (if injection occurs)
Specific Gravity	Quarterly
Wellhead Total Dissolved Solids	Quarterly
(TDS) Wellhead Total Organic	Quarterly
Carbon (TOC)	

Other Major Constituents (if not already listed)
(greater than 0.01% by mass):

Annually

- Ammonia Nitrogen
- Chloride
- Copper
- Potassium
- Sodium
- Total Nitrogen
- Total Suspended Solids
- Zinc

Other Analytes (if not already listed):

Annually

- Aluminum
- Bicarbonate
- Calcium
- Cyanide
- Fluoride
- Magnesium
- Sulfate

3. Section 3 Waste Re-Characterization

Chemical reactions taking place in the recovered leachate storage tanks are not expected to significantly alter the injectate quality. Significant changes in the injectate chemistry throughout are not expected. Re-characterization of the injectate beyond the already-specified frequency is not prescribed on these bases.

4. Section 4 Sampling and Analysis Procedures

Samples shall be collected by individuals properly trained in environmental sample collection, preservation, and shipping. The injectate sample shall be collected for the analytes prescribed in this WAP, at the specified frequencies, and be analyzed the prescribed analytical methods.

The injectate samples shall be grab samples collected at the wellhead, or from any sample port in the pipe conveying representative injectate between the discharge side of the pump and the wellhead, while actual injection is occurring. The samplers shall prevent the possibility of introducing analytes to the sample by wearing analyte-free gloves. The sample port stopcock shall be opened and the discharge shall be directed into a bucket, allowed to purge for a minimum purge volume of 1 gallon is expelled. The sample stream shall be slowed sufficiently to eject a laminar

flow stream. The sample bottle shall be filled in a manner that prevents excessive turbulence. The purged liquid shall be returned to the leachate storage tanks, or to the leachate recovery sump.

All samples shall be given the Sample Name "Injectate" and be differentiated from each other only by date and time of collection, and not any other nomenclature. This uniform sample nomenclature is intended to facilitate effective loading and retrieval of sample results from a database.

A sample label will be placed on each container and the following information recorded on the label:

- Sample number
- Date
- Time
- Sampler's initials

Sample collection shall be recorded and shipped to the operator's contracted laboratory under chain-of-custody. The laboratory-supplied chain-of-custody form shall serve as the analytical request form, and it shall be fully completed with indelible ink at the time of sampling.

The minimum information to be recorded in the field record is:

1. Sample's name, title, and company affiliation;
2. Date and time the sample was collected;
3. Sample Nomenclature (i.e., "Injectate");
4. Sample collection method;
5. Sample collection point;
6. Sample preservation technique;
7. Sample color;
8. Requested analytes and their respective analytical methods;
9. Unique chain-of-custody number; and
10. Observation of any unusual conditions.

This information will also be recorded in the field book, on the groundwater sampling form, and on the chain-of-custody forms.

Anticipated analytical method accuracy and upper & lower analytical method quantification limits are specified by and unique to the prescribed analytical methods.

See the QA/QC section of this WAP for more information on sampling and shipping.

4.1 HEALTH AND SAFETY PROCEDURES

Samplers of injectate shall adopt the health and safety procedures prescribed by the facility's existing detailed Site-specific Health and Safety Plan (HASP) prepared for the groundwater

sampling activities. The HASP conforms to OSHA standards as outlined in 29 CFR 1910.120. All personnel involved in sampling activities at the site, will be briefed on the HASP contents, given the opportunity to read the HASP, and required to sign the HASP and date their signature.

4.2 SAMPLE IDENTIFICATION SYSTEM

The injectate samples will be identified as "Injectate". QA/QC samples, when applicable, will be identified by a code within the sample name. Sample type designations that will be used include, but are not necessarily limited to the following:

- EB - Equipment blank
- TB - Tripblank
- DUP - Duplicate sample
- MS - Matrix spike
- MSD - Matrix spike duplicate

4.3 FIELD PREPARATION

All equipment used to conduct the injectate sampling will be provided or procured by the sampler. The following items will be checked prior to mobilizing for each sampling event:

- Batteries of equipment and instruments to be used, to ensure that they are recharged.
- Any sampling equipment scheduled for use, to ensure that the equipment is clean and in good working order.
- Instrument calibration.
- Any back-up systems, to ensure they are in good working order.
- Sample bottle supply, to ensure that an adequate supply of clean sample bottles is available.
- Field sampling kits, to ensure that all items necessary to procure good, properly documented samples are included. A standard sampling kit will contain the following items:
 - Alconox® soap
 - a sufficient supply of distilled water for rinsing hands and sampling equipment
 - disposable gloves
 - paper towels
 - a waterproof pen
 - labels for sample identification
 - a cooler with ice
 - chain of custody forms
 - site blank appropriate sample containers
 - disposable hailers for each well

All sampling events will be scheduled with the analyzing laboratory to ensure that the lab can accept the samples. The analyzing lab will be notified at least two weeks prior to any sampling event and informed of the approximate number of samples to be collected, the parameters to be analyzed for, and the anticipated date and time of sample arrival.

