

STATE OF MISSISSIPPI UNDERGROUND INJECTION CONTROL PERMIT

THIS CERTIFIES THAT

**Mississippi Power Company
2992 West Beach Blvd.
Gulfport, Mississippi 39501
Harrison County**

has been granted permission to inject fluids into four Class I wells located at

Plant Victor J. Daniel , Section 11, T11S, R6W in Jackson County, Mississippi

in accordance with limitations, monitoring requirements and other conditions set forth in part I and II hereof. This permit is issued in accordance with the provisions of the Mississippi Water Pollution Control Law (section 49-17-1 et. seq., Mississippi Code of 1972), and the regulations and standards adopted and promulgated thereunder, and under authority granted pursuant to the Safe Drinking Water Act, as amended (42 U.S.C. 300f et. seq. commonly known as SDWA) and attendant regulations incorporated by the U.S. Environmental Protection Agency under Title 40 of the Code of Federal Regulations (CFR).

Effective Date: As specified herein.

MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD

**AUTHORIZED SIGNATURE
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY**

Issued:

Expires:

Permit No.: MSI1007

PART I

Site Specific Conditions

A. CONSTRUCTION REQUIREMENTS

1. Location and construction

The permittee is authorized to construct four underground injection wells in accordance with the conditions of this permit and the approved construction plans. Well 11-3 (located at 30.53557 -88.56125) and Well 11-4 (30.536902 -88.5584) are both constructed. Prior to beginning construction of Well 11-5 and/or 11-6 both located on the facility property, the permittee shall notify Mississippi Department of Environmental Quality (Department) in accordance with Part 1.D3. Unless otherwise specified herein, construction parameters for each well shall be the same.

2. Casing and Cementing

The permittee shall maintain the casing and cement in all wells to prevent the movement of fluids into or between underground sources of drinking water or into any unauthorized zone.

3. Tubing and Packer Specifications

Injection may only take place through the injection tubing with a packer set within the long string casing at a depth no higher than 7,750 feet. The tubing and packer shall be maintained in a manner that is compatible with the injection operation specified in Part I.B. of this permit so as to prevent the movement of fluids into or between underground sources of drinking water.

B. OPERATING REQUIREMENTS

1. Injection Composition, Volume and Mass Limitations

- (a) The permittee shall only inject non-hazardous wastewater generated by the onsite processing of flue gas desulfurization plus rainwater. The wastewater shall consist of predominantly calcium, sulfate and other trace amounts of magnesium, potassium, sodium and chloride. Manifested wastes originating offsite shall not be injected.

To support compliance with this requirement, the permittee shall monitor the quantity and quality of the wastewater effluent in accordance with Section C below. Upon the request of the Department, the permittee should also be prepared to submit other information, such as raw materials throughput, ore analysis, production data, remediation system operation and other data which would satisfactorily explain any significant increases in wastewater effluent quantity or quality.

- (b) The volumetric rate of injection shall be limited to a maximum total rate of 550 gallons per minute each for injection wells 11-3, 11-4, 11-5 and 11-6.

2. Injection Pressure Limitations

- (a) Except during stimulation of the injection zone as approved by the Permit Board, injection pressure at the well head shall be limited so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. The fracture pressure for the injection zone is estimated to be approximately 2,275 psi for the Lower Tuscaloosa injection zone and 2,275 psi for the Washita-Fredericksburg injection zone.

Compliance with this condition shall be determined by use of the

Following method for estimating bottom-hole pressure.

$$P_{bh} = P_{inj} + P_h - P_f$$

Where; P_{bh} = bottom hole pressure

P_{inj} = injection or well head pressure

P_h = head pressure

P_f = friction head loss

The bottom hole pressure shall be constantly monitored and controlled through a combination of injection pressure measurements (i.e., Section C.3. of this permit) and the use of a standard calculated relationship between these measurements and actual bottom hole conditions. The injection pressure at the well head shall not exceed 2,275 psi for the Lower Tuscaloosa or 2,275psi for the Washita-Fredericksburg.

