STATE OF WEST VIRGINIA
DEPARTMENT OF NATURAL RESOURCES
CHARLESTON 25305

ARCH A. MOORE, JR.
Governor

March 24, 1986

RONALD R. POTESTA
Director

MICHAEL A. FOTOS
Deputy Director

NOTICE OF FINAL FILING - LEGISLATIVE RULE

LEGISLATIVE RULE: Hazardous Waste Management, Chapter 20, Article 5E, Series 15

The attached legislative rule is hereby final filed with the Secretary of State by the Director of the Department of Natural Resources as authorized by SB 434, Sections 64-2-20(5e)(6)(d), (e) and (f).

Ronald R. Potesta
Director

FILED
1986 MAR 27 AM 11:20

KEN HECHLER
Secretary of State

MARY P. RATLIFF
Deputy Secretary of State

BARBARA STARCHER
Deputy Secretary of State

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STATE OF WEST VIRGINIA
SECRETARY OF STATE
Charleston 25305

March 11, 1986

WILLIAM H. HARRINGTON
Chief of Staff

RICH O. HARTMAN
Director, Administrative Law

DONALD R. WILKES
Director, Corporations

VIRGINIA SKEEN
Special Assistant

(Plus all the volunteer help we can get)

IMPORTANT NOTICE
****

TO: Ron Shipley

FROM: RICH O. HARTMAN, DIRECTOR

RE: LEGISLATIVE RULE Hazardous Waste Management (2 Amendment)
filed on Dec. 11, 1985 and modified on Feb 12, 1986

THE 1986 LEGISLATURE HAS AUTHORIZED YOUR AGENCY TO FINAL FILE AND ADOPT THE ABOVE LEGISLATIVE RULE. THIS AUTHORIZATION IS IN S.B. 434 SECTION 64-2-20(5e)(6)(d) PASSED ON March 8, 1986, 1986, EFFECTIVE FROM PASSAGE. YOU HAVE 60 DAYS FROM THAT DATE TO FINAL FILE THE ABOVE RULE WITH THIS OFFICE. NO RULE WILL BE ACCEPTED AFTER THAT DATE. YOU MAY ESTABLISH ANY EFFECTIVE DATE FOR YOUR RULE RANGING FROM THE SAME DATE YOU FINAL FILE TO 90 DAYS FROM THE DATE YOU FINAL FILE. REMEMBER TO RE-TYPE YOUR RULE IN ITS ENTIRETY FOLLOWING THE PROPER FORMAT. PLEASE CALL IF YOU HAVE ANY QUESTIONS.

STATE OF WEST VIRGINIA
DEPARTMENT OF NATURAL RESOURCES
CHARLESTON 25305

ARCH A. MOORE, JR.
Governor

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Director

MICHAEL A. FOTOS
Deputy Director

February 20, 1986

The Honorable Ken Hechler
Secretary of State
Capitol Complex, Suite 157-K
Charleston, West Virginia 25305

Re: File of Rule Modification;
Hazardous Waste Management

Dear Mr. Hechler:

Enclosed please find two copies of the above referenced rules which we have modified at the direction of the Legislative Rulemaking Review Committee. The changes amounted to the correction of typographical and other clerical errors.

Please file them at your earliest convenience.

Sincerely,

Ronald R. Potesta
Director

RRP/rsb

cc: David W. Robinson
Timothy T. Laraway
LRRC

Section 6 Standards Applicable to Generators of Hazardous Waste

6.1 Purpose, Scope and Applicability

6.1a This Section establishes standards and regulations for generators of hazardous wastes.

6.1b A generator who treats, stores, or disposes of hazardous waste on-site must only comply with the following subsections of this Section with respect to that waste: 6.1.1 for determining whether his waste is hazardous; 6.1.2 for obtaining an EPA identification number; 6.4.1(c) and (d) for recordkeeping; 6.4.4 for additional reporting; and, if applicable, 6.5.2 for Farmers; and 6.3.5 for accumulation of hazardous waste.

* * * * *

6.4.3 Exception Reporting

6.4.3a A generator, who does not receive a copy of the manifest with the handwritten signature of the ~~authorized representative~~ owner or operator of the facility within 35 days of the date the waste was accepted by the initial transporter, shall contact the transporter and/or the owner or operator of the designated facility to determine the status of the hazardous waste.

6.4.3b A generator shall submit an Exception Report to the Chief if he has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within forty-five (45) days of the date the waste was accepted by the initial transporter. The Exception Report must include:

6.4.3.b.1 A legible copy of the manifest for which the generator does not have confirmation of delivery.

6.4.3.b.2 A cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the hazardous waste and the results of those efforts.

6.4.3.b.3 In case of interstate shipments which originated in the State for delivery to a designated facility in another State, an additional copy of the Exception Report will be provided to the Chief for transmittal to that State or EPA as

provided for in 40 C.F.R. Section 271.128(b)(8).

* * * * *

Section 8 Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities

8.1 General, Purpose, Scope and Applicability

8.1.1 The purpose of these regulations is to establish minimum standards which define the acceptable management of hazardous waste.

8.1.2 The standards in this section apply to owners and operators of all facilities which treat, store, or dispose of hazardous waste except as Section 8.1.5 provides otherwise.

8.1.3 The requirements of this section apply to a person disposing of hazardous waste by means of underground injection only to the extent that they are required to comply with certain portions of this section under the Underground Injection Control Program establish pursuant to the Water Pollution Control Act, W. Va. Code §20-5A, et seq..

8.1.4 The requirements of this section apply to the owner or operator of a POTW which treats, stores, or disposes of hazardous waste only to the extent they are included in a Hazardous Waste Management Permit by Rule granted to such a person under Section 11.6.

8.1.5 The requirements of this section do not apply to:

8.1.5a The owner or operator of a facility which treats or stores hazardous waste, which treatment or storage meets the criteria in Section 3.1.5(a), except to the extent that Section 3.1.5(b) provides otherwise.

8.1.5b A generator accumulating waste on-site in compliance with Section 6.3.5 provided the requirements of Sections 3.1.4 and 3.1.5 are complied with.

8.1.5c A farmer disposing of waste pesticides from his own use in compliance with Section 6.5.2.

8.1.5d The owner or operator of a totally enclosed treatment facility, as defined in Section 2.

8.1.5e The owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in Section 2.

8.1.5f A transporter storing manifested shipments of hazardous waste in containers meeting the requirements of Section 6.3.1, at a transfer facility for a period of ten (10) days or less.

8.1.5g Persons with respect to those activities which are carried out to immediately contain or treat a spill of hazardous waste, except that, with respect to such activities, the appropriate requirements of Sections 8.3 and 8.4 are applicable to owners and operators of treatment, storage and disposal facilities otherwise subject to this section. (Comment: After the immediate response activities are completed, the applicable regulations apply fully to the management of any spill residue or debris which is a hazardous waste under Section 3.)

8.1.5h The addition of absorbent material to hazardous waste in a container or the addition of hazardous waste to absorbent material in a container, provided that these actions occur at the time hazardous waste is first placed in the container and Section 8.2.8 (b), 8.7.2 and 8.7.3 are complied with. ~~(Comment:---After the--immediate--response-activities-are-completed,-the-applicable regulations-apply-fully-to-the-management-of-any-spill-residue-or debris-which-is-a-hazardous-waste-under-Section-3.)~~

* * * * *

8.2.4 General Waste Analysis

8.2.4a.1 Before an owner or operator treats, stores, or disposes of any hazardous waste, a detailed chemical and physical analysis of a representative sample of the waste must be obtained. At a minimum, this analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with the requirements of this section or with the conditions of a permit issued under Section 11.00 of these regulations. (Comment: Section 11.5 of these regulations requires that the waste analysis plan be submitted with Part B of the permit application.)

8.2.4a.2 The analysis may include data developed under Section 3 of these regulations, and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes.

8.2.4.a.3 The facility's records of analysis performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with (a)(1) of this section. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the information required by (a)(1) of this section. If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with this section.

8.2.4.a.4 The analysis must be repeated as necessary to ensure that it is accurate and up-to-date. At a minimum, the analysis must be repeated:

8.2.4.a.4.i When the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

8.2.4.a.4.ii For off-site facilities, when the results of the inspection required in (a)(5) of this section indicate that the hazardous waste received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

8.2.4.a.5 The owner or operator of an off-site facility must inspect and, if necessary, analyze each hazardous waste movement received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

8.2.4b The owner or operator must develop and follow a written waste analysis plan which describes the procedures which will comply with (a) of this section. This plan must be kept at the facility. At a minimum, the plan must specify:

8.2.4.b.1 The parameters for which each hazardous waste will be analyzed and the rationale for the selection of the parameters (i.e., how analysis for these parameters will provide sufficient information on the waste's properties to comply with (a) of this section).

8.2.4.b.2 The test methods which will be used to test for these parameters.

8.2.4.b.3 The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

8.2.4.b.3.i One of the sampling methods described in Appendix I of Section 3 of these regulations.

8.2.4.b.3.ii An equivalent sampling method.

8.2.4.b.4 The frequency which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up-to-date; and

8.2.4.b.5 For off-site facilities, the waste analyses that hazardous waste generators have agreed to supply.

8.2.4.b.6 Where applicable, the methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in Sections 8.02.08 and the Air Pollution Control Commission's Regulation XXV.

8.2.4.6ec For off-site facilities, the waste analysis plan required in (b) of this section must also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan must describe:

8.2.4.c.1 The procedures which will be used to determine the identity of each movement of waste managed at the facility.

8.2.4.c.2 The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

8.2.5 Security

8.2.5a The owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility, unless it can be demonstrated to the Chief that:

8.2.5.a.1 Physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may

enter the active portion of a facility.

8.2.5.a.2 Disturbance of the waste or equipment, by the unknowing or unauthorized entry ~~of~~ of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements of this section.

8.2.5.a.3 The owner or operator who wishes to make the demonstration referred to above must do so with Part B of the permit application.

8.2.5b Unless the owner or operator has made a successful demonstration under paragraphs (a)(1) and (a)(2) of this section, a facility must have:

8.2.5.b.1 A twenty-four hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the active portion of the facility or;

8.2.5.b.2.i An artificial or natural physical barrier (e.g., a fence in good repair or a fence combined with a cliff), which completely surrounds the active portions of the facility; and

8.2.5.b.2.ii A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility).

8.2.5.b.3 The requirements of (b) of this section are satisfied if the facility or plant within which the active portion is located itself has a surveillance system, or a barrier and a means to control entry, which complies with the requirements of (b)(1) or (b)(2) of this section.

8.2.5.c Unless the owner or operator has made a successful demonstration under (a)(1) and (a)(2) of this section, a sign with the Legend, "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT," must be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend must be written in English and in any other language predominant in the area surrounding the facility, and must be legible from a distance of at least twenty-five (25) feet. Existing signs with a legend other than "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" may be used if the legend on the sign indicates that only authorized

personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous.

8.2.6 General Inspection Requirements

8.2.6a The owner or operator must inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing - or may lead to:

8.2.6.a.1 Release of hazardous waste constituents to the environment; or

8.2.6.a.2 A threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

8.2.6.b.1 The owner or operator must develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

8.2.6.b.2 This schedule must be kept at the facility.

