CR 86-237

State of Wisconsin \ **DEPARTMENT OF NATURAL RESOURCES**

Carroll D. Besadny
Secretary

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File Ref:

STATE OF WISCONSIN)
)
DEPARTMENT OF NATURAL RESOURCES)

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TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, Bruce B. Braun, Deputy Secretary of the Department of Natural Resources and custodian of the official records of said Department, do hereby certify that the annexed copy of Natural Resources Board Order No. SW-64-86 was duly approved and adopted by this Department on June 25, 1987. I further certify that said copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Department at the Natural Resources Building in the City of Madison, this 11th day of November, 1987.

Bruce B. Braun

Bruce B. Braun, Deputy Secretary

(SEAL)

2-1-88
2-6-88 date publication

ORDER OF THE STATE OF WISCONSIN
NATURAL RESOURCES BOARD REPEALING AND CREATING RULES

IN THE MATTER of repealing ch. NR 180; and creating chs. NR 500, 502, 504, 506, 508, 510, 512, 514, 516, 518 and 520 of the Wisconsin Administrative Code pertaining to solid waste management	SW-64-86

Analysis Prepared by the Department of Natural Resources

These rules are adopted under the authority of ss. 144.435 and 227.11, Stats., and interpret and implement ss. 144.43 to 144.47, Stats.

The creation of chs. NR 500-520, Wis. Adm. Code, will incorporate, interpret and implement the appropriate legislative changes which have occurred since March 1, 1980. The rules also codify design, construction, quality assurance/quality control, operational, monitoring and performance standards for land disposal facilities. These standards are currently being implemented through the plan review and approval process.

These rules apply to anyone who treats, stores, collects, transports, transfers, processes or disposes of solid waste. The draft rules divide the existing code (NR 180) into 11 smaller, more manageable codes which should be easier to use and comply with. The new code series begins with ch. NR 500 and goes through NR 520. This facilitates the separation of specific topics into a separate code chapter.

SECTION 1. Chapter NR 180 is repealed
SECTION 2. Chapters NR 500, 502, 504, 506, 508, 510, 512, 514, 516, 518 and 520 are created to read:

Chapter NR 500

General Solid Waste Management Requirements

NR 500.01 PURPOSE. The purpose of this chapter is to provide definitions, submittal requirements, exemptions and other general information relating to solid waste facilities. This chapter is adopted pursuant to ss. 144.43 to 144.47, and 227.11, Stats.

NR 500.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste facilities as defined in s. 144.43(5), Stats., except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181, and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 500.03 DEFINITIONS. The following definitions as well as the definitions in ch. 144, Stats., are applicable to the terms used in chs. NR 500 to 522 unless the context requires otherwise.

(1) "Actual dollar inpayments" means equal annual payments made by the facility owner into a long-term care account.

(2) "Air curtain destructor" means a solid waste facility that combines a fixed wall, open pit and mechanical air supply which uses an excess of oxygen and turbulence to accomplish the smokeless combustion of clean wood wastes and similar combustible materials.

(3) "Anti-seep collar" means a device which is attached to a leachate transfer pipe to prevent the migration of leachate along the pipe.

(4) "Applicant" means a person applying for a license or approval for a solid waste facility.

(5) "Approved facility" has the meaning specified in s. 144.441(1)(a), Stats.

(6) "Approved plan of operation" means a plan of operation approved under s. 144.44(3), Stats.

(7) "Aquifer" means rock or sediment in a formation, group of formations or part of a formation which are saturated and sufficiently permeable to transmit economic quantities of water to wells and springs.

(8) "Asbestos" means any material which contains fibrous chrysotile, crocidolite, amosite minerals or the fibrous varieties of anthopyllite, tremolite and actinolite.

(9) "ASTM" means the American society for testing and materials.

(10) "Base grade" means the elevation of a facility or portion of a facility following placement of the liner but prior to the placement of any granular drainage blanket.

(11) "Beneficial use or reuse" means the recycling or use of solid waste in a productive use.

(12) "Bird hazard" means an increase in the likelihood of a bird and aircraft collision that may cause damage to the aircraft or injury to its occupants.

(13) "Capital expenditures" has the meaning specified in s. 144.443(1)(a), Stats.

(14) "Certificate of deposit" means a certificate issued by a bank or financial institution acknowledging receipt of a specified sum of money in a special kind of time deposit, drawing interest and requiring written notice for withdrawal.

(15) "Clay" means all soil particles less than .005 mm.

(16) "Closure" means those actions to be taken by the owner or operator of a solid waste facility to prepare the facility for long-term care and to make it suitable for other uses.

(17) "Closure period" means the 90-day period after the facility ceases to accept waste, unless otherwise specified in the approved plan of operation.

(18) "Closure plan" means a written report and engineering plans detailing those actions that will be taken by the owner or operator to effect proper closure of a solid waste facility.

(19) "Closing" has the meaning specified in s. 144.43(1m), Stats.

(20) "COD" means chemical oxygen demand.

(21) "Collection and transportation service" means a solid waste facility which utilizes containers, vehicles or other means for the collection and transportation of solid waste.

(22) "Collection basin lysimeter" means a device which is constructed with a geomembrane for monitoring the unsaturated zone.

(23) "Company" has the meaning specified in s. 144.443(1)(b), Stats.

(24) "Completeness determination" means a determination by the department that the minimum submittal requirements established by chs. NR 500 to 522 for a plan or report have been met.

(25) "Condensate" means the liquid which is generated due to a change in the temperature or pressure of landfill gas.

(26) "Conductivity" means the measurement of a waters' ability to transmit an electrical current in micromhos/cm before correcting to 25°C.

(27) "Construct" means to engage in facility construction for a new or expanded solid waste facility including but not limited to the erection or building of new structures, replacement, expansion, remodeling, alteration or extension of existing structures, the acquisition and installation of equipment associated with the new, expanded or remodeled structures, and clearing, grading or liner construction.

(28) "Construction documentation report" means a written report submitted under the seal of a registered professional engineer in the state of Wisconsin documenting that a solid waste facility has been constructed in substantial compliance with a department approved plan of operation or chs. NR 500 to 522.

(29) "Containerized storage facility" means a storage facility designed and operated to use containers for the storage and containment of solid waste.

(30) "Critical habitat areas" means any habitat determined by the department to be critical to the continued existence of any endangered or threatened species listed in ch. NR 27.

(31) "Demolition and construction material" means solid waste resulting from the construction, demolition or razing of buildings, roads and other structures. Demolition and construction material typically consists of concrete, bricks, bituminous concrete, wood, glass, masonry, roofing, siding and plaster, alone or in combinations. It does not include asbestos, waste paints, solvents, sealers, adhesives or similar materials.

(32) "Department" means the department of natural resources.

(33) "Design capacity" means the total volume in-place in cubic yards of solid waste disposed of in a land disposal facility together with daily and intermediate cover utilized in the facility, but not including liner material, drainage blanket, final cover or topsoil.

(34) "Detection limit" means the lowest concentration for an analytical test method and sample matrix at which the presence of a substance can be identified in an analytical sample, with a stated degree of confidence, regardless of whether the concentration of the substance in the sample can be quantified.

(35) "Detrimental effect on ground or surface water" means having a significant damaging impact on ground or surface water quality for any present or future consumptive or nonconsumptive uses.

(36) "Discarded material" means material that is no longer of use to the generator of the material in the process from which it is generated.

(37) "Discharge area" means an area in which there are upward components of hydraulic head in the aquifer.

(38) "Distillate waste product" has the meaning specified in s. 144.438(1)(a).

(39) "DNR" means department of natural resources.

(40) "Dredge material" means any solid waste removed from the bed of any surface water.

(41) "Environmentally sound storage facility" has the meaning specified in s. 144.438(1)(b).

(42) "Equal annual outpayments" means estimated payments for long-term care which are the same amount in each year of the period of owner responsibility for the long-term care of the facility.

(43) "Establish" means to bring a new or expanded solid waste facility into existence.

(44) "Expand an existing land disposal facility" means to construct a solid waste disposal facility or dispose of solid waste on land not previously licensed or to dispose of an additional volume of waste beyond the volume previously approved by the department. The term also includes the disposal of approved volumes of solid waste on existing licensed land if done in a manner not in accordance with a department plan approval or in a manner significantly different from past operations unless the department approves the proposed changes in writing.

(45) "Facility" means a solid waste facility.

(46) "Feasibility report" means a report required under s. 144.44(2)(a) for a specific solid waste facility that describes the facility, surrounding area, and proposed operation in terms of land use, topography, soils, geology, groundwater, surface water, proposed waste quantities and characteristics, preliminary facility design concepts, environmental impacts, the need for the facility and waste reduction and recovery alternatives.

(47) "Fill area" means the area proposed to receive or which is receiving direct application of solid waste.

(48) "Filter pack" means the sand, gravel or both in direct contact with or directly above the well screen.

(49) "Final cover" means cover material that is applied upon closure of a landfill.

(50) "Fine-grained soil environment" means a soil environment in which a majority of the material within 25 feet of the proposed sub-base of the facility has at least 50% by weight passing the #200 sieve and which contains no extensive and continuous deposits of coarse-grained or non-plastic soils. This shall be determined based on an interpretation of soil stratigraphy after

consideration is given to the deposition and origin of the deposits and their engineering classification under the unified soil classification system specified in ASTM standard D-2487-69 (1975).

(51) "Floodplain" means the land which has been or may be hereafter covered by flood water during the regional flood as defined in ch. NR 116, and includes the floodway and the flood fringe as defined in ch. NR 116.

(52) "Food chain crops" means tobacco and crops grown for human consumption, and pasture, forage and feed grain for animals whose products are consumed by humans.

(53) "Fracture frequency" means the number of natural fractures or bedding planes divided by the total length cored in feet.

(54) "Free liquids" means liquids which readily separate from the solid portion of a waste under ambient temperature and pressure. Free liquids shall be determined using the paint filter test as defined in an EPA document entitled: "Update II to SW-846".

Note: Copies of the test procedures are available for inspection at the offices of the department of natural resources, the secretary of state, and the revisor of statutes. Copies may be obtained from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, D.C. 20401.

(55) "Garbage" has the meaning specified in s. 144.01(4), Stats.

(56) "Geomembrane" means a highly impermeable membrane made from plastic or rubber-based material by polymerization.

(57) "Geotextile" means a porous fabric manufactured from synthetic materials.

(58) "Groundwater" means any waters of the state, as defined in s. 144.01(19), Stats., occurring in a saturated subsurface geological formation of rock or soil.

(59) "Hazardous air contaminant" has the meaning specified in s. NR 445.02(4)

(60) "Hazardous substance" has the meaning specified in s. 144.01(4m), Stats.

(61) "Hazardous waste" means any solid waste defined as hazardous waste in s. NR 181.12.

(62) "High-volume industrial waste" has the meaning specified in s. 144.44(7)(a)1.

(63) "Hydraulic connection" means groundwater interflow within the zone of saturation occurring between 2 formations which may or may not be separated by an intermediate layer.

(64) "Hydrogeologist" means a person who is a graduate of an accredited institution of higher education and who has successfully completed 30 semester hours or 45 quarter hours of course work in geology. At least 6 semester hours or 9 quarter hours of the geology course work must be in hydrogeology, geohydrology or groundwater geology. This person shall also have acquired through education and actual field experience the ability to direct the drilling of borings, and the installation and development of wells; describe and classify geologic samples and evaluate and interpret geologic and hydrogeologic data in accordance with the requirements of chs. NR 508, 510 and 512.

(65) "Incinerator" means a processing facility designed and operated for controlled burning of solid wastes primarily to achieve volume and weight reduction or to change waste characteristics. Facilities which use solid waste as a supplemental fuel where less than 30% of the heat input to the facility is derived from such supplemental fuel are not classified as incinerators under this chapter.

(66) "Industrial waste" means any process waste which is the direct or indirect result of the manufacturing of a product or the performance of a service such as dry cleaners or paint shops.

(67) "Infectious waste" means solid waste which contains pathogens with sufficient virulence and quantity so that exposure to the waste by a susceptible host could result in an infectious disease.

(68) "In-field conditions report" means a report consisting of an evaluation to determine if a facility poses a potential hazard to public health, safety or welfare, or the environment.

(69) "Initial site report" means a report submitted under ch. NR 510 which describes a proposed solid waste disposal facility in sufficient detail to allow the department to give a written opinion on whether or not a feasibility report should be prepared.

(70) "In-situ testing" means hydraulic conductivity tests performed on the in-place soils.

(71) "Interest bearing accounts" means escrow accounts, trust accounts or cash deposits with the department.

(72) "Land disposal facility" means a solid waste facility where solid waste is placed in a land spreading facility, a landfill, or surface impoundment facility for disposal purposes.

(73) "Landfill" means a land disposal facility, not classified as a landspreading facility or surface impoundment facility, where solid waste is disposed on land by utilizing the principles of engineering to confine the solid waste to the smallest practical area, to reduce it to the smallest practical volume, and to cover it with a layer of earth or other approved material as required.

(74) "Landspreading facility" means a land disposal facility where solid waste is discharged, deposited, placed or injected in thin layers onto the

land surface of the facility, or is incorporated into the top several feet of the surface soil, for agricultural, silvicultural or waste disposal purposes.

(75) "Leachate" means water or other liquid that has been contaminated by dissolved or suspended materials due to contact with solid waste or with gases generated by solid waste.

(76) "Leachate collection and removal system" means a system capable of collecting and removing leachate or other liquids from a solid waste facility.

(77) "Leachate monitoring system" means a system used to monitor the elevation, quantity or quality of leachate and other liquids generated within a solid waste facility.

(78) "Limits of filling" means the outermost limit at which waste from a facility has been disposed of, or approved or proposed for disposal.

(79) "Liner" means a constructed, continuous layer of natural or artificial materials placed beneath and on the sides of a surface impoundment, landfill, or landfill cell, which restricts the downward or lateral movement of leachate.

(80) "Lithostratigraphic unit" means a geologic formation that has a substantial degree of overall uniformity including such characteristics as color, mineralogic composition and grain size.

(81) "Long-term care" has the meaning specified in s. 144.43(3), Stats.

(82) "Lysimeter" means a device used for sampling the unsaturated zone.

(83) "Major phase" means a horizontal portion of the landfill which is designed to be constructed at one time.

(84) "Major soil unit" means any soil layer which is greater than 2 feet thick, or is laterally extensive or affects the local hydrogeologic flow system.

(85) "Monitoring" means all procedures used to systematically inspect and collect data on the performance of a facility relating to leachate and gas

production or the effect on the quality of the air, groundwater, surface water, unsaturated zone or soils.

(86) "Municipal solid waste" means solid waste generated primarily by residential and commercial activities.

(87) "Noncombustible materials" means solid waste which will not support combustion in the ambient atmosphere.

(88) "Noncontainerized storage facility" means a storage facility which is not a containerized storage facility.

(89) "Noninterest bearing accounts" means letters of credit, performance bonds or forfeiture bonds.

(90) "One-time disposal" means the disposal of no more than 10,000 cubic yards of approved types of agricultural or demolition solid waste on a one-time basis over a project life of not more than 6 months. Examples are the disposal of concrete, brick, stone, asphalt, wood, trees, logs, brush and material from demolished buildings.

(91) "Open burning" has the meaning specified in s. 144.436(1)(b), Stats.

(92) "Operator" has the meaning specified in s. 144.442(9), Stats.

(93) "OSHA" means the occupational safety and health administration.

(94) "Owner" has the meaning specified in s. 144.442(9), Stats.

(95) "Paint filter test" means the test used for determining whether a waste contains free liquid as specified by EPA in a document entitled: "Update II to SW-846".

Note: Copies of the test procedures are available for inspection at the offices of the department of natural resources, the secretary of state, and the revisor of statutes. Copies may be obtained from the Superintendant of Documents, U.S. Government Printing Office (GPO), Washington, D.C. 20401.

(96) "Parent material" means the slightly altered or unweathered material from which the soil was formed.

(97) "Percent recovery" means the volume of soil or rock remaining in a sampling device relative to the total volume of soil or rock penetrated by the sampler.

(98) "Piezometer" means a well which is used to measure groundwater elevations and water quality within an aquifer. A piezometer is sealed within the aquifer and typically has a well screen of 2 to 5 feet.

(99) "Piezometer nest" means 2 or more piezometers within 10 feet of each other at the ground surface which are screened at different depths.

(100) "Piezometric surface" means a surface that represents the level to which water will rise in a piezometer.

(101) "Place of public gathering" means a structure which is open to the public.

(102) "Plan of operation" means a report submitted for a solid waste facility that describes its location, design, construction, documentation, monitoring, sanitation, operation, maintenance, closing and long-term care.

(103) "Population equivalent" has the meaning specified in s. 144.436(1)(c), Stats.

(104) "Private alcohol fuel production system" has the meaning specified in s. 144.438(1)(c), Stats.

(105) "Processing facility" means a solid waste facility at which solid waste is baled, shredded, pulverized, composted, classified, separated, combusted or otherwise treated or altered by some means to facilitate further transfer, processing, utilization or disposal. Processing facilities do not include operations conducted by scrap metal, paper, fiber or plastic processors which are excluded from the definition of "solid waste facilities" in this section.

(106) "Proof of financial responsibility" means a bond, letter of credit, deposit, escrow account, trust account, net worth method, or other financial

commitment made payable to or for the benefit of the department and approved by the department, ensuring that sufficient funds will be available to comply with the closure and long-term care requirements of chs. NR 500 to 520 and the approved plan of operation.

(107) "Putrescible waste" means solid waste which contains organic matter capable of being decomposed by microorganisms and of such a character and proportion as to be capable of supporting a vector population or attracting or providing food for birds.

(108) "Real dollars inpayments" means payments made by the facility owner, which increase each year at the rate of inflation, into a long-term care account.

(109) "Recharge zone" means an area in which there are downward components of hydraulic head in the aquifer.

(110) "Recycling" has the meaning specified in s. 144.44(7)(a)2, Stats.

(111) "Recycling facility" means a facility where waste is recycled and may include a facility where waste has been generated.

(112) "Refuse" has the meaning specified in s. 144.43(4), Stats.

(113) "Registered professional engineer" means a professional engineer registered with the Wisconsin examining board of architects, professional engineers, designers and land surveyors.

(114) "Representative sample" means any sample of a universe or whole, such as groundwater or soils, which reliably exhibits the average properties of the universe or whole.

(115) "Run-off" means any rainwater, leachate or other liquid that drains over land, from any part of a solid waste facility.

(116) "Run-on" means any rainwater, leachate, or other liquid that drains over land onto any part of a solid waste facility.

(117) "Saturated zone" means that part of the earth's crust in which all voids are filled with water excluding the capillary zone.

(118) "SCS" means the United States soil conservation service.

(119) "Seasonal population" means the seasonal transient population in addition to the year round population.

(120) "Sludge" means any solid, semi-solid or liquid waste generated from a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant or air pollution control facility.

(121) "Small demolition facility" means a landfill with a design capacity of less than 50,000 cubic yards and used for the disposal of only demolition wastes.

(122) "Soil" means material that has been physically and chemically derived from the bedrock by nature.

(123) "Solid waste" has the meaning specified in s. 144.01(15), Stats.

(124) "Solid waste disposal" has the meaning specified in s. 144.43(4r), Stats.

(125) "Solid waste facility" has the meaning specified in s. 144.43(5), Stats.

(126) "Solid waste storage" has the meaning specified in s. 144.43(7g), Stats.

(127) "Solid waste treatment" has the meaning specified in s. 144.43(7r), Stats.

(128) "Specific conductance" means the measurement of a water's ability to transmit an electrical current in micromhos/cm corrected to 25°C.

(129) "Stabilization of waste" means any chemical, physical or thermal treatment of a waste, either alone or in combination with biological processes, which results in a significant reduction of pathogenic organisms including viruses.