- (b) In no case shall injection or stimulation pressure initiate fractures in the confining zone or cause the movement of waste, waste constituents, or formation fluids into an underground source of drinking water.
- (c) Injection between the outermost casing protecting underground source of drinking water and the well bore is prohibited.

3. Annulus Fluid and Pressure

- (a) During well operation the annulus between the injection tubing and the long string casing shall be filled with an approved corrosion inhibited non-toxic fluid.
- (b) A positive annulus pressure differential shall be maintained from top to bottom as a safety precaution. As measured on the surface at the wellhead the pressure differential shall be no less than 25 psig above the injection pressure at all times during steady state operation, and shall be self-correcting within 10 minutes after significant changes in injection conditions.
- (c) If a differential pressure greater than 25 psig cannot be maintained during well operation and trouble-shooting investigations lasting a maximum of 15 minutes cannot determine the cause, or if there is a loss of more than 200 gallons of annulus fluid during a 24-hour period, the permittee shall notify the Department in accordance with Part II.A.12 of this permit and shall cease injection of wastewater until the cause of the pressure drop or annulus fluid consumption is determined and corrected.
- (d) To ensure that the movement of wastewater outside of the injection zone will not occur during well shutdown periods, the permittee shall implement an appropriate shutdown procedure to ensure that such movement will not occur.

4. Injection Zone

The injection zone for the well as defined by 40 CFR § 146.3 shall be limited to that portion of the Lower Tuscaloosa and Washita-Fredericksburg Formation occurring below a depth of 7,570 feet from land surface.

5. Injection Interval

The injection interval for the well shall be limited to that portion of the Lower Tuscaloosa Formation and Washita-Fredericksburg Formation below 8,480 feet from land surface.

6. Loss of Mechanical Integrity During Operation

In accordance with 40 CFR § 146.13, if loss of mechanical integrity, as defined by 40 CFR § 146.8, becomes evident during well operation, the permittee shall notify the Department in accordance with Part

II.A.12 of this permit, cease injection of wastewater, and take all steps necessary to determine whether there may have been a release of waste or waste constituents into any unauthorized zone. Injection shall not be resumed in a well until adequate demonstration of mechanical integrity has been made as required in Part II.C. of this permit.

7. Alarm System

The permittee shall install and use an automatic alarm designed to sound when pressure, flow rates, or other parameters approved by the Department exceed a range and/or gradient specified in the permit.

If an automatic alarm is triggered, the permittee shall immediately investigate and identify as expeditiously as possible the cause of the alarm. If upon investigation, a well appears to be lacking mechanical integrity, the permittee shall:

- (i) Cease injection of waste fluids in the well until authorized by the Department to continue or resume injection.
- (ii) Take all necessary steps to determine the presence or absence of a leak; and
- (iii) Notify the Department within 24 hours after the alarm or subsequent shutdown.

8. Contamination of Underground Source of Drinking Water (USDW)

Should the permittee obtain evidence that there may have been a release of injected waste from the well into an unauthorized zone the permittee must:

- (i) Immediately cease injection of waste fluids in the well;
- (ii) Notify the Department within 24 hours of obtaining such evidence;
- (iii) Take all necessary steps to identify and characterize the extent of any release;
- (iv) Implement any remediation plan approved by the Department;
- (v) Place a notice in a newspaper of general circulation, if such release is into an underground source of drinking water currently serving as a water supply.

C. MONITORING REQUIREMENTS

1. Sampling and Analytical Methods

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Test methods and procedures shall be as specified in 40 CFR § 136 or 40 CFR § 261 Appendix A. When the analytical method for a particular parameter is not specified in 40 CFR § 136 or 40 CFR § 261 Appendix A, the permittee must obtain the approval of the Regional Administrator of the EPA for an alternate method.