8.2.6.b.3 The schedule must identify the types of problems (e.g., malfunctions or deterioration) which are to be looked for during the inspection (e.g., inoperative sump pump, leaking fitting, eroding dike, etc.).

8.2.6.b.4 The frequency of inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use. At a minimum, the inspection schedule must include the terms and frequencies called for in Sections 8.7.6, 8.8.4, 8.9.5, 8.10.5, and 8.11.3 where applicable.

8.2.6.b.5 A copy of the inspection schedule as required by Section 8.02.06(b) must be submitted to the Chief with Part B of the permit application to ensure that it adequately protects human health and the environment. As part of this review, the

Chief may modify or amend the schedule as may be necessary.

8.2.6c The owner or operator must remedy any deterioration or malfunction of equipment or structures which the inspection reveals to ensure that the problem does not lead to an environmental or human health hazard. A schedule for remedial action may be allowed by the Chief. Where a hazard is imminent or has already occurred, remedial action must be taken immediately.

8.~~3~~.2.6d The owner or operator must record inspections in an inspection log or summary. These records must be kept for the life of the facility. At a minimum, these records must include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

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8.5 Manifest System, Recordkeeping, and Reporting

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8.5.3 Manifest Discrepancies

8.5.3a Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity or type of hazardous waste a facility actually receives. Significant discrepancies in quantity are:

8.5.3.a.1 For bulk waste, variations greater than 10 percent in weight, and

8.5.3.a.2 For batch waste, ~~an~~ any variation in piece count, such as a discrepancy of one drum in a truckload.

Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper.

8.5.3b Upon discovery of a significant discrepancy, the owner or operator must attempt to reconcile the discrepancy with the waste generator or transporter (e.g., with telephone conversations). If the discrepancy is not resolved within 15 days after receiving the waste, the owner or operator must immediately submit to the Chief a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue.

* * * * *

8.6.1 Applicability

Except as Section 8.01 provides otherwise:

8.6.1a Sections 8.6.2 - 8.6.8 and 15.1 (which concern closure) apply to the owners and operators of all hazardous waste management facilities; and

8.6.1b Sections 8.6.2 - 8.6.8, ~~and~~ 15.1 and 15.3 (which concern post-closure care) apply to the owners and operators of all hazardous waste disposal facilities.

8.6.8 Post-Closure Plan;Amendment of Plan

8.6.8a The owner or operator of a disposal facility must have a written post-closure plan. The plan must be submitted with Part B of the permit application and approved by the Chief as a part of the permit issuance proceeding. The approved post-closure plan will become a condition of any permit issued. A copy of the approved plan and all revisions must be kept at the facility until the post-closure care period begins. This plan must identify the activities which will be carried on after closure and the frequency of these activities, and include at least:

8.6.8.a.1 A description of the planned groundwater monitoring activities and frequencies at which they will be performed.

8.6.8.a.2 A description of the planned maintenance activities, and frequencies at which they will be performed, to ensure:

8.6.8.a.2.i The integrity of the cap and final cover or other containment structures where applicable; and

8.6.8.a.2.ii The function of the facility monitoring equipment.

8.6.8.a.3 The name, address, and phone number of the person or office to contact about the disposal facility during the post-closure period. This person or office must keep an updated post-closure plan during the post-closure period.

8.6.8b The owner or operator may amend the post-closure plan at any time during the active life of the disposal facility or

during the post-closure care period. The owner or operator must amend the plan whenever changes in operating plans or facility design, or events which occur during the active life of the facility or during the post-closure period, affect the post-closure plan. This plan must be amended whenever there is a change in the expected year of closure.

8.6.8c When a permit modification is requested during the active life of the facility to authorize a change in operating plans or facility design, modification of the post-closure plan must be requested at the same time. In all other cases, the request for modification of the post-closure plan must be made within sixty (60) days after the change in operating plans or facility design or the events which affect the post-closure plans occur.

8.7 Use and Management of Containers

8.7.1 Applicability

The regulations in this section apply to owners and operators of all hazardous waste management facilities that store containers of hazardous waste, except as Section 8.1 provides otherwise. (Comment: Under Sections 3.1.6 and 3.4.4(c) if a hazardous waste is emptied from a container the residue remaining in the container is not considered a hazardous waste if the "container" is "empty" as defined in Section 3.1.6. In that event, management of the container is exempt from the requirements of this section.)

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8.8 Tanks

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8.8.4 Inspections

8.8.4a The owner or operator must inspect:

8.8.4.a.1 Overfilling control equipment (e.g., waste feed cut-off systems and by-pass systems) at least once each operating day to ensure that it is in good working order.

8.8.4.a.2 Data gathered from monitoring equipment (e.g., pressure and temperature gauges) where present, at least once each operating day to ensure that the tank is being operated according to design.

8.8.4.a.3 For uncovered tanks, the level of waste in the tank, at least once each operating day to ensure compliance with Section 8.8.3(b).

8.8.4.a.4 The construction materials of above-ground portions of the tank, at least weekly to detect corrosion or erosion and leaking of fixtures and seams.

8.8.4.a.5 The area immediately surrounding the tank, at least weekly, to detect obvious signs of leakage (e.g., wet spots, or dead vegetation).

8.8.4b As part of the inspection schedule required in Section 8.2.6(b) and in addition to the specific requirements of paragraph (a) of this section, the owner or operator must develop a schedule and procedure for assessing the condition of the tank. The schedule and procedure must be adequate to detect cracks, leaks, corrosion and erosion which may lead to cracks or leaks, or wall thinning to less than the thickness required under Section 8.8.2. Procedures for emptying a tank to allow entry and inspection of the interior must be established when necessary to detect corrosion or erosion of the tank sides and bottom. The frequency of these assessments must be based on the material of construction of the tank, type of corrosion or erosion protection used, rate of corrosion or erosion observed during previous inspections, and the chracteristics of the waste being treated or stored.

8.8.4c As part of the contingency plan required under

Section 8.4 the owner or operator must specify the procedures to be used to respond to tank spills or leakage, including procedures and timing for expeditious removal of leaked or spilled waste and repair of the tank.

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8.9 Surface Impoundments

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8.9.2 General Design Requirements

8.9.2a A surface impoundment must be designed and constructed to provide maintenance of sufficient freeboard, and to prevent overtopping resulting from wave or wind action, normal and abnormal operation, malfunctions or level controllers, alarms and other equipment, precipitation and human error or any combination thereof. The freeboard shall not be less than 60 centimeters (2 feet); or an amount of freeboard other than 60 centimeters based on documentation acceptable to the Chief that the specified amount of freeboard will prevent overtopping.

8.9.2b A surface impoundment must be designed and constructed so that any flow of waste into the impoundment can be immediately shut off in the event of overtopping or liner failure.

8.9.2c A surface impoundment must be designed and constructed to prevent discharge into or on the land, and to waters of the State (except discharges authorized by an NPDES permit during the life of the impoundment) by use of a liner system and leachate detection, collection and removal system which complies with Section 8.9.4, except as provided in (f) of this section.

8.9.2d Dikes must be designed and constructed with sufficient structural integrity to prevent massive failure without dependence on any liner system included in the surface impoundment design.

8.9.2e A leachate detection, collection, and removal system must be designed and constructed so that liquid will flow freely from the collection system to prevent the creation of pressure head within the collection system in excess of that necessary to cause the liquid to flow freely.

8.9.2.f.1 Existing facilities are exempt from the ~~liner~~ requirements outlined in Sections 8.9.2(c), (e), 8.9.4(a)(1), (c), (d), 8.9.6, 8.9.10, ~~(2)~~ (c)(2) and (d)~~(2),(e)(1) and (e)(3)~~, provided that paragraph (2) of this section is complied with.

8.9.2.f.2 The owner or operator, in order to qualify for the

exemption in (1) above, must demonstrate that statistically significant increases of hazardous constituents do not occur in the groundwater or surface water during its active life and the post closure period, except as provided in (f)(4) of this Section.

8.9.2.f.3 If statistically significant increases of hazardous constituents are detected as outlined in Section 8.13.8(d) in the groundwater beneath the facility (including the regulated unit) the owner or operator must comply with the corrective action outlined in Section 8.13.9 (if ground water contamination has been determined).

8.9.2.f.4 If the owner or operator determines that the corrective action program being implemented under Section 8.13.09 is insufficient for causing cessation of hazardous waste constituents migration, then the unit must be closed. However, if it is determined that the corrective action will adequately arrest and remove the contamination, the owner may choose one of the four options which will become part of the conditions of the permit:

8.9.2.f.4.i Retrofit the unit with liners; in accordance with Section 8.9.4(a)(1);

8.9.2.f.4.ii Stop the leak;

8.9.2.f.4.iii Continue the operation of the unit, (while concurrently developing/implementing an alternate treatment, storage or disposal method), for a period of five years at which time the unit must be closed; or

8.9.2.f.4.iv Continue the operation of the unit provided a demonstration can be made and approved by the Chief that no adverse impact to human health or to the environment will result from the continued operation of the unit during the active life and closure and post-closure period, provided that the facility continues to comply with an approved corrective action program. Such demonstration must include and discuss the following:

8.9.2.f.4.iv.A Potential adverse effects on groundwater quality, considering:

8.9.2.f.iv.A.1 The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

8.9.2.f.4.iv.A.2 The hydrogeological characteristics of the facility and surrounding land;

8.9.2.f.4.iv.A.3 The quantity of ground water and the direction of ground water flow;

8.9.2.f.4.iv.A.4 The proximity and withdrawal rates of ground water users;

8.9.2.f.4.iv.A.5 The current and future uses of ground water in the area;

8.9.2.f.4.iv.A.6 The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground water quality;

8.9.2.f.4.iv.A.7 The potential for health risks caused by human exposure to waste constituents;

8.9.2.f.iv.A.8 The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

8.9.2.f.4.iv.A.9 The persistence and permanence of the potential adverse effects; and

8.9.2.f.4.iv.B Potential adverse effects on hydraulically connected surface water quality, considering:

8.9.2.f.4.iv.B.1 The volume and physical and chemical characteristics of the waste in the regulated unit;

8.9.2.f.4.iv.B.2 The hydrogeological characteristics of the facility and surrounding land;

8.9.2.f.iv.B.3 The quantity and quality of ground water, and the direction of ground water flow:

8.9.2.f.4.iv.B.4 The patterns of rainfall in the region;

8.9.2.f.4.iv.B.5 The proximity of the regulated unit to surface waters;

8.9.2.f.4.iv.B.6 The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

8.9.2.f.4.iv.B.7 The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

8.9.2.f.4.iv.B.8 The potential for health risks caused by human exposure to waste constituents;

8.9.2.f.4.iv.B.9 The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

8.9.2.f.iv.B.10 The persistence and permanence of the potential adverse effects.

8.9.2.f.4.iv.C In making any determination under paragraph (4) of this section concerning the use of ground water in the area around the facility, the Chief will consider any identification of underground sources of drinking water and exempted aquifers made under the West Virginia Administrative Regulations of the State Water Resources Board Chapter 20, Article 5E, Series IX (1983).

* * * * *

8.9.4 Specific Design Requirements

8.9.4a A surface impoundment must be designed to prevent discharge into the land, and State waters during its life and must have:

8.9.4.a.1 A double liner system that is designed, constructed, and installed to prevent any migration of wastes and/or leachate out of the impoundment to the adjacent subsurface, soil or groundwater or surface water at any time during the operating life, closure (and the post closure period where applicable) of the impoundment. The primary liner (i.e. -- the liner in contact with the waste) must be constructed of materials that prevent wastes and/or leachate from passing into the liner during the operating life, closure (and the post closure period where applicable of the facility. All liners must be:

8.9.4.a.1.i Constructed of materials that are chemically resistant to the waste and leachate expected to be generated and of sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external

hydrogeologic forces), physical contact with the waste and leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation. The liner will be tested for compatibility with the waste and leachate expected to be generated to determine possible effects on the liner materials prior to installation.

8.9.4.a.1.ii Placed upon a foundation or base capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift; and

8.9.4.a.1.iii Installed to cover all surrounding earth likely to be in contact with the waste and leachate; and

8.9.4.a.1.iv Constructed to be free of lenses, cracks, channels, holes, or other structural nonuniformities; and

8.9.4.a.1.v If a soil-based or admixed liner is to be used as the secondary liner (i.e. -- the liner underneath the primary liner), then such liner must be at least 90 centimeters (3 feet) thick with a maximum saturated hydraulic conductivity of nomore than 1 x 10-7 cm/sec throughout the total thickness and area of the liner;

8.9.4.a.2 An impoundment (including the base of the lower most liner components) which must be located at a minimum of 3 feet above the highest known seasonal water table elevation. This 3 foot distance may be achieved by elevating the surface impoundment artificially or by the non-mechanical lowering of the water table at the location. However, no mechanical means (i.e. - pumps) may be used to lower the water table. All plans for alteration of the water level must be approved by the Chief and will become a part of the hazardous waste management permit.

8.9.4.a.3 A leachate detection, collection and removal system beneath the liner(s) in contact with the waste (i.e. - must be situated between the liners in the double liner system) to detect, contain, collect and remove any discharge from the liner(s) in contact with the waste.

8.9.4b Earthen dikes must have a protective cover, such as grass, or rock to minimize wind and water erosion and to preserve the structural integrity of the dike.

~~8.9.4c A liner system and leachate detection, collection and~~

~~removal--system--must-have-a-containment-life-equal-to-or-greater than-the-life-of-the-surface-impoundment.~~

8.9.4c A leachate detection, collection and removal system beneath the liner in contact with the waste (i.e. must be situated between the liners in the double liner system) to detect, contain, collect and remove any discharge from the liner in contact with the waste at any time during the operating life, closure (and the post closure period where applicable) of the impoundment.

8.9.4d The owner or operator and a registered professional engineer must submit to the Chief a certification that the facility has been designed and constructed in compliance with Section 8.9.4 prior to placement of wastes into the impoundment.

8.9.5 Inspections and Testing

8.9.5a During construction or installation, liner systems must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, and foreign materials).

8.9.5.a.1 Soil based and admixed liner systems must be tested for compaction density, moisture content, permeability, and inspected for imperfections including lenses, cracks, channels, root holes or other structural non-conformities that may cause an increase in the permeability of the liner; and

8.9.5.a.2 Manufactured liner materials (e.g., membranes, sheets, and coatings) must be inspected to ensure tight seams and joints and the absence of tears or blisters.

8.9.5.a.3 Upon discovery of such imperfections, the repair of the liner must be completed prior to placement of the wastes into the impoundment.

8.9.5.a.4 The leachate detection, collection and removal system must be inspected for cracks, breaks, loose seams and joints, clogging, areas of structural stress, and any other faults or conditions which may result in collapse or failure of the system.

8.9.5.a.5 Results of such tests and repairs must be certified in writing by a registered professional engineer.

8.9.5b The owner or operator must inspect:

8.9.5.b.1 A surface impoundment (including the leachate detection, collection and removal system) at least once each day to ensure compliance with Section 8.09.03(a), (b) and (c) and to detect any leaks or other failures of the impoundment.

8.9.5.b.2 Each surface impoundment, including dikes, berms, and vegetation surrounding the dike, at least once a week and after storms to detect any evidence of or potential for leaks from the impoundment, erosion of dikes, and to ensure compliance with Section 8.9.3(d).

8.9.5c The structural integrity of any dike, including that portion of any dike which provides freeboard, must be certified against massive failure by a registered professional engineer prior to the issuance or reissuance of a permit; or if the impoundment is not in service and has not been inspected and maintained as required under Section 8.09.05(b), prior to being placed in service and after construction or prior to being returned to service.

8.9.5.c.1 In certifying the structural integrity of the dike it must be established that the dike will withstand:

8.9.5.c.1.i The stress of the pressure head of liquids placed into the impoundment;

8.9.5.c.1.ii The weakening effect of earth materials being scoured due to leakage from the impoundment through and under the dike without relying on any liner system;

8.9.5.c.1.iii The weakening effect of earth materials being scoured due to leakage from the impoundment through and under the dike assuming leaks develop in the liner system; and

8.9.~~6~~5.c.1.iv The weakening effect of any piping included in the impoundment's construction.

8.9.6 Liner System Repairs, Contingency Plans

8.9.6a Whenever there is any indication of a possible failure of the liner system, that system must be inspected in accordance with the provisions of the liner system evaluation and repair plan required by paragraph (d) of this section. Indications of possible failure of the liner system include at least an unplanned and non-sudden drop in liquid level in the impoundment, liquid detection in the leachate detection system,

evidence of leakage or the potential for leakage in the dike, erosion of the dike, apparent or potential deterioration of the liner(s) based on observation or test samples of the liner materials, any mishandling of wastes placed in the impoundment and foreign objects in the impoundment.

8.9.6b Whenever there is a positive indication of an unplanned sudden drop in liquid level in the impoundment, or active leakage through the dike, the impoundment must be removed from service.

8.9.6c If the surface impoundment must be removed from service as required by (b) of this section, the owner or operator must:

8.9.6.c.1 Immediately shut off the flow or stop the addition of wastes into the impoundment.

8.9.6.c.2 Immediately contain any surface leakage which has occurred or is occurring and cause such leak(s) to be stopped.

8.9.6.c.3 Immediately notify the Chief through the Division of Water Resources' Emergency Notification Number 1-800-642-3074.

8.9.6.c.4 If all leaks specified in (b) of this section (including leaks not evident at the surface) cannot be stopped by any other means, empty the impoundment.

8.9.6.c.5 Within 15 days after detecting the leak, submit to the Chief a written report of the problem and corrective measures taken.

8.9.6.c.6 Take any other steps necessary to stop or prevent catastrophic failure.

8.9.6d As part of the contingency plan required in Section 8.04, the owner or operator must specify:

8.9.6.d.1 A procedure for complying with the requirements of (c) of this section; and

8.9.6.d.2 A liner system repair plan describing testing and monitoring techniques; procedures to be followed to evaluate the integrity of the liner system in the event of a possible failure; a schedule of actions to be taken in the event of a possible failure; and a description of the repair techniques to be used in

the event of leakage due to liner system failure or deterioration which does not require the impoundment to be removed from service.

8.9.6e No surface impoundment that has been removed from service in accordance with (b) of this section may be restored to service unless:

8.9.6.e.1 The liner system and leachate detection, collection and removal system have been repaired; and

8.9.6.e.2 The liner system and the leachate detection, collection and removal system have been re-certified by a registered professional engineer as meeting the design specifications approved in the permit.

8.9.6f A surface impoundment that has been removed from service in accordance with (b) of this section and that is not being repaired must be closed in accordance with Section 8.09.07.

8.9.6g All wastes removed from the impoundment must be managed as a hazardous waste in compliance with all applicable requirements. Any point source discharge to waters of the State is subject to the requirements of the Water Pollution Control Act and all regulations promulgated thereunder.

8.9.7 Closure

8.9.7a At closure, all hazardous waste and hazardous waste residues must be removed from the impoundment (except as provided in Section 8.09.10). Any component of the surface impoundment or any appurtenant structures or equipment (e.g., discharge platforms and pipes, baffles, skimmers, aerators, or other equipment) containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed.

8.9.7b At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with these regulations that the waste removed from the surface impoundment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements.

8.9.7c An owner or operator who plans to close a surface impoundment exempted from the liner requirements pursuant to Section 8.9.2f of these regulations must:

1. Prepare a contingent plan for complying with Sections 8.9.10(a)(1), (a)(2) and (b) of these regulations in case not all contaminated subsoils can be practicably removed at closure; and

2. Prepare a contingent post-closure plan for complying with Section 8.9.10c, except paragraph c.2 of these regulations in case not all contaminated subsoils can be practicably removed at closure.

* * * * *

8.9.10 Additional Requirements for Impoundments Used for Disposal of Hazardous Wastes

In addition to all the other requirements of this section~~:~~,

~~8.9.10a The owner or operator desiring to leave wastes in place in an impoundment upon closure, must comply with the following as part of the closure procedures:~~ when an owner or operator leaves wastes, or waste residues or contaminated materials in place in an impoundment upon closure he must comply with the following as part of the closure procedures:

8.9.10.a.1 Eliminate the free liquids contained in the impoundment by removing the liquid wastes and by solidifying the remaining wastes and waste residues left in place;

8.9.10.a.2 Stabilize the remaining wastes to a bearing capacity sufficient to support the final cover;

8.9.10b Prior to beginning the post closure period, the owner or operator must cover the impoundment with a final cover designed and constructed to:

8.9.10.b.1 Provide long-term minimization of migration of liquids through the closed impoundment;

8.9.10.b.2 Function with minimum maintenance;

8.9.10.b.3 Promote drainage and minimize erosion or abrasion of the cover;

8.9.10.b.4 Accommodate settling and subsidence so that the cover's integrity is maintained; and

8.9.10.b.5 Have a permeability less than or equal to the

least permeable component of the liner system or 1 x 10-7 cm/sec whichever value is less.

8.9.10.c After final closure, the owner or operator must comply with all post closure requirements contained in Section 8.6.7, 8.6.8, ~~and~~ 13.00, 15.1 and 15.3 including maintenance and monitoring throughout the post closure period (specified in the permit under Section 8.6.7). The owner or operator must:

8.9.10.c.1 Maintain the integrity and effectiveness of the cover including making repairs to the cover as necessary to correct the effects of settling, subsidence, erosion, or other events;

8.9.10.c.2 Continue to operate the leachate collection and removal system for the entire post closure period;

8.9.10.c.3 Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of Section 8.13 of these regulations;

8.9.10.c.4 Prevent run-on and run-off from eroding or otherwise damaging the cover; and

8.9.10d During the post closure period, the owner or operator must:

8.9.10.d.1 Inspect daily and maintain the leachate detection, collection and removal system. If leachate is detected in the detection system between the liners, the owner or operator must:

8.9.10.d.1.i Immediately notify the Chief through the Division of Water Resources' Emergency Notification Number 1-800-642-3074.

8.9.10.d.1.ii Within 15 days after detecting the leak, submit to the Chief a written report of the problem and corrective measures taken.

8.9.10.d.2 Unless the owner or operator can demonstrate otherwise, the leachate must be managed as a hazardous waste in accordance with all regulations governing the generation of such wastes.

8.9.10.d.3 If it is determined that the liner(s) is leaking,

the owner or operator must begin the remedial actions set forth in the contingency plan specified in the permit which shall at least include plans for repairing the breach in the liner and preventing the continued migration of the leachate.