(130) "Stabilization of a land disposal facility" means the process of waste settlement and associated land surface maintenance to insure that the majority of settlement has occurred, that pockets or depressions caused by settlement have been refilled or regraded, and that the final land surface contours represent a stable condition for closure and facility maintenance purposes.

(131) "Storage facility" means a solid waste facility for the storage of solid waste, on a temporary basis in such a manner as not to constitute ultimate disposal of solid waste.

(132) "Sub-base grade" means the elevation of the facility or portion of the facility which has been excavated to its lowest level prior to the placement of any liner system.

(133) "Sub-soil horizon" means the soil horizon adjacent to and usually directly below the topsoil.

(134) "Surface impoundment facility" means a storage or land disposal facility with a natural topographic depression, artificial excavation or dike arrangement which is used for storage or disposal of waste fluids, semi-solids or wastes containing free liquids.

(135) "Tank" means a stationary device not including manholes, designed to contain an accumulation of leachate or other waste which is constructed primarily of nonearthen materials, such as wood, concrete, steel or plastic, which provide structural support.

(136) "10-year, 24-hour storm" means a storm of 24-hour duration with a probable recurrence interval of once in 10 years as determined under s. NR 205.05.

(137) "Termination" has the meaning specified in s. 144.43(8), Stats.

(138) "Topsoil" means natural loam, sandy loam, silt loam, silty clay loam or clay loam humus-bearing soils or other material that will easily produce and sustain dense growths of vegetation capable of preventing wind and water erosion of the material itself and of other materials beneath.

(139) "Transfer facility" means a solid waste facility at which transferring of solid waste from one vehicle or container to another, generally of larger capacity, occurs prior to transporting to the point of processing or disposal.

(140) "Ultra low-level radioactive waste" means a waste generated at a wastewater or water treatment facility treating groundwater containing radium.

(141) "Underground tank" means a tank with 10% or more of its storage capacity below the final ground elevation. This term includes uncovered in-ground tanks. This term does not include tanks which are an integral part of a leachate collection system which are placed or constructed above the landfill liner system or within other approved containment systems.

(142) "Unequal annual outpayments" means estimated payments for long-term care which are higher in the early years of the period of owner responsibility for long-term care than they are later in the long-term care period after the facility has stabilized.

(143) "Uniformity coefficient" means the number resulting from dividing the grain size diameter in millimeters at the point where 60% of the material is finer by weight by the grain size diameter in millimeters at the point where 10% of the material is finer by weight.

(144) "U.S. government securities" means treasury bills, treasury bonds, treasury certificates, treasury notes and treasury stocks guaranteed by the federal government.

(145) "Unsaturated zone" means the zone between the land surface and the water table in which the pore spaces contain water at less than atmospheric pressure, as well as air and other gases.

(146) "Unsaturated zone monitoring system" means a system used to measure soil moisture quantity or quality in the unsaturated zone beneath a regulated facility.

(147) "USCS" means the unified soil classification system.

(148) "USDA" means the United States department of agriculture.

(149) "USGS" means the United States geological survey.

(150) "U.W.-Extension" means the university of Wisconsin extension.

(151) "VOC" means volatile organic compounds.

(152) "Water table" means the upper surface of the saturated zone where the hydrostatic pressure is equal to atmospheric pressure.

(153) "Well" means any drillhole or other excavation or opening constructed for the purpose of obtaining or monitoring groundwater.

(154) "Well nest" means 2 or more wells installed within 10 feet of each other at the ground surface and constructed to varying depths.

(155) "Wetlands" means those areas where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation, and which have soils indicative of wet conditions.

(156) "WPDES permit" means a Wisconsin pollution discharge elimination system permit issued by the department under ch. 147, Stats., for the discharge of pollutants.

(157) "WSGNHS" means the Wisconsin state geologic and natural history survey.

(158) "Zone-of-saturation landfill" means a landfill where the base grade is located below the water table in a fine-grained soil environment and is designed and operated to maintain inward groundwater gradients.

NR 500.04 INITIAL INSPECTION. Any person intending to establish a new solid waste disposal facility or expand an existing solid waste disposal

facility shall contact the departments district or area office as appropriate to arrange for an initial inspection for the purpose of evaluating compliance with the location and performance standards of s. NR 504.04. This inspection shall be completed prior to submittal of an initial site report or a feasibility report.

NR 500.05 GENERAL SUBMITTAL REQUIREMENTS. Unless otherwise specified, all submittals for review and approval of any initial site report, feasibility report, plan of operation, infield conditions report, construction documentation report or closure plan shall include the following:

(1) REVIEW FEE. The review fee specified in s. NR 520.04 in check or money order payable to the department. The fee shall be sent to the department's district or area office as appropriate.

(2) COVER LETTER. A letter detailing the desired department action or response.

(3) NUMBER OF COPIES. Unless otherwise specified, five copies of the plan or report prepared pursuant to the appropriate section of chs. NR 500 to 522. Two copies shall be submitted to the department's field office responsible for the area in which the facility is located and 3 copies shall be submitted to the bureau of solid waste management in Madison.

(4) CERTIFICATION. The report and plan sheets shall be under the seal of a registered professional engineer. Initial site reports, feasibility reports, plans of operation, infield conditions reports and any other reports where interpretation of geology or hydrogeology is necessary shall be signed by a hydrogeologist.

(5) TECHNICAL PROCEDURES. All technical procedures used to investigate a solid waste facility shall be the current standard procedures as specified by the American society for testing materials, United States geologic survey,

standard methods for the examination of water and wastewater, or other equivalent or appropriate methods approved by the department. Test procedures used shall be specified. Any deviation from a standard method shall be explained in detail with reasons provided.

(6) VISUALS. Maps, figures, photographs and tables to clarify information or conclusions. The visuals shall be legible. All maps, plan sheets, drawings, isometrics, cross-sections and aerial photographs shall meet the following requirements:

(a) No larger than 24 inches x 36 inches and no smaller than 8 1/2 inches x 11 inches.

(b) Be of appropriate scale to show all required details in sufficient clarity.

(c) Be numbered, referenced in the narrative, titled, have a legend of all symbols used, contain horizontal and vertical scales, where applicable, and specify drafting or origination dates.

(d) Use uniform scales.

(e) Contain a north arrow.

(f) Use USGS datum as a basis for all elevations.

(g) Contain a survey grid based on monuments established in the field which is referenced to state plane coordinates.

(h) Show original topography and the grid system on plan sheets showing construction, operation or closure topography.

(i) Show survey grid location and reference major plan sheets on all cross-sections. A reduced diagram of a cross-section location plan view map shall be included on the sheets with the cross-sections.

(7) TABLE OF CONTENTS. A table of contents listing all sections of the submittal.

(8) APPENDIX. An appendix listing names of all references, all raw data, testing and sampling procedures and calculations.

NR 500.06 LICENSE APPLICATIONS. Unless otherwise specified, no person may operate or maintain a solid waste facility without a license from the department. A submittal for initial licensing or relicensing of any solid waste facility shall include:

(1) REVIEW FEE. The appropriate fee as specified in ch. NR 520.04 in check or money order payable to the department. The fee shall be sent to the department's district or area office as appropriate. Plan review fees are not transferable, proratable or refundable.

(2) APPLICATION FORM. A completed copy of the appropriate application form.

(3) FINANCIAL RESPONSIBILITY. For all land disposal facilities with plans of operation approved under s. 144.44(3), Stats., proof of financial responsibility as specified in s. NR 520.05.

(4) AFFIDAVIT OF FACILITY REGISTRY. Submittal on form 4400-67 that proof that a notation of the existence of the facility has been recorded in the office of the register of deeds in each county in which a portion of the facility is located.

NOTE: This form may be obtained from the Department of Natural Resources, Bureau of Solid Waste Management, 101 S. Webster Street, Natural Resources Building, Madison, WI. 53707.

NR 500.07 REVIEW TIMES. Except as otherwise provided in chs. NR 500 to 522, the department shall review and approve, deny or deem incomplete requests for plan approvals or exemptions within 65 business days after receiving the

request. For the purposes of determining department compliance with review times specified in chs. NR 500 to 522 and ch. 144, Stats., the review time starts when the appropriate copies and review fee are received.

NR 500.08 EXEMPTIONS. (1) GENERAL. The following facilities are exempt from all requirements of chs. NR 500 to 522:

(a) Facilities used for the disposal of solid waste from a single family or household on the property where it is generated.

(b) Riprapping projects using inert solid waste materials approved by the department under s. 30.12, Stats., or in submerged shorelands in Lake Michigan, the title to which has been granted by the state to a municipality.

(2) OTHER FACILITIES. The following facilities must be established in conformance with the locational requirements of s. NR 504.04(3)(c), and s. NR 504.04(4)(a) to (e) and must be operated and maintained in a nuisance-free and aesthetic manner but are exempt from licensing and the requirements of chs. NR 500 to 522:

(a) Facilities where only clean soil, brick, building stone, concrete, reinforced concrete, broken pavement, and unpainted or untreated wood are disposed.

(b) Facilities for the exclusive disposal of spoils from sand, gravel or stone and crushed stone quarry operations and similar nonmetallic earth materials.

(c) Facilities for the disposal of wood residue from a saw mill, debarker or equivalent industry which produces less than 5,000 board feet of lumber per year or equivalent and the total disposal facility volume is less than 500 cubic yards of wood residue.

(3) DREDGED MATERIAL EXEMPTIONS. The following facilities are exempt from the licensing and plan review requirements of chs. NR 500 to 522 but must be developed in accordance with the following requirements:

(a) Dredged material determined by the department to be clean according to ch. NR 347 and designated for in-water disposal provided the project meets all provisions specified in ch. NR 347.

(b) Facilities for the disposal of nonhazardous dredged material consisting of less than 3000 cubic yards from Lake Michigan, Lake Superior, the Wisconsin river, the Sheboygan river, the Milwaukee river, the Brule and Menomonee rivers, the Fox river, the Mississippi river, or from any inland lakes or ponds treated with arsenicals provide the facility complies with the performance standards specified in s. NR 504.04(4).

(c) Facilities for the disposal of nonhazardous dredged material from inland lakes or ponds that have not been treated with arsenicals provided the facility complies with the performance standards specified in s. NR 504.04(4).

(4) EXEMPTIONS FROM SOLID WASTE RULES. Exemptions from the requirements of chs. NR 500 to 522 may be granted in writing by the department in special cases except as otherwise provided. A person may apply for an exemption by providing the department with a written request along with the appropriate documentation which demonstrates that the proposal will not cause environmental pollution as defined in s. 144.01(3), Stats. The department shall take into account such factors as the population of the area being served, the amount of waste being generated, the geologic and hydrogeologic conditions at the facility, the design of the facility, the operational history of the facility, the physical and chemical characteristics of the waste and any other information which may be appropriate. The department shall review and make a written determination on the exemption request within 65 business days of receipt of a complete request and the appropriate review fee under ch. NR 520 unless a different time period is provided by law.

(5) BENEFICIAL REUSE. The department may grant exemptions from the requirements of ss. 144.43 to 144.47, Stats., for the purpose of allowing or

encouraging the recycling of solid wastes. Any exemptions granted under this section shall be issued in writing in accordance with the requirements of s. 144.44(7)(b), (c), (f) and (g), Stats.

NR 500.09 CONSTRUCTION INSPECTION. The department may require as a condition of the approval of a feasibility report, plan of operation, groundwater monitoring plan, closure plan, in-field conditions report or a modification to any approval that critical construction steps of a facility, as specified in the approval, be inspected by the department. The applicant shall pay an inspection fee as specified in s. NR 520.04(5).

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Chapter NR 502

SOLID WASTE STORAGE, TRANSPORTATION, TRANSFER, INCINERATION, AIR CURTAIN DESTRUCTORS, PROCESSING, WOOD BURNING, ONE TIME DISPOSAL AND SMALL DEMOLITION FACILITIES

NR 502.01 PURPOSE. The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to outline the requirements regarding licensing and operational requirements for solid waste storage, transportation, transfer, incinerators, air curtain destructors, processing, wood burning, one time disposal and small demolition facilities. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 502.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste storage, transportation, transfer, incinerators, air curtain destructors, processing, wood burning, one time disposal and small demolition facilities as defined in s. 144.43(5), Stats., except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181, and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 502.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 502.04 LOCATION AND PERFORMANCE STANDARDS. (1) GENERAL. An applicant for an initial license or for approval of an expansion of an existing facility regulated under this chapter with the exception of collection and transportation services shall demonstrate to the department that the proposed facility will comply with all of the applicable locational standards of this section for which no exemption has been granted.

(2) LOCATION STANDARDS. No person may establish, construct, operate, maintain or permit the use of property for any facility regulated under this chapter within the following areas:

(a) Within 1,000 feet of any navigable lake, pond or flowage.

(b) Within 300 feet of any navigable river or stream.

(c) Within a floodplain

(d) Within 1,000 feet or the nearest edge of the right-of-way of any state trunk highway, interstate or federal aid primary highway or the boundary of any public park, unless the facility is screened by natural objects, plantings, fences or other appropriate means so that it is not visible from the highway or park.

(e) Within 10,000 feet of any airport runway used or planned to be used by turbojet aircraft or within 5,000 feet of any airport runway used only by piston type aircraft or within other areas where a substantial bird hazard to aircraft would be created. This criterion is applicable only when the facility will be used for handling putrescible waste.

(f) Within 1,200 feet of any public or private water supply well.

(3) PERFORMANCE STANDARDS. No person may establish, construct, operate, maintain or permit the use of property for any facility regulated under this chapter within an area where there is a reasonable probability that the facility will cause:

(a) A significant adverse impact on wetlands.

(b) A significant adverse impact on critical habitat areas.

(c) A detrimental effect on any surface water.

(d) A detrimental effect on groundwater quality or will cause or exacerbate an attainment or exceedance of any preventive action limit or enforcement standard at a point of standards application as defined in ch. NR 140. For the purposes of design, the point of standards application is defined by s. NR 140.22(1).

(e) The migration and concentration of explosive gases in any facility structures, excluding any leachate collection system or gas control or recovery system components or in the soils or air at or beyond the facility property boundary in excess of 25% of the lower explosive limit for such gases of any time.

(f) The emission of any hazardous air contaminant exceeding the limitations for those substances contained in s. NR 445.03.

NR 502.05 STORAGE FACILITY REQUIREMENTS. (1) GENERAL. (a) No person may operate or maintain a solid waste storage facility unless the person has obtained an operating license from the department, unless the facility is exempt under sub. (2) or (4). The operating license for a storage facility is transferable.

(b) All waste shall be stored in containers unless its volume precludes practical containerized storage in which case it shall meet the noncontainerized storage requirements of this section unless exempted under sub. (2).

(2) EXEMPTIONS. The following storage facilities are exempt from licensing and all requirements of this section:

(a) Garbage cans for household wastes located on the property where the waste is generated.

(b) Containerized storage facilities such as lugger boxes and rolloff containers for solid waste serving apartments, commercial establishments, business establishments and industries which are located on the premises served.

(c) Pit silos used for the storage of by-products from fruit, vegetable or grain processing operations where such by-products are to be used for animal feed.

(d) Facilities for high volume industrial waste or wood residue where the waste is stored at the point of generation for less than 72 hours prior to being transported for disposal or beneficial reuse and the facility is operated and maintained in an environmentally sound and nuisance free manner.

(3) OPERATIONAL REQUIREMENTS FOR CONTAINERIZED STORAGE FACILITIES. No person may operate or maintain a containerized storage facility except in conformance with the following minimum requirements:

(a) Storage containers shall be durable, rust resistant, nonabsorbent, leak-proof, easy to clean and effectively contain the stored waste. If garbage or similar putrescible wastes are stored, the containers shall have close-fitting, fly-tight covers and be constructed of light-weight durable material.

(b) Covers and containers shall be maintained in good condition.

(c) Containers handling municipal solid waste shall be removed and emptied at least once per week, or more often if conditions warrant. Containers handling nonputrescible industrial waste shall be removed and emptied as necessary, but at least once every 90 days.

(d) All weather access shall be provided and maintained.

(e) Effective means shall be provided to control flies, rodents and other vectors.

(f) Objects too large for the containers shall be stored in a nuisance-free manner.

(g) Periodic clean-up and maintenance of the storage container and surrounding area shall be conducted to keep it aesthetically pleasing and nuisance-free. This maintenance shall be the responsibility of the property owner where the containers are located as well as the owner of the containers.

(h) Access restrictions including a lockable gate and attendant may be required by the department to prevent nuisance conditions or if mechanical compaction equipment is part of the facility.

(i) Disposal of solid waste is not allowed at a storage facility.

(j) No burning of solid waste may be conducted.

(k) The facility shall be operated and maintained in a sanitary, nuisance-free manner so as to protect the environment and the public health.

(4) NONCONTAINERIZED STORAGE FACILITIES. Facilities which meet the following criteria may be exempted in writing by the department from licensing and the plan submittal requirements of this section. All other noncontainerized storage requirements of this section shall apply. Any person intending to establish or construct a noncontainerized storage facility shall contact the department to arrange for an initial inspection. The department shall issue an exemption in writing if the operator demonstrates that the facility meets all the following criteria:

(a) The solid waste does not include putrescible waste such as garbage and municipal refuse.

(b) The waste is free of noxious odors and not readily transported by wind or water unless it is stored to prevent such transport.

(c) The facility exists less than 6 months from the time of initial storage to the removal of all waste.

(d) The volume of waste stored at the facility does not exceed 2,500 cubic yards at any time during the 6 month period.

(e) The total volume of waste stored at the facility during the allowable 6 month period does not exceed 5,000 cubic yards.

(5) PLAN OF OPERATION. No person may establish or construct a solid waste storage facility or expand an existing facility unless the person has obtained a plan of operation approval from the department. The plan of operation shall specify the intent and objectives of the proposal and indicate methods and procedures to minimize adverse environmental impacts. Unless otherwise approved by the department in writing, the plan shall be submitted in accordance with s. NR 500.04 and shall contain, at a minimum, the following information:

(a) A legal description of the facility.

(b) The present ownership of the property.

(c) The proposed facility size, property boundaries and present land use of the facility and the area within 1/4 mile of the facility.

(d) The area served, including population and major industries.

(e) The consistency of facility development with areawide solid waste plans and land use plans.

(f) The predominant types of vegetation and wildlife within the proposed facility boundaries.

(g) A complete materials balance for the storage facility, specifying amounts and characteristics of solid waste.

(h) The types of vehicles and access routes used to transport solid waste to and from the facility including the estimated traffic flow patterns within the facility, and an estimate of the increased quantities of traffic on access routes to and from the facility.

(i) The estimated quantities and characteristics of wastes containing free liquids resulting from facility operations and methods of their storage or disposal.

(j) The persons responsible for facility construction and operation.

(k) Any additional procedures for the control of dust, odors, fire, windblown materials and potential explosions and for the handling of the waste in the case of major facility breakdown.

(l) The tentative operating schedule for the facility.

(m) Provisions for protection of groundwater and surface waters during facility construction and operation.

(n) A discussion of possible operational hazards and necessary safety precautions.

(o) A discussion of design features and logic including the equipment capacity or size. Information shall be included to justify the size and configuration of the receiving area; methods of handling wastes containing free liquids resulting from operations such as floor drains, sewers and water treatment facilities; sizing of surface water drainage control structures; traffic flow patterns; design life of any building and facility equipment; methods of controlling windblown materials; and methods of screening the facility from the surrounding area.

(p) An operations and maintenance manual which specifies the operating and maintenance procedures; operating personnel responsibilities; hours of operation; daily operating schedule; equipment maintenance schedules; methods of controlling explosions, fire, odors and windblown materials; special waste handling procedures; methods of controlling access; daily cleanup procedures; person responsible for operation; facility licensee and owner; record keeping procedures; emergency procedures for handling of freezeup during cold weather; methods to prevent solid waste from burning; and any other pertinent information.