4.3.1 QA/QC Samples

Equipment blanks are unnecessary because the samples are collected directly from sample ports and no "equipment" is used.

A laboratory-prepared trip blank will accompany each sample cooler from the time samples are placed in the cooler to the time they are removed from the cooler at the laboratory. Trip blanks will not be analyzed unless the potential for cross-contamination of samples during sample shipment and storage is suspected.

Field duplicates of injectate samples are unnecessary.

The laboratory shall prepare and analyze matrix spike, matrix spike duplicate, and laboratory duplicate samples according to the provisions of the prescribed analytical methods or generally accepted good analytical laboratory procedures if not prescribed in the method.

4.4 DECONTAMINATION PROCEDURES

There is little decontamination required for collection of grab sample collection. The sampler's hands will be protected from contact with the sample by using appropriate gloves. Spent gloves and any other protective disposable clothing worn by the sampler (such as Tyvek®) shall be discarded as non-hazardous, non-regulated trash. Samples shall wash hands and face with soap and water after completing the task.

5. Section 5 Chain of Custody Procedures

Chain of custody is defined as the sequence of persons who have an item in custody. Complete and proper chain of custody for the samples will be accomplished through a combination of field and laboratory records that demonstrate possession and transfer of custody. The samples are under a person's custody if:

- the samples are in the actual possession of the person;
- the samples are in the view of the person after being in the actual possession of the person;
- the samples were in the actual physical possession of the person, and are now locked up to prevent tampering; or
- the samples are in a secure area designated and identified by the person.

Field Custody Procedures

The sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. The sampler will keep a written record of the sampling procedures and sample identities in a field logbook. The logbook entries will be used to assist the sampler in completing the chain-of-custody documents which will accompany the samples to the laboratory. All sample shipments will be accompanied by the chain-of-custody identifying the contents.

The chain-of-custody form will identify the sampler's name and company, the project name and number, and the sampler's contact information. For each sample being submitted to the laboratory, the chain-of-custody form will list the following:

- Sample number
- Sample date and time
- Number and type of sample containers
- Preservatives for each type of sample container
- Analyses to be completed
- Required detection limits
- Required data quality level
- Any other pertinent information

When transferring the possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note the time on the chain-of-custody form. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage area. The original form will accompany the shipment, and a copy will be retained by the sampler.

Samples will be hand delivered to the laboratory, or relinquished to an overnight carrier, after collection in the field. Commercial carriers are not required to sign-off on the custody form as long as the custody forms are sealed inside the sample cooler and the custody seals remain intact.

Laboratory Custody Procedures

Laboratory custody procedures begin when the samples are received by the laboratory. The following laboratory custody procedures must be followed by the laboratory.

1. All samples will be handled by the minimum number of people possible.
2. The laboratory will set aside a secured sample storage area consisting of a clean, dry, refrigerated, isolated room. This room will be capable of being locked if deemed necessary.
3. A specific person (or persons) will be designated custodian(s). All incoming samples must be received by the custodian who will indicate receipt by signing the chain-of-custody form.

4. The sample custodian will maintain a bound logbook, or other official record keeping system, to record the following information for each sample: person delivering sample, person receiving sample, date and time received, source of sample, sample identification of log number, mode of transportation to laboratory and condition in which the sample(s) was received. A standardized format must be maintained.
5. The custodian will ensure that samples which are heat-sensitive, light-sensitive, or radioactive, or which require special handling in other ways, are properly stored and maintained prior to analysis.
6. The analytical area will be restricted to authorized personnel only.
7. After sample analyses are complete, the laboratory will discard samples after 30 days. Analytical data are to be kept secured and released to authorized personnel only.

6. Section 6 Sample Packaging and Shipping Procedures

Sample packaging will be completed by the sampler(s) and will be packaged and shipped as follows:

- Each sample bottle is placed in a separate plastic bag, which is then sealed. As much air as possible is squeezed from the bag before sealing.
- A sample cooler will be used as a shipping container. In preparation for shipping samples, the drain plug will be taped shut from the outside. Approximately 1 inch of packing material is placed in the bottom of the cooler along with bagged ice to ensure the samples arrive at the laboratory at 4° C.
- The bottles are placed in the sample cooler.
- The cooler is filled with packing material. Sufficient packing material will be used to prevent sample containers from making contact during shipment.
- The chain-of-custody documents and any others going to the laboratory are placed inside a plastic bag. The bag is sealed and taped to the inside of the cooler lid. The last block on the chain-of-custody form will indicate the overnight carrier and air bill number. The air bill must be filled out before the samples are handed over to the carrier.

7. Section 7 Quality Assurance Program

The overall QA objective is to develop and implement procedures for field sampling; chain-of-custody, laboratory analysis, and reporting that will provide results that are legally defensible in a court of law. The following address the specific objectives for accuracy, precision, completeness, representativeness, and comparability.

7.1 QUANTITATIVE QA OBJECTIVES

The overall quantitative QA objective is to achieve the QA provisions prescribed in each analytes analytical method.

7.1.1 Precision

Precision is the agreement among a set of replicate measurements without consideration of the "true" or accurate value: i.e., variability between measurements of the same material for the same analyte. Precision is measured in a variety of ways including statistically, such as calculating variance or standard deviation. Precision control limits are analysis-specific and laboratory-specific and are listed in the laboratory's Quality Assurance Plan.

7.1.2 Accuracy

Accuracy is the closeness of agreement between an observed value and an accepted reference value. The difference between the observed value and the reference value includes components of both systematic error (bias) and random error. Laboratories assess the overall accuracy of their instruments and analytical methods (independent of sample or matrix effects) through the measurement of "standards," materials of accepted reference value.

Accuracy will vary from analysis to analysis because of individual sample and matrix effects. In an individual analysis, accuracy can be measured and expressed in terms of the recovery of surrogate compounds (organic analysis) or the recovery of spiked compounds (inorganic analysis). This gives an indication of expected recovery for analytes tending to behave chemically like the spiked or surrogate compounds.

Accuracy in the field is assured through adherence to all sample handling, preservation, and holding times. Individual sample accuracy in the laboratory is assured and assessed through the comparison of surrogate recoveries, matrix spike and matrix spike duplicate recoveries, and laboratory control sample recoveries at a frequency prescribed by each analytical method. Accuracy control limits are analysis-specific and laboratory-specific and are listed in the laboratory's Quality Assurance Plan.

7.1.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is defined in terms of a percentage of the number of valid measurements expected.

Field completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. Laboratory completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. All attempts will be made by the lab to achieve 100% completeness on analytical parameters.

7.2 QUALITATIVE QA OBJECTIVES

Qualitative QA objectives include representativeness and comparability.

7.2.1 Representativeness

Representativeness expresses the degree to which the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, process condition, or an environmental condition. Representativeness is a qualitative parameter which is dependent upon the proper design of the sampling program and the laboratory quality control protocol.

Representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the groundwater monitoring network and design for the site is followed and that proper sampling techniques are used.

Representativeness in the laboratory is ensured by using the proper analytical procedures, meeting sample holding times and analyzing and assessing field duplicated samples. The sampling network was designed to provide data representative of facility conditions.

7.3 CONTROL LIMITS

Control limits are the maximum and/or minimum values defining a range for a specific parameter, as outlined within each analytical procedure considered to satisfactorily meet quality control criteria. When the parameter falls outside that range, the procedure is considered to be out of control.

Whenever the analytical procedure is, or becomes, out-of-control, corrective action must be taken to bring the analysis back into control. The corrective action must include: (1) finding the cause of the problem, (2) correcting the problem, (3) demonstrating the problem has been corrected by reanalyzing appropriate laboratory reference samples, and (4) repeating the analyses of any investigative samples that may have been affected by the control problem.

If the control limit is technically impracticable for a particular sample or analysis, documentation and a narrative explanation will be submitted with the data report and raw data. The documentation must include evidence that a good faith effort was made to meet the control limit; this will generally include two attempts to analyze the sample.

7.4 DATA ANALYSIS

The analytical results will be tabulated for ease of review and evaluation. The data will be evaluated for compliance with quality goals.

7.5 REPORTING

Scepter will submit an annual report to USEPA that contains all the results, data and sampling description necessary to enable Region 5 to assess the accuracy, completeness and repeatability of the reported analytical results. The report will contain a table which specifies the type of sample (waste, blank, etc.), sampling date, sampling location, analytical method, method detection limit, validation result, and analytical result. The results of analyses and all accompanying data, including chain-of-custody forms, should be reported to USEPA within 45 days of the annual sampling event, unless conditions beyond the control of the operator prohibit such a reporting schedule.

7.6 RECORD KEEPING

Scepter will maintain records of all injectate sampling activities and results throughout the active life of the facility and the post-closure care period. All applicable *QNQC* documentation generated from valid analyses of injectate samples by the laboratory will be retained, and made available upon request by EPA, for a minimum of three years. The records will be maintained at the Scepter office in Bicknell, Indiana.