Section 8.10 Waste Piles

8.10.1 Applicability

8.10.1a The regulations in this section apply to owners and operators of facilities that store or treat hazardous waste in piles, except as Section 8.1 provides otherwise.

8.10.1b (Reserved)

8.10.1c Owners and operators of waste piles used to store or treat only hazardous wastes that do not contain free liquids are not subject to regulation under Sections 8.10.2, 8.10.3, 8.10.4, ~~8.10.5~~ and 8.10.6 with respect to these piles, provided that:

8.10.1.c.1 Liquids or materials containing free liquids are not placed in the pile;

8.10.1.c.2 The pile is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated;

8.10.1.c.3 The pile is protected from surface water run-on by the structure or in some other manner;

8.10.1.c.4 The pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting;

8.10.1.c.5 The pile will not generate leachate through decomposition or other reactions; and

8.10.1.c.6 The pile does not discharge hazardous wastes into State waters.

8.12.11.c.7 Continue unsaturated zone monitoring in compliance with Section 8.12.9 except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone.

8.12.11d The owner or operator is not subject to regulation under paragraphs (a)(8) and (c) of this section if the Chief finds that the level of hazardous constituents in the treatment zone soil does not exceed the background value of those constituents by an amount that is statistically significant when using the test specified in paragraph (d)(3) f this section. The owner or operator may submit such a demonstration to the Chief or at any time during the closure or post closure care periods. For the purposes of this paragraph:

8.12.11.d.1 The owner or operator must establish background soil values and determine whether there is a statistically significant increase over those values for all hazardous constituents specified in the facility permit under Section 8.12.2(b).

8.12.11.d.1.i Background soil values may be based on a one-time sampling of a background plot having characteristics similar to those of the treatment zone.

8.12.11.d.1.ii The owner or operator must express background values and values for hazardous constituents in the treatment zone in a form necessary for the determination of statistically significant increases under paragraph (d)(3) of this section.

8.12.11.d.2 In taking samples used in the determination of background and treatment zone values, the owner or operator must take samples at a sufficient number of sampling points and at appropriate locations and depths to yield samples that represent the chemical make-up of soil that has not been affected by leakage from the treatment zone and the soil within the treatment zone, respectively.

8.12.11.d.3 In determining whether a statistically significant increase has occurred, the owner or operator must compare the value of each constituent in the treatment zone to the background value for that constituent using a statistical procedure that provides reasonable confidence that constituent presence in the treatment zone will be identified. The owner or operator must use a statistical procedure that:

8.12.11.d.3.i Is appropriate for the distribution of the data used to establish background values; and

8.12.11.d.3.ii Provides a reasonable balance between the probability of falsely identifying hazardous constituent presence in the treatment zone and the probability of failing to identify real presence in the treatment zone.

8.12.11e The owner or operator is not subject to regulation under Section 8.13 of these regulations if the Chief finds that the owner or operator satisfies paragraph (d) of this section and if unsaturated zone monitoring under Section 8.12.9 indicates that hazardous constituents have not migrated beyond the treatment zone during the active life of the land treatment unit.

* * * * *

Section 8.13 Groundwater Protection

8.13.1 Applicability

8.13.1a Except as provided in paragraph (b) of this section, the regulations in Section 8.13 apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments, waste piles, land treatment units, or landfills. The owner or operator must satisfy the requirements of Section 8.13 for all wastes (or constituents thereof) contained in any such waste management unit at the facility that receives hazardous waste after the effective ~~day~~ date of Section 8.13 (hereinafter referred to as a "regulated unit"). Any waste or waste constituent migrating beyond the waste management area under Section 8.13.05(b) is assumed to originate from a regulated unit unless the Chief finds that such waste or waste constituent originated from another source.

8.13.1b The owner or operator is not subject to regulation under Section 8.13 if:

8.13.1.b.1 He is exempted under Section 8.01;

8.13.1.b.2 He designs and operates a pile in compliance with Section 8.10.01(c);

8.13.1.b.3 The Chief finds, pursuant to Section 8.12.11(d), that the treatment zone of a land treatment unit does not contain concentrations of hazardous constituents that are above background levels of those constituents by an amount that is statistically significant, and if an unsaturated zone monitoring program meeting the requirements of Section 8.12.09 has not shown a statistically significant increase in hazardous constituents below the treatment zone during the operating life of the unit. An exemption under this paragraph can only relieve an owner or operator of responsibility to meet the requirements of Section 8.13 during the post closure care period.

8.13.1c The regulations under Section 8.13 apply during the active life of the regulated unit (including the closure period). After closure of the regulated unit, the regulations in Section 8.13:

8.13.1.c.1 Do not apply if all waste, waste residues, contaminated containment system components, and contaminated subsoils are removed or decontaminated at closure;

8.13.1.c.2 Apply during the post closure period under Section 8.06.07 in all other cases.

* * * * *

8.13.7 Groundwater Monitoring System Requirements

The owner or operator must comply with the following requirements for any groundwater monitoring program:

8.13.7a The groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depth to yield groundwater samples from the uppermost aquifer that:

8.13.7.a.1 Represent the quality of background groundwater that has not been affected by leakage from the regulated unit; and

8.13.7.a.2 Represent the quality of groundwater passing the point of compliance.

8.13.7b Well construction must meet the following standards:

8.13.7.b.1 Wells must be cased in a manner that maintains the integrity of the monitoring well bore hole:

8.13.7.b.2 Wells must be screened and packed with sand or gravel throughout the total vertical distance of the uppermost aquifer except as provided under Section 8.13.07(c). The screened interval of an individual well should not exceed 20 feet (screened intervals greater than 20 feet may be permitted if the owner or operator can successfully demonstrate that the proposed interval will provide representative samples; such demonstration must be based on specific hydrogeologic conditions at the facility). In order to meet these requirements for screened intervals, nested wells or well clusters may be needed.

8.13.7.b.3 Screening shall be designed to prevent the introduction of sediment, yet allow optimum entrance velocity for water;

8.13.7.b.4 Screens and casing must be constructed of materials that are strong enough to prevent collapse and must be non-reactive, non-synergistic and non-catalytic to the hazardous constituents being monitored;

8.13.7.b.5 The annular space (the space between the bore hole wall and the well casing) above the sampling depth must be sealed to prevent contamination of samples and groundwater by entrance of materials from the surface; and

8.13.7.b.6 The wells must be installed, constructed and maintained using the best available techniques which will provide compliance with this section.

8.13.7c In locations where multiple formations comprise the uppermost aquifer the owner or operator must establish a groundwater monitoring system that isolates each ~~strata~~ stratum containing water and allows for separate sampling of each ~~strata~~ stratum containing water.

8.13.7d If a facility contains more than one regulated unit, separate groundwater monitoring systems may not be required for each regulated unit provided that provisions for sampling the groundwater in the uppermost aquifer will enable detection and measurement at the point of compliance of hazardous constituents from the regulated units that have entered the groundwater in the uppermost aquifer. Requests to use such a monitoring system must be submitted in the permit application as required under Section 8.13.05(b)(2).

8.13.8 Groundwater Monitoring Program

An owner or operator required to establish a groundwater monitoring program must, at a minimum, discharge the following responsibilities:

8.13.8a General requirements:

8.13.8.a.1 The owner or operator must monitor for indicator parameters (e.g., pH, specific conductance, total organic carbon, or total organic halogen), hazardous constituents under Section 8.13.04 and/or reaction products that provide a reliable indication of the presence of hazardous constituents in groundwater. The Chief will specify the monitoring parameters (indicator parameters and/or reaction products) and constituents to be monitored in the permit, after considering the following factors:

8.13.8.a.1.i The types, quantities, and concentrations of hazardous constituents in wastes managed at the regulated unit;

8.13.8.a.1.ii The mobility, stability, and persistence of hazardous constituents or their reaction products in the unsaturated zone beneath the waste management area;

8.13.8.a.1.iii The detectability of indicator parameters, hazardous constituents, and reaction products in groundwater; and

8.13.8.a.1.iv The concentrations and coefficients of variation of proposed monitoring parameters of hazardous constituents in the background groundwater.

8.13.8.a.2 The owner or operator must install a groundwater monitoring system at the point of compliance under Section 8.13.05. The groundwater monitoring system must comply with Section 8.13.07.

8.13.8.a.3 The groundwater monitoring program must include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide a reliable indication of groundwater quality below the waste management area. At a minimum the program must include procedures and techniques for:

8.13.8.a.3.i Sample collection;

8.13.8.a.3.ii Sample preservation and shipment;

8.13.8.a.3.iii Analytical procedures; and

8.13.8.a.3.iv Chain of custody control.

8.13.8.a.4 The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents in groundwater samples. Recommended methods include those outlined in 40 CFR Part 136. The proposed sampling and analytical methods must be approved by the Chief and upon approval, become a condition of the hazardous waste management permit.

8.13.8.a.5 The owner or operator must determine the groundwater flow rate and direction in the uppermost aquifer at least annually and determine transmissibility during initial sampling or initial well development.

8.13.8.a.6 The groundwater monitoring program must include a determination of the static water level and groundwater surface

elevation each time groundwater is sampled.

8.13.8.a.7 If the owner or operator determines that the groundwater monitoring program no longer satisfies the requirements of this section, he must, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

8.13.8.a.8 The owner or operator must assure that monitoring and corrective action measures necessary to achieve compliance with the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1 are taken during the term of the permit.

8.13.8.a.9 The groundwater monitoring wells must be sampled to allow detection of density separated hazardous constituents or monitoring parameters which may escape from the regulated unit.

8.13.8b Establishing water quality concentrations:

8.13.8.b.1 The groundwater monitoring program must establish background groundwater quality concentrations for each of the hazardous constituents or monitoring parameters specified in the permit.

8.13.8.b.1.i The background concentration for a hazardous constituent must be based on data from upgradient wells.

8.13.8.b.1.ii Samples shall be obtained from upgradient well(s) each time downgradient wells are sampled. Downgradient concentrations of hazardous constituents or monitoring parameters shall be compared with upgradient concentrations to determine whether the upgradient background concentrations have been exceeded.

8.13.8.b.1.iii In comparing concentrations of hazardous constituents or monitoring parameters at the point of compliance with background concentrations, the owner or operator shall use the background concentration values for the current quarter. At least four (4) background concentration values collected as required under (b)(1)(v) of this section must be used when utilizing the statistical test outlined in Section 8.13.08(c).

8.13.8.b.1.iv The owner or operator may propose to the Chief to use background concentrations of hazardous constituents or monitoring parameters based on sampling of wells that are not

upgradient from the waste management area where sampling at other wells will provide values that are representative than those provided by the upgradient wells or in situations where the owner or operator cannot define or locate an upgradient well due to adverse hydrogeologic conditions. The owner or operator must submit the details of such a proposal to the Chief for his approval. The reasons for the proposal to utilize wells that are not upgradient must be included with the proposal.

8.13.8.b.1.v In developing the data base used to determine a background concentration for each monitoring parameter or hazardous constituent, the owner or operator must take a minimum of four (4) samples from each well and a minimum of four (4) samples from the entire system used to determine background groundwater quality, each time the system is sampled.

8.13.8.b.2 The owner or operator must determine the concentration of each hazardous constituent and monitoring parameter at each monitoring well at the point of compliance and each upgradient well at least quarterly during the compliance period. Intervals between sampling and the frequency of sampling will be specified in the permit. The owner or operator must express the concentrations of each hazardous constituent and monitoring parameter at each monitoring well in a form necessary for the determination of statistically significant increases under (c) of this section.

8.13.8c Statistical method:

The owner or operator must use the following statistical procedure in determining whether the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1 has been exceeded:

8.13.8.c.1 If, in a groundwater monitoring program, the concentration of a hazardous constituent or monitoring parameter at the point of compliance is to be compared to it's respective background concentration, and both the background concentration data set and the point of compliance monitoring well concentration data set have been determined to be normally distributed by an appropriate method approved by the Chief~~.~~:

8.13.8.c.1.i The owner or operator must take at least four (4) samples at each well at the point of compliance and determine whether any increase between the mean concentration of each constituent at each well (using all samples taken) and the

background concentration value for the constituent is significant at the 0.05 level using the Cochran's Approximation to the Behren-Fisher Student's t-test as described in Appendix II. If the test indicates that the increase is significant, the owner or operator must repeat the same procedure (with at least the same number of samples as used in the first test) using fresh samples from the monitoring well. If this second round of analyses indicates that the increase is significant, the owner or operator must conclude that a statistically significant increase has occurred; or

8.13.8.c.1.ii The owner or operator may request in writing for authorization to use an equivalent statistical procedure for determining whether a statistically significant increase has occurred. The Chief will specify such a procedure in the permit if he finds that the alternative procedure reasonably balances the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit in a manner that is comparable to that of the statistical procedure described in paragraph (c)(1)(i) of this section. This alternative procedure must be appropriate for the distribution of the data.

8.13.8.c.2 In all other situations in a groundwater monitoring program the owner or operator must use a statistical procedure which provides a reasonable balance of the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit. The Mann-Whitney Test (Appendix III) is recommended. The owner or operator must supply to the Chief a written request to use such a statistical procedure, completely describing the details of the procedure and the reasons for using it.

8.13.8.c.3 The Chief will approve statistical procedures in specific cases where he finds the procedure:

8.13.8.c.3.i Is appropriate for the distribution of the data used to establish concentration values; and

8.13.8.c.3.ii Provides a reasonable balance between the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit.

8.13.8.c.4 In taking samples used in the determination of concentration values, the owner or operator must use a

groundwater monitoring system that complies with Section 8.13.07 and which fulfills the requirements of Section 8.13.08.

8.13.8d Determination of significant increases:

8.13.8.d.1 The owner or operator must determine whether there is a statistically significant increase over background concentration values for any monitoring parameter or hazardous constituent specified in the permit pursuant to paragraph (a)(1) of this section each time he determines the concentration of hazardous constituents or monitoring parameters in the groundwater at the point of compliance under paragraph (b)(2) of this section.

8.13.8.d.1.i In determining whether a statistically significant increase has occurred, the owner or operator must compare the concentration of each hazardous constituent and monitoring parameter at each individual monitoring well at the point of compliance to the background concentration value for that parameter or constituent, according to the statistical procedure specified under Section 8.13.08(c).

8.13.8.d.1.ii The owner or operator must determine whether there has been a statistically significant increase at each monitoring well at the point of compliance. This will be done within the time period after completion of sampling specified in the permit. The Chief will specify that time period, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of groundwater samples.

8.13.8.d.2 If the owner or operator determines, pursuant to paragraph (d)(1) of this section, that there is a statistically significant increase in the concentrations of any monitoring parameter or hazardous constituents specified pursuant to paragraph (a)(1) of this section at any monitoring well at the point of compliance, he must:

8.13.8.d.2.i Notify the Chief of this finding in writing within seven (7) days. The notification must indicate what monitoring parameter(s) or hazardous constituent(s) have shown statistically significant increases;

8.13.8.d.2.ii Immediately sample the groundwater in all monitoring wells and determine the concentration of all constituents identified in Appendix VIII of Section 3 of these

regulations that are present in ground water;

8.13.8.d.2.iii Establish a background value for each Appendix VIII constituent that has been found at the compliance point under paragraph (d)(2)(ii) of this section as follows:

8.13.8.d.2.iii.A The owner or operator must comply with Section 8.13.08(b) in developing the data base used to determine background values;

8.13.8.d.2.iii.B The owner or operator must express background values in a form necessary for the determination of statistically significant increases under Section 8.13.08(c); and

8.13.8.d.2.iii.C In taking samples used in the determination of background values, the owner or operator must use a groundwater monitoring system that complies with Section 8.13.07(a), (b), (c), and (d);

8.13.8.d.2.iv Within 60 days submit to the Chief a written report including the following information:

8.13.8.d.2.iv.A Any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of Section 8.13.09;

8.13.8.d.2.iv.B Any proposed changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical procedures used at the facility necessary to meet the requirements of Section 8.13.09;

8.13.8.d.2.iv.C An identification of the concentration of any Appendix VIII constituents found in the groundwater at each monitoring well at the compliance point; and

8.13.8.d.2.iv.D If such changes are proposed under (A) and (B) of this subsection, then an application for permit modification must be submitted, with the report, pursuant to Section 11.17; and,

8.13.8.d.2.v If the owner or operator determines, pursuant to paragraph (d)(1) of this section, that there is a statistically significant increase in the concentrations of hazardous constituents specified pursuant to paragraph (a)(1) of this section at any monitoring well at the point of compliance (thereby violating the Water Resources Board's Groundwater

Protection Standard Regulation, Series VII, Section 1), he must comply with the provisions of the corrective action program specified in the permit, unless the Chief determines that a demonstration made under paragraph (d)(3) of this section successfully shows that a source other than the regulated unit caused the increase or that the increase resulted from an error in sampling, analysis or evaluation.

8.13.8.d.3 If the owner or operator determines, pursuant to paragraph (d)(1) of this section, that the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1 if being exceeded at any monitoring well at the point of compliance, he may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis or evaluation. In making a demonstration under this paragraph, the owner or operator must;

8.13.8.d.3.i Notify the Chief in writing within seven (7) days that he intends to make a demonstration under this paragraph;

8.13.8.d.3.ii Within 60 days, submit a written report to the Chief which demonstrates that a source other than a regulated unit caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation;

8.13.8.d.3.iii Within 90 days, submit to the Chief an application for a permit modification to make any appropriate changes to the groundwater monitoring program at the facility; and

8.13.8.d.3.iv Continue to monitor in accord with the groundwater monitoring program established under this section.

8.13.9 Corrective Action Program

An owner or operator, required to establish a corrective action program under Section 8.13 must, at a minimum, discharge the following responsibilities:

8.13.9a The owner or operator must take corrective action to ensure that regulated units are in compliance with the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1.

8.13.9b The owner or operator must implement a corrective action program that prevents hazardous constituents from exceeding their respective background concentrations in groundwater by removing the hazardous constituents from the groundwater. The contingency plan in the permit will specify the specific measure that will be taken.

8.13.9c The owner or operator must begin corrective action within the time period specified in the permit contingency plan after the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1, is exceeded.

8.13.9.d.1 In conjunction with a corrective action program, the owner or operator must establish and implement a groundwater monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements for a groundwater monitoring program under Section 8.13.08 and must be as effective as that program in determining compliance with the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1.

8.13.9.d.2 The owner or operator must analyze samples from all monitoring wells for all constituents contained in Appendix VIII of Section 3 of these regulations at least once prior to terminating the corrective action program to determine if there is a need for further corrective action. The owner or operator shall report the results of full Appendix VIII sample analyses to the Chief within seven (7) days after completion of the analyses.

8.13.9e In addition to the other requirements of this section, the owner or operator must conduct a corrective action program to remove any hazardous constituents under Section 8.13.4 that exceed their respective background concentrations in groundwater at the point of compliance under Section 8.13.6 or between the point of compliance and the downgradient facility property boundary. The contingency plans submitted in the permit application will specify the measures to be taken.

8.13.9.e.1 Corrective action measures under this paragraph must be initiated and completed within a reasonable time considering the extent of contamination.

8.13.9.e.2 Corrective action measures under this paragraph may be terminated once the concentration of hazardous constituents under Section 8.13.4 is reduced to levels below

their respective background concentrations.

8.13.9f The owner or operator must continue corrective action measures during the compliance period to the extent necessary to ensure that the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1 is not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, he must continue that corrective action for as long as necessary to achieve compliance with the above standard. The owner or operator may terminate corrective action measures taken beyond the compliance period if he can demonstrate, based on data from the groundwater monitoring program under paragraph (d) of this section, that the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1, has not been exceeded for a period of three (3) consecutive years.

8.13.9g The owner or operator must report in writing to the Chief on the effectiveness of the corrective action program. The owner or operator must submit these reports semi-annually.

8.13.9h If the owner or operator determines that the corrective action program no longer satisfies the requirements of this section, he must, within 60 days submit an application for a permit modification to make any appropriate changes to the program.

8.13.9i If the owner or operator elects to pursue a corrective action program other than that outlined in the permit contingency plan, he must notify the Chief of his decision, in writing, within 15 days of the determination made under Section 8.13.08(d). The owner or operator must obtain approval to implement any alternate corrective action plan from the Chief and begin implementation of such plan, within 90 days of the determination made under Section 8.13.08(d). If the alternate plan is not approved or in effect within 90 days, the owner or operator must immediately begin implementation of the original corrective action program outlined in the permit contingency plan.

8.13.9j If the Chief determines that groundwater quality has been affected by a regulated unit prior to or upon receipt of a Part B application, the owner or operator shall be required to implement a corrective action program immediately upon issuance of the permit.

8.13.10 - 8.13.20 (Reserved)

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11.5 Contents of Part B

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11.5.2 Specific Information Requirements

The following additional information is required from owners or operators of specific types of hazardous waste management facilities that are used or to be used for storage or treatment:

11.5.2a For facilities that store containers of hazardous waste except as otherwise provided in Section 8.07.01:

11.5.2.a.1 A description of the containment system to demonstrate compliance with Section 8.07.07. Show at least the following:

11.5.1.a.1.i Basic design parameters, dimensions, and materials of construction.

11.5.2.a.1.ii How the design promotes drainage or how containers are kept from contact with standing liquids in the containment system.

11.5.2.a.1.iii Capacity of the containment system relative to the number and volume of containers to be stored.

11.5.2.a.1.iv Provisions for preventing or managing run-on.

11.5.2.a.1.v How accumulated liquids can be analyzed and removed to prevent overflow.

11.5.2.a.2 For storage areas that store containers holding hazardous wastes that do not contain free liquids, a demonstration of compliance with Section 8.07.07(c), including:

11.5.2.a.2.i Test procedures and results or other documentation or information to show that the wastes do not contain free liquids provided such test procedures, results and other documentation or information simulate in-situ waste management conditions and demonstrate the irreversibility of the liquid to solid phase of the waste during the time the waste is managed in the containers, based at least on in-situ temperature and pressure conditions, possible chemical and biological reactions, and the partition coefficients of the specific sorbant matrix with that of the particular waste; and

11.5.2.a.2.ii A description of how the storage area is designed or operated to drain and remove liquids and how containers are kept from contact with standing liquids.

11.5.2.a.3 Sketches, drawings, or data demonstrating compliance with Section 8.07.08 (location or buffer zone and containers holding ignitable or reactive wastes) and Section 8.07.09(c) (location of incompatible wastes), where applicable.

11.5.2.a.4 Where incompatible wastes are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with Sections 8.07.09(a) and (b) and 8.02.08(b) and (c).

11.5.2b For facilities that use tanks to store or treat hazardous waste, except as otherwise provided in Section 8.08.01, description of design and operation procedures which demonstrate compliance with all applicable requirements of Section 8.00, including:

11.5.2.b.1 References to design standards or other available information used (or to be used) in design and construction of the tank.

11.5.2.b.2 A description of design specifications including identification of construction materials and lining materials (include pertinent characteristics such as corrosion or erosion resistence).

11.5.2.b.3 Tank dimensions, capacity, and shell thickness.

11.5.2.b.4 A diagram of piping, instrumentation, and process flow.

11.5.2.b.5 Description of feed systems, safety cutoff, bypass systems, and pressure controls (e.g., vents).

11.5.2.b.6 Description of procedures for handling incompatible, ignitable, or reactive wastes, including the use of buffer zone.

11.5.2c For facilities that store, treat, or dispose of hazardous waste in surface impoundments, except as otherwise provided in Section 8.09.01:

11.5.2.c.1 A list of the hazardous wastes placed or to be

placed in each surface impoundment;

11.5.2.c.2 Detailed plans and an engineering report describing how the surface impoundment is or will be designed, constructed, operated, and maintained to meet the requirements of Sections 8.09.02 and 8.09.04. This submission must address the following items:

11.5.2.c.2.i The liner system,

11.5.2.c.2.ii Prevention of overtopping; and

11.5.2.c.2.iii Structural integrity of dikes.

11.5.2.c.3 A description of how each surface impoundment, including the liner and cover systems and appurtenances for control of overtopping, will be inspected in order to meet the requirements of Section 8.09.05. This information should be included in the inspection plan and submitted under paragraph ~~(a)(5)~~ 11.5.1.e of this section;

11.5.2.c.4 A certification by a registered professional engineer which attests to the structural integrity of each dike, as required under Section 8.09.05. For new units, the owner or operator must submit a statement by a registered professional engineer that he will provide such a certification upon completion of construction in accordance with the plans and specifications;

11.5.2.c.5 A description of the procedure to be used for removing a surface impoundment from service, as required under Section 8.09.06 and paragraph (c). This information should be included in the contingency plan submitted under paragraph ~~(a)(7)~~ 11.5.1.g of this section;

11.5.2.c.6 A description of how hazardous waste residues and contaminated materials will be removed from the unit at closure, as required under Section 8.09.07. For any wastes not to be removed from the unit upon closure, the owner or operator must submit detailed plans and an engineering report describing how Section 8.09.07 will be complied with. This information should be included in the closure plan and, where applicable, the post-closure plan submitted under Section 11.05.01(n);

11.5.2.c.7 If ignitable or reactive wastes are to be placed in a surface impoundment, an explanation of how Section 8.09.08

will be complied with;

11.5.2.c.8 If incompatible wastes, or incompatible wastes and materials will be placed in a surface impoundment, an explanation of how Section 8.09.09 will be complied with.

11.5.2d For facilities that store or treat hazardous waste in waste piles, except as otherwise provided in Section 8.01:

11.5.2.d.1 A list of hazardous wastes placed or to be placed in each waste pile;

11.5.2.d.2 If an exemption is sought to Section 8.10.2, 8.10.3, 8.10.4 and 8.10.6 pursuant to 8.10.1c a demonstration must be made sufficient to show compliance with Section 8.10.1(c) (1)-(6). ~~Such demonstration must include:~~

11.5.2.d.~~2.4~~.3 Detailed plans and an engineering report describing how the pile is or will be designed, constructed, operated and maintained to meet the requirements of Section 8.10.2. This submission must address the following items as specified in Section 8.10.2:

11.5.2.d.23.i.A The liner system;

11.5.2.d.23.ii.B Control of run-on;

11.5.2.d.2.3iii.C Control of run-off;

11.5.2.d.2.3iv.D Management of collection and holding units associated with run-on and run-off control systems; and

11.5.2.d.2.3vi.E Control of wind dispersal of particulate matter, where applicable;

11.5.2.d.42.4.F A description of how each waste pile, including the liner and appurtenances for control of run-on and run-off, will be inspected in order to meet the requirements of Section 8.10.05. This information should be included in the inspection plan submitted under paragraph of this section;

11.5.2.d.5i.G If treatment is carried out on or in the pile, details of the process and equipment used, and the nature and quality of the residuals;

11.5.2.d.62.i.H If ignitable or reactive wastes are to be

placed in a waste pile, an explanation of how the requirements of Section 8.10.07 will be complied with;

11.5.2.d.7~~2.i.I~~ If incompatible wastes, or incompatible wastes and materials will be placed in a waste pile, an explanation of how Section 8.10.08 will be complied with;

11.5.2.d.8~~2.i.J~~ A description of how hazardous waste residues and contaminated materials will be removed from the waste pile at closure, as required under Section 8.06.

11.5.2e For facilities that use land treatment to dispose of hazardous waste, except as otherwise provided in Section 8.01:

11.5.2.e.1 A description of plans to conduct a treatment demonstration as required under Section 8.12.03. The description must include the following information:

11.5.2.e.1.i The wastes for which the demonstration will be made and the potential hazardous constituents in the wastes;

11.5.2.e.1.ii The data sources to be used to make the demonstration (e.g., literature, laboratory data, field data, or operating data);

11.5.2.1.iii Any specific laboratory or field test that will be conducted, including:

11.5.2.e.1.iii.A The type of test (e.g., column leaching, degradation);

11.5.2.e.1.iii.B Materials and methods, including analytical procedures;

11.5.2.e.1.iii.C Expected time for completion;

11.5.2.e.1.iii.D Characteristics of the unit that will be simulated in the demonstration, including treatment zone characteristics, climatic conditions, and operating practices;

11.5.2.e.2 A description of a land treatment program, as required under Section 8.12.03. This information must be submitted with the plans for the treatment demonstration, and updated following the treatment demonstration. The land treatment program must address the following items;

11.5.2.e.2.i The wastes to be land treated;

11.5.2.e.2.ii Design measures and operating practices necessary to maximize treatment in accordance with Section 8.12.04 including;

11.5.2.e.2.ii.A Waste application method and rate;

11.5.2.e.2.ii.B Measures to control soil pH;

11.5.2.e.2.ii.C Enhancement of microbial or chemical reactions;

11.5.2.e.2.ii.D Control of moisture content;

11.5.2.e.2.iii Provisions for unsaturated zone monitoring, including:

11.5.2.e.2.iii.A Sampling equipment, procedures, and frequency;

11.5.2.e.2.iii.B Procedures for selecting sampling locations;

11.5.2.e.2.iii.C Analytical procedures;

11.5.2.e.2.iii.D Chain of custody control;

11.5.2.e.2.iii.E Procedures for establishing background values;

11.5.2.e.2.iii.F Statistical methods for interpreting results;

11.5.2.e.2.iii.G The justification for any hazardous constituents, in accordance with the criteria for such selection in Section 8.12.9;

11.5.2.e.2.iv A list of hazardous constituents reasonably expected to be in, or derived from, the wastes to be land treated based on waste analysis performed pursuant to Section 8.2.4;

11.5.2.e.2.v The proposed dimensions of the treatment zone;

11.5.2.e.3 A description of how the unit is or will be designed, constructed, operated, and maintained in order to meet

the requirements of Section 8.12.04. This submission must address the following items;

11.5.2.e.3.i Control of run-on;

11.5.2.e.3.ii Collection and control of run-off;

11.5.2.e.3.iii Minimization of run-off of hazardous constituents from the treatment zone;

11.5.2.e.3.iv Management of collection and holding facilities associated with run-on and run-off control systems;

11.5.2.e.3.v Periodic inspection of the unit. This information should be included in the inspection plan submitted under paragraph ~~(a)(5)~~ 11.5.1.e of this section;

11.5.2.e.3.vi Control of wind dispersal of particulate matter, if applicable;

11.5.2.e.4 If food-chain crops are to be grown in or on the treatment zone of the land treatment unit, a description of how the demonstration required under Section 8.12.07(a) will be conducted including;

11.5.2.e.4.i Characteristics of the food-chain crop for which the demonstration will be made;

11.5.2.e.4.ii Characteristics of the waste, treatment zone, and waste application method and rate to be used in the demonstration;

11.5.2.e.4.iii Procedures for crop growth, sample collection, sample analysis, and data evaluation;

11.5.2.e.4.iv Characteristics of the comparison crop including the location and conditions under which it was or will be grown.

11.5.2.e.5 If food-chain crops are to be grown, and cadmium is present in the land-treated waste, a description of how the requirements of Section 8.12.07 will be complied with;

11.5.2.e.6 A description of the vegetative cover to be applied to closed portions of the facility, and a plan for maintaining such cover during the post-closure care period, as

required under Section 8.12.11. This information should be included in the closure plan and, where applicable, the post-closure care plan submitted under Section 11.05.01(n).

11.5.2.e.7 If ignitable or reactive wastes will be placed in or on the treatment zone, an explanation of how the requirements of Section 8.12.12 will be complied with;

11.5.2.e.8 If incompatible wastes, or incompatible wastes and materials, will be placed in or on the same treatment zone, an explanation of how Section 8.12.13 will be complied with.

11.5.2f For facilities that dispose of hazardous waste in landfills, except as otherwise provided in Section 8.01:

11.5.2.f.1 A list of the hazardous wastes placed in each landfill or landfill cell;

11.5.2.f.2 Detailed plans and an engineering report describing how the landfill is or will be designed, constructed, operated, and maintained to comply with the requirements of Section ~~8.11.04~~ 8.11.2. This submission must address the following items as specified in Section ~~8.11.04~~ 8.11.2:

11.5.2.f.2.i The liner system and leachate collection and removal system;

11.5.2.f.2.ii Control of run-on;

11.5.2.f.2.iii Control of run-off;

11.5.2.f.2.iv Management of collection and holding facilities associated with run-on and run-off control systems; and

11.5.2.f.2.v Control of wind dispersal of particulate matter, where applicable.

11.5.2.f.3 A description of how each landfill, including the liner and cover systems will be inspected in order to meet the requirements of Section 8.11.03. This information should be included in the inspection plan submitted under paragraph ~~(a)(5)~~ 11.5.1.e of this section;

11.5.2.f.4 Detailed plans and an engineering report describing the final cover which will be applied to each landfill

or landfill cell at closure in accordance with Section 8.11.11, and a description of how each landfill will be maintained and monitored after closure in accordance with Section 8.11.11. This information should be included in the closure and post-closure plans submitted under paragraph ~~(a)(13)~~ 11.5.1.n of this section.

11.5.2.f.5 If ignitable or reactive wastes will be landfilled, an explanation of how the requirements of Section 8.11.13 will be complied with;

11.5.2.f.6 If incompatible wastes, or incompatible wastes and materials will be landfilled, an explanation of how Section 8.11.14 will be complied with;

11.5.2.f.7 If bulk or non-containerized liquid waste or waste containing free liquids is to be landfilled, an explanation of how the requirements of Section 8.11.15 will be complied with;

11.5.2.f.8 If containers of hazardous waste are to be landfilled, an explanation of how the requirements of Sections 8.11.16 or 8.11.17, as applicable, will be complied with.

11.5.2g The following additional information regarding protection of ground water is required from owners or operators of hazardous waste surface impoundments, piles, land treatment units, and landfills, except as otherwise provided in Section 8.13.01(G):

11.5.2.g.1 A summary of the ground-water monitoring data obtained during the interim status period under 40 C.F.R. 265.90-265.94, were applicable.

11.5.2.g.2 Identification of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including ground-water flow direction and rate, and the basis for such identification (i.e., the information obtained from hydrogeologic investigations of the facility area). This information should include the following:

11.5.2.g.2.i Characterization of the site hydrogeology:

11.5.2.g.2.i.A Copies of any available geophysical logs of the site (Spontaneous potential, resistivity, gamma ray, etc.);

11.5.2.g.2.i.B Depth to the top of each water-bearing formation;

11.5.2.g.2.i.C Depth to the bottom of each water-bearing formation;

11.5.2.g.2.i.D Areas of recharge and discharge for the uppermost aquifer;

11.5.2.g.2.i.E Water level depth information (i.e., a water-table map);

11.5.2.g.2.i.F Depth to and type of bedrock present;

11.5.2.g.2.i.G Information available on the three dimensional flow of the site (including horizontal and vertical flow rates and directions); and

11.5.2.g.2.i.H Any additional information deemed necessary by the Chief.

11.5.2.g.2.ii Characterization of each soil horizon underlying the hazardous waste management area:

11.5.2.g.2.ii.A pH;

11.5.2.g.2.ii.B Cation exchange capacity;

11.5.2.g.2.ii.C Particle size ratio and textural classification;

11.5.2.g.2.ii.D Bulk density;

11.5.2.g.2.ii.E Percent voids present;

11.5.2.g.2.ii.F Permeability;

11.5.2.g.2.ii.G Infiltration rate; and

11.5.2.g.2.ii.H Any other information deemed necessary by the Chief.

11.5.2.g.3 On the topographic map required under Section 11.05.01 (t), a delineation of the waste management area, the property boundary, the propsoed "point of compliance" as defined under Section 8.13.05, the proposed location of ground-water monitoring wells as required under Section 8.13.07 and, to the extent possible, the information required in paragraph g ~~(e)(2)~~ (2) of this section;

11.5.2.g.4 A description of any plume of contamination that has entered the ground water from a regulated unit at the time that the application is submitted that:

11.5.2.g.4.i Delineates the extent of the plume on the topographic map required under Section 11.05.01(t);

11.5.2.g.4.ii Identifies the concentration of each Appendix VIII constituent in the plume.

11.5.2.g.5 Detailed plans and an engineering report describing the proposed ground-water monitoring program to be implemented to meet the requirements of Section 8.13.07 (including such information as proposed purging methods, proposed development of wells, etc.);

11.5.2.g.6 The owner or operator must also submit an engineering feasibility plan for a corrective action program necessary to meet the requirements of Section 8.13.09.

11.5.2.g.7 The owner or operator must submit sufficient information, supporting data, and analyses to establish a ground-water monitoring program which meets the requirements of Section 8.13.08. This submission must address the following items as specified under Section 8.13.08:

11.5.2.g.7.i A proposed list of indicator parameters, waste constituents, or reaction products that can provide a reliable indication of the presence of hazardous constituents in the ground water;

11.5.2.g.7.ii A proposed ground-water monitoring system;

11.5.2.g.7.iii Background concentrations of each proposed monitoring parameter or hazardous constituent, or procedures to calculate such concentrations; and

11.5.2.g.7.iv A description of proposed sampling, analysis and statistical comparison procedures to be utilized in evaluating ground-water monitoring data.

11.5.2.g.8 If hazardous constituents have been measured in the groundwater at the point of compliance at concentrations which are determined to be significantly increased over background concentrations under Section 8.13.08(d), the owner or operator must submit sufficient information, supporting data, and

analyses to establish a corrective action program which meets the requirements of Section 8.13.09. To demonstrate compliance with Section 8.13.09, the owner or operator must address the following items (in addition to other Section 8.13.09 requirements):

11.5.2.g.8.i A characterization of the contaminated groundwater, including concentrations of hazardous constituents;

11.5.2.g.8.ii The background concentration for each hazardous constituent found in the groundwater as set forth in Section 8.13.08(b);

11.5.2.g.8.iii Detailed plans and an engineering report describing the corrective action to be taken;

11.5.2.g.8.iv A description of how the ground-water monitoring program will assess the adequacy of the corrective action under Section 8.13.09(d);

11.5.2.g.8.v A proposed compliance schedule for beginning the corrective action; and

11.5.2.g.8.vi A description of the wastes previously handled at the facility.

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11.10.12 Reporting Requirements

11.10.12a Planned changes.

The permittee shall give written notice to the Chief as soon as possible of any planned ~~major~~ physical alterations or additions to the permitted facility. For a new hazardous waste management facility, the permittee may not commence treatment, storage, or disposal of hazardous waste; and for a facility being modified the permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility, until:

11.10.12.a.1 The permittee has submitted to the Chief by certified mail or hand delivery, a letter signed by the permittee and a registered professional engineer, stating that the facility has been constructed or modified in compliance with the permit; and

11.10.12.a.1.i The Chief has inspected the modified or newly

analyses to establish a corrective action program which meets the requirements of Section 8.13.09. To demonstrate compliance with Section 8.13.09, the owner or operator must address the following items (in addition to other Section 8.13.09 requirements):

11.5.2.g.8.i A characterization of the contaminated groundwater, including concentrations of hazardous constituents;

11.5.2.g.8.ii The background concentration for each hazardous constituent found in the groundwater as set forth in Section 8.13.08(b);

11.5.2.g.8.iii Detailed plans and an engineering report describing the corrective action to be taken;

11.5.2.g.8.iv A description of how the ground-water monitoring program will assess the adequacy of the corrective action under Section 8.13.09(d);

11.5.2.g.8.v A proposed compliance schedule for beginning the corrective action; and

11.5.2.g.8.vi A description of the wastes previously handled at the facility.

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The permittee shall give written notice to the Chief as soon as possible of any planned ~~major~~ physical alterations or additions to the permitted facility. For a new hazardous waste management facility, the permittee may not commence treatment, storage, or disposal of hazardous waste; and for a facility being modified the permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility, until:

11.10.12.a.1 The permittee has submitted to the Chief by certified mail or hand delivery, a letter signed by the permittee and a registered professional engineer, stating that the facility has been constructed or modified in compliance with the permit; and

11.10.12.a.1.i The Chief has inspected the modified or newly

constructed facility and finds it is in compliance with the conditions of the permit; or

11.10.12.a.1.ii Within fifteen (15) days of the date of submission of the letter in paragraph (a)(1) of this section, if the permittee has not received notice from the Chief of the intent to inspect, prior inspection is waived and the permittee may commence treatment, storage or disposal of hazardous waste.

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8.11 Landfills

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8.11.2 Design and Operating Requirements

8.11.2a A landfill must have:

8.11.2.a.1 A double liner system that is designed, constructed, and installed to prevent any migration of wastes and/or leachate out of the landfill to the adjacent subsurface, soil or groundwater or surface water at any time during the operating life, closure and the post closure period of the landfill. The primary liner (i.e. -- the liner in contact with the waste), must be constructed of materials that prevent wastes and/or leachate from passing into the liner during the operating life, closure and the post closure period of the facility. All liners must be:

8.11.2.a.1.i Constructed of materials that are chemically resistant to the waste and leachate expected to be generated and of sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste and leachate installation, and the stress of daily operation. The liner will be tested for compatibility with the waste and leachate expected to be generated to determine possible effects on the liner materials prior to installation.

8.11.2.a.1.ii Placed upon a foundation or base capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift;

8.11.2.a.1.iii Installed to cover all surrounding earth likely to be in contact with the waste and leachate;

8.11.2.a.1.iv Constructed to be free of lenses, cracks, channels, holes, or other structural nonuniformities; and

8.11.2.a.1.v If a soil-based or admixed liner is to be used as the secondary liner (i.e. -- the liner underneath the primary liner), then such liner must be at least 90 cm (3 feet) thick with a maximum saturated hydraulic conductivity of no more than 1 x 10-7 cm/sec throughout the total thickness and area of the liner;

8.11.2.a.2 A leachate collection and removal system immediately above the primary liner that is designed, constructed, maintained, and operated to collect and remove leachate from the landfill. The Chief will specify conditions for design and operation in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must be:

8.11.2.a.2.i Constructed of materials that are:

8.11.2.a.2.i.A Chemically resistant to the waste managed in the landfill and the leachate expected to be generated; and

8.11.2.a.2.i.B Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill; and

8.11.2.a.2.ii Must be overlain by a graded granular material assuring a hydraulic conductivity of 1 x 10-3 cm/sec placed with a minimum slope of 2%.

8.11.2.a.2.iii Designed and operated to function without clogging through the operating life and scheduled closure and post closure period of the landfill.

8.11.2.a.3 A leachate detection system must be designed, constructed, maintained and operated between the liners to detect any migration of liquid into the space between the liners.

8.11.2b The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 25-year 24-hour storm.

8.11.2c The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 25-year 24-hour storm.

8.11.2d Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

8.11.2e If the landfill contains any particulate matter

which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to control wind dispersal.

8.11.2f The landfill (including the base of the lower most liner components) must be located at a minimum of 3 feet above the highest known seasonal water table elevation. This 3 foot distance may be achieved by elevating the waste disposal facility artificially or by non-mechanical lowering of the water table. However, non-mechanical means (i.e. - pumps) may be used, to lower the water table. All plans for alteration of the water level must be approved by the Chief and will become a part of the hazardous waste management permit.

8.11.2g The Chief will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

8.11.2h The design specifications, construction and installation practices and operating conditions will be certified by an owner or operator and a registered professional engineer.

8.11.2i Existing portions of landfills are exempt from the requirements of Section 8.11.2(a), 8.11.3(a), 8.11.4, 8.11.11(c)(2), (c)(3), and (d) provided that paragraph (i)(1), is complied with.

8.11.2.i.1 The owner or operator, in order to qualify for the exemption in paragraph (i) above, must demonstrate that statistically significant increases of hazardous constituents do not occur in the groundwater or surface water during its active life and the post closure period, except as provided in paragraph (j) of this Section.

8.11.2.i.2 If statistically significant increases of hazardous constituents are detected as outlined in Section 8.13.08(d) in the groundwater beneath the facility (including the regulated unit) the owner or operator must comply with the corrective action outlined in Section 8.13.9 (if groundwater contamination has been determined).

8.11.2j If the owner or operator determines that the corrective action program being implemented under Section 8.13.09 is insufficient for causing cessation of hazardous waste constituents migration, then the unit must be closed. However, if it is determined that the corrective action will adequately

arrest and remove the contamination, the owner may choose one of the four options which will become part of the conditions of the permit:

8.11.2.j.1 Retrofit the unit with liners; in accordance with Section 8.11.01(a)(1);

8.11.2.j.2 Stop the leak;

8.11.2.j.3 Continue the operation of the unit, (while concurrently developing/implementing an alternate treatment, storage, or disposal method), for a period of five years at which time the unit must be closed; or

8.11.2.j.4 Continue the operation of the unit provided a demonstration can be made and approved by the Chief that no adverse impact to human health or to the environment will result from the continued operation of the unit during the active life and closure and post closure period, provided that the facility continue to comply with an approved corrective action program. Such demonstration must include and discuss the following:

8.11.2.j.4.i Potential adverse effects on ground water quality, considering:

8.11.2.j.4.i.A The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

8.11.2.j.4.i.B The hydrogeological characteristics of the facility and surrounding land;

8.11.2.j.4.i.C The quantity of ground water and the direction of ground water flow;

8.11.2.j.4.i.D The proximity and withdrawal rates of ground users;

8.11.2.j.4.i.E The current and future uses of ground water in the area;

8.11.2.j.4.i.F The existing quality of ground water, including other sources of contamination and their cumulative impact on ground water quality;

8.11.2.j.4.i.G The potential for health risks caused by

human exposure to waste constituents;

8.11.2.j.4.i.H The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

8.11.2.j.4.i.I The persistence and permanence of the potential adverse effects; and

8.11.2.j.4.ii Potential adverse effects on hydraulically connected surface water quality, considering:

8.11.2.j.4.ii.A The volume and physical and chemical characteristics of the waste in the regulated unit;

8.11.2.j.4.ii.B The hydrogeological characteristics of the facility and surrounding land;

8.11.2.j.4.ii.C The quantity and quality of ground water, and the direction of ground water flow;

8.11.2.j.4.ii.D The patterns of rainfall in the region;

8.11.2.j.4.ii.E The proximity of the regulated unit to surface waters;

8.11.2.j.4.ii.F The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

8.11.2.j.4.ii.G The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

8.11.2.j.4.ii.H The potential for health risks caused by human exposure to waste constituents;

8.11.2.j.4.ii.I The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

8.11.2.j.4.ii.J The persistence and permanence of the potential adverse effects.

8.11.2.j.4.iii In making any determination under paragraph (4) of this section concerning the use of ground water in the

area around the facility, the Chief will consider any identification of underground sources of drinking water and exempted aquifers made under the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20, Article 5A, Series IX (1983).

* * * * *

8.11.15 Restrictions on Liquid Waste

8.11.15a Bulk or non-containerized liquid waste or waste containing free liquids must not be placed in a landfill unless:

8.11.15.a.1 The landfill has a liner and leachate collection and removal system that meet the requirements of 8.11.2; or

8.11.15.a.2 Before disposal the liquid waste or waste containing free liquids is treated, solidified and stabilized, chemically or physically, so that free liquids are ~~not~~ no longer present.

8.11.15b Containers holding free liquids must not be placed in a landfill unless:

8.11.15.b.1 The container is very small, such as an ampule; and

8.11.15.b.2 The container is placed in an overpack drum (lab pack) as defined in Section 8.11.17 and is disposed of in accordance with Section 8.11.17.

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8.12 Land Treatment

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8.12.7 Food Chain Crops

The Chief may allow the growth of food chain crops in or on the treatment zone only if the owner or operator satisfies the conditions of this section. The Chief will specify in the facility permit the specific food chain crops which may be grown.

8.12.7.a.1 The owner or operator must demonstrate that there is no substantial risk to human health caused by the growth of such crops in or on the treatment zone by demonstrating, prior to the planting of such crops, that hazardous constituents other than cadmium:

8.12.7.a.1.i Will not be transferred to the food or feed portions of the crop by plant uptake or ~~indirect~~ direct contact, and will not otherwise be ingested by food chain animals (e.g., by grazing); or

8.12.7.a.1.ii Will not occur in greater concentrations in or on the food or feed portions of crops grown on the treatment zone than in or identical portions of the same crops grown on untreated soils under similar conditions in the same region.

8.12.7.a.2 The owner or operator must make the demonstration required under this paragraph prior to the planting of crops at the facility for all constituents identified in Appendix VIII of Section 3 of these regulations that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

8.12.7.a.3 In making a demonstration under this paragraph, the owner, or operator may use field tests, greenhouse studies, available data, or, in the case of existing units, operating data, and must;

8.12.7.a.3.i Base the demonstration on conditions similar to those present in the treatment zone, including soil characteristics (e.g., pH, cation exchange capacity), specific wastes, application rates, application methods, and crops to be grown; and

8.12.7.a.3.ii Describe the procedures used in conducting any tests, including the sample selection criteria, sample size,

analytical methods, and statistical procedures.

8.12.7.a.4 If the owner or operator intends to conduct field tests or greenhouse studies in order to make the demonstration required under this paragraph, he must obtain a permit for conducting such activities.

8.12.7b The owner or operator must comply with the following conditions if cadmium is contained in wastes applied to the treatment zone:

8.12.7.b.1.i The pH of the waste and soil mixture must be 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less;

8.12.7.b.1.ii The annual application from cadmium from waste must not exceed .44 lbs/acre on land used for production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food chain crops, the annual cadmium application rate must not exceed:

Time Period	Annual Cd application rate lbs/acre
Present to June 30, 1984	1.78
July 1, 1984 to December 31, 1986	1.11
Beginning January 1, 1987	.44

8.12.7.b.1.iii The cumulative application of cadmium from waste must not exceed 4.46 lbs/acre if the waste and soil mixture has a pH of less than 6.5; and

8.12.7.b.1.iv If the waste and soil mixture has a pH of 6.5 or greater or is maintained at a pH of 6.5 or greater during crop growth, the cumulative application of cadmium from waste must not exceed: 4.46 lbs/acre if soil cation exchange capacity (CEC) is less than 5 meq/100g; 8.92 lbs/acre if soil CEC is 5-15 meq/100g; and 17.4884 lbs/acre if soil CEC is greater than 15 meq/100g; or

8.12.7.b.2.i Animal feed must be the only food chain crop produced;

8.12.7.b.2.ii The pH of the waste and soil mixture must be 6.5 or greater at the time of waste application or at the time the crop is planted, whichever occurs later, and this pH level must be maintained whenever food chain crops are grown;

8.12.7.b.2.iii There must be an operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The operating plan must describe the measures to be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses; and

8.12.7.b.2.iv Future property owners must be notified by a stipulation in the land record or property deed which states that the property has received waste at high cadmium application rates and that food chain crops must not be grown except in compliance with paragraph (b)(2) of this section.

* * * * *

8.12.11 Closure and Post Closure Care

8.12.11a During the closure period the owner or operator must:

8.12.11.a.1 Continue all operations (including pH control) necessary to maximize degradation, transformation, or immobilization of hazardous constituents within the treatment zone as required under Section 8.12.4(a), except to the extent such measure are inconsistent with paragraph (a)(8 of this section;

8.12.11.a.2 Continue all operations in the treatment zone to minimize run-off of hazardous constituents as required under Section 8.12.4(b);

8.12.11.a.3 Maintain the run-on control system required under Section 8.12.4(c);

8.12.11.a.4 Maintain the run-off management system required under Section 8.12.4(d);

8.12.11.a.5 Control wind dispersal of hazardous waste if required under Section 8.12.4(f);

8.12.11.a.6 Continue to comply with any prohibitions or

conditions concerning growth of food chain crops under Section 8.12.7;

8.12.11.a.7 Continue unsaturated zone monitoring in compliance with Section 8.12.09, except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone; and

8.12.11.a.8 Establish a vegetative cover on the portion of the facility being closed at such time that the cover will not substantially impede degradation, transformation, or immobilization of hazardous constituents in the treatment zone. The vegetative cover must be capable of maintaining growth without extensive maintenance.

8.12.11b For the purpose of complying with Section 8.06.06, when closure is completed the owner or operator may submit to the Chief certification by an independent qualified soil scientist, in lieu of an independent registered professional engineer, that the facility has been closed in accordance with the specifications in the approved closure plan.

8.12.11c During the post-closure care period the owner or operator must:

8.12.11.c.1 Continue all operations (including pH control) necessary to ~~enhaee~~ enhance degradation and transformation and sustain immobilization of hazardous constituents in the treatment zone to the extent that such measures are consistent with other post-closure care activities;

8.12.11.c.2 Maintain a vegetative cover over closed portions of the facility;

8.12.11.c.3 Maintain the run-on control system required under Section 8.12.4(c);

8.12.11.c.4 Maintain the run-off management system required under Section 8.12.4(d);

8.12.11.c.5 Control wind dispersal of hazardous waste if required under Section 8.12.04(f);

8.12.11.c.6 Continue to comply with any prohibitions or conditions concerning growth of food chain crops under Section 8.12.7; and

WEST VIRGINIA LEGISLATURE

Legislative Rule-Making Review Committee

NOTICE OF ACTIONS TAKEN BY LEGISLATIVE RULE-MAKING REVIEW COMMITTEE

January 28, 1986

TO: Ken Hechler, Secretary of State; State Register

FILED
1986 JAN 31 AM 10 22

TO: Mr. Ronald R. Potesta, Director
State of West Virginia
Department of Natural Resources
State Capitol
Charleston, WV 25305

FROM: Legislative Rule-Making Review Committee

PROPOSED RULE: Proposed rules and regulations relating to Hazardous Waste Management

The Legislative Rule-Making Review Committee recommends that the West Virginia Legislature:

1. Authorize the agency to promulgate the Legislative Rule as originally filed or as modified by the agency X

2. Authorize the agency to promulgate part of the Legislative rule; a statement of reasons for such recommendation is attached. _____

3. Authorize the agency to promulgate the Legislative rule with certain amendments; amendments and a statement of reasons for such recommendation is attached. _____

4. Recommends that the rule be withdrawn; a statement of reasons for such recommendation is attached. _____

Pursuant to Code 29A-3-11(c), this notice has been filed in the state register and with the agency proposing the rule.

cc: Mr. Ron Shipley
Special Asst. to the Director
Division of Regulatory Affairs
Dept. of Natural Resources

WEST VIRGINIA LEGISLATURE

Legislative Rule-Making Review Committee

NOTICE OF ACTIONS TAKEN BY LEGISLATIVE RULE-MAKING REVIEW COMMITTEE

November 19, 1985

TO: Ken Hechler , Secretary of State; State Register

TO: Ronald R. Potesta, Director
Department of Natural Resources
State Capitol
Charleston, WV 25305

FILED
1985 NOV 22 AM 10:50

FROM: Legislative Rule-Making Review Committee

PROPOSED RULE: Relating to Hazardous Waste Management: Small Quantity Generators and Waste Minimization Certificate

The Legislative Rule-Making Review Committee recommends that the West Virginia Legislature:

1. Authorize the agency to promulgate the Legislative Rule as originally filed or as modified by the agency X

2. Authorize the agency to promulgate part of the Legislative rule; a statement of reasons for such recommendation is attached. _____

3. Authorize the agency to promulgate the Legislative rule with certain amendments; amendments and a statement of reasons for such recommendation is attached. _____

4. Recommends that the rule be withdrawn; a statement of reasons for such recommendation is attached. _____

Pursuant to Code 29A-3-11(c), this notice has been filed in the state register and with the agency proposing the rule.

cc: Ron Shipley
State Hazardous Waste Coordinator