2. Waste Liquid

The following parameters shall be monitored and recorded during injection of wastewater:

<u>Parameter</u>	<u>Frequency</u>	<u>Sample Type</u>
Temperature	Continuous	Recorder
Flow Rate	Continuous	Recorder
Volume	Continuous	Totalizer

Total Acidity	Weekly	Composite*
Total Iron	Weekly	Composite*
Total Aluminum	Weekly	Composite*
Total Dissolved Solids	Weekly	Composite*
Specific Conductance	Weekly	Composite*
Specific Gravity	Weekly	Composite*
Total Mercury	Semiannual	Composite

All parameters shall be measured at a point representative of the injected fluid which is the nearest accessible point following pretreatment and prior to injection.

*A composite shall be collected no less than once a week.

3. Injection Pressure and Annulus Pressure

Injection pressure, annulus pressure, and the differential pressure between the injection tubing and the annulus shall be monitored continuously with a recorder.

4. Monitoring Wells

The permittee shall monitor a freshwater aquifer above the injection zone by sampling two water wells located at the plant and one community water well closest to the plant in accordance with the prescribed monitoring program approved by the Department. The monitoring plan includes reporting the following parameters:

<u>Parameters</u>	<u>Frequency</u>	<u>Sample Type*</u>
pH	Monthly	Grab
Total Suspended Solids	Monthly	Grab
Total Solids	Monthly	Grab
Total Dissolved Solids	Monthly	Grab
Conductivity	Monthly	Grab
Chloride	Monthly	Grab
Iron	Monthly	Grab
Temperature	Monthly	Grab

In addition to the monthly analysis, annual grab samples shall be analyzed as follows:

<u>Parameters</u>	
pH	Total Molybdenum
Specific Gravity	Total Nickel
Total Suspended Solids	Total Sodium
Total Solids	Total Potassium
Total Dissolved Solids	Total Chlorides
Conductivity	Total Silicates
Nitrogen, Total Kjeldahl	Total Sulfates
Phosphorous	Total Hardness
Total Aluminum	Hardness as Carbonate
Total Calcium	Hardness as Noncarbonate
Total Chromium	Alkalinity as Bicarbonate
Total Iron	Color
Total Magnesium	Turbidity

*Samples shall be collected after a minimum of three well volumes have been evacuated.

5. Corrosion Monitoring

- (a) The permittee shall conduct continuous monitoring of the construction materials used in the well by:
 - (i) Placing coupons of the well construction material in contact with the waste steam; or
 - (ii) Using an alternative method approved by the Department.
- (b) The test shall use materials identical to those used in the construction of the well. Such materials must be constantly exposed to temperatures (measured at the wellhead) of the injection operation.

The permittee shall monitor the materials for loss of mass, pitting, and other signs of corrosion on a yearly basis to ensure that the well components are not degraded by their use in the well.

6. Ambient Monitoring

The permittee shall monitor the pressure build-up in the injection zone by conducting a pressure fall-off test annually on the well.

D. REPORTING REQUIREMENTS

1. Quarterly and Annual Reports

In accordance with 40 CFR § 144.51(I)(4), the permittee shall submit the results of all monitoring conducted during each calendar quarter no later than the 28th day of the month following the quarter. Also, the permittee shall submit the results of all monitoring that is required on an annual basis no later than the 28th day of the month following the end of the 4th quarter. Signed copies of these and all other reports required herein shall be submitted to the Department at the following address:

Mississippi Department of Environmental Quality
Waste Division
Attention: UIC Coordinator
P. O. Box 2261
Jackson, MS 39225

All reports shall be submitted in a format approved by the Department. Quarterly reports shall, at a minimum, include:

- (a) The maximum injection pressure;
- (b) A description of any event that exceeds operating parameters for annulus pressure or injection pressure as specified in the permit;
- (c) A listing and description of any event that triggers an automatic alarm or shut down device which exceeds conditions of this permit and the response taken;
- (d) The total volume of fluid injected;
- (e) Any change in the annular fluid volume;
- (f) The physical, chemical, and other relevant characteristics of injected fluids; and

2. Reports on Well Tests and Workovers, and Well Shutdown Procedures

The permittee shall submit the results of well shutdown procedures, any mechanical integrity tests or any well workover, logging, or other test data revealing down-hole conditions. A detailed report of these testing results prepared by a knowledgeable expert shall be submitted to the Department within 45 days of completion of the test, unless the permittee requests and obtains permission from the Department to submit the corresponding data and reports at a later date.