(6) ENGINEERING PLANS. The plan of operation shall include a set of engineering plans and maps which contain the following information unless an exemption is granted in writing by the department:

(a) An existing conditions map, which shows the entire facility and the area within 1/2 mile. The minimum scale shall be 1" = 400'. This map shall include the proposed facility boundary, property lines, easements and right-of-way; building foundations, roads, utilities and other structures; topography, drainage swales, surface waters, wetlands, floodplains and similar drainage features; wooded areas; location of soil borings and test pits; features of historical and archaeological significance; and other features as appropriate.

(b) A facility plan which shall include proposed facility access roads and traffic patterns, buildings, scales, utility lines, drainage diversion, screening, means of access control, final topography, areas to be cleared of vegetation, and other design features. The extent of coverage and scale shall be the same as that for the existing conditions map.

(c) A proposed layout plan which shows the receiving, storage and loadout areas. The minimum scale shall be 1" = 20'. Plan details shall include conceptual design for receiving area configuration and traffic flow patterns, storage area and equipment configuration, loadout area and equipment configuration, and other design features.

(d) At least one cross section shall be drawn through the receiving, storage and loadout areas indicating existing topography, limits of excavation, proposed final grades and other pertinent design features. More cross sections may be necessary depending on the complexity of the facility design.

(7) CONSTRUCTION DOCUMENTATION REPORT. The department may require the applicant to submit a construction documentation report for any noncontainerized storage facility. When a documentation report is required, it shall be prepared in accordance with the department's plan approval and s. NR 500.05. Operation of the facility may not commence until the report is approved in writing by the department and a license is issued. The department may issue a license prior to facility construction or construction documentation.

(8) LOCATIONAL CRITERIA. Noncontainerized storage facilities shall meet the location and performance standards specified in s. NR 502.04. Exemptions from the requirements of s. NR 502.04(2)(a),(b),(d),(e) and (f) and s. NR 502.04(3)(b),(e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant the exemption. Exemptions from compliance with s. NR 502.04(3)(a) may be granted only in accordance with the standards in s. NR 1.95. Exemptions from compliance with s. NR 502.04(3)(d) may be granted only according to the procedures in ch. NR 140. Exemptions from compliance with s. NR 502.04(2)(c) and s. NR 502.04(3)(c) will not be granted.

(9) OPERATIONAL REQUIREMENTS FOR NONCONTAINERIZED STORAGE FACILITIES. No person may operate or maintain a noncontainerized storage facility except in conformance with an approved plan of operation and the following minimum requirements:

(a) All weather access shall be provided and maintained.

(b) Effective measures shall be taken to control flies, rodents and other vectors.

(c) Periodic maintenance or clean-up of the facility shall be conducted to keep it aesthetically pleasing and nuisance-free.

(d) Gates, fencing and an attendant shall be provided as specified by the department.

(e) Solid waste shall be disposed of at a licensed facility approved by the department.

(f) Solid waste shall not be burned.

(g) The facility shall be operated and maintained in a sanitary, nuisance-free manner so as to protect the environment and the public health.

(h) Adequate drainage shall be maintained on and around the facility.

(10) MONITORING. The department may require the owner or operator to perform surface water, groundwater, unsaturated zone or gas monitoring of noncontainerized storage facilities. Monitoring shall be conducted as specified by the department. Monitoring may be required after facility closure.

(11) CLOSURE. Any person who owns or operates a noncontainerized storage facility or who permits the use of property for such purpose shall close the facility in accordance with any plan approval issued by the department and the following minimum practices:

(a) The owner or operator shall notify the department in writing at least 60 days prior to the closing of the facility.

(b) All solid waste shall be removed from the facility in accordance with the conditions of the approved plan of operation. The waste shall be properly utilized or disposed.

(c) The surface of the facility shall be restored in conformity with the approved plan of operation, or restored to its original condition to the extent practicable.

(12) FINANCIAL RESPONSIBILITY. The department may require that the owner or operator provide proof of financial responsibility for the removal, transportation and ultimate disposal of the stored material.

NR 502.06 COLLECTION AND TRANSPORTATION SERVICE REQUIREMENTS. (1) GENERAL. No person may operate or maintain a collection or transportation service unless the person has obtained an operating license from the department, unless the facility is exempt under sub. (2).

(2) EXEMPTIONS. The following collection or transportation services are exempt from all requirements of this section:

(a) Services for the collection and transportation of only salvageable material, gravel pit spoils, quarry materials or earth materials.

(b) Services for the collection and transportation of only ordinary solid waste from a single household or ordinary household solid waste amounting to less than 20 tons per year.

(c) Services for the collection and transportation of sludge from municipal wastewater or water supply treatment plants provided it is handled in accordance with ch. 147, Stats.

(d) Services for the collection and transportation of only waste materials regulated and licensed under s. 146.20, Stats.

(e) Governmental services consisting solely of vehicles used to collect and transport roadside litter from town, village, city, county, state and federal highway right-of-way. Litter shall be disposed of at a licensed disposal facility.

(f) Services for the collection and transportation of dredge material regulated by permit or contract under s. 30.20, Stats.

(g) Services for the collection and transportation of wastes generated by an industrial company which do not travel on public roads and which utilize vehicles owned by the company.

(h) Services for the collection and transportation of whey or waste materials from fruit or vegetable processing operations.

(3) TRANSPORTATION OF ASBESTOS WASTE. All services collecting and transporting asbestos shall meet the minimum requirements of the applicable air management rules.

(4) OPERATIONAL REQUIREMENTS. No person may operate or maintain a solid waste collection and transportation service except in accordance with the following minimum requirements:

(a) Each vehicle shall have "WDNR" followed by the license number lettered on the driver's door. The letters shall be at least 2 inches high with a minimum 1/2 inch brush stroke. The lettering shall contrast with the background so it is easy to read.

(b) Solid waste shall be transported only to facilities which are licensed or approved by the department, or to facilities which are exempt from regulation by the department.

(c) Vehicles or containers used for the collection and transportation of solid waste shall be durable, easy to clean and leak-proof, if necessary, considering the type of waste and its moisture content. All vehicles and containers shall be cleaned as frequently as necessary to prevent nuisances or insect breeding and shall be maintained in good repair.

(d) Vehicles or containers used for the collection and transportation of solid waste shall be loaded and moved in such a manner that the contents do not fall, spill or leak. Covers shall be provided to prevent littering and spillage. If spillage does occur, the operator shall immediately return

spilled materials to the vehicle and shall properly clean the spill area. In the event of a spill of a hazardous substance the department shall be notified under s. 144.76, Stats., and the spill material shall be collected and the environment restored as provided in ch. NR 158.

(5) EXPANSION OR TERMINATION. The owner or operator shall notify the department in writing of any expansion or termination of a service or of any change in disposal facilities used at least 30 days prior to the effective date of such action.

(6) RESPONSIBILITY. A person generating solid waste shall be responsible for the collection and transportation of the waste to a solid waste disposal facility licensed by the department unless the person contracts with a collection and transportation service licensed by the department for that purpose.

NR 502.07 TRANSFER FACILITIES. (1) GENERAL. No person may operate or maintain a solid waste transfer facility unless the person has received an operating license from the department, except as otherwise provided in sub. (2). Any person intending to establish or construct a solid waste transfer facility shall contact the department to arrange for an initial inspection.

(2) EXEMPTIONS. Transfer facilities at which waste from individual users or from hand unloaded vehicles not exceeding one ton in capacity are exempt from the plan approval requirements of this chapter and licensing but shall be operated and maintained in conformance with the following practices:

(a) Containers shall be leak-proof and manufactured of nondegradable material such as metal, plastic or concrete.

(b) Where mechanical equipment is a part of the operation, access shall be limited to those times that an attendant is on duty. Access restrictions

and an attendant may be required by the department for a nonmechanical facility.

(c) Containers shall be removed or emptied at least once per week and more frequently if conditions warrant.

(d) The transfer station and adjacent area shall be kept clean and free of litter.

(e) Burning of solid waste may not be conducted.

(f) Effective means shall be provided to control flies, rodents and other insects or vermin.

(g) An all-weather access road and parking area shall be provided and maintained.

(h) If recycling facilities are provided, they shall be clearly labeled and maintained in a nuisance-free manner.

(3) PLAN OF OPERATION. No person may establish or construct a transfer station prior to obtaining approval in writing from the department of a plan of operation for the facility. The plan of operation shall specify the intent and objectives of the proposal and indicate methods and procedures to minimize adverse environmental impacts. Unless an exemption is granted by the department in writing, the plan shall be submitted in accordance with s. NR 500.04 and shall contain, at a minimum the following information:

(a) A legal description of the property and the facility boundaries.

(b) The present ownership of the proposed facility property.

(c) Land use within 1/4 mile of the proposed facility.

(d) The operator of the facility.

(e) The size of the facility.

(f) A USGS 7 1/2 minute or 15 minute quadrangle map of the facility property.

(g) The proposed methods of screening waste handling operations from the surrounding area.

(h) A discussion of the consistency of facility development with areawide solid waste management plans, land use plans or other areawide plans. Alternatives considered in the project planning phase shall be discussed.

(i) The population and area to be served by the facility and projections for changes in use in the future.

(j) The type and quantity of waste to be handled, and specific waste types which will not be accepted at the facility. The method for screening the incoming waste to eliminate unacceptable material such as asbestos, infectious waste, explosive wastes, hazardous waste or other materials from endangering the operators' safety shall be identified.

(k) The persons responsible for structural improvements, building maintenance and daily operation and control of the facility.

(l) The types of vehicles used to transport solid waste into and out of the facility.

(m) The vehicle traffic routing at the facility and provisions for access to connecting roadways.

(n) The source of the facilities water supply and the method of wastewater treatment.

(o) The methods of volume reduction to be used such as compacting, grinding, compression or tamping.

(p) The design criteria used to select equipment capacity and building configuration and sizing.

(q) Daily clean-up procedures.

(r) The names and locations of all solid waste disposal facilities to which waste from the transfer station may be hauled.

(s) The procedures for alternate routing of waste during inoperable periods at the facility.

(t) The procedures to handle heavy or bulky items and locations for storage of solid waste beyond the end of the working day.

(u) The equipment and procedures designed to control dust, odors, noise, fire and windblown paper.

(v) The proposed life expectancy of the facility.

(w) A detailed discussion of the safety equipment and procedures to be used at the facility

(4) ENGINEERING PLANS. The plan of operation shall include a set of engineering plans and maps which contain the following information unless an exemption is granted in writing by the department:

(a) An existing conditions map, which shows the entire facility and the area within 1/2 mile. The minimum scale shall be 1" = 400'. This map shall include the facility boundary, property lines, easements and right-of-way; building foundations, roads, utilities and other structures; existing topography, drainage swales, surface waters, wetlands, floodplains and similar drainage features; wooded areas; location of soil borings and test pits; features of historical and archaeological significance; and other features as appropriate.

(b) A facility plan which shall include the proposed facility access roads and traffic patterns, buildings, scales, utility lines, drainage diversion, screening, means of access control, final topography, areas to be cleared of vegetation and other design features. The extent of coverage and scale shall be the same as that for the existing conditions map.

(c) A proposed process layout plan which shows the receiving, storage and loadout areas. The minimum scale shall be 1" = 20'. The plans shall include

design details for the receiving area configuration and traffic flow patterns, storage area and equipment configuration, loadout area and equipment configuration, and other design features.

(5) CONSTRUCTION DOCUMENTATION REPORT. The department may require the applicant to submit a construction documentation report for any transfer facility. When a documentation report is required it shall be prepared in accordance with the department's plan approval and s. NR 500.05. Operation of the facility may not begin until the report is approved in writing by the department and a license is issued. The department may issue a license prior to facility construction or construction documentation.

(6) LOCATIONAL CRITERIA. Transfer facilities shall meet the locational criteria specified in s. NR 502.04(2)(c) and the performance standards specified in s. NR 502.04(3). Exemptions from the requirements of s. NR 502.04(3)(b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant such exemptions. Exemptions from compliance with s. NR 502.04(3)(a) may be granted only in accordance with the standards in s. NR 1.95. Exemptions from compliance with s. NR 502.04(3)(d) may be granted only in accordance with the procedures in ch. NR 140. Exemptions from compliance with s. NR 502.04(2)(c) and (3)(c) will not be granted.

(7) OPERATIONAL REQUIREMENTS. No person may operate or maintain a transfer facility except in conformance with an approved plan of operation and the following minimum requirements:

(a) A sign shall be prominently posted at the entrance to the facility, which indicates the name, license number, the hours of operation, waste types accepted, necessary safety precautions and any other pertinent information specified by the department.

(b) A building, roofed and enclosed on at least 3 sides or otherwise enclosed to satisfactorily control dust, papers, and other waste materials, shall be provided.

(c) Screening of waste handling operations shall be provided for a transfer facility located within 500 feet of any residence, unless a signed waiver is received from all residents located within 500 feet of the facility.

(d) The facility shall be operated under the direct supervision of responsible individuals who are thoroughly familiar with the requirements and the operational procedures of the transfer facility.

(e) Access shall be restricted except when an attendant is on duty.

(f) There may be no storage of solid waste on the premises for a period greater than 24 hours except in conformance with s. NR 502.05 or unless the waste is contained in vehicles used by a licensed collection and transportation service. Longer storage periods may be authorized by the department for certain industrial and commercial waste depending on the design of the facility.

(g) Unloading of solid waste shall take place only within the enclosed structure and only in approved designated areas.

(h) Solid waste shall be confined to the unloading, loading and handling area.

(i) The transfer facility and adjacent area shall be kept clean and free of litter.

(j) Sewage solids, sludge or wastes containing free liquids may not be accepted unless special handling plans for these wastes have been submitted to the department and approved in writing. Asbestos, infectious or hazardous waste may not be accepted under any circumstances.

(k) Dust and odor generated by the unloading of solid waste and the operation of the transfer facility shall be controlled at all times.

(l) Burning of solid waste may not be conducted.

(m) Solid waste which is burning or is at a temperature likely to cause fire or is flammable or explosive may not be accepted.

(n) Equipment shall be provided to control accidental fires and arrangements shall be made with the local fire protection agency to provide immediate services when needed.

(o) Means shall be provided to control flies, rodents and other insects or vermin.

(p) Provisions shall be made for adequate maintenance of the transfer facility after each day of operation.

(q) Means of communication shall be provided for emergency purposes.

(r) An approved alternative method of waste processing or disposal shall be provided in the event that the transfer facility is rendered inoperable.

(s) Recyclable material may be separated from the incoming waste and stored provided that no fire hazard or nuisance conditions are created.

(8) CLOSURE. Any person who operates or maintains a transfer facility or who permits the use of property for such purpose shall close the facility in accordance with any plan approval issued by the department and the following minimum practices:

(a) The operator shall notify the department and all users of the facility in writing at least 60 days prior to closure.

(b) Access shall be restricted through the use of a fence, gate, plantings or other appropriate means upon closure of the facility.

(c) The operator shall post a sign in a prominent location notifying users of the date at which the facility will close.

NR 502.08 SOLID WASTE PROCESSING FACILITIES. (1) GENERAL. No person may operate or maintain a solid waste processing facility unless the person has obtained an operating license from the department, except as provided in sub. (2). An applicant intending to establish or construct a solid waste processing facility shall contact the department to arrange for an initial inspection. This section does not apply to incinerators, air curtain destructors or wood burning facilities which are regulated under ss. NR 502.09 to 502.11.

(2) EXEMPTIONS. The following facilities are exempt from licensing and the requirements of this section:

(a) Composting facilities used for processing solid waste from a single family or household, a member of which is the owner, occupant or lessee of the property used for the solid waste processing operation and the facility is operated in a nuisance free and environmentally sound manner.

(b) Composting facilities used for processing grasses, leaves, yard and food waste which do not exceed 50 cubic yards per year provided the facility is operated in a nuisance free and environmentally sound manner.

(c) Facilities for the processing of scrap iron, steel or nonferrous metal using large machines to produce a principal product of scrap metal for sale or use for remelting purposes and facilities which use large machines to sort, grade, compact, bale or process clean wastepaper, textiles, clean wood, glass, rubber, demolition debris, pavement or plastics, not mixed with other solid waste, for sale or use for recycling purposes.

(d) Private alcohol fuel production systems provided the waste product is stored in an environmentally sound storage facility and disposed of using an environmentally safe land spreading technique and the disposal is confined to the property of the owner.

(e) Facilities utilizing fly ash that conforms to ASTM-C618 Class F and C specifications provided the testing, reporting, storage and other requirements specified by the department in writing are complied with.

(3) FACILITIES FOR THE REUSE OF HIGH VOLUME INDUSTRIAL WASTES. Except for those facilities which are exempt under sub. (2), facilities where solid wastes are processed for reuse or recycling by being incorporated into a structural material such as a concrete or asphalt or converted into a consumer product which is used as a raw material in a commercial or industrial process are exempt from licensing and all other requirements of this section. The solid waste generator must obtain written approval from the department to use the waste for these purposes, comply with the performance standards specified in s. NR 502.04(3), unless an exemption is granted, and operate the facility in a nuisance-free and aesthetic manner. To obtain approval, the solid waste generator shall submit the necessary laboratory and field tests to show that the specific waste types to be used would not release quantities of contaminants into the environment such that a potential hazard to public health or the environment would be created.

(4) COMPOSTING OPERATIONS FOR GRASS CLIPPINGS, LEAVES, CHIPPED WOOD AND YARD WASTE WHICH EXCEED 50 CUBIC YARDS PER YEAR BUT DO NOT EXCEED 20,000 CUBIC YARDS. Except as provided in sub. (2)(a), no person may establish or construct a composting operation for processing more than 50 cubic yards per year but less than 20,000 cubic yards of grass clippings, leaves, chipped wood or yard waste at one location unless the person can demonstrate compliance

with s. NR 502.04 and obtain approval in writing from the department of a report prepared in accordance with s. NR 500.05 and this section. The report shall contain, at a minimum, the following information:

(a) The location of the property where the facility is proposed to be located.

(b) A brief description of the project, including the area served, an estimate of the volume of material to be processed and a brief description of the operational practices.

(c) The proposed size of the facility, including property boundaries and present land use within 1/2 mile of the facility.

(d) Potential markets for the compost.

(e) Names and location of solid waste disposal facilities at which any waste generated from the composting operation will be disposed.

(5) PLAN OF OPERATION - NONEXEMPT PROCESSING FACILITIES. No person may establish or construct a solid waste processing facility prior to obtaining approval in writing from the department of a plan of operation for the facility. Unless otherwise approved by the department in writing, the plan shall be submitted in accordance with s. NR 500.04 and shall contain, at a minimum, the following information:

(a) A legal description of the property and the facility boundaries.

(b) The present ownership of the proposed facility property.

(c) Land use within 1/4 mile of the proposed facility. Particular note shall be made of parks, hospitals, nursing homes and areas of archaeological and historical significance.

(d) The area served, including population and major industries.

(e) The consistency of facility development with areawide solid waste plans and land use plans. All alternatives considered shall be discussed.

(f) The predominant types of vegetation and wildlife within the proposed facility boundaries.

(g) A complete materials balance for the facility, specifying amounts and characteristics of solid waste received and amounts and characteristics of products and wastes generated by the facility.

(h) The types of vehicles and access routes used to transport solid waste to and from the facility including the estimated traffic flow patterns within the facility, and an estimate of increased quantities of traffic on access routes to and from the facility.

(i) The estimated quantities and characteristics of wastes containing free liquids resulting from facility operation and methods of their treatment or disposal.

(j) The persons responsible for plant construction and operation.

(k) The quality and quantity of air discharge from plant operations and the need for any permits.

(l) Any additional procedures for the control of dust, odors, fire, windblown materials and potential explosions and for the handling of the waste in the case of major processing facility breakdown.

(m) The names and locations of all solid waste disposal facilities at which solid waste from the processing plant will be disposed.

(n) Overall facility layout including conceptual building design, sizing of receiving areas, methods of processing, and the size of major process equipment and process areas.

(o) Potential markets for recovered solid wastes and potential contractual arrangements for recovered products.

(p) A timetable for facility construction, shakedown and operation.

(q) The tentative operating schedule for the facility.

(r) Provisions for protection of groundwater and surface waters during facility construction and operation.

(s) A discussion of possible operational hazards and necessary safety precautions.

(t) A discussion of design features and logic including equipment capacity or size. Information shall be included to justify the size and configuration of the receiving area; size and configuration of processing equipment and areas, conveyors, blowers or other transport equipment; air pollution control units and associated duct work; methods of handling wastes containing free liquids resulting from operations such as floor drains, sewers and water treatment facilities; heat balances, residence time and process temperature for thermal processing equipment; size and configuration of loadout and storage facilities for process outputs; sizing of surface water drainage control structures; traffic flow patterns; design life of any building and facility equipment; methods of controlling windblown materials; and methods of screening the facility from the surrounding area.

(u) A discussion of personnel training; solid waste sources, quantities and characteristics of the waste to be processed; process line startup procedures and equipment performance evaluations; process raw materials on hand at startup; process outputs testing; and other appropriate startup procedures.

(v) A discussion of operating personnel responsibilities; hours of operation; daily processing schedule; routine process monitoring including monitoring quantity and quality of waste input; process output testing; equipment maintenance schedules; methods of controlling explosions, fire, odors, and windblown materials; special waste handling procedures; methods of controlling access; daily cleanup procedures; facility bypass procedures

during major breakdowns and alternative means of disposal; persons responsible for operation; facility licensee and owner; record keeping; emergency procedures for handling of freezeup during cold weather; methods to prevent solid waste from burning; and other pertinent information.

(6) ENGINEERING PLANS. The plan of operation shall include a set of engineering plans and maps which contain the following information unless an exemption is granted by the department in writing.

(a) An existing conditions map, which shows the entire facility and the area within 1/2 mile. The minimum scale shall be 1" = 400'. This map shall include the proposed facility boundary, property lines, easements and right-of-way, buildings foundations, roads, utilities and other structures; topography, drainage swales, surface waters, wetlands, floodplains and similar drainage features; wooded areas; location of soil borings and test pits; features of historical and archaeological significance; and other features as appropriate.

(b) A facility plan which includes the proposed facility access roads and traffic patterns, buildings, scales, utility lines, drainage diversion, screening, means of access control, final topography, areas to be cleared of vegetation, and other design features. The extent of coverage and scale shall be the same as that for the existing conditions map.

(c) A proposed process layout plan which shows the receiving, processing, and loadout areas. The minimum scale shall be 1" = 20'. Plan details shall include conceptual design for receiving area configuration and traffic flow patterns, processing area and equipment configuration, loadout area, equipment configuration, and other design features.

(d) At least one cross section shall be drawn through the receiving area, each process line, and the loadout area indicating existing topography, limits

of excavation, proposed final grade, and other pertinent design features. More cross sections may be necessary depending on the complexity of the facility design.

(7) LOCATIONAL CRITERIA. (a) Processing facilities not located within a building shall meet the location and performance standards specified in s. NR 502.04. Processing facilities located within a building shall meet the locational criteria specified in s. NR 502.04(2)(c) and the performance standards specified in s. NR 502.04(3). Exemptions from the requirements of s. NR 502.04(2)(a), (b), (d), (e) and (f) and (3)(b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant such an exemption. Exemptions from compliance with s. NR 502.04(3)(a) may be granted only in accordance with the standards in s. NR 1.95. Exemptions from compliance with s. NR 502.04(3)(d) may be granted only according to the procedures in ch. NR 140. Exemptions from compliance with s. NR 502.04(2)(c) and (3)(c) will not be granted.

(8) MINIMUM DESIGN REQUIREMENTS FOR NEW FACILITIES. A plan of operation for a solid waste processing facility shall be prepared in accordance with s. NR 500.05 and the following requirements:

(a) Screening shall be provided for any processing facility located within 1/4 mile of any residence.

(b) Dust within a facility shall be controlled so that operators are not exposed to undue health risk.

(c) Access to the processing facility shall be limited by means of fencing, natural barriers or other methods. Access roads utilized shall be of all-weather construction.

(d) All wastewater resulting from the process shall be discharged into a sanitary sewer or other system approved by the department.

(e) Thermal processing facilities shall be designed to provide adequate temperature and residence time in the reaction chambers to assure complete processing and shall be equipped with the necessary air pollution control equipment to meet state air pollution control regulations.

Note: These facilities may be subject to other regulations including OSHA requirements.

(9) MINIMUM OPERATIONAL REQUIREMENTS FOR NEW AND EXISTING FACILITIES. No person may operate or maintain a solid waste processing facility except in conformance with any approved plan of operation and the following minimum requirements:

(a) A sign, acceptable to the department, shall be posted at the entrance to the facility which indicates the name, license number, the hours of operation, a list of all prohibited wastes, the penalty for unauthorized use, all necessary safety precautions and other pertinent information.

(b) Access to the processing facility shall be limited to those times that an attendant is on duty.

(c) A processing facility shall be operated under the close supervision of responsible individuals who are thoroughly familiar with the requirements and operational procedures of the plant.

(d) All solid waste, with the exception of that in the process line, shall be stored in conformance with s. NR 502.05.

(e) Unloading of solid waste shall take place only in approved, designated areas.

(f) The processing facility and adjacent area shall be kept clean and free from litter.

(g) All operators shall be trained to use appropriate safety equipment and who to contact in case of an emergency.

(h) Waste containing free liquids and sludge waste shall be excluded unless plans specifically addressing the handling of these materials have been submitted to the department and approved in writing.

(i) Equipment shall be provided to control accidental fires and arrangements shall be made with the local fire protection agency to provide immediate services when needed.

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

(k) The operation shall be conducted in a manner to prevent public health hazards and nuisances.

(l) Asbestos or solid waste which is infectious, flammable or explosive shall not be accepted.

(m) Open burning of solid waste may not be conducted.

(n) Materials resulting from composting or similar processes and offered for sale shall be stabilized to eliminate pathogenic organisms, and to not reheat upon standing, and shall be free of sharp particles which could cause injury to persons handling the compost.

(o) Means of communication with emergency facilities shall be provided.

(p) Dust generated by the unloading of solid waste and the operation of the processing facility shall be controlled in accordance with the state air management rules so as not to create nuisance conditions.

(q) The department may require that permanent records of facility performance be maintained and submitted to the department with the relicensing application or as specified in the plan approval. Records shall indicate types, sources and amounts of solid waste processed, minor plant modifications performed, process monitoring data, amounts and characterization testing of

process outputs, and other data as required by the department when granting the license.

(r) An approved solid waste disposal facility shall be provided for use in the event that the processing facility is rendered inoperable or is not able to completely process the solid waste.

(s) By-products or residues shall be disposed of in facilities approved to receive such waste or shall be handled by an alternative method approved by the department.

(10) ADDITIONAL DESIGN REQUIREMENTS APPLICABLE TO NEW AND EXPANDING FACILITIES. A plan of operation for a solid waste processing facility shall be prepared in accordance with ss. NR 500.05, 502.08(5) and the following additional requirements:

(a) All access roads shall be constructed with a maximum grade no greater than 10%. The intersection of the access road with an existing highway shall be designed to provide sufficient sight distance and provide for minimum interference with traffic on existing highways.

(b) All installed processing equipment shall be enclosed to prevent nuisance conditions from developing.

(c) All buildings enclosing processing equipment shall have a sloped concrete floor with floor drains connected to a sanitary sewer or other system approved by the department.

(d) Maximum soil slopes for disturbed areas shall be 3 horizontal to one vertical.

(e) All areas disturbed during facility construction shall be graded, covered with 6 inches of topsoil and seeded or otherwise protected from soil erosion.

(f) Processing, receiving or storage areas not enclosed by a building shall be graded at a minimum 1% slope and surfaced with a material which will adequately support heavy equipment, resist frost action, provide a wearing surface and prevent contamination of groundwater. Runoff from these areas shall be directed to a sanitary sewer or other system approved by the department.

(g) Explosion-prone equipment such as primary shredders shall be placed in a separate room with explosion venting or explosion suppression equipment.

(h) The receiving area and all dry processing units such as shredders, screens, air classification devices, magnetic separators and similar equipment and all conveyor transfer points where dust is generated shall be shrouded and equipped with dust collection and removal equipment. Any air collected in this manner shall be directed through appropriate air pollution control equipment before being discharged.

(11) ADDITIONAL OPERATING REQUIREMENTS FOR NEW AND EXPANDED FACILITIES. No person may operate or maintain a new solid waste processing facility or expand an existing facility except in accordance with the requirements of s. NR 502.08(9), the terms and conditions of any plan of operation approval, and the following additional requirements:

(a) All borrow areas shall be abandoned in accordance with Wisconsin department of transportation procedures.

(b) All facilities operated more than 4 hours per day shall be equipped with a toilet and wash basin or have such facilities available within a reasonable distance.

(12) CONSTRUCTION DOCUMENTATION. The department may require that a registered professional engineer document facility construction and render an opinion whether the facility has been constructed in substantial conformance

with the approved plan. When a documentation report is required, it shall be prepared in accordance with the department's plan approval and s. NR 500.05. Operation of the facility may not commence until the report is approved in writing by the department and a license is issued. The department may issue a license prior to facility construction or construction documentation.

(13) MONITORING. Specific monitoring requirements and testing procedures for new, expanded and existing processing facilities will be determined by the department based on a review of the potential for environmental pollution. The department may require the owner or operator of any processing facility or any person who permits the use of property for such purpose to conduct monitoring as follows:

(a) Air quality monitoring.

(b) Product testing and waste characterization. The frequency of testing and parameters to be analyzed will be determined based on a review of the proposal and complexity of the product. The quality control program will correlate with the nature of the solid waste to be processed and final uses proposed for the material.

(c) Groundwater and surface water monitoring. The frequency and type of monitoring and analysis will be determined based on a review of the project.

(d) Periodic assessments of plant operation, process feasibility and marketability analyses of processed materials.

(14) CLOSURE. Any person who maintains or operates a processing facility or who permits the use of property for such purpose shall close the facility in accordance with the following practices unless otherwise specified by the department in writing:

(a) The operator shall notify the department and all users of the facility in writing at least 120 days prior to ceasing to accept solid waste.

(b) A sign shall be placed at the entrance to the facility notifying all users that the facility is no longer accepting solid waste.

(c) Access to the facility shall be restricted through the use of a fence, gate or other appropriate means.

(d) The department may require the continuance of groundwater, surface water and air quality monitoring after closure of the facility.

(e) The operator shall submit to the department for approval at least 120 days prior to facility closure, a plan for facility closure. The department shall review the plan and notify the operator of the acceptability and completeness of the plan. If additional items are needed to properly close the facility the operator shall be notified and appropriate additions shall be made to the closure plan.

(f) All aspects of facility closure other than monitoring shall be completed within 6 months after ceasing to accept solid waste.

NR 502.09 INCINERATORS. (1) GENERAL. Solid waste incineration facilities are exempt from licensing under this section provided that:

(a) A permit has been obtained in accordance with s. 144.391, Stats., if required; and

(b) The facility is located, designed and operated in accordance with subs. (3) and (4); and

(c) Waste characterization is performed in accordance with sub. (5).

(2) EXEMPTIONS. (a) Incinerators having a capacity of 500 pounds per hour or less are exempt from all requirements of this section except sub. (5). The facility shall be designed and operated in conformance with emission limitations of state air pollution control regulations.

(b) Incinerators burning only clean wood waste are exempt from all requirements of this section except sub. (5).

(3) LOCATIONAL CRITERIA. Incinerators shall meet the locational criteria specified in s. NR 502.04(2)(c) and the performance standards specified in s. NR 502.04(3). Exemptions from the requirements of s. NR 502.04(3)(b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant such expemptions. Exemptions from compliance with s. NR 502.04(3)(a) may be granted only in accordance with the standards in s. NR 1.95. Exemptions from compliance with s. NR 502.04(3)(d) may be granted only in accordance with the procedures in ch. NR 140. Exemptions from compliance with s. NR 502.04(2)(c) and (3)(c) will not be granted.

(4) OPERATIONAL REQUIREMENTS. No person may operate or maintain an incineration facility except in conformance with the following minimum requirements, unless an exemption is granted by the department in writing:

(a) The incinerator shall be situated, equipped, operated, and maintained as to minimize interference with other activities in the area.

(b) Adequate shelter and sanitary facilities shall be available for personnel.

(c) A sign shall be prominently posted at the entrance to the facility, which indicates the name, license number, the hours of operation, necessary safety precautions and any other pertinent information.

(d) All incoming solid waste shall be confined to the designated storage area.

(e) Solid waste shall be stored in conformance with s. NR 502.05.

(f) Dust shall be controlled in the unloading and charging areas.

(g) Permanent records shall be maintained including the weights of material incinerated, the quantity of resulting residue, hours of plant

operation, combustion temperatures, residence time and other pertinent information.

(h) Appropriate fire-fighting equipment shall be available in the storage and charging areas and elsewhere as needed.

(i) Arrangements shall be made with the local fire protection agency to provide adequate emergency fire-fighting forces.

(j) Means of communication with emergency facilities shall be provided.

(k) Adequate equipment shall be provided to allow cleaning after each day of operation or as may be required in order to maintain the plant in a sanitary condition.

(l) The charging openings as well as all equipment throughout the plant shall be provided with adequate safety equipment.

(m) The incinerator shall be designed and operated such that it will not cause a nuisance because of the emission of noxious odors, gases, contaminants or particulate matter or exceed emission limitations established by state air management rules.

(n) Residue shall be disposed of at a solid waste facility licensed by the department to accept the material or be handled by an alternate method approved in writing by the department. Approval will be issued on a case-by-case basis after review of the information contained in sub. (4).

(o) All wastewater from the incinerator shall be discharged into a sanitary sewer or other system approved in writing by the department.

(p) Upon completion of construction of a new incinerator and at least 10 days prior to initial operation, the department shall be notified to allow inspection of the incinerator both prior to and during any performance tests and initial operation.

(q) Open burning of solid waste shall not be conducted.

(r) An approved alternative method shall be used for solid waste disposal during any time that the incinerator is inoperable.

(s) The incoming waste shall be screened to eliminate unacceptable material from entering the facility such as hazardous waste, asbestos, explosive materials or other materials which may endanger operator safety.

(5) WASTE CHARACTERIZATION. The owner or operator of an incineration facility shall undertake a testing program as follows:

(a) An ash testing program shall be completed within 60 days of construction and shake-down of the incinerator. Representative samples of both fly ash and bottom ash shall be tested for physical characteristics, bulk chemical composition, analysis using the appropriate leaching test and analysis using the EP toxicity test or other test to determine the wastes' regulatory status under federal or state hazardous waste laws. Test methods, the number of tests, detection limits, and parameters to be tested for will be specified by the department.

(b) A long-term ash testing program shall be established. For the first year of operation, quarterly testing of at least one sample of bottom ash and one sample of fly ash shall be performed using approved methods and procedures. Thereafter, annual sampling and testing shall be performed. The department may specify an alternate testing program.

NR 502.10 AIR CURTAIN DESTRUCTORS. (1) GENERAL. No person may operate or maintain an air curtain destructor unless the person has obtained an operating license from the department. Any person intending to establish or construct an air curtain destructor shall contact the department to arrange for an initial inspection.

(2) PLAN OF OPERATION. No person may establish or construct an air curtain destructor or expand an existing air curtain destructor prior to obtaining approval in writing from the department of a plan of operation for the facility. The air curtain destructor shall comply with all applicable emission requirements of the state air management rules. The plan of operation shall include at a minimum the following:

(a) A map or aerial photograph of the area showing land use, zoning, homes, industrial buildings and roads within 1/4-mile of the facility.

(b) A plot plan of the air curtain destructor facility showing means of restricting access, method of screening the facility from the surrounding area, general layout of equipment, access roads and waste material storage areas.

(c) Construction plans for the burning pit.

(d) Plans and specifications for the blower unit and appurtenances.

(e) A report indicating the type and quantity of waste material to be consumed, planned method of charging, startup procedures, safety features to be used at the facility both during and after burning, proposed pit clean-out procedures and methods to be employed in conforming to the minimum requirements of the state air management rules.

(f) The facility at which the ash residue will be disposed and any alternative facilities available for use when the primary facility is inoperative.

(3) LOCATIONAL CRITERIA. Air curtain destructors shall meet the locational criteria specified in s. NR 502.04(2)(c) and the performance standards specified in s. NR 502.04(3). Exemptions from the requirements of s. NR 502.04(3)(b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant such exemptions. Exemptions from

compliance with s. NR 502.04(3)(a) may be granted only in accordance with the standards in s. NR 195. Exemptions from compliance with s. NR 502.04(3)(d) may be granted only in accordance with the procedures in ch. NR 140. Exemptions from compliance with s. NR 502.04(2)(c) and (3)(c) will not be granted.

(4) OPERATIONAL REQUIREMENTS. No person may construct, operate or maintain an air curtain destructor except in conformance with any approved plan of operation and the following minimum requirements:

(a) The burning pit shall be constructed of a material which will result in a pit of permanent dimensions. Unconsolidated soils are not an acceptable material for construction of the burning pit. Maintenance shall be performed on the pit to keep its dimensions constant to keep the air curtain destructor working properly.

(b) The burning pit floor shall be constructed in a manner which provides for proper drainage.

(c) The burning pit shall be oriented perpendicular to the prevailing wind with the plenum chamber and blower on the downwind side.

(d) The charging area shall be paved with a concrete pad for a distance of at least 10 feet from the edge of the burning pit and sloped away from the chamber. Adequate safety devices shall be provided to prevent loading equipment from falling into the burning pit.

(e) Only clean wood, brush and baled paper wastes may be burned in an air curtain destructor.

(f) The stockpile of waste material shall be kept a minimum of 100 feet from the burner. The stockpile shall be limited to one week of accumulation. The department may grant an exemption to the one week limitation upon demonstration of need by the operator.

(g) Charging shall be done to prevent damage to the pit wall and floor.

(h) Waste shall be carefully placed so not to have waste extending above the burning pit or interfering with air circulation.

(i) Start-up shall be accomplished by using kindling material to ignite larger materials rather than using fuel oil, tires, or other rubber materials. Where sufficient quantities of kindling materials are unobtainable, other methods approved by the department in writing may be used.

(j) Burning may be conducted only during daylight hours. Quantities of materials to be burned shall be restricted to allow for complete burnout while the facility is attended.

(k) Fire-fighting equipment shall be kept at the facility in case of emergency. Arrangements shall also be made with the local government to provide fire protection. Fire breaks shall be provided for a distance of at least 100 feet from the air curtain destructor. Greater setbacks may be specified by the department.

(l) The burning pit shall be cleaned out on a regular schedule. Ashes may not be allowed to accumulate to a depth of greater than 3 feet. The department may specify a lesser depth.

(m) A minimum separation distance of 1/4 mile shall be maintained between the burner and the nearest residence unless written consent is obtained from all adult residents within 1/4 mile of the licensed operation. If an air curtain destructor is located at an existing land disposal operation, a minimum separation distance of 200 feet shall be maintained between the burner and the working face of the land disposal operation.

(n) The burner shall be screened from the surrounding area.

(o) The air curtain destructor shall be surrounded by a fence with a lockable gate. The gate shall be kept locked when no attendant is on duty.

(p) An attendant shall be on duty at all times when the blower unit is in operation. All fires shall be out when the blower unit is shut off.

(q) Warning signs shall be posted at intervals around the entire air curtain destructor installation notifying people to keep out of the area.

(r) A sign, acceptable to the department, shall be posted at the entrance to the operation which indicates the name, acceptable wastes, license number, the hours of operation, penalty for nonauthorized use, necessary safety precautions and any other pertinent information.

(s) Surface water shall be diverted away from the active operating area, storage area and access areas.

(t) Ash resulting from the operation shall be disposed of at a facility approved by the department to receive such material.

(u) The facility shall be operated in a nuisance-free manner consistent with this chapter and in accordance with the state air management rules.

(5) CLOSURE. Any person who operates or maintains an air curtain destructor, or permits the use of property for such purpose, shall close the facility in accordance with any plan approval issued by the department and the following minimum practices:

(a) The pit shall be cleaned out and properly backfilled.

(b) Means for recycling, processing and alternate disposal of the solid waste shall be provided.

(c) The facility area shall be cleaned up and all debris and litter collected and properly disposed.

(d) The department shall be notified in writing at least 60 days prior to the proposed closure date.

NR 502.11 WOODBURNING FACILITIES. (1) GENERAL. No person may operate or maintain a woodburning facility unless the person has obtained an operating license from the department. Any person intending to establish or construct a woodburning facility shall contact the department to arrange for an initial inspection.

(2) LOCATIONAL CRITERIA. Woodburning facilities shall meet the locational criteria specified in s. NR 502.04(2)(c) and the performance standards specified in s. NR 502.04(3). Exemptions to s. 502.04(2)(a), (b), (d), (e) and (f) and (3)(b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant such exemptions. Exemptions from compliance with s. NR 502.04(3)(a) may be granted only in accordance with the standards in s. NR 1.95. Exemptions from compliance with s. NR 502.04(3)(d) may be granted only according to the procedures in ch. NR 140. Exemptions from compliance with s. NR 502.04(2)(c) and s. NR 502.04(3)(c) will not be granted.

(3) PLAN OF OPERATION. No person may establish or construct a wood burning facility or expand an existing wood burning facility prior to obtaining approval in writing from the department of a plan of operation for the facility. The wood burning facility shall comply with all applicable requirements of the state air management rules. Unless otherwise approved by the department in writing, the plan of operation shall include at a minimum the following:

(a) A map or aerial photograph of the area showing land use, zoning, homes, industrial buildings and roads within 1/4-mile of the facility.

(b) A plot plan of the facility showing means of restricting access, method of screening the facility from the surrounding area, access roads and waste material storage areas.

(c) Construction plans for the burning pad. The burning pad may be constructed of concrete, compacted gravel, compacted mineral soil or other materials approved in writing by the department.

(d) A report indicating the type and quantity of waste material to be burned, planned method of charging, startup procedures, safety features to be used at the facility both during and after burning, proposed cleanup procedures and methods to be employed in conforming to the minimum requirements of the state air management rules.

(e) The facility at which the ash residue will be disposed and any alternative facilities available for use when the primary facility is inoperative.

(4) OPERATIONAL REQUIREMENTS. No person may construct, operate or maintain a wood burning facility except in conformance with any approved plan of operation and the following minimum requirements:

(a) All burning shall be done on a burning pad or pit which is surrounded by a firebreak of mineral soil scraped free of vegetation for a minimum distance of 100 feet around the burning pad or pit. Greater setback distances may be specified by the department.

(b) Only clean wood, brush, stumps or trees may be burned at a woodburning facility.

(c) Waste material may be placed or stored on the burning pad. Any additional accumulation of waste material must be stockpiled a minimum of 100 feet from the burning pad. The stockpile should be limited to one week of accumulation unless safe burning conditions do not exist.

(d) Start-up shall be accomplished by using kindling material to ignite larger materials rather than using waste oil, tires or other rubber

materials. Where sufficient quantities of kindling materials are unobtainable, other methods approved by the department in writing may be used.

(e) Burning may be conducted only during daylight hours. Quantities of materials to be burned shall be restricted to allow for complete burnout while the facility is attended.

(f) Fire-fighting equipment shall be kept at the facility in case of emergency, unless the services of a local fire protection agency are arranged.

(g) A minimum separation distance of 1/4 mile shall be maintained between the burning pad and the nearest residenceunless a written consent is obtained from all adult residents with 1/4 mile of the licensed operator. If a wood burning facility is located at an existing land disposal operation, a minimum separation distance of 200 feet shall be maintained between the burning pad and the working face of the land disposal operation.

(h) The burning pad shall be screened from the surrounding area.

(i) The burning pad shall be surrounded by a fence with a lockable gate. The gate shall be kept locked when no attendant is on duty.

(j) An attendant shall be on duty at all times when burning is taking place. All fires shall be out before the attendant leaves the facility.

(k) Warning signs shall be posted at intervals around the facility notifying people to keep out of the area.

(l) A sign, acceptable to the department, shall be posted at the entrance to the operation which indicates the name, acceptable wastes, license number, the hours of operation, penalty for nonauthorized use, necessary safety precautions and any other pertinent information.

(m) Surface water shall be diverted away from the burning pad, storage area and access areas.

(n) Ash resulting from the operation shall be disposed of at a facility approved by the department to receive such material.

(o) The facility shall be operated in a nuisance-free manner consistent with all local burning regulations and permits, this chapter and in accordance with the state air management rules. A burning permit must be obtained during five season if the facility is located in a fire control area.

(5) CLOSURE. Any person who operates or maintains a wood burning facility, or permits the use of property for such purpose, shall close the facility in accordance with any plan approval issued by the department and the following minimum practices:

(a) The burning pad or pit shall be cleaned out and properly backfilled.

(b) Means for recycling, processing and alternate disposal of the solid waste shall be provided.

(c) The facility area shall be cleaned up and all debris and litter collected and properly disposed.

(d) The department shall be notified in writing at least 60 days prior to the proposed closure date.

NR 502.12 ONE TIME DISPOSAL. (1) GENERAL. No person may operate or maintain a facility for the one-time disposal of agricultural or demolition solid waste unless the person has obtained a written plan approval from the department, except as otherwise provided in s. NR 500.08. Facilities approved under this section are exempt from the licensing requirements of ss. 144.44 to 144.47, Stats.

(2) LOCATIONAL CRITERIA. One-time disposal facilities shall meet the location and performance standards specified in s. NR 502.04. Exemptions to s. NR 502.04(2)(a), (b), (d), (e), and (f) and (3)(b), (e) and (f) may be

granted only upon demonstration by the applicant of circumstances which warrant an exemption. Exemptions from compliance with s. NR 502.04(3)(a) may be granted only in accordance with the standards in s. NR 1.95. Exemptions from compliance with s. NR 502.04(3)(d) may be granted only according to the procedures in ch. NR 140. Exemptions from compliance with s. NR 502.04(2)(c) and (3)(c) will not be granted.

(3) INITIAL INSPECTION. Any person intending to establish or construct a facility under the provisions of this chapter shall contact the department to arrange for an initial inspection of the property prior to submitting a report.

(4) REPORT REQUIREMENTS. Any person intending to establish a facility for the one-time disposal of agricultural or demolition solid waste shall submit a report to the department which contains the information specified in s. NR 502.13(4) unless the department waives specific requirements of that section in writing. The applicant shall address the alternatives considered, including disposal at a licensed solid waste disposal facility, and the reasons why other economically feasible alternatives are not available. The department may require any additional information as specified in ch. NR 512 or 514, if it determines that the information is necessary to complete the review of the project.

(5) OPERATIONAL REQUIREMENTS. No person may construct, operate or maintain a one-time disposal facility except in conformance with the following minimum requirements and with the terms and conditions of the plan approval for the facility:

(a) The facility life may not exceed 6 months.

(b) The design capacity of the facility may not exceed 10,000 cubic yards.

(c) The facility shall be operated, maintained and closed in a nuisance-free manner. Screening shall be provided from all residences within 1/4 mile unless this requirement is waived in writing by the department.

(d) A minimum 10-foot separation distance from the water table shall be maintained unless the disposal facility is in a clay soil environment.

(e) Access to the facility shall be restricted through the use of fencing or other means if approved by the department.

(6) MONITORING. The department may require installation of groundwater and leachate monitoring wells or other devices, groundwater and leachate quality sampling and analysis programs, gas monitoring and provisions to protect against detrimental effects of leachate and gas migration from any one-time disposal facility.

(7) CLOSURE. Any person who operates or maintains a one-time disposal facility, or who permits the use of property for such purposes shall close the facility within 6 months after disposal begins in the following manner:

(a) The entire area previously used for disposal purposes shall be covered with at least 2 feet of compacted earth sloped adequately to allow surface water runoff. A specific soil type may be required by the department for this 2-foot layer. Fine grain soils shall be utilized to minimize infiltration unless this requirement is waived in writing by the department. Top slopes shall be no less than 2%. Side slopes shall be no steeper than 33%.

(b) Surface water shall be diverted to limit the potential for erosion and sedimentation. Wherever possible, surface water shall be diverted around previously filled areas. Where it is necessary to divert drainage over previously filled areas, the department may require that drainage be conveyed by clay lined drainage swales having a minimum thickness of 2 feet.

(c) The finished surface of the filled area shall be covered with a minimum of 6 inches of topsoil.

(d) Seeding, fertilizing and mulching of the finished surface shall be accomplished in accordance with the facility's final use. The seed type and amount of fertilizer shall be selected depending on the type and quality of topsoil and compatibility with native vegetation.

(e) Following closure of the one time disposal facility, the facility shall be inspected and maintained by the owner or operator until it becomes stabilized or until the responsibility of the owner or operator terminates in accordance with the plan approval.

(8) EXPANSIONS. Any person who wishes to expand an existing one-time disposal facility shall comply with all provisions of this section. The department shall interpret expansions to include any new facility within 1,000 feet of an existing facility. The department may deny any request for an expansion if, in the department's opinion, the disposal of additional waste may result in a detrimental effect on surface or groundwater or cause or exacerbate an attainment or exceedance of any standard in ch. NR 140. The local geology, hydrogeology, and topography shall be considered in this decision.

NR 502.13 SMALL DEMOLITION WASTE LANDFILLS. (1) GENERAL. No person may operate or maintain a small demolition facility unless the person has obtained written plan approval from the department except as otherwise provided in s. NR 500.08 or 502.12. Demolition waste disposal facilities having a design capacity of less than 50,000 cubic yards are exempt from the licensing requirements of ss. 144.44 to 144.47, Stats.

(2) LOCATIONAL CRITERIA. Demolition waste disposal facilities having a design capacity of less than 50,000 cubic yards shall meet the location and performance standards specified in s. NR 502.04. Exemptions to s. NR 502.04(2)(a), (b), (d), (e), and (f) and (3)(b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant an exemption. Exemptions from compliance with s. NR 502.04(3)(a) may be granted only in accordance with the standards in s. NR 1.95. Exemptions from compliance with s. NR 502.04(3)(d) may be granted only according to the procedures in ch. NR 140. Exemptions from compliance with s. NR 502.04(2)(c) and (3)(c) will not be granted.

(3) INITIAL INSPECTION. Any person intending to establish a small demolition waste disposal facility shall contact the department to arrange for an initial inspection of the property prior to submitting a report.

(4) REPORT REQUIREMENTS. Any person intending to establish a small demolition waste disposal facility shall submit a report to the department which contains the following information:

(a) General facility information which identifies the project title; name, address, and telephone number of the primary contact persons and consultants; present property owner; proposed facility owner and operator; facility location by quarter-quarter section; total acreage of property and facility; proposed facility life and disposal capacity; municipalities and industries to be served; estimated waste types and quantities to be disposed; anticipated covering frequency; equipment to be used and mode of operation.

(b) Geotechnical information shall be obtained by drilling a minimum of 5 soil borings which extend to 25 feet below the anticipated facility base grade or to bedrock, whichever is less unless an alternative geotechnical program is approved by the department in writing. The borings shall be

distributed on a grid pattern throughout the area. A minimum of 3 representative samples shall be taken from each major soil layer encountered during installation of the borings and shall be analyzed for grain size distribution and classified according to the unified soil classification system.

(c) Water table observation wells shall be installed to adequately define the water table surface and hydraulic gradients. At a minimum, 3 water table observation wells shall be installed. The well locations shall be chosen in an effort to place one well upgradient and the other 2 downgradient at the proposed facility.

(d) The results of the subsurface investigations shall be summarized using a series of geologic sections which connect the soil borings performed. Each section shall show present topography, borings, wells, major soil layers, water table and bedrock.

(e) Topographic survey information shall be displayed on a plan sheet showing the proposed fill area, property boundaries, proposed facility boundaries, soil borings performed and wells installed. The minimum scale shall be 1" = 200' with a maximum contour interval of 5 feet. This map may consist of a blow-up of a USGS map, with supplemental information added as appropriate. Drainage patterns shall be shown. In addition, the plan sheet shall show all roads adjacent to or near the proposed facility; homes, water supply wells and wetlands or water courses within 1/4 mile of the facility.

(f) A topographic plan sheet showing the proposed base grades and the sequence of filling shall be prepared. A contour interval of 2 feet should be used and all drainage patterns shown.

(g) A topographic plan sheet showing the proposed final grades shall be prepared.

(h) Cross-sections, both north-south and east-west, shall be drawn through the fill area delineating present topography, soils information, groundwater, base grades, and final contours. This information may be shown on the geologic cross-sections required in par. (d) if clarity is not compromised.

(i) An appendix shall be prepared which includes all raw data such as boring logs, soil tests, well construction data and water level measurements; a plat map of the area; a soil conservation service soil map and interpretation and references.

(5) CONSTRUCTION DOCUMENTATION REPORT. The department may require the applicant to submit a construction documentation report for any small demolition waste disposal facility. When a documentation report is required it shall be prepared in accordance with the department's plan approval and s. NR 500.05. Operation of the facility may not begin until the report is approved in writing by the department.

(6) OPERATIONAL REQUIREMENTS. Any person operating a facility for the disposal of less than 50,000 cubic yards of demolition wastes shall meet the operational requirements listed in s. NR 502.12(5)(c), (d) and (e), and comply with the terms and conditions of the plan approval for the facility.

(7) MONITORING. The department may require installation of groundwater and leachate monitoring wells or other devices, groundwater and leachate sampling and analysis programs, gas monitoring and provisions to protect against detrimental effects of leachate and gas migration from any small demolition waste disposal facility.

(8) CLOSURE REQUIREMENTS. The closure of the facility shall meet the requirements listed in s. NR 502.12(7), and the terms and conditions of the plan approval for the facility.

(9) EXPANSIONS. Any person who wishes to expand an existing small demolition waste disposal facility shall comply with all provisions of this section. The department shall interpret expansions to include any new facility within 1,000 feet of an existing facility. The department may deny any request for an expansion, if in the department's opinion, the disposal of additional waste may result in a detrimental effect on surface or groundwater or cause or exacerbate an attainment or exceedance of any standard in ch. NR 140. The local geology, hydrology, hydrogeology and topography shall be considered in this decision.

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Chapter NR 504

Landfill Location, Performance and Design Criteria

NR 504.01 PURPOSE. The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to provide information on locational criteria, performance standards and the minimum design requirements for solid waste disposal facilities. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 504.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste disposal facilities as defined in s. 144.43(5), Stats., except landspreading facilities regulated under ch. NR 518, hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181 and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 504.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 504.04 LANDFILL LOCATION AND PERFORMANCE STANDARDS. (1) GENERAL. As part of the feasibility report required under ch. NR 512 an applicant shall demonstrate to the department that the proposed facility will comply with all of the location and performance standards of this section unless an exemption is granted.

(2) EXEMPTIONS. (a) Exemptions from compliance with sub. (3)(a), (b), (d), (e) and (4)(b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant such an exemption. Exemptions from compliance with sub. (4)(a) may be granted only in accordance with the standards set forth in s. NR 1.95. Exemptions from compliance with sub. (3)(c) and (4)(c) will not be granted. Exemptions from compliance with sub. (4)(d) may be granted only according to the procedures set forth in chs. NR 508 and 140. Exemptions from compliance with sub. (3)(f) will be based on an evaluation of the information contained in par. (b). However, no exemptions from sub. (3)(f) may be granted unless information on the well location, former and present well owner, well driller, well log and construction details and the general hydrogeologic setting is submitted to the department.

(b) Additional factors which may be considered by the department in determining whether or not to grant exemptions under this section include waste types, characteristics and quantities; the geology and hydrogeology of the facility; the proposed facility design and operation; the availability of other environmentally suitable alternatives; compliance with other state and federal regulations and the health, safety and welfare of the public. Requests for exemptions and information needed to demonstrate the circumstances that warrant such exemptions shall be addressed by the applicant in the feasibility report.

(3) LOCATION STANDARDS. No person may establish, construct, operate, maintain or permit the use of property for a solid waste land disposal facility where the limits of filling are or would be within the following areas:

(a) Within 1,000 feet of any navigable lake, pond or flowage not including facility drainage or sedimentation control structures.

(b) Within 300 feet of any navigable river or stream.

(c) Within a floodplain.

(d) Within 1,000 feet of the nearest edge of the right-of-way of any state trunk highway, interstate or federal aid primary highway or the boundary of any public park, unless the facility is screened by natural objects, plantings, fences or other appropriate means so that it is not visible from the highway or park.

(e) Within 10,000 feet of any airport runway used or planned to be used by turbojet aircraft or within 5,000 feet of any airport runway used only by piston type aircraft or within other areas where a substantial bird hazard to aircraft would be created. This criterion applies only when the facility will be used for disposing of putrescible waste.

(f) Within 1,200 feet of any public or private water supply well.

(4) PERFORMANCE STANDARDS. No person may establish, construct, operate, maintain or permit the use of property for a solid waste land disposal facility within an area where there is a reasonable probability that the facility will cause:

(a) A significant adverse impact on wetlands.

(b) A significant adverse impact on critical habitat areas.

(c) A detrimental effect on any surface water.

(d) A detrimental effect on groundwater quality or will cause or exacerbate an attainment or exceedance of any preventive action limit or enforcement standard at a point of standards application as defined in ch. NR 140. For the purposes of design the point of standards application is defined by s. NR 140.22(1).

(e) The migration and concentration of explosive gases in any facility structures, excluding the leachate collection system or gas control or recovery system components, or in the soils or air at or beyond the facility property boundary in excess of 25% of the lower explosive limit for such gases at any time.

(f) The emission of any hazardous air contaminant exceeding the limitations for those substances contained in s. NR 445.03.

NR 504.05 MINIMUM DESIGN CRITERIA. Unless otherwise approved by the department in writing, the minimum design criteria set forth in this section apply to all new facilities and to the expansion of existing facilities for which the plan of operation was not approved before [the effective date of these rules]. These criteria shall be used by the applicant to the greatest degree practical when preparing design plans for initial site reports, feasibility reports and plans of operation and for the submittal of any plan modification or closure plan. Facilities designed in substantial

conformance with these design criteria are presumed to be capable of meeting the performance standards of s. NR 504.04(4)(d) regarding groundwater quality. If the proposed design differs from these requirements the applicant shall provide supporting justification for any differences.

(1) GENERAL. (a) All solid waste land disposal facilities shall be designed to contain and collect leachate to the maximum practical extent unless the applicant can demonstrate that no significant quantity of leachate will be generated due to the unique character of the waste or facility type. This shall be accomplished by designing the facility to meet the standards contained in either sub. (3) or (4), unless the department approves the applicants alternative design, which provides an equivalent or better level of performance than the standards contained in this chapter.

(b) If the applicant does not complete construction of the first major phase of the facility within 2 years from the date of the plan of operation approval, the applicant must reapply to the department for approval to begin construction. This application does not constitute a feasibility report as defined in s. 144.44(2), Stats. The department may require additional conditions of approval and require redesign of the facility in accordance with state-of-the-art design criteria.

(2) DESIGN CAPACITY. All facilities shall meet the requirements of this subsection unless they are exempted in s. 144.44(2)(nr), Stats. The minimum design capacity of a solid waste land disposal facility shall equal or exceed the expected volume of solid waste and daily and intermediate cover that will be disposed of at the facility within 10 years after operations begin. The maximum design capacity of the facility may not exceed the expected volume of solid waste and daily and intermediate cover that will be disposed of at the facility within 15 years after operations begin. Waste approved for use in construction of facility components shall not be included in the calculation

of design capacity. Expansions of existing facilities are not subject to the 10-year minimum design capacity requirement.

(3) CLAY-LINED LANDFILLS. All facilities designed with a clay liner shall meet the following requirements:

(a) Soil used for the clay liner shall meet the specifications contained in sub. (5).

(b) A leachate collection system shall be included in each horizontal phase of the facility. This system shall be designed to limit the post closure average leachate head level on the liner to one foot or less.

(c) The separation distance between the seasonal high groundwater table and the bottom of the clay liner shall be at least 10 feet.

(d) The separation distance between the competent bedrock surface and the bottom of the clay liner shall be at least 10 feet.

(e) The minimum slope on the top of the clay liner toward the leachate collection lines shall be at least 2%.

(f) The minimum thickness of the clay liner at all locations shall be at least 5 feet measured perpendicular to the liner surface.

(g) The clay-lined base and interior sidewalls shall be constructed in lift heights no greater than 6 inches after compaction.

(h) The slope of the interior sidewalls shall not exceed 3 horizontal to one vertical.

(i) A minimum 1-foot thick granular drainage blanket shall be placed on top of the clay-lined base and sidewalls. The granular drainage blanket shall contain no more than 5% material by weight which passes the 200 sieve, have a uniformity coefficient of less than 4 for gravel soils and less than 6 for sandy soils, and a hydraulic conductivity which is greater than or equal to 1×10^{-3} cm/sec at the anticipated field density.

(j) Clay-lined phases of the facility constructed adjacent to each other

shall be keyed together to form a continuous clay seal. This shall be accomplished by excavating steps along the edge of the existing clay-lined phase and overlapping the lifts of clay being placed for the liner of the new phase with the steps in the existing liner.

(k) All leachate transfer lines, tanks or other structures used to convey or store leachate outside the clay-lined area shall be constructed above the seasonal high groundwater table unless it is not technically feasible to do so and the design meets the requirements of s. NR 504.05(6)(k).

(l) All major horizontal clay-lined phases shall be designed with a collection basin lysimeter to monitor the unsaturated zone.

(4) ZONE-OF-SATURATION LANDFILLS. All facilities proposed with base grades beneath the groundwater table shall meet the following requirements:

(a) A leachate collection system shall be included for each horizontal phase of the facility. The system shall be designed to limit the post-closure average leachate head level on the recompacted clay base to one foot or less. Unless otherwise approved by the department, an analysis using a numerical flow model shall be performed to predict whether the facility will maintain inward gradients following closure and during the period of long-term care.

(b) The facility shall be located in a fine-grained soil environment.

(c) A minimum of 5 feet of recompacted clay shall be maintained at all locations beneath the proposed base and sidewalls. The applicant may propose a thicker recompacted clay base to offset deficiencies in the natural clay soil environment.

(d) The recompacted clay base and sidewalls shall meet the requirements in sub. (3)(e), (g), (h), (i) and (j).

(5) CLAY SPECIFICATIONS. Soil for a clay liner, recompacted clay base or sidewalls shall meet the following specifications:

(a) A minimum of 50% by weight which passes the 200 sieve.

(b) A clay size content of 25% by weight or greater.

(c) A saturated hydraulic conductivity of 1×10^{-7} cm/sec or less.

(d) A liquid limit of 30% or greater.

(e) A plasticity index of 15% or greater.

(f) Compacted to 90% modified or 95% standard Proctor density or greater.

(6) LEACHATE COLLECTION SYSTEMS. All leachate collection systems shall incorporate the following design features:

(a) The minimum slope on all leachate collection pipes shall be 0.5%.

(b) The minimum diameter of all leachate collection or transfer pipes shall be 6 inches. Schedule 80 PVC pipe or an approved substitute shall be used.

(c) The collection efficiency of the leachate collection system shall be calculated using an analytical or numerical model acceptable to the department. An analytical model for clay-lined landfills above the water table and a numerical flow model for zone-of-saturation facilities shall be utilized unless otherwise approved by the department. The analysis shall be used to predict the volume of liquid that will be collected, the volume of liquid that may percolate through the liner, the predicted head of liquid on the liner, and the efficiency of the collection system over a one year period. The analysis shall be performed for the periods of time during active operations when the maximum amount of area has been filled but not capped and following facility closure. A table shall be presented in the feasibility report and plan of operation showing the results of this analysis.

(d) The bedding material utilized in backfilling the leachate collection pipe trenches shall have a uniformity coefficient of less than 4, a maximum particle diameter of 2 inches, a maximum of 5% of the material which passes the 4 sieve and consist of rounded to subangular gravel. A minimum depth of 6 inches of gravel shall be placed in the trenches prior to installation of the leachate pipes. After the pipes have been properly installed, the remaining

backfill shall be placed such that a minimum of 6 inches of material exists above the top of the pipe and within the trenches. A geotextile shall be used to line the base and sidewalls of all leachate collection trenches. In cases where the particle size of the drainage blanket is significantly less than the collection trench bedding, a properly designed graded soil filter or geotextile shall be utilized to minimize the migration of the drainage blanket material into the collection trenches. Limestone and dolomite shall not be used in the leachate collection system unless no other suitable material is reasonably available.

(e) Properly sized geotextiles or other suitable means to reduce the potential for migration of fines shall be used at all interfaces of granular and fine-grained soil where the potential for piping or migration of fines exists. This includes the interface of the clay liner and the granular backfill in the collection lysimeters.

(f) All leachate collection lines shall have cleanout access points installed on both ends of each line. The maximum length of the line shall be minimized to take into account the capabilities of the available cleanout equipment. Where practical, the leachate lines shall be designed so that the entire line does not exceed the capabilities of the cleanout device in one direction.

(g) Leachate lines, manholes and other engineering structures shall not penetrate the liner in the vertical direction. Leachate transfer lines may penetrate the liner in the horizontal direction only. The number of liner penetrations shall be kept to a minimum.

(h) Any leachate line that penetrates a clay liner shall have an anti-seep collar placed around it. A minimum of 5 feet of compacted clay shall be placed around the collar in all directions.

(i) All leachate lines transporting leachate out of the facility shall be constructed with valves so the flow of leachate can be controlled. The valves shall be compatible with the leachate and be capable of being operated from the ground surface. This requirement may be waived if the applicant shows that leachate overflow from the containment structures will not be possible based on the design.

(j) The overall slope of the leachate collection lines and clay-lined base in each phase shall be toward the perimeter of the facility where a lesser thickness of refuse exists. The base may be sloped internally toward the leachate collection lines.

(k) All leachate transfer lines located outside of the clay-lined area shall be designed to assure groundwater protection by being fully encased in at least 2 feet of clay, through the use of double-cased pipe or by using another approved secondary containment method. Regardless of the proposed design, all leachate transfer lines shall be pressure tested prior to their use.

(l) Leachate collection tanks, manholes and sumps shall be designed with a secondary containment system to prevent the discharge of leachate to ground and surface waters in the event of a leak or spill. Means shall be provided to monitor the tank and sump within the secondary containment system.

(m) Material specifications for the leachate storage tanks shall be submitted. This information shall include the tank material, wall thickness, protective coatings for both the inside and outside of the tank, the proposed installation method, bedding material and the need for any anchoring. Methods for documenting the integrity of the tank after placement and during facility operations shall also be proposed. Leachate collection tanks should be designed, constructed and maintained in accordance with the appropriate portions of chapter 2 in the national fire protection associations publication no. 30, 1984.

NOTE: This publication may be obtained from the Department of Natural Resources, Bureau of Solid Waste Management, 101 S. Webster Street, Natural Resources Building, Madison, Wisconsin 53707.

(n) All leachate collection tanks shall be designed to withstand the soil and liquid loads that will be encountered during installation and use. The installation of the tanks shall follow the recommendations of the consultant and manufacturer.

(o) Measures shall be proposed to prevent accidental discharges at the leachate loadout facility from entering groundwater or surface water. Unless an alternate method is approved by the department, the leachate loading station shall be paved with a concrete or asphalt pad and sloped to a catch basin to direct all spills back into the leachate holding tank.

(p) All manholes and enclosed structures for leachate and gas control systems shall be designed to allow for proper venting and access control.

(q) All control systems such as pumps, valves and meters shall be designed to be operated from the ground surface.

(r) All leachate and groundwater collection systems shall be designed to accurately and continuously monitor the volume of liquid removed by the system.

(7) GAS CONTROL. All facilities accepting wastes with the potential to generate gas shall be designed to prevent the migration of explosive gases generated by the waste fill and shall meet the following minimum requirements:

(a) The concentration of gases in any facility structures, excluding the leachate collection system or gas control or recovery system components, and in the soils or air at or beyond the facility property boundary, shall not exceed 25% of the lower explosive limit for such gases at any time. The department may require that the concentration of gases not exceed the lower detection limit for that gas at the facility property boundary.

(b) Each facility shall be designed with a system which allows surficial gas venting from the entire landfill unless the facility will utilize an active gas recovery system. An analysis shall be performed to determine the spacing needed between gas venting trenches for an effective system.

(c) Gas venting trenches consisting of gravel surrounding perforated pipes running through the center of the trench shall be placed within the waste along the high points of the final grades and along major changes in slope. The system shall be designed such that the perforated pipes can be utilized as part of an active gas extraction system.

(d) All landfills with waste depths greater than 40 feet shall be designed with engineering features to vent gas that is generated in the depths of the waste fill.

(e) Alternate types of passive and active gas venting systems may be proposed by the applicant. An analysis of the effectiveness of any alternate system shall be included in the proposal.

(f) A series of gas monitoring probes shall be designed outside the limits of waste fill on all sides of the facility in deposits of granular soil and other soil formations where gas migration may occur. At least one set of gas probes shall be designed at the elevation of the base of the facility, unless the geologic environment prevents migration from that level.

(8) HAZARDOUS AIR CONTAMINANT CONTROL. All solid waste disposal facilities which will accept municipal solid waste shall be designed to efficiently collect and combust hazardous air contaminants emitted by the facility. Control techniques other than combustion may be approved by the department.

(9) RUNOFF CONTROL. All facilities shall incorporate the following requirements for runoff control:

(a) All surface water drainage ditches, culverts and other drainage control structures shall be designed using the 10 year, 24-hour rainfall event as defined in s. NR 205.05 to determine peak flow rates.

(b) A runoff analysis shall be performed to determine the amount and velocity of runoff prior to facility development, at critical periods during operations, and during the long-term care period. Sizing for surface water drainage ditches, structures and sedimentation control structures shall be based on this analysis.

(c) Rainfall runoff shall be diverted away from the active fill area of the facility and any borrow areas to a sedimentation control structure. Drainage swales designed to convey surface water runoff over waste disposal areas shall be lined with a minimum thickness of 2 feet of clay.

(d) Surface water drainage ditches, structures and sedimentation basins shall be installed during the initial stages of construction to control rainfall runoff and limit entrained sediment from reaching surface water bodies. Temporary sediment control measures may be used during initial construction if approved in writing by the department.

(e) Surface water drainage ditches, structures and sedimentation basins shall discharge along existing drainage patterns capable of accepting the anticipated flow volume. An analysis shall be performed to document compliance with this requirement.

(f) Surface water diversion and construction at a facility shall be designed to minimize impacts on adjacent property, such as erosion, sedimentation and flooding.

(10) MISCELLANEOUS. All facilities shall be designed to meet the following requirements:

(a) A method of controlling any dust or windblown debris shall be included in the facility design. Unless otherwise approved by the department, the design shall include a temporary or permanent berm at least 10 feet in height constructed around the active area of a landfill phase. A fence at least 5 feet in height shall be constructed on top of the berm to control any blowing debris. Waste shall not be deposited above the top elevation of the berm. The factors which will be considered by the department when evaluating alternative provisions for controlling dust and windblown debris includes the remoteness of the facility, natural screening and windbreaks and waste types.

(b) Access to the facility shall be restricted through the use of fencing, natural barriers or other methods approved in writing by the department.

(c) All access roads for the facility, including those leading to the active area, shall be designed for all weather operation.

(d) All access roads shall be designed with a maximum grade no greater than 10%. The intersection of the facility access road with an existing highway shall be designed to provide sufficient sight distance and minimum interference with traffic on the highway.

(e) All borrow areas shall be abandoned in accordance with section 208.3, Wisconsin department of transportation standard specifications for road and bridge construction. Pre-existing commercial borrow sources are exempt from this requirement.

(f) A minimum separation distance of 100 feet shall be maintained between the limits of waste filling and adjacent property line. A minimum distance of 50 feet shall be maintained between any permanent berms or excavations associated with the facility, excluding surface water diversion structures and the adjacent property line.

(g) The facility shall be designed so that final grades in each phase are reached as soon as possible and the open area used for refuse filling is minimized.

(h) The final slopes of the facility shall be greater than 5%, but shall not exceed 4 horizontal to one vertical.

(i) All facilities which may obstruct flight patterns to instrument approach airports shall follow FAA guidelines in designing intermediate and final grades.

(j) A minimum of 2 leachate head wells shall be designed for each major horizontal phase of the facility unless otherwise approved by the department.

(k) All facilities with a design capacity greater than 50,000 yd^3 and proposing to accept municipal solid waste shall be supplied with a weight scale unless the applicant can document an alternative method for accurately determining waste tonnages.

(l) All facilities shall be designed with properly protected permanent benchmarks for horizontal and vertical control. Elevations shall be tied to USGS datum and horizontal control shall be referenced to the property boundary.

(m) All facilities shall be designed to allow for rapid gas and leachate movement to the collection and removal systems.

NR 504.06 ALTERNATIVE DESIGN CRITERIA FOR LAND DISPOSAL FACILITIES FOR HIGH VOLUME INDUSTRIAL WASTES. This section applies to landfills designed principally for high volume industrial waste, wood residue and minor amounts of other wastes as approved by the department. This section applies to all new facilities and to the expansion of existing facilities for which the plan of operation was not approved before [the effective date of these rules].

(1) GENERAL. (a) An applicant may design a high volume industrial waste landfill to meet the standards contained in ss. NR 504.05 and 504.07 or may propose an alternative design in accordance with the provisions of this section.

(b) If the applicant does not complete construction of the first major phase of the facility within 2 years from the date of the plan of operation approval, the applicant must reapply to the department for approval to begin construction. This application does not constitute a feasibility report as defined in s. 144.44(2), Stats. The department may require additional conditions of approval and require redesign of the facility in accordance with state-of-the-art design criteria.

(2) DESIGN CAPACITY. Design capacity shall be in accordance with s. NR 504.05(2).

(3) DESIGN CRITERIA. An applicant seeking approval of an alternative design under this section shall demonstrate in the feasibility report required in ch. NR 512 that the alternative design adequately protects public health, welfare and the environment and meets or exceeds the location and performance standards of s. NR 504.04. The applicant may include the following types of information as a part of such a demonstration:

(a) Facility characteristics including regional and specific information on land use, geology, hydrology, hydrogeology and soils.

(b) Waste characteristics including quantity and physical and chemical analyses of the waste and its leachate.

(c) Numerical groundwater quality modeling.

(d) Field demonstration data.

(e) Design and performance data for other similarly designed and constructed facilities.

(f) Accepted scientific or engineering analyses or field studies, field plots, research, manufacturers data or demonstrations.

(4) APPROVAL CRITERIA. The department shall approve the alternative design proposed by the applicant if the department determines to a reasonable degree of certainty that the alternative design adequately protects public health, welfare and the environment and meets or exceeds the location and performance standards of s. NR 504.04.

NR 504.07 FINAL COVER SYSTEM DESIGN. (1) GENERAL. (a) All final cover systems shall be designed to minimize leachate generation by limiting the amount of percolation through the cap system, reduce facility maintenance by stabilizing the final surface through design of compatible slopes and establishment of vegetation, minimize the climatic effects of freeze-thaw and desiccation on the clay capping layer of the final cover system, and provide removal of leachate and venting of gas from those facilities which accept wastes with a high moisture content or which readily biodegrade.

(b) All new facilities and expansions of existing facilities for which the plan of operation was not approved before [the effective date of these rules] shall be designed with a final cover system meeting the requirements in subs. (2) to (6) unless it is established to the satisfaction of the department that portions of the cap system are not necessary based on the proposed waste types and the proposed design.

(2) GRADING LAYER. A minimum 6 inch thick grading layer shall be designed over the final elevation of facilities proposing to accept municipal solid waste materials to attain the required slope and provide for a stable base for subsequent system components. Daily and intermediate cover may be used for this purpose.

(3) GAS VENTING SYSTEM. Facilities designed to accept wastes which have the potential to generate gas shall have a final cover system capable of allowing removal of the generated gas. Facilities designed solely to accept coal ash are exempt from this requirement.

(4) CLAY CAPPING LAYER. A minimum 2 foot thick clay cap shall be designed to provide a low hydraulic conductivity barrier to percolation. Clay soil shall be used for this layer and shall meet the following specifications. The department may approve alternative materials such as geomembranes based on facility specific information.

(a) A minimum of 50% by weight which passes the 200 sieve.

(b) A saturated hydraulic conductivity of 1×10^{-7} cm/sec or less.

(c) Constructed in maximum 6 inch lift heights after compaction to at least 90% modified or 95% standard Proctor density.

(d) The department may require that the material meet specifications for liquid limit and plasticity index.

(5) COVER LAYER. A minimum 1.5 to 2.5 foot thick soil cover layer shall be designed above the clay capping layer to provide additional rooting depth for vegetation and to protect the clay capping layer from damage due to freeze-thaw and desiccation. Soils available on or near the proposed facility property may be proposed for this material. This layer shall not be densely compacted. The thickness of this layer shall be based on:

(a) The freeze-thaw susceptibility and moisture holding capacity of the proposed material,

(b) The geographic location of the facility and

(c) The type and thickness of the capping layer.

(6) TOPSOIL. A minimum of 6 inches of topsoil shall be designed over the cover layer to support the proposed vegetation. A testing program of the

proposed topsoil sources shall be designed which will document nutrient content and pH adjustments. Fertilizer and lime shall be added as indicated by the testing.

(7) REVEGETATION. The seed type and amount of fertilizer applied shall be proposed depending on the type and quality of topsoil and compatibility with both native vegetation and the final use. Unless otherwise approved by the department in writing, seed mixtures and application rates shall be in accordance with section 630, Wisconsin department of transportation standard specifications for road and bridge construction. Application rates for fertilizer and mulch shall also be specified.

(8) FINAL USE. The proposed final use shall be compatible with the final cover system. The following activities are prohibited at closed solid waste disposal facilities unless specifically approved by the department in writing.

(a) Use of the facility for agricultural purposes.

(b) Establishment or construction of any buildings.

(c) Excavation of the final cover or any waste materials.

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05/21/87

Chapter NR 506

Landfill Operational Criteria

NR 506.01 PURPOSE. The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to outline the requirements regarding operational criteria for solid waste landfills and surface impoundments. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 506.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste disposal facilities as defined in s. 144.43(5), Stats., except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181 and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 506.03 DEFINITIONS. The terms in this chapter are defined in s. NR 500.03.

NR 506.04 OPEN BURNING. No person may conduct open burning at a new or existing land disposal facility except in conformance with the minimum requirements of this section.

(1) GENERAL. Open burning of solid waste is prohibited unless an exemption authorizing open burning is granted in writing by the department. The department shall grant an exemption if the open burning operation meets the criteria in s. 144.436(2), Stats. The department shall utilize the following criteria in implementing and interpreting s. 144.436, Stats.

(a) In determining the population equivalent served by a facility, the department may consider credible documentation submitted by the applicant which establishes that the actual population served by the facility is less than the total population in the geographic area served.

(b) In determining the need to obtain written consent from residents and proprietors within 1/4 mile of the licensed boundaries, the department may not require that the consent be obtained from any person who was not a resident or proprietor at the time the landfill initially was authorized to open burn,

unless that person is a successor in interest to a person who was a resident or proprietor at that time.

(c) If a resident or proprietor who previously consented to open burning at the facility withdraws, terminates or revokes the consent in writing, the withdrawal, termination or revocation is not effective until the end of the current license period for the facility.

(d) Facilities located in Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington or Waukesha county are not eligible to open burn solid waste.

(2) FACILITIES SERVING LESS THAN 2,500 PERSONS. Facilities serving a population equivalent of less than 2,500 are eligible for an exemption allowing open burning provided that the requirements of s. 144.436, Stats., and the following criteria are met:

(a) All burning shall be done on a burning pad or pit which is separated from the active disposal area by a minimum of 200 feet. A fire break of mineral soil scraped free of vegetation shall be maintained for a minimum distance of 100 feet around the burning pad or pit.

(b) Fire protection equipment shall be maintained at the facility unless provisions are made for the services of a local fire protection agency.

(c) Wet combustible garbage, oily substances, asphalt, plastic and rubber products may not be burned. These waste types shall be separated and disposed of in a licensed landfill.

(d) The ash from the burning pad shall be removed and disposed of in a licensed landfill as often as necessary to allow for proper operation and at least every 30 days. Care shall be taken to ensure that the ash is sufficiently cool before placement in the landfill.

(e) The burning shall be done in compliance with all state and local burning regulations and permits.

(f) An attendant shall be present to supervise the burning operation and to ensure that any fire is completely extinguished at the end of each day.

(g) Tires or flammable material such as gasoline may not be used for starting fires.

(3) FACILITIES SERVING AT LEAST 2,500 PERSONS BUT LESS THAN 10,000. Facilities serving a population equivalent of 2,500 or more but less than 10,000 are eligible for an exemption to burn only clean wood and paper provided that the criteria listed in sub. (2) and the following additional criteria are met:

(a) Leaves, pine needles, painted or treated wood such as railroad ties and demolition material may not be burned.

(b) Paper may be burned only if it is separately collected and stored in a nuisance-free manner.

NR 506.05 DAILY COVER REQUIREMENTS. (1) UNPROCESSED MUNICIPAL SOLID WASTE. All unprocessed municipal solid waste shall be compacted and completely covered at the end of each operating day with a compacted layer of at least 6 inches of soil or other material approved in writing by the department. If clay soil is used for daily cover purposes, it shall be scarified or removed prior to placement of the next lift of waste. The department may grant an exemption in writing for less frequent covering for operations serving a population equivalent of less than 2,500 if all portions of the licensed operation are greater than 1/4 mile from any residence or place of public gathering or written consent is obtained from all residents and proprietors within 1/4-mile of the licensed operation, potential nuisance conditions are not created and the solid waste is compacted and completely covered no less frequently than once per month, except for the months of

December, January, February and March. The department shall utilize the following additional criteria when evaluating exemption requests:

(a) In determining the need to obtain written consent from residents and proprietors within 1/4-mile of the licensed boundaries, the department may not require that the consent be obtained from any person who was not a resident or proprietor at the time the landfill initially was authorized to cover on a less than daily basis, unless that person is a successor in interest to a person who was a resident or proprietor at that time.

(b) If a resident or proprietor who previously consented to covering on a less than daily basis withdraws, terminates or revokes the consent in writing, the withdrawal, termination or revocation is not effective until the end of the current license period for the facility.

(c) In determining the population equivalent served by a facility, the department may consider credible documentation submitted by the applicant which establishes that the actual population served by the facility is less than the total population in the geographic area served.

(2) PROCESSED MUNICIPAL SOLID WASTE, INDUSTRIAL WASTE AND COMMERCIAL WASTE. All processed municipal solid waste, industrial waste and commercial waste shall be compacted and completely covered at the end of each operating day with a compacted layer of at least 6 inches of soil or other material approved in writing by the department. High volume industrial waste is not subject to daily cover requirements unless specifically required by the department. The department may grant an exemption in writing for less frequent covering. In granting such exemptions, the department shall consider the characteristics of the solid waste, the leaching potential of the solid

waste and the potential for nuisance conditions if other than daily covering is utilized.

NR 506.06 INTERMEDIATE COVER. Unless otherwise approved by the department in writing, any portion of a solid waste land disposal facility which has been used for waste disposal but will not receive additional solid waste for a period exceeding 6 months shall be covered with one foot of fined grained intermediate cover. A specific soil type may be specified by the department for this one foot layer. The intermediate cover shall be compacted and adequately sloped to allow surface water runoff. The slopes shall be no less than 5% and no greater than 33%. The department may require that intermediate slopes be vegetated depending on the length of time they will remain open. This section does not apply to high volume industrial waste or to wood residue approved as a construction material or to provide protection of the liner from frost under s. NR 506.07(2)(b), unless specifically required by the department.

NR 506.07 OPERATIONAL REQUIREMENTS FOR LANDFILLS. No person may operate or maintain a new or existing land disposal facility except in conformance with any approved plan of operation and the following minimum requirements:

(1) GENERAL. (a) Daily deposition of solid waste shall be confined to as small an area as practical.

(b) Provisions shall be made to confine windblown material within the active disposal area.

(c) At the conclusion of each day of operation, all windblown material shall be collected and properly disposed of in the active area in accordance with the provisions of this section unless the operator establishes, to the satisfaction of the department, that all windblown material cannot be

collected using reasonable efforts because of conditions beyond the control of the operator, windblown material which can be collected using a reasonable effort has been collected and properly disposed of and nuisance conditions do not exist.

(d) Surface water drainage shall be diverted away from the working area and areas already filled with waste.

(e) Putrescible materials such as spoiled foods and animal carcasses shall be immediately compacted and covered.

(f) Access to the facility shall be restricted through the use of fencing, natural barriers or other methods approved in writing by the department.

(g) Effective means shall be taken to limit access to the active disposal area to minimize exposure of the public to hazards.

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

(i) Equipment shall be provided to control accidental fires and arrangements shall be made with the local fire protection agency to acquire its services when needed.

(j) An attendant shall be on duty at the facility at all times while it is open for public use.

(k) A gate shall be provided at the entrance to the operation and it shall be kept locked when an attendant is not on duty.

(l) The gate area shall be policed at the beginning of each day of operation to remove any solid waste which has been indiscriminately dumped during periods when the facility was closed.

(m) A sign, acceptable to the department shall be posted at the entrance of any facility operated for public use which indicates the facility name,

license number, the hours of operation, waste types accepted, penalty for unauthorized use, necessary safety precautions and any other pertinent information.

(n) The facility shall be surrounded with rapidly growing trees, shrubbery, fencing, berms or other appropriate means to screen it from the surrounding area and to provide a wind break.

(o) Means acceptable to the department shall be taken to control dust resulting from facility operation.

(p) Scavenging within the active disposal area is prohibited.

(q) Provisions shall be made for back-up equipment in the event of operating equipment breakdown.

(r) A minimum separation distance of 20 feet shall be maintained between the limits of waste filling and adjacent property or the perimeter of the licensed acreage, whichever is closer at nonapproved facilities as defined in s. 144.44(1)(c), Stats. A minimum separation distance of 100 feet shall be maintained between the limits of waste filling and the property boundary or the perimeter of the licensed acreage, whichever is closer for all new and expanded facilities and all approved facilities as defined in s. 144.44(1)(a), Stats. The department may require additional separation distance if necessary to provide for vehicle access, drainage, monitoring, gas migration control, separation to adjacent homes or other facility development factors.

(s) All topsoil within the facility construction limits shall be salvaged and stored within the property boundaries for use in facility closure. All stockpiled soil material which is not anticipated to be used within 6 months shall be seeded.

(t) All access roads to the active area of the operation shall be of all-weather construction and shall be maintained in good condition.

(u) All access roads for the use of waste hauling trucks shall be constructed with a maximum grade no greater than 10%. The intersection of the

access road with an existing highway shall be constructed to provide sufficient sight distance and provide for minimum interference with traffic on existing highways.

(2) WASTE PLACEMENT. (a) For all landfills designed with liners, deposition of waste on the granular drainage blanket shall begin at the edge of each phase. Waste shall be pushed out over the granular blanket. Vehicles may not be driven directly on the granular blanket. Alternative operating procedures may be approved by the department if the consistency of the waste prevents vehicular access over a filled area.

(b) For all landfills designed with liners, a layer of waste at least 4 feet thick or an adequate amount of other frost protection material shall be placed over the granular blanket in all portions of the lined area prior to December 31st of the year the liner was constructed. Waste may not be placed during the winter on any portion of the liner not having a 4-foot thick layer of waste or other adequate frost protection material covering it after December 31st of each year. Those portions of the clay liner shall be investigated for density and effects from freeze-thaw as specified by the department and shall be recompacted and recertified during the next construction season if required, prior to waste placement. The requirements of this paragraph may be waived by the department upon the request of the owner.

(c) To provide for maximum compaction, each single layer of municipal solid waste shall be spread and compacted in 2-foot layers.

(3) GAS CONTROL. Effective means shall be utilized to prevent the migration of explosive gases generated by the waste fill. At no time shall the concentration of explosive gases in any facility structure, excluding the leachate collection system or gas control or recovery system components, or in

the soils or air at or beyond the facility property boundary exceed 25% of the lower explosive limit for such gases. The department may require the concentration of explosive gases not exceed the lower detection limit for that gas at the facility property boundary.

(4) LEACHATE COLLECTION SYSTEMS. (a) Leachate shall be removed from all collection tanks, manholes, lift stations, sumps or other structures used for leachate storage as often as necessary to allow for gravity drainage of leachate from the facility at all times. All leachate removed from a leachate collection system shall be disposed of at a wastewater treatment facility approved by the department and capable of accepting the leachate in accordance with the requirements of its WPDES discharge permit.

(b) Any liquid which comes in contact with waste or accumulates in a portion of the facility where active waste disposal operations are occurring shall be handled as leachate and properly treated as specified in par. (a) unless otherwise approved by the department in writing.

(c) All leachate collection lines shall be cleaned with a water jet cleanout device immediately after construction, after the first layer of waste has been placed over an entire phase and annually thereafter.

(5) BORROW AREAS. All borrow areas established after [the effective date of this chapter] shall be abandoned in accordance with section 208.3, Wisconsin department of transportation standard specifications for road and bridge construction.

(6) PHASED CLOSURE. Each phase of the facility shall have final cover placed over it as soon as possible after final grades are reached. By

September 15th of each year, any areas that are at final grades shall be capped, topsoiled and seeded.

NR 506.08 CLOSURE REQUIREMENTS. Any person who maintains or operates a land disposal facility, or who permits use of property for such purpose shall, when the fill area or portion thereof reaches final grade, or when the department determines that closure is required, cease to accept waste and close the facility or portion thereof in accordance with the plan approval issued by the department and the following minimum practices unless otherwise approved by the department in writing:

(1) NOTIFICATION PROCEDURES. (a) At least 120 days prior to closing the facility, the owner or operator shall notify the department in writing of the intent to close the facility and the expected date of closure. Prior to this date, the owner or operator shall notify all users of the facility of the intent to close the facility so that alternative disposal options can be arranged.

(b) Signs shall be posted at all points of access to the facility at least 30 days prior to closure indicating the date of closure and alternative disposal facilities. Facilities which are operated by and serve only a single waste generator and are not open to the public are exempt from this provision.

(c) Notice of the upcoming closure shall be published in a local newspaper at least 30 days prior to closure and a copy of the notice shall be provided to the department within 10 days of the date of publication. Facilities which are operated by and serve only a single waste generator and are not open to the public are exempt from this provision.

(2) GENERAL REQUIREMENTS. Within 10 days after ceasing to accept waste, the owner or operator shall restrict access by the use of gates, fencing or

other appropriate means to insure against further use of the facility. If the final use allows access, such access shall be restricted until closure has been completed and approved by the department.

(3) CLOSURE. Within 60 days after ceasing to accept waste, closure shall be accomplished in the following manner for facilities without a closure plan or plan of operation approved in writing by the department. Placement of final cover in accordance with s. NR 504.07 may be required if the department determines that this type of final cover system is necessary to prevent or abate attainment or exceedance of the groundwater standards contained in ch. NR 140.

(a) The entire area previously used for disposal purposes shall be covered with at least 2 feet of compacted earth sloped adequately to allow surface water runoff. A specific soil type may be required by the department for this 2-foot layer. The department may require the cover layer to be more than 2 feet thick.

(b) Surface water run-on shall be diverted around all areas used for waste disposal to limit the potential for erosion of the cover soils and increased infiltration. Drainage swales conveying surface water runoff over previous waste disposal areas shall be lined with a minimum thickness of 2 feet of clay.

(c) The final slopes of the facility shall be greater than 2%, but shall not exceed 3 horizontal to one vertical.

(d) The finished surface of the disposal area shall be covered with a minimum of 6 inches of topsoil.

(4) ESTABLISHMENT OF VEGETATION. Within 90 days after ceasing to accept waste, or if waste termination is after September 15, within 90 days after March 15 of the following year, the owner or operator shall complete seeding,

fertilizing and mulching of the finished surface. The seed type and amount of fertilizer applied shall be selected depending on the type and quality of topsoil and compatibility with both native vegetation and the final use. Unless otherwise approved by the department in writing, seed mixtures and applications rates shall be in accordance with section 630, Wisconsin department of transportation standard specifications for road and bridge construction.

(5) FINAL USE. The following activities are prohibited at closed solid waste disposal facilities unless specifically approved by the department in writing:

(a) Use of the facility for agricultural purposes.

(b) Establishment or construction of any buildings.

(c) Excavation of the final cover or any waste materials.

(6) HAZARDOUS AIR CONTAMINANT CONTROL. All solid waste disposal facilities which have a design capacity of greater than 500,000 cubic yards and have accepted municipal solid waste shall install a department approved system to efficiently collect and combust hazardous air contaminants emitted by the facility within 18 months of [the effective date of these rules] unless the owner can demonstrate that the performance criteria of s. NR 504.04(4)(f) can be achieved without implementing such a system. Control techniques other than combustion may be approved by the department.

NR 506.09 WASTE CHARACTERIZATION. (1) GENERAL. Only the waste types and sources listed in the plan of operation approval, wastes previously approved by the department in writing or otherwise allowed under this chapter may be accepted for disposal. Written requests for authorization to accept

additional waste types shall be submitted to and approved by the department prior to disposal of such waste.

(2) SUBMITTAL REQUIREMENTS. Requests for authorization to accept additional waste types shall include the following information at a minimum:

(a) Detailed physical and chemical characteristics including percent solids and the results of the paint filter test.

(b) The volume of waste to be disposed of on a daily and yearly basis.

(c) The source of the wastes and a description of the processes which generated the waste.

(d) The duration of disposal.

(e) Special handling and disposal procedures.

(f) Based upon a preliminary review of the above information, the department may require additional information to determine the compatibility of the waste with the existing design and operation of the landfill.

Note: Landfill operators who wish to accept hazardous waste from small quantity generators subject so s. NR 181.13(2) must obtain approval from the department under s. NR 181.13(7).

NR 506.10 ASBESTOS. No person may dispose of asbestos at a solid waste disposal facility except in conformance with the following minimum requirements:

(1) FACILITY CRITERIA. Only facilities meeting the following criteria may accept asbestos for disposal:

(a) The facility shall be a licensed and approved facility as defined in s. 144.441(1)(a), Stats.

(b) Open burning shall not be conducted at the facility.

(c) The facility shall be approved by the department in writing to accept asbestos.

(2) GENERAL REQUIREMENTS. (a) Unless an alternative handling procedure is approved by the department, asbestos shall be disposed of at the base of

the active working face. A specific disposal trench shall be excavated into existing refuse. Asbestos shall be placed into the excavated trench and shall immediately be covered with a minimum of 3 feet of waste or soil prior to compaction.

(b) The location of asbestos disposal areas may not coincide with previous asbestos disposal areas or proposed future landfill construction.

(c) All applicable safety measures required by chs. NR 400 to 499, and EPA and OSHA, specifically, those requirements dealing with the safety of personnel working with the asbestos, shall be followed.

NR 506.11 INFECTIOUS WASTE. No person may accept infectious waste at a solid waste disposal facility unless the material has been incinerated in a controlled air, multi-chambered incinerator which provides complete combustion of the waste to carbonized or mineralized ash or has otherwise been treated, processed or handled by a generally accepted medical process so as to render the waste noninfectious.

NR 506.12 ULTRA LOW-LEVEL RADIOACTIVE WASTE. No person may dispose of ultra low-level radioactive waste at a solid waste disposal facility except in accordance with the following minimum requirements:

(1) FACILITY CRITERIA. Only facilities meeting the following criteria may accept ultra low-level radioactive waste for disposal:

(a) The facility shall be a licensed and approved facility as defined in s. 144.441(1)(a), Stats.

(b) The facility shall be approved by the department in writing to accept ultra low-level radioactive waste.

(2) GENERAL REQUIREMENTS. The following criteria also apply to facilities proposing to accept ultra low-level radioactive waste:

(a) Sludge wastes shall meet the requirements contained in s. NR 506.13 or 506.14, as appropriate.

(b) A plan shall be submitted which addresses the control of any radon gas which may be generated by the waste.

NR 506.13 FREE LIQUIDS WASTES. (1) SMALL QUANTITY EXEMPTION. An owner or operator of a solid waste facility used for the disposal of municipal waste may accept waste containing free liquids amounting to no more than 55 gallons on a one-time basis provided that the material is tested and determined to be non-hazardous, the criteria contained in ss. NR 506.14(2)(a) and (b) are complied with and the department is notified and provided with all testing information prior to disposal. The department may require additional information if deemed necessary.

(2) MUNICIPAL SOLID WASTE DISPOSAL FACILITIES. Solid waste facilities used for the disposal of municipal solid waste shall not accept waste containing free liquids unless the facility meets the criteria contained in s. NR 506.14(2)(a) and (b), is in substantial compliance with the minimum design criteria specified in s. NR 504.05 and the material is specifically approved in writing by the department. The information specified in s. NR 506.14(2)(d) shall be submitted when requesting an approval under this section.

(3) OTHER FACILITIES. An owner or operator of any nonmunicipal solid waste disposal facility may accept waste containing free liquids only in accordance with plans approved by the department in writing.

NR 506.14 NON-FREE LIQUID SOLID WASTES. (1) SMALL QUANTITY EXEMPTION. An owner or operator of a solid waste facility used for the disposal of municipal waste may accept sludge wastes amounting to less than 50 cubic yards

per year per generator provided that the material is tested and determined to be non-hazardous, the criteria contained in ss. NR 506.14(2)(a) to (c) and are complied with and the department is notified and provided with all testing information prior to disposal. The department may require additional information if deemed necessary.

(2) MUNICIPAL SOLID WASTE DISPOSAL FACILITIES. An owner or operator of a solid waste facility used for the disposal of municipal solid waste shall not accept sludge wastes for disposal unless all of the following criteria are complied with:

(a) The facility shall be a licensed and approved facility under s. 144.441(1)(a), Stats.

(b) The proposed facility shall be in compliance with all solid waste regulations and any plan of operation approval.

(c) The material has been tested and determined not to contain free liquids.

(d) A report shall be submitted to and approved by the department which addresses the physical and chemical characteristics of the waste including the percent solids; the weight and volume of material produced; the frequency of waste generation; the amount of additional liquid which would be added over a specified time frame; revised water balance and liner efficiency calculations to account for the additional liquids added; methods for handling the additional gas generation and any proposed changes to the groundwater, surface water, unsaturated zone or leachate monitoring programs.

(e) A quarterly report is submitted which documents the daily mixing ratios of each sludge waste to municipal waste on both a weight and volume basis and any operational problems.

(3) OTHER FACILITIES. An owner or operator of any nonmunicipal solid waste disposal facility may accept sludge which does not contain free liquids only in accordance with plans approved by the department.

NR 506.15 ENFORCEMENT. The department may deny, suspend or revoke the operating license of a solid waste disposal facility as provided in s. 144.44(4)(a), Stats., for failure to pay fees required under ss. 144.43 to 144.47, Stats., or for grievous and continuous failure to comply with the approved plan of operation under s. 144.44(3), Stats., or, if no plan of operation exists with regard to the facility, for grievous and continuous failure to comply with any requirement of chs. NR 500 to 522. Any failure to comply with any such requirement or condition on 5 or more days within any 30 successive calendar days andwhich consists of action or inaction which may cause pollution as defined in s. 144.01(10), Stats., or which may otherwise create nuisance conditions, is a grievous and continuous failure to comply with the requirement or condition.

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Chapter NR 508

LANDFILL MONITORING, REMEDIAL ACTIONS AND IN-FIELD CONDITIONS REPORTS

NR 508.01 PURPOSE. The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin, to outline environmental

monitoring requirements at solid waste facilities and to implement groundwater standards and remedial actions according to ch. NR 140. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 508.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste facilities as defined by s. 144.43(5), Stats., except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181, and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 508.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 508.04 GENERAL MONITORING REQUIREMENTS. The department may require the owner or operator of any land disposal facility, or any person who permits the use of property for such purpose, to conduct monitoring of groundwater, the unsaturated zone, leachate, gas, surface water or other physical features in accordance with plans approved by the department. Monitoring is required at all new land disposal facilities and at expansions of existing facilities for which the plan of operation was not approved before [the effective date of

the rules]. Pursuant to s. 144.44(4)(f), Stats., the department may require monitoring at existing facilities, regardless of whether the facility remains in operation.

(1) GROUNDWATER, UNSATURATED ZONE AND LEACHATE MONITORING. The department may require the installation of groundwater and leachate monitoring wells, suction lysimeters, moisture probes, collection basin lysimeters, and similar monitoring devices, and the implementation of a water quality sampling and analysis program as part of the plan review or relicensing process.

(a) All groundwater sampling devices shall be designed, located, installed and maintained so as to obtain reliable and representative information regarding aquifer characteristics, groundwater flow directions and chemical and physical characteristics of groundwater.

(b) All devices shall be constructed to minimize the potential for contaminants to enter the groundwater or to move from one major soil unit or bedrock formation to another.

(c) Leachate head wells shall be designed and installed to measure leachate levels at the base of the facility.

(d) The locations of all monitoring devices installed after the feasibility report is approved shall be approved by the department in writing prior to installation. The location and construction of any monitoring device may be submitted to the department for review and concurrence prior to installation.

(2) GAS MONITORING. The department may require the installation of gas monitoring devices and sampling and analysis programs to monitor for gas migration and determine the effectiveness of any gas venting systems. The gas monitoring program shall be implemented in accordance with plans approved by the department. If gas monitoring is required, the temperature, ground

condition, barometric pressure and information as to whether the barometric pressure is rising or falling shall be recorded each time sampling is performed. Sample collection and analytical techniques shall be in accordance with standard methods.

(a) All gas monitoring probes shall be designed, located, installed and maintained so as to obtain reliable and representative information regarding soil conditions and gas concentrations.

(b) All gas monitoring probes shall be constructed with a shut-off valve to prevent the escape of gas from the sampling device and minimize the amount of inflow of air from the atmosphere.

(3) SURFACE WATER MONITORING. The department may require the monitoring of surface water runoff, leachate seeps, sumps, sedimentation ponds, any surface water bodies and other surface water discharges resulting from facility operation. The department shall specify sampling times and parameters and all sampling shall be implemented in accordance with plans approved by the department. All surface water sampling locations shall be surveyed in and permanently and clearly marked.

(4) AIR QUALITY MONITORING. The department may require monitoring of air quality for particulates, toxics or other constituents in the ambient air, from point sources or in buildings at or associated with the facility. The department shall specify sampling times and locations and all sampling shall be implemented in accordance with plans approved by the department.

(5) OTHER MONITORING. The department may require monitoring of landfill settlement; berm, sideslope and final cover stability; vegetative growth; drainage control structures; gradient control systems; or any other aspects of facility operation. All required monitoring shall be implemented in accordance with plans approved by the department. The department may require geophysical investigations to complement groundwater monitoring efforts.

NR 508.05 WELL DESIGN AND INSTALLATION. All monitoring devices shall be designed and installed in accordance with ch. NR 141 and the following requirements unless an alternate method is approved in writing by the department.

NOTE: ch. NR 141 is currently being promulgated by the department and has not yet been printed in the administrative code.

(1) PROTECTIVE DEVICES. All groundwater monitoring wells, leachate head wells, suction lysimeters, moisture probes, and other sampling devices shall have a cap to prevent contaminants from entering the monitoring device. All monitoring devices except leachate head wells in the active area of the facility shall have protective metal casings and locking lids. The lids shall be kept locked. The department may require additional protective devices such as rings of brightly colored posts around any monitoring device. All leachate head wells shall be protected to prevent damage during facility operation.

(2) LABELING. All monitoring devices shall be clearly and permanently labeled. At a minimum, the label shall include the well name and number.

(3) DRILLING METHOD. Drilling shall be performed in accordance with ss. NR 141.15, 141.17 and the requirements of this section. The drilling method shall allow the driller to obtain undisturbed soil samples and perform standard penetration tests while drilling. If a drilling method using continuous sampling does not allow for standard penetration tests, then the consolidation of the recovered samples shall be measured in the field with a vane sheer or pocket penetrometer.

(a) If the drilling method does not allow the required soil sampling to be performed, a separate boring shall be drilled adjacent to the monitoring well to provide the necessary information.

(b) Drilling fluids and water may be used to drill monitoring wells only when there are no reasonable alternatives. If drilling fluids are used, the driller shall document the type of fluids, any additives used and the chemical constituents of the mixture. If water is used, the source of the water shall be identified.

(c) When drilling equipment comes into contact with contaminants in the borehole or above ground, the driller shall clean the equipment thoroughly prior to any additional drilling.

(4) BOREHOLE ABANDONMENT. If any borehole is deeper than the well to be placed in it, the portions of the borehole below the well screen shall be properly sealed according to s. NR 508.07.

NR 508.06 WELL DEVELOPMENT. All groundwater monitoring wells shall be properly developed following installation. The development process shall cause water to flow rapidly into and out of the well screen for the purpose of dislodging and removing fine soil particles, drill cuttings and drilling fluids. Well development shall be considered complete when the water extracted from the well is chemically stable, and as free of sediment as possible. Well development shall follow the procedures in s. NR 141.19 and the requirements of this section.

(1) SAMPLING AFTER DEVELOPMENT. Once the water being extracted from the well is stabilized, a sample shall be tested for total suspended solids. If drilling fluids were used during well construction, the sample shall also be tested for COD.

(2) WATER LEVEL MEASUREMENTS. After development, all wells shall be pumped and successive water level measurements shall be taken until stabilized readings are obtained.

(3) DOCUMENTATION. All well development techniques shall be documented in writing according to ss. NR 141.21 and 508.11.

NR 508.07 BORING AND WELL ABANDONMENT. Proper abandonment of borings and monitoring devices shall seal the well or borehole completely in order to prevent future contamination of groundwater. The sealing materials used shall be continuous, physically and chemically stable and have a hydraulic conductivity of less than 1×10^{-7} cm/sec. The exact location of abandoned wells and borings and the date and the method of abandonment shall be documented in writing. The abandonment method shall also be documented by photographs. All monitoring wells and boreholes shall be abandoned and documented in accordance with ss. NR 141.25, 508.13 and this section.

(1) TIMELINE. All boreholes not instrumented with a well shall be abandoned immediately after drilling and completion of soil testing.

(2) ABANDONMENT OF WATER SUPPLY WELLS. Water supply wells which are required to be abandoned shall be abandoned and documented according to s. NR 112.21.

NR 508.08 INSPECTIONS. The facility owner or operator shall inspect all monitoring devices at least annually. Sampling personnel shall inspect all monitoring devices each time the device is sampled or a water level elevation is measured. If for any reason a monitoring device is destroyed or otherwise fails to function properly, the facility operator shall notify the department in writing within 10 days after discovery. The device shall be repaired if possible. If the device cannot be repaired, it shall be properly abandoned and replaced within 60 days unless otherwise approved in writing by the department. Unless otherwise approved, if a device is replaced, the

replacement well shall be given the same number as the well it replaced followed by the letter "R" to indicate it is a replacement well. An additional "R" shall be added each time the well is replaced.

NR 508.09 SOIL SAMPLING. All soil samples collected from borings installed after submittal of a feasibility report shall be collected and tested in accordance with this section unless otherwise approved in writing by the department.

(1) SAMPLE COLLECTION. Where conditions permit, samples shall be collected using undisturbed soil sampling techniques. Samples shall not be composited for testing purposes. In fine-grained soil environments, continuous samples shall be collected from the land surface to at least 25 feet below the anticipated or existing sub-base grade for the purpose of field classification. In uniform, coarse-grained soil environments and following the continuous sampling in fine-grained soil environments, samples shall be collected from each major soil unit encountered and at maximum 5-foot intervals. At least one soil sample shall be collected at the depth of any subsequently placed monitoring well screen. If borings are extended into bedrock, continuous core samples of the bedrock shall be taken and the rock properties including fracture frequency, rock quality designation and percent recovery shall be determined.

(2) LABORATORY AND FIELD TESTING. Laboratory and field analysis shall be conducted to identify the specific geologic and hydrogeologic conditions in the vicinity of the boring or monitoring well.

(a) The soil sample collected at the depth of any subsequently placed monitoring well screen shall be analyzed for grain size distribution by mechanical and hydrometer test and Atterberg limits, as appropriate for the

particular soil type. Each soil sample shall be described according to its physical texture, color, geologic origin and visually classified according to the unified soil classification system.

(b) An in-field test shall be conducted on each well to determine the in-situ hydraulic conductivity. The test shall be of long enough duration and include a sufficient amount of data to provide a representative estimate of the actual hydraulic conductivity. Boring logs shall be recorded for all borings. Each boring log shall include complete information as required in s. NR 508.11(6).

NR 508.10 GROUNDWATER AND LEACHATE SAMPLING AND ANALYSIS. The owner or operator shall implement a monitoring program at a land disposal facility in accordance with this section and the approved plan of operation unless otherwise approved in writing by the department.

(1) NUMBER OF REQUIRED MONITORING POINTS. The number of required monitoring points and the monitoring program shall be approved in writing by the department based on the facility size, waste types, facility design and hydrogeologic and geologic setting of the facility. The monitoring program shall be adequate to determine upgradient and downgradient water quality, horizontal and vertical gradients and to detect any impacts from the facility on groundwater quality.

(2) SAMPLING OF WATER SUPPLY WELLS. The department may require the owner or operator to sample public or private water supply wells and to determine water level elevations in such wells as part of a routine groundwater monitoring program or to determine the extent of groundwater contamination unless permission cannot be obtained from the well owner.

(3) SAMPLING FREQUENCY. The minimum sampling frequency shall be according to this subsection unless otherwise specified in writing by the department. Routine monitoring at facilities having a design capacity of 50,000 cubic yards or less shall be conducted semiannually, within 15 days of March 15 and September 15. Routine monitoring at facilities having a design capacity of greater than 50,000 cubic yards shall be conducted quarterly, within 15 days of March 15, June 15, September 15 and December 15. Alternative dates to those specified may be utilized if approved by the department in writing. Leachate head wells shall be measured at least monthly for leachate level elevations.

(4) SAMPLING PARAMETERS. Unless otherwise specified in writing by the department the following parameters shall be monitored:

(a) Water level elevation shall be measured and recorded to the nearest 0.01 foot in each groundwater or leachate monitoring well prior to sampling. The elevation shall be corrected to USGS datum. The measuring point shall be the top of the well casing and shall be identified on the well itself if the top of the casing is not level.

(b) The physical appearance of the water sample, including color, odor and turbidity, shall be recorded at the time of sampling of each monitoring device.

(c) Groundwater monitoring shall be conducted in accordance with Table 1. Both the uncorrected field conductivity and the field conductivity at 25°C shall be reported. Uncorrected field conductivity does not need to be reported if a meter which automatically corrects to 25° C is used for sampling. The department may require analysis of additional parameters depending on the characteristics of the waste, the raw process materials used, or the provisions of ch. NR 140.

Table 1

Waste Type	Parameters: Indicators	Parameters: Public Welfare Standards	Parameters: Public Health Standards
Municipal solid waste	Field temperature Field conductivity (uncorrected) Field conductivity (at 25°C) Field pH Alkalinity COD Hardness	Chloride Dissolved iron	
Paper mill sludge	Field temperature Field conductivity (uncorrected) Field conductivity (at 25°C) Field pH Alkalinity COD Hardness Ammonia-nitrogen	Chloride Dissolved iron Sulfates	Nitrate+Nitrite (as N)
Fly or bottom ash	Field temperature Field conductivity (uncorrected) Field conductivity (at 25°C) Field pH Alkalinity Boron COD Hardness	Dissolved iron Sulfates	Selenium
Foundry waste	Field temperature Field conductivity (uncorrected) Field conductivity (at 25°C) Field pH Alkalinity COD Hardness Sodium		Fluoride
Other solid waste	As specified in writing by the department		

(5) SAMPLING PLAN. A sampling plan for all monitoring devices at the facility shall be submitted to the department as part of the feasibility report and shall be implemented as approved in writing by the department. The department may require that any existing facility prepare a sampling plan. The sampling plan should follow department guidelines for groundwater sampling and shall comply with the requirements in s. NR 140.16. At a minimum, the following items shall be addressed:

(a) Procedures to purge wells prior to collecting samples; calculations which determine the volume of water to be removed from each well; the amount of time between purging and sampling; the equipment used to purge wells, measure water levels, retrieve samples and measure temperature, conductivity and pH in the field; procedures to clean the purging and sampling equipment between wells; the order of well sampling; volume of sample needed; procedures and equipment to filter samples for various parameters; procedures to physically and chemically preserve samples; quality assurance and quality control measures including blanks and duplicates; special procedures to sample leachate head wells or other devices; time to sample, filter, preserve and transport samples to the laboratory; chain of custody procedures, including persons responsible for sampling, methods for transporting samples to the laboratory, and the time elapsed before samples are analyzed in the laboratory. The plan shall specify the location where the in-field tests and sample preservation will be performed and the laboratory where the samples will be analyzed.

(b) A copy of the approved sampling plan shall be kept at the facility or at the office of the facility owner and a copy shall be provided to the sampling personnel for use during sampling. The sampling plan shall be followed unless a modification to the plan is approved in writing by the department.

(6) ANALYTICAL METHODS. All required chemical and physical groundwater and leachate analyses shall be conducted by a laboratory certified or registered under s. 144.95, Stats., and ch. NR 149. The laboratory shall use the analytical methods referenced in ch. NR 149 unless alternative methods are approved by the department in writing. Detection limits for all chemical analyses shall be in accordance with NR 140.16(2). The following tests are excluded from the requirements of ch. NR 149 but must be performed using standard methods or procedures, if they exist.

(a) Physical tests of soil,

(b) Physical tests of wastes,

(c) Air quality tests,

(d) Gas tests,

(e) Field pH tests,

(f) Field conductivity tests,

(g) Product quality testing,

(h) Nutrient testing of soils and waste,

(i) Turbidity tests,

(j) Water elevation,

(k) Temperature,

(l) Leachate-liner compatibility testing.

NR 508.11 WELL CONSTRUCTION DOCUMENTATION. The facility owner or operator shall document all well construction activities and report the information to the department as required in s. NR 141.21 and this section. Well construction shall be documented in all major plan submittals including initial site reports, feasibility reports, plans of operation, construction documentation or in-field conditions reports. If no major plan is being

prepared at the time of well installation, documentation shall be submitted to the department within 60 days of well installation. All elevations shall be corrected to USGS datum. Elevations shall be recorded to the nearest 0.01 foot. The documentation shall be submitted on forms provided by the department which are supplemented by written descriptions. Documentation of well construction shall include the following information:

(1) WELL PROTECTION. The type of protective casing; the diameter, length and elevation of the top of the protective casing; the grout used between the well casing and the protective casing; the depth and width of surface plug below the land surface; the height of the plug above the land surface; and the type of cap and lock.

(2) WELL DESIGN. The well casing type, length, diameter and schedule; the type of joints used; the screen type, length, diameter and schedule; the screen slot type and size; the percent open area of the screen; the type of screen bottom; the distance the filter pack extends above the screen; elevations of the top of casing and land surface; depth from the land surface to and elevation of the bottom of the borehole, the bottom of the well screen, and top and bottom of all seals; and well locations identified by the landfill coordinate system to the nearest foot.

(3) MATERIALS USED. A description of the filter pack material, including grain size analysis, quantity used, and manufacturer and product name or number; the well seal including the physical characteristics of the material; the type and quantity of annular space sealant including percentages of each specific material used for each well; drilling fluid including additives; and water added including the source and the results of the water quality analysis for parameters in Table 1.

(4) INSTALLATION TECHNIQUES. The drilling method used; type of drill rig; borehole diameter; inside diameter of the hollow stem auger, if used; cleaning procedures; sealing method; time between sealing the annular space and constructing well protection; and the date the well was drilled.

(5) WELL DEVELOPMENT. The date the well was developed; the date, time and the water level in the well both before and after development; the development method; time spent developing the well; volume of water removed and added; source of water; clarity of water before and after development; presence of sediment at the bottom of the well before and after development; volume of water purged; all readings of field temperature, field specific conductance, field pH and the times at which they were measured; analysis of total suspended solids and analysis of COD if drilling fluids were used during well construction.

(6) SOILS INFORMATION. Boring logs, soil testing results and driller's observations including any problems encountered or conditions that may affect the performance of the monitoring device or that may help in planning future well installations. Each boring log shall include soil and rock descriptions, method of sampling, sample depths and elevations, date of boring, land surface elevation, water level elevations and depths, elevation and depth of the bottom of the boring, the location of the well screen and soil test data. Soil and rock descriptions shall include geologic origin and any heterogeneities, soil structure, soil color, mottling, moisture, blow counts, layering, jointing, lenses, fractures, organic matter or voids. Each soil layer shall be classified according to the unified soil classification system. All elevations shall be corrected to USGS datum.

(7) MISCELLANEOUS. The raw data and calculated results of in-situ hydraulic conductivity tests; water level measurements and dates; computations

of well yield, if determined; any changes in well construction, casing elevation or other features subsequent to drilling.

(8) MAP. An 8 1/2 by 11 inch map, drawn to scale, showing facility boundaries, the design management zone, the location of all monitoring devices and borings, landfill coordinate system, scale, north arrow and key.

(9) FORMS. Groundwater monitoring well information form 4400-89, groundwater monitