RESOLUTION AND NOTIFICATION

On August 4 and 9, 1983, the Examining Panel's Report on the Public Hearings held on June 2, 1983, regarding Puerto Rico's Underground Injection Control Regulation was considered by this Board.

The components of said panel were Mr. Ildefonso González Rivera, Miss Magaly Medina Padín and attorney Pedro A. Maldonado Ojeda.

After the holding of the Public hearing, the panel evaluated all the testimonies presented during the hearing; all written comments submitted after the hearing, as well as the comments submitted by the hearing regarding this matter, held on April 19, 20, 21, 1982.

On said occasion the panel was composed by Mr. Tomás Rivera Cabrera and Attorneys Wanda A. Linares and José L. Ortega Santana.

After the evaluation, the examining panel submitted its report, together with the corresponding amendments and corrections, recommending the Board's approval of the proposed Regulation, without prejudice of being amended from time to time to harmonize it with the Commonwealth and Federal Requirements which could arise in the Underground Injection Control Program.

The Regulation was constituted as follows:
UNDERGROUND INJECTION CONTROL REGULATION

This Regulation is divided in five (5) parts and two (2) appendices:

1) Introduction
2) Part I - General Provisions
3) Part II - General Prohibitions
4) Part III - Underground Injection Control
5) Part IV - Exemption of Aquifers
6) Part V - Permit and Analyses Fees
7) Appendix A - Construction Requirements for Septic Systems
8) Appendix B - Requirements for Class II (c) and VII UIFs

Part I: General Provisions

This part is divided in seventeen (17) Rules

Rule 101 - Definitions and Classifications of Injection Facilities

This Rule is divided into two (2) sections:

Section A - Terms defined for this Regulation:
Abandoned well, annular pressure, aquifer, area of review, best management practices, Board or EQB, casing, catastrophic collapse, cementing, confining bed, confining zone, contaminant, conventional mine, conversion, CWA, disposal well, drilling mud, dry well, effluent, EPA, escape of fluid, exempted aquifer, existing injection well or UIF, experimental technology, fault, flow rate, fluid, formation, formation fluid, fracture, generator, ground water, H-20 truck, hazardous waste, hazardous waste management facility, increments of progress, injection, injection well, injection zone, lithology, major facility, modification, natural drainage cavity, natural quality of the waters, new injection well or UIF, NPDES, owner or operator, packer, permit, permit by rule, person,
plugging, plugging record, pollutant, pressure, project, radioactive waste, RCRA, run-off waters, SDWA, sinkhole, site, spill, standard temperature and pressure, stratum, subsidence, surface casing, terrestrial sources, total dissolved solids ("TDS"), toxic substances, treatment facility, underground injection, UIC, UIF, underground tank, USDW, waste waters, wastes, water pollution source, waters of Puerto Rico, well, well injection, well log, well monitoring, well plug, and well stimulation.

Section B - Classification of Injection Facilities
Injection wells or Facilities are classified as follows:
1. Class I
2. Class II
3. Class III
4. Class IV
5. Class V: Types A and B
6. Class VI
7. Class VII

Rule 102 Amendments to the Regulation
This Rule is divided in four (4) sections:
Section A Effectiveness of Amendments
States the Board's authority to adopt amendments to the Regulation.
Section B Notice and Public Hearings on Amendments to this Regulation
This section states that the Board shall not adopt any amendments to this Regulation without public notice and a public hearings.
Section C  **Effect of Amendments on Authorizations, Permits and Compliance Plans**

This section states when a proposed amendment to this Regulation shall be considered pending and its effect on authorizations, permits and compliance plans. In addition, it states that amendments to this Regulation shall not affect the validity of any permit, compliance plan, approval or authorization approved by the Board before an amendment is pending.

Section D  **Amendment Request**

This section states the requirements to request the modification, amendment or revocation of any part of this Regulation from the Board.

**Rule 103 Applications, Notice and Public Hearings**

This Rule is divided in three (3) sections:

Section A -  **Application for Permits Authorizations**

States general provision regarding the contents of applications, its oath, and notice of the decisions regarding a permit application.

Section B  **Public Notice**

This section states all the requirements related to all public notices.

Section C  **Public Hearings**

This section states all conditions that must be met for the Board to hold public hearings.

**Rule 104 Information Available to Public**

This Rule states the availability of information obtained by the Board to the public for inspection. It also states provisions regarding confidentiality of information.
Rule 105 Notice of Violation
This Rule states that whenever the Board finds that any provision of this regulation is not complied with, the Board shall issue a written notice of violation to the alleged violator. It also states what shall be included in all notices of violation. This Rule finally states that the Board is empowered to issue an order, after or together with the notice of violation.

Rule 106 Right of Entry to Inspect and Examine
This Rule establishes the right of entry of representatives of the Board to any premises, in which any facility or regulated activity is located or conducted, the right to copy the documents related to the facility, and the right to inspect, sample or monitor.

Rule 107 Closure of an Underground Injection Facility
This Rule establishes the authority of the Board to order the closure or compel the shutdown of an Underground Injection Facility. It also states how long the closure shall remain in effect.

Rule 108 Public Nuisance
This Rule states that nothing in this Regulation shall be construed to authorize or legalize the creation or maintenance of a public nuisance. In addition this Rule does not limit or restrict other prohibitions established in other parts of this Regulation.

Rule 109 Overlapping of Contradictory Provisions
This Rule states that when there exist any provision of this regulation and one is more restrictive or less restrictive than another, the requirement which is more restrictive shall prevail.

Rule 110 Separability Clause
This Rule states that each provision of this regulation shall be considered as separate.
Rule 111 Effectiveness

This Rule states when this regulation shall go into effect.

Rule 112 Penalties and Permit Revocation

This Rule states that any violation of this Regulation shall constitute a misdemeanor and will be subject to the penalties and administrative fines established in the "Environmental Public Policy Law of Puerto Rico".

Rule 113 Compliance Plans for Underground Injection Facilities

This Rule is divided in seven (7) sections:

Section A Individual Compliance Plans

This section states the maximum time period allowed for any existing UIF not in compliance with this Regulation on the date of effectiveness or of notice of violation, to file a complete operation permit application jointly with a compliance plan. It also states the conditions of the compliance plans.

Section B Standards for the Approval of Compliance Plans

This section states the requirements for the approval of compliance plans and their contents.

Section C Action on the Compliance Plan

This section states that the Board shall act on each proposed compliance plan within a reasonable time and that no person shall cause or permit the operation of an UIF if the Board denies a proposed compliance plan or suspends or revokes a compliance plan.

Section D Conditions on Plan Approval

This section empowers the Board to impose any reasonable conditions on the approval of a compliance plan or modification to a compliance plan previously approved.
Section E  Revocation of a Compliance Plan
This section establishes the circumstances for the suspension or revocation of a compliance plan.

Section F  Modifications
This section specifies the provisions necessary for the modification of a compliance plan.

Section G  Alternate Compliance Plan
This section states the provisions for an alternate compliance plan for the closing of operation.

Rule 114  Monitoring, Record Keeping and Reporting

Section A  General Provision
This section states specific requirements regarding monitoring, recording and reports, that may require the Board.

Section B  Monitoring
Provides provisions regarding the monitoring requirements which shall be specified in the operating permit.

Section C  Recording
This section specifies requirements regarding the contents of monitoring records which shall be kept by the permittee.

Section D  Reporting
Establishes the provisions related to the monitoring results to be submitted to the Board.

Section E  Compliance Monitoring
This section empowers the Board to conduct, whenever pertinent, sampling and compliance tests.

Section F  Certification of Test and Reports
States the requirements of certifications which shall accompany all tests and reports submitted to the Board.
Rule 115 Water Pollution Control Systems and Equipment and Treatments Facilities

This Rule is divided in three (3) sections:

Section A General Provision
Establishes the requirement of adequate maintenance of all water pollution control equipment or system, or treatment facility for fluids to be injected.

Section B Performance Standards
This section states that all water pollution control equipment or system, or fluid treatment facility shall be operated at all times and also indicates measures to be taken in the case of a routine shutdown. In addition, this section states spill prevention measures.

Section C New Connections
This section empowers the Board to determine if new connections or additional load will or will not be permitted.

Rule 116 Malfunction or Non Compliance
This Rule states the step to be taken when a malfunction or non compliance occurs in equipment or treatment facility and the measures the permittee shall follow.

Rule 117 Property Rights
This Rule states that a permit does not convey any property rights of any sort, or any exclusive privilege.
Part II General Prohibitions

This part is divided in three (3) Rules.

Rule 201  **Generic Prohibitions**
This Rule states the general prohibition of the Regulation.

Rule 202  **Underground Injection**
States the specific activities prohibited by the Regulation.

Rule 203  **Underground Injection Facility**
This Rule States that no person shall cause or allow an underground injection facility to become inoperative or useless, or the modification, alteration or change of manufacturing specifications, or the conditions upon which the Board approved the operation of such facility.

Part III  **Underground Injection Control (UIC)**

This part is divided in four (4) Rules:

Rule 301  **Applicability**
This Rule is divided in two (2) sections:

Section A  **Specific Inclusions**
This section states the types of Underground Injection activities covered by this Regulation.

Section B  **Specific Exclusions**
This section states the injection facilities not covered by this Regulation.
Rule 302 Construction Permits for New Underground Injection Facilities

This Rule is divided in eight (8) sections:

Section A Permit Required
This section states that no person shall cause or allow the construction, modification or conversion of any Underground Injection Facility without a permit from the Board.

Section B Standards for Granting Permits
This section states the conditions to be demonstrated to the satisfaction of the Board, for the approval of permits for the construction or conversion of underground injection facilities.

Section C Application
This section states all the information which shall be included in every application for a construction permit of an UIF according to the well classification.

Section D Action on Application
This section states the steps to be taken by the Board upon receipt of an application for a construction permit.

Section E Condition Upon Approval
This section states the conditions for granting a UIC construction permit and empowers the Board to impose any reasonable conditions upon granting a UIC construction permit.

Section F Duration and Revocation of UIC Permit to Construct
This section states the duration of the UIC construction permits and the reasons why the Board may revoke a UIC permit to construct.
Section G  Revision to a UIC Construction Permit
Prior to the submission of an application permit to operate, the Board must approve any change in the permit to construct.

Section H  Corrective Action Plugging and Abandonment
This section states when a corrective action plan be submitted together with the permit, the parameters the Board shall use to determine how adequate the plan is; the requirement of a plan for plugging and abandonment and what it shall state.

Rule 303 Operating Permits for Underground Injection Facilities
This Rule is divided in eleven (11) sections:

Section A  Permit Required
This section states the requirement of an permit in order to operate an underground injection facility.

Section B  Criteria for Granting UIC Permits to Operate
This section states the criteria that an applicant must demonstrate to the satisfaction of the Board before granting the applicant a UIC Permit to operate.

Section C  Application
This section states the information required for application of a UIF operating permit according to well classification.

Section D  Action on Application
This section states the action the Board shall take after receipt of an application for an UIF operating permit.
Section E Conditions Upon Granting a UIC Operating Permit

This section states that the Board may impose any reasonable conditions upon granting a UIC operating permit. It also states the conditions that must be met by those applying for permit by Rule.

Section F Mechanical Integrity

This section defines the term mechanical integrity and states the methods and tests for its determination.

Section G Period of Validity

This section states the period of validity of an operating permit.

Section H Review, Modification, Revocation, and Reissuance, Renewal and Termination

This section states that the Board may review, modify, revoke and reissue, renew or terminate any UIC permit during its term for causes set forth in this section.

Section I Transfer of Permits

This section states that permits shall not be transferable unless certain conditions are met.

Section J Posting of a UIC Operating Permit

This section states that a person holding a UIC operating permit must have available, at the facility, an entire copy of the permit or legible facsimile at all times.
Section K  Prohibition of Movement of Fluids into Underground Sources of Drinking Water
This section states that no authorization by permit or rule shall allow the movement of fluids containing any contaminant into USDW, and if such movement occurs the actions the Board may take.

Rule 304  Construction, Operation, Monitoring and Reporting Requirements for UIFS
This Rule is divided in four (4) sections:

Section A  Construction Requirements
This section states the siting requirements of Class II and V-C facilities; casing and cementing; drilling and logs; and the installation of monitoring wells:

Section B  Operating Requirements
This section states general and specific operating requirements for UIFS.

Section C  Monitoring and Reporting Requirements
This section states the monitoring requirements to determine the characteristics of injected fluids and monitoring and reporting requirements.

Section D  Additional Requirements
This section states that the Board may prescribe additional requirements for construction, corrective action, operation, monitoring and reporting as would be necessary to prevent the contamination of underground sources of drinking water.
Part IV  Exemption of Aquifers

This part consists of one (1) Rule:

Rule 401  Exempted Aquifers

This Rule is divided in three (3) sections:

Section A  Criteria to Classify Aquifers as Exempted

This section establishes the criteria to be met in order to classify an aquifer or a portion thereof as "Exempted Aquifer".

Section B  Procedures to Request the Determination of an Aquifer as Exempted

This section states the information that all applicant must submit, for the determination of an aquifer as exempted, including scientific and economic justifications.

Section C  Effects of the Exemption of Aquifers

This section states that all injection activity into an exempted aquifer requires a UIC permit. In no case shall the exemption permit Class I and IV facilities, prohibited by the Regulation.

Part V  Permit and Analyses Fees

This part is divided in two (2) Rules:

Rule 501  Permit and Filing Fees

This Rule is divided in eight (8) sections:

Section A  Filing Fees

This section states the amount of the filing fee for permit applications, approvals, renewals.
Section B  Permit Fee
This section states that an applicant shall pay an annual permit fee in addition to the filing fee.

Section C  Renewal Fee
This section states that sixty (60) days before the expiration date, the permittee shall pay a renewal fee.

Section D  Permit Fees
This section states the amount prescribed for permit fees based on the volume of fluid to be injected.

Section E  Fees Relative to Transfer of Ownership or Change of Location
This section states the fees relative to transfer of ownership or change of location.

Section F  Fees for Duplicate Permits, Approvals or Certifications
This section states the fees the permittee shall pay for duplicates, approvals or certifications.

Section G  Fees for Revisions
This section states the fees for revision of a construction or operating permit or compliance plan.

Section H  Fees for Compliance Plans
This section states that all compliance plans, shall be subject to a permit fee.
Rule 502  Test and Analyses Fees

This section states that the owner or operator of a facility shall pay for the cost incurred by the Board in the fulfillment of analyses and tests.

Appendix A - Construction Requirements for Septic Systems

Appendix A states the requirements for the construction and installation of septic tanks; the construction requirements for trenches and seepage pits systems. It sets forth specifications regarding percolation tests and determination of leaching areas.

Appendix B - Requirements for Class II (c) and VII UIFS

Appendix B states the requirements for the construction and installation of Class II (c) and VII facilities and for determining mechanical integrity, leak detection and abandonment and closure of these facilities.
NOW, THEREFORE, after having examined the submitted document and having made the corresponding amendments and corrections, and pursuant to the authority conferred to the Environmental Quality Board by Law No. 9 of June 1970, Environmental Public Policy Act, as amended, the Board hereby approves and adopts said document, as if they had been set forth in the enclosed document in full text.

Notify the following officials of the Environmental Quality Board: Eng. Carl-Axel P. Soderberg, Vice-Chairman; Eng. Luis E. de la Cruz, Associate Member; Mr. Wilfrido Soto de Arce, Alternate Member; Mr. Miguel Santiago, Acting Director Underground Injection Control Program; Att. Héctor Russe Martínez, Acting Director Office of Legal Matter; Att. Pedro A. Maldonado Ojeda, Office of Legal Matter; and Att. Norma Morales de Sánchez, Director, Office of Examining Officials.

Issued in San Juan, Puerto Rico on August 9, 1983.

Pedro A. Gelabert
Chairman

CERTIFICACION

CERTIFICO que la presente es copia fiel y exacta del original que obra en el Archivo de Seguridad de esta Junta.

En San Juan, Puerto Rico,
UNDERGROUND INJECTION CONTROL REGULATION
Pursuant to and in accordance with Environmental Policy Act (Law No. 9 of June 18, 1970, as amended), and the Safe Drinking Water Act (Part C), as amended, (42 USC 300 t et. sec.) this

UNDERGROUND INJECTION CONTROL REGULATION

Has been promulgated by Resolution Number R-83-23-1 to protect the natural quality of our underground sources of water which are or could be sources of drinking water, by means of an adequate control of underground injection activities.

Dated this 14 th day of September, 1983.

Luis de la Cruz
Associate Member

Carl-Axel F. Roederberg
Vice-Chairman

Pedro A. Gelabert
Chairman
INTRODUCTION

Statement of Goals and Purposes

In Puerto Rico, population growth has been continually increasing the demand for water supply. This circumstance increases the importance of underground water resources as a potential source of water for all uses, in particular for drinking water. The Environmental Quality Board acknowledges this problem and has established a policy of underground water protection.

One of the main objectives of the Board is the conservation, maintenance, and improvement of the quality of existing and potential underground water resources as future sources of drinking water.

As an instrument of achieving these objectives the Environmental Quality Board established an Underground Injection Control Program which was given the task, among others, of preparing a set of rules for the protection, conservation and maintenance of underground water resources. This regulation is the result of said program. The Regulation establishes a permit system which aims at controlling the disposal of industrial and domestic wastes through injection wells (by pressure or gravity flow) as well as through multifamily and non residential septic tanks and other systems, or through sinkholes or natural drainage cavities. The Regulation also intends to control the underground storage of fluids in tanks.

The Underground Injection Control Regulation is adopted by virtue of the powers conferred on the Board by Law #9 of June 18, 1970 known as the Puerto Rico Environmental Public Policy Act (12 LPRAS. 1121 et seq.), as amended, and leaves without effect any other provision, resolution, order or agreement of the Commonwealth of P.R. which might contravene its provisions.
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Part I

GENERAL PROVISIONS
Part I - GENERAL PROVISIONS

Rule 101 - DEFINITIONS AND CLASSIFICATION OF INJECTION FACILITIES

A. Terms Defined for this Regulation

Abandoned Well

A well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

Annular Pressure

A pressure which a fluid exerts laterally from the center of the well towards its walls.

Aquifer

A geological formation, group of formations or part of a formation that is capable of yielding a significant amount of groundwater to wells or springs.

Area of Review

The area of review or zone of endangering influence. This shall be that area the radius of which is the lateral distance from an injection well, field or project in which the pressure in the injection zone may cause the migration of the injection or formation fluids into an underground source of drinking water. The area of review shall be a fixed radius of one fourth (1/4) of a mile from the UIF, field or project.

A different distance may be considered by the Board if the applicant of a permit demonstrates to the satisfaction of the Board, the scientific validity of that request.

The Board may establish an area of review greater than one forth (1/4) of mile whenever the existing geological conditions require it.
Best Management Practices

Those methods, measures or practices that, after establishing the problem and examining the alternatives (including the technical, economic and institutional considerations) results more effective for the prevention or reduction of the pollution of waters arising from non point sources, including structural and non structural controls and the operation and maintenance procedures.

Board or EQB

The Environmental Quality Board of Puerto Rico.

Casing

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

Catastrophic Collapse

The sudden and utter failure of overlying "strata" caused by removal of underlying materials.

Cementing

The operation whereby a cement slurry is pumped into a drilled hole and forced behind the casing.

Confining Bed

A body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.
Confining Zone

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

Contaminant

Any physical chemical, biological or radioactive substance or matter in water or any combination there of.

Conventional Mine

An open pit or underground excavation for the production of minerals.

Conversion

Change of classification of an injection well.

CWA

The Federal Clean Water Act, as amended.

Disposal Well

A well used for the disposal of waste into a subsurface stratum.

Drilling Mud

A heavy suspension used in drilling an "injection well" introduced down the drill pipe and through the drill bit.

Dry Well

A perforation in the earth for fluid extracion, from which a fluid was never obtained in economically feasible quantities.

Effluent

The discharge of waste waters, or sanitary waters, treated or untreated, proceeding from sanitary treatment plants, manufacturing processes, storage tanks, ponds,
sewers or any water pollution source.

**EPA**

The Environmental Protection Agency of the United States.

**Escape of Fluid**

Any escape or movement of fluids representing a potential risk for an USDW.

**Exempted Aquifer**

An aquifer or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures of Rule 401.

**Existing Injection Well or UIF**

An "injection well or UIF" other than a "new injection well or UIF".

**Experimental Technology**

A technology which has not been proven feasible under the conditions in which it is being tested.

**Fault**

A surface or zone of rock fracture along which there has been displacement.

**Flow Rate**

The volume per time unit given to the flow of gases or other fluid substance which emerges from on orifice, pump, turbine or passes along a conduct or channel.

**Fluid**

Material or substance which flows or moves whether in a semisolid, liquid, sludge, gas or any other form or state.
Formation

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

Formation Fluid

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

Fracture

Any rupture or crack of the earth crust.

Generator

Any person, by site location, whose act or process produces hazardous waste identified or listed in 40 CFR Part 261.

Ground Water

Water below the land surface in a zone of saturation. Ground waters include waters under the bed of a river, creek or brook or under the bottom of the sea, of a lake, dam or other body of water irrespective of its origin or state, or of the formation or geological unit in which they are found, flow, percolate or move. All waters found in caves or caverns are also considered ground water.

H-20 truck

A truck able to hold a maximum weight load of 8,000 lbs. in the front axle and a maximum weight load of 32,000 lbs. in the rear axle.
Hazardous Waste

A waste designated as hazardous by the Board or which is listed in 40 CFR Subpart D (261.30), or mixture of hazardous wastes, as defined, or that exhibits any of the characteristics identified in 40CFR Subpart C (261.20), and is not specially excluded under the Regulation for the Control of Hazardous and Non-Hazardous Solid Wastes, as amended.

Hazardous Waste Management Facility

All contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposals operational units (for example, one or more landfills, surface impoundments, or combination of them).

Increments of Progress

The steps to be taken by the owner or operator to bring an Underground Injection Facility (UIF) into compliance with this Regulation and with all conditions pursuant hereto imposed by the Board, as specified in an approved compliance plan or in any other legally binding or enforceable document issued by the Board.
Injection

The subsurface emplacement of fluids through a bored, drilled or driven well or through a dug well where the depth of the dug well is greater than the largest surface dimension or the deposit of fluids by gravity or pressure flow through a natural or man-made cavity, septic systems or underground facilities for the storage or disposal of fluids.

Injection Well or UIF

Wells for the underground injection of fluids including all the equipment and appurtenances needed for the well operation.

Injection Zone

A geological "formation", group of formations, or part of a formation receiving fluids through an UIF.

Lithology

The description of rocks on the basis of their physical and chemical characteristics.

Major Facility

Any UIF classified as such by the Regional Administrator of EPA in conjunction with the Board.

Modification

Any physical change to, or change in the method of operation of, or addition to an underground injection facility which results or may result in:

1. Increase or otherwise alter the volume, temperature or concentration of any pollutants of any existing effluent in excess of the limits imposed by any valid approval, permit or enforceable document from the Board; or
2. The addition of any pollutant not previously included in the effluent.

**Natural Drainage Cavity**

Fracture, duct or natural cave which allows the drainage of fluids into the subsurface.

**Natural Quality of the Waters**

The quality of a body of water which, within any reasonable doubt, can be assured that is not directly or indirectly affected by human activities.

**New Injection Well or UIF**

A well or UIF which began injection after the approval of the UIC Program.

**NPDES**

National Pollutant Discharge Elimination System.

**Owner or Operator**

The owner or operator of any facility or activity subject to regulation under the UIC program.

**Packer**

A device lowered into a well to produce a fluid-tight seal.

**Permit**

An authorization, license, or equivalent control document issued by the Board to implement the requirements of this Regulation and of 40 CFR, Parts 124, 144, 145 and 146, including UIC authorization by rule. Permit does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or a "proposed permit".

**Permit by Rule**

The authorization of use, granted and certified by the Board to a UIF without the formal permit issuance, provided these UIF'S are those specified in Rule 303(E)7 of this Regulation and comply with the conditions established therein.
Person

A natural person or legal association or group of private or public associations with the capacity of assuming any activity controlled by this Regulation, including Federal and State agencies, municipalities, public and governmental bodies or an agent or employee thereof, trust and partnership.

Plugging

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

Plugging Record

A systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations which are sealed and a graphic log of the well showing formation location, formation thickness, and location of plugging structures.

Pollutant

See contaminant.

Pressure

The total load or force per unit area acting on a surface.

Project

A group of UIF's in a single operation.
Radioactive Waste
Any waste which contains radioactive material in concentration which exceed those listed in 10 CFR Part 20, Appendix B, Table II column 2.

RCRA
Resource Conservation and Recovery Act, as amended.

Run-off Waters
Rainwater or irrigation water which flows by gravity on the land surface.

SDWA
The Federal Safe Drinking Water Act, as amended.

Significant Yield of Water
Yield of water from a well or spring in economically feasible quantities.

Sinkhole
A natural depression formed by the solution or erosion of limestone, dolomite (and on occasions, gypsum rock) or any other formation that permits the filtration or injection of water or any other fluid.

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

Spill
Any loss or release of any contaminant in such a manner that it moves towards or is capable of moving towards and reaching the waters of Puerto Rico.

Standard Temperature and Pressure
0°C Temperature (273°K) and 760 mm Hg (1 atm.) pressure.

Stratum
A single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.
Subsidence

The lowering of the natural land surface in response to: Earth movements; lowering of fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (Hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.

Surface Casing

The first string of well casing to be installed in the well.

Terrestrial Sources

Any source that produces or could produce wastes waters or run-off waters containing only uncontaminated soil particles and which cannot be attributed to activities produced by man.

Total Dissolved Solids ("TDS")

Means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136.

Toxic Substances

Those substances or combination thereof, including disease causing agents, which after being discharged or emplaced and after their exposure, ingestion, inhalation or assimilation by any organism, directly from the environment or indirectly by means of ingestion through the food chain; is the cause, based on the information available.
to the Board or to the Environmental Protection Agency, of death, illness, abnormal behavior, cancer genetic mutations, physiologic malfunctioning (including malfunction of reproduction) or physical deformations, in such organisms or their descendants; those substances enumerated in the recent version of Table #1 present by the Publishing Committee #95-30 of the Committee for Public Works and Transportation of the House of Representatives of the United States Congress.

Treatment Facility

Any device equipment, process and all its appurtenances used for the prevention, elimination, reduction, storage, treatment, separation or disposal of used water, including rainwater run-off or any other method, including the disposal in soil used for recycling or claiming waste of liquid nature, of municipal, domestic, industrial, agricultural, commercial or of any other type.

Underground Injection

A "well injection".

UIC


UIF

Underground Injection Facility. (See injection well).
**Underground Tank**

A container of any type or material for the storage or temporary or final disposal of any fluid which is totally or partially under the ground level and those on the surface level if their inferior portion is on direct contact with the earth.

**USDW**

Underground Source of Drinking Water. An aquifer or a portion:

a. Which supplies any public water system; or
b. Which contains a sufficient quantity of ground water to supply a public water system and currently supplies or could supply drinking water for human consumption, or
c. Contains fewer than 10,000 mg/l total dissolved solids; and is not an exempted aquifer.

**Wastewaters**

Any liquid substance disposed of, resulting from industrial, commercial, municipal, residential, agricultural, recreational, institutional or any other type of operation or establishment and any other substance disposed of which contains contaminants.

**Wastes**

(See contaminant)

**Water Pollution Source**

Any building, structure, facility or installation, or combination thereof either municipal, domestic, commercial, industrial, agricultural or of any kind, capable of generating or producing and discharging used waters, with the exception of terrestrial sources.
Waters of Puerto Rico

All coastal, surface and subsurface waters within the jurisdiction of the Commonwealth of Puerto Rico, including all rivers and their tributaries, ponds, lakes, streamlets, creeks, ditches, drainage system and any other waterbody except those constructed and used exclusively for collection, transportation, treatment or disposal of used waters.

Well

A bored, drilled or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension, and all septic tanks, cesspools, underground storage tanks, sinkholes and natural drainage cavities.

Well Injection

The subsurface emplacement of fluids through a well.

Well Log

A log obtained from a well, indicating information such as resistivity, radioactivity, spontaneous potential and acoustic velocity as a function of depth.

Well Monitoring

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

Well Plug

A watertight and gastight seal installed in a borehole or well to prevent movement of fluids.

Well Stimulation

Several processes used to clean the well bore, enlarge channels and increase pore size in the interval to be injected, thus making it possible for wastewater to move more
readily into the formation, and includes:

(1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.

B. Classification of Injection Facilities

Injection wells or facilities are classified as follows:

1. Class I
   a) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation containing within one quarter (1/4) mile of the well bore, an underground source of drinking water.
   b) Other industrial and municipal disposal wells or facilities which inject fluids beneath the lowermost formation containing, within one quarter (1/4) mile of the well bore, an underground source of drinking water.

2. Class II
   Wells which inject fluids:
   a) Which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.
   b) For enhanced recovery of oil or natural gas;
   c) For storage of hydrocarbons which are liquid at standard temperature and pressure.
3. **Class III**

Wells which inject for extraction of minerals or energy, including:

a) Mining of sulfur by the FRASCH process;
b) In situ production of uranium or other metals. This category includes in situ production from ore bodies which have not been conventionally mined and solution mining of conventional mines such as stopes leaching.
c) Solution mining of salts or potash.
d) Injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale.

4. **Class IV**

a) Wells used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous waste management facilities, or by owners or operators or radioactive waste disposal sites to dispose of hazardous waste or radioactive wastes into or above a formation which within one quarter (1/4) mile of the well contains an underground source of drinking water.

b) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to dispose of hazardous waste, which cannot be classified under Rule 101 B1 (a) or Rule 101 B4 (a). (e.g. wells used to dispose of hazardous wastes into or above a formation which contains an aquifer which has been exempted pursuant to Rule 401).
5. **Class V**

Injection wells not included in Class I, II, III, IV or VI. Class V wells include:

**Type A wells:**

- **a)** $A_1$ - Sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines whether what is injected is a radioactive waste or not.
- **b)** $A_2$ - Radioactive waste disposal facilities other than Class IV.
- **c)** $A_3$ - Drywells for the injection of wastes into a subsurface formation.
- **d)** $A_4$ - Subsidence control wells (not used for the purpose of oil natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.
- **e)** $A_5$ - Wells used for the storage of hydrocarbons which are gases at standard temperature and pressure.
- **f)** $A_6$ - Wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts.

**Type B wells**

- **a)** $B_1$ - Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump;
- **b)** $B_2$ - Salt water intrusion barrier wells used to inject
water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water.

c) B3 - Cooling water return flow wells used to inject water previously used for cooling.

d) B4 - Recharge wells used to replenish water in an aquifer.

e) B5 - Drainage wells used to drain surface fluid and roof drains of primarily storm runoff, into a subsurface formation.

f) B6 - Injection facilities associated with the recovery of geothermal energy for heating, aquaculture and production of electric energy.

g) B7 - Underground injection facilities used in experimental technologies.

Type C wells

a) C1 - Septic system wells including all septic tanks used to inject the waste or effluent from a multiple dwelling, business, government and municipal community or regional septic tank for any type of business, government and municipal establishments and any septic tank on an industrial park. The UIC requirements do not apply to single family residential septic systems.

b) C2 - Wells that receive wastes, which have an open bottom and sometimes have perforated sides (cesspools), including multiple dwelling, community or regional cesspools. The UIC requirements do not apply to single family residential cesspools.
6. **Class VI**
   Sinkholes or natural drainage cavities.

7. **Class VII**
   Underground tanks for storage of any fluid except those included under Class II (c).
RULE 102 AMENDMENTS TO THE REGULATION

A. Effectiveness of Amendments

1. Amendments to this Regulation may be adopted by the Board and shall become effective 30 days after the date of their filing in the Department of State or immediately by an Executive Order of the Governor, in conformity with Law No. 112 of June 30, 1957, as amended.

B. Notice and Public Hearing on Amendments to this Regulation

1. The Board shall not adopt any amendments to this regulation without public notice and a public hearing in accordance with Rule 103, provided that this provision shall not limit the authority of the Board not to adopt the proposed amendment(s).

2. The public hearing requirements referred to in 102 (B) (1) above shall apply in cases when the Board has to adopt amendments that modify the text of pending amendments to this Regulation which have already been considered in public hearing, if said modifications do not alter or significantly change the concept or intent of the original version of the proposed amendment.
C. Effect of Amendments on Authorizations, Permits and Compliance Plans

1. For purpose of this Rule, a proposed amendment to this Regulation shall be considered pending:
   a. From the date of the first publication of the notice of public hearings of the amendment; and
   b. Until the date the Board takes final action or upon adoption by the Board, until the date of effectiveness of the amendment pursuant to Law No. 112 of June 30, 1957, as amended.

2. While any proposed amendment of this Regulation is pending, the Board may grant temporary authorizations for a period not greater than one (1) year, provided that the said authorization may be renewed if the proposed amendment continues pending.

3. Except as provided in Rule 102 C (4), amendments to this Regulation shall not affect the validity of any permit, compliance plan, approval or authorization lawfully granted or approved by the Board before an amendment is pending.

4. 180 days after the effectiveness of any amendment to this Regulation, the Board may revoke or cancel any permit, compliance plan, approval or authorization, or may impose additional conditions thereon, when the Board finds such action necessary to attain and maintain compliance with any
amendment which goes into effect. If requested in any writing within 30 days of the notification, the party affected by the revocation or modification shall have the opportunity of an administrative hearing before the Board.

D. Amendment Requests

1. Any interested person may request the Board to modify, amend or revoke, any part of this Regulation. Every request shall be submitted to the Board by certified mail and shall include the following:
   a. Name and address of petitioner;
   b. A statement of petitioner's interest and its juridical capacity on the proposed action;
   c. Complete description of the proposed amendment including the proposed language; and
   d. A detailed statement of the need of the proposed revision and its justification including support samplings, studies and any other information.

2. The Board shall not adopt any revision to this Regulation without previous publication of a public notice and the holding of a public hearing.
RULE 103 APPLICATIONS, NOTICE AND PUBLIC HEARINGS

A. Applications for Permits, Authorizations and Compliance Plans

1. Content of Applications
   All applications must comply with the rules and policies of the Board, and must be filed on forms provided by the Board. All information, plans, specifications, evidence, supporting material or documentation required by the Board for consideration of the applications must be included therewith.

2. Oath
   Each application shall be signed and sworn to by the applicant according to the requirements in Rule 302 C(12) attesting under oath, the truth and correctness of all facts, statements, and information submitted.

3. Single Facility
   Except as otherwise specifically permitted, each application shall pertain to only one facility and shall include specific information relative to that facility.

4. Decision and Notification to Applicants
   The Board shall notify the applicant in writing of its decision on regard to each application filed pursuant to this Regulation. The Board shall point out in any notice of disapproval its reasons for such determination.

B. Public Notice

1. All public notices shall specify the date, the time and place where any background documents regarding a pending matter before the Board will be available for public
inspection, including any preliminary determination by
the Board on authorizations, permits and compliance
plans, and the period during which interest persons
may submit written comments or request a public hearing.
A request for public hearing shall be in writing and
shall state the nature of the issues proposed to be
raised in the hearing.

2. All public notices shall also specify the following:
   a. Name and address of the permittee or permit appli-
      cant, and if different, of the facility regulated
      or to be regulated by the permit.
   b. A brief description of the business conducted at
      or proposed for the facility described in the permit
      application or draft permit.
   c. A brief description of the comment procedures required,
      including a statement of procedures to request a hearing
      (unless a hearing has already been schedule) and other
      procedures by which the public may participate in the
      final decision.
   d. Any additional information considered necessary or
      proper by the Board.
   e. Public notices not used for announcing the holding of
      public hearings shall establish a thirty day (30)
      period, from the publication of the notice, to receive
      comments from the public or requests for public hearings.

3. All public notices of public hearings, shall specify the
day, the time and place of the public hearing and shall be published at least thirty (30) days before the hearing.

4. The notice shall be published in at least two (2) newspapers of general circulation in Puerto Rico.

5. Whenever the notice relates to any application or appeal under consideration by the Board, the applicant shall pay the Board the cost of the notice before its publication or see that the notice is published, in which case the publication shall be made in accordance with the specifications established herein or by the Board.

C. Public Hearings

1. The Board shall hold public hearings when required by this Regulation, giving notice thereof according to the preceding subsection B above.

2. The Board may also at its option, hold public hearings on those matters under its consideration.

3. The Board shall hold a public hearing whenever the Board finds, on the basis of request, a significant degree of public interest.

4. If the Board decides to hold a public hearing on a matter for which it published a notice, but without having announced the public hearing, the Board must publish a new announcement regarding said public hearing.

5. The Board may periodically hold public hearings to consider possible amendments to this Regulation or submit the complete Regulation to hearings for the proposal of amendments by the public.
Any information received or obtained by, or to be submitted to the Board, as required by this regulation or any permits issued pursuant thereto, shall be available to the public for inspection and copying except when it has been marked or identified as confidential and the Board has determined the information is in fact confidential. The Board will only consider information to be confidential if it might substantially adversely affect the competitive position of the person providing the information. Any person who submits information to the Board may assert a claim of confidentiality covering all or part of that information by declaring specific reasons for that claim. If no claim of confidentiality accompanies the information when it is submitted to the Board, it will be made available to the public without further notice. Confidentiality of information does not justify its being withheld from the Board, including its officials and its employees. Confidentiality of information also does not prevent the Board, including its officials and its employee, from making whatever confidential use of such information may be necessary for implementation of this Regulation, including use in enforcement proceeding and including the sharing of such information with EPA upon request without restriction. Claims of confidentiality for the following information will be denied: (1) The name and address of any permit applicant or permittee (2) Information which deals with the existence, absence, or level of contaminants in drinking water and in the waters of Puerto Rico.
RULE 105  NOTICE OF VIOLATION

A. Whenever, the Board finds that any provision of this Regulation is not complied with, the Board shall issue a written notice of violation to the alleged violator.

B. All notices of violation shall specify the reasons that prompted the notice, and may include those requirements that the Board deems pertinent to bring the injection facility into compliance within the period granted by the Board. In no case shall this period exceed 30 days unless the notified violator submit and the Board approves a compliance plan according to Rule 113.

C. Notwithstanding the provisions of Rule 105 Sections A and B, the Board may issue an order pursuant to Article 11 of the "Environmental Public Policy Law of Puerto Rico" (Law No.9 of June 18, 1970, as amended) requiring the owner or operator of the facility to submit reports, appear before the Board or hearing panel, or to cease and desist of any violation of this Regulation.

RULE 106  RIGHT OF ENTRY TO INSPECT AND EXAMINE

A. Representatives of the Board, upon presentation of their credentials:

1. Shall have right of entry to any premises in which any facility or regulated activity is located or conducted or in which any records required to be maintained under this Regulation are located;

2. Shall have access to and right to copy any documents in said records;

3. Shall have the right to inspect for a reasonable time any facility, equipment (including monitoring and control
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equipment), practice or operations regulated or required under this Regulation; and

4. Shall have access to sample or monitor for a reasonable time, any substance or parameter in any location with the purpose of assuring compliance of any issued permit under this Regulation.

RULE 107  CLOSURE OF AN UNDERGROUND INJECTION FACILITY

A. The Board may order the closure or compel the shutdown of an underground injection facility when found not in compliance with this Regulation, or if a violation persists after the time limit granted by the Board under a notice of violation, an order or any other enforcement action.

B. The closure shall remain in effect until the underground injection facility is found in compliance with this Regulation. The person against which said order is issued may request an administrative hearing where he shall state his reasons why the order should be modified or revoked and not put in force. The filing of the request for administrative hearing shall not exempt a person from complying or obeying any order or decision of the Board, nor shall it operate in any time as a suspension or postponement of its effectiveness unless a special order from the Board so directs.

RULE 108  PUBLIC NUISANCE

A. Nothing in this Regulation shall be construed to authorize or legalize the creation or maintenance of a public nuisance as defined in Article 329 of the Penal Code of Puerto Rico.

B. This Rule shall not be understood as a limit or restriction on the other prohibitions established in other parts of this Regulation.
RULE 109  OVERLAPPING OR CONTRADICTORY PROVISIONS

If a requirement established by any provision of this Regulation is either more restrictive or less restrictive than a requirement established by any other provision of this Regulation, the requirement which is more restrictive shall prevail.

RULE 110  SEPARABILITY CLAUSE

If any provision of this Regulation is declared null or unconstitutional by order of a court, such declaration or order shall not affect the other provisions of this Regulation, each one being considered as separate.

RULE 111  EFFECTIVENESS

This Regulation shall go into effect thirty (30) days after the date of its filing in the Department of State of the Commonwealth of Puerto Rico or immediately by an Executive Order in conformity with Law 112 of June 30, 1957, as amended.

RULE 112  PENALTIES AND PERMIT REVOCATION

Any violation of this Regulation shall constitute a misdemeanor, and will be subject to the penalties and administrative fines established in the "Environmental Public Policy Law of Puerto Rico (law. No. 9 of June 18, 1970, as amended). Moreover, the Board may, in any case of infraction to this Regulation, suspend, amend, or revoke any permit, approval, or other authorization issued under this Regulation.
RULE 113  COMPLIANCE PLANS FOR UNDERGROUND INJECTION FACILITIES

No person shall cause or permit the operation of an existing UIF in violation of any of the requirements of this Regulation unless the owner or operator has a compliance plan approved by the Board.

A. Individual Compliance Plans

1. Any existing UIF not in compliance with this Regulation on the date of effectiveness shall comply with the Regulation within a period of 6 months of the date of effectiveness. An existing UIF may continue operating if:

   a) It has filed a complete operation permit application jointly with a compliance plan within 60 days of the date of effectiveness of this Regulation; or

   b) Is operating according to a compliance plan approved by the Board.

2. If the owner or operator of a UIF, against which a notice of violation or enforcement action has been issued according to Rule 105, cannot attain compliance within a period specified by the Board, which cannot exceed 60 days from the date of said notice or enforcement action, the Board shall proceed pursuant to Rule 107 unless the owner or operator of the facility submits and the Board approves a compliance plan. This shall not hinder the Board from imposing sanctions or from requiring other solutions to the violation.
3. Once the compliance plan is approved by the Board it shall form part of the conditions of the UIF operating permit until the date of compliance specified in the plan.

B. Standards for the Approval of Compliance Plans

1. The Board shall not approve any compliance plan unless the applicant shows that the plan provides for compliance with this Regulation and with the conditions of the UIC permit, as soon as possible.

2. The compliance plan shall establish the dates on or before which the increments of progress shall be attained and by which the applicant shall submit to the Board periodic progress reports to demonstrate the continuous compliance with the terms of the plan. These reports shall be submitted within 15 days of the date of expiration specified for the increments of progress, unless an application for modification has been filed according to Section F of this Rule. The requirements of all compliance plans shall be met as soon as possible but no later than 2 years.

3. The proposed compliance plan according to Section A (2) of this Rule shall establish the time to attain the final compliance with each of the requirements of this Regulation.
4. All proposed compliance plans shall indicate, in
detail, the measures to be taken for the attainment
of compliance in the facility with the provisions of
this Regulation and with the conditions of the UIC
operating permit on each proposed date.

5. Each proposed compliance plan shall be signed by
the owner or operator of the UIF.

C. Action on the Compliance Plan

1. The Board shall act on each proposed compliance plan or
application for plan modification within a reasonable
time provided that in case of an existing UIF for which
a plan together with its permit application has been
filed, the Board shall act concurrently with the evalua-
tion of said application.

2. No person shall cause or permit the operation of an
UIF if the Board denies a proposed compliance plan
submitted for such facility or suspends or revokes a
compliance plan previously approved.

D. Conditions on Plan Approval

The Board may impose any reasonable conditions on the
approval of a compliance plan or modification to a com-
pliance plan previously approved.

E. Revocation of a Compliance Plan

1. The Board may suspend or revoke a compliance plan
if any of the terms and conditions of the plan are
violated.
2. The suspension or revocation of a compliance plan shall be in effect immediately after the date of the notice of said action by the Board to the owner or operator of the UIF subject to the rights of public hearings, reconsideration and judicial review provided by law.

3. The suspension or revocation of a compliance plan shall be deemed a suspension or revocation of any operating permit granted to the UIF by the Board.

F. Modifications

1. Whenever the owner or operator of UIF determines that the schedule of increments of progress included in the approved compliance plan cannot be complied with, he shall apply for a modification from the Board.

2. The modification may cover the schedule of increments of progress and other parts of the compliance plan except the date of final compliance which shall not be extended unless circumstances the Board determines that special warrant such an extension. The applicant for such extension shall provide evidence of such circumstances and in no case shall the extension be for a period greater than six (6) months from the submission of the application for modification.

3. All applications for modification of the compliance plan shall be filed before the date of the increments of progress specified in the compliance plan which cannot be attained. Such application shall be signed as per requirements in Rule 302 C (12) and shall contain as a minimum:
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a. The specific reasons for which the date of the plan cannot be complied with;
b. The proposed changes in the schedule of increments of progress; and
c. any change in the steps to be taken in order to attain compliance according to Section B (4) of this Rule

4. The owner or operator of the UIF shall be notified, in writing, of any modifications or schedules approved by the Board which shall be appended to the compliance plan previously approved.

G. Alternate Compliance Plan

Any existing UIF which must cease operating on the date of effectiveness of this Regulation or any owner or operator of an UIF who wishes the cessation of the activities regulated by this Regulation instead of continuing the operation and attaining the permit requirements, may propose an alternate compliance plan for the closing of its operations. This shall be subject to the provisions of this Rule and shall include a plan for plugging and abandonment pursuant to Rule 302 Section H (2) and the alternate methods to be used for the disposal or storage of injection fluids. An existing UIF may continue to operate if the owner or operator has filed within 60 days of the effective date of this Regulation, a complete operating permit application together with a compliance plan. Once the compliance plan is approved, the existing UIF can
continue operating, provided it operates according to the approved compliance plan. The existing UIF shall not continue injecting underground if the Board denies a compliance plan.

RULE 114  MONITORING, RECORD KEEPING AND REPORTING

A. General Provision

The Board may require the owner or operator of any injection facility to install, use, maintain and calibrate such monitoring equipment; provide the necessary equipment and appurtenances for sampling injected fluids, perform analyses, establish and maintain records; and prepare and submit such periodic reports as the Board deems necessary. For injection facilities the Board may require the owner or operator as a minimum to sample:

1. water quality in the receiving formation;
2. each injection of fluids; and
3. the quality of surface waters which are totally or partially nourished by the receiving formation.

B. Monitoring

1. Each approval of an UIC operating permit shall specify the sampling and analyses requirements, including frequency and type of sampling and analyses.
2. The required sampling and analyses shall be according to Rule 304 (c).
C. Recording

1. The owner or operator (permittee) shall keep a record of monitoring activities and its results including all original continuous chart recordings and calibration and maintenance records. All information contained in the record shall be kept for a minimum of six (6) years. This period of retention may be extended automatically during the course of unresolved litigation or as required by the Board.

2. All record of monitoring shall include for all samples and measurements:
   a. the date, and time samples or measurements were taken;
   b. exact location where the sample or measurement was taken;
   c. methods used to take the sample or measurements;
   d. chain of custody (for samples);
   e. dates the analyses were performed;
   f. name and license number, when applicable, of who performed out the analyses;
   g. analytic techniques and methods used;
   h. results of such analyses; and
   i. name of individuals who took the measurements.
D. Reporting

1. The owner or operator (permittee) shall submit the monitoring results to the Board on forms approved by the Board.

2. The monitoring reports shall be submitted as required by the Board in an enforcement order, approval or permit, compliance plan, certification or any authorization granted by the Board, but the reporting period shall not be greater than one year.

3. The permittee shall notify the Board at such time as the permit requires before conversion or abandonment of the UIF.

4. The permittee shall give notice to the Board at least six (6) months in advance of any planned physical alterations or additions to the permitted facility. The Board shall approve or deny it at least within a period of 4 months after submittance of the notice.

5. The permittee shall give at least 2 months advance notice to the Board of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

E. Compliance Monitoring

1. Whenever pertinent, the Board may conduct sampling and tests of fluid to be injected underground.
2. Upon request of the Board, the owner or operator of any injection facility shall provide access and such other safe and proper sampling and testing facilities.

3. The requirements of Rule 114 (E) do not include instruments or apparatus for sampling or testing except when specifically required by the Board in accordance with this Regulation.

F. Certification of Tests and Reports

1. All records and reports required pursuant to this Regulation shall be submitted on forms approved by the Board, and shall be submitted in a manner consistent with Rule 302 C 12 (b), (c), (d). The Board reserves the right to require that a record or report be notarized.

2. All tests shall be made and the results calculated in accordance with test procedures prescribed by this Regulation. Furthermore, each test shall be certified by a professional, qualified by his academic preparation and experience to make each test. If requirements for a licence and membership into a professional organization exist for a profession, the professional shall be adequately licensed to practice in Puerto Rico. The following tests and studies shall be certified by a professional as specified or by another professional whose qualifications and experience, as previously shown to the Board, prove him capable to carry out said tests and studies in each of the following subjects:
a. Chemical Analyses - Chemist or Chemical Engineer.
b. Bacteriological Analyses - Medical technologist or a person with a master degree in microbiology.
c. Geologic Studies - Geologist (at least a baccalaureate degree in sciences with specialization in geology).
d. Hydrologic Studies - Hydrologist and Geologist, or an experienced Engineer.
e. Hydrogeologic Studies - Geologist with experience in hydrology, Hydrogeologist.
f. Land Survey - Land Surveyor or Civil Engineer qualified to carry out land survey work.
g. Soil Study - Civil Engineer with specialization in soil studies or soil mechanics or a geologist.
h. Mechanical Integrity Studies - Geologist or Engineer.

RULE 115  WATER POLLUTION CONTROL SYSTEMS AND EQUIPMENT AND TREATMENT FACILITIES

A. General Provision

All water pollution control equipment or system, or treatment facility for fluids to be injected, shall provide for continuous compliance in accordance with this Regulation. Such equipment, facility or system shall be installed, maintained and operated according to the specifications of the manufacturer, and under the terms and conditions for its construction and operation as authorized by the Board.
B. Performance Standards

1. Operation Continuity
   a. All water pollution control equipment or system, or fluid treatment facility shall be operated at all times and in conjunction with the injection facility except if the Board has approved alternative injection fluid disposal methods or storage facilities for fluids to be injected.
   b. The Board may require additional equipment or treatment to continue operation.

2. Routine Shutdown
   In the case of a shutdown of any water pollution control equipment or system, or treatment facility for fluids to be injected for necessary scheduled maintenance, the intent to shutdown such equipment, system, or treatment facility shall be reported to the Board at least 96 hours prior to the planned shutdown. This prior notice shall include, but is not limited to the following:
   a. Identification of the specific facility system or equipment to be taken out of service as well as its location and injection facility permit number;
   b. In case the facility will not be taken out of service as a result of the schedule maintenance, the measures that will be taken to prevent violations of this Regulation; and
   c. The expected length of time that the water pollution control equipment, system or injection fluids treatment facility will be out of service.
3. **Spills**

   In order to prevent spills that could significantly contaminate groundwater through an injection facility, all preventive measures, including but not limited to, catchment areas or entrapment dikes, shall be taken.

C. **New Connections**

   1. The Board may determine that an injection facility has overtaken or surpassed its design capacity or permitted injection capacity to prevent USDW contamination so that no new connections or additional load may be permitted without causing a violation of this Regulation or of permit conditions.

   2. If an UIF has surpassed the permitted injection capacity to prevent USDW contamination, the Board may require the reduction of injection volume or pressure or any other measures deemed pertinent so that such facility complies with this Regulation or with permit conditions.
RULE 116  MALFUNCTION OR NON COMPLIANCE

A. In the event that any underground injection facility (UIF), pollution control equipment or system for fluid injection, treatment facility or other related equipment breaks down, malfunctions, ruptures, leaks or is rendered partially or totally inoperative in such a manner as to cause the injection of a fluid in violation of this Regulation, or in case of any non compliance with a permit condition or any monitoring or other information indicating any contaminant that may cause an endangerment to an USDW; the person responsible for such equipment, or facility shall report to the Board such failure, breakdown or non compliance, within 24 hours following the failure or non compliance and provide all pertinent available facts, including the estimated duration of the non compliance or malfunction.

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

C. The Board shall be notified in writing not later than one (1) weeks after the incident except when the Board requires an earlier report. The report shall include a description of the failure or non compliance and its cause, specific data concerning the affected sources of contamination, injection facilities, pollution control equipments or systems for fluid to be injected and other related equipment, the period of non compliance, including dates and times of the malfunction,
or non compliance, corrective measure and it if the malfunction or non compliance has not been corrected, the anticipated time it is expected to continue.

D. Should a malfunction occur, the injection facility or treatment facility causing the violation shall cease treatment and injection operations immediately to make the necessary repairs.

E. If a malfunction occurs only in the treatment facility injecting the fluid, it may be operated notwithstanding the provisions in Section D, provided an alternative disposal method or storage facility has been approved by the Board.

F. The occurrence of a malfunction shall not relieve the owner or operator from complying with any provision of this Regulation.

G. Not later than one week after a malfunction or non compliance has been corrected, the owner or operator shall submit another written report to the Board including:

1. A certification indicating the correction of the malfunction or non compliance, specifying the date of correction.
2. A description of the corrective measures and steps taken to reduce, eliminate or prevent occurrence of such malfunction or non compliance in the future;
3. An estimate of the total amount of contaminants injected or present in the USDW as a result of the malfunction or non compliance, including all the analyses and computations carried out for their attainment.

H. The reports required by Sections C and G of this Rule may be submitted as a single report provided that there has been compliance with the one (1) week time limit required by Section C.
I. The report requirements set forth by this Rule shall not be a substitute for the reports required in Article 4.4.1 of the Water Quality Standards Regulation of Puerto Rico.

RULE 117 PROPERTY RIGHTS

This permit does not convey any property rights of any sort, or any exclusive privilege.
PART II

GENERAL PROHIBITIONS
Part II: **General Prohibitions**

**RULE 201: GENERIC PROHIBITIONS**

A. No person shall cause or allow the disposal or injection of any fluid through an UIF in violation of this Regulation or of the conditions of a UIC permit including the Federal Underground Injection Control Regulation as established in 40 CFR, 124, 144, 145, and 146 of the Code of Federal Regulations.

B. No person shall install or cause the installation or use of any device or additive or any measure, which conceals or dilutes the injected fluid which would otherwise violate this Regulation.

C. No person shall operate or cause the operation of any injection facility if such person fails to achieve any scheduled increment of progress established pursuant to Rule 113 Section B, or any enforcement order of the Board. The injection facility may be operated beyond this limit, provided that an application for modification of the scheduled increments of progress has been submitted pursuant to Rule 113 (F) and approval has been granted by the Board for such modification.
RULE 202 UNDERGROUND INJECTION

No persons shall cause or allow:

A. The underground injection of hazardous wastes through an underground injection facility.

B. The construction of any Class I or IV injection facilities on the effective date of this Regulation.

C. The operation of any Class I or Class IV facility after six (6) months following approval or promulgation of a UIC Program by the Board and by the U.S EPA Administrator.

D. The construction or operation of Class V UIFS, Types A2, A3 and C2 (injection facilities).

E. The injection of fluids through Class V UIFS, Types B1, B-2, B-3 and B-4, which are not waters of equal or better quality than those of the receiving aquifer in its natural state, except when the Board determines that the quality of fluids to be injected shall be strictly superior to the receiving aquifer, complying with more strict requirements, when the Board deems necessary. The Board may fix a temperature standard when deemed pertinent.

F. The injection of fluids through a Class VI injection well except for:

1. Runoff waters that do not contain contaminants in excess of the standards established by the Water Quality Standards Regulation of Puerto Rico as amended, for waters classified as SD, unless said contaminants originate from terrestrial sources after the application of the best management practices approved by the Board.
2. Cooling waters that do not contain contaminants in excess of the standards established by the Water Quality Standards Regulation of Puerto Rico as amended, for waters classified as SD except the temperature limit, parameter for which the Board may fix a standard, when deemed pertinent.

3. Treated waters that do not contain contaminants in excess of the standards established by the Water Quality Standards Regulation of Puerto Rico as amended, for waters classified as SD.

G. The underground injection through a Class VI injection well at a pressure other than the force of gravity.

H. The modification of a Class VI well in a manner that the original natural condition is altered, unless the modification is approved by the Board.

**RULE 203 UNDERGROUND INJECTION FACILITY**

No person shall cause or allow an underground injection facility to become inoperative or useless, or the modification, alteration or change of manufacturing specifications, or the conditions upon which the Board approved the operation of such facility.
PART III

UNDERGROUND INJECTION CONTROL (UIC)
Part III - UNDERGROUND INJECTION CONTROL (UIC)

RULE 301 APPLICABILITY

A. Specific Inclusions

Types of underground injection activities covered by this Regulation include, but are not limited to the following facilities:

1. Any injection facility located on a drilling platform inside Puerto Rico's territorial waters.

2. Any underground injection facility irrespective of the quality of the ground waters.

3. Any well, used for the subsurface emplacement or disposal of fluids.

4. Any septic tank or cesspool used by generators of hazardous waste, or by owners of hazardous waste management facilities, to dispose of fluids containing hazardous wastes.

5. Any septic tank, cesspool, or other wells used by a multiple dwelling, industry, commerce or other private, governmental or municipal establishment, community or regional system for the underground injection of wastes.

6. Any sinkhole or other natural drainage cavity used for the emplacement or injection of fluids.

7. Private and governmental injection facilities including municipal, state and federal facilities.

8. Underground tanks for fuel storage or any other type of fluid.

B. Specific Exclusions

The following injection facilities are not covered by this Regulation:
1. Injection facilities located on a drilling platform or other site that is beyond Puerto Rico's territorial waters.

2. Individual or single family residential wastewater systems such as domestic septic systems.

3. Any well which is not used for emplacement or disposal of fluids underground.

4. The injection of mortar cement (grouting) to plug the subsurface.

5. Sinkholes or natural cavities not modified by man which receive storm waters from areas in their natural state.

6. Puerto Rico Aqueduct and Sewer Authority's underground water storage tanks and those covered by the Regulation for the Control of Hazardous and Non-Hazardous Wastes, as amended.

RULE 302 CONSTRUCTION PERMITS FOR NEW UNDERGROUND INJECTION FACILITIES

A. No persons shall cause or allow the construction, modification or conversion of any underground injection facility (UIF) which has not been specifically prohibited in Rule 202, without a permit from the Board. In addition, all UIFs must be in compliance with Rules 201 and 202.

B. Standards for Granting Permits

1. Permits for the construction or conversion of underground injection facilities shall be granted only if an applicant demonstrates to the satisfaction of the Board that:
   a. For all classes of UIFs, the underground injection will not result in movement of fluids into an underground source of drinking water (USDW), except in the case of storm or cooling waters and treated waters that comply with the water quality standards
for waters classified SD, before entering the injection facilities.

b. For all classes of UIFS the underground injection will not result in the presence of any contaminant in a USDW which may adversely affect the health of persons, or which may cause a violation of any primary drinking water standard.

c. For all classes of UIFS the underground injection will take place in a facility that has been classified by the Board.

d. A public notice has been published making available the draft permit to the public for comments and providing opportunity for a public hearing pursuant to Rule 103.

e. For UIFS Class II, III and V Types A5, A6, B6, and B7, a proposed contingency plan to cope with all malfunctions or facility failures, that is adequate to prevent migration of fluids into USDWS.

f. For facilities Class II, III and V Types A5, A6, B6 and B7, for wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken by the applicant as established in Rule 302 H.

g. For all classes of wells, a certificate has been presented by which the applicant has assured through a performance bond or other appropriate means, the
resources necessary to close, plug or abandon the well as required by Rule 302 H.

h. All construction requirements described in Rule 304 for UIFS Class II, III and V Types A5, A6, B6 and B7 are covered in the permit application with regard to:
   i) Construction specifications;
   ii) Well operation; and
   iii) Monitoring and reporting;

i. For Class II, III, VA and VB UIFS the Department of Natural Resources (DNR) endorsement shall be required prior to permit approval.

j. Notwithstanding any other provision of this section, the Board may take emergency action upon receipt of information that a contaminant which is present in or is likely to enter a public water system may present an imminent and substantial endangerment to the health of persons.

C. Application

Every application for a construction permit of an underground injection facility shall include:

1. The proposed activities by the applicant which require a UIC permit.

2. Name, mailing address, and location of the facility for which the application is submitted.

3. Up to four Standard Industrial Classification (SIC) codes which best reflect the principal products or services provided by the entity.
4. The operator's name, address, telephone number, ownership status, and status as federal, state, private, public, or other entity.

5. A 1:20,000 scale map showing the exact location of the entity and an inch equal to 200 ft. in the field (1:2,400) sketch (or any other scale accepted by the Board) extending one mile radius beyond the injection facility, showing said facility and each of its intake and discharge structures; each of the fluid treatment, storage, or disposal facilities of the entity; each well where fluids from the entity are or would be injected underground; and every other well, spring, and surface or coastal water body within that radius.

6. A brief description of the nature of the business.

7. In case of wells in the injection zone which are improperly sealed, operating or abandoned, a plan shall be submitted proposing such modifications necessary to prevent movement of fluids into USDWs, as corrective action, as established in Rule 302 Section E and H. This requirement applies to Class II, III and V Types A5, A6, B6 and B7 UIFS.

8. In the case of construction, modification or conversion of any Class II facility, the application shall also include:

a. Within the area of review, a topographic map
showing the number or name and location, including the distance and direction from the UIF, of all existing extraction wells, injection wells, surface bodies of water, springs, mines (surface and subsurface) quarries, and other pertinent surface features including residences and roads. The map should also show geological faults.

b. An inventory of all of the UIFs, extraction wells, and any other type of well within the area of review included on the map required in subsection 8 (a) above, which penetrate into the proposed injection zone. The inventory shall include a description of each well type, type of construction, drilling date, location, depth, record of plugging and completion, and any additional information the Board may require. In addition to the above information, in the case of Class II UIFs to be operated over the fracture pressure of the injection formation, this information must also be submitted for all wells within the area of review which penetrate formations that would be affected by the increase in pressure.

c. Maps and geological profiles indicating the geology and hydrology of the region, the geological structure and approximate vertical and lateral limits of all USDWs within the area of review, their
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position relative to the injection formation and the direction and average velocity of ground water movement in each aquifer.

d. Proposed operating data:
   i. Average and daily maximum and minimum rates and volume of the fluid to be injected;
   ii. Source of the fluid to be injected and analysis of its chemical, physical, radiological and biological characteristics; and
   iii. Daily average and maximum injection pressure.

e. Proposed formation testing program to obtain the information required by Rule 304 Section A (4) (a).

f. Proposed stimulation program

g. Proposed injection procedure

h. Design plans with the surface and subsurface construction details of the UIF.

i. Emergency plans to cope with all malfunctions or facility failures so as to prevent the migration of contaminating fluids into any USDW. In addition, the plans shall include the measures that shall be taken in case of spills and in case there is detected around the facility, any fluid containing contaminants which could flow into it.

j. Plans (including maps) for meeting the monitoring requirements set forth in Rule 304.
k. For wells within the area of review which penetrate the injection zone but are not properly constructed or plugged, the corrective action proposed to be taken by the applicant shall be according to Rule 302 H.

l. Construction procedures including a tubing and cement casing program, logging procedures, deviation checks, and a drilling, testing and sampling program.

m. A certificate indicating that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by Rule 302 H.

n. A plan for plugging and abandonment pursuant to Rule 302 H (2).

o. Appropriate geological data on the injection zone and confining zone including lithologic description, name of geological formation, thickness and depth.

p. Name of the geological formation and depth to bottom of all underground sources of drinking water which may be affected by the injection.

q. The distance to the nearest surface water body nourished by the ground water.
9. In the case of construction or conversion of any Class III facility, the application shall cover all the information required for Class II facilities above, plus the additional information listed below:
   a. All public drinking water systems to be included in the map specified in subsection C. 8 (a);
   b. All expected changes in pressure and native underground fluid displacement;
   c. Direction of movement of injection fluid; and
   d. Qualitative analysis and ranges in concentrations of all constituents of injected fluids. The applicant may request confidentially. If the information is proprietary an applicant may, in lieu of the ranges in concentrations, choose to submit maximum concentrations which shall not be exceeded. In such a case, the applicant shall retain records of the undisclosed concentrations and provide them upon request to the Board as part of any enforcement investigation.

10. In the case of construction or conversion of any Class V facility the application shall include the following information:
   a. For types A5, A6, B6 and B7 UIFS:
      All the information required for Class II facilities pursuant to section C. 8 of this Rule.
   b. For the rest of Class V UIFS the information to be submitted shall include:
      i. A map showing within one fourth (1/4) of a
mile of the UIF, its location, the number
and location of injection facilities, waterwells,
abandoned wells, surface bodies of water, springs,
building and property limits.

ii. Engineering drawings of the system
construction, specifying dimensions and
building materials.

iii. Nature and volume of fluids to be injected.

iv. Analysis of the chemical, physical and
biological characteristics of the fluids
to be injected other than sanitary wastes.

v. A plugging and abandonment plan pursuant to
Section H (2) of this Rule.

The following need not be submitted unless requested
by the Board:

i. Information about bore, casing, tubing and
packers.

ii. Well logs.

iii. Drilling, testing and coring programs.

li. In the case of a Class VI injection well except those
covered by Rule 302 E (7), the application shall cover
the information required in:

a. Rule 302 C items, 1, 2, 3, 4 and 5.

b. Rule 302 C-8 from item (a) to item (c) for
Class II facilities, within one fourth (1/4)
of a mile of the Class VI UIF.
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c. Rule 302 (C) (8) (h) (engineering drawings) in cases where any man made structure has been constructed, in, around or upon the sinkhole.

12. a. All permit applications, except those submitted for Class II UIFS under the UIC program (see paragraph (b) of this subsection) shall be signed as follows:

   (i) For a corporation: by a principal executive officer of at least the level of vice-president;

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

   (iii) For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

b. All reports required by permits, other information requested by the Board, and all permit applications submitted for Class II UIFS shall be signed by a person described in paragraph (a) of this section or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   (i) The authorization is made in writing by a person described in paragraph (a) of this section;

   (ii) The authorization specifies either an individual or a position having responsibility
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for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of UIF or a UIF field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(iii) The written authorization is submitted to the Board.

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

d. Certification- Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

"I certify that all information submitted in this document, and all the attachments is accurate, true and complete and has been presented without
the purpose of lessening the facts or commit fraud. I am aware that on discovery of any deceit or fraud related with documents I signed, I will be subjected to penalties, including fines, imprisonment or both".

13. If an applicant fails or refuses to correct deficiencies in the application, the permit may be denied and appropriate enforcement actions may be taken.

14. In case of permit applications for more than one UIF, the applicant may submit the information required in one permit application if:
   a. It is for a UIF of the same class and type;
   b. Will be constructed and operated with the same purpose, and will inject the same fluid;
   c. Will be of simultaneous construction and operation;
   d. Will be localized within the same geographic area and property; and
   e. The information to be submitted identifies each UIF adequately and specifies any minor differences within these (for example, different injection pressures or flows within each UIF).

15. Notwithstanding clause 14 above, a permit application for more than one UIF shall be considered as an individual application for each UIF.
D. Action on Application

1. Within 60 days after receipt of an application for a construction permit, the Board shall notify the applicant about the completeness of the application. In the event of any deficiency in the application or information submitted, the date of receipt of a complete application shall be the date on which the Board received all required information.

2. Within 180 days after receiving a duly completed permit application, the Board shall make a tentative determination on whether to prepare a draft permit or to deny the permit applied for. The periods of time included in subsections 1 and 2 may be extended in special circumstances.

3. If the tentative determination is to deny the application the Board shall issue a notice of intent to deny. An intent to deny a permit application is a type of draft permit and will follow the same procedure as any draft permit prepared under this section. The Board may subsequently modify or vary the tentative determination of denial and begin the draft permit procedure.
4. If the tentative determination is to issue a permit, a draft permit shall be prepared to contain, at least:
   a. Construction requirements for new or converted injection facilities;
   b. Corrective actions, as required by Section H;
   c. Operating requirements;
   d. Monitoring and reporting requirements;
   e. Plugging and abandonment plans;
   f. Financial responsibility;
   g. Mechanical Integrity requirements;
   h. All compliance schedules under Rule 113; and
   i. Any other measures that are necessary to prevent the migration of fluids into an USDW.

5. Fact Sheet
   A fact sheet shall be prepared for every draft permit that is for a major facility or is the subject of widespread public interest or raises major issues. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit. The Board shall send this fact sheet to the applicant, and, on request, to any other person. The fact sheet shall include:
a. A brief description of the type of facility or activity which is the subject of the draft permit;

b. The type and quantity of fluids which are proposed to be or are being injected;

c. A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions;

d. Justification for the alternatives considered to required standards;

e. A description of the procedures for reaching a final decision on the draft permit including:

   i. The beginning and ending dates of comment period and the address where comments shall be submitted.

   ii. Procedures for requesting a hearing.

   iii. Any other procedures of public participation

f. Name and telephone number of person(s) to contact for additional information.

6. Statement of Basis

The Board shall prepare a Statement of Basis for every draft permit for which a Fact Sheet is not prepared. The Statement of Basis will briefly describe the basis on which the conditions established in the draft permit are based, or, in the case of notice of intent to deny or terminate a permit, the reasons supporting such tentative determination. The Statement of Basis shall be sent to the applicant and, upon request, to any other person.
7. Public Participation
   a. The Board shall give public notice pursuant to Rule 103 whenever the following actions have occurred:
      i. There is an intention to deny a UIC permit under this section;
      ii. There is an intention to issue a draft UIC permit under this section;
      iii. A date has been established for a public hearing; and
      iv. An appeal has been granted according to Law #9 of June 18, 1970 as amended.
   b. Public notices may describe more than one permit or permit action.
   c. Public notice of the preparation of a draft permit (including a notice of intent to deny a permit application) required under paragraph (a) of this section shall allow at least 30 days for public comment. The public notice of the draft permit shall not be published until Article 4 (C) of the Environmental Public Policy Act, as amended, is complied with.

E. Conditions Upon Approval
   1. The Board may impose reasonable conditions upon granting a UIC construction permit.
   2. The Board shall impose applicable permit conditions in accordance with the provisions set forth in 40CFR 144.51, 144.52 relative to the UIC Program.
3. Where injection facilities within an area of review penetrate the injection zone and such wells are improperly sealed, completed or abandoned, the Board shall include, as part of the permit conditions, the steps or modifications contained in the plan required by Section C (8) (k) of this Rule.

F. Duration and Revocation of UIC Permit to Construct

1. Each UIC Permit to construct shall automatically expire one year after the date of issuance, unless construction or modification has commenced within that period.

2. The Board may revoke a UIC permit to construct at any time if work is suspended for more than 1 year, if it is otherwise not diligently pursued to completion, or if any of the conditions imposed in the permit are violated.

G. Revision to a UIC Construction Permit

Any revision, modification or change in the conditions upon which a UIC permit to construct has been granted must be approved by the Board prior to the submission of an application for a permit to operate.

H. Corrective Action, Plugging and Abandonment

1. Corrective Action

   a. Applicants for Class II or III injection facility permits shall identify the location of all known wells within the UIF area of review which penetrate the injection zone or in the case of Class II UIS...
operating over fracture pressure of the injection formation, all known wells within the area of review penetrating formations affected by the increase in pressure. For such facilities which are improperly sealed, completed or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluids into underground sources of drinking water.

b. In determining the adequacy of the plan (corrective action) proposed by the applicant and in determining the additional steps needed to prevent fluid movement into USDWS the Board shall consider:
   i. Nature and volume of the injected fluids;
   ii. Nature of native fluids or by-products derived from injection;
   iii. Potentially affected population;
   iv. Geology;
   v. Hydrology;
   vi. History of the injection facility operation;
   vii. Plugging and closure records;
   viii. Abandonment procedures in effect at the time the facility was abandoned;
   ix. Hydraulic connections with underground sources of drinking water and surface water nourished by these; and
x. Alternative sources of drinking water to supply potentially affected population.

c. Where the plan is adequate, the Board shall incorporate it into the permit as a condition. Where the Board's review of an application indicates that the applicant's plan is inadequate (based on the factors in (b) above) the Board shall require the applicant to submit a plan which is acceptable to the Board, as a condition of the permit under Section A or in the absence thereof, the application shall be denied.

d. If the plan required under subsection 1 (a) above is found unacceptable because of conflicting property interest of injection facilities in the area of review, the Board may require as a permit condition that injection pressure will not exceed hydrostatic pressure measured at the site of any improperly completed or abandoned injection facility within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation shall be part of a compliance plan and continue in effect until all other required corrective action has been taken.
e. No permit for a new UIF may authorize injection until all required corrective action has been taken.

f. When setting corrective action requirements for Class III UIFS the board shall consider the individual and whole effect of the UIF in the project on the hydraulic gradient in potentially affected USW and the corresponding changes in potentiometric surfaces(s) and flow direction(s). If a decision is made that corrective action is not necessary based on the determinations above, the monitoring program shall be designed to verify the validity of such determinations.

2. Plugging and Abandonment
   a. Every applicant for a UIC permit is required to submit a plan for plugging and abandonment. Where the plan meets the requirements of this paragraph, the Board shall incorporate it into the permit as a condition. Where the Board's review of an application indicates that the applicant's plan is unacceptable, the applicant will be required to submit a plan which is acceptable to the Board; or in the absence thereof, the Board shall deny the application.

   b. The plan for plugging and abandonment shall state, among other things:
i. The facility to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, whether by circulating the mud in the facility at least once or by a comparable method specified in paragraph (iii) below for cement plugging.

ii. Prior to abandoning any Class II or III facility it will be plugged with cement in a manner which will not allow the movement of fluids either into or between underground sources of drinking water. The cement plugging shall be accomplished by one of the following:
  (a) The Balanced Method;
  (b) The Dump Bailer Method;
  (c) The Two-Plug Method; or
  (d) An alternative method approved by the Board which will reliably provide a comparable level of protection to USDWS.

iii. In regard to the cement plugging, the plan shall indicate:
  a. The type and number of plugs to be used;
  b. The placement of each plug, including the elevation from the top to bottom;
  c. The type, grade and quantity of cement to be used;
  d. The method for placement of the plug; and
e. The procedures to be used to meet the requirements of static equilibrium stated in section H (2) (b) (ii).

c. The plugging and abandonment plan required in (a) above shall also specify that no movement of contaminants from the excavated zone into an underground source of drinking water shall occur. The Board shall require any measure deemed necessary and feasible to insure that no migration of contaminants from the excavated zone into a underground source of drinking water shall occur.

d. For purpose of this paragraph, temporary intermittent cessation of injection operations is not abandonment.

e. In the case of Class V-C facilities, an alternative plugging and abandonment method acceptable to the Board can be submitted.

f. Class VI facilities shall not be plugged, but in the case of Class VI facilities used to inject rain waters which are not run-off waters, the applicant for a permit shall submit an abandonment plan indicating the measures the permittee will take with the installations used to channel the water into the facility and the alternative method to dispose of these waters once the use of the sinkhole or natural drainage hole has been abandoned.
g. The plugging and abandonment plan shall, in the case of a Class III project which underlies or is in an aquifer which has been exempted, also demonstrate adequate protection of USDWS. The Board shall prescribe aquifer cleanup and monitoring where it deems necessary and feasible to insure adequate protection of USDWS.

RULE 303: OPERATING PERMITS FOR UNDERGROUND INJECTION FACILITIES

A. Permit Required

1. No person shall cause or allow the operation of an underground injection facility (UIF) which has not been specifically prohibited in Rule 202, without a permit from the Board.

2. Six (6) months from the date of effectiveness of this Regulation, no person shall operate or cause the operation of an existing injection well before having applied for an operating permit from the Board.

B. Criteria for Granting UIC Permit to Operate

Permit for the operation of a UIF shall be granted only if an applicant demonstrates to the satisfaction of the Board that:

1. The UIF is in compliance with the provisions of this Regulation and is consistent with the SDWA. In the case of a new or converted UIF, it is also in compliance with the terms and conditions imposed under a UIC permit to construct.
2. The owner or operator of the UIF is capable of operating the facility and has provided equipment.

3. For Class II, III and V Types A5, A6, B6 and B7, a demonstration of mechanical integrity pursuant to Section F of this Rule.

4. The operation of the facilities is in compliance with construction and operating requirements as set forth in Rule 304 and construction permit conditions.

5. In the case of an existing UIF, compliance with the standards specified in Sections (7) (a), (b) and (d) of this Rule has been demonstrated.

6. The underground injection will take place in a well which has been inventoried.

7. In case of UIFSClass II, and III and V Types A5, A6, B6 and B7:
   a. There is compatibility of injected fluids with the fluids and minerals of the geologic formations in both the injection zone and the confining zone;
   b. Corrective action on defective wells in the area of review has been completed or is in progress;
   c. The injection facilities exhibit mechanical integrity; and
   d. The past operating data of the facilities are satisfactory.
8. In the case of Class V-C facilities, that receive sanitary wastes exclusively, subsection 1, 2 and 6 of section B of this Rule must be complied with. For new facilities, the requirements set forth in Appendix A of this Regulation must be complied with or in its place, said requirements have been substituted by alternatives previously studied and approved by the Board. In the case of existing Class V-C UIFS the Board reserves the right to require corrective action if a potential hazard to public health or the environment occurs. For all Class V-C UIFS that receive other than sanitary wastes, subsection 7a, b, d of Rule 303 (B) must also be complied with.

9. For Class VI facilities:
For Class VI facilities not covered by Rule 303 (E) (7), subsections 1, 2 and 6 of this section and section B (4) of Rule 304 have been complied with. To grant a permit the Board may take into account its considerations based on individual characteristics of each case.

10. The Board shall consider that the facilities described in Rule 302 (E) (7) have an operating permit if they comply with the conditions specified therein.

11. The Board shall consider the information specified in 40 CFR 146.24 in authorizing Class II UIFS.
12. The Board shall consider the information specified in 40CPR 146.34 in authorizing Class III UIFS.

C. Application

1. The information required for application of a UIC operating permit is the same in subject and scope as an UIC construction permit. Therefore, the applicant should refer to Section C of Rule 302, for a description of the required information for the applicant.

2. In addition to the construction data required in Rule 302 C, the following information must be submitted by the applicant of UIFS Class II, III and V Types A5, A6, B6 and B7:
   a. Results of all available logging and testing program data of the UIF.
   b. Demonstration of mechanical integrity pursuant to Rule 303 F.
   c. Anticipated maximum pressure and flow rate at which the applicant will operate the UIF.
   d. Results of the formation testing program.
   e. The status of corrective action on defective wells in the area of review.
   f. The steps taken to meet the monitoring requirements set forth in Rule 304.
3. If an applicant fails or refuses to correct deficiencies in the application, the permit may be denied and appropriate enforcement actions may be taken.

4. In the case of operating permit applications for more than one UIF the applicant may submit the information required in one application if subsections 14 and 15 of Rule 302 (C) are complied with.

D. Action on Application

1. Within 60 days after receipt of an application for an UIF operating permit, the Board shall notify the applicant about the completeness of the application. In the event of any deficiency in the application or information submitted, the date of receipt of a complete application shall be that date when the Board received all the required information.

2. Within 180 days after receipt of a completed permit application the Board shall tentatively determine to prepare a draft permit or deny the application. The periods of time included in subsections 1 and 2 may be extended in special circumstances. All existing UIF permit applications must be processed within four years.

3. In making its determination regarding an application for an existing UIF permit, the Board shall follow the same procedure set forth in Section D, Rule 302. On making its determination regarding an application for a new UIF permit, the Board shall verify the compliance
with the conditions of the construction permit and shall ensure that it responds to the requirements in Section D, Rule 302.

E. **Conditions Upon Granting a UIF Operating Permit**

1. The Board may impose any reasonable conditions upon granting a UIF operating permit.

2. In the case of Class II and III facilities the Board shall recommend conditions resulting from the evaluation carried out every six (6) months during the first two (2) years of operation of the facility.

3. Permit for Class II and III UIFS shall be reviewed at least every five (5) years for reevaluation according to Section H of this Rule and must be modified, revoked and reissued or terminated. Class II and III UIFS may be permitted for up to the operating life of the facility.

4. The Board shall include the details of the plugging and abandonment plan as permit conditions when said details meet the requirements of this Regulation.

5. Any permit issued for an existing injection facility (other than Class II) requiring corrective action shall include a compliance plan, including any corrective action accepted or required under Section C, Rule 302 to be completed as soon as possible.
6. Any Class II or III permit shall include, and any Class V permit may include, conditions to assure that plugging and abandonment of the facility will prevent the migration of fluids either toward a USDW or from one USDW to another or surface water nourished by it.

7. Permit by Rule
   a. Class VI UIFS modified and used exclusively for the injection of run-off water without contaminants, except those coming from terrestrial sources after the application of the best management practices approved by the Board, shall be considered as having a permit, if they comply with the following conditions:
      1) The UIFS shall be reported to and registered with the Board, for which the following information must be submitted:
         a) The general information of Rule 302 C 1, 2, 3, 4, 5 and 6.
         b) The management practices to prevent the contamination of run-off waters other than those coming from terrestrial sources after the application of said practices.
         c) A contingency plan to prevent accidents or failures which could result in the access of contaminants into the Class VI facility.
d) In cases where a structure constructed by man exists within, around or above the sinkhole the information required in Rule 302 (C) (8) (h) shall be submitted.

e) The submitted information shall be certified as set forth in Rule 302 (C) (12).

2. If the natural drainage cavity was altered or if modifications are proposed, the approval of the Board is necessary.

b. Fuel storage tanks included under Class II (c) and Class VII UIFS shall be considered as having a permit, if they comply with the following conditions:

1. The tanks shall be reported to and registered with the Board for which the following information shall be submitted:

   a) The general information of Rule 302 C 1, 2, 3, 4, 5 and 6.

   b) Inventory data submitted to the Board that include:

      i. dates of installation and beginning of tank utilization

      ii. if it was installed new or used

      iii. total number of tanks and location

      iv. material and capacity of each tank

      v. stored substances and their nature (raw materials, wastes, etc.)
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vi. depth from land surface to the bottom of the tank

vii. maximum seasonal water table level

viii. leak detection systems, linings, monitoring systems, etc.

ix. type of mechanical integrity tests performed before and after installation or use and dates performed

x. malfunctions, repairs and periodical maintenance history (specifying dates)

xi. system of fluid injection (by gravity or pump)

xii. any other additional information requested by the Board.

c) The evaluation of the tanks mechanical integrity pursuant to Appendix B showing that it does not have any escape of stored fluids which could contaminate a USDW and is in compliance with the mechanical integrity requirements.

2. Any tank should have an adequate system to detect leaks at the moment they occur, pursuant to Appendix B. If the tank does not have such system, the tank owner or operator shall include in the information required in subsection b (1) above, the system that will be installed and proposed date of installation.
Such information will be included in the certification to operate granted by the Board as a condition. The owner or operator shall notify the Board that such system has been installed within 30 days of the proposed installation date.

3. The submitted information shall be certified as set forth in Rule 302 (C) (12) and 114 F.

4. In addition to the above requirements, the evaluation of mechanical integrity should be carried out at least once every two (2) years, during the life of the facility, as specified by the manufacturer, after which said test shall be carried out every six (6) months. Results of this evaluation shall be reported to the Board within 30 days after performing the test. Non compliance with this provision may be a cause to revoke the operating authorization granted to the UIF.

5. All new tanks shall comply with Section A of Appendix B.

6. Abandonment and closure of all Class II (c) and VII UIFS shall comply with requirements set forth in Section D of Appendix B.

c. Even when the facilities in paragraphs (a) and (b) above are exempted from the monitoring and reporting
requirements, the Board, on its own motion, may require a sampling test of the injected fluids as well as the groundwater which could be affected by the UIF operation to show that these comply with the requirements established herein.

d. If the Board considers that the conditions of this section have been satisfied, it shall grant a certification authorizing the use of the Class VI, II (c) or VII facility, under the conditions previously approved by the Board.

e. In cases of owner or operator changes, authorization can be transferred according to Rule 303 I.

f. The Board may require any owner or operator of a UIF authorized by rule to apply and obtain an individual UIC permit. Those cases include:

i) When the injection facility is not in compliance with any requirement established herein.

ii) When the UIF is not or no longer is within the category of UIF and type of UIC operation authorized by rule.

iii) When the protection of USDWS requires that the injection operation be regulated by requirements such as corrective action, monitoring and reporting or operating requirements which are not contained in the authorization given by the Board.
g. Existing Class V-C UIFS that have filed a complete permit application in the Board, shall be considered to have a permit by rule during the period of time that will take to process the application.

F. Mechanical Integrity

1. Mechanical Integrity Defined

An injection facility has mechanical integrity if:

a. There is no leak in the casing, tubing, or packer; and

b. There is no fluid movement towards an underground source of drinking water or surface water nourished by it through vertical channels adjacent to the injection well bore.

2. Mechanical Integrity Determination

(a) One of the following methods must be used to evaluate the absence of significant leaks under paragraph (F) (1) (a) of this section:

i) Monitoring of annulus pressure; or

ii) Pressure test with liquid or gas; or

iii) Records of monitoring showing the absence of significant changes in the relationship between injection pressure and injection flow rate for the following Class II enhanced recovery UIFS:
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i) Existing UIFS completed without a packer provided that a pressure test has been performed and the data are available and provided further that one pressure test shall be performed at a time when the UIF is shut down and if the running of such a test will not cause further loss of significant amounts of oil or gas; or

ii) Existing UIFS constructed without a long string casing, but with surface casing which terminates at the base of fresh water provided that local geological and hydrological features allow such construction and provided further that the annular space shall be visually inspected. For these the Board shall prescribe a monitoring program which will verify the absence of significant fluid movement from the injection zone into an USDW.

(b) One of the following methods must be used to determine the absence of significant fluid movement under paragraph (F) (1) (b) of this section:

i) The results of a temperature or noise log;

ii) For Class III UIFS where the nature of the casing precludes the use of the logging techniques prescribed at paragraph 2(b) (i) of this
subsection, cementing records demonstrating the presence of adequate cement to prevent such migration;

iii) For Class III UIFS where the Board elects to rely on cementing records to demonstrate the absence of significant fluid movement the monitoring program prescribed by Rule 304 (C) shall be designed to verify the absence of significant fluid movement.

(c) The Board may allow the use of a test to demonstrate mechanical integrity other than those listed in paragraphs 2 (a) and (b) of this section with the written approval of the EPA Administrator. To obtain approval, the Board shall submit a written request to the Administrator, which shall set forth the proposed test and all technical data supporting its use. The Administrator shall approve the request if it will reliably demonstrate the mechanical integrity of a UIF for which its use is proposed. Any alternate method approved by the Administrator shall be published in the Federal Register and may be used unless its use is restricted at the time of approval by the Administrator.

(d) In conducting and evaluating the tests enumerated in this section or others to be allowed by the Board, the owner or operator and the Board shall
apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Board, it shall include a description of the test(s) and the method(s) used. In making its evaluation, the Board shall review monitoring and other test data submitted since the previous evaluation.

G. Period of Validity

Any UIC operating permit shall be effective for a period no longer than the effectiveness of the mining grant given by the Government of Puerto Rico or the operating life of the facility, whatever occurs first, subjected to section E (3) of this Rule.

H. Review, Modification, Revocation and Reissuance, Renewal and Termination


a) Except for Class II and III UIFS, compliance with a permit during its term constitutes compliances for purposes of enforcement with Part C of the SDWA. However, the Board may review, modify, revoke and reissue, renew or terminate any UIC permit during its term for causes set forth in this section.

b) No public notice is required when a request for permit modification, revocation and reissuance, renewal or termination is denied under this section.
Written notice of that denial shall be given to the petitioner and to the permit applicant.

c) The permittee shall furnish to the Board within a reasonable time any information which the Board may request to determine whether cause exists for modifying, revoking and reissuing or terminating a permit or to determine compliance with the permit. The permittee shall also furnish to the Board, upon request, copies of records required to be kept by the permittee.

2. Review

The Board may review a UIF operating permit when deemed appropriate to determine whether it should be modified, revoked and reissued, renewed or terminated.

3. Modification, Revocation and Reissuance or Renewal

1. When the Board receives any information (for example, inspects the facility, receives information submitted by the permittee, receives a request for modification or revocation or to renew a permit) it may determine whether or not one or more of the causes listed in paragraph (a) and (b) of this subsection for modification, revocation and renewal exists. If cause exists, the Board may modify, revoke and reissue or renew the permit accordingly, subject to the limitations of paragraph (b) of this subsection, and the Board may require an
updated application if necessary. When a permit is modified, only the condition subject to modification may be reviewed. If a permit is revoked and reissued or reviewed the entire permit is subject to revision and the permit may be granted for a new term. If a permit modification satisfies the criteria in subsection 5 of this section for "minor modifications", the permit may be modified without a draft permit or public participation. Otherwise a draft permit must be prepared and other program procedures that are approved by EQB must be followed.

a) **Causes for Modification, Revocation and Reissuance or Renewal**

The following reasons may be causes for the modification of a permit for all UIFs and to revoke and reissue or renew permits:

i) **Alterations**

There are alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different from those or are absent in the existing permit.

ii) **Information**

Permits other than for Class II and III facilities may be modified during their terms for cause only if the Board has received
information and that information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance.

iii) **Amendments to the Regulation**

The standards or regulations on which the permit was based have been amended by the Board or by judicial decision after the permit was issued.

iv) **Transfer of Permits**

When the Board has received notification (as required in this Regulation) of a permit transfer application, the permit also may be modified to reflect a transfer.

b) **Facility Siting**

The suitability of the facility location will not be considered at the time of permit modification, or revocation and reissuance or renewal unless new information or standards, indicating that a threat to human health or to the environment exists, which was unknown at the time of permit issuance.

4. **Termination of Permits**

The Board may terminate or cancel a UF operating permit
or deny a permit renewal for the following causes:

a) Non-compliance by the permittee with any condition of the permit;

b) The permittee's failure, in the application or during the permit issuance process, to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or

c) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

5. Minor Modifications to Permits

The Board may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this subsection, without following the procedures of Rule 103. Any permit modification not processed as a minor modification under this section must be made for a good cause and with a draft permit and public notice as required in Rule 103. Minor modifications may only be made to:

a) Correct typographical errors;

b) Require more frequent monitoring or reporting for the permittee;

c) Change a date in the increments of progress schedule or in a compliance plan, provided the new
date is not more than 120 days after the date
specified in the compliance plan and does not
interfere with attainment of final compliance
date requirement. Said modification shall be
made according to the provisions of Rule 113 (F);

d) Allow for a change in ownership or operational
control of a facility where the Board determines
that no other change in the permit is necessary,
provided that a written agreement containing a
specific date for transfer of permit responsibili-
ity, coverage, and liability between the current
and new permittees has been submitted to the Board.

e) Change the construction schedule for an injection
facility.

f) Changes in the quantities or types of changes in
the quantities or types of fluids injected which
are within the capacity of the facility as permitted
and, in the judgment of the Board after reviewing
information required, would not interfere with the
operation of the facility or its ability to meet
conditions specified in the permit, and would not
change its classification.

g) Minor changes to construction requirements approved
by the Board pursuant to established UIC permit
conditions, provided that any such alteration shall
comply with the requirements of this Rule.
h) Amend a plugging and abandonment plan.

I. Transfer of Permits

Permits shall not be transferable with the following exceptions:

1. The Board may transfer or acknowledge a transfer of an UIC permit to a new owner or operator only if a minor modification is made to identify the new permittee.

2. The Board may automatically transfer a UIC permit, if it complies with the following conditions:
   a) The permittee notifies the Board at least 30 days in advance of the proposed transfer date mentioned in paragraph (2) (b) of this section.
   b) The notice includes a written agreement between the permittee and the person or entity interested in obtaining the permit, containing a specific date for transfer of permit responsibility, public responsibility and bond.
   c) The permit shall not be transferred without previously notifying the Board and without giving the Board the opportunity to modify or revoke it.
   d) The notice to the Board from the permittee demonstrates that the person or entity interested in obtaining the permit complies with the financial responsibility requirements of Rule 302 (B) (1) (g).
J. **Posting of a UIC Operating Permit**

A person holding a UIC operating permit pursuant to this Rule shall not use or operate the underground injection facility (UIF) unless it has available, at the facility, an entire copy of the permit or legible facsimile in such a manner that the number, description and any specified operating conditions are clearly visible and accessible at all times.

K. **Prohibition of Movement of Fluid into Underground Sources of Drinking Water**

1) No authorization by permit or rule shall allow the movement of fluids containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulations under 40CFR Part 142 or may otherwise adversely affect the health of persons, aquatic or terrestrial organisms. The applicant for the permit shall have the burden of showing that the requirements of this paragraph are met.

2) For Class II and III UIFS, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water except as authorized under Rule 302 and 303, the Board shall prescribe such additional requirements for construction, corrective action, operation, monitoring or reporting (including closure.
of the injection well) as are necessary to prevent such movement. These additional requirements shall be imposed by modifying or terminating the permit in accordance with Rule 303 H, or appropriate enforcement action may be taken if the permit has been violated.

3) For Class V UIFS if at any time the Board learns that a Class V UIF may cause a violation of primary drinking water regulations under 40 CFR Part 142, the Board shall:
   (1) Order the injector to take such actions (including where required, closure of the UIF) as may be necessary to prevent the violation, or
   (2) Take enforcement action.

4) Whenever the Board learns that a Class V UIF may be otherwise adversely affecting the health of persons, the Board may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under paragraph (3) of this section.

5) Notwithstanding any other provision of this section the Board may take emergency action upon receipt of information that a contaminant which is present in or is likely to enter a public water system may present an imminent and substantial endangerment to the health of persons.
RULE 304
CONSTRUCTION, OPERATION, MONITORING AND REPORTING REQUIREMENTS FOR UIFS

A. Construction Requirements

1. UIF Siting
   a. All new Class II facilities shall be sited in such a fashion that they inject into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of review.
   b. All new Class V-C septic tanks shall be sited in accordance with the specifications in Appendix A.

2. Casing and Cementing
   a. All UIF Class II and III and V Types A5, A6, B6 and B7, shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled UIF shall be designed for the life expectancy of the UIF. In determining and specifying casing and cementing requirements, the following factors shall be considered:
      i) Depth to the injection zone;
      ii) Estimated maximum and average injection pressure, internal and external pressure, and axial loading;
      iii) Hole size;
iv) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

v) Corrosiveness of injected fluid, and nature of formation fluids;

vi) Lithology of injection zones and confining intervals;

vii) Type and grade of cement; and

viii) Depth to the bottom of all USDWS.

b. All V-B UIFS shall be cased and cemented so as to conduct the injected fluid directly into the injection formation.

c. The construction requirements for new Class V-C UIFS shall follow the provisions set forth in Appendix A.

d. Any structure to be constructed in, around or upon a sinkhole shall be made in such a fashion that it will not obstruct the flow of runoff water from surrounding land toward the sinkhole.

e. Grouting for cementing shall be applied only from the bottom of the casing towards the surface.

3. UIF Drilling and Logs

a. Appropriate underground profile logs and other tests required by the Board shall be conducted during the drilling and construction of new Class II, III and V UIF (excluding septic tanks).
A descriptive report interpreting the results of this data by a qualified geologist, geophysicist, hydrogeologist or soils engineer shall be prepared and submitted to the Board. For Class II UIFS the descriptive report shall interpret the results of that portion of those logs and tests which specifically relate to an USDW, the confining zone adjacent to it and to the injection and adjacent formations. At a minimum, these logs and tests shall include:

i) Deviation checks on all Class II UIFS constructed by first drilling a pilot hole and then enlarging the pilot hole, by reaming or another method. For Class III and Types VA, VB UIFS, such checks shall be conducted unless the hole will be cased and cemented by circulating cement to the surface. These checks shall be conducted at sufficiently frequent intervals to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling.

ii) Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan and the need for additional information that may arise from time to time as the construction of the UIF progresses.
In determining which logs and tests shall be required, the following may be considered by the Board:

a) For surface casing intended to protect underground sources of drinking water:
   i) Resistivity, spontaneous potential, and caliper logs before the casing is installed; and
   ii) A cement bond, temperature, or density log after the casing is set and cemented.

b) For intermediate and log strings of casing intended to facilitate injection:
   i) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;
   ii) Fracture finder logs; and
   iii) A cement bond, temperature, or density log after the casing is set and cemented.

4. **Injection Zone Formation**

   a) The following information concerning the injection formation shall be determined or calculated for new Class II and V UIFS with the exception of Class V-C UIFS:
      i) Fluid pressure;
      ii) Fracture pressure;
      iii) Other physical and chemical characteristics
of the injection zone;

iv) Physical and chemical characteristics of
the formation fluids.

b) In the case of Class III UIFS where the injection
zone is a water bearing formation, the information
listed in subsection a) above, concerning the
injection zone shall be determined or calculated
for new Class III UIFS provided that when the in­
jection formation is not water bearing only the
information in paragraph (a) (ii) above must be
submitted.

5. Monitoring Wells

a. In the case of Class III UIFS:

i) Where injection is into a formation which
contains water with less than 10,000 mg/l TDS*,
monitoring wells shall be installed into the
injection zone and into any USDW above and
under the injection zone which could be affected
by the mining operation. These wells shall be
located in such a fashion as to detect any ex­
cursion of injected fluids, process by-products,
or formation fluids outside the mining area or
zone. If the mining operation could be affected
by subsidence of catastrophic collapse, the
monitoring wells shall be located away from the
susceptible area so that they will not be
physically affected.

*TDS: Total Dissolved Solids
ii) Where injection is into a formation which does not contain water with less than 10,000 mg/l TDS, no monitoring wells are necessary in the injection stratum.

iii) Where the UIFS penetrate a USDW in an area subject to subsidence or catastrophic collapse, an adequate number of monitoring wells shall be installed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical area of influence of the subsidence or catastrophic collapse.

iv) In determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered:

1) The population relying on the USDW or on the surface waters nourished by it affected or potentially affected by the injection operation;

2) The proximity of the injection operation to points of withdrawal of drinking water;

3) The local geology and hydrology;

4) The operating pressures and whether a negative pressure gradient is being maintained;

5) The composition, volume and toxicity of the injected fluids, the formation water and the process by-products; and
6) The UIF density.

b. For UIF Class II and V Types A5, A6, B6 and B7 the monitoring requirements set forth in Rule 304 A (5) (a) will apply.

c. For Class V A and V B UIF except Class V Types A5, A6, B6 and B7, the Board will determine whether monitoring wells and monitoring requirements are required, on a case by case basis.

B. Operating Requirements

1. For all classes of UIFS, the underground injection shall not result in movement of fluids into an USDW, except in the case of storm or cooling waters and treated waters that comply with the Water Quality Standards for waters classified SD before entering the UIF.

2. 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 the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operation, staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facility or similar systems only when necessary to achieve compliance with the conditions of the permit.
3. Operating requirements for Class II, III and V UIFS except for Class II (c) are the following:
   a. Injection pressure at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection, except during well stimulation for Class III, does not propagate existing fractures or initiate new fractures in the injection or confining zones or cause the migration of injection or formation fluids into an underground source of drinking water.
   b. Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.
   c. In the case of septic tanks, the injection pressure shall be such as to avoid any fractures in the tank walls which can cause the movement of injection or formation fluids into an USDW.

4. For Class VI UIFS the following requirements shall be complied with:
   a. Under all circumstances a Class VI UIF shall be used only for disposal of fluids which are:
      i) Runoff waters which do not contain pollutants in excess of the standards set forth in the "Water Quality Standards Regulations of Puerto Rico" as amended, for waters classified SD, except when the pollutants results from terrestrial
sources and after applying the best management practices approved by the Board.

ii) Cooling waters which do not contain pollutants in excess of the standards set forth in the "Water Quality Standards Regulation of Puerto Rico" as amended, for waters classified SD, except the temperature limit.

iii) Treated waters free of pollutants in excess of the standards set forth in the "Water Quality Standards Regulations of Puerto Rico", as amended, for waters classified SD.

b. Under all circumstances a Class VI UIF shall not be used to dispose of fluids at a pressure exceeding the force of gravity.

c. Under all circumstances no modifications shall be made to a Class VI UIF so as to change its original natural condition, without the Board's approval.

C. Monitoring and Reporting Requirements

1. For all classes of UIFS, samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. Monitoring requirements for all Class II, III and V-A and V-B UIF are, at a minimum:

a. Monitoring and analyses of the physical and chemical characteristics of the injected
fluids with sufficient frequency to yield representative data on their characteristics. In the case of Class III UIFS whenever the injection fluid is modified to the extent that the analysis required in Rule 302 C (9) (d) is incorrect or incomplete, a new analysis shall be provided to the Board.

b. For Class II, III and V A5, A6, B6 and B7 installation and use of continuous recording devices to monitor the injection pressure flow rate and volume of injected and produced fluids.

c. In the case of Class III UIFS:
   i) Weekly monitoring of fluid level in the injection zone and of the parameters chosen to measure water quality in the monitoring wells; and
   ii) Quarterly monitoring of wells adjacent to the injection site to detect any migration from the injection zone into a USDW.

d. A demonstration of mechanical integrity pursuant to Rule 303 (F) at least once every five years during the life of Class II, III and V Types A5, A6, B6 and B7 UIFS, except when the Board considers that the circumstances of each individual case justify a greater frequency. The need for demonstration of mechanical integrity for the rest of
Class V A, B UIFS shall be determined by the Board on a case by case basis.

e. Class II UIFS (hydrocarbons storage and enhanced recovery) and Class III UIFS may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

f. For Class V-C UIFS the Board will determine the monitoring and reporting requirements on a case by case basis.

g. For Class VI UIFS not covered by section E (7) of Rule 303, the minimum monitoring requirement will be those established in section C (2) (a) of this Rule.

3. Reporting Requirements

Reporting requirements for Class II, III and V wells, shall at a minimum include:

a. Class II UIFS

i) A quarterly report to the Board summarizing the results of the monitoring required under subsection 2 of this section.
The quarterly report shall include monthly records of injected fluids and any major changes in characteristics or sources of injected fluids. Previously submitted information may be included by reference.

ii) Owners or operators of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than an individual well basis where manifold monitoring is used.

b. For Class III UIFS
   i) Quarterly reporting to the Board on required monitoring;
   ii) Results of mechanical integrity and any other periodic test required by the Board reported with the first regular quarterly report after the completion of the test; and
   iii) Monitoring may be reported quarterly on a project or field basis rather than individual well basis where manifold monitoring is used.

c. For Class V UIFS except Class V-C UIFS into which only Sanitary Wastes are Disposed
   i) Semiannual reports to the Board on:
      a. The physical, chemical and other relevant characteristics of injection fluids;
b. Monthly average and maximum and minimum values for injection pressure, flow rate, volume and annular pressure; and
c. The results of monitoring in the area within one fourth (1/4) of a mile of the UIF.

ii) Reporting the results with the first semestral report after the completion of:
   a. Periodic tests of mechanical integrity for Types V A5, V A6, V B6 and B7 UIFS and for other classes as required by the Board, as set forth in Rule 304C(2)(e).
   b. Any other test of the UIF conducted by the permittee if required by the Board; and
   c. Any repair of the UIF;
   d. For septic tanks used only for sanitary waste disposal, the Board will decide whether to require any reports after an evaluation of each individual case;
   e. For Class VI UIFS not covered by Section E (7) of Rule 303, the reports shall include:
      i) Quarterly reports to the Board on:
a) The physical, chemical, biological and other relevant characteristics of injection fluids;

b) Monthly, average, maximum and minimum values for flow rate and volume; and

c) The results of monitoring required by the Board.

d. **Additional Requirements**

Notwithstanding any other provisions set forth in this Rule, the Board shall established such additional requirements for construction, corrective action, operation, monitoring or reporting as would be necessary to prevent the movement of injection or formation fluids, that could contaminate a USDW.
PART IV

EXEMPTION OF AQUIFERS
PART IV  EXEMPTION OF AQUIFERS

RULE 401: Exempted Aquifers

A. Criteria to Classify Aquifers as Exempted

An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" may be classified as an "Exempted Aquifer" if it meets the following criteria:

1. It does not currently serve as a source of drinking water, and

2. It cannot now and will not in the future serve as a source of drinking water because:

   a. It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.

   b. It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

   c. It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
d. It is located over a Class III well mining area subject to subsidence or catastrophic collapse.

3. The Total Dissolved Solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system; and

4. It shall not cause adverse impacts on public health, safety and welfare; and

5. There is no surface water body receiving water from the aquifer; and

6. It will not interfere with the purposes, goals and standards of the Public Policy Environmental Act of Puerto Rico (Law No. 9 of June 18, 1970, as amended).

B. Procedures to Request the Determination of an Aquifer as Exempted

1. The request should be part of a UIC permit application and should include as a minimum:

   a. All the available information on the aquifer for which an exemption is requested including, but not limited to:

      i. Vertical and lateral extension of the aquifer, its depth to the bottom and the flow direction of groundwater.
ii) Quantitative and qualitative representative data of the ground waters of the whole aquifer;

iii) Detailed description of the geology of the area;

iv) Nearby surface water bodies and their relationship with the aquifer for which an exemption is requested; and

v) Uses, contamination history, diagrams of the area showing extraction and monitoring wells, industrial activity, population and any other additional information that could show that the aquifer meets the criteria established in Section A of this Rule.

b. The reasons for which the petition is submitted including the scientific and economic justifications.

c. (1) For Class III UIFS, the Board shall require an applicant for a permit which requests an aquifer exemption, to furnish the data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing. Information contained in the mining plan for the proposed project, such as a map and general description of the mining zone, general information on the mineralogy and geochemistry of the mining
zone, analysis of the amenability of the mining zone to the proposed mining method and a timetable of planned development of the mining zone shall be considered by the Board in addition to the information required by Rule 302 (C). Approval of the aquifer exemption shall be treated as a program revision under 40CFR 145.32 (2) For Class II UIFS, a demonstration of commercial producibility shall be made as follows:

i) For Class II UIFS to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced, commercial producibility shall be presumed by the Board upon a demonstration by the applicant of historical production having occurred in the project area or field.

ii) For Class II UIFS not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation depth,
formation thickness and formation parameters such as permeability and porosity shall be considered by the Board.

2. The Board may request from the exemption petitioner, all the additional information necessary to make a determination, including the sampling and analysis of the groundwater quality.

3. Any exemption petition shall follow the established procedures for permit applications with the exception that it will be mandatory that a public hearing be held in accordance with Rule 103.

4. Any exemption petition shall be approved by the United States Environmental Protection Agency previous to final processing by the Board.

C. Effects of the Exemption of Aquifers

1. All injection activity into an exempted aquifer requires a UIC permit and shall comply with the conditions imposed within it by the Board.

2. The exemption of an aquifer may be issued with respect to:

   a. a specific type of well;
b. a specific type of fluid; or
c. both, as established in the conditions of the permit.

3. In no case shall the exemption of an aquifer permit Class I and IV UIFS, prohibited by this Regulation.
PART V
PERMIT AND ANALYSES FEES
RULE 501  PERMIT AND FILING FEES

A. Filing Fees
   1. Every applicant filing an application for a permit, approval, or permit renewal, shall pay a filing fee of $50.00 except public schools which shall be exempted from the filing fee.
   2. If an application for a permit or approval is canceled or denied, and such denial becomes final, the filing fee required herein will not be refunded.

B. Permit Fee
   1. An applicant who submits an application for a permit to construct, operate, or commitment to compliance plan for an UIF shall pay an annual permit fee in addition to the filing fee, for the amount prescribed in the list set forth in Section D.
   2. If more than one fee list is applicable to a permit application, the governing list shall be that which results in the higher fee.
   3. The filing fee and the permit fee shall be deposited together except when another rule indicates the opposite.
   4. When an application for a permit is revoked or terminated, and such decision becomes final, the permit fee required herein shall be retained by the Board.
C. **Renewal Fee**
   1. All permits to operate shall be renewable upon their expiration date. Sixty days before such date, and together with the application for renewal of a permit to operate, the permittee shall pay a renewal fee.

D. **Lists for Permit Fees**
   1. The fee lists for permits are based on the volume of fluid to be injected and the source category.
   2. **List 1: Class III, V and VI UIFS**

<table>
<thead>
<tr>
<th>Volume (MGD)*)</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 0.002</td>
<td>$20.00</td>
</tr>
<tr>
<td>More than 0.002 but less than 0.004</td>
<td>25.00</td>
</tr>
<tr>
<td>More than 0.004 but less than 0.008</td>
<td>30.00</td>
</tr>
<tr>
<td>More than 0.008 but less than 0.010</td>
<td>35.00</td>
</tr>
<tr>
<td>More than 0.010 but less than 0.015</td>
<td>45.00</td>
</tr>
<tr>
<td>More than 0.015 but less than 0.020</td>
<td>55.00</td>
</tr>
<tr>
<td>More than 0.020 but less than 0.030</td>
<td>70.00</td>
</tr>
<tr>
<td>More than 0.030 but less than 0.050</td>
<td>90.00</td>
</tr>
<tr>
<td>More than 0.050 but less than 0.075</td>
<td>100.00</td>
</tr>
<tr>
<td>More than 0.075 but less than 0.100</td>
<td>120.00</td>
</tr>
<tr>
<td>More than 0.100 but less than 0.150</td>
<td>155.00</td>
</tr>
<tr>
<td>More than 0.150 but less than 0.200</td>
<td>180.00</td>
</tr>
<tr>
<td>More than 0.200 but less than 0.300</td>
<td>215.00</td>
</tr>
<tr>
<td>More than 0.300 but less than 0.500</td>
<td>260.00</td>
</tr>
<tr>
<td>More than 0.500</td>
<td>300.00</td>
</tr>
</tbody>
</table>

*Million Gallons per Day*
3. List 2: Class II UIF

<table>
<thead>
<tr>
<th>Volume</th>
<th>Unit</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 4,000</td>
<td>gallons</td>
<td>$30.00</td>
</tr>
<tr>
<td>from 4,000 to 10,000</td>
<td>gallons</td>
<td>50.00</td>
</tr>
<tr>
<td>from 10,001 to 40,000</td>
<td>gallons</td>
<td>100.00</td>
</tr>
<tr>
<td>from 40,001 to 100,000</td>
<td>gallons</td>
<td>200.00</td>
</tr>
<tr>
<td>from 100,001 to 400,000</td>
<td>gallons</td>
<td>250.00</td>
</tr>
<tr>
<td>from 400,001 to 1,000,000</td>
<td>gallons</td>
<td>800.00</td>
</tr>
<tr>
<td>from 1,000,001 to 2,000,000</td>
<td>gallons</td>
<td>1,100.00</td>
</tr>
<tr>
<td>from 2,000,001 to 5,000,000</td>
<td>gallons</td>
<td>1,500.00</td>
</tr>
<tr>
<td>Over 5,000,000</td>
<td>gallons</td>
<td>2,000.00</td>
</tr>
</tbody>
</table>

4. List 3: Miscellaneous

Underground injection facilities than cannot be categorized according to the aforementioned lists, shall be assessed according to this list.

   a. Adequately treated storm water injections of an average daily volume of 500,000 gallons or less, shall be assessed a fee of $30.00 except if such daily average is more than 500,000 gallons, where list 2 should apply.

   b. Class VII wells or other injection activities that cannot be catalogued under any list shall pay a fee of $100.00
E. Fees relative to Transfer of Ownership or Change of Location

Whenever an application is filed for a permit because the facility has been moved to a new location, or whenever ownership has been transferred from one person to another and a permit, authorization or certification has previously been granted by the Board for such a facility and no alteration or addition has been or is being made, the applicant shall pay the fee provided in Section A and a permit fee equivalent to 30 percent of the permit fee, as established in Section D of this Rule.

F. Fees for Duplicate Permits, Approvals or Certifications

A request for a duplicate permit, shall be made in writing by the permittee after the destruction, loss, or defacement of permit document. A fee of $10.00 shall be charged for issuing a duplicate permit.

G. Fees for Revisions

Any revision of a permit to construct, to operate or commit to a compliance plan, the applicant shall pay one-eighth (1/8) of the fee provided in Section D.

H. Fees for Compliance Plans

All compliance plans, shall be subject to a permit fee according to the lists in Section D of this Rule.
RULE 502  TEST AND ANALYSES FEES

A. The Board shall, when deemed appropriate, conduct tests, related to an underground injection facility. These tests, may deal with the functioning of the facility, or may determine the amount of injected contaminants and the degree of compliance with the permit conditions and provisions of this Regulation.

B. In case the Board decides to act according to the authority conferred by this Rule and Rule 106, the Board may notify the owner or operator of the facility of its intention and request those facilities and devices necessary for carrying out the tests.

C. The owner or operator of the facility shall pay a fee equal to the cost incurred by the Board in the fulfilment of the monitoring, tests, and analyses.

D. 1. After completing the test, the Board shall send a written notice to the owner or operator of the facility, indicating the fee to be paid.

2. These fees shall be paid within 30 days of the invoice date.

3. In case of non-payment of the tests and analyses fees within the thirty day period specified in subsection 2, the Board may revoke or cancel any operation permit or application granted to the facility.

4. Following the payment of corresponding tests and analyses fees, the Board shall send a copy of the test report to the owner or operator of the facility.
APPENDIX A

CONSTRUCTION REQUIREMENTS FOR SEPTIC SYSTEMS
APPENDIX A

CONSTRUCTION REQUIREMENTS FOR SEPTIC SYSTEMS

A. Septic Tanks

Septic tanks shall be watertight and constructed of non-corrosive and durable materials. Concrete covers shall be reinforced to withstand dead load of 732 kilograms per square meter (150 lbs/sq. ft.) Concrete covers shall be at least 10 centimeters (4") thick. The tanks shall be constructed of either precast reinforced concrete, poured-in-place reinforced concrete, bituminous-coated metal, or other material approved by this Board.

1. Construction of septic tanks shall meet the following specifications:

   a. INLET AND OUTLET - The invert of the inlet pipe shall be located at least 8 centimeters (3") above the invert of the outlet.

   b. BAFFLES - Baffles shall be located 15 to 20 centimeters (6" to 8") from the walls and shall extend at least 15 cm. (6") above the flow line and have a 3 cm. (1") vent space between the top of the baffle and the treatment tanks. Inlet baffles shall extend at least 15 centimeters (6") below line and outlet baffles should extend below the liquid surface a depth equal to 40 percent of the liquid depth. Submerged T's of approved
materials with a short section of the pipe extending to the depth required for baffles may be used as inlet and outlet baffles. See Figures 1 and 2.

c. MEANS OF ACCESS - Each compartment of a tank shall be provided with an access manhole. Manhole openings should be at least 58 centimeters (23") in diameter.

d. MULTIPLE COMPARTMENTS - The inlet compartment of tanks having two compartments shall have the capacity of the inlet compartment not less than one-half (1/2) and not more than two-thirds (2/3) of the total tank capacity. See Figure 2.

e. TANKS IN SERIES - Tanks may be connected in series provided the number of tanks does not exceed two (2) and the volume of the first tank is equal to or greater than the volume of the second tank.

f. INSTALLATION - The invert of the outlet and all openings of a tank shall be above the maximum seasonal water table elevation.

g. TANK CAPACITY - The net volume or effective capacity below the flowline of a septic tank, for flows up to 1,500 gallons per day, should be equal to at least 1.5 times the sewage flow:

\[ V = 1.5Q \]
With flows greater than 1500 gallons per day, the minimum effective tank capacity should equal 1,125 gallons plus 75 percent of the daily sewage flow; or

\[ V = 1125 + 0.75Q \]

where \( V \) is the net volume of the tank in gallons and \( Q \) is the daily sewage flow in gallons per day. The maximum permissible septic tank capacity will be for flows up to 14,500 gallons per day. The minimum tank capacity will be 450 gallons. The flow will be determined in accordance with Table 1.

h. LIQUID DEPTH - The minimum permissible liquid depth will be four (4) feet (1.2 m) in every tank or compartment.

i. WIDTH DIMENSIONS - The minimum permissible width dimension will be thirty-six (36) inches (91 cm) wide.

j. The bottom of the tank will be located at a minimum distance of four (4) feet (1.2 m) above the underground water table.

k. VEHICULAR TRAFFIC - For installation under driveways, parking lots, in heavy saturated solids or otherwise subject to heavy loads, the treatment tanks shall be capable of withstanding an H-20 truck load.

2. Saturated Conditions

In soils where the water table may rise above the half-way point on the treatment or holding tank, anti-flotation precautions shall be taken to counteract buoyancy.
Placement of additional concrete on top of the tank or other suitable anchors to the pads placed under the tank shall be provided.

3. Location
   
a. Each septic tank will be located at minimum distance of three (3) feet (0.91 m) from a private property border line.

b. Each septic tank will be located at a minimum distance of one hundred (100) feet (30.5 m) from a potable water supply source.

c. Each septic tank will be located at minimum distance of three (3) feet (0.91 m) from any building structure.

4. Flow determination - for flow determination See Table 1.

5. Effluent

Septic tank effluent will be treated by any percolation system as specified in Section B, C and D and will not be discharged into any receiving body of water.

6. Grease Trap

Grease trap is required before the septic tank if the raw wastewater contains oil or grease.

B. Trench System

The type and size of a system shall depend upon the volume of estimated wastewater flow, as determined from Table 1 of this appendix and the capacity of the soil to filtrate wastewaters.
1. Construction of trenches - The disposal trenches shall be constructed in accordance with the following standards:

   a. The vegetation shall be removed from the ground surface of the disposal area.

   b. The trench bottom area should be scarified or trilled to minimize glazing of the original soil.

   c. Wastewater from a treatment tank or distribution box shall be discharged to the bed by means of
      
      i. GRAVITY - a watertight pipe at least 10cm (4") in diameter with a slope of at least 5 mm per meter (1/16" per foot).

      ii. PRESSURE - a watertight pipe at least 3.8 cm (1.5") in diameter.

   d. The distribution lines - perforated pipes used in a distribution system shall be installed and aligned so that the holes are located in the lower half of the pipe. Solid pipe shall be installed between the treatment tank and the disposal area. All piping shall meet the materials standards listed in Regulation No. 7 of the Puerto Rico Planning Board.

   e. The trench should be approximately parallel to ground contours so that variations in trench depth will be minimized.
f. The bottom of the rock aggregate bed and the distribution lines shall be level.
g. Trench construction will not be permitted in rapidly permeable soils with percolation rates faster than one (1) minute per inch except when it is proved to the Board, showing scientific evidence, that there exists an impermeable strata between the area where the trenches and the aquifer lie, or in cases where the aquifer is located at a depth greater than 200 feet.
h. Trench construction will not be permitted in soils with percolation rates slower than sixty (60) minutes per inch.
i. The perimeter of the disposal area and fill extension shall be granted, and diversion ditches installed to divert ground and surface waters when necessary.
j. The disposal and fill area shall be stabilized to prevent erosion.
k. Trench construction will not be permitted in areas where the maximum water table elevation is located less than four (4) feet (1.2 m) below the bottom of the trench.
2. Design criteria - Disposal trenches shall be designed and constructed in accordance with the following criteria:

a. Dimensions of Trenches
   i. Maximum length of trench  30.5 meters (100 feet)
   ii. Maximum width of trench  0.91 meters (3 feet)
   iii. Minimum width of trench  0.46 meters (1.5 feet)
   iv. Maximum depth of trench  0.91 meters (3 feet)
   v. Minimum depth of trench  0.46 meters (1.5 feet)
   vi. The trenches will be of a uniform width and a uniform depth.

b. Distribution System
   i. The distribution system shall be designed to equally distribute wastewater in the disposal area. Distribution line shall be equally spaced in the disposal area. The lines shall be separate as specified in Table 2.
   ii. The distribution lines (distribution pipes) shall be installed within a filtering bed of crushed stone with a minimum thickness of six (6) inches (15 cm) below and four (4) inches (10 cm) above the distribution line.
   iii. The crushed stone shall be completely covered with at least a 5 cm (2") layer of compressed hay, straw or any other material acceptable to the Board to prevent sifting of backfill material into the crushed stone.
iv. 20 cm to 30 cm, (8" - 12") of clean backfill shall be carefully placed over the hay, straw, or any other material acceptable to the Board.

v. Clean fill is to be placed in 20 centimeter (8") layers and then throughly compacted as it is placed.

vi. The surface of fill shall extend from the disposal area a distance of 1 meter (3.25') at a 3 percent slope.

vii. The minimum distance between the trenches and the treatment tank shall be 1.5 m (5 ft.)

3. The leaching area of a trench will be calculated using the following formula:

\[ A_t = W_t \times L_t \]

where:
- \( A_t \) = Leaching area of a trench, \( \text{ft}^2 \)
- \( W_t \) = Trench width, \( \text{ft} \)
- \( L_t \) = Trench length, \( \text{ft} \)

This area must be equal to the required area as specified in Section F.

4. Trenches will follow primary or secondary treatment.

5. The application of raw wastewater into trenches shall not be permitted.

6. See Figure 3 for typical trench system.
C. Leaching Bed

The leaching bed system will be designed and constructed in accordance with Section B (trench system) with the following modifications.

1. Minimum separation between distribution pipes 1.8 meters (6 ft)
2. Maximum width of bed 6.0 meters (20 ft)
3. Minimum width of bed 0.91 meters (3 ft)
4. Maximum depth of bed 0.91 meters (3 ft)
5. Minimum depth of bed 0.46 meters (1.5 ft)
6. The minimum distance between beds shall be 7.5 meters (25 ft) for beds with a width ranging between 3m to 6m (10'-20').
7. The minimum distance between beds shall be 3m (10 ft.) for beds with a width ranging between 1 m to 3 m (3.25' - 10').
8. Leaching beds will follow primary or secondary treatment.
9. The application of raw wastewater into leaching beds shall not be permitted.
10. See Figure 4 for a typical leaching bed system.
11. Leaching bed construction will not be permitted in areas where the maximum seasonal water table elevation is located less than four (4) feet (1.2 m) below the bottom of the bed.

D. Seepage Pits

The type and size of a system shall depend upon the volume of estimated wastewater flow, as determined from Table 1 of this appendix and the filtration capacity of the soil. Construction of seepage pits shall comply with the following:

1. Construction materials - The tanks will be constructed of non-corrosive and durable materials.

2. Covers - Concrete covers shall be reinforced to withstand a dead load of 732 kilograms per square meter (150 lbs/ft²). Concrete covers shall be at least 10 centimeters (4") thick and must be extended at least 6 inches (15 cm) beyond the seepage pit's walls.

3. Means of Access - Each tank shall be provided with an access manhole. Manhole openings should be at least 58 centimeters (23") in diameter, or a square 58 cm x 58 cm.

4. Tanks in Parallel or Series - Tanks with a flow distribution in parallel or series are permitted with a minimum separation between tanks equal or greater than "DBT".

\[
\text{DBT} = 3 \times \text{Dt} \quad \text{for circular tanks} \\
\text{DBT} = 3 \times \text{Lt} \quad \text{for rectangular tanks}
\]

where:  
DBT = Distance between tanks, ft.  
Dt = Largest tank diameter, ft.  
Lt = Largest tank length, ft.
5. Depth - The bottom of the tank will be located a minimum distance of 4 feet (1.2m) above the underground water table.

6. Location
- Each tank will be located at a minimum distance of five (5) feet (1.5m) from a private property border line.
- Each tank will be located at a minimum distance of one hundred (100) feet (30.5m) away from any potable water supply source.
- Each tank will be located at a minimum distance of five (5) feet (1.5m) away from any building structure.

7. Tank configuration
Circular - The circular tanks will be constructed in a cylindrical form with a uniform diameter.
Rectangular - The rectangular tanks will be constructed in such a way that the bottom and the top have the same dimensions.

8. The walls of the tanks will be constructed with concrete blocks or bricks. Concrete blocks and bricks will lay with staggered open joints. Hollow blocks will lay with open holes toward the soil.

9. The leaching area of a circular seepage pit will be calculated by the following formula:

$$ A_{sp} = D_p \times 2\pi \times r_p $$

where: $A_{sp}$ = Leaching area of seepage pit, $ft^2$
$D_p$ = Depth of pit, $ft$
$\pi = 3.1416$ (constant)
$r_p$ = radius of pit = Diameter of pit, $ft$. 

This area must be equal or greater than the required area as specified in section F.

10. The leaching area of a rectangular seepage pit will be calculated by the following formula:

\[ A_{sp} = \left[ (Lp \times 2) + (Wp \times 2) \right] \times \frac{Dp}{2} \]

where:
- \( A_{sp} \) = Leaching area of seepage pit, \( ft^2 \)
- \( Lp \) = Length of pit, \( ft \)
- \( Wp \) = Width of pit, \( ft \)
- \( Dp \) = Depth of pit, \( ft \)

This area must be equal or greater than the required area as specified in Section F.

11. There will be no effluent pipe in this tank.

12. Seepage pit will follow primary or secondary treatment.

13. The application of raw wastewaters into the seepage pits shall not be permitted.

E. Percolation Test

The percolation test will be performed as specified in the following:

a) Dig a hole with Dimensions one (1) foot (30cm) wide and one (1) foot long by two (2) feet (60cm) deep.

b) Fill with water and let the water be absorbed by the soil.

c) Fill again with water to a depth of twelve (12) inches (30cm).

d) Record the time it takes the soil to absorb the last six (6) inches (15 cm) of water.

e) Divided this time by six (6). This will be the percolation test result in minutes per inch.
This result will be submitted to the Board properly signed and sealed by an engineer licensed by the Engineer Examination Board.

F. Leaching Areas

The leaching area will be determined by using the following procedure:

1. Determine the application rate in gallons per square foot per day by using the following formula:

\[ Q_a = \frac{5}{\sqrt{T}} \]

where: \( Q_a \) = application rate, gallons/ft\(^2\)/day
\( T \) = percolation test result, minutes/inch

2. Determine the required leaching area by using the following formula:

\[ A = \frac{Q}{Q_a} \]

where: \( A \) = required area, ft\(^2\)
\( Q \) = flow, gallons per day
\( Q_a \) = application rate, gallons/ft\(^2\)/day
Table 1: Wastewater Flow Contributions

<table>
<thead>
<tr>
<th>Description</th>
<th>Gallons Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small dwellings and cottages with seasonal occupancy</td>
<td>50</td>
</tr>
<tr>
<td>Single family dwellings, per housing unit</td>
<td>300</td>
</tr>
<tr>
<td>Public housing projects, per housing unit</td>
<td>200</td>
</tr>
<tr>
<td>Apartments building and condominiums, per housing unit</td>
<td>225</td>
</tr>
<tr>
<td>Rooming and boarding houses, per person</td>
<td>50</td>
</tr>
<tr>
<td>Additional kitchen wastes for non-residence boarders, per person</td>
<td>10</td>
</tr>
<tr>
<td>Restaurants (toilet and kitchen wastes per patron)</td>
<td>10</td>
</tr>
<tr>
<td>Restaurants (kitchen wastes per meal served)</td>
<td>4</td>
</tr>
<tr>
<td>Tourist camps or trailer parks with central bath house, per person</td>
<td>35</td>
</tr>
<tr>
<td>Tourist courts or mobile home parks with individual bath units, per person</td>
<td>50</td>
</tr>
<tr>
<td>Resort camps (night and day) with limited plumbing, per person</td>
<td>50</td>
</tr>
<tr>
<td>Luxury camps, per person</td>
<td>150</td>
</tr>
<tr>
<td>Work or construction camps (semi permanent), per person</td>
<td>50</td>
</tr>
<tr>
<td>Day camps (no meals served), per person</td>
<td>15</td>
</tr>
<tr>
<td>Day schools without cafeterias, gymnasium, or showers, per student</td>
<td>15</td>
</tr>
<tr>
<td>Day schools, without gymnasium or showers, with cafeterias, per student</td>
<td>20</td>
</tr>
<tr>
<td>Day Schools with cafeterias, gymnasium and showers, per student</td>
<td>25</td>
</tr>
<tr>
<td>Category</td>
<td>Gallons Per Day</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Boarding schools, per student</td>
<td>100</td>
</tr>
<tr>
<td>Day workers at schools and offices, per person/per shift</td>
<td>15</td>
</tr>
<tr>
<td>Institutions other than hospitals, per person</td>
<td>125</td>
</tr>
<tr>
<td>Factories (gallons per person per shift, exclusive of industries wastes)</td>
<td>35</td>
</tr>
<tr>
<td>Picnic parks (toilet wastes only), gallons per picknicker</td>
<td>5</td>
</tr>
<tr>
<td>Picnic parks with bath houses, showers, and flush toilets, per person</td>
<td>10</td>
</tr>
<tr>
<td>Luxury residences and estates, per person</td>
<td>150</td>
</tr>
<tr>
<td>Motels (per bed space)</td>
<td>40</td>
</tr>
<tr>
<td>Motels with bath, toilet and kitchen wastes, per person</td>
<td>60</td>
</tr>
<tr>
<td>Drive in theaters (per car space)</td>
<td>5</td>
</tr>
<tr>
<td>Movie theaters (per auditorium seat)</td>
<td>5</td>
</tr>
<tr>
<td>Airports (per passenger)</td>
<td>5</td>
</tr>
<tr>
<td>Self-service laundries (gallons per machine)</td>
<td>800</td>
</tr>
<tr>
<td>Stores (per toilet room)</td>
<td>500</td>
</tr>
<tr>
<td>*Service stations, per vehicle served (per employee)</td>
<td>13 (16)</td>
</tr>
<tr>
<td>*Bars, per customer (per employee)</td>
<td>5 (16)</td>
</tr>
<tr>
<td>*Hotels, per guest (per employee)</td>
<td>60 (13)</td>
</tr>
<tr>
<td>Office, per 1,000 ft² of floor space</td>
<td>300</td>
</tr>
<tr>
<td>*Shopping center, per parking space (per employee)</td>
<td>2 (15)</td>
</tr>
<tr>
<td>*Prision, per inmate (per employee)</td>
<td>160 (16)</td>
</tr>
<tr>
<td>*Rest home, per resident (per employee)</td>
<td>119 (16)</td>
</tr>
<tr>
<td>Service</td>
<td>Gallons Per Day</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Apartment resort, per person</td>
<td>74</td>
</tr>
<tr>
<td>*Cafeteria, per customer (per employee)</td>
<td>3 (13)</td>
</tr>
<tr>
<td>Cocktail Lounge, per seat</td>
<td>26</td>
</tr>
<tr>
<td>*Coffee shop, per customer (per employee)</td>
<td>8 (13)</td>
</tr>
<tr>
<td>*Country Club, per member present (per employee)</td>
<td>132 (16)</td>
</tr>
<tr>
<td>Dinning hall, per meal served</td>
<td>13</td>
</tr>
<tr>
<td>Dormitory bunkhouse, per person</td>
<td>46</td>
</tr>
<tr>
<td>*Swimming pool, per person (per employee)</td>
<td>13 (13)</td>
</tr>
<tr>
<td>Cemetery, per employee</td>
<td>25</td>
</tr>
<tr>
<td>*Infiltrations, per housing units (per mile of piping)</td>
<td>75 (10,000)</td>
</tr>
<tr>
<td>*Medical Hospital, per bed (per employee)</td>
<td>250 (16)</td>
</tr>
<tr>
<td>*Mental Hospital, per bed (per employee)</td>
<td>170 (16)</td>
</tr>
</tbody>
</table>

* The total flow will be the sum of both flows.
TYPICAL SEPTIC TANK OUTLET STRUCTURES TO MINIMIZE SUSPENDED SOLIDS IN DISCHARGE(11)
FIGURE 2

TYPICAL TWO-COMPARTMENT SEPTIC TANK

Plan

Longitudinal Section
TYPICAL TRENCH SYSTEM

- Perforated Distribution Pipe
- Barrier Material
- ¾ - 2½ in. Rock
- Water Table or Creviced Bedrock
- Backfill

Dimensions:
- 1.5-3 ft
- 6-12 in.
- 4 ft. Min.
Figure 4

Typical Bed System

- Distribution Box
- Perforated Distribution Pipe
- Barrier Material
- Water Table or Creviced Bedrock

4 ft. min

3/4-2½ inch dia. Rock

15 ft. min 16 ft. min
APPENDIX B

REQUIREMENTS FOR CLASS II (C) AND VII UIFS
APPENDIX B

REQUIREMENTS FOR CLASS II (c) AND VII UIFS

A. New Class II (c) and VII Facilities

   a. All new Class II (c) and VII facilities to be used for the underground storage of fluids shall be designed and constructed in a manner which will, in the opinion of the Board, provide the maximum reasonable protection available against leakage or spillage from the facility due to corrosion, breakage, structural failure, or other means.
   b. Double-walled or equivalent measures are required for all Class VII UIF to be installed.
   c. All Class II (c) UIF to be installed must follow the Underwriters Laboratories, Inc. design standards as detailed in their pamphlet: "Standard for Safety Steel Underground Tanks for Flammable and Combustible Liquids, U.L. #58, latest edition.

2. Standards for Installation
   a. All facilities are to be installed in accordance with manufacturer's specifications.
   b. They shall be installed at least 100 feet (30.5m) from any drinking water well or USDW.
   c. In areas where the water level is above or at least 6 feet (1.8m) below the bottom of the excavation, a sheet of material
imprevious to the stored fluid shall be installed around the entire perimeter of the excavation. All leak detection systems are to be located within the confines of the enclosure formed by this material.

d. All underground tanks for the storage of toxic or hazardous substances shall be installed with a containment and recovery system to prevent the contamination of a USDW in case of spills. Said system shall be approved by the Board before its installation.

3. Overfill Protection
a. A mean for overfill protection shall be provided for all new underground storage facilities.
b. These means may consist of but shall not be limited to:
   i. an overfill prevention device;
   ii. a product-tight containment capable of intercepting and preventing the release to the ground or groundwater of on overfill spill; or
   iii. any other mean approved by the Board.

B. Mechanical Integrity for New and Existing Class II (c) and VII Facilities
1. Class II (c) and VII underground storage facilities have mechanical integrity if:
a. There is no leak of stored fluids from the facility or storage system (fluid distribution lines, tanks, etc.)
b. There is no stored fluid movement into an underground source of drinking water through vertical channels adjacent to the excavation.
c. One of the following methods must be used to evaluate
the absence of leaks under (a) above:

i. For the storage facility:
   a. in case of installation of a new facility:
      1. Soap test of facility (e.g. tank) prior to placement in excavation and after placement in excavation, according to the requirements of API Bulletin No. 1615 established by the American Petroleum Institute.
   b. In case of existing facilities:
      1. Empty the facilities (e.g. tank) and proceed with the anterior soap test.

ii. For the distribution lines:
   a. In case of installation of new lines:
      1. After all lines have been installed and before they are buried, lines are to be disconnected from the tank or storage facility, sealed and subjected to a pressure according to trade mark specification and type of pump installed and checked for leaks with a soap and water solution.
   b. For existing lines:
      1. Disconnect the distribution lines, empty them, and proceed with the beforementioned test for new lines.

iii. All new or existing completed systems must be submitted to air or hydrostatic testing after the abovementioned test, to prove their mechanical integrity.

C. Leak Detection

1. All Class II (c) and VII facilities must be equipped with means
of calculating product delivery and consumption. Accurate records must be kept of all deliveries and consumption.

2. All storage facility must be provided with a means of monitoring continuously and accurately for any leakage and spillage that might occur.

3. All monitoring, delivery and consumption records must be kept as provided in Rule 114 C.

4. Leak detection and monitoring can be provided by an electrical continuous leak detection system; visually operated or float operated alarms; pressure, vacuum or fluid level detectors for double-walled facilities; observation wells and collection barriers or membranes; for Class II (c) UIF, a perforated, properly designed U tube installation is acceptable. Other equivalent designs may be used, with the Board's approval.

5. In case of spillage or leakage of fluids which violate the provisions of Section A.1.a. above, provisions set forth in Rule 116 of this Regulation, must be followed.

D. Abandonment and Closure of Class II (c) and VII UIF

1. An abandoned underground storage facility means one which has remained out of service for two (2) years or more, or which has been declared by the owner or operator to be abandoned.

2. An out of service underground storage facility means substantially empty; or not in use, meaning no regular filling or drawing; or not being maintained; or uncontrolled, meaning not attended or secured; or any combination thereof.
3. No person shall use or maintain the existence of an abandoned underground storage facility.

4. An underground storage facility may be removed from service if:
   a. said facility is declared abandoned, emptied immediately and removed within ninety (90) days of so declaring, and is disposed of as junk by first rendering it vapor-free and by sufficiently perforating it so as to render it unfit for further use; or
   b. said facility is declared abandoned, emptied immediately and made inert by completely filling with sand or concrete within ninety (90) days.

5. An underground storage facility may be declared temporarily out of service if it is planned to be returned to active service within two (2) years of the placement of it temporarily out of service, and it is returned to active service within said two (2) years; it is emptied of its content immediately, and the fill line, gauge opening and pump suction are capped and secured against tampering, and the vent line is left open.

6. Any declaration of abandonment or temporarily removal from service of a facility must be notified to the Board in writing within 30 days after said declaration by the owner or operator.
Subpart C—Authorization of Underground Injection by Rule

Sec. 144.21 Listing Class I, II (except enhanced recovery and hydrocarbon storage) and III wells.
144.22 Listing Class II enhanced recovery and hydrocarbon storage wells.
144.23 Class IV wells.
144.24 Class V wells.
144.25 Requiring a permit.
144.26 Inventory requirements.

Subpart D—Authorization by Permit

144.27 Authorization for a permit application and reports.
144.28 Permits.
144.29 Issuance of permits.
144.30 Suspension of permits.
144.31 Termination of permits.
144.32 Minor modifications of permits.

Subpart E—Permit Conditions

144.33 Conditions applicable to all permits.
144.34 Establishing permit conditions.
144.35 Schedule of compliance.
144.36 Requirements for recording and reporting of monitoring results.
144.37 Corrective action.


Subpart A—General Provisions

§ 144.1 Purpose and scope of Part 144.


(b) Authority.

(1) Section 1422 of SDWA requires the Administrator to promulgate regulations establishing minimum requirements for effective UIC programs.

(2) Section 1422 of SDWA requires the Administrator to list in the Federal Register "each State for which in his judgment a State underground injection control program may be necessary to ensure that underground injection will not endanger drinking water supplies" and to establish by regulation a program for EPA administration of UIC programs in the absence of an approved State program in a listed State.

(3) Section 1423 of SDWA provides procedures for EPA enforcement of UIC requirements.

(4) Section 1431 authorizes the Administrator to take action to protect the health of persons when a contaminant which is present in or may enter a public water system may present an imminent and substantial endangerment to the health of persons.

(5) Section 1445 of SDWA authorizes the promulgation of regulations for such recordkeeping, reporting, and monitoring requirements as the Administrator may reasonably require to assist him in establishing regulations under this title, and a right of entry and inspection to determine compliance with this title, including for this purpose, inspection, at reasonable times, or records, files, papers, processes, controls, and facilities.

(6) Section 1459 of SDWA authorizes the Administrator to prescribe such regulations as are necessary or appropriate to carry out his functions under SDWA.

(c) Overview of the UIC Program. An UIC program is necessary in any State listed by EPA under section 1422 of the SDWA. Because all States have been listed, the SDWA requires all States to submit an UIC program within 180 days after July 9, 1986, the effective date of 40 CFR Part 146, which was the final element of the UIC minimum requirements to be originally promulgated, unless the Administrator grants an extension which may be for a period not to exceed an additional 120 days. If a State fails to submit an acceptable program, EPA will establish a program for that State. Once a program is established, SDWA provides that all underground injections in listed States are unlawful and subject to penalties unless authorized by a permit or a rule. This Part sets forth the requirements governing all UIC programs, authorizations by permit or rule and prohibits certain types of injection. The technical regulations governing those authorizations appear in 40 CFR Part 148.

(d) Structure of the UIC Program.

(1) Part 144. This Part sets forth the permitting and other program requirements that must be met by UIC Programs, whether run by a State or by EPA. It is divided into the following subparts:

(i) Subpart A describes general elements of the UIC Program, including definitions and classifications.

(ii) Subpart B sets forth the general program requirements, including the performance standards applicable to all injection activities, basic elements that
all UIC programs must contain, and provisions for waiving permit of rule requirements under certain circumstances.

(iii) Subpart C sets forth requirements for wells authorized by rule.

(iv) Subpart D sets forth permitting procedures.

(v) Subpart E sets forth specific conditions, or types of conditions, that must at a minimum be included in all permits.

(2) Part 145. While Part 144 sets forth minimum requirements for all UIC Programs, these requirements are specifically identified as elements of a State application for primary or secondary jurisdiction. If a State wishes to administer an UIC Program in Part 145, Part 145 also sets forth the necessary elements of a State submission and the procedural requirements for approval of State programs.

(3) Part 124. The public participation requirements that must be met by UIC Programs, whether administered by the State or by EPA, are set forth in Part 124, EPA must comply with all Part 124 requirements; State administered programs must comply with Part 124 as required by Part 145. These requirements carry out the purposes of the public participation requirement of 40 CFR Part 25 (Public Participation), and supersede the requirements of that Part as they apply to the UIC Program.

(4) Part 146. This part sets forth the technical criteria and standards that must be met in permits and authorizations by rule as required by Part 124.

(a) Scope of the Permit or Rule Requirement.

The UIC Permit Program regulates underground injections by five classes of wells (see definition of "well injection" in § 144.3). The five classes of wells are set forth in § 144.8. All owners or operators of these injection wells must be authorized either by permit or rule by the Director. In carrying out the mandate of the SDWA, this part provides that no injection shall be authorized by permit or rule if it results in the movement of fluid containing any contaminant into Underground Sources of Drinking Water (USDWs—see § 144.3 for definition), if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may adversely affect the health of persons (§ 144.12). Existing Class IV wells which inject hazardous waste directly into an underground source of drinking water are to be eliminated over a period of six months and new such Class IV wells are to be prohibited (§ 144.13). Class V wells will be inventoried and assessed and regulatory action will be established at a later date.

In the meantime, if remedial action appears necessary, the individual permit may be amended (§ 144.25) or the Director must require remedial action or closure by order (§ 144.12(c)). During UIC program development, the Director may identify aquifers and portions of aquifers which are actual or potential sources of drinking water. This will provide an aid to the Director in carrying out his or her duty to protect all USDWs. An aquifer is a USDW if it fits the definition, even if it has not been "identified." The Director may also designate "exempted aquifers" using criteria in § 144.04. Such aquifers are those which would otherwise qualify as "underground sources of drinking water" to be protected, but which have no real potential to be used as drinking water sources. Therefore, they are not USDWs. No aquifer is "exempted aquifer" until it has been affirmatively designated under the procedures in § 144.7. Aquifers which do not fit the definition of "underground sources of drinking water" are not "exempted aquifers." They are simply not subject to the special protection afforded USDWs.

(b) Specific Inclusions. The following wells are included among those types by injection activity that are covered by the UIC regulations. (This list is not intended to be exclusive but is for clarification only.)

(i) Any injection well located on a drilling platform inside the State's territorial waters.

(ii) Any dog hole or well that is deeper than its largest surface diameter, where the principal function of the hole is emplacement of fluids.

(iii) Any septic tank or cesspool used by generators of hazardous waste, or by owners or operators of hazardous waste management facilities, to dispose of fluids containing hazardous waste.

(iv) Any septic tank, cesspool, or other well used by a multiple dwelling, community, or Regional system for the injection of wastes.

(c) Specific Exclusions. The following are not covered by these regulations:

(i) Injection wells located on a drilling platform or other site that is beyond the State's territorial waters.

(ii) Individual or single family residential waste disposal systems such as domestic cesspools or septic systems.

(iii) Non-residential cesspools, septic systems or similar waste disposal systems if such systems (A) are used solely for the disposal of sanitary waste, and (B) have the capacity to serve fewer than 20 persons a day.

(iv) Injection wells used for injection of hydrocarbons which are of pipeline quality and are gases at standard temperature and pressure for the purpose of storage.

(v) Any dug hole which is not used for employment of any underground source of drinking water.

The prohibition applicable to Class IV wells under § 144.13 does not apply to injections of hazardous wastes into aquifers or portions thereof which have been exempted pursuant to § 146.04.

§ 144.2. Promulgation of Class II Programs for Indian Lands.

Notwithstanding the requirements of this Part or Parts 124 and 145 of this chapter, the Administrator may promulgate an alternate UIC Program for Class II wells on any Indian reservation or Indian lands. In promulgating such a program the Administrator shall consider the following factors:

(a) The interest and preferences of the tribal government having responsibility for the given reservation or Indian lands;

(b) The content of the alternate program and any program in effect in an adjoining jurisdiction; and

(c) Such other factors as are necessary and appropriate to carry out the Safe Drinking Water Act.
according to the criteria set forth in § 144.06 or in the case of an area permit, the project area plus a circumscribing area the width of which is either 5% of a mile or a number calculated according to the criteria set forth in § 144.22. 

**Permit** means an authorization, license, or equivalent control document issued by EPA or an approved State to implement the requirements of this Part. 

**Formulation fluid** means "fluid" present in a "deposition", under natural conditions as opposed to introduced fluids, such as "drilling mud." 

**Generator** means any person, by site location, whose act or process produces hazardous waste identified or listed in 40 CFR Part 261. 

**Ground water** means water below the land surface in a zone of saturation. 

**Hazardous Waste Management facility** ("HWM facility") means all contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills; surface impoundments; or combination of them). 

**Injection well** means a "well" into which "fluids" are being injected. 

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

**Interstate agency** means an agency of two or more States established by or under agreements or compact approved by the Congress, or any other agency of two or more States having substantial powers or duties pertaining to the control of pollution as determined and approved by the administrator under the "appropriate Act and regulations." 

**Major facility** means any UIC "facility or activity" classified as such by the Administrator or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director. 

**Manifest** means the shipping document originated and signed by the "generator," which contains the information required by Subpart B of 40 CFR Part 262. 

**Owner or operator** means the owner or operator of any "facility or activity" subject to regulation under the UIC program.
Interstate agencies. “State Director” means the chief administrative officer of the State or interstate agency authorized to perform the particular procedure or function to which reference is made.

State/EPA Agreement means an agreement between the Regional Administrator and the State which coordinates EPA and State activities, responsibilities and programs.

Stratum (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

Total dissolved solids means the total dissolved (filtrable) solids as determined by use of the method specified in 40 CFR Part 191.

UIC means the Underground Injection Control program under Part C of the Safe Drinking Water Act, including an "approved State program."

Underground injection means a "well injection."

Underground source of drinking water (USDW) means an aquifer or a part of an aquifer: (a) Which supplies any public water system; or (b) Which contains a sufficient quantity of ground water to supply a public water system; and (i) Currently supplies drinking water for human consumption; or (ii) Contains fewer than 10,000 mg/l total dissolved solids; and (b) Which is not an exempted aquifer.

USDW means "underground source of drinking water."

Well means a bored, driven or drilled shaft, or a dug hole, whose depth is greater than the largest surface dimension.

Well injection means the subsurface emplacement of "fluids" through a bored, drilled, or driven "well," or through a dug hole, wherein the depth of the dug hole is greater than the largest surface dimension.

§ 144.4 Considerations under Federal law.

Permits shall be issued in a manner and shall contain conditions consistent with requirements of applicable Federal laws. These laws may include: (a) The Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq., Section 7 of the Act prohibits the Regional Administrator from assisting by license or otherwise the construction of any water resource project that would have a direct, adverse effect on the value for which a national wild and scenic river was established. (b) The National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq., Section 106 of the Act and implementing regulations (36 CFR Part 800) require the Regional Administrator, before issuing a license, to adopt measures when feasible to mitigate potential adverse effects of the licensed activity and properties listed or eligible for listing in the National Register of Historic Places. The Act’s requirements are to be implemented in cooperation with State Historic Preservation Officers and other entities as appropriate, in consultation with the Advisory Council on Historic Preservation.

(c) The Endangered Species Act, 16 U.S.C. 1531 et seq., Section 7 of the Act and implementing regulations (50 CFR Part 402) require the Regional Administrator to ensure, in consultation with the Secretary of the Interior or the Commerce Secretary acting in that capacity, that any actions authorized by EPA are not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

(d) The Coastal Zone Management Act, 16 U.S.C. 1431 et seq., Section 307(c) of the Act and implementing regulations (33 CFR Part 330) prohibit EPA from issuing a permit for an activity affecting land or water use in the coastal zone until the applicant certifies that the proposed activity complies with the State Coastal Zone Management program, and the State or its designated agency concurs with the certification (or the Secretary of Commerce overrides the State’s nonconcurrence).

(e) The Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq., requires the Regional Administrator before issuing a permit proposing or authorizing the impoundment (with certain exemptions), diversion, or other control or modification of any body of water, consult with the appropriate State agency exercising jurisdiction over wildlife resources to conserve these resources.

(f) Executive orders [Reserved.]

§ 144.5 Confidentiality of information.

(a) In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claims must be asserted at the time of submission. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).

(b) Claims of confidentiality for the following will be denied: (1) The name and address of any permit applicant or permittee;
(2) Information which deals with the existence, absence, or level of contaminants in drinking water.

§ 144.6 Classification of wells.

Injection wells are classified as follows: (a) Class I. Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation containing, within one-quarter mile of the well bore, an underground source of drinking water.

(b) Class II. Wells which inject fluids beneath the lowermost formation containing, within one-quarter mile of the well bore, an underground source of drinking water.

(c) Class III. Wells which inject for extraction of minerals including: (1) Mining of sulfur by the Frasch process. (2) In-situ production of uranium or other metals; this category includes only in-situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class V.

(d) Class IV. Wells used by generators of hazardous waste, or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste into a formation which within one-quarter (k) mile of the well contains an underground source of drinking water.

(e) Class V. Wells used by generators of hazardous waste or of radioactive waste into a formation which is not an underground source of drinking water.
above a formation which within one-quarter (1/4) mile of the well contains an underground source of drinking water.

(c) The permittee shall provide an accurate map and a description of the area containing an underground source of drinking water.

(d) The Director may require the permittee to submit any additional information or documentation as necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbons producing.

(2) Well Operators or Owners of Hazardous Waste Management Facilities

When a permittee is identified as a well operator or owner of a hazardous waste management facility, the permittee may be required to provide information on the operation of the facility and the potential for contamination.

(3) Well Operators or Owners of Hazardous Waste Management Facilities

When a permittee is identified as a well operator or owner of a hazardous waste management facility, the permittee may be required to provide information on the operation of the facility and the potential for contamination.

(4) Permittees

When a permittee is identified as a well operator or owner of a hazardous waste management facility, the permittee may be required to provide information on the operation of the facility and the potential for contamination.

§ 144.7 Identification of underground sources of drinking water and aquifers

(a) The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect, except where exempted under paragraph (b) of this section, as an underground source of drinking water, all aquifers or parts of aquifers which meet the definition of an "underground source of drinking water" in § 144.3.

(b) When an aquifer has not been specifically identified by the Director, it is an underground source of drinking water if it meets the definition in § 144.3.

(c) The Director may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms, (such as vertical and lateral limits and gradient) which are clear and definite, all aquifers or parts thereof which the Director proposes to designate as exempted aquifers using the criteria in 40 CFR 146.04.

(2) No designation of an exempted aquifer submitted as part of a UIC Program shall be final until approved by the Administrator as part of a UIC program.

(3) Subsequent to program approval or promulgation, the Director may, after notice and opportunity for a public hearing, identify additional exempted aquifers. For approved State programs, exemptation of aquifers identified (i) under § 146.04(b) shall be treated as a program revision under § 146.32; (ii) under § 146.04(c) shall become final if the State Director submits the exemption in writing to the Administrator and the Administrator has not disapproved the designation within 45 days. Any disapproval by the Administrator shall state the reasons and shall constitute final Agency action for purposes of judicial review.

(c) For Class III wells, the Director shall require an application for a permit which contains the certification that the aquifer is not expected to be mineral or hydrocarbons producing. Information on the completion of the project shall be required in the permit application, in the form and general description of the mining zone, general information on the mining zone and geology of the mining zone, and the time-table of planned development of the mining zone shall be considered by the Director in addition to the information required by § 144.31(g).

(2) For Class II wells, a demonstration of commercial productivity shall be made as follows:

(i) For a Class II well to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced, commercial productivity shall be presumed by the Director to demonstrate the existence of historical production having occurred in the project area or field.

(ii) For Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability and porosity shall be considered by the Director, to the extent such information is available.

§ 144.8 Noncompliance and program reporting by the Director

(a) The Director shall prepare quarterly and annual reports as detailed below. When the State is the permit-issuing authority, the State Director shall submit any reports required under this section to the Regional Administrator. When EPA is the permit-issuing authority, the Regional Administrator shall submit any report required under this section to EPA Headquarters.

(b) Quarterly reports. The Director shall submit quarterly narrative reports for major facilities as follows:

(i) Format. The report shall use the following format:

(A) Provide an alphabetized list of permittees. When two or more permittees have the same name, the lowest permit number shall be entered first.

(ii) For each entry on the list, include the following information in the following order:

(A) Name, location, and permit number of the complying permittee. When there is no noncomplying permittee. Instances of noncompliance may include one or more of the kinds set forth in paragraph (a)(2) of this section.

When a permittee has noncompliance of more than one kind, combine the information into a single entry for each separate instance.

(c) The date(s) and a brief description of the action(s) taken by the Director to ensure compliance.

(d) Status of the instance(s) of noncompliance with the date of the review of the status or the date of resolution.

(e) Any details which tend to explain or mitigate the instance(s) of noncompliance.

§ 144.9 Noncompliance with other permit requirements. When a permittee has noncompliance within the following categories shall be reported in subsequent reports.

(a) Failure to complete construction elements. When the permittee has failed to complete the permit, the Director may identify an element of compliance schedule involving either planning for construction or a construction step (for example, begin construction, operate level); and the permittee has not returned to compliance by accomplishing the required elements of the schedule within 30 days from the date a compliance schedule report is due under the permit.

(b) Modifications to schedules of compliance. When a schedule of compliance in the permit has been modified under §§ 144.39 or 144.41 because of the permittee's noncompliance.

(i) Failure to complete or provide compliance schedule or monitoring reports. When the permittee has failed to complete or provide a report required in a permit compliance schedule (for example, progress report or notice of noncompliance or compliance) or a monitoring report and the permittee has not submitted the complete report within 30 days from the date it is due under the permit for compliance schedule reports, or from the date specified in the permit for monitoring reports.

(iv) Deficient reports. When the required reports provided by the permittee are so deficient as to cause misunderstanding by the Director and thus impede the review of the status of compliance.

(v) Noncompliance with other permit requirements. Noncompliance shall be reported in the following circumstances:

(A) Whenever the permittee has violated a permit requirement (other than reported under paragraph (a)(2) (i) or (ii) of this section), and has not
concerning noncompliance with permit requirements by major facilities in the State in accordance with the following schedule. The Regional Administrator shall prepare and submit information for EPA-issued permits to EPA Headquarters in accordance with the same schedule.

Quarterly Covered By Reports on Noncompliance By Major Facilities
(Data for compliance of permits)

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Reports Delivered to EPA for Inspection and Copying in the Data Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-Mar</td>
<td>123 (This is an example)</td>
</tr>
<tr>
<td>Apr-Jun</td>
<td>456 (This is an example)</td>
</tr>
<tr>
<td>Jul-Sep</td>
<td>789 (This is an example)</td>
</tr>
<tr>
<td>Oct-Dec</td>
<td>1011 (This is an example)</td>
</tr>
</tbody>
</table>

(2) For all annual reports. The period for annual reports shall be for the calendar year ending December 31, with reports completed and submitted to the public on or before 30 days later.

Subpart B—General Program Requirements
§ 144.11 Prohibition of unauthorized injection.
(a) Any underground injection, except as authorized by permit or rule issued under the UIC program, is prohibited. The construction of any well required to have a permit is prohibited until the permit has been issued.
(b) Prohibition of movement of fluid into underground sources of drinking water.
(c) No owner or operator shall construct, operate, maintain, convert, plug, abandon, or cause any other injection activity in a manner that adversely affects underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulations under 40 CFR Part 142 or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.
(d) For Class I, II, and III wells, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water, except as authorized under Part 142, the Director shall promptly inform the Administrator of the requirements for construction, corrective action, operation, monitoring or reporting (excluding closure of the injection well) as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit.

§ 144.12 Elimination at certain Class IV wells.
(a) In addition to the requirement of § 144.14, the following are prohibited:
(1) The construction of any Class IV well for the injection of hazardous waste directly into an underground source of drinking water.
(2) The injection of hazardous waste directly into an underground source of drinking water through a Class IV well that was not in operation prior to July 16, 1990.
(3) Any increase in the amount of hazardous waste or change in the type of hazardous waste injected into a well injecting hazardous waste directly into a USDW.
(4) The operation of any Class IV well injecting hazardous waste directly into a USDW after 6 months following the approval or promulgation of a UIC program for the State.

Subpart C—Special Program Requirements
§ 144.34 Requirements for wells injecting hazardous waste.
(a) Applicability. These regulations in this section apply to all generators of...
Subpart C—Authorization of Underground Injection by Rule

§ 144.21 Existing Class I, II (except underground enhanced recovery and hydrocarbon storage) and III wells authorized.

(a) Description. The authorization under this section expires:

(1) When abandoned or notified of closure.

(2) When injection is stopped after notice of abandonment has been given.

(3) When injection is stopped on order of the Director.

(4) When injection is stopped on order of the Secretary of the Interior.

(5) When injection is stopped on order of the Administrator.

(6) When injection is stopped on order of the Secretary of Health and Human Services.

(7) When injection is stopped on order of the Secretary of Transportation.

(8) When injection is stopped on order of the Secretary of Commerce.

(9) When injection is stopped on order of the Secretary of Defense.

(10) When injection is stopped on order of the Secretary of Agriculture.

(11) When injection is stopped on order of the Secretary of Energy.

(b) Duration. The authorization under this section expires:

(1) When closed.

(2) When abandoned.

(3) When notified of closure.

(4) When injection is stopped on order of the Secretary of the Interior.

(5) When injection is stopped on order of the Administrator.

(6) When injection is stopped on order of the Secretary of Health and Human Services.

(7) When injection is stopped on order of the Secretary of Transportation.

(8) When injection is stopped on order of the Secretary of Commerce.

(9) When injection is stopped on order of the Secretary of Defense.

(10) When injection is stopped on order of the Secretary of Agriculture.

(11) When injection is stopped on order of the Secretary of Energy.

§ 144.34 Additional requirements for Class IV wells. (Reserved.)

§ 144.35 Assessment of Class V wells. (Reserved.)

§ 144.36 Assessment of Class V wells. The Director shall, within three years of the approval of the program in a State submit a report and recommendations to EPA in compliance with § 144.2(k).
is acceptable to the Director (for purposes of this paragraph, temporary intermittent cessation of injection operations is not abandonment); 
(a) Section 144.52(a)(7)—(financial responsibility); 
(b) Section 146.06—(mechanical integrity); 
(c) Section 146.22—(casing and cementing requirements where appropriate); and 
(d) The minimum operating, monitoring and reporting requirements required to be specified by § 146.23.

In § 144.23 Class IV wells, 
(a) Injection into existing Class IV wells as defined in § 144.6(d)(1) is authorized for up to six months after approval or promulgation of the UIC Program. Such wells are subject to the requirements of § 144.13 and § 144.14(c). 
(b) Injection into existing Class IV wells as defined in § 144.6(d)(2) and (3) are authorized until six months after approval or promulgation of an UIC Program incorporating criteria and standards under Part 146. Subpart E applicable to Class IV injection wells. Such wells are subject to the requirements of § 144.14(c).

In § 144.24 Class V wells, 
Injection into Class V wells is authorized until further requirements under future regulations become applicable.

In § 144.25 Requiring a permit, 
(a) The Director may require any Class I, II, III, or V injection well authorized by a rule to apply for and obtain an individual or area UIC permit. Cases where individual or area UIC permits may be required include: 
(1) The injection well is not in compliance with any requirement of the rule. 
(2) The injection well is not or no longer is within the category of wells and types of well operations authorized in the rule. 
(3) The protection ofUSDWs requires that the injection operation be regulated by requirements, such as for corrective action, monitoring and reporting, or operation, which are not contained in the rule. 
(b) For EPA administered programs, the Director may require the owner or operator authorized by a rule to apply for an individual or area UIC permit under this paragraph only if the owner or operator has been notified in writing that a permit application is required. The notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a time for the owner or operator to file the application, and a statement that upon the effective date of the UIC permit, the rule no longer applies to the activities regulated under the UIC Program. 
(c) Any owner or operator authorized by a rule may request to be excluded from the coverage of the rules by applying for an individual or area UIC permit. The owner or operator shall submit an application under § 144.31 with reasons supporting the request to the Director. The Director may grant any such requests. 

In § 144.26 Inventory requirements, 
Owners or operators of all injection wells authorized by rule shall submit inventory information to the Director. Any authorization under this subpart automatically terminates for any owner or operator who comply within the time specified in paragraph (c) of this section. 
(a) Contents. As part of the inventory, the Director shall require the owner/operator shall provide at least the following information: 
(1) Facility name and location; 
(2) Name and address of legal contact; 
(3) Ownership; 
(4) Nature and type of injection wells; and 
(5) Operating status of injection wells. 
Note.—This information is requested on national form “Inventory of Injection Wells,” OMB No. 1506-ROJ7. 
(b) Notice. Upon approval of the UIC Program in a State, the Director shall notify owners or operators of injection wells of their duty to submit inventory information. The method of notification selected by the Director must assure that the operator will be made aware of the inventory requirement. 
(c) Deadlines. Owners or operators of injection wells must submit inventory information no later than one year after the authorization by rule. The Director need not require inventory information from any facility with interim status under RCRA. 

Subpart D—Authorization by Permit 

§ 144.31 Application for a permit, authorization by permit 
(a) Permit application. Except for owners or operators authorized by rule, all underground injection wells are prohibited unless authorized by permit. Persons currently authorized by rule must still apply for a permit under this section unless authorization was for the life of the well or project. Rules authorizing well injections for which permit applications have been submitted shall lapse for a particular well injection or project upon the effective date of the permit or permit denial for that well injection or project. Procedures for applications, issuance and administration of emergency permits are found exclusively in § 144.34.

(b) Who applies? When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit.

(c) Time to apply. Any person who performs or proposes an underground injection for which a permit is or will be required shall submit an application to the Director in accordance with the UIC program as follows:

(1) For existing wells, as expeditiously as practicable but no later than 4 years from the approval or promulgation of the UIC program, or as required under § 144.14(b) for wells injecting hazardous waste.

(2) For new injection wells, except new wells in projects authorized under § 144.21(b) or covered by an existing area permit under § 144.33(c), a reasonable time before construction is expected to begin.

(d) Completeness. The Director shall not issue a permit before receiving a complete application for a permit except for emergency permits. An application for a permit is complete when the Director receives an application form and any supplemental information which are completed to his or her satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity. For EPA-administered programs, an application which is reviewed as of 12/31 is complete when the Director receive a complete application or the information listed in a notice of deficiency. 

(e) Information requirements. All applicants for permits shall provide the following information to the Director, using the application form provided by the Director. 

(1) The activities conducted by the applicant which require it to obtain permits under CRCA, UIC, the National Pollution Discharge Elimination System (NPDES) program under the Clean Water Act, or the Prevention of
Significant Deterioration (PSD) program under the Clean Air Act.
(2) Name, mailing address, and location of the facility for which the application is submitted.
(3) Up to your SIC codes which best reflect the principal products or services provided by the facility.
(4) The name, address, telephone number, ownership, status, and status as Federal, State, private, public, or other entity.
(5) Whether the facility is located on Indian land.
(6) A listing of all permits or construction approvals received or applied for under any of the following programs:
- Remedial Waste Management program under RCRA.
- UIC program under SDWA.
- NPDES program under OWA.
- Prevention of Significant Deterioration (PSD) program under the Clean Air Act.
- National Emission Standards for Hazardous Air Pollutants (NESHAP).
- All construction approval under the Clean Air Act.
- Clean Air Act permits under the Marine Protection, Research, and Sanctuaries Act.
- Nothing or fill permits under section 316 of the CWA.
- Other relevant environmental permits, including State permits.
(7) A topographic map (or other map) showing the boundaries of the source, depicting the facility and each of its major discharge structures, each of the hazardous waste management areas, or disposal facilities, in each well where fluids from the facility are injected into the underground, and those wells, springs, and groundwaters, which are affected or impacted by the discharge; water wells; and other sources of ambient water - applicant within a quarter mile of the facility property boundary.
(8) A brief description of the nature of the business.
(9) Recordkeeping. Applicants shall keep records of all data used to construct the plans and any supplemental information submitted under § 144.33 for a period of at least 3 years from the date the application is signed.
(10) Content of UIC application.
(11) § 144.32 Signatories to permit applications and reports.
(12) Applications. All permit applications, except those submitted for Class II wells, (see paragraph (b) of this section) shall be signed as follows:
- For a corporation, by a principal executive officer of that corporation or vice-president.
- For a partnership or sole proprietorship, by all general partners or the proprietor, respectively.
- For a state, Federal, or other public agency, by either a principal executive or ranking elected official.
- All reports, all reports required by permits, other information requested by the Director, and all permit applications submitted for Class II wells, under § 144.31 shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of the person described in paragraph (a).
- The authorization is made by writing a person described in paragraph (a) of this section,
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulatory facility or activity, such as the owner, decision-maker, or person with equivalent responsibility. The authorized representative may be either a named individual or any individual occupying a named position; and
- The written authorization is submitted to the Director.
(13) Changes to the authorization. If an application is not required under § 144.33, this section is no longer applicable. All changes to the authorization shall be submitted to the Director for review. If the Director approves the application, the Director may modify the permit under § 144.30, terminate the application, or take enforcement action. If the Director determines that cumulative effects are unacceptable, the permit may be modified under § 144.30.
(14) Notice. Whenever the Director determines that any well constitutes a permitable well, the Director shall notify the owner and operator of such well of the determination and of the need to comply with these rules.
(15) Coverage. Notwithstanding any other provisions of this Part or Part 729, the Director may temporarily permit a specific underground injection well that has not otherwise been authorized by rule or permit.
(16) An interim and substantial amendment to the health of persons responsible for an emergency permit is granted.
(17) A substantial and irretrievable loss of oil or gas resources will occur.
§ 144.35 Effect of a permit.
(a) Except for Class II and III wells, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Part C of the SDWA. However, a permit may be modified, revoked, and reissued, or terminated during its term for causes set forth in §§144.30 and 144.40.
(b) The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.
(c) The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

§ 144.36 Duration of permits.
(a) Permits for Class I and Class V wells shall be effective for a fixed term not to exceed 10 years. UIC permits for Class II and III wells shall be issued for a period up to the operating life of the facility. The Director shall review each issued Class II or III well UIC permit at least once every 5 years to determine whether it should be modified, revoked, and reissued, terminated, or a minor modification made as provided in §§144.39, 144.40, and 144.41.
(b) Except as provided in §144.37, the term of a permit shall not be extended by modification beyond the maximum duration specified in this section.
(c) The Director may issue any permit for a duration that is less than the full allowable term under this section.

§ 144.37 Continuation of expiring permits.
(a) EPA permits. When EPA is the permit-issuing authority, the conditions of an expired permit continue in force under 5 U.S.C. 558(c) until the effective date of a new permit.

1. The permittee has submitted a timely application which is a complete application for a new permit; and
2. The Regional Administrator, through no fault of the permittee, does not issue a new permit with an effective date or expiration date of the previous permit (for example, when issuance is impracticable due to time or resource constraints).

(b) Effect. Permits continued under this section remain fully effective and enforceable.
(c) Enforcement. When the permittee is not in compliance with the conditions of the expiring or expired permit, the Regional Administrator may choose to do any or all of the following:
1. Initiate enforcement based upon the permit which has been continued;
2. Issue a notice of intent to deny the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;
3. Issue a new permit under Part 124 with appropriate conditions;
4. Take other sections authorized by these regulations.

(d) State continuation. An EPA issued permit does not continue in force beyond its time expiration date under Federal law if at that time a State is the permitting authority. A State authorized to administer the UIC program may continue either EPA or State-issued permits when the term of the expiring permit is the maximum duration specified in this section.

§ 144.38 Transfer of permits.
(a) Transfers by modification. Except as provided in paragraph (b) of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under §144.39(b)(2)), or a minor modification made (under §144.41(d)), to identify the new permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.
(b) Automatic transfers. As an alternative to transfers under paragraph (a) of this section, any UIC permit for a well not injecting hazardous waste may be automatically transferred to a new permittee if:
1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date referred to in paragraph (b)(2) of this section;
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them, and the notice demonstrates that the financial responsibility requirements of §144.42(a)(7) will be met by the new permittee; and
3. The Director does not notify the existing permittee and the proposed new permittee of the existence of the permit and the intent of the other to modify or revoke and reissue the permit. A modification under this paragraph may also be a minor modification under §144.41 if the notice is not received. In that event, the transfer is effective on the date specified in the agreement mentioned in paragraph (b)(2) of this section.

§ 144.39 Modification or revocation and reissuance of permits.
When the Director receives any information (for example, inspections of the facility, receives information submitted by the permittee as required in the permit (see §144.51 of this chapter), receives a request for modification or revocation and reissuance, or conducts a review of the permit file) that he or she may determine whether or not one or more of the causes listed in paragraphs (a) and (b) of this section for modification or revocation and reissuance both exist. If cause exists, the Director may modify or revoke and reissue the permit accordingly, subject to the limitations of paragraph (c) of this section and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit contains the requirements of a new permit.
permit is reopened and subject to revision and the permit is rescinded for a new term. See §124.5(c)(2) of this chapter. If closure does not occur under this section, or if the permittee is not in compliance with §124.5 within ninety (90) days of judicial review, the Director shall not modify or revoke and reissue the permit. If a permit modification satisfies the criteria in §144.41 for "minor modifications" the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and other procedures in Part 124 must be followed.

(a) Causes for modification. The following are causes for modification. For Class II or III wells the following may be causes for revocation and reissuance as well as modification; and for all other wells the following may be cause for revocation or revocation as well as modification when the permittee requests or agrees:

(1) Availability. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

(2) Information. The Director has received information. Permits other than for Class II and III wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. For UIC area permits (§144.33), this cause shall include any information indicating that cumulative effects on the environment are unacceptable.

(3) New regulations. The standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued. Permits other than for Class II or III wells may be modified during their terms for this cause only as follows:

(i) For promulgation of amended standards or regulations, when:
(A) The permit condition requested to be modified was based on a promulgated Part 148 regulation; and
(B) EPA has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based.

(ii) A permittee requests modification in accordance with §124.5 within ninety (90) days after Federal Register notice of the action on which the request is based.

(ii) For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based and a request is filed by the permittee in accordance with §124.5 within ninety (90) days of judicial review.

(b) Compliance schedules. The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also §144.41(c) (minor modifications).

(c) Causes for modification or revocation and reissuance. The following are causes to modify or, alternatively, revoke and reissue a permit:

(1) Cause exists for termination under §144.40, and the Director determines that modification or revocation and reissuance is appropriate.

(2) The Director has received notification (as required in the permit, see §144.61(d)) of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (§144.56(b))(b) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.

(d) Felony sitting. Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

§144.40 Termination of permits.

(a) The Director may terminate a permit during its term, or deny a permit renewal application for the following causes:

(1) Noncompliance by the permittee with any condition of the permit;

(2) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant fact at any time; or

(3) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination,

(b) The Director shall follow the applicable procedures in Part 124 in terminating any permit under this section.

§144.41 Minor modifications of permits.

Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for the conduct or status of the permit detailed in the criteria listed in this section, without following the procedures of Part 124. Any permit modification not processed as a minor modification under this section must be made for cause and with Part 124 draft permit and public notice as required in §144.39. Minor modifications may only:

(a) Correct typographical errors;

(b) Require more frequent monitoring or reporting by the permittee;

(c) Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or

(d) Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director.

(e) Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification.

(f) Change construction requirements approved by the Director pursuant to §144.52(a)(1) (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of this Part and Part 146.

(g) Amend a plugging and abandonment plan which has been updated under §144.52(a)(6).

Subpart F—Permit Conditions

§144.51 Conditions applicable to all permits.

The following conditions apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations (or the corresponding approved State regulations) must be given in the permit.

(a) 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 if the permittee fails to comply with the provisions of the permit to the extent and for the duration such noncompliance is authorized in an emergency permit under §144.34.

(b) 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 apply for and obtain a new permit.

(c) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(d) Duty to mitigate. The permittee shall take all reasonable steps to minimize and/or reduce the impact on the environment resulting from noncompliance with this permit.

(e) 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 the permit.

(f) Permit actions. This permit may be modified, revoked and rescinded, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a modification of planned changes or anticipated noncompliance, does not stay any permit condition.

(g) Property rights. This permit does not convey any property rights of any sort, or any exclusive privileges.

(h) Duty to provide information. The permittee shall furnish to the Director, with a time period specified, any information which the Director may require to determine whether causes exist 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.

(i) 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:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Enter at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit and
4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters of any location.

[j] Monitoring and records.

(k) Samples and reports. Samples taken for the purpose of monitoring shall be representative of the monitored activity. The permittee shall retain records of all monitoring information, including the following:

1. Calibrations and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to make the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time; and
2. The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under §144.39.

(l) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;
(ii) The individual(s) who performed the sampling or measurements;
(iii) The date(s) analyses were performed;
(iv) The individual(s) who performed the analyses;
(v) The analytical techniques or methods used; and
(vi) The results of such analyses.

(m) Signatory requirement. All applications, reports, or information submitted to the Administrator shall be signed and certified. (See §144.32).

(n) Reporting requirements.

(1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

(2) Anticipated noncompliance. The permittee shall give advance notice to the Director of any anticipated changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(3) Transfers. This permit is not transferable to any person except after notice to the Director. The Director may require modifications 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. (See §144.38; in some cases, modification or revocation and reissuance is mandatory.)

(4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

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

(6) Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment, including:

(i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; or
(ii) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

Any information shall be provided orally within 24 hours from 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 any planned steps to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(7) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (i) (4), (5), and (9) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraphs (5)(6) of this section.
(8) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director; it shall promptly communicate such facts or information.

(m) Requirements prior to commencing injection. Except for all new wells authorized by an area permit under §144.53(c), a new injection well may not commence injection until construction is complete, and

(1) The permittee has submitted notice of completion of construction to the Director;

(2)(i) The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or

(ii) The permittee has not received notice form the Director of his or her intention to inspect or otherwise review the new injection well within 15 days of the date of receipt of a notice of construction set forth in paragraph (m)(1) of this section, in which case prior inspection or review is waived and the permittee may commence injection. The Director shall include in his notice a reasonable time period in which he shall inspect the well.

(n) The permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.

§144.52 Establishing permit conditions.

(a) In addition to conditions required in §144.51, the Director shall establish conditions, as required on a case-by-case basis by §144.52(a), (b) (permit); §144.53(a) (schedules of compliance); §144.54 (monitoring); and for EPA permits only §144.58(b) (alternative schedules of compliance) and §144.58(c) (considerations under Federal law). In addition, each permit shall include conditions meeting the following requirements, when applicable.

(1) Construction requirements set forth in Part 146. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. Except as authorized by an area permit, no construction may commence on a permit well until an issued containing construction requirements (see §144.41). New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Administrator as minor modifications (§144.41). No such changes may be physically incorporated into construction of the well prior to approval of same by the Director.

(2) Corrective action as set forth in §144.55 and §145.7.

(3) Operation requirements as set forth in 40 CFR Part 146; the permit shall establish an maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the Part 146 operating requirements.

(4) Requirements for wells managing hazardous waste, as set forth in §144.14.

(5) Monitoring and reporting requirements as set forth in 40 CFR Part 146. The permittee shall be required to identify types of tests and methods used to generate the monitoring data.

(6) Plugging and abandonment. Any Class I, II or III permit shall include, and any Class V permit may include, conditions to ensure that plugging and abandonment of the well will not allow the movement of fluids either into an underground source of drinking water or from one underground source of drinking water to another. Applicants for a UIC permit shall submit a plan for plugging and abandonment. Where the plan meets the requirements of this paragraph, the Director shall incorporate it into the permit as a condition. Where the Director’s review of an application indicates that the permittee’s plan is inadequate, the Director shall require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the application. For purposes of this paragraph, temporary intermittent cessation of injection operations is not abandonment.

(7) Financial responsibility. The permittee is required to maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director. The permittee must show evidence of financial responsibility to the Director by the submission of surety bond, or other adequate assurance, such as financial, surety, or federal or other materials acceptable to the Director.

(8) Mechanical integrity. A permit for any Class I, II or III well or injection project which lacks mechanical integrity shall be issued, and for any Class V well may include a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under §146.08 that the well has mechanical integrity.

(9) Additional conditions. The Director shall impose a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.

(b) In addition to conditions required in all permits the Director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of the SDWA and Parts 146, 145, 146 and 124.

(2) For a State issued permit, an applicable requirement is a State statutory or regulatory requirement which takes effect prior to final administrative disposition of the permit. For a permit issued by EPA, an applicable requirement is a statutory or regulatory requirement (including any interim final regulation) which takes effect prior to the issuance of the permit (except as provided in §144.50(b) for UIC permits being processed under Subparts E or F of Part 124). Section 1424.14 (reopening of comment period) provides a means for reopening EPA permit proceedings at the discretion of the Director where new requirements become effective during the permitting process and are of sufficient magnitude to make additional proceedings desirable. For State and EPA administrated programs, an applicable requirement is also any requirement which takes effect prior to the modification or revocation and resubmittal of a permit, to the extent allowed in §144.39.

(3) New or reissued permit, and to the extent allowed under §144.39 modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in §144.32.

(c) Incorporation. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.

§144.53 Schedule of compliance.

(a) General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with the SDWA and Parts 144, 145, 146, and 124.

(1) Time for compliance. Any schedules of compliance shall require compliance as soon as possible, and in
no case later than 3 years after the effective date of the permit.

(2) Interval dates. As provided in paragraph (b)(1)(i) of this section, if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement. (i) The time between interim dates shall not exceed 1 year.

(ii) If the time necessary for completion of any interim requirement is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

(3) Reporting. The permit shall be written to require that if paragraphs (a)(1) of this section is applicable, progress reports shall be submitted no later than 30 days following each interim date and the final date of compliance.

(b) Alternative schedules of compliance. A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to operate and meet permit requirements as follows:

(i) If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued;

(ii) The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

(ii) The permittees cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

(2) If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

(3) If the permittee is undecided whether to cease conducting regulated activities, the Director may issue or modify a permit to contain two schedules as follows:

(i) Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;

(ii) One schedule shall lead to timely compliance with applicable requirements;

(iii) The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements;

(iv) Each permit containing two schedules shall include a requirement that after the permits holder has made a final decision under paragraph (b)(1)(i) of this section shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

(4) The permittee's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Director, such as a resolution of the board of directors of a corporation.

§ 146.54 Requirements for recording and reporting of monitoring results.

All permits shall specify:

(a) Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);

(b) Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including when appropriate, continuous monitoring;

(c) Applicable reporting requirements based upon the impact of the regulated activity and as specified in Part 146.

Reporting shall be no less frequent than specified in the above regulations.

§ 146.55 Corrective action.

(a) Coverage. Applicants for Class I, II, or III injection well permits shall identify the location of all known wells within the injection well's area of review which penetrate the injection zone, or in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review penetrating formations affected by the increase in pressure. For such wells which are improperly sealed, completed, or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water ("corrective action"). Where the plan is adequate, the Director shall incorporate it into the permit as a condition. Where the Director's review of an application indicates that the permittee's plan is inadequate (based on the factors in

§ 146.07), the Director shall require the applicant to submit a plan for corrective action as a condition of the permit under paragraph (b) of this section, or deny the application. The Director may disregard the provisions of § 146.08 (Area of Review) and § 146.07 (Corrective Action) when reviewing an application to permit an existing Class II well.

(b) Requirements.

(1) Existing injection wells. Any permit issued for an existing injection well (other than Class II) requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed under paragraph (a) of this section to be completed as soon as possible.

(2) New Injection Wells. No owner or operator of a new injection well may begin injection until all required corrective action has been taken.

(c) Injection pressure limitation. The Director may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned wells within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.

(d) Class III Wells Only. When setting corrective action requirements the Director shall consider the overall effect of the project on the hydraulic gradient in potentially affected USGW, and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If a decision is made that corrective action is not necessary based on the determinations above, the monitoring program required in § 146.33(b) shall be designed to verify the validity of such determinations.
Part 145 is added to read as follows:

PART 145—STATE UIC PROGRAM REQUIREMENTS

Subpart A—General Program Requirements

Sec. 145.1 Purpose and scope.
145.2 Definitions.

Subpart B—Requirements for State Programs.

145.11 Requirements for permitting.
145.12 Requirements for compliance evaluation programs.
145.13 Requirements for enforcement authority.
145.14 Sharing of information.
Subpart C—State Program Submissions
Sec.
144.21 General requirements for program
(2) Any State program approved by
the Administrator shall at all times be
conducted in accordance with the
requirements of this Part.
(8) Nothing in this Part prevents a
State from:
(1) Adopting or enforcing
requirements which are more stringent
than those required under this Part;
(2) Operating a program with a greater
scope of coverage than that required
under this Part, where an approved
State program has a greater scope of
coverage than required by Federal law;
and
(3) —(Draft Permit)
(27) —(Fact sheets);
(28) —(Draft (a)(1)(ii), (a)(1)(iii),
(a)(1)(y), (b), (c), (d), and (e)—(Public
notice);
(29) —(Public comments and
requests for hearings); and
(30) —(Public hearings);
and
(31) —(Response to
comments).
(b)(1) States need implement
provisions identical to the provisions
listed in paragraphs (a)(1)—(31) of this
section. Implemented provisions must,
however, establish requirements at
least as stringent as the corresponding
listed provisions. While States may impose
more stringent requirements, they may
not make one requirement more lenient
as a tradeoff for making another
requirement more stringent; for example,
by requiring that public hearings be held
prior to issuing any permit while
reducing the amount of advance notice of
such a hearing.
(c) State programs may, if they have
adequate legal authority, implement any
of the provisions of Parts 144 and 124.
See, for example §144.37(d)
(renewal of permits) and §144.41
(consolidation of permit processing).
§145.11 Requirements for permitting.
(a) All State programs under this Part
must have legal authority to implement
each of the following provisions and
must be in accord with Federal law;
except that States are not
precluded from omitting or modifying any
provisions to impose more stringent
requirements.
(1) —(Confidential
information);
(2) —(Confidential
information);
(3) —(Identification
of underground sources of drinking water
and exempted waters);
(4) —(Environment
reporting);
(5) —(Prohibition
of unauthorized injection);
(6) —(Prohibition
of unauthorized injection);
(7) —(Elimination of Class IV
wells);
(8) —(Permit for
well for removal of hazardous waste); and
(9) —(Application for
permit):
(10) —(Application for a
permit):
(11) —(Sewers);
(12) —(Permit Permit);
(13) —(Emergency permits);
(14) —(Effect of permit);
(15) —(Duration);
(16) —(Permit transfer);
(17) —(Permit modification);
(18) —(Permit termination);
(19) —(Applicable permit
conditions);
or other program requirements. Any compilation, index, or inventory of such facilities and activities shall be made available to the Regional Administrator upon request.

(2) A program for periodic inspections of the facilities and activities subject to regulation, inspections shall be conducted in a manner designed to:

(i) Determine compliance or noncompliance with issued permit conditions and other program requirements;
(ii) Verify the accuracy of information submitted by permittees and other regulated persons in reporting forms and other forms supplying monitoring data; and
(iii) Verify the adequacy of sampling, monitoring, and other methods used by permittees and other regulated persons to develop that information.

(3) A program for investigating information obtained regarding violations of applicable program and permit requirements; and

(4) Procedures for receiving and ensuring proper consideration of information submitted by the public about violations. Public effort in reporting violations shall be encouraged and the State Director shall make available information on reporting procedures.

(c) The State Director and State officers engaged in compliance evaluation shall have authority to enter any site or premises subject to regulation or in which records relevant to program operation are kept in order to copy any records, inspect, monitor or otherwise investigate compliance with permit conditions and other program requirements. States whose law requires a search warrant before entry conform with this requirement.

(d) Investigatory inspections shall be conducted. Examples shall be taken and other information shall be gathered in a manner [e.g., using proper "chain of custody" procedures] that will produce evidence admissible in an enforcement proceeding or in court.

§ 145.13 Requirements for enforcement authority.

(a) Any State agency administering a program shall have available the following remedies for violations of State program requirements:

(1) To restrain immediately and effectively any person by order or by suit in State court from engaging in any unauthorized activity which is endangering public health or environment:

[Note.—This paragraph requires that States have a mechanism [e.g., an administrative cease and desist order or the ability to seek a temporary restraining order] to stop any unauthorized activity endangering public health or the environment.]

(2) To sue in courts of competent jurisdiction to enjoin any threatened or continuing violation of any program requirement, including permit conditions, without the necessity of a prior revocation of the permit;

(3) To assess in court civil penalties and to seek criminal remedies, including fines, as follows:

(i) For all wells except Class II wells, civil penalties shall be recoverable for any program violation in at least the amount of $2,500 per day. For Class II wells, civil penalties shall be recoverable for any program violation in at least the amount of $1,000 per day.

(ii) Criminal fines shall be recoverable in at least the amount of $5,000 per day against any person who willfully violates any program requirement, or for Class II wells, pipeline (production) severance shall be imposible against any person who willfully violates any program requirement.

[Note.—In many States the State Director will be represented in State courts by the State Attorney General or other appropriate legal official. Although the State Director need not appear in court at all, he should have power to request that any of the above actions be brought.]

(b) (1) The maximum civil penalty or criminal fine [as provided in paragraph (a)(3) of this section] shall be assessable for each instance of violation and, if the violation is continuous, shall be assessable up to the maximum amount for each day of violation.

(2) For the purpose of determining the degree of knowledge or intent required under State law for establishing violations under paragraph (a)(3) of this section, shall be no greater than the burden of proof or degree of knowledge or intent EPA must provide when it brings an action under the Safe Drinking Water Act.

[Note.—For example, this requirement is not met if State law includes mental state as an element of proof for civil violations.]

(c) Any civil penalty assessed, sought or agreed upon by the State Director under paragraph (a)(3) of this section shall be appropriate to the violation. A civil penalty agreed upon by the State Director in settlement of administrative or judicial litigation may be adjusted by a percentage which represents the likelihood of success in establishing the underlying violation(s) in such litigation.

If civil penalty, together with the costs of expunging compliance violations could be so severely disproportionate to the resources of the violator as to jeopardize continuance in business, the payment of the penalty may be deferred or the penalty may be forgiven in whole or in part, as circumstances warrant. In the case of a penalty for a failure to meet a statutory or final permit compliance deadline, "appropriate to the violation," as used in this paragraph, means a penalty which is equal to:

(1) An amount appropriate to redress the harm or risk to public health or the environment;

(2) An amount appropriate to remove the economic benefit gained or to be gained from delayed compliance; plus

(3) An amount appropriate as a penalty for the violator's degree of recalcitrance, defiance, or indifference to requirements of the law; plus

(4) An amount appropriate to recover unusual or extraordinary enforcement costs, minus

(5) An amount, if any, appropriate to reflect any part of the noncompliance attributable to the government itself; and

(6) An amount appropriate to reflect any part of the noncompliance caused by factors completely beyond the violator's control (e.g., floods, fires).

[Note.—In addition to the requirements of this paragraph, the State may have other enforcement remedies. The following enforcement options, while not mandatory, are highly recommended:

Procedures for assessment by the State of the costs of investigations, inspections, or monitoring surveys which lead to the establishment of violations;

Procedures which enable the State to assess or to sue any person responsible for unauthorized activities for any expenses incurred by the State in removing, correcting, or terminating any adverse effects upon human health and the environment resulting from the unauthorized activity, or both; and

Procedures for the administrative assessment of penalties by the Director.]

(d) Any State administering a program shall provide for public participation in the State enforcement process by providing either:

(1) Authority which allows intervention as of right in any civil or administrative action to obtain remedies specified in paragraph (a)(1), (2), (3) of this section by any citizen having an interest which is or may be adversely affected; or

(2) Assurance that the State agency or enforcement authority will:

(i) Investigate and provide written responses to all citizen complaints submitted pursuant to the procedures established.

(ii) Not oppose intervention by any citizen when permissive intervention, may be authorized by statute, rule, or regulation; and
§ 145.14 Sharing of information.

(a) Any information obtained or used in the administration of a State program shall be available to EPA upon request without restriction. If the information has been submitted under a claim of confidentiality, the State shall submit to EPA, when providing information under this section, any information obtained from a State subject to a claim of confidentiality. EPA may make that information available in the public record without further notice.

(b) EPA shall furnish to States with approved programs the information it obtains from States but submitted under a claim of confidentiality which the State needs to implement the approved program. EPA shall furnish to States with approved programs information submitted to EPA under a claim of confidentiality which the State needs to implement the approved program, subject to the conditions in 40 CFR Part 2.

Subpart C—State Program Submissions

§ 145.21 General requirements for program approval.

(a) States shall submit to the Administrator a proposed State UIC program compliant with § 145.22 of this part within 270 days of the day of promulgation of the UIC regulations on June 24, 1980. The administrator may, for good cause, extend the time for submission of a proposed State UIC program for up to an additional 270 days.

(b) States shall submit to the Administrator 6 months after the date of promulgation of the UIC regulations a report describing the State’s progress in developing a UIC program. If the Administrator determines the time for submission of a UIC program an additional 270 days, pursuant to § 145.21(a), the State shall submit a second report six months after the first report is due. The Administrator may prescribe the manner and form of the report.

(c) EPA shall establish a UIC program in any State which does not comply with paragraph (a) of this section, and EPA will continue to operate a UIC program in such a State until the State receives approval of a UIC program in accordance with the requirements of this Part.

(d) States which are authorized to administer the NPDES permit program under Section 402 of CWA are encouraged to rely upon existing statutory authority, to the extent possible, in developing a State UIC program. Section 402(f)(1) of CWA requires that NPDES States submit to EPA permits which control the disposal of pollutants into wells. In many instances, therefore, NPDES States will have existing statutory authority to regulate well disposal which satisfies the requirements of the UIC program. Note, however, that CWA excludes certain types of well injections from the definition of “pollutant.” If the State’s statutory authority contains a similar exclusion it may need to be modified to qualify for UIC program approval.

(2) If a State can demonstrate to EPA’s satisfaction that there are no underground injection wells within the State for one or more classes of injection wells (other than Class IV wells) subject to SDWA and that such injections cannot legally occur in the State until the State has developed an approved program for those classes of injection wells, the State need not submit a program to regulate those injections and a partial program may be approved. The demonstration of legal prohibition shall be made by certification from the State’s government that new injections of the class not covered by the State program or providing a certification from the State Attorney General that such new injections cannot legally occur in the State until the State has developed an approved program for those classes of injection wells. The State shall submit a program to regulate those classes of injections for which a demonstration is not made.

(e) When a State UIC program is fully approved by EPA to regulate all classes of injections, the State assumes primary enforcement responsibility whenever the State program is not approved in whole or in part. States which have partially approved programs have authority to enforce any violation of the approved portion of the program. EPA retains authority to enforce violations of State underground injection control programs, except that, when a State has a fully approved program, EPA will not take enforcement actions without providing prior notice to the State and otherwise complying with Section 1422(b)(2) of SDWA.

(f) A State can assume primary enforcement responsibility for the UIC program under § 145.21(e) when the State program satisfies the requirements of this Part.

(g) The program on Indian lands if the State does not seek this authority.

§ 145.22 Elements of a program submission.

(a) Any State that seeks to administer a program under this Part shall submit to the Administrator a complete submission of the program. The submission shall contain the following:

(1) A letter from the Governor of the State requesting program approval;

(2) A complete program description, as required by § 145.23, describing how the State intends to carry out its responsibilities under this Part;

(3) An Attorney General’s statement as required by § 145.23;

(4) A Memorandum of Agreement with the Regional Administrator as required by § 145.28.

(b) It shall consist of all applicable State statutes and regulations, including those governing State administrative procedures;

(c) The showing required by § 145.21(b) of the State’s public participation activities prior to program submission;

(d) Within 30 days of receipt by EPA of a State program submission, EPA will notify the State whether its submission is complete. If EPA finds that a State’s submission is complete, the statutory review period (i.e., the period of time allotted for formal review of a proposed State program under the Safe Drinking Water Act) shall be deemed to have begun on the date of receipt of the State’s submission. If EPA finds that a State’s submission is incomplete, the statutory review period shall not begin until all the necessary information is received by EPA.

(e) If the State’s submission is materially changed during the statutory review period, the statutory review period shall be extended only upon receipt of the revised submission.

(f) The State and EPA may extend the statutory review period by agreement.

§ 145.23 Program description.

Any State that seeks to administer a program under this Part shall submit a description of the program it proposes to administer in lieu of the Federal program under State law or under an interstate compact. The program description shall include:

(a) A description in narrative form of the scope, structure, coverage and process of the State program;

(b) A description (including through charts) of the organization and structure of the State agency or agencies which have responsibility for administering the program, including
the information listed below. If more than one agency is responsible for administration of a program, each agency must have statewide jurisdiction over a class of activities. The responsibilities of each agency must be delineated and the coordination set forth, and an agency may be designated as a “lead agency” to facilitate communications between EPA and the State agencies having program responsibility. When the State proposes to administer a program of greater scope of coverage than is required by Federal law, the information provided under this paragraph shall indicate the resources dedicated to administering the Federally required portion of the program.

(1) A description of the State agency staff who will carry out the State program, including the number, occupations, and general duties of the employees. The State need not submit complete job descriptions for every employee carrying out the State program.

(2) An itemization of the estimated costs of establishing and administering the program for the first two years after approval, including cost of the personnel listed in paragraph (b)(1) of this section, cost of administrative support, and cost of technical support.

(3) An itemization of the sources and amounts of funding, including an estimate of Federal grant money available to the State Director for the first two years after approval to meet the costs listed in paragraph (b)(2) of this section, identifying any restrictions or limitations upon this funding.

(4) A description of applicable State procedures, including permitting procedures and any State administrative or judicial review procedures.

(5) Copies of the permit form(s), application form(s), reporting form(s), and manifest format the State intends to employ in its program. Forms used by States need not be identical to the forms used by EPA but should require the same basic information. The State need not provide copies of uniform national forms it intends to use but should note its intention to use such forms.

(6) A complete description of the State’s compliance tracking and enforcement procedures.

(7) A State UIC program description shall also include:

(A) A schedule for issuing permits within five years after program approval to all injection wells within the State which are required to have permits under this Part and Part 144.

(B) The priorities (according to criteria set forth in 40 CFR 146.09) for issuing permits, including the number of permits in each class of injection well which will be issued each year during the first five years of program operation.

(C) A description of how the Director will implement the mechanical integrity testing requirements of 40 CFR 146.02, including the frequency of testing that will be required and the number of tests that will be reviewed by the Director each year.

(D) A description of the procedure whereby the Director will notify owners and operators of injection wells of the requirement that they apply for and obtain a permit. The notification required by this paragraph shall require applications to be filed as soon as possible, but not later than four years after program approval for all injection wells requiring a permit.

(E) A description of any rule under which the Director proposes to authorize injections, including the text of the rule.

(F) For any existing enhanced recovery and hydrocarbon storage wells which the Director proposes to authorize by rule, a description of the procedure for reviewing the wells for compliance with applicable monitoring, reporting, construction, and financial responsibility requirements of §§144.51 and 144.52, and 40 CFR Part 146:

(1) A description of and schedule for the State’s program to establish and maintain a current inventory of injection wells which must be permitted under State law;

(2) Where the Director had designated underground sources of drinking water in accordance with §144.7(a), a description and inventory of all such designated sources in the State;

(3) A description of aquifers, or parts thereof, which the Director has identified under §144.7(b) as exempt aquifers, and a summary of supporting data;

(4) A description of and schedule for the State’s program to ban Class IV wells prohibited under §144.7(a) and §144.7(b);

(5) A schedule for the State’s program to establish an inventory of Class V wells and to assess the need for a program to regulate Class V wells.

(8) Where the permit has an enforcement option which may be exercised by the State, the memorandum of agreement shall include a description of the enforcement option and the conditions under which it may be exercised.

[N.R. 9-25 Memorandum of Agreement with the Regional Administrator.

(a) Any State that seeks to administer a program under this Part shall submit a Memorandum of Agreement. The Memorandum of Agreement shall be executed by the State Director and the Regional Administrator and shall become effective when approved by the Administrator. In addition to meeting the requirements of paragraph (b) of this section, the Memorandum of Agreement may include other terms, conditions, or agreements consistent with this Part and relevant to the administration and enforcement of the State’s regulatory program.

(b) The Memorandum of Agreement shall include the following:

(1) Provisions for the prompt transfer of data from EPA to the State’s pending permit applications and any other information relevant to the program operation not already in the possession of the State Director (e.g., support files for permit issuance, compliance reports, etc.).

(2) When existing permits are transferred from EPA to State for administration, the Memorandum of Agreement shall include a schedule for transferring the administration of these permits. If a State lacks the authority to directly administer permits issued by the Federal...
government, a procedure may be established to transfer responsibility for these permits.

[Note.—For example, EPA and the State and the permittees could agree that the State shall issue a permit identical to the outstanding Federal permit which would simultaneously be terminated.]

(2) Provisions specifying classes and categories of permit applications, draft amendments and proposed permits that the State will submit to the Regional Administrator for review, comment and, where applicable, objection.

(3) Provisions specifying the frequency and content of reports, documents and other information which the State is required to submit to EPA. The State shall allow EPA to routinely review State records, reports, and files relevant to the administration and enforcement of the approved program. State reports may be combined with grant reports where appropriate.

(4) Provisions on the State's compliance monitoring and enforcement program, including:

(i) Provisions for coordination of compliance monitoring activities by the State and by EPA. These may specify the basis upon which the Regional Administrator will select facilities or activities within the State for EPA inspection. The Regional Administrator will normally notify the State at least 7 days before any such inspection; and

(ii) Procedures to assure coordination of enforcement activities.

(5) When appropriate, provisions for joint processing of permits by the State and EPA, for facilities or activities which require permits from both EPA and the State under different programs. See 124.4.

(6) Provisions for modification of the Memorandum of Agreement in accordance with this Part.

(a) The Memorandum of Agreement, the annual program and grant and the State/EPA Agreement should be consistent. If the State/EPA Agreement indicates that a change is needed in the Memorandum of Agreement, the Memorandum of Agreement may be amended through the procedures set forth in this part. The State/EPA Agreement may not override the Memorandum of Agreement.

[Note.—Detailed program priorities and specific requirements for EPA support of the State program will change and are therefore more appropriately negotiated in the context of annual agreements rather than in the MOA. However, it may still be appropriate to specify in the MOA the basis for such detailed agreements, e.g., provisions in the MOA specifying that EPA will select facilities in the State for inspection annually as part of the State/EPA agreement.]

Subpart D—Program Approval, Revision and Withdrawal

§ 145.21 Approval process.

(a) Prior to submitting an application to the Administrator for approval of a State UIC program, the State shall issue public notices allowing the public to comment on the UIC program and to seek program approval from EPA. This public notice shall:

(1) Be circulated in a manner calculated to attract the attention of interested persons. Circulation of the public notice shall include publication in enough of the largest newspapers in the State to attract Statewide attention and mailing to persons on appropriate State mailing lists and to any other persons whom the agency has reason to believe are interested;

(2) Specify when and where the State's proposed program submission may be reviewed by the public;

(3) Indicate the cost of obtaining a copy of the submission;

(4) Provide a 30 day period of not less than 30 days during which interested persons may comment on the proposed UIC program;

(5) Schedule a public hearing on the State program no less than 30 days after notice of the hearing is published;

(6) Briefly outline the fundamental aspects of the State UIC program; and

(7) Identify a person that an interested member of the public may contact for further information.

(b) After complying with the requirements of paragraph (a) of this section any State may submit a proposed UIC program under section 4322 of SDWA and § 145.22 of this Part to EPA for approval. Such a submission shall include a showing of compliance with paragraph (a) of this section; copies of all written comments received by the State; a transcript, recording or summary of any public hearing which was held by the State; and a responsiveness summary which identifies the public participation activities conducted, describes the matters presented to the public, summarizes significant comments received, and responds to these comments. A copy of the responsiveness summary shall be sent to those who testified at the hearing, and others upon request.

(c) After determining that a State's submission for UIC program approval is complete the Administrator shall issue public notice of the submission in the Federal Register in accordance with paragraph (a)(1) of this section. Such notice shall:

(1) Indicate that a public hearing will be held by EPA no earlier than 30 days after notice of the hearing. The notice may require persons wishing to present testimony to file a request with the Regional Administrator, who may cancel the public hearing if sufficient public interest in a hearing is not expressed;

(2) Afford the public 30 days after the notice to comment on the State's submission; and

(3) Note the availability of the State submission for inspection and copying by the public.

(d) The Administrator shall approve State programs which conform to the applicable requirements of this Part.

(e) Within 60 days of the receipt of a complete submission (as provided in § 145.22) or material amendment thereto, the Administrator shall by rule either fully approve, disapprove, or approve in part the State's UIC program taking into account any comments. The Administrator shall give notice of this rule in the Federal Register and in accordance with paragraph (a)(1) of this section. If the Administrator determines not to approve the State program or to approve it only in part, the notice shall include a concise statement of the reasons for this determination. A responsiveness summary shall be prepared by the Regional Office which identifies the public participation activities conducted, describes the matters presented to the public, summarizes significant comments received, and explains the Agency's response to these comments. The responsiveness summary shall be sent to those who testified at the public hearing, and to others upon request.

§ 145.32 Procedures for revision of State programs.

(a) Either EPA or the approved State may initiate program revision. Program revision may be necessary when the controlling Federal or State statutory or regulatory authority is modified or supplemented. The State shall keep EPA fully informed of any proposed modifications to its basic statutory or regulatory authority, its forms, procedures, or priorities.

(b) Revision of a State program shall be accomplished as follows:

(1) The State shall submit a proposed program description, Attorney General's statement, Memorandum of Agreement, or such other documents as EPA determines to be necessary under the circumstances.

(2) Whenever EPA determines that the proposed program revision is substantial, EPA shall issue public notice and provide an opportunity to comment for a period of at least 30 days. The public notice shall be mailed to
interested persons and shall be published in the Federal Register and be enough of the largest newspapers in the State to provide Statewide coverage.

The public notice shall summarize the proposed revisions and provide for the opportunity to request a public hearing. Such a hearing will be held if there is significant public interest based on requests received.

(3) The Administrator shall approve or disapprove program revisions based on the requirements of this Part and of the Safe Drinking Water Act.

(4) A program revision shall become effective upon the approval of the Administrator. Notice of approval of any substantial revision shall be published in the Federal Register. Notice of approval of non-substantial program revisions may be given by a letter from the Administrator to the State Governor or his designee.

(2) States with approved programs shall notify EPA whenever they propose to transfer all or part of any program from the approved State agency to any other State agency, and shall identify any new division of responsibilities among the agencies involved. The new agency is not authorized to administer the program until approval by the Administrator under paragraph (b) of this section. Organizational charts required under § 145.33(b) shall be revised and resubmitted.

(d) Whenever the Administrator has reason to believe that circumstances have changed with respect to a State program, he may request, and the State shall provide, a supplemental Attorney General's statement, program description, or such other documents or information as are necessary.

(e) The State shall submit the information required under paragraph (b)(1) of this section within 270 days of any amendment to this Part or 40 CFR Parts 144, 146, or 122 which revises or adds any requirement respecting an approved UIC program.

§ 145.33 Criteria for withdrawal of State programs.

(a) The Administrator may withdraw program approval when a State program no longer complies with the requirements of this Part, and the State fails to take corrective action. Such circumstances include the following:

(1) When the State's legal authority no longer meets their requirements of this Part, including;

(i) Failure of the State to remit or enact new authorities or court striking down or limiting State authorities;

(ii) Failure of the State program to comply with the requirements of this Part, including:

(iii) Failure to enforce its program and provide for the opportunity to request a public hearing.

(iv) Failure to comply with the requirements of this Part, including:

(v) Failure to act on requests for program revisions, or failure to act on complaints from the public.

(vi) Failure to respond to the Administrator's request for information or reports.

(vii) Failure to comply with the public participation requirements of this Part.

(viii) Failure to comply with the requirements of this Part, including:

(2) The state's enforcement program fails to comply with the requirements of this Part, including:

(a) Failure to act on violations of permits or other program requirements;

(b) Failure to meet administrative requirements to collect administrative fines when imposed;

(c) Failure to inspect and monitor activities subject to regulation.

(3) The state's enforcement program fails to comply with the terms of the Memorandum of Agreement required under § 145.24.

§ 145.34 Procedures for withdrawal of State programs.

(a) A State with a program approved under this Part may voluntarily transfer program responsibilities required by Federal law to EPA by taking the following actions, or in such other manner as may be agreed upon with the Administrator.

(1) The State shall give the Administrator 180 days notice of the proposed transfer and shall submit a plan for the orderly transfer of all relevant program information not in the possession of EPA (such as permits, program files, compliance files, reports, permit applications) which are necessary for EPA to administer the program.

(2) Within 60 days of receiving the notice and transfer plan, the Administrator shall assess the State's transfer plan and identify any additional information needed by the Federal government for program administration and/or identify any other deficiencies in the program.

(b) Approval of a State UIC program may be withdrawn and a Federal program established in its place when the Administrator determines, after holding a public hearing, that the State program is not in compliance with the requirements of SDWA and this Part.

(1) Notice to State of Public Hearing. If the Administrator has cause to believe that a State is not administering or enforcing its authorized program in compliance with the requirements of SDWA and this Part, he or she shall inform the State by registered mail of the specific areas of noncompliance. If the State demonstrates to the Administrator within 30 days of such notification that the State program is in compliance, the Administrator shall take no further action toward withdrawal and shall so notify the State by registered mail.

(2) Public Hearing. If the State has not demonstrated its compliance to the satisfaction of the Administrator within 30 days after notification, the Administrator shall inform the State Director and schedule a public hearing to discuss withdrawal of the State program. Notice of such public hearing shall be published in the Federal Register and in enough of the largest newspapers in the State to attract statewide attention, and mailed to persons on appropriate State and EPA mailing lists. This notice shall be served not less than 60 days nor more than 75 days following the publication of the notice of the hearing. Notice of the hearing shall identify the Administrator's concerns. All interested persons shall be given an opportunity to make written or oral presentation on the State's program at the public hearing.

(3) Notice to State of Findings. When the Administrator finds after the public hearing that the State is in compliance, he or she shall notify the State by registered mail of the specific deficiencies in the State program and of any necessary remedial actions. Within 60 days of receipt of the above letter, the State shall either carry out the required remedial action or the Administrator shall withdraw program approval. If the State carries out the remedial action or, as a result of the hearing is found to be in compliance, the Administrator shall so notify the State by registered mail and conclude the withdrawal proceedings.
ENVIRONMENTAL PROTECTION AGENCY CRITERIA AND STANDARDS
FOR THE UNDERGROUND INJECTION CONTROL PROGRAM

(40 CFR 146; 45 FR 42500, June 24, 1980, Effective July 24, 1980; 46 FR 43160,

PART 146—UNDERGROUND
INJECTION CONTROL PROGRAM:
CRITERIA AND STANDARDS

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Authority: See Secs. 1421, 1422, 1423, 1431, 1445, 1447, and 1450 of the Safe Drinking Water Act, as amended, 42 U.S.C. 300(f) et seq.

Abandoned well means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

Administrator means the Administrator of the United States Environmental Protection Agency or an authorized representative.

Application means the EPA standards, national forms for applying for a permit including any additions, revisions or modifications to the forms; or forms approved by EPA for use in approved States, including any approved modifications or revisions. For RCRA application also includes the information required by the Director under §122.23, [content of Part B of the RCRA application].

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

Area of review means the area surrounding an injection well described according to the criteria set forth in §146.08 or in the case of an area permit, the project area plus a circumscribing area the width of which is either ¼ of a mile or a number calculated according to the criteria set forth in §146.08.

[Amended by 46 FR 43160, August 27, 1981]

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

[Amended by 46 FR 43160, August 27, 1981]

 Catastrophic collapse means the sudden and utter failure of overlying "strata" caused by removal of underlying materials.

[Sec. 146.03]
Cementing means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.

Confining bed means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

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

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

Confining bed means a body of rock characterized by a degree of lithologic homogeneity which is sufficiently impermeable to restrict the movement of water, gas, or any other form of matter.

Formation means a body of rock characterized by a degree of lithologic homogeneity which is sufficiently impermeable to restrict the movement of water, gas, or any other form of matter.

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

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

Fluid means material or substance which flows or moves either in a semisolid, liquid, sludge, gas; or any other form of state.

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

Generator means any person, by sitelocation whose act or process produces no hazardous waste as defined in 40 CFR 261.3.

Ground water means water below the land surface in a zone of saturation.

Hazardous waste means a hazardous waste as defined in 40 CFR 261.3.

Hazardous Waste Management facility ("HWM facility") means all of the contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).

HWM means "Hazardous Waste Management facility."

Injection well means a "well" into which "fluids" are being injected.

Injection well means a "well" into which "fluids" are being injected.

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

Lithology means the description of rocks on the basis of their physical and chemical characteristics.

Owner or operator means the owner or operator of a facility or activity subject to regulation under the RCRA, UIC, NPDES, or 404 programs.

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

[Added by 47 FR 4998, February 3, 1982]

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of this part and Parts 122, 123 and 124. Permit does not include RCRA interim status (§ 122.23), UIC authorization by rule (§ 122.37), or any permit which has not yet been the subject of formal agency action, such as a "draft permit" or a "proposed permit."

Plugging means the act or process of stopping the flow of water, oil, or gas in "formations" penetrated by a borehole or "well."

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

[Amended by 46 FR 43160, August 27, 1981]

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

Project means a group of wells in a single operation.

[Added by 47 FR 4998, February 3, 1982]

Radioactive Waste means any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR Part 20, Appendix B, Table II column 2.

[Amended by 46 FR 43160, August 27, 1981]


SDWA means the Safe Drinking Water Act (Pub. L. 93-523, as amended by Pub. L. 95-152, 42 U.S.C. 300f et seq.).

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

Sole or principal source acquirer means an aquifer which has been designated by the Administrator pursuant to sections 1424 (a) or (e) of the SDWA.

State Director means the chief administrative officer of any State or interstate agency operating an approved program, or the delegated representative of the State Director. Responsibility is divided among two or more State or interstate agencies. "State Director" means the chief administrative officer of the State or interstate agency authorized to perform the particular procedure or function to which reference is made.

Stratum (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

Subsidence means the lowering of the natural land surface in response to Earth movements; lowering of fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or...
from natural causes; compaction due to wetting (Hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.

Surface casing means the first string of well casing to be installed in the well.

Total dissolved solids ("TDS") means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136.

UIC means the Underground Injection Control program under Part C of the Safe Drinking Water Act, including any "approved program."

Underground injection means a "well injection."

Underground source of drinking water (USDW) means an aquifer or its portion:

[(1)(i)] Which supplies any public water system;
[(1)(ii)] Which contains a sufficient quantity of ground water to supply a public water system; and
[(B)] Contains fewer than 10,000 mg/l the total dissolved solids; and
[(2)] Which is not an exempted aquifer.
[Revised by 47 FR 4998, February 3, 1982]

USDW means "underground source of drinking water."

Well means a bored, drilled or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension.

Well injection means the subsurface emplacement of fluids through a bored, drilled or driven well or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

Well plug means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.

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

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

§ 146.04 Criteria for exempted aquifers.

An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in § 146.03 may be determined under 40 CFR 122.38 to be an "exempted aquifer" if it meets the following criteria:

(a) It does not currently serve as a source of drinking water and
(b) It cannot now and will not in the future serve as a source of drinking water because:
(1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible;
[146.04(b)(1) revised by 47 FR 4998, February 3, 1982]

(2) It is situated at a depth or location which makes recovery of water for drinking purposes economically or technologically impractical;
[146.05(b)(1) revised by 47 FR 4998, February 3, 1982]

(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption;

(4) It is located over a Class II or Class III mining area subject to subsidence or catastrophic collapse;

[146.05(b)(1) amended by 47 FR 4998, February 3, 1982]

(c) The Total Dissolved Solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.
[146.05(c) revised by 47 FR 4998, February 3, 1982]

(d) Other industrial and municipal disposal wells which inject fluids beneath the lowest formation containing, within one quarter (1/4) mile of the well bore, an underground source of drinking water.

§ 146.05 Classification of injection wells.

Injection wells are classified as follows:

(a) Class I. (1) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities or by owners or operators of radioactivewaste disposal sites to dispose of hazardous waste or radioactive waste into a formation which within one quarter (1/4) mile of the well contains an underground source of drinking water.

[146.05(a)(1) revised by 47 FR 4998, February 3, 1982]

(2) Other industrial and municipal disposal wells which inject fluids beneath the lowest formation containing, within one quarter (1/4) mile of the well bore, an underground source of drinking water.

[146.05(b)(1) revised by 47 FR 4998, February 3, 1982]

(b) Class II. Wells which inject fluids:

(1) Which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production wells, unless those waters are classified as a hazardous waste at the time of injection.

[146.05(b)(1) revised by 47 FR 4998, February 3, 1982]

(2) For enhanced recovery of oil or natural gas and

(3) For storage of hydrocarbons which are liquid at standard temperature and pressure.
[146.05(c) amended by 47 FR 4998, February 3, 1982]

(c) Class III. Wells which inject for extraction of minerals including:

[146.05(c) amended by 47 FR 4998, February 3, 1982]

(1) Mining of sulfur by the Frasch process;

(2) In situ production of uranium or other metals. This category includes only in-situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stopes-leaching is included in Class V.

[146.05(c) revised by 46 FR 43160, August 27, 1981]

(3) Solution mining of salts or phosphates.

New 146.05(c)(3) added and former (3), (4) redesignated as (4), (5) by 46 FR 43160, August 27, 1981.

(4) [Removed]

[146.05(c)(4) removed by 47 FR 4998, February 3, 1982]

(5) [Removed]

[146.05(c)(5) removed by 47 FR 4998, February 3, 1982]

(d) Class IV.

(1) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste into a formation which within one quarter (1/4) mile of the well contains an underground source of drinking water.

(2) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste above a formation which within one quarter (1/4) mile of the well contains an underground source of drinking water.

(3) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste above a formation which contains an aquifer which has been exempted Pursuant to § 146.04.

[146.05(d) revised by 47 FR 4998, February 3, 1982]
(a) Class V—Injection wells not included in Class I, II, III, or IV. Class V wells include:

[(146.05(e), amended by 47 FR 4998, February 3, 1982)]

(1) Air conditioning return flow wells used to return to the source water used for heating or cooling in a heat pump.

(2) Cesspools including multiple dwelling, community or regional cesspools or other devices that receive waste which are open bottom and sometimes have perforated sides. The UIC requirements do not apply to single family residential cesspools not to non-residential cesspools which receive solely sanitary wastes and have the capacity to serve fewer than 20 persons a day.

[(146.05(e)(2) revised by 47 FR 4998, February 3, 1982)]

(3) Cooling water return flow wells used to inject water previously used for cooling.

(4) Drains to wells used to drain surface fluid, primarily storm runoff, into an underground formation.

(5) Dry wells used for the injection of wastes into an underground formation.

(6) Recharge wells used to replenish the water in an aquifer.

(7) Salt water intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water.

(8) Sand backfill and other backfill wells used to inject a mixture of water and sand in fillings or other solids which may be used to cut off elements of subsurface mines whether or not they are radioactive waste or non-waste.

[(146.05(e)(8) amended by 47 FR 43180, August 27, 1982)]

(9) Septic system wells used to inject the waste or effluent from a multiple dwelling, business establishment, community or regional business establishment, septic tank. The UIC requirements do not apply to single family residential septic systems which are used solely for the disposal of sanitary waste and have the capacity to serve fewer than 20 persons a day.

[(146.05(e)(9), revised by 47 FR 4998, February 3, 1982)]

(10) Subsidence control and wells other than Class IV wells used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

[(146.05(e)(10) revised by 47 FR 43180, August 27, 1981)]

(11) Injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electric power.

[(146.05(e)(11) revised by 47 FR 43180, August 27, 1981)]

(12) Injection wells used for solution mining of conventional minerals such as those leaching.

[(146.05(e)(12) revised by 47 FR 4998, February 3, 1982)]

(13) Injection wells used in experimental technologies.

(14) Wells used to inject spent brines into the same formation from which it was withdrawn after extraction of halogens or their salts.

(15) Injection wells used in experimental technologies.

(16) Injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale.

[(146.05(e)(16) added by 47 FR 4998, February 3, 1982)]

§ 146.06. Area of Review.

The area of review for each injection well or each field, project or area of the State shall be determined according to either paragraph (a) or (b) of this section. The Department may solicit input from the owners or operators of injection wells within the State as to which method is most appropriate for each geographic area or field.

[(146.06 added by 47 FR 43180, August 27, 1981)]

(a) Zone of endangering influence.

(b) Zone of endangering influence may be based on parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. The following modified Thiele equation illustrates one form which the mathematical model may take:

\[ z = \frac{2KH_{0}\nu}{S_{o}^{2}} \]

where:

\[ z = \text{Depth of endangering influence from injection well (length)} \]

\[ K = \text{Hydraulic conductivity of the injection zone (length/time)} \]

\[ S_{o} = \text{Specific gravity of fluid in the injection zone (dimensionless)} \]

\[ \nu = \text{Injection rate (volume/time)} \]

\[ H_{0} = \text{Thickness of the injection zone (length)} \]

\[ t = \text{Time of injection (time)} \]

\[ S = \text{Storage coefficient (dimensionless)} \]

\[ Q = \text{Injection rate (volume/time)} \]

The above equation is based on the following assumptions:

(i) The injection zone is homogeneous and isotropic.

(ii) The injection zone has infinite area extent.

(iii) The injection zone penetrates the entire thickness of the injection zone.

(iv) The well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes; and

(v) The injection of fluid into the injection zone creates instantaneous increase in pressure.

(b) Fixed radius. (1) In the case of an application for an area permit under § 122.39, a fixed radius around the well of not less than one-fourth (1/4) mile may be used.

(2) In the case of an application for an area permit under § 122.39, a fixed width of not less than one-fourth (1/4) mile for the circumscribing area may be used.

(c) If the area of review of a mathematical model pursuant to paragraph (a) of this section; the permissible radius is the result of such calculation even if it is less than one-fourth (1/4) mile.

§ 146.07. Corrective Action.

In determining the adequacy of corrective action proposed by the applicant under 40 CFR 122.44 and in determining the additional steps needed to prevent fluid movement into the underground source of drinking water, the following criteria and factors shall be considered by the Director:

[(146.07(a) and (b), revised by 47 FR 43180, August 27, 1981)]

(a) Nature and volume of injected fluid;

(b) Nature of native fluids or by-products of injection;
(c) Potentially affected population:
(d) Geology:
(e) Hydrology:
(f) History of the injection operation;
(g) Completion and plugging records;
(h) Abandonment procedures in effect at the time the well was abandoned; and
(i) Hydraulic connections with underground sources of drinking water.
§ 146.08 Mechanical Integrity
(a) An injection well has mechanical integrity if:
(1) There is no significant leak in the casing, tubing or packer; and
(2) There is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.
(b) One of the following methods must be used to evaluate the absence of significant leaks under paragraph (a)(1) of this section:
[146.08(b), amended by 47 FR 4998, February 3, 1982]
(1) Monitoring of annulus pressure or
(2) Pressure test with liquid or gas.
[146.08(b)(2) amended by 47 FR 4998, February 3, 1982]
(c) Records of monitoring showing the absence of significant changes in the relationship between injection pressure and injection flow rate for the following Class II enhanced recovery well:
(i) Existing wells completed, without a packer provided that a pressure test has been performed and the data is available and provided further that one pressure test shall be performed at a time when the well is shut down and if the results of the test show a further loss of significant amounts of oil or gas, or
(ii) Existing wells constructed with a long string casing, but with surface casing which terminates at the base of fresh water provided that local geological and hydrological features allow such construction and provided further that the annular space be visually inspected. For these wells, the Director shall prescribe a monitoring program which will verify the absence of significant fluid movement from the injection zone into an USDW.
[146.08(b)(3) added by 47 FR 4998, February 3, 1982]
(c) One of the following methods must be used to determine the absence of significant fluid movement under paragraph (a)(2) of this section:
[146.08(c)(1) and (2) revised by 49 FR 43160, August 27, 1981]
(1) The results of a temperature or noise log or
(2) For Class II only, cementing records demonstrating the presence of adequate cement to prevent such migration;
[146.08(c)(3) and (4) added by 47 FR 4998, February 3, 1982]
(3) For Class III wells where the nature of the casing precludes the use of the logging techniques prescribed at paragraph (c)(1) of this section, cementing records demonstrating the presence of adequate cement to prevent such migration;
(4) For Class III wells where the Director elects to rely on cementing records to demonstrate the absence of significant fluid movement, the monitoring program prescribed by §146.33(b) shall be designed to verify the absence of significant fluid movement.
(d) The Director may allow the use of a test to demonstrate mechanical integrity other than those listed in paragraphs (b) and (c) of this section with the written approval of the Administrator. To obtain approval the Director shall submit a written request to the Administrator, which shall set forth the proposed test and all technical data supporting its use. The Administrator shall approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternative test method approved by the Administrator shall be published in the Federal Register and may be used in all States unless its use is restricted at the time of approval by the Administrator.
[146.08(b) amended by 47 FR 4998, February 3, 1982]
(e) In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director shall apply relevant standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director shall review monitoring and other test data submitted since the previous evaluation.
§ 146.09 Criteria for Establishing Permitting Priorities.
In determining priorities for setting times for owners or operators to submit applications for authorization to inject under the procedures of §122.38 or §123.4(f), the Director shall base these priorities upon consideration of the following factors:
(a) Injection wells known or suspected to be contaminating underground sources of drinking water;
(b) Injection wells known to be injecting fluids containing hazardous contaminants;
(c) Likelihood of contamination of underground sources of drinking water;
(d) Potentially affected population;
(e) Injection wells violating existing State requirements;
(f) Coordination with the issuance of permits required by other States or Federal permit programs;
(g) Age and depth of the existing well; and
(h) Expiration dates of existing State permits, if any.
§ 146.10 Plugging and abandoning Class I—III wells.
(a) Prior to abandoning Class I—III wells the well shall be plugged with cement in a manner which will not allow movement of fluids either into or between underground sources of drinking water. The Director may allow Class III wells to use other plugging materials if he is satisfied that such materials will prevent movement of fluids into or between underground sources of drinking water.
[146.10(a) revised by 47 FR 4998, February 3, 1982]
(b) Placement of the cement plugs shall be accomplished by one of the following methods:
(1) The Balance Method;
[146.08(b)(2) and (3) amended by 47 FR 4998, February 3, 1982]
(2) The Dump Bailer Method;
(3) The TwoPlug Method; or
(4) An alternative method approved by the Director which will reliably provide a comparable level of protection to underground sources of drinking water.
[146.10(b)(4) added by 47 FR 4998, February 3, 1982]
(c) The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized to bottom either by circulating the mud in the well at least once or by a comparable method prescribed by the Director prior to the placement of the cement plug(s).
[146.08(b)(3) added by 47 FR 4998, February 3, 1982]
(d) The plugging and abandonment plan required in 40 CFR §§122.42(f) and §122.42a shall, in the case of a Class III project which underlies or is in an aquifer which has been exempted under 40 CFR 148.04, also demonstrate adequate protection of USDWs. The Director shall prescribe aquifer cleanup and monitoring when he deems it necessary and feasible to ensure adequate protection of USDWs.
[146.10(d) amended by 47 FR 4998, February 3, 1982]
Subpart B—Criteria and Standards
Applicable to Class I Wells

§ 146.11 Applicability.
This subpart establishes criteria and standards for underground injection control programs to regulate Class I wells.

§ 146.12 Construction Requirements.
(a) All Class I wells shall be sited in such a location or manner as to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each new drilled well shall be designed for the life expectancy of the well. In determining the location of drilling sites, the following factors shall be considered:

1. Depth to the injection zone;
2. Injection pressure; external fracture pressure, internal pressure, and axial loading;
3. Well size;
4. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, or construction material);
5. Corrosiveness of injection fluids and formation fluids; and
6. Lithostatic and confining pressures.

(b) All Class I injection wells, except those municipal wells injecting non-corrosive wastes, shall be completed with cemented or uncemented casings extending from the surface to a depth immediately above the injection zone or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.

(c) The use of other alternatives to a packer may be allowed with the written approval of the Director. To obtain approval, the operator shall submit a written request to the Director, which shall be considered the proposed alternative and all technical data supporting its use. The Director shall approve the request if the alternative method will provide a comparable level of protection to underground sources of drinking water. The Director may approve an alternative method solely for an individual well or for general use.

(d) In determining and specifying requirements for tubing, packer, or other alternatives the following factors shall be considered:

(i) Depth of setting;
(ii) Characteristics of injection fluid (chemical content, corrosiveness, and density); and
(iii) Injection pressure.

(e) Annular pressure;
(f) Rate, temperature, and volume of injected fluid; and
(g) Size of casing.

(d) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report summarizing the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. At a minimum, such logs and tests shall include:

1. Deviation checks on all holes constructed by drilling a pilot hole, then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to ensure that vertical releases for fluid migration in the form of diverging holes are not created during drilling.
2. Such other logs and other tests may be needed after testing to account for the data of similar data in the area of the drilling site, the construction plan, and the need for additional information, which, when given from time to time as the construction increases the well progress. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:
   (i) For surface casing intended to protect underground sources of drinking water:
   (A) Resistivity, spontaneous potential, and caliper logs before the casing is set and cemented;
   (B) A cement bond, temperature, or density log after the casing is set and cemented;
   (C) A cement bond, temperature, or density log after the casing is set and cemented;

3. For internal testing of the equivalent of the test of a cement bond intended to facilitate injection:
   (A) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casting is installed;
   (B) Fracture checker logs;
   (C) A cement bond, temperature, or density log after the casing is set and cemented;

(f) At a minimum, the following information concerning the injection formation shall be determined and calculated for new Class I wells:

1. Fluid pressure;
2. Temperature;
3. Fracture pressure;
4. Other physical and chemical characteristics of the injection matrix; and
5. Physical and chemical characteristics of the injection fluids.

§ 146.13 Operating, Monitoring and Reporting Requirements.
[Editor’s note: EPA, July 26, 1982 (47 FR 32129) amended §146.13 to add OMB control No. 2000—0456.]

(2) Except during stimulation injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new, larger fractures or cause fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection formation fluids into an underground source of drinking water.

(2) Injection between the outermost casing both upgradient and downgradient from the injection zone is prohibited.

(3) A demonstration of mechanical integrity pursuant to §146.09 at least once every five years during the life of the well.

(4) The type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured, and the frequency of monitoring.

(5) Quarterly reports to the Director:

1. The physical, chemical, and other characteristics of injection fluids; and
2. Monthly average, maximum and minimum values for injection pressure, flow rate, and volume, and annular pressure; and
3. The results of monitoring prescribed under subparagraph (b)(4) of this section.
(2) Reporting the results, with the first quarterly report after the completion of:
   (i) Periodic tests of mechanical integrity;
   (ii) Any other test of the injection well conducted by the permittee if required by the Director; and
   (iii) Any well work over.

§ 146.14 Information to be considered by the Director.

This section sets forth the information which must be considered by the Director in authorizing Class III wells. For an existing or converted new Class III well the Director may rely on the existing permit files for those items of information listed below which are current and accurate in the file. For a newly drilled Class III well, the Director shall require the submission of all of the information listed below. For both existing and new Class III wells certain maps, cross-sections, tabulations of wells within the area of review and 50 other data may be included in the application by reference provided they are current, readily available to the Director (for example, in the permitting agency's files) and sufficiently identified to be retrieved. In cases where EPA issues the permit all the information in this section must be submitted to the Administrator of EPA.

Prior to the issuance of a permit for an existing Class III well to operate or the construction or conversion of a new Class III well the Director shall consider the following:

(1) Information required in 40 CFR 122.4 and 112.5(b).

(2) A map showing the injection well(s) for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map.

(3) A tabulation of data on all wells within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require.

(4) Maps and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection.

(5) Maps and cross sections detailing the geologic structure of the local area:
   (i) Generalized maps and cross sections illustrating the regional geologic setting;
   (ii) Proposed operating data:
      (A) Average and maximum daily rate and volume of the fluid to be injected;
      (B) Average and maximum injection pressure and
   (iii) Source and an analysis of the chemical, physical, radiological, and biological characteristics of injection fluids.

(6) Proposed stimulation program:

(7) Proposed injection procedure:

(8) Schematic or other appropriate drawings of the surface and subsurface construction details of the well.

(9) Proposed monitoring program:

(10) Proposed injection procedure:

(11) Contingency plans to cope with all shut-down or well failures so as to prevent migration of fluids into any underground source of drinking water.

(12) Plans (including maps) for meeting the monitoring requirements in § 146.13.

(13) For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under 40 CFR 122.44.

(14) Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program;

(15) A certificate that the applicant has assured, through a performance bond or other appropriate means, the availability of funds to close the plug or abandon the well as required by 40 CFR 122.42(g);

(16) A certificate that the Director has assured, through a performance bond or other appropriate means, the availability of funds to close the plug or abandon the well as required by 40 CFR 122.42(g);

(17) A demonstration of mechanical integrity pursuant to § 146.08;

(18) The anticipated maximum pressure and flow rate at which the well will be operated;

(19) The results of the formation testing program;

(20) The actual injection procedure;

(21) The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone; and

(22) The status of corrective action on defective wells, in the area of review.

(c) Prior to granting approval for the plugging and abandonment of a Class III well the Director shall consider the following:

(1) The type and number of plugs to be used;

(2) The location of each plug, including the elevation of the top and bottom;

(3) The type and grade of cement to be used;

(4) The method for placement of the plugs; and

(5) The procedure to be used to meet the requirements of § 146.10(c).

§ 146.15 Mid-course evaluation requirements.

In compliance with 40 CFR 122.18(c)(4)[ii] the data to be submitted on each Class II permit at six-month intervals during the first two years of operation of the State program shall at a minimum include the following:

(1) The data required in § 146.14(a)(1);

(2) The data required in § 146.14(a)(2) including, under location, the distance and direction from the injection well;

(3) The depth to the top and bottom of any USDW;

(4) The distance to the nearest down gradient water supply well;

(5) A description of the geology and hydrology of the area;

(6) The construction characteristics of the well;

(7) The corrective action proposed as well as that performed;

(8) The number and nature of all well integrity tests reported to the Director; and

(9) Any reporting to the Director under § 122.41(d).

Subpart C—Criteria and Standards Applicable to Class II Wells

§ 146.21 Applicability.

This subpart establishes criteria and standards for underground injection control programs to regulate Class II wells.

§ 146.22 Construction requirements.

(a) All new Class II wells shall be sited in such a fashion that they inject into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of review.

(b) All new Class II wells shall be designed to ensure that:

146.22(a) amended by 46 FR 43160, August 27, 1981.
[Former 146.22(b) redesignated as (b) (1) by 47 FR 4998, February 3, 1982.]

(b) (1) All Class II injection wells shall be cased and cemented to prevent movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

[Former 146.22(b)(1)-(3) redesignated as (b)(1)(i)-(iii) by 47 FR 4998, February 3, 1982.]

(i) Depth to the injection zone;
(ii) Depth to the bottom of all USDWs; and
(iii) Estimated maximum and average injection pressures.

(b)(2) In addition, the Director may consider the following factors:

(i) Nature of formation fluids;
(ii) Lithology of injection and confining zones;
(iii) External pressure, internal pressure, and axial loading;
(iv) Hole size;
(v) Size and grade of all casing strings; and
(vi) Class of cement.

[New 146.22(b)(2) added by 47 FR 4998, February 3, 1982.]

(c) The requirements in paragraph (b) of this section need not apply to existing or newly drilled Class II wells located in existing fields if:

(1) Regulatory controls for casing and cementing existed for those wells at the time of drilling and those wells are in compliance with those controls; and
(2) Well injection will not result in the movement of fluids into an underground source of drinking water so as to create a significant risk to the health of persons.

(d) The requirements in paragraph (b)(2) of this section need not apply to newly drilled wells in existing fields if:

(1) They meet the requirements of the State for casing and cementing applicable to that field at the time of submission of the State program to the Administrator; and
(2) Well injection will not result in the movement of fluids into an underground source of drinking water so as to create a significant risk to the health of persons.

(e) Where a State did not have regulatory controls for casing and cementing prior to the time of the submission of the State program to the Administrator, the Director need not apply the casing and cementing requirements in paragraph (b)(2) of this section if he submits as a part of his application for primacy, an appropriate plan for casing and cementing of:

existing, newly converted, and newly drilled wells in existing fields, and the Administrator approves the plan.

(f) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class II wells. A descriptive report interpreting the results of that portion of those logs and tests which specifically relate to USDW and the confining zone adjacent to it, and (2) the injection and adjacent formations shall be prepared by a knowledgeable log analyst and submitted to the Director. At a minimum, those logs and tests shall include:

[146.22(f) amended by 47 FR 43160, August 27, 1982.]

(1) Deviation checks on all holes constructed by first drilling a pilot hole and then enlarging the pilot hole, by reaming or another method. Such checks shall be made at sufficiently frequent intervals to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling.

(2) Such other logs as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required the following shall be considered by the Director in setting logging and testing requirements:

[146.22(d)(2)(i) and (d)(1)(A) revised by 47 FR 4998, February 3, 1982.]

(i) For surface casing intended to protect underground sources of drinking water in areas where the lithology has not been determined:
   (A) Electric and caliper logs before casing is installed; and
   (B) Cement bond, temperature, or density log after the casing is set and cemented.

(ii) For intermediate and long strings of casing intended to facilitate injection:
   (A) Electric, porosity and gamma ray logs before the casing is installed;
   [146.22(d)(2)(ii) revised by 47 FR 4998, February 3, 1982.]
   (B) Fracture finder logs and density log after the casing is set and cemented.

(2) Where it is determined that new fractures do not initiate during drilling, the Director may require that the following information concerning the injection formation shall be determined or calculated for new Class II wells or projects:

(1) Fluid pressure;

(2) Estimated fracture pressure;

(3) Physical and chemical characteristics of the injection zone.

[146.22(g) revised by 47 FR 4998, February 3, 1982.]

(f) Operating, monitoring, and reporting requirements.

[Editor's note: EPA July 26, 1982 (47 FR 32129) amended §146.23 to add OMB control No. 2000-0456.]
(1) Reporting requirements shall at a minimum include an annual report to the Director summarizing the results of monitoring required under paragraph (b) of this section. Such summary shall include monthly records of injected fluids, and any major changes in characteristics or sources of injected fluid. Previously submitted information may be included by reference.

[146.23(c)(1) revised by 46 FR 43180, August 27, 1981]

(2) Owners or operators of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than an individual well basis where manifold monitoring is used.

§ 146.24 Information to be considered by the director.

This section sets forth the information which must be considered by the Director in authorizing Class II wells. Certain maps, cross-sections, tabulations of wells within the area of review, and other data may be included in the application by reference provided they are current, readily available to the Director (for example, in the permitting agency’s files) and sufficiently identified to be retrieved. In cases where EPA issues the permit, all the information in this section shall be the responsibility of the Administrator.

(a) Prior to the issuance of a permit for an existing Class II well to operate or the construction or conversion of a new Class II well the Director shall consider the following:

1. Information required in 40 CFR 122.4 and 122.36(c);

2. [146.24(a)(2) and (3) revised by 46 FR 43180, August 27, 1981]

3. A map showing the injection well or project area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number of names and location of all existing producing wells, injection wells, abandoned wells, dry holes, and water wells. The map may also show the surface bodies of waters, mines (surface and subsurface), quarries and other pertinent surface features including residences and roads, and faults if known or suspended. Only information of public record and pertinent information known to the applicant is required to be included on this map. This requirement does not exist for Class II wells and

4. A tabulation of reasonably available from public records or otherwise known to the applicant on all wells within the area of review included on the map required under paragraph (a)(2) of this section which penetrate the proposed injection zone or, in the case

§ 146.25 Mid-course evaluation requirements.

(a) In compliance with 40 CFR 122.18(b)(4)(C)(ii) the data to be submitted on each new Class II permit at six-month intervals during the first two years of operation of the State program shall at a minimum include the following:

1. The data required in § 146.24(a)(1);

2. The data required in § 146.24(a)(3) including, under location, the distance and direction from the injection well;

3. The data to the top and bottom of any USDW;

4. The distance to the nearest downgradient water supply well;

5. A description of the geology and hydrology of the area;

6. The construction characteristics of the well;

7. The construction characteristics of the well;

8. Any reporting to the Director under § 122.41(d).

[Sec. 146.25(a)(8)]
The Director shall also submit the type and results of all Mechanical Integrity tests reported on existing wells and new (conversion only) wells during the first two years of operation.

(c) The Director shall require a temperature log or noise log, on a sample of Class II wells in cases where operators submitted cementing records to meet the requirements of § 146.08(c).

The wells to be tested shall be chosen by a formal random selection procedure. The sampling shall be done on a field or pool basis and be statistically representative of the wells in that field or pool. At a minimum, the sample size for each State shall be 100 wells or 5 percent of the number of Class II injection wells in the State whichever is smaller. At least half of the wells tested must be existing wells.

Subpart D—Criteria and Standards Applicable to Class III Wells

§ 146.31 Applicability

This subpart establishes criteria and standards for underground injection control programs to regulate Class III wells.

§ 146.32 Construction requirements

(a) All new Class III wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The Director may waive the casing requirement for new wells in existing projects or portions of existing projects where he has evidence that no contamination of underground sources of drinking water would result.

The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying the casing and cementing requirements, the following factors shall be considered:

(1) Depth to the injection zone;
(2) Injection pressure, external pressure, internal pressure, axial loading, etc.;
(3) Hole size;
(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);
(5) Corrosiveness of injected fluids and formation fluids;
(6) Lithology of injection and confining zones; and
(7) Type and grade of cement.

(b) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells.

A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. The logs and tests appropriate for each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. Deviation checks shall be made in holes where pilot holes and stemming are used, unless the hole will be cased and cemented by circulating cement to the surface. Where deviation checks are necessary they shall be conducted at sufficient frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

§ 146.32(b) amended by 46 FR 43160, August 27, 1981; 47 FR 4998, February 3, 1982.

(c) Where the injection zone is a formation which is naturally water-bearing the following information concerning the injection zone shall be determined or calculated for new Class III wells or projects:

(1) Temperature of injection zone;
(2) Fracture pressure; and
(3) Physical and chemical characteristics of the formation fluids.

§ 146.32(c) amended by 46 FR 43160, February 3, 1982.

(d) Where the injection formation is not a water-bearing formation, the information in paragraph (c)(2) of this section must be submitted.

§ 146.32(d) amended by 47 FR 4998, February 3, 1982.

(e) Where injection is into a formation which contains water with less than 10,000 mg/l TDS monitoring wells shall be completed into the injection zone and into any underground sources of drinking water above the injection zone which could be affected by the mining operation. These wells shall be located in such a fashion as to detect any excursion of injection fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or catastrophic collapse the monitoring wells shall be located so that they will not be physically affected.

§ 146.32(e) amended by 46 FR 43160, August 27, 1981.

(f) Where injection is into a formation which does not contain water with less than 10,000 mg/l TDS, no monitoring wells are necessary in the injection stratum.

(g) Where the injection wells penetrate an USDW in an area subject to subsidence or catastrophic collapse an adequate number of monitoring wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

§ 146.32(f) amended by 46 FR 43160, August 27, 1981.

(h) In determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered:

(1) The population relying on the USDW affected or potentially affected by the injection operation;
(2) The pressure of the injection operation to points of withdrawal of drinking water;
(3) The local geology and hydrology;
(4) The operating pressures and whether a negative pressure gradient is being maintained;
(5) The nature and volume of the injected fluid, the formation, water, and the process by-products; and
(6) The injection well density.

§ 146.33 Operating, monitoring, and reporting requirements.


(a) Operating Requirements.

Operating requirements prescribed shall, at a minimum, specify that:

(1) Except during well stimulation injection pressures at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case, shall injection pressure initiate fractures in the confining zone or cause the migration of injection or formation fluids into an underground source of drinking water.

§ 146.33(a)(1) amended by 46 FR 43160, August 27, 1981.

(2) Injection between the outermost casing and underground sources of drinking water and the well bore is prohibited.

(b) Monitoring Requirements.

Monitoring requirements shall, at a minimum, specify:

§ 146.33(b)(1)–(4) amended by 47 FR 4998, February 3, 1982.

(1) Monitoring of the nature of injected fluids with sufficient frequency to yield representative data on its characteristics. Whenever the injection fluid is modified to the extent that the analysis required by § 146.34(a)(7)(iii) is incorrect or incomplete, a new analysis as required by § 146.34(a)(7)(iii) shall be provided to the Director.

(2) Monitoring of injection pressure and either flow rate or volume semi-
monthly, or metering and daily recording of injected and produced fluid volumes as appropriate.

(3) Demonstration of mechanical integrity pursuant to §146.08 at least once every five years during the life of the well for salt solution mining.

(4) Monitoring of the fluid level in the injection zone semi-monthly, where appropriate, and monitoring of the parameters chosen to measure water quality in the monitoring wells required by §146.32(e), semi-monthly.

(5) Quarterly monitoring of wells required by §146.32(g).

(6) All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

(6) Reporting Requirements. Reporting requirements shall, at a minimum, include:

(1) Quarterly reporting to the Director on required monitoring;

(2) Results of mechanical integrity and any other periodic test required by the Director reported with the first regular quarterly report after the completion of the test;

(3) Monitoring may be reported on a project or field basis rather than individual well basis where manifold monitoring is used.

§146.34 Information to be considered by the Director.

This section sets forth the information which must be considered by the Director in authorizing Class III wells. Certain maps, cross sections, tabulations of wells within the area of review, and other data may be included in the application by reference provided they are current, readily available to the Director (for example, in the permitting agency's files) and sufficiently identified to be retrieved. In cases where EPA disagrees the permit, all the information in this section must be submitted to the Administrator.

(a) Prior to the issuance of a permit for an existing Class III well or area to operate or the construction of a new Class III well the Director shall consider the following:

(1) Information required in 40 CFR 122.4 and 122.38(c);

(2) A map showing the injection well or project area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, public water systems and water wells. The map may also show surface bodies of waters, mines (surface on subsurface) quarries and other pertinent surface features, including residencies and roads, and faults if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

(3) A tabulation of data reasonably available from public records or otherwise known to the applicant on wells within the area of review included on the map required under paragraph (a)(2) of this section which penetrates the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the Director may require. In cases where the information would be repetitive and the wells are of similar age, type, and construction the Director may elect to only require data on a representative number of wells.

(4) Maps and cross sections indicating the vertical limits of all underground sources of drinking water within the area of review; their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection.

(5) Maps and cross sections detailing the geologic structure of the local area;

(6) Generalized map and cross sections illustrating the regional geologic setting;

(7) Proposed operating data;

(i) Average and maximum daily rate and volumes of fluid to be injected;

(ii) Average and maximum injection pressure;

(iii) Qualitative analysis and ranges in concentrations of all constituents of injected fluids. The applicant may request Federal confidentiality as specified in 40 CFR Part 2. If the information is proprietary an applicant may, in lieu of the ranges in concentrations, choose to submit maximum concentrations which shall not be exceeded. In such a case the applicant shall retain records of the undisclosed concentrations and provide them upon request to the Director as part of any enforcement investigation.

(8) Proposed formation testing program to obtain the information required by §146.32(g).

(9) Proposed stimulation program:

(10) Proposed injection procedure;

(11) Schematic or other appropriate drawings of the surface and subsurface construction details of the well.

(12) Plans (including maps) for meeting the monitoring requirements of §146.33(b);

(13) Expected changes in pressure, native fluid displacement, direction of movement of injection fluid;

(14) Contingency plans to cope with all shut-ins or well failures as to prevent the migration of contaminating fluids into underground sources of drinking water;

(15) A certificate that the applicant has assured, through a performance bond, or other appropriate means, the resources necessary to close, plug, or abandon the well as required by 40 CFR 122.42(g) and

(16) The corrective action proposed to be taken under 40 CFR 122.44.

(b) Prior to granting approval for the operation of a Class III well the Director shall consider the following information:

(1) All available logging and testing data on the well;

(2) A satisfactory demonstration of mechanical integrity for all new wells and for all existing salt solution wells pursuant to §146.08;

(3) The anticipated maximum pressure and flow rate at which the permittee will operate;

(4) The results of the formation testing program;

(5) The injection procedures, and

(6) The status of corrective action on defective wells in the area of review.

(c) Prior to granting approval for the plugging and abandonment of a Class III well the Director shall consider the following information:

(1) The type and number of plugs to be used;
§ 146.34 Midcourse evaluation requirements.

In compliance with 40 CFR 122.18(c)(4)(C)(iii) the data to be submitted on each Class III permit at six month intervals during the first two years of operation of the State program shall at a minimum include the following:

(a) The data required in § 146.14(a)(1);
(b) The data required in § 146.34(a)(3) including, under location, the distance and direction from the injection well;
(c) The depth to the top and bottom of any USDW;
(d) The distance to the nearest down gradient water supply well;
(e) A description of the geology and hydrology of the area;
(f) The construction characteristics of the well;
(g) The type and results of all mechanical integrity tests reported to the Director during the first two years of the program; and
(h) Any reporting to the Director under § 122.41.(d).

§ 146.35 Subpart E—Criteria and Standards Applicable to Class IV Injection Wells

Subpart E—Criteria and Standards Applicable to Class IV Injection Wells

§ 146.51 Applicability.

This subpart sets forth criteria and standards for underground injection control programs to regulate all injection not regulated in Subparts C, D, and E.

(a) Generally, wells covered by this subpart inject non-hazardous fluids into or above formations that contain underground sources of drinking water. It includes all wells listed in § 146.05(e); but is not limited to those types of injection wells.

(b) It also includes wells not covered in Class IV that inject radioactive material listed in 10 CFR Part 39, Appendix B, Table II, Column 2.

§ 146.52 Inventory and Assessment.

(a) The owner or operator of any Class V well shall, within one year of the effective date of an underground injection control program, notify the Director of the existence of any well meeting the definitions of Class V under his control, and submit the inventory information required in 40 CFR 122.37(c)(1).

(b) Within three (3) years of approval of the State program the Director shall complete and submit to EPA a report containing:

(1) The information on the construction features of Class V wells, and the nature and volume of the injected fluids;

(2) An assessment of the contamination potential of the Class V wells using hydrogeological data available to the State;

(3) An assessment of the available corrective alternatives where appropriate and their environmental and economic consequences; and

(4) Recommendations both for the most appropriate regulatory approaches and for remedial actions where appropriate.
STEEL UNDERGROUND TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS
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April 10, 1981

STANDARD FOR
STEEL UNDERGROUND TANKS FOR FLAMMABLE AND
COMBUSTIBLE LIQUIDS

UL 58, SEVENTH EDITION

Accompanying this sheet is a copy of the second impression of the seventh edition of UL 58.

A CHANGE IN REQUIREMENTS AS INCLUDED IN REVISED PAGES DATED NOVEMBER 28, 1977
IS INDICATED BY A VERTICAL MARGINAL RULE ON THE AFFECTED PAGE. EDITORIAL
CHANGES ARE NOT SO MARKED.

THIS EDITION OF THE STANDARD IS NOW IN EFFECT.

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the
following check list:

<table>
<thead>
<tr>
<th>Page</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>April 10, 1981</td>
</tr>
<tr>
<td>2</td>
<td>October 29, 1976</td>
</tr>
<tr>
<td>3</td>
<td>November 28, 1977</td>
</tr>
<tr>
<td>4,5</td>
<td>October 29, 1976</td>
</tr>
<tr>
<td>6</td>
<td>November 28, 1977</td>
</tr>
<tr>
<td>7-16</td>
<td>October 29, 1976</td>
</tr>
</tbody>
</table>

Revised and/or additional pages may be issued from time to time.

Transmittal only — not a permanent part of the standard
UL 58

STANDARD FOR
STEEL UNDERGROUND TANKS FOR FLAMMABLE
AND COMBUSTIBLE LIQUIDS

First Edition - October, 1925
Second Edition - September, 1929
Third Edition - February, 1937
Fourth Edition - April, 1949
Fifth Edition - December, 1961
Sixth Edition - December, 1971

(The fifth and previous editions were originally titled
"Underground Tanks for Flammable Liquids")

SEVENTH EDITION

First Impression ..................October 29, 1976
Second Impression (as revised to January 6, 1978). ..... April 10, 1981

Approval as an American National Standard covers the numbered paragraphs
on pages dated October 29, 1976. These pages should not be discarded when
revised or additional pages are issued if it is desired to retain the approved
text. Revisions of this standard will be made by issuing revised or additional
pages bearing their dates of issue.

Approved as ANSI B137.1-1971, July 27, 1971
Approved as ANSI B137.1-1976, July 23, 1976

*Replaces page 1 dated October 29, 1976

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UL's Standards for Safety are copyrighted to protect UL's publication rights, not to restrict their use
in product design or evaluation. See paragraph E of the Foreword.
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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

*Replaces page 4 dated October 29, 1976
1. Scope

1.1 These requirements cover horizontal atmospheric-type steel tanks intended for the storage underground of flammable and combustible liquids.

1.2 These tanks are intended for installation and use in accordance with the Standard for the Installation of Oil-Burning Equipment, NFPA No. 31, and the Flammable and Combustible Liquids Code, NFPA No. 30, of the National Fire Protection Association.

1.3 Tanks covered by these requirements are cylindrical tanks which are fabricated, inspected, and tested for leakage before shipment from the factory as completely assembled vessels.

2. General

2.1 Capacities, dimensions, and construction details shall conform to the applicable requirements of this Standard.

2.2 Gallon capacities per foot of length of cylindrical shells having diameters of 24 to 144 inches, inclusive, are given in Appendix A, Table I. Capacities in liters (dm³) per meter of length of cylindrical shells having diameters of 600 to 3800 mm, inclusive, are given in Appendix A, Table II. (Add one-third the height of conical heads to shell lengths to obtain total capacity.)

2.3 If a value for measurement as given in these requirements is followed by an equivalent value in other units, the first stated value is to be regarded as the requirement. A given equivalent value may be only approximate.

3. Capacities, Dimensions, and Metal Thicknesses

3.1 The overall length of a tank shall be not greater than six times its diameter.

3.2 Neither the capacity nor the diameter for the corresponding gage or thickness of metal shall exceed that specified in Table 3.1.

3.3 To provide for manufacturing variations, a plus tolerance of 10 percent in maximum capacity and a plus tolerance of 5 percent in either the maximum diameter or the maximum length will be permitted for tanks constructed of No. 7 gage (0.167 inch minimum) (4.24 mm minimum) or heavier steel. This does not mean that a tank is to be designed intentionally to have a capacity, diameter, or length greater than the maximum designated above. There is no limit on the minus tolerances for capacity, diameter, or length.

4. Materials

4.1 A tank shall be constructed of commercial quality uncoated or galvanized steel of good welding quality. Only new material shall be used.

4.2 The thickness of steel, as measured in accordance with paragraph 4.3 shall be not less than the appropriate minimum value given in Table 4.1 or 4.2.

4.3 The thickness of steel is to be determined by five micrometer readings equally spaced along the edge of the full piece as rolled. Thickness is to be determined on the sheet not less than 3/8 inch (9.5 mm) from a cut edge and not less than 3/4 inch (19 mm) from a mill edge.

<table>
<thead>
<tr>
<th>TABLE 3.1</th>
<th>THICKNESS OF STEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>Maximum Diameter</td>
</tr>
<tr>
<td>U.S. Gallons</td>
<td>dm³</td>
</tr>
<tr>
<td>Up to 285</td>
<td>Up to 1078</td>
</tr>
<tr>
<td>286 to 560</td>
<td>1082 to 2120</td>
</tr>
<tr>
<td>561 to 1100</td>
<td>2124 to 4164</td>
</tr>
<tr>
<td>1101 to 4000</td>
<td>4168 to 15142</td>
</tr>
<tr>
<td>4001 to 12,000</td>
<td>15145 to 45425</td>
</tr>
<tr>
<td>12,001 to 20,000</td>
<td>45429 to 75708</td>
</tr>
<tr>
<td>20,001 to 50,000</td>
<td>75712 to 189270</td>
</tr>
</tbody>
</table>
5. Shell Seams

5.1 A shell seam of a tank shall be one of the forms shown by Figure 5.1.

5.2 Shell seam No. 4 shall not be used on tanks larger than 96 inches (2.44 m) in diameter.

5.3 Shell seam No. 7 shall not be used on tanks larger than 65 inches (1.65 m) in diameter.

---

**TABLE 4.1**

NOMINAL AND MINIMUM THICKNESS FOR UNCOATED SHEET AND PLATE STEEL

<table>
<thead>
<tr>
<th>Manufacturers' Standard Gage No.</th>
<th>Nominal Thickness</th>
<th>Minimum Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inches (mm)</td>
<td>Inches (mm)</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>0.375 (9.53)</td>
<td>0.365 (9.27)</td>
</tr>
<tr>
<td>5/16 inch</td>
<td>0.312 (7.92)</td>
<td>0.302 (7.67)</td>
</tr>
<tr>
<td>1/4 inch</td>
<td>0.250 (6.35)</td>
<td>0.240 (6.10)</td>
</tr>
<tr>
<td>7</td>
<td>0.179 (4.55)</td>
<td>0.167 (4.24)</td>
</tr>
<tr>
<td>9</td>
<td>0.150 (3.81)</td>
<td>0.138 (3.51)</td>
</tr>
<tr>
<td>10</td>
<td>0.135 (3.43)</td>
<td>0.123 (3.12)</td>
</tr>
<tr>
<td>12</td>
<td>0.106 (2.67)</td>
<td>0.093 (2.36)</td>
</tr>
<tr>
<td>14</td>
<td>0.075 (1.91)</td>
<td>0.067 (1.70)</td>
</tr>
</tbody>
</table>

---

**TABLE 4.2**

NOMINAL AND MINIMUM THICKNESS FOR GALVANIZED SHEET STEEL

<table>
<thead>
<tr>
<th>Galvanized Sheet Gage No.</th>
<th>Nominal Thickness</th>
<th>Minimum Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inches (mm)</td>
<td>Inches (mm)</td>
</tr>
<tr>
<td>10</td>
<td>0.138 (3.51)</td>
<td>0.126 (3.20)</td>
</tr>
<tr>
<td>12</td>
<td>0.109 (2.74)</td>
<td>0.097 (2.46)</td>
</tr>
<tr>
<td>14</td>
<td>0.079 (2.01)</td>
<td>0.070 (1.78)</td>
</tr>
</tbody>
</table>

---

Figure 5.1 revised November 28, 1977

*Replaces page 6 dated October 29, 1976

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6. Heads and Head Joints

6.1 A head of a tank shall be fabricated of not more than two pieces for diameters of 48 inches (1.22 m) or less; three pieces for diameters of from 49 to 96 inches (1.24 to 2.44 m); and four pieces for diameters of from 97 to 144 inches (2.46 to 3.66 m). When two or more pieces are used, seams shall be one of the forms shown by Figure 5.1, observing the diameter limits as noted.

6.2 A head of a tank may be flat, dished, or conical.

6.3 A head of a tank shall be attached to the shell by one of the joints shown by Figure 6.1.

6.4 An unflanged flathead of a tank shall be braced in accordance with Figure 6.2, No. 1 or 2, and the head and shell shall be made of not less than No. 7 gage (see Table 4.1) material.

FIGURE 6.1
HEADS AND HEAD JOINTS FOR ALL DIAMETER TANKS

B - Overlap - 1/2 inch (12.7 mm) minimum.
C - Continuous welds.
CF - Shall be continuous full fillet welds.
F - Not less than five times head thickness - minimum 1/2 inch (12.7 mm).
J - Joint No. 21 - Minimum Gage No. 7, (0.179 inch) (4.55 mm) nominal.

K - Joint No. 22 - Heads require bracing. (see No. 1 and 2 of Figure 6.2). Minimum Gage No. 7, (0.179 inch) (4.55 mm) nominal.

T - Tack weld 1 inch (25 mm) spots, not over 12 inches (305 mm) apart.

Head may be flat, dished, or cone.
Height of cone heads - not less than one-twelfth diameter.
Height of dished heads shall conform to Table 6.1.
FIGURE 6.2
BRACING FOR UNFLANGED FLAT HEADS AND
BULKHEADS

C—Weld.
S—From center, approximately \( \frac{3}{4} \) of
diameter.
U—Weld three sides
each foot.
V—Bracing.
W—Minimum length
of foot.

T—Tack welds, not
over 12 inches (305 mm)
apart.
V—Bracing.
X—Not over 2 inches (51 mm)
from shell.

TABLE 6.1
DISHED HEADS — MINIMUM HEIGHT

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Minimum Dish</th>
<th>Diameter</th>
<th>Minimum Dish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>mm</td>
<td>Inches</td>
<td>mm</td>
</tr>
<tr>
<td>Up to 60</td>
<td>Up to 1.52</td>
<td>1-1/2</td>
<td>38</td>
</tr>
<tr>
<td>61—72</td>
<td>1.55—1.83</td>
<td>2</td>
<td>51</td>
</tr>
<tr>
<td>73—84</td>
<td>1.85—2.13</td>
<td>2-1/2</td>
<td>64</td>
</tr>
<tr>
<td>85—96</td>
<td>2.16—2.44</td>
<td>3-1/2</td>
<td>88</td>
</tr>
</tbody>
</table>
NOTE – The use of standard S.I. (metric) sizes and weights of angles, channels, and I-beams as substitutes for the U.S.A. structural units specified in Tables 6.2, 6.3, and 6.4 shall be based on those sizes and weights having an equal or greater section modulus (S).

### Table 6.2

**Strut Bracing for Unflanged Flat Heads and Bulkheads**

<table>
<thead>
<tr>
<th>Diameter Head</th>
<th>Channels</th>
<th>Angles</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>m</td>
<td>Section Modulus(s) In.³</td>
<td>Size, Inches</td>
</tr>
<tr>
<td>Up to - 60</td>
<td>0.15</td>
<td>0.048b</td>
<td>1 by 3/8 by 1/8</td>
</tr>
<tr>
<td>61-72</td>
<td>1.56-1.83</td>
<td>0.048b</td>
<td>1 by 3/8 by 1/8</td>
</tr>
<tr>
<td>73-84</td>
<td>1.88-2.13</td>
<td>0.063b</td>
<td>1 by 1/2 by 1/8</td>
</tr>
<tr>
<td>85-96</td>
<td>2.16-2.44</td>
<td>0.063b</td>
<td>1 by 1/2 by 1/8</td>
</tr>
<tr>
<td>97-108</td>
<td>2.46-2.74</td>
<td>0.147b</td>
<td>1-1/2 by 3/4 by 1/8</td>
</tr>
<tr>
<td>109-120</td>
<td>2.77-3.05</td>
<td>1.1b</td>
<td>3 inches - 4.1 pounds</td>
</tr>
<tr>
<td>121-132</td>
<td>3.07-3.35</td>
<td>1.1b</td>
<td>3 inches - 4.1 pounds</td>
</tr>
<tr>
<td>133-144</td>
<td>3.38-3.66</td>
<td>1.1b</td>
<td>3 inches - 4.1 pounds</td>
</tr>
</tbody>
</table>

*See Figure 6.2, No. 1.*

*Flange of channel welded to head or bulkhead and shell.*

### Table 6.3

**Surface Bracing for Unflanged Flat Heads and Bulkheads**

<table>
<thead>
<tr>
<th>Diameter Head</th>
<th>Channels</th>
<th>Angles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>m</td>
<td>Section Modulus(s) In.³</td>
</tr>
<tr>
<td>Up to - 60</td>
<td>0.15</td>
<td>1.1b</td>
</tr>
<tr>
<td>61-72</td>
<td>1.55-1.83</td>
<td>1.1b</td>
</tr>
<tr>
<td>73-84</td>
<td>1.85-2.13</td>
<td>1.9b</td>
</tr>
<tr>
<td>85-96</td>
<td>2.16-2.44</td>
<td>3.0b</td>
</tr>
<tr>
<td>97-108</td>
<td>2.46-2.74</td>
<td>3.0b</td>
</tr>
<tr>
<td>109-120</td>
<td>2.77-3.05</td>
<td>4.3b</td>
</tr>
<tr>
<td>121-132</td>
<td>3.07-3.35</td>
<td>6.0b</td>
</tr>
<tr>
<td>133-144</td>
<td>3.38-3.66</td>
<td>6.0b</td>
</tr>
</tbody>
</table>

*See Figure 6.2, No. 2.*

*Short leg of angle or flange of channel welded to head or bulkhead.*
<table>
<thead>
<tr>
<th>Diameter</th>
<th>Head</th>
<th>I-Beams</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Size</td>
<td>Section Modulus(s)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inches</td>
<td>in.³</td>
</tr>
<tr>
<td>72-84</td>
<td></td>
<td>3</td>
<td>1.7⁶</td>
</tr>
<tr>
<td>85-96</td>
<td></td>
<td>3</td>
<td>1.7⁶</td>
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<tr>
<td>97-108</td>
<td></td>
<td>4</td>
<td>3.0⁶</td>
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<td>109-120</td>
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<td>4.8⁶</td>
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<tr>
<td>121-132</td>
<td></td>
<td>5</td>
<td>4.8⁶</td>
</tr>
<tr>
<td>133-144</td>
<td></td>
<td>5</td>
<td>4.8⁶</td>
</tr>
</tbody>
</table>

a See Figure 6.2, No. 3.
b Flange of I-beam or channel welded to bulkhead.

6.5 A flanged flathead of a tank is not required to be braced.

6.6 A conical head of a tank shall have a height of not less than one-twelfth the diameter of the tank.

6.7 A dished head shall have a dish height of not less than that specified in Table 6.1.

7.3 A bulkhead of a double bulkhead tank, shown by No. 100, Figure 7.1, shall be fabricated of not more than two pieces for diameters of 48 inches (1.22 m) or less; three pieces for diameters of from 49 to 96 inches (1.24 to 2.44 m); and four pieces for diameters of from 97 to 144 inches (2.46 to 3.66 m). When two or more pieces are used, seams shall be one of the forms shown by Figure 5.1, observing the diameter limits as noted.

7.4 The thickness of metal employed for a bulkhead depends upon its diameter and shall be not less than that specified in Table 3.1.

7.5 An unflanged flat bulkhead of a compartment tank shall be braced in accordance with Figure 6.2, No. 1 or 2, and shall be made of not less than No. 7 gage (see Table 4.1) material.

7.6 A flanged flat bulkhead of a compartment tank more than 72 inches (1.83 m) in diameter shall be made of not less than 5/16-inch (see Table 4.1) thick material or it shall be braced in accordance with Figure 6.2, No. 3.

7.7 A flanged flat bulkhead 72 inches (1.83 m) or less in diameter does not require bracing.
A - Bracing as per Table 6.4 if diameter exceeds 72 inches (1.8 m)
B - 1/2 inch (12.7 mm)
C - 3/4 inch (19.1 mm)
D - 1-1/4 inch (31.8 mm)
E - Bracing as per Table 6.2 or 6.3
8. Pipe Connections

8.1 Pipe connections shall be supplied by welding to the tank, standard threaded pipe couplings, substantial threaded flanges, standard half pipe nipples, or by bolted and gasketed flanged connections welded to pipe nipples which, in turn, are welded to the tank.

8.2 Conventional types of pipe connections are illustrated by Figure 8.1.

8.3 Pipe-connecting fittings shall be of steel of a good welding quality. The minimum length of thread shall conform to the values specified by Table 8.1.

8.4 Pressed-steel pipe-connecting fittings shall be installed with the hub section on the inside of the tank only and of the form shown by No. 62, Figure 8.1. The thickness of the flange section shall be as specified in Table 8.1 with tolerances as permitted by Table 4.1.

![Figure 8.1: Pipe Connections](image-url)

No. 60 - Half pipe coupling.
No. 61 - Half pipe coupling.
No. 62 - Pressed steel, hub inside tank only.
No. 63 - Forged steel, hub inside tank.
No. 64 - Full pipe coupling.
No. 65 - Forged steel, with pilot.
No. 66 - Forged steel, without pilot.
No. 67 - Standard pipe nipple and welding flange.

All welds shall be full fillet welds.
TABLE 8.1
PIPE CONNECTIONS

<table>
<thead>
<tr>
<th>Pipe Size Nominal</th>
<th>Minimum Length of Thread</th>
<th>Thickness of Flange Section of Pressed-Steel Fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>Inches</td>
<td>mm</td>
</tr>
<tr>
<td>1/8</td>
<td>1/4</td>
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<td>9.5</td>
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<tr>
<td>3/8</td>
<td>3/8</td>
<td>9.5</td>
</tr>
<tr>
<td>1/2</td>
<td>1/2</td>
<td>12.7</td>
</tr>
<tr>
<td>3/4</td>
<td>5/8</td>
<td>15.9</td>
</tr>
<tr>
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<td>5/8</td>
<td>15.9</td>
</tr>
<tr>
<td>1-1/4</td>
<td>11/16</td>
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<td>25.4</td>
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<tr>
<td>4</td>
<td>1-1/8</td>
<td>28.6</td>
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<tr>
<td>5</td>
<td>1-3/16</td>
<td>30.2</td>
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<tr>
<td>6</td>
<td>1-1/4</td>
<td>31.7</td>
</tr>
<tr>
<td>8</td>
<td>1-3/8</td>
<td>34.9</td>
</tr>
</tbody>
</table>

a American Standard, ANSI B36.10.

8.5 Half pipe nipples shall be welded to the tank as shown by No. 67, Figure 8.1.

8.6 Except as indicated in paragraphs 8.7 and 8.8, all openings in a tank shall be located in the top, parallel with the longitudinal axis of the tank.

8.7 If the application of a tank is such that pipe-connecting openings in the top are required to be grouped, the openings may be located off center of the longitudinal axis under the conditions specified in paragraph 8.8.

8.8 No opening in the shell of a tank shall be located more than 12 inches (305 mm) from the longitudinal center line of the top, and the upper end of the pipe coupling or other pipe-connecting fitting welded to the tank shall terminate above the top of the shell.

8.9 All openings in a tank shall be closed with wooden plugs, metal covers, or their equivalent, to protect the threads and exclude foreign matter while in storage or in transit.

8.10 Each tank shall have a pipe connection of a size not less than that specified in Table 8.2 for attachment of a vent pipe.

8.11 An opening for connection of a vent pipe shall not be located in a manhole cover.

TABLE 8.2
SIZE OF VENT-PIPE FITTING

<table>
<thead>
<tr>
<th>Capacity of Tank, U.S. Gallons</th>
<th>dm³</th>
<th>Pipe Size Nominal Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 500</td>
<td>Up to 1,895</td>
<td>1-1/4</td>
</tr>
<tr>
<td>501 to 3,000</td>
<td>1,895 to 11,395</td>
<td>1-1/2</td>
</tr>
<tr>
<td>3,001 to 10,000</td>
<td>11,395 to 37,855</td>
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</tr>
<tr>
<td>10,001 to 20,000</td>
<td>37,855 to 75,710</td>
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</tr>
<tr>
<td>20,001 to 35,000</td>
<td>75,715 to 132,490</td>
<td>3</td>
</tr>
<tr>
<td>35,001 to 50,000</td>
<td>132,495 to 198,270</td>
<td>4</td>
</tr>
</tbody>
</table>

a American Standard, ANSI B36.10.
9. Manholes

9.1 A manhole, if provided in a tank, shall be located above the highest normal liquid level and shall be of the bolted-cover type as shown by Figure 9.1.

9.2 A manhole-cover joint shall be provided with a gasket of material determined to be suitable for the liquid to be stored and shall have a thickness of not less than 1/8 inch (3.2 mm).

FIGURE 9.1
CONVENTIONAL MANHOLES

CF - Continuous full fillet weld.

P - Gasket material, 1/8 inch (3.2 mm) thick minimum — ring or face gasket.

Q - Minimum, 1/2 inch (12.7 mm) bolts spaced 4 inch (102 mm) centers maximum.

R - Minimum, 2 inches (51 mm) for tanks 6 feet (1.8 m) in diameter or larger.

t - Not less than No. 7 gage (0.179 inch) (4.55 mm) nominal.
10. Heating Coils and Hot Wells

10.1 A heating coil or hot well, if provided as a part of a tank assembly and if handling a fluid other than that stored in the tank, such as steam or hot water, shall have no joints in that portion located within the tank unless such joints are continuously welded or brazed.

10.2 Inlet and outlet connections of a heating coil or a hot well shall be located above the highest normal liquid level. A continuous weld shall be made where a connection pierces the shell of the tank or a manhole cover.

MANUFACTURING AND PRODUCTION TESTS

11. General

11.1 Each tank, before painting, shall be tested by the manufacturer and proved tight against leakage in accordance with one of the following methods:

A. By applying internal air pressure and using soapsuds, linseed oil, or equivalent material for the detection of leaks. The test pressure is to be not less than 5 nor more than 7 pounds per square inch gauge (psig) (34.5–48.3 kPa).

B. By completely filling the tank with water and applying an additional 5 psig (34.5 kPa) pressure. When using this method, the tank is to be placed in the position in which it will be installed.

11.2 If leaks are noted during the test, the tank shall be made tight by welding and retested. Defects in welds shall be repaired by chipping or melting out from one or both sides of the joint, as required, and rewelding.

11.3 Each compartment of compartment tanks shall be separately tested for leakage.

MARKING

12. General

12.1 Each tank shall be marked with the name of the manufacturer or a distinctive marking, which may be in code, by which it may be identified as the product of a particular manufacturer.

12.2 If a manufacturer produces tanks at more than one factory, each tank shall have a distinctive marking to identify it as the product of a particular factory.
## APPENDIX A

### TABLE I
**GALLON CAPACITY PER FOOT OF LENGTH**

<table>
<thead>
<tr>
<th>Diameter in Inches</th>
<th>U.S. Gallons 1-Foot Length</th>
<th>U.S. Gallons 1-Foot Length</th>
<th>U.S. Gallons 1-Foot Length</th>
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