3. Reporting of New Wells Drilled Within the Area of Review (AOR)

The permittee shall file annually a report on the following information, to the extent such information is reasonably available:

- (a) Locations and depths of newly drilled or newly discovered wells within the Area of Review, as defined by 40 CFR § 146.6, which penetrate to within 300 feet of the top of the injection zone, if such wells were not included in the technical report accompanying the permit application or in any previously submitted reports; and
- (b) A tabulation of data as required by 40CFR § 146.14 for those wells reported under paragraph (a) above.

COMPLIANCE SCHEDULE

- 1. 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.
- 2. The permittee shall continue to investigate alternative treatment and/or disposal technologies and shall discontinue deepwell disposal by a schedule agreed to by the Department if it is found that these or other technologies are feasible and economically practicable.

CLOSURE

1. Closure Plan

The permittee shall prepare, maintain and comply with a plan for well closure.

2. Temporary Cessation of Injection

- (a) The permittee, upon temporarily ceasing injection (by shutting the well in for a period of greater than 4 weeks), may keep the well open provided the permittee:
 - (i) has received authorization from the Department; and
 - (ii) has described actions or procedures, satisfactory to the Department, that the permittee will take to ensure that the well does not endanger underground sources of drinking water during the period of temporary disuse. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Department.
- (b) The permittee shall notify the Department 30 days prior to resuming operation of the well if the well has been temporarily shut in for more than two years.
- (c) The permittee shall demonstrate the mechanical integrity of the well shut down for 18 months or longer before the well is placed back into service.

3. Notice of Intent to Close

The permittee shall notify the Department at least 60 days before closure of the well. At the discretion of the Office of Pollution Control, a shorter notice period may be allowed following written request.

4. Closure Report

The permittee shall submit a closure report to the Department within 60 days after well closure or at the time of the next quarterly report (whichever is less). If the quarterly report is due less than 15 days after completion of closure, then the report shall be submitted within 60 days after closure. The report shall be

certified as accurate by the permittee and by the person who performed the closure operation (if other than the permittee). Such report shall consist of either:

- (a) A statement that the well was closed in accordance with the closure plan previously submitted and approved by the Department; or
- (b) Where actual closure differed from the plan previously submitted, a written statement specifying the differences between the previous plan and the actual closure.

5. Plugging and Abandonment Plan

- (a) Prior to closing the well, the permittee shall observe and record the pressure decay for a time specified by the Department. The Department shall analyze the pressure decay and the transient pressure observations required under Part 1, Section C, item 7, and determine whether the injection activity has conformed with predicted values.
- (b) Plugging and abandonment of all permitted injection wells shall be in accordance with Part II, Section F, of this permit.

6. Post-Closure Care

The permittee shall prepare, maintain and comply with a plan for post-closure care that meets the regulatory requirements of 40 CFR § 146.72 and is acceptable to the Department. The obligation to implement the post-closure plan survives the termination of this permit or the cessation of injection activities. The requirement to maintain an approved plan is directly enforceable regardless of whether the requirement is a condition of any permit.

PART II

STANDARD CONDITIONS

A. GENERAL REQUIREMENTS

1. **Effect of Permit**

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. The underground injection activity, otherwise authorized by this permit, shall not allow the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR § 142 or may otherwise adversely affect the health of persons. Any underground injection activity not authorized in this permit is prohibited. Under 40 CFR § 144.51(g), 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, or invasion of other private rights, or any infringements of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under Section 1431 of the Safe Drinking Water Act (SDWA) or any other law governing protection of public health or the environment for any imminent and substantial endangerment to human health, or the environment. However, compliance with this permit during its term constitutes compliance, for purposes of enforcement, with Part C of the SDWA.

