CHAPTER 114
SANITARY LANDFILLS: CONSTRUCTION AND DEMOLITION WASTES

[Prior to 12/11/02, see 567—Chs 102, 103, 110]

567—114.1(455B) Scope and applicability. This chapter details the plan and operating requirements for all sanitary landfills accepting only construction and demolition wastes. All sanitary landfills accepting only construction and demolition wastes must conform with the provisions of these rules. This chapter also pertains to the hydrologic monitoring system standards for these solid waste disposal facilities.

567—114.2(455B) Permit required. No public or private agency shall construct or operate a sanitary disposal project without first obtaining a permit from the director.

567—114.3(455B) Types of permits. There are four types of permits issued by the director.

114.3(1) *Sanitary disposal project permit.* This permit is issued by the director under the authority of Iowa Code section 455B.305 for sanitary disposal projects which comply with the requirements described in 567—Chapters 102 to 106, 109 to 116, and 118 to 122. Such permits are issued for a term of three years and are renewable for similar terms.

a. Applications for renewal shall be received at the department office at least 90 days before the expiration date of the existing permit. For application forms, see 567—100.3(17A,455B).

b. The department shall conduct an inspection of the sanitary disposal project following receipt of the application for renewal. Following the inspection, the permit holder shall be notified of all measures needed to bring the sanitary disposal project into conformance with Iowa Code chapter 455B and these rules.

c. A permit shall be renewed when a properly completed application has been received and all corrective measures identified in 114.3(1)*"b"* have been completed.

114.3(2) *Temporary permit.* This permit is issued by the director under the authority of Iowa Code subsection 455B.307(1) for solid waste disposal sites which do not comply with the requirements of Iowa Code chapter 455B and these rules. Such permits are issued for a term of one year and are renewable. Temporary permits may be renewed if the director finds that the public interest will be best served by granting a renewal and the applicant has complied with the terms of the previous temporary permit.

a. Temporary permits shall incorporate as a condition a compliance schedule that specifies how and when the applicant will meet the requirements of Iowa Code chapter 455B and these rules.

b. The decision of the director whether to issue a temporary permit, which is discretionary, shall be a final decision. Once a temporary permit has been issued, it may be suspended or revoked only as provided in Iowa Code section 455B.305 and 567—Chapter 7.

114.3(3) *Developmental permit.* The director may issue a developmental permit for construction and operation of a sanitary disposal project which is not specifically described in these rules if the permit applicant demonstrates at a public hearing that the proposed project can provide satisfactory disposal of solid waste without adverse health-related or environmental effects.

a. No such permit shall be issued until the director, after public hearing, considers and approves the proposed project.

b. A developmental permit shall be issued for a term of no less than one year and no more than three years.

c. A developmental permit may be renewed if the director finds, following public hearing, that the sanitary disposal project provided satisfactory disposal of solid waste without adverse health-related or environmental effects over the term of the prior permit.

114.3(4) *Closure permit.* This permit is issued by the director under the authority of Iowa Code section 455B.305 for sanitary disposal projects which no longer accept solid waste. Such permits are issued for a term of 30 years. If the postclosure period is extended, the term of subsequent renewal of the permit will be determined on a site-specific basis. A sanitary disposal project shall require a closure permit until the department determines that postclosure maintenance, postclosure monitoring, and operation of the required leachate control system are no longer necessary.

a. Application shall be filed at the time of department notification of intended closure as required by this rule.

b. The application for issuance of this permit shall be based on a previously approved comprehensive plan and other rules adopted pursuant to the authority of Iowa Code section 455B.306.

c. This permit shall require submission of an annual audit report detailing the status of the financial instrument and other funds as required to guarantee completion of postclosure and monitoring requirements.

d. This permit may be modified by the issuance of an amendment by the department. Requests for permit amendments may be initiated by the department or by the permit holder.

e. At the end of the applicable postclosure period, and upon satisfactory completion of all required postclosure activities as established by Iowa Code chapter 455B, written notification shall be issued by the director stating that a permit is no longer required for the facility.

567—114.4(455B) Applications for permits.

114.4(1) *Application requirements for permits and renewals.* See 567—100.3(17A,455B).

114.4(2) *Time limit on submittal of information.*

a. Sanitary disposal project permit applications. If an application for a sanitary disposal project permit is found by the department to be incomplete, the applicant will be notified of that fact and of the specific deficiencies. Thirty days following such notification, the application may be returned by the department as incomplete without prejudice to the applicant's right to reapply. The applicant may be granted, upon request, an additional 30 days to complete the application.

b. Application for renewal or amendment of a sanitary disposal project. If an application for a sanitary disposal project permit renewal or amendment is found by the department to be incomplete, the applicant will be notified of that fact and of the specific deficiencies. Thirty days following such notification, the application may be denied by the department.

567—114.5(455B) Preparation of plans. All plans and specifications submitted in the application for a sanitary disposal project permit or a developmental permit shall be prepared in conformance with Iowa Code chapter 542B and shall be submitted in triplicate.

567—114.6(455B) Construction and operation. All sanitary disposal projects shall be constructed and operated according to the plans and specifications as approved by the department and the terms of the permit. The approved plans and specifications shall constitute a term of the permit.

567—114.7(455B) Compliance with rule changes.

114.7(1) *Design and construction.* Sanitary disposal projects designed and constructed in accordance with rules in effect at the time of construction shall not be required to be redesigned or reconstructed due to subsequent rule changes unless the department finds that such facilities are causing pollution. Such facilities shall be brought into compliance with rules in effect at the time of reconstructing, enlarging, or otherwise modifying the sanitary disposal project, or at the time of permit renewal.

114.7(2) *Operation.* If any new rule conflicts with an operating procedure prescribed in the engineering plans or the permit of a sanitary disposal project, the operation shall conform with the new rule.

567—114.8(455B) Amendments. Sanitary disposal project permits, temporary permits, and developmental permits may be modified by the issuance of an amendment by the department, except as provided in 114.7(1).

567—114.9(455B) Transfer of title and permit. If title to an operational sanitary disposal project is transferred, and the transferee desires to continue operation of the project, the transferee shall apply in writing to the department within 30 days of the transfer for a transfer of the permit.

114.9(1) The department shall transfer the permit when it determines that the sanitary disposal project is in compliance with Iowa Code chapter 455B and these rules and the terms of the permit, and that the transferee possesses the equipment and personnel to operate the project in conformance with Iowa Code chapter 455B and these rules and the terms of the permit.

114.9(2) No permit shall be valid after 60 days following transfer of title, unless the permit has been transferred by the department to the new titleholder pursuant to this rule.

567—114.10(455B) Permit conditions. Any permit may be issued subject to conditions specified in writing which are necessary to ensure that the sanitary disposal project can be constructed and operated in compliance with these rules.

567—114.11(455B) Effect of revocation. If a permit for a sanitary disposal project held by any public or private agency is revoked by the director, no new permit shall be issued to that agency for that disposal project for a period of one year from the date of revocation. Such revocation shall not prohibit the issuance of a permit for the disposal project to another public or private agency.

567—114.12(455B) Inspection prior to start-up. The department shall be notified when the initial construction of a sanitary disposal project has been completed in order that an inspection may be made to determine that the project is constructed as designed. No solid waste shall be accepted by a sanitary disposal project until that project has been inspected and approved by the department.

567—114.13(455B) Primary plan requirements for all sanitary disposal projects. Every application for any permit issued by the department shall include the following. In addition, every application shall include the particular information required by the chapter describing the type of project to be constructed.

114.13(1) The name, address and telephone number of:

a. Owner of site where project will be located.

b. Permit applicant.

c. Official responsible for operation of project.

d. Design engineer.

e. Agency to be served by the project, if any.

f. Responsible official of agency served, if any.

114.13(2) A legal description of the site.

114.13(3) A map or aerial photograph locating the boundaries of the site and identifying:

a. North or other principal compass points.

b. Zoning and land use within one-half mile.

c. Haul routes to and from the site with load limits or other restrictions.

d. Homes and buildings within one-half mile.

e. Section lines or other legal boundaries.

f. Any nearby runway used or planned to be used by turbojet or piston-type aircraft at FAA-certified airports.

114.13(4) Type, source, and expected volume or weight of waste to be handled per day, week or year.

114.13(5) An organizational chart.

114.13(6) A detailed description of the disposal process to be used.

114.13(7) A table listing the equipment to be used, its design capacities and expected loads.

114.13(8) A contingency plan detailing specific procedures to be followed in case of equipment breakdown, maintenance downtime, or fire in equipment or vehicles, including methods to be used to remove or dispose of accumulated waste.

114.13(9) Proof of the applicant's ownership of the site or legal entitlement to use the site for the disposal of solid waste for the term of the permit for which application is made.

114.13(10) Closure/postclosure plan.

a. A closure/postclosure plan shall be submitted which:

(1) Details how and when the facility will be closed in accordance with applicable requirements of this chapter.

(2) Describes the proposed groundwater monitoring plan, leachate control system, and site inspection and maintenance activities necessary to comply with this chapter.

(3) States the name, address and telephone number of the person or office to serve as a contact with regard to the facility during the postclosure period.

b. The closure/postclosure plan shall be submitted at the time of the first permit renewal after January 15, 2003, but not less than 180 days prior to closure.

114.13(11) Such other information as may be required by the director.

567—114.14(455B) Hydrologic monitoring system planning requirements.

114.14(1) All plans, specifications and other documentation required herein must be developed by an engineer registered in Iowa.

114.14(2) All sanitary disposal projects shall conduct a soil and hydrogeologic investigation which conforms to the requirements of this chapter. The purpose of soil and hydrogeologic investigation is to obtain data to determine potential routes of contaminant migration from a site via groundwater. The rules that follow set forth minimum requirements for such investigations. Additional work and use of other methods (e.g., geophysical techniques) are encouraged.

567—114.15(455B) Soil investigation.