2. **Modification, Revocation and Reissuance, or Termination**

- (a) This permit may be modified, revoked and reissued, or terminated for cause as set forth in 40 CFR § 144.39, § 144.40, § 144.41 and § 144.51(f).
- (b) 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.
- (c) Under 40 CFR § 144.51(h), the permittee shall furnish to the Director of the Department, within a specified time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit.

3. **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.

4. **Duty to Comply**

The permittee must comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance constitutes a violation of the Mississippi Air and Water Pollution Control Act and the Federal Safe Drinking Water Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application.

5. **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 days before this permit expires.

The conditions of an expired permit continue in force until the effective date of a new permit if:

- (a) The permittee has submitted a timely and complete application; and

- (b) The Permit Board, through no fault of the permittee, fails to act on the application on or before the expiration date of this permit.

6. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the 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.

7. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

8. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all injection facilities 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 and back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

9. Duty of Provide Information

The permittee shall furnish to the Department, within a time specified, any information which may be requested to determine whether cause exists for modifying, revoking and reissuing, terminating this permit, or determining permit compliance.

10. Inspection and Entry

The permittee shall allow any authorized representative of the Commission on Environmental Quality or EPA to:

- (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
- (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- (d) Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Safe Drinking Water Act, any substances or parameters at any location.

11. Recordkeeping

- (a) In accordance with 40 CFR § 144.51(j), the permittee shall retain records of all monitoring information, including the following:
 - (1) Calibration and maintenance records and all original strip charts or computer recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for the permit, for a period of at least five (5) years from the date of the sample, measurement, report, or application. This period may be extended by request of the Permit Board at any time; and
 - (2) The nature and composition of all injected fluids until five (5) years after the completion of any plugging and abandonment procedures specified in Section D of this part. The Permit Board may require the permittee to deliver these records to the Department at the Conclusion

of the retention period.

- (b) Records of monitoring information shall include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.
- (c) The permittee shall furnish to the Department, upon request, copies of records required to be kept by this permit.

12. Reports

- (a) The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility.
- (b) The permittee shall give advance notice to the Director of the Department of any planned changes in the permitted facility or activities which may result in noncompliance with permit requirements.
- (c) The permittee shall notify the Department and obtain its approval prior to conducting any well workover.
- (d) As required in 40 CFR § 144.51(l)(6), the permittee shall report orally to the Department within 24 hours of becoming aware of the following:
 - (1) any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or
 - (2) any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water; or
 - (3) any shutdown of an injection well as required in Part I.B.3 of this permit, or any other shutdown which requires down hole maintenance or repair. Excluded are normal operational shutdowns or maintenance procedures.
- (e) A written report shall be submitted to the Director of the Department within five (5) days of becoming aware of any instance of noncompliance with a condition of this permit or with any circumstance described in Section 12.(c) of this Part. The report shall contain a description of the noncompliance and its cause, if known; 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 reoccurrence of the noncompliance.
- (f) Where the permittee becomes aware that relevant facts were omitted or submitted incorrectly to the Department, the permittee shall promptly submit the correct facts or information as required in 40 CFR § 144.51(l)(8).
- (g) All reports or information required by this permit shall be signed and certified by a responsible corporate officer, or by a duly authorized representative in accordance with 40 CFR § 144.32 and § 144.51(k).

13. Transfer of Permit

This permit is not transferable to any person except after notice to and approval of the Permit Board. The Permit Board may require modification or revocation and reissuance of the permit to change the name of

the permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.

This permit may be transferred to a new owner or operator by modification, if the Permit Board determines that no other change in the permit is necessary, provided that a written agreement containing a specific date of transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the Director of the Department.

B. FINANCIAL RESPONSIBILITY

1. The permittee shall maintain continuous compliance with the requirement to demonstrate adequate financial responsibility and resources to close, plug, and abandon the permitted injection well, as required in Subpart F of 40 CFR § 144.
2. The permittee shall not substitute an alternative demonstration of financial responsibility from that which was initially submitted, unless he has previously submitted evidence of that alternative demonstration to the Department and the Department notifies them that the alternative demonstration of financial responsibility is acceptable.

C. MECHANICAL INTEGRITY

1. Mechanical Integrity Demonstration

Injection operations are prohibited after the effective date of this permit unless the permittee has demonstrated that the well covered by this permit has mechanical integrity in accordance with 40 CFR § 146.8, and the permittee has received written notice from the Department that such demonstration is satisfactory.

A demonstration of mechanical integrity, shall be made in accordance with 40 CFR § 146.8. Mechanical integrity shall also be demonstrated any time the tubing is removed from a well or if a loss mechanical integrity becomes evident during operation. The permittee may continue well operation only if the permittee has received written notice from the Department that such demonstration is satisfactory. The permittee shall notify the Department of their intent to demonstrate mechanical integrity at least 30 days prior to such demonstration. In the event of an unexpected workover, notification of intent to demonstrate mechanical integrity shall be made at least three (3) working days prior to the proposed demonstration. Such demonstration shall be made according to the last approved mechanical integrity test plan for the well.

2. Methods to be Used for Mechanical Integrity Test (MIT)

A plan for logging and testing wells for mechanical integrity shall be prepared and submitted for the Department for approval at least 60 days prior to the proposed MIT demonstration date. The plans shall propose logs and tests designed to make the demonstrations required by 40 CFR § 146.8. The plans shall also propose standards that will be used for evaluating the results of logging and testing. Mechanical integrity will be confirmed if the well logs and test data meet or exceed the standards approved as a result of the Department's review of the plan.

3. Periodic Mechanical Integrity Testing

Unless the well has been shut down and is expected to remain shut down for 12 months or more, the permittee shall conduct annual mechanical integrity testing. Permittee may request an extension of this requirement to allow the testing of well once per calendar year if necessary. Mechanical integrity testing on the well shall be conducted as follows:

- (a) The long string casing, injection tubing, and annular seal shall be tested by means of an approved pressure test with a liquid or gas annually and whenever there has been a well workover.
- (b) The bottom-hole cement shall be tested by means of an approved radioactive tracer survey annually. This test shall be conducted at the maximum demonstrated injection rate of the well.

- (c) An approved temperature, noise, or other approved log shall be run at least once every five years to test for movement of fluid along the borehole. A detailed report of the testing shall be prepared by a qualified individual amenable to both the permittee and the Department and submitted to the Department. The report shall include a narrative analysis of test results and a discussion of any indicated changes in downhole conditions since initiation of injection.
- (d) Depending on the testing and conclusions contained in any mechanical integrity test reports submitted or required by this section, the agency reserves the right to require other logs or tests which it may find necessary to more accurately describe downhole conditions and/or demonstrate that there is no movement of fluid into or between USDWs resulting from injection activity.
- (e) An approved casing inspection log shall be run whenever the owner or operator conducts a workover in which the injection string is pulled, unless the Department waives this requirement due to well construction or other factors which limit the test reliability, or based upon the satisfactory results of a casing inspection log run within the previous five years. The Department may require that a casing inspection log be run every five years, if there is reason to believe that the integrity of the long string casing of the well may be adversely affected by naturally-occurring or man-made events.
- (f) Any other test approved by the Department in accordance with the procedures in 40 CFR § 146.8(d) may also be used.

3. Duty to Establish and Maintain Mechanical Integrity

In accordance with 40 CFR § 146.51(q), the following shall apply when appropriate:

- (1) The permittee shall establish prior to commencing injection or on a schedule determined by the Office of Pollution Control and thereafter maintain mechanical integrity as defined in 40 CFR § 146.8.
- (2) When it is determined that a well lacks mechanical integrity pursuant to 40 CFR § 146.8, the Department shall give written notice to the permittee. Unless the agency requires immediate cessation, the permittee shall cease injection into the well within 48 hours of receipt of the agency's determination. The Department may allow plugging of the well pursuant to the requirements of 40 CFR § 146.10 or require the permittee to perform such additional construction, operation, monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The permittee may resume injection upon written notification from the Department that the permittee has demonstrated mechanical integrity pursuant to 40 CFR § 146.8.