114.15(1) *Soil borings.*

a. *Number of borings.* A sufficient number of soil borings shall be made to accurately identify the hydrogeologic variations of the site. For new sites, the minimum number of borings required is 10 for sites of less than 10 acres, 20 for sites of 10 to 50 acres, and 20 plus an additional boring for every 10 acres above 50 acres for sites larger than 50 acres. Fewer borings may be needed for existing sites, depending on previous work done at the site. Also, no borings will be required in existing fill areas. The department may require additional borings based on the geological complexity of the site.

b. *Depth of borings.* All borings must extend a minimum of 25 feet deep and at least 10 feet deep below the water table. However, borings in proposed fill areas shall be terminated 10 feet above the uppermost aquifer or be grouted to provide such separation. At least half the borings located outside the existing or proposed fill area shall extend 10 feet into the uppermost aquifer, 50 feet below the water table, or 10 feet into bedrock. At least one boring shall extend 10 feet into bedrock or 100 feet below the lowest ground surface elevation.

c. *Boring method.* Borings shall comply with the applicable portions of rule 114.23(455B). The preferred boring method is hollow stem auger, although it may be necessary to use other methods at greater depths and in bedrock. When wet drilling methods are used for boring in which monitoring wells or piezometers are installed, the drilling fluid and methods and development procedures shall be approved by and documented with the department.

d. *Assurance that soil boring samples have been taken at the site.* The soil boring samples must be kept by the permit applicant until the permit is issued and must be made available to the department if the department requests them.

114.15(2) *Soil samples.* Samples shall be collected at 5-foot intervals and at every change in stratum. These samples shall be obtained using a split spoon sampler and the procedures of the standard penetration test, conducted in accordance with American Society of Testing and Materials (ASTM) Standard D1586. This test simply counts the blows of a 140-pound hammer falling 30 inches on the sampler per foot penetration of the sampler. A minimum of one undisturbed Shelby tube sample shall be obtained in the uppermost cohesive stratum at or below the lowest depth at which solid waste will be disposed of. Shelby tube sampling shall be in accordance with ASTM Standard D1587. Samples shall be clearly marked, preserved, and maintained for future inspection. Samples selected for laboratory analysis shall be preserved and transported to the laboratory in accordance with ASTM Standard D422.

114.15(3) *Laboratory test of discrete soil samples.* Laboratory tests of discrete soil samples shall be conducted to correlate strata between soil borings, obtain permeability data on each stratum, and design monitoring wells.

a. *Permeability tests.* Permeability tests using a constant-head or falling-head permeameter shall be run on a minimum of one sample from each Shelby tube sample. Each sample shall be from a different soil boring representing a different area of the site.

b. *Grain size distribution.* Grain size distribution tests shall be conducted on a minimum of one sample from each distinct stratum. Analysis shall be conducted in accordance with ASTM Standards D422 and D1140. Estimates of permeability shall be developed for each sample tested based on grain size distribution and standard penetration blow counts.

567—114.16(455B) Hydrogeologic investigation.

114.16(1) *Groundwater level measurements.* The elevation of the water table shall be determined at or near the location of each soil boring which penetrates the water table. The water table may be determined using a completed water table monitoring well, or piezometer. The bottom of a piezometer used to measure water table elevation shall be no more than 5 feet below the water table.

The apparent horizontal groundwater flow direction should be determined based on water table measurements. Vertical groundwater flow shall then be assessed in at least two profiles approximately parallel to the apparent horizontal flow direction. Vertical groundwater flow shall be assessed using at least two well clusters per profile. Each well cluster shall contain a water table monitoring well or piezometer and additional water level monitoring points based on site conditions as follows:

a. If the water table is in the uppermost aquifer, one additional water level monitoring point shall be located near the base of the aquifer or at least 20 feet below the base of the water table monitoring point. This additional monitoring point may not be required if the aquifer is less than 20 feet thick.

b. If the uppermost aquifer is less than 50 feet below the water table, an additional water level monitoring point shall be located at the top of the aquifer.

c. If the uppermost aquifer is more than 50 feet below the water table, additional water level monitoring points shall be placed at depths of 30 feet and 50 feet below the water table.

d. If required, the one deeper soil boring into bedrock shall be used as a site for one well cluster. Water table monitoring points in this cluster shall correspond to the other well cluster used for a profile. In addition, water level monitoring points shall be placed at the bottom of the boring and, if possible, at the top and bottom of the uppermost aquifer. Groundwater level measurements shall be made after the water levels have stabilized in the monitoring point, at least 24 hours after completion and bailing of the monitoring well, or installation of the piezometer. The water level in existing wells shall be observed and recorded prior to bailing. Each set of water level measurements shall be made in as short a time frame as possible not to exceed 8 hours.

114.16(2) *In-situ permeability tests.* In-situ permeability tests shall be conducted on each monitoring well and piezometer in each well cluster.

a. *Pumping test.* If more than one monitoring point is located in the uppermost aquifer, a pumping test shall be conducted at one or more upper aquifer monitoring points. A pumping test involves pumping at a constant rate from one well while observing water levels in other wells. The pumping rate shall be as high as possible without dewatering the well. Water level measurements in other uppermost aquifer wells shall be measured at frequent intervals near the start of the test and then at progressively longer intervals (e.g., 1-minute intervals to 10 minutes, 5-minute intervals to an hour, 15-minute intervals to 2 hours, and half-hour intervals thereafter). Continuous water level recording is preferable.

Water levels in wells not located in the uppermost aquifer shall be recorded throughout the test at regular intervals (e.g., every half hour). Water levels in all wells shall be measured 24 hours prior to the test and just before the test. The test duration shall be at least 4 hours and continue until a stabilized drawdown condition is observed. Longer tests may be necessary if other uppermost aquifer monitoring points are slow to respond. Water level readings shall be recorded through the recovery phase of the water table.

b. *Bail and slug tests.* Monitoring wells and piezometers located in materials with low permeabilities shall be tested using bail or slug tests. These tests involve rapidly removing or adding a known volume of water to a well and then recording water levels in the well as the well recovers to its original level. Typically, the necessary frequency of measurements will be similar to that required of pumping tests. In materials of very low permeability, less frequent measurements are necessary. In materials of higher permeability, more frequent measurements may be necessary.

567—114.17(455B) Hydrologic monitoring system planning report requirements. The hydrologic monitoring system planning report shall contain a description of field investigations and presentation of results including a description of the field and laboratory testing methods; a presentation of the test results and field measurements; documentation of a reasonable effort to inventory all active, unused, and abandoned wells within one mile of the facility; and the identification of all public water supply wells and wells with water withdrawal permits pursuant to 567—Chapters 50 to 52 within three miles of the facility. Well logs, other available information on well construction, static water levels, and usage shall be obtained. The well inventory shall be based on thorough reviews of state and local collections of well logs and, when possible, interviews or surveys of well owners. Also to be included are maps showing the location of soil borings, other field tests/measurements, and existing wells.

567—114.18(455B) Evaluation of hydrogeologic conditions.

114.18(1) Based on soil boring and other available information, a description of the site geology shall be made. This description shall include preparation of geologic cross sections of sufficient number and spacing (no fewer than four at every site) to adequately define all areas of the site and of sufficient detail to adequately depict major stratigraphic and structural trends and reflect geologic structural features in relation to groundwater flow. Each pair of cross sections must be as near to perpendicular as possible to adequately portray the site geology.

114.18(2) A description of the hydrogeologic unit(s) within the saturated zone shall be made including thickness; depth; hydraulic properties, such as transmissivity and storage coefficient or specific yield; description of the role of each as confining bed, aquifer, or perched saturated zone and its actual or potential use as a water supply aquifer.

114.18(3) All groundwater flow paths from the site shall be identified, including both horizontal and vertical components of flow. A contour map of the water table shall be presented showing horizontal flow paths. A potentiometric surface map of the uppermost aquifer showing horizontal flow paths shall also be presented, if different from the water table. Vertical flow paths shall be shown in at least two profiles approximately parallel to the direction of horizontal flow. Vertical flow paths shall be determined by water level measurements from clustered wells at different depths, if possible. An evaluation of vertical groundwater flow based on the hydrologic properties of the various strata encountered at the site, estimated groundwater flow and recharge rates, and known information on hydraulic head shall also be made.

114.18(4) The seasonal, temporal and artificially induced variations in groundwater flow shall be evaluated. Temporal variations occur due to natural events, such as rainfall. The addition of tile lines, removal of overburden, or deposition of wastes would constitute artificially induced variations.

114.18(5) Surface water flow paths from the site shall be identified on topographic contour maps.

567—114.19(455B) Monitoring system plan. A hydrologic monitoring system shall be designed to intercept the groundwater and surface water flow paths from the site. The plan shall include proposed locations and depths for monitoring wells in accordance with monitoring well siting criteria in rule 114.22(455B). Monitoring wells shall be designed in accordance with rule 114.23(455B). The surface water monitoring plan shall include monitoring points on all standing and flowing bodies of water which will receive surface runoff or groundwater discharge from the site. For streams, sampling points upstream and downstream of areas of potential impact from the site shall be selected.

567—114.20(455B) Sampling protocol. At a minimum, the sampling protocol must include the following:

1. Order in which monitoring points are to be sampled, all tests and procedures needed at each monitoring point and the order in which these procedures will be carried out, equipment and containers to be used, procedures and precautions for their use; precautions to avoid introducing contaminants from outside sources into monitoring wells or samples; and how equipment must be cleaned between uses;
2. Procedures for evacuating each monitoring well prior to each water quality sampling;
3. Procedures for handling field blanks and other quality assurance samples at the facility and in transit to and from the laboratory;
4. Procedures for field filtration of samples, if required;
5. Procedures for sample preservation;
6. Procedures for sample collection, labeling and handling at the facility and during transport to the laboratory;
7. Procedures for recording field observations and measurements;
8. Procedures for records maintenance and data analysis; and
9. Procedures for sampling surface water monitoring points including exact sampling locations and depths.

567—114.21(455B) Monitoring well maintenance and performance reevaluation plan.

114.21(1) A monitoring well maintenance and performance reevaluation plan shall be included as part of the hydrologic monitoring system plan. The plan shall ensure that all monitoring points remain reliable.

114.21(2) The plan shall provide for the following:

a. A biennial examination of high and low water levels accompanied by a discussion of the acceptability of well location (vertically and horizontally) and exposure of the screened interval to the atmosphere.

b. A biennial evaluation of water level conditions in the monitoring wells to ensure that the effects of waste disposal or well operation have not resulted in changes in the hydrologic setting and resultant flow paths.

c. Annual measurement of well depths to ensure that wells are physically intact and not filling with sediment.

d. Every five years conduct in-situ permeability tests on monitoring wells to compare test data with those collected originally to determine if well deterioration is occurring.

567—114.22(455B) Monitoring well siting requirements.

114.22(1) *Downgradient monitoring wells.* Downgradient monitoring wells must be located to provide a high level of certainty that releases of contaminants from the site can be promptly detected. Downgradient monitoring wells shall be placed along the site perimeter, within 50 feet of the planned liner or waste boundary unless site conditions dictate otherwise, downgradient of the facility with respect to the hydrologic unit being monitored. For those facilities which are long-term, multiphase operations, the department may establish temporary waste boundaries in order to define locations for monitoring wells. The convergence of groundwater paths to minimize the overall length of the downgradient dimension may be taken into consideration in the placement of downgradient monitoring wells.

114.22(2) *Water table wells.* At least three downgradient water table monitoring wells shall be installed at each facility. The maximum spacing between wells shall be 600 feet.

114.22(3) *Uppermost aquifer monitoring wells.* If different from water table monitoring wells, at least three uppermost aquifer monitoring wells shall be installed at each facility. Uppermost aquifer monitoring wells shall be spaced no more than 600 feet apart. If the uppermost aquifer is located more than 50 feet below the water table, this requirement may be relaxed, although at least one downgradient uppermost aquifer monitoring well will be required.

114.22(4) *Other downgradient monitoring wells.* Additional downgradient monitoring wells will be required if the water table and uppermost aquifer monitoring wells do not intercept most vertical flow paths from the site. In such situations, monitoring wells shall be placed at the appropriate depths to intercept the remaining flow paths and shall be spaced at no more than 600 feet apart.

114.22(5) *Upgradient monitoring wells.* Upgradient monitoring wells shall not be affected by the site. At least one upgradient monitoring well shall be installed into each stratum being monitored by downgradient monitoring wells. If it is not possible to actually locate a monitoring well upgradient of the site, the well shall be placed as near the site as feasible without being affected by the site.

114.22(6) *Monitoring point identification system.* The various types of monitoring points shall be identified as follows:

a. Monitoring Well MW# _____

b. Surface Water Monitoring Point SW# _____

c. Piezometer PZ# _____

Each monitoring point must have a unique number, regardless of the type of monitoring point, and that number must never change.

567—114.23(455B) Monitoring well/soil boring construction standards.

114.23(1) *General considerations.*

a. Contractors involved in construction of monitoring wells and piezometers and soil boring activities shall be registered with the department as required in 567—Chapter 82.

b. To the extent possible, all monitoring well construction materials must not absorb, desorb, react or otherwise alter the screened soil stratum or the quality of the groundwater being sampled. Galvanized metal, glues, welding solvents, pipe thread lubricants and other foreign substances must not be used.

c. All monitoring well construction materials must be protected from contamination prior to installation.

d. A typical cross section of a properly constructed monitoring well is shown in Figure 1 at the end of this chapter.

114.23(2) *Casings.*

a. As a minimum, the diameter of the inner casing (see Figure 1) of a monitoring well must be at least 2 inches.

b. Plastic cased wells must be constructed of materials with threaded, nonglued joints which do not allow water infiltration under natural subsurface pressure conditions or when the well is evacuated for sampling.

c. Well casings must provide structural stability to prevent casing collapse during installation as well as drill hole integrity when installed. Flush joint casing is required for small diameter wells installed through hollow stem augers.

d. Well casings must be constructed of inert materials such as polytetrafluorethylene, stainless steel or polyvinyl chloride. The department may approve other casing materials if the owner or operator can demonstrate that the material has a low potential for biasing the water quality parameters of samples. The department may approve the construction of composite well casings (casings with less inert materials in the unsaturated zone).

114.23(3) *Well screens.*

a. Slot size will be based on sieve analysis of the sand and gravel stratum or filter pack. The slot size must hold out 35 percent to 60 percent of the formation material and not less than 90 percent of the filter pack.

b. Slot configuration and open area must permit effective development of the well.

c. Screen length. Maximum screen length shall be 10 feet except for water table wells in which the screen must be of sufficient length to accommodate expected seasonal fluctuations of the water table. The screen shall be placed 5 feet above and below the observed water table, unless local conditions are known to produce greater fluctuations. Screen length for piezometers shall be 2 feet or less. Multiple screened single-cased wells are prohibited.

114.23(4) *Filter pack.*

a. To prevent other materials from coming in contact with the well screen, the filter pack shall extend 18 inches above and 12 inches below the well screen.

b. Size must be based on sieve analysis of sand and gravel stratum. The filter pack material must be 2.5 to 3 times larger than 50 percent grain size of the zone being monitored.

114.23(5) *Grouting.*

a. The annular space above the filter pack must be sealed with expanding cement or bentonite grout. The vertical dimension of this seal must be a minimum of 3 feet.

b. The annular space between the seal and to just below the frostline must be backfilled with an impervious material such as bentonite grout or expanding cement.

c. The remaining annular space must be sealed with bentonite grout to the ground surface.

d. Grouting materials must be installed from the top of the filter pack up in one continuous operation with a tremie tube.

114.23(6) *Well protection.*

a. Plastic cased wells. A protective metal casing must be installed around the well casing. The inside diameter of the protective metal casing shall be at least 2 inches larger than the outside diameter of the well casing. The protective metal casing shall extend from a minimum of 1 foot below the frostline to slightly above the well casing top. The protective casing shall be shortened or omitted if it covers part of the well screen. The protective casing shall be sealed or immobilized with a concrete plug around the outside. The bottom of the concrete plug must extend at least 1 foot below the frostline. The concrete plug shall be shortened if it covers part of the well screen. The top of the plug shall be extended approximately 3 to 6 inches above the ground surface and shall slope away from the well approximately 3 feet. Soil may be placed above the plug. The inside of the protective casing shall be sealed with a bentonite grout. A vented cap shall be placed on the well casing and a protective locking cap on the metal casing. The lockable cap must be kept locked when the well is not in use.

b. Metal cased wells. The concrete plug shall be extended from at least 1 foot below the frostline to approximately 3 to 6 inches above the ground surface and sloped away from the well approximately 3 feet. Soil may be placed on top of the concrete plug. A vented, locking cap shall be placed on the casing. The lockable cap must be kept locked when the well is not in use. See Figure 1.

c. To protect against accidental damage, a ring of brightly colored posts or other protective devices must be installed around all wells.

114.23(7) *Well drilling.*

a. The owner or operator must ensure that in all phases of drilling, well installation and completion, the methods and materials used do not introduce substances that may alter the results of water quality analyses.

b. Well drilling equipment coming into contact with contaminants in the borehole or aboveground must be thoroughly cleaned to avoid spreading contamination to other depths or locations. Contaminated materials or leachate from wells must not be discharged onto the ground surface or into ponds or streams so as to cause environmental harm in the processes of drilling or well development.

c. The owner or operator must ensure that, at a minimum, the following well design and construction log information be retained at the site and a copy of this information be sent to the department:

(1) Date/time of construction;
(2) Name and address of the driller;
(3) Drilling method and drilling fluid used;
(4) Soil sampling methods;
(5) Surveyed location (±0.5 ft.);
(6) Soil and rock classifications;
(7) Field observations;
(8) Well name/number;
(9) Borehole diameter and well casing diameter;
(10) Well depth (±0.1 ft.);
(11) Water level measurements;
(12) Drilling and lithologic logs;
(13) Casing materials, inside diameter and weight or wall thickness;
(14) Screen materials;
(15) Casing and screen joint type;
(16) Screen slot size/length;
(17) Filter pack material/size (depths from ____ to ____);
(18) Filter pack volume;
(19) Filter pack replacement method;

(20) Sealant materials (depths from ____ to ____);
(21) Sealant volume;
(22) Sealant placement method;
(23) Grouting schedule and materials;
(24) Surface seal design/construction (depths from ____ to ____);
(25) Type of protection well cap;
(26) Ground surface elevation (±0.1 ft.);
(27) Well cap elevation (±0.01 ft.);
(28) Top of casing elevation (±0.01 ft.); and
(29) Detailed drawing of well (including dimensions).

114.23(8) *Well development.* Prior to use of the monitoring well for water quality monitoring purposes, well development is required to ensure the collection of representative groundwater samples. Procedures used in well development involve using a surge block, bailing or surging by pumping of compressed inert gas to produce a movement of water at alternately high and low velocities into and out of the well screen and gravel pack in order to loosen and remove fine materials. Development of low hydraulic conductivity wells may require the circulation of water down the well casing, out through the screen and gravel pack, and up the open borehole prior to the placement of grout or seal in the annulus. Any additional water used must be of a quality so as not to interfere with future groundwater quality determinations. Following surging, the well is pumped until the water does not contain significant quantities of suspended solids.

567—114.24(455B) Sealing abandoned wells and boreholes. Boreholes, piezometers and observation wells not used for groundwater monitoring must be sealed. The location of the abandoned well or borehole shall be documented in writing with reference to the landfill's coordinate system and method of sealing. The document must be retained at the landfill with a copy sent to the department.

114.24(1) *Sealing boreholes.* The borehole shall be filled by extending a tremie tube to the bottom of the hole. Bentonite or expanding cement grout shall be applied through the tube to the bottom of the hole and the tremie tube shall be raised as the hole is filled from the bottom upward. The end of the tremie tube shall be submerged in the grout while filling. The borehole shall be filled from the base of the boring all the way to the ground surface.

114.24(2) *Sealing abandoned monitoring wells.*

a. Well is known to be constructed properly with impermeable grout that was installed from the bottom up using a tremie tube. Any existing protective metal casing shall be removed by vertically pulling it off the well. With a tremie tube, the inner well casing shall be filled with an impermeable grout slurry from the bottom to ground surface. After 24 hours, the grout shall be retopped if it has settled below the existing ground surface.

b. Well construction is improper or undocumented. An attempt should be made to remove the well casing. If the well casing cannot be removed, the well casing shall either be drilled around with a hollow stem auger of large inside diameter or shall be drilled out with a standard casing bit or solid stem auger with a boring diameter greater than the initial diameter of the hole. Drilling shall be to the maximum depth of the previously drilled boring. The drilling debris shall be cleaned from the interior of the auger or borehole. The borehole shall be sealed with an impermeable grout using a tremie tube. If the soil conditions permit the sealing to be conducted in a continuous operation, the tremie tube shall be submerged in the grout at all times. After 24 hours, the grout shall be retopped if it has settled below the ground surface.

c. Monitoring wells in future fill areas. The well shall be removed and sealed as described in the procedures for sealing boreholes in 114.24(1).

567—114.25(455B) Variance from design, construction, and operation standards. Pursuant to the authority of Iowa Code section 455B.303, a variance from the specific requirements of rules 114.14(455B) to 114.25(455B) may be issued, modified, or denied by the director. The request shall also include any supporting information to be considered by the director in the formulation of a decision.

567—114.26(455B) General requirements for all sanitary landfills.

114.26(1) *Plan requirements.* The plans for all sanitary landfills shall include the following:

a. The map and aerial photograph required in subrule 114.13(3) of sufficient scale to show all homes, buildings, lakes, ponds, watercourses, wetlands, dry runs, rock outcroppings, roads and other applicable details including topography and drainage patterns. All wells shall be identified on the map or aerial photograph and a bench mark shall be indicated.

b. A plot drawing in appropriate scale of the site and the immediately adjacent area showing dimensions, topography with appropriate contour intervals, drainage patterns, known existing drainage tiles, locations where any geologic samples were taken, all water wells with their uses, and present and planned pertinent features including but not limited to roads, fencing, and cover stockpiles.

c. Detailed engineering drawing of the site showing all initial and permanent roads, buildings and equipment to be installed; unloading and holding areas; fences and gates; landscaping and screening devices; personnel and maintenance facilities; and sewer and water lines.

d. A liner system that meets the following requirements, depending upon the type of waste material disposed of:

(1) Municipal solid waste landfills (MSWLFs) shall have a composite liner system consisting of two components. The upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil as specified in subparagraph 114.26(1)*"d"*(2). FML components consisting of high-density polyethylene (HDPE) shall be at least 60-mil thick. The FML must be installed in direct and uniform contact with the compacted soil component. The requirements for MSWLF facilities under this subparagraph were effective November 13, 1996, and apply to liner and cover systems that had not been installed by that date.

(2) Nonmunicipal solid waste landfills may utilize a liner system meeting 114.26(1)*"d"*(1) or shall have a soil liner consisting of at least four feet of recompacted soil. The description, source and volume of the material to be used for the landfill liner, including the method of installation, must be provided. The coefficient of permeability must be 1×10^{-7} cm/sec (0.00028 ft/day) or less as determined by appropriate laboratory analysis. The percent of standard or modified proctor density at moisture contents consistent with expected field conditions and corresponding to a measured coefficient of permeability equal to or less than 1×10^{-7} cm/sec shall be determined in the laboratory. The soil shall be placed in lifts not to exceed 8 inches in thickness. A minimum of one field density test shall be performed per lift per acre to verify that the density determined by the laboratory analysis as correlated to permeability has been achieved. Results of field density tests shall be submitted to the department prior to the placement of solid waste.

e. Alternative liner systems.

(1) The department may approve an alternative to the liner system specified in subparagraph 114.26(1)*"d"*(1) provided that the alternative liner system design has included certification by a professional engineer registered in Iowa stating that the proposed alternative liner system will ensure that the contaminant concentration values listed in federal regulations under 40 CFR 258, Subpart D, Table 1, will not be exceeded in the uppermost aquifer at the designated monitoring points of compliance as specified by the department.

This point of compliance shall be no more than 150 meters from the waste management boundary. This point of compliance is to be utilized for the purpose of certifying the alternative design only. All operational issues related to monitoring systems, compliance determinations, groundwater assessments, and remedial measures are governed by the appropriate relevant rules in this chapter and 567—Chapter 111. The certification shall be on a form furnished by the department which shall include space for identification of the sources of data utilized; formulas, models, tests or other methods utilized to determine contaminant concentrations at the points of compliance; and all references or guidance documents relied upon for the techniques or methods applied. A copy of all data utilized, formulas, models, tests or other methods utilized to determine contaminant concentrations at the point of compliance shall be placed in the facility's official files prior to operation of the landfill.

(2) An alternative liner system to that required in subparagraph 114.26(1)*"d"*(2) may be approved by the director if the design of the liner system is equivalent to the soil liner required in subparagraph 114.26(1)*"d"*(2) in performance, longevity and protection of the groundwater; or, based on the specific type of waste to be disposed of, the design of the liner system offers equivalent protection of the groundwater. Undisturbed soil will not be allowed for use as liner material.

f. Diversion and drainage structures designed to prevent ponding, infiltration, inundation, erosion, slope failure and washout from surface runoff due to a 25-year, 24-hour rainfall event, as shown in the department of agriculture and land stewardship publication "Climatology of Iowa Series #2-1980."

g. A leachate collection, storage and treatment and disposal system designed to protect the soils, surface water, and groundwater from leachate contamination. This system shall be designed to operate during the active life of the site and during the postclosure period required by Iowa Code section 455B.304.

(1) The design and construction of the system must be in accordance with subrule 114.26(3) and be coordinated with the planned phase development of the site and the timing of leachate generation.

(2) The potential for leachate generation shall be evaluated in determining the design for the facility.

(3) The plan must include proposed quality assurance and quality control testing to be performed during installation and operation of the system. This plan shall include procedures that will be followed during installation of the leachate collection system and during normal landfill operations to ensure the system's integrity and design standards.

h. A drawing of the scheme of development including any excavation, trenching, and fill shown progressively with time. The methods to be used to ensure compliance with the scheme and to provide vertical and horizontal controls shall be described.

i. Cross-sectional drawings showing progressively with time the original and proposed elevation of excavating, trenching, and fill.

j. Evidence that the proposed plan has been reviewed by the local soil conservation district commissioner and that the technical assistance of the soil conservation district will be utilized to facilitate compliance with wind and water soil loss limit regulations provided for in Iowa Code sections 467A.42 to 467A.51.

k. An ultimate land use proposal, including intermediate stages, with time schedules indicating the total and complete land use. Final elevations, grades, permanent drainage structures, monitoring or treatment facilities and permanent improvements of the completed landfill shall be included. Any supporting drawings to the ultimate land use proposal shall be in appropriate scale.

l. Information describing:

(1) Source, volume, and characteristics of cover material;

(2) Area of site in acres;

(3) Areas to be used for salvaging and the burning of diseased trees.

m. A report consisting of information verifying that the portion of the site to be filled is:

(1) So situated as to obviate any predictable lateral movement of significant quantities of leachate from the site to standing or flowing surface water or to shallow aquifers that are in actual use or are deemed to be of potential use as a water resource.

(2) So situated that the base of the proposed site is at least 5 feet above the high water table unless a greater separation is required to ensure that there will be no significant adverse effect on groundwater or surface waters or a lesser separation is unlikely to have a significant adverse effect on groundwater and surface waters.

(3) Outside a flood plain or shoreland, unless proper engineering and sealing of the site will render it acceptable and prior approval of the department under Title V of these rules and, when necessary, the U.S. Corps of Engineers is obtained.

(4) So situated to ensure no adverse effect on any well within 1,000 feet of the site existing at the time of application for the original permit which is being used or could be used without major renovation for human or livestock consumption or at least 1,000 feet from any such well unless hydrologic conditions are such that a greater distance is required to ensure no adverse effect on the well.

(5) So situated to ensure no adverse effect on the source of any community water system in existence at the time of application for the original permit within one mile of the site or at least one mile from the source of any community water system in existence at the time of application for the original permit unless hydrologic conditions are such that a greater distance is required to ensure no adverse effect on the water system.

(6) At least 20 feet from the adjacent property line unless there is a written agreement with the owner of the abutting property. The report shall verify that the portion to be filled is at least 50 feet from the adjacent property line. The written agreement shall be filed with the county recorder and shall become a permanent record of the property.

(7) Beyond 500 feet from any existing habitable residence unless there is written agreement with the owner of the residence and the site is screened by natural objects, plantings, fences or by other appropriate means. The residence must be in existence on the date of application for the original permit from the department. The written agreement shall be filed with the county recorder and recorded for abstract of title purposes, and a copy submitted to the department.

n. Should conditions in violation of 114.26(1)*"m"*(1), (2), (3), (4), or (5) exist, the original plan shall detail how the site is to be engineered to provide equivalent protection to the water resources. The applicant shall have the burden of showing that equivalent protection will be provided.

o. If sewage sludge is to be disposed of at the site, the characteristics of the sludge and the method of disposal shall be described. If sludge is to be utilized for land application, such utilization shall be in conformance with 567—Chapter 67.

p. The required soil and hydrogeologic design information specified in rules 114.14(455B) through 114.25(455B).

q. Such additional data and information as may be deemed necessary by the director to evaluate a proposed sanitary landfill.

r. When a new landfill or lateral expansion is located within 10,000 feet of any airport runway end used by turbojet aircraft or within 5,000 feet of any airport runway end used by only piston-type aircraft, the plan must contain a notice that the landfill's official files will include the following demonstration: that the site is designed and will be operated so that it does not pose a bird hazard to aircraft. For any new site or a lateral expansion within a five-mile radius of any airport runway end used for turbojet or piston-type aircraft, the plan must show that the Federal Aviation Administration has been notified. For existing landfills located within 10,000 feet of any airport runway end used by turbojet aircraft or within 5,000 feet of any runway end used by only piston-type aircraft, the owner or operator must prepare the demonstration required above in this paragraph and notify the director that it has been placed in the facility's official files.

s. When a new landfill or lateral expansion is located within 200 feet of a fault that has had displacement in Holocene time, the plan must contain a notice that the facility's official files will include the following demonstration: that an alternative setback distance of less than 200 feet will prevent damage to the structural integrity of the site and will be protective of human health and the environment.

t. When a new landfill or a lateral expansion is located in seismic impact zones, the plan must contain a notice that the facility's official files will include the following demonstration: that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in the lithified earth material for the site.

u. When a new facility or lateral expansion is located in an unstable area, the plan must contain a notice that the facility's official files will include the following demonstration: that engineering measures have been incorporated into the site design to ensure that the integrity of the structural components of the site will not be disrupted. The demonstration must consider the on-site or local soil conditions that may result in significant differential settling, on-site or local geologic or geomorphologic features, and on-site or local human-made features or events (both surface and subsurface). For existing facilities located in an unstable area, the owner or operator must prepare the above demonstration required in this paragraph and notify the director that it has been placed in the facility's official files.

114.26(2) *General operating requirements for all sanitary landfills.* All sanitary landfills shall be operated in conformance with this subrule. The plan submitted shall detail how the sanitary landfill will comply with these requirements.

a. Solid waste shall be unloaded at the operating area only when an operator is on duty at that area. Solid waste may be deposited in storage containers inside the site under the supervision of an attendant or operator.

b. Access to the site shall be restricted, and a gate shall be provided at the entrance to the site and shall be kept locked when an attendant or operator is not on duty.

c. A copy of the permit, engineering plans and reports shall be kept at the site at all times unless the applicant demonstrates to the department that, on the basis of the characteristics of the waste to be handled at the site and the times of operation of the site, such is unnecessary.

d. Sites not open to the public shall have a permanent sign posted at the site entrance specifying:

(1) Name of operation.

(2) The site permit number.

(3) That the site is not open to the public.

(4) The name and telephone number of the responsible official.

e. Solid waste shall not be deposited in such a manner that material or leaching therefrom may cause pollution of groundwater or surface waters.

f. Provision shall be made for an all-weather fill area which is accessible for solid waste disposal during all weather conditions under which solid waste is received and disposed of at the site. Such all-weather areas shall be operated at all times in accordance with Iowa Code chapter 455B and these rules.

g. Provisions shall be made to have cover material available for winter and wet weather operations.

h. Each site shall be graded and provided with drainage facilities to meet the requirements of 114.26(1)"*f*" to minimize flow of surface water onto and into the portion of the site being filled and to prevent soil erosion and ponding of water.

i. The finished surface of the site shall be repaired as required, covered with soil, and seeded with native grasses or other suitable vegetation immediately upon completion or promptly in the spring on areas terminated during winter conditions. If necessary, seeded slopes shall be covered with straw or similar material to prevent erosion.

j. Each sanitary landfill shall be staked as necessary and inspected annually, or as otherwise specified in the permit, by a professional engineer registered in Iowa. A brief report by the engineer indicating areas of conformance or nonconformance with the approved plans and specifications shall be submitted to the department by the permit holder within 30 days of the inspections. In specifying alternate inspection frequencies, the department shall consider the types and quantities of waste disposed of, the rate of development of the site, the degree of control over site development inherent in the design and topography of the site and the quality of prior operation.

k. If any pockets, seams or layers of sand or other highly permeable material are encountered at the sanitary landfill, the permit holder shall promptly notify the department and shall ensure that a professional engineer registered in Iowa has certified that all sands encountered were totally excavated or sealed off properly or otherwise handled as explicitly provided for in the permit before solid waste is disposed of in that area of the site.

l. The total volume of leachate collected for each month shall be recorded, and the elevation of leachate in the landfill shall be provided to the department in accordance with the schedule specified in the permit.

114.26(3) *Hydrologic monitoring system.* The owner or operator of a solid waste disposal facility shall operate and maintain a hydrologic monitoring system which includes a sufficient number of groundwater monitoring wells and surface water monitoring points to determine the impact, if any, that the sanitary disposal project is having on the adjacent water. The hydrologic monitoring systems shall enable early detection of the escape of pollutants from a sanitary landfill.

The hydrologic monitoring system shall be planned, designed and constructed in accordance with the provisions of rules 114.14(455B) through 114.25(455B) and implemented in accordance with the following schedule:

a. A hydrologic monitoring system plan shall be submitted to the department for review and approval with any application for a new permit. Installation of the approved system shall be completed prior to the deposition of solid waste into the landfill.

b. A hydrologic monitoring system plan shall be submitted with applications for permit renewal, not later than the date of renewal, with completion of installation and operation within one year of approval of the plan. Installation of the plan shall be completed within one year of the date of department approval.

c. Upon notice by the department, a hydrologic monitoring system plan may be required to be submitted within six months of such notification, with completion of installation and operation of the approved plan within one year of the date of department approval.

114.26(4) *Hydrologic monitoring system operating requirements.*

a. *Operational sampling requirements.* All sampling shall be conducted in accordance with an approved sampling protocol, components of which are described in rule 114.20(455B).

b. *Groundwater levels.* The elevation of water in each monitoring well shall be measured monthly and recorded to the nearest 0.01 foot. Level measurements must be made before a well is evacuated for sample collection.

c. *Surface water levels.* The water level or flow rate of each surface water body sampled shall be measured and recorded at the time of sample collection.

d. First-year water sampling. During the first year of operation of the hydrologic monitoring system, a sample shall be collected quarterly from each groundwater monitoring well and surface water monitoring point. The purpose of this sample is to determine baseline water quality information and enable initial estimation of water quality variability. Each sample shall be analyzed for the following parameters in addition to the parameters listed in paragraph *"e"* of this subrule and any additional parameter deemed necessary by the department:

(1) Arsenic, dissolved.
(2) Barium, dissolved.
(3) Cadmium, dissolved.
(4) Chromium, total dissolved.
(5) Lead, dissolved.
(6) Mercury, dissolved.
(7) Magnesium, dissolved.
(8) Zinc, dissolved.
(9) Copper, dissolved.
(10) Benzene.
(11) Carbon tetrachloride.
(12) 1,2-Dichloroethane.
(13) Trichloroethylene.
(14) 1,1,1-Trichloroethane.
(15) 1,1-Dichloroethylene.
(16) Paradichlorobenzene.

e. Routine semiannual water sampling. After the first year, each monitoring point must be sampled semiannually as specified in the facility's operation permit and analyzed for the following parameters:

(1) Chloride.
(2) Specific conductance (field measurement).
(3) pH (field measurement).
(4) Ammonia nitrogen.
(5) Iron, dissolved.
(6) Chemical oxygen demand.
(7) Temperature (field measurement).
(8) Any additional parameters deemed necessary by the department.

f. Routine annual water sampling. One sample per year from each monitoring point collected in a quarter specified in the facility's operation permit must be analyzed for the following parameters:

(1) Total organic halogen.
(2) Phenols.
(3) Any additional parameters deemed necessary by the department.

114.26(5) *Laboratory procedures.* The owner or operator of the solid waste facility must have the groundwater and surface water samples analyzed only by laboratories that are certified by the state of Iowa. Until the department adopts rules regarding certification of laboratories, analyses shall be conducted at a laboratory that certifies to the department that the appropriate analytical procedure is utilized.

All analyses of parameters not covered in the Safe Drinking Water Act (SDWA) must be performed according to methods specified in SW-846 or approved by the United States Environmental Protection Agency. Any analytical method used on non-SDWA parameters deviating from those specified in SW-846 or approved by EPA must be approved by the department.

All analyses must be recorded on forms which, in addition to the analytical results, show the precision of the data set, bias, and limit of detection.

114.26(6) *Analysis of sampling data.* For each parameter analyzed during the first year of operation of the hydrologic monitoring system, as listed in paragraph 114.26(4)*"d"* above, the mean and standard deviation for each upgradient monitoring well shall be determined using the first year of data. For routine semiannual monitoring parameters, as listed in paragraph 114.26(4)*"e"* above, mean and standard deviation shall be recalculated annually using all available analytical data. If the analytical results for a downgradient monitoring point do not fall within the control limits of two standard deviations above the mean parameter(s) level in a corresponding upgradient monitoring point, the owner or operator shall submit this information to the department within 30 days of receipt of the analytical results. If the analytical results from an upgradient monitoring point do not fall within two standard deviations of the mean parameter(s) level for that monitoring point, the department shall also be notified within 30 days.

114.26(7) *Additional sampling.* The department will determine if additional sampling is warranted, after receipt of information indicating a possible release as required in subrule 114.26(6) above. The department may require any additional samples to be split and analyzed to determine if the values obtained outside the control limits were the result of laboratory or sampling error. Any additional analytical results shall be submitted to the department by the owner or operator within seven days of receipt. The department will review the information and determine if additional monitoring or preparation of a groundwater quality assessment plan, in accordance with subrule 114.26(9), is necessary.

114.26(8) *Record keeping and recording.*

a. The persons conducting the sampling must record the procedures, measurements, and observations at the time of sampling. The field records must be sufficient to document whether the procedures and requirements specified in the sampling protocol have been followed. The records must also contain the names of the persons conducting the sampling, the time and date each monitoring point was sampled, and the required field measurement or test result. The owner or operator must submit copies of these field records to the department if requested.

b. The owner or operator shall keep records of analyses and the associated groundwater surface elevations for the active life and postclosure period of the facility. These records shall be kept at the site or in the administrative files of the owner or operator and shall be available for review by the department upon request in the county in which the landfill is located.

c. The owner or operator shall provide the department with copies of the quarterly monitoring analytical results by the dates specified in the facility's operation permit.

d. An annual report summarizing the effect of the facility on groundwater and surface water quality shall be submitted to the department by November 30 each year. The summary is to be prepared by an engineer registered in the state of Iowa and incorporated in the November semiannual engineer inspection report. The contents of this summary are to include the following items:

(1) Amounts and kinds of wastes accepted under Special Waste Authorizations.

(2) A narrative describing the effects of the facility on surrounding surface water and groundwater quality and any changes made or maintenance needed in the monitoring network.

(3) Graphs showing concentrations versus time for all monitoring parameters for each well for as long as records exist for that parameter. Control limits (— two standard deviations from the initial background value) must be shown in each graph.

(4) Results of activities and tests required by the well maintenance and performance reevaluation plan described in rule 114.21(455B).

114.26(9) *Groundwater quality assessment plan.*

a. If leachate migration occurs, the owner or operator, as required by the department, shall develop and submit for approval a specific plan to conduct a groundwater quality assessment study at the facility to determine the rate of migration and the extent and constituent composition of the leachate release. At a minimum, the assessment monitoring plan must contain the following elements:

(1) Discussion of the hydrogeologic conditions at the site with an identification of potential contaminant pathways.

(2) Description of the present detection monitoring system.

(3) A description of the approach the owner or operator will take to substantiate any contention that the contamination may have been falsely indicated.

(4) Description of the investigatory approach used to characterize the rate and extent of leachate migration.

(5) Discussion of the number, location and depth of wells that will be initially installed as well as a strategy for installing more wells in subsequent investigatory phases.

(6) Information on well design and construction.

(7) Description of the sampling and analytical program used to obtain and analyze groundwater monitoring data.

(8) Description of data collection and analysis procedures.

(9) Schedule for the implementation of each phase of the assessment study.

b. After the plan has been approved by the department, the owner or operator shall implement the plan according to the schedule in the plan.

c. Within 90 days after the activities prescribed in the groundwater assessment plan have been completed, the owner or operator shall submit a written groundwater quality assessment report to the department.

d. If the department determines that no waste or waste constituents from the facility have entered the groundwater, the owner or operator shall reinstate the routine monitoring program.

If the department determines that waste or waste constituents have been released from the facility and have entered the groundwater, the owner or operator shall continue to make the determinations described by the assessment plan and develop a remedial action/mitigation plan to alleviate or reduce contamination to the fullest extent possible.

114.26(10) *Postclosure monitoring requirements.*

a. At least six months prior to closing the site, the owner or operator of a sanitary landfill shall submit a plan to the department for approval detailing a 30-year postclosure monitoring program.

b. The department will review the facility's postclosure monitoring records at five-year intervals to determine if changes in the monitoring frequencies or parameters are required.

c. The commission may adopt rules on a site-specific basis identifying additional monitoring requirements for sanitary landfills for which the postclosure monitoring period is to be extended.

114.26(11) *Leachate control systems for new landfills.* Every new landfill must have a leachate collection, storage, and treatment and discharge system in place prior to accepting waste. This system shall be operated in conformance with the approved design during the active life of the site and during the postclosure period.

a. *Leachate collection system.*

(1) The leachate collection system shall be designed to allow not more than 1 foot of head above the top of the landfill liner. The collection system must include a method for measuring the leachate head in the landfill at the lowest area(s) of the collection system.

(2) The landfill liner must be graded toward the leachate collection pipe at a slope greater than 2 percent, but not to exceed 10 percent. The side slopes of the landfill liner must be less than 25 percent.

(3) A drainage layer must be placed immediately above the landfill liner. This drainage layer shall consist of a minimum of 1 foot of soil with a coefficient of permeability of 1×10^{-3} cm/sec (2.8 ft/day) or greater.

(4) Leachate collection pipe shall be placed in a trench excavated a minimum of 18 inches into the liner. The liner system beneath the trench shall meet the applicable requirements specified under 114.26(1)*"d."*

(5) Leachate collection pipe shall be surrounded by a gravel protection and drainage layer, and by either a graded filter layer or by a geotextile filter fabric.

(6) The collection pipe must be covered with a filter material to encourage flow and to prevent infiltration of fine-grained materials into the pipe. The collection pipe must be perforated or slotted, of a sufficient diameter to handle the expected flow, but not less than 4 inches in inside diameter; capable of being cleaned throughout the active life of the site and during the postclosure period; chemically resistant to the wastes and the expected leachate; and of sufficient strength to support maximum static and dynamic loads imposed by the overlying wastes, cover materials, and equipment used during the construction and operation of the site. Documentation shall be submitted which includes methods and specifications for cleaning of the pipes, chemical compatibility of the pipes, and calculations and specifications for pipe strength.

(7) The leachate collection system shall be equipped with valves to enable the flow of leachate from the facility to be shut off during periods of maintenance.

(8) The leachate collection system shall be cleaned out once every three years, or more frequently if leachate head or the volume of leachate collected indicates cleanout is necessary. A report of the methods and results of the cleanout shall be submitted at the time of permit renewal.

b. *Leachate storage system.* The leachate storage system must be:

(1) Capable of storing at least seven days' accumulation of leachate based on mathematical simulated volume using average precipitation; and

(2) Constructed of materials which are compatible with the expected leachate; and

(3) Accessible at all times of the year and under all weather conditions.

c. *Leachate treatment and disposal system.*

(1) Leachate shall be treated by such physical, chemical or biological processes as necessary to meet the pretreatment limits, if any, imposed by a treatment agreement between the landfill and a publicly owned treatment works, or by the effluent discharge limitation established by an NPDES permit issued to the landfill.

(2) Leachate recirculation systems shall be designed to minimize detrimental effects to vegetative cover, to minimize erosion and damage to the soil cover, and to promote rapid stabilization of the waste. Such systems shall not be allowed for sites which do not satisfy all of the requirements of 114.26(11).

(3) All leachate treatment systems, except as described in (2) above, shall conform to wastewater treatment design standards as established by the department.

d. *Inspection prior to start-up.* The department shall be notified when the initial construction of the leachate collection, storage, and treatment and discharge system has been completed in order that an inspection may be made to determine that the leachate control system is constructed as designed. Prior to this inspection, construction certification reports from the project engineer must be submitted discussing quality assurance and quality control testing done to ensure that all materials and equipment for the leachate control system have been placed in accordance with the approved engineering plans, reports and specifications. The results of all testing must be included, along with documentation of any failed tests, a description of the procedures used to correct the failures, and results of any retesting performed. This inspection may be incorporated with the inspection required by rule 114.12(455B).

114.26(12) *Leachate control systems for existing landfills.*

a. All existing landfills must submit a leachate control plan, as described in paragraph *"b"* below, when any of the following occur:

(1) At the time of permit renewal;

(2) When requesting a change in the existing permit for expansion or modification of the waste fill area;

(3) Within 180 days of notification by the department of the detection of any leachate seep or contamination of the groundwater or surface waters from leachate; or

(4) At least 180 days prior to landfill closure.

b. The design of the leachate control system must include leachate collection, storage, and treatment and disposal.

(1) New fill areas of a landfill that have not previously received waste must address the design standards of subrules 114.26(1) and 114.26(11).

(2) Existing fill areas must address the design standards of subrule 114.26(11), except paragraph *"a,"* subparagraphs (1) to (4). The leachate collection system must be designed to achieve the lowest possible leachate head above the landfill liner and must include a method of measuring the leachate head.

c. The leachate control plan must be implemented within one year of departmental approval of the leachate control plan.

114.26(13) *Closure requirements.* The owner or operator of the landfill must close the site in a manner that minimizes the potential for postclosure release of pollutants to the air, groundwater or surface waters.

a. A minimum of two permanent surveying monuments must be installed by a registered land surveyor from which the location and elevation of wastes, containment structures, and monitoring facilities can be determined throughout the postclosure period.

b. The final cover of a nonmunicipal solid waste landfill shall consist of:

(1) Not less than 2 feet of compacted soil. The permeability must be 1×10^{-7} cm/sec or less as determined by appropriate laboratory analysis. The percent of standard or modified proctor density at moisture content consistent with expected field conditions and corresponding to a measured coefficient of permeability equal to or less than 1×10^{-7} cm/sec shall be determined in the laboratory. The soil shall be placed in lifts not to exceed 8 inches in thickness. A minimum of one field density test shall be performed per lift per acre to verify that the density determined by the laboratory analysis as correlated to permeability has been achieved. Results of field density tests shall be submitted to the department. The compacted soil shall be keyed into the bottom liner at the waste cell boundary.

(2) Not less than 2 feet of uncompacted soil, containing sufficient organic matter to support vegetation. The thickness of this soil layer must be at least the root depth of the planned vegetative cover to prevent root penetration into the underlying soil layers. This layer shall be placed as soon as possible to prevent desiccation, cracking and freezing of the compacted soil layer described in 114.26(13)*"b"*(1).

(3) A layer of compacted soil, incinerator ash, or similar material permitted by the department may be used to prepare the site for placement of the compacted soil layer described in 114.26(13)*"b"*(1). The use of such material will not serve as a replacement for the compacted soil layer described in 114.26(13)*"b"*(1).

(4) Alternate methods and materials may be permitted if shown to provide equal or superior performance.

c. The final cover for a municipal solid waste landfill shall consist of:

(1) An erosion layer underlaid by an infiltration layer. The infiltration layer must be comprised of a minimum of 18 inches of earthen material that has a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less. The erosion layer must consist of a minimum of 6 inches of earthen material that is capable of sustaining native plant growth.

(2) The department may approve an alternate final cover design that includes an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified above in subparagraph (1) and an erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified above in subparagraph (1).

d. Those portions of existing landfills demonstrating placement of final cover in conformance with previously approved plans and specifications or regulations in effect at the time of such approval shall not be required to apply additional cover solely to achieve compliance with 114.26(13)*"b"* and *"c."* Those areas of existing landfills which have not been completed in conformance with the exemptions provided herein prior to January 15, 2003, shall complete all such areas in conformance with an approved closure plan pursuant to subrule 114.13(10) which shall include compliance with the provisions of 114.26(13)*"b"* and *"c."* This paragraph shall not preclude a requirement to provide additional cover to such exempted areas as a result of the conclusions of a groundwater assessment or remedial action plan.

e. The final cover shall be designed and graded to meet the drainage requirements of 114.26(1)*"f."* The final cover must have a minimum slope of 5 percent, and shall not exceed a slope of 25 percent. Those portions of existing landfills demonstrating placement of final cover in conformance with previously approved plans and specifications shall not be required to reconstruct the cover to meet either the minimum or maximum slope established by this subrule. Those areas which have not been completed by placement of final cover pursuant to this exemption on January 15, 2003, shall be completed in conformance with an approved closure plan pursuant to subrule 114.13(10) and shall meet the minimum and maximum slope requirements stated herein. This subrule shall not preclude a requirement to modify the slope of any portion of the landfill as a result of the conclusion of a groundwater assessment or remedial action plan.

f. The final cover shall be seeded with native grasses or other suitable vegetation as soon as practical upon completion to prevent soil erosion. If seeding must be delayed due to summer or winter conditions, silt fences or other structures shall be used to minimize erosion of the final cover until the next season suitable for planting. The placement of cover in conformance with 114.26(13)*"b"* and *"c"* shall not be delayed due to season and shall be placed as soon as the solid waste has reached its maximum design elevation within the cell. Vegetation type shall be based on density and root depth, nutrient availability, soil thickness, and soil type. Alternatives to vegetative cover may be considered to control erosion and promote runoff.

g. An approved groundwater monitoring system as required by the closure permit and the rules must be in place and operating.

h. An approved leachate collection and treatment system as required by the closure permit and the rules must be in place and operating.

i. An approved landfill gas monitoring and collection or ventilation system as required by the closure permit and the rules must be in place and operating unless determined not to be necessary by the director.

j. An approved financial assurance instrument, adequate to cover costs of all postclosure activities as required by the closure plan and the closure permit, must be provided upon promulgation of the appropriate rules.

k. All requirements of the closure plan, the closure permit, and the rules must be satisfied.

114.26(14) *Postclosure requirements for 30 years following closure of the site.* The owner or operator of the site must comply with all postclosure requirements.

a. The diversion and drainage system as required in 114.26(1)*"f"* must be maintained to approved specifications to prevent run-on and runoff from eroding or otherwise damaging the final cover.

b. The integrity and effectiveness of the final cover must be maintained by making repairs as necessary to correct the effects of settling, subsidence, erosion, or other events. If damage to the compacted soil layer described in 114.26(13)*"b"*(1) occurs, repairs shall be made to correct the damage and return it to its original specifications.

c. The vegetative cover shall be reseeded as necessary to maintain good vegetative growth. Any invading vegetation whose root system could damage the compacted soil layer shall be removed or destroyed immediately.

d. The groundwater monitoring system shall be operated and maintained and shall comply with all applicable rules and closure permit requirements.

e. The leachate collection, removal and treatment systems shall be operated and maintained and shall comply with all applicable rules and closure permit requirements.

f. The landfill gas monitoring and collection systems shall be operated and maintained and shall comply with all applicable rules and closure permit requirements.

g. Semiannual reports shall be submitted to the department. These reports shall contain information concerning the general conditions at the site, groundwater monitoring results, amount of leachate collected and treated, information concerning the landfill gas monitoring and collection system, and other information as may be required by the closure permit. In addition, locations and elevations of all permanent monuments, required in 114.26(13)*"a,"* shall be determined at least once every three years or more frequently in the event of obvious disturbance of the monument. The reports are due by April 30 and October 31 for the preceding six-month period.

h. The permanent surveying monuments required in 114.26(13)*"a"* shall be maintained.

114.26(15) *Control of explosive gases.*

a. Owners or operators of all sanitary landfills must ensure that:

(1) The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane gas in facility structures (excluding gas control or recovery system components); and

(2) The concentration of methane gas does not exceed the lower explosive limit for methane gas at the facility property boundary.

b. Owners or operators of all sanitary landfills must monitor quarterly for compliance with paragraph *"a"* of this subrule. An annual report shall be submitted by November 30 summarizing the methane gas monitoring results and any action taken resulting from gas levels exceeding the limits during the previous year.

c. If methane gas levels exceeding the limits specified in paragraph *"a"* of this subrule are detected, the owner or operator must:

(1) Immediately take all necessary steps to ensure protection of human health and notify the director;

(2) Within seven days after detection, submit to the director a report stating the methane gas levels detected and a description of the steps taken to protect human health;

(3) Within 60 days of detection, implement a plan for remediation of the methane gas releases and send a copy of the remediation plan to the director. The plan shall describe the nature and extent of the problem and the proposed remedy.

567—114.27(455B) Operating requirements for all sanitary disposal projects. Every application for any permit issued by the department shall detail the means by which the applicant will comply with the following operating requirements. All sanitary disposal projects shall be operated in conformance with these requirements.

114.27(1) Open burning shall be prohibited except when permitted by 567—Chapter 23. Any burning to be conducted at the site shall be at a location that is separate and distinct from the operating area.

114.27(2) Litter shall be confined to the property on which the sanitary disposal project is located. At the conclusion of each day of operation, any litter strewn beyond the confines of the operating area shall be collected and stored in covered leakproof containers or properly disposed of.

114.27(3) Scavenging shall be prohibited. Any salvaging to be conducted must be described in the permit application, and all salvaged materials must be stored and removed from the sanitary disposal project site in conformance with the permit conditions.

114.27(4) Effective means shall be taken to control flies, other insects, rodents and other vermin.

114.27(5) Equipment designated in the plans and specifications or equivalent equipment shall be used to operate the site at all times.

114.27(6) The major internal roads shall be of all-weather construction and maintained in good condition. Dust shall be controlled on internal roads.

114.27(7) Sites open to the public shall have a permanent sign posted at the site entrance specifying:

a. Name of the operation.

b. The site permit number.

c. The hours and days the site is open to the public.

d. The categories of waste which will be accepted for disposal or, as an alternative, the identification of the categories of waste which are prohibited.

e. Telephone number of official responsible for the operation.

114.27(8) Free liquids or waste containing free liquids. No free liquids or waste containing free liquids shall be disposed of in a sanitary landfill.

114.27(9) General closure requirements.

a. The owner or operator shall notify the department in writing at least 180 days prior to closure of the facility or suspension of operations.

b. Notice of closure shall be posted at the facility at least 180 days prior to closure indicating the date of closure and alternative solid waste management facilities. Notice of closure shall also be published at least 180 days prior to closure in a newspaper of local circulation. This notice shall include the date of closure and alternative solid waste management facilities.

c. Implementation of the closure/postclosure plan shall be completed within 90 days of the closure of the facility. The owner and an engineer registered in Iowa shall certify that the closure/postclosure plan has been implemented in compliance with the rules, the closure/postclosure plan and the permit.

d. Upon completion of closure activities, the following documentation shall be submitted: as-built plans showing changes from the original design plans; test results indicating compliance with final cover as applicable, waste removal, equipment decontamination; a copy of the notation filed with the county recorder; and other forms of documentation as required.

567—114.28(455B) Specific requirements for a sanitary landfill proposing to accept only construction and demolition waste.

114.28(1) *Plan requirements.* The plans for sanitary landfills proposing to accept only construction and demolition waste shall include the following information in addition to that required by rules 114.2(455B) through 114.13(455B), 114.27(455B), 114.29(455B) and 114.30(455B) and subrule 114.26(1).

114.28(2) *Specific operating requirements for sanitary landfills proposing to accept only construction and demolition waste.* Sanitary landfills accepting only construction and demolition waste shall be operated in conformance with rules 114.2(455B) through 114.13(455B), 114.27(455B), 114.29(455B) and 114.30(455B), subrule 114.26(2), and this subrule. The plan submitted shall detail how the sanitary landfill will comply with these requirements.

a. Immediately after solid waste is deposited, it shall be uniformly distributed and compacted as densely as practical.

b. The waste shall be covered with a minimum of 1 foot of earth at least once every seven days of operation. The day during which cover will be applied shall be specified in the plan.

c. At least a 2-foot cover of compacted earth shall be applied to any area of the sanitary landfill which will not be utilized for further disposal of solid waste for more than two months. The cover shall be graded to allow surface water runoff.

d. The final cover shall be consistent with the proposed land use but in no event shall the cover be less than 2 feet.

567—114.29(455B) Operator certification. Sanitary landfill operators and solid waste incinerator operators shall be trained, tested, and certified by a department-approved certification program.

114.29(1) A sanitary landfill operator or a solid waste incinerator operator shall be on duty during all hours of operation of a sanitary landfill or solid waste incinerator, consistent with the respective certification.

114.29(2) To become a certified operator, an individual shall complete a basic operator training course that has been approved by the department or an alternative, equivalent training approved by the department and shall pass a departmental examination as specified by this rule. An operator certified by another state may have reciprocity subject to approval by the department.

114.29(3) A sanitary landfill operator certification or solid waste incinerator operator certification is valid until June 30 of the following even-numbered year.

114.29(4) Basic operator training course.

a. The required basic operator training course for a certified sanitary landfill operator will have at least 25 contact hours and will address the following areas, at a minimum:

(1) Description of types of wastes;
(2) Interpreting and using engineering plans;
(3) Construction surveying techniques;
(4) Waste decomposition processes;
(5) Geology and hydrology;
(6) Landfill design;
(7) Landfill operation;
(8) Environmental monitoring;
(9) Applicable laws and regulations;
(10) Permitting processes;
(11) Leachate control and treatment.

b. The required basic operator training course for a certified solid waste incinerator operator will have at least 12 contact hours and will address the following areas, at a minimum:

(1) Description of types of wastes;
(2) Incinerator design;
(3) Interpreting and using engineering plans;
(4) Incinerator operations;
(5) Environmental monitoring;
(6) Applicable laws and regulations;
(7) Permitting processes;
(8) Incinerator maintenance;
(9) Ash and residue disposal.

114.29(5) Alternate basic operator training must be approved by the department. It shall be the applicant's responsibility to submit any documentation the department may require to evaluate the equivalency of alternate training.

114.29(6) Fees.

a. The examination fee for each examination shall be $20.

b. The initial certification fee shall be $8 for each one-half year of a two-year period from the date of issuance to June 30 of the next even-numbered year.

c. The certification renewal shall be $24.

d. The penalty fee shall be $12.

114.29(7) Examinations.

a. The operator certification examinations will be based on the basic operator training course curriculum.

b. All persons wishing to take the examination required to become a certified operator of a sanitary landfill or a solid waste incinerator shall complete the Operator Certification Examination Application, Form 542-1354. A listing of dates and locations of examinations is available from the department upon request. The application form requires the applicant to indicate the basic operator training course taken. Evidence of training course completion must be submitted with the application for certification. The completed application and the application fee shall be sent to the director and addressed to the central office in Des Moines. Application for examination must be received by the department at least 30 days prior to the date of examination.

c. A properly completed application for examination will be valid for one year from the date the application is approved by the department.

d. Upon failure of the first examination, the applicant may be reexamined at the next scheduled examination. Upon failure of the second examination, the applicant shall be required to wait a period of 180 days between each subsequent examination.

e. Upon each reexamination when a valid application is on file, the applicant shall submit to the department the examination fee at least ten days prior to the date of examination.

f. Failure to successfully complete the examination within one year from the date of approval of the application shall invalidate the application.

g. Completed examinations will be retained by the director for a period of one year after which they will be destroyed.

h. Oral examinations may be given at the discretion of the department.

114.29(8) Certification.

a. All operators who passed the operator certification examination by July 1, 1991, are exempt from taking the required operator training course. Beginning July 1, 1991, all operators will be required to take the basic operator training course and pass the examination in order to become certified.

b. Application for certification must be received by the department within 30 days of the date the applicant receives notification of successful completion of the examination. All applications for certification shall be made on a form provided by the department and shall be accompanied by the certification fee.

c. Applications for certification by examination which are received more than 30 days but less than 60 days after notification of successful completion of the examination shall be accompanied by the certification fee and the penalty fee. Applicants who do not apply for certification within 60 days of notice of successful completion of the examination will not be certified on the basis of that examination.

d. For applicants who have been certified under other state mandatory certification programs, the equivalency of which has been previously reviewed and accepted by the department, certification without examination will be recommended.

e. For applicants who have been certified under voluntary certification programs in other states, certification will be considered. The applicant must have successfully completed a basic operator training course and an examination generally equivalent to the Iowa examination. The director may require the applicant to successfully complete the Iowa examination.

f. Applicants who seek Iowa certification pursuant to 114.29(8)*"d"* or *"e"* shall submit an application for examination accompanied by a letter requesting certification pursuant to those paragraphs. Application for certification pursuant to those paragraphs shall be received by the director in accordance with 114.29(8)*"a"* and *"b."*

114.29(9) Renewals. All certificates shall expire every two years, on even-numbered years, and must be renewed every two years to maintain certification. Application and fee are due prior to expiration of certification.

a. Late application for renewal of a certificate may be made provided that such late application shall be received by the director or postmarked within 30 days of the expiration of the certificate. Such late application shall be on forms provided by the department and accompanied by the penalty fee and the certification renewal fee.

b. If a certificate holder fails to apply for renewal within 30 days following expiration of the certificate, the right to renew the certificate automatically terminates. Certification may be allowed at any time following such termination, provided that the applicant successfully completes an examination. The applicant must then apply for certification in accordance with subrule 114.29(8).

c. An operator may not continue to operate a sanitary landfill or solid waste incinerator after expiration of a certificate without renewal thereof.

d. Continuing education must be earned during the two-year certification period. All certified operators must earn ten contact hours per certificate during each two-year period. The two-year period will begin upon issuance of certification.

e. Only those operators fulfilling the continuing education requirements before the end of each two-year period will be allowed to renew their certificates. The certificates of operators not fulfilling the continuing education requirements shall be void upon expiration, unless an extension is granted.

f. All activities for which continuing education credit will be granted must be related to the subject matter of the particular certificate to which the credit is being applied.

g. The director may, in individual cases involving hardship or extenuating circumstances, grant an extension of time of up to three months within which the applicant may fulfill the minimum continuing education requirements. Hardship or extenuating circumstances include documented health-related confinement or other circumstances beyond the control of the certified operator which prevent attendance at the required activities. All requests for extensions must be made 60 days prior to expiration of certification.

h. The certified operator is responsible for notifying the department of the continuing education credit earned during the period. The continuing education credits earned during the period shall be shown on the application for renewal.

i. A certified operator shall be deemed to have complied with the continuing education requirements of this rule during periods that the operator serves honorably on active duty in the military service; or for periods that the operator is a resident of another state or district having a continuing education requirement for operators and meets all the requirements of that state or district for practice there; or for periods that the person is a government employee working as an operator and is assigned to duty outside of the United States; or for other periods of active practice and absence from the state as approved by the department.

114.29(10) Discipline of certified operators.

a. Disciplinary action may be taken on any of the following grounds:

(1) Failure to use reasonable care or judgment or to apply knowledge or ability in performing the duties of a certified operator. Duties of certified operators include compliance with rules and permit conditions applicable to landfill or incinerator operation.

(2) Failure to submit required records of operation or other reports required under applicable permits or rules of the department, including failure to submit complete records or reports.

(3) Knowingly making any false statement, representation, or certification on any application, record, report or document required to be maintained or submitted under any applicable permit or rule of the department.

b. Disciplinary sanctions allowable are:

(1) Revocation of a certificate.

(2) Probation under specified conditions relevant to the specific grounds for disciplinary action. Additional education or training or reexamination may be required as a condition of probation.

c. The procedure for discipline is as follows:

(1) The director shall initiate disciplinary action. The commission may direct that the director investigate any alleged factual situation that may be grounds for disciplinary action under 114.29(10)*"a"* and report the results of the investigation to the commission.

(2) A disciplinary action may be prosecuted by the director.

(3) Written notice shall be given to an operator against whom disciplinary action is being considered. The notice shall state the informal and formal procedures available for determining the matter. The operator shall be given 20 days to present any relevant facts and indicate the operator's position in the matter and to indicate whether informal resolution of the matter may be reached.

(4) An operator who receives notice shall communicate verbally, in writing, or in person with the director, and efforts shall be made to clarify the respective positions of the operator and director.

(5) The applicant's failure to communicate facts and position relevant to the matter by the required date may be considered when determining appropriate disciplinary action.

(6) If agreement as to appropriate disciplinary sanction, if any, can be reached with the operator and the commission concurs, a written stipulation and settlement between the department and the operator shall be entered. The stipulation and settlement shall recite the basic facts and violations alleged, any facts brought forth by the operator, and the reasons for the particular sanctions imposed.

(7) If an agreement as to appropriate disciplinary action, if any, cannot be reached, the director may initiate formal hearing procedures. Notice and formal hearing shall be in accordance with 567—Chapter 7 related to contested and certain other cases pertaining to license discipline.

114.29(11) Revocation of certificates. Upon revocation of a certificate, application for certification may be allowed after two years from the date of revocation. Any such applicant must successfully complete an examination and be certified in the same manner as a new applicant.

114.29(12) A temporary operator of a sanitary landfill or solid waste incinerator may be designated for a period of six months when an existing certified operator is no longer available to the facility. The facility must make application to the department, explain why a temporary certification is needed, identify the temporary operator, and identify the efforts which will be made to obtain a certified operator. A temporary operator designation shall not be approved for greater than a six-month period except for extenuating circumstances. In any event, not more than one six-month extension to the temporary operator designation may be granted. Approval of a temporary operator designation may be rescinded for cause as set forth in 114.29(10).

567—114.30(455B) Emergency response and remedial action plans.

114.30(1) *Purpose.* The purpose of this rule is to implement Iowa Code section 455B.306(6)*"d"* by providing the criteria for developing a detailed emergency response and remedial action plan (ERRAP) for permitted sanitary disposal projects.

114.30(2) *Applicability.* The requirements of this rule apply to the owners or operators of all sanitary landfills.

114.30(3) *Submittal requirements.*

a. The owner or operator of facilities that are subject to this rule and have been permitted prior to October 24, 2001, shall submit a complete detailed ERRAP that meets the requirements set forth in this rule no later than December 31, 2001.

b. Applications for a new permit after October 24, 2001, shall incorporate a complete detailed ERRAP that meets the requirements set forth in this rule.

c. An updated ERRAP that meets the requirements of this rule shall be submitted at the time of each permit renewal or permit reissuance application that is due after December 31, 2001.

d. An updated ERRAP shall be included with any request for permit modification to incorporate a facility expansion or significant changes in facility operation that require modification of the currently approved ERRAP.

e. Facilities that submitted an ERRAP meeting the requirements defined under Iowa Code section 455B.306(6)*"d"* by May 1, 2001, including regional collection centers that, prior to this date, have met the contingency plan submittal requirement described in 567—Chapter 211, and were approved by the department prior to October 24, 2001, are not required to submit an updated ERRAP that meets the requirements of this rule until the next permit renewal application due date after December 31, 2001.

f. Three sets of ERRAP documents shall be submitted for department approval.

114.30(4) *Content.* The content of ERRAP documents shall be concise and readily usable as a reference manual by facility managers and operators during emergency conditions. The ERRAP document content shall address at least the following primary issues in detail, unless project conditions render the specific issue as not applicable. The rationale for exclusion of any issue areas that are determined not to be applicable must be provided in either the body of the plan or as a supplement to facilitate department review. Additional emergency response and remedial action plan requirements unique to the facility shall be addressed, as applicable.

a. Facility information.

(1) Permitted agency.

(2) DNR permit number.

(3) Facility description.

(4) Responsible official and contact information.

(5) Project location.

(6) Site and environs map.

b. Regulatory requirements.

(1) Iowa Code section 455B.306(6)*"d"* criteria citation.

(2) Reference to provisions of the permit.

c. Emergency conditions—response activities—remedial action.

(1) Failure of utilities.

1. Short-term (48 hours or less).
2. Long-term (over 48 hours).

(2) Weather-related events.

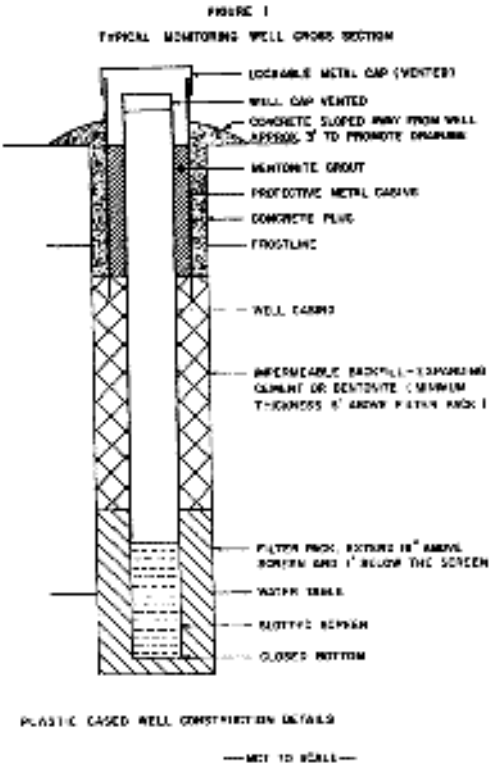
1. Tornado.
2. Windstorms.
3. Intense rainstorms and erosion.
4. Lightning strikes.
5. Flooding.
6. Event and postevent conditions.

(3) Fire and explosions.

1. Waste materials.
2. Buildings and site.
3. Equipment.
4. Fuels.
5. Utilities.
6. Facilities.
7. Working area.
8. Hot loads.
9. Waste gases.
10. Evacuation.

(4) Regulated waste spills and releases.
1. Waste materials.
2. Leachate.
3. Waste gases.
4. Waste stockpiles and storage facilities.
5. Waste transport systems.
6. Litter and airborne particulates.
7. Site drainage systems.
8. Off-site releases.
(5) Hazardous material spills and releases.
1. Load check control points.
2. Mixed waste deliveries.
3. Fuels.
4. Waste gases.
5. Site drainage systems.
6. Off-site releases.
(6) Mass movement of land and waste.
1. Earthquakes.
2. Slope failure.
3. Waste shifts.
4. Waste subsidence.
(7) Emergency and release notifications and reporting.
1. Federal agencies.
2. State agencies.
3. County and city agencies.
4. News media.
5. Public and private facilities with special populations within five miles.
6. Emergency response agencies and contact information.
7. Reporting requirements and forms.
(8) Emergency waste management procedures.
1. Communications.
2. Temporary discontinuation of services—short- and long-term.
3. Facilities access and rerouting.
4. Waste acceptance.
5. Wastes in process.
(9) Primary emergency equipment inventory.
1. Major equipment.
2. Fire hydrants and water sources.
3. Off-site equipment resources.
(10) Emergency aid.
1. Responder contacts.
2. Medical services.
3. Contracts and agreements.
(11) ERRAP training requirements.
1. Training providers.
2. Employee orientation.
3. Annual training updates.
4. Training completion and record keeping.
(12) Reference tables, figures and maps.

These rules are intended to implement Iowa Code section 455B.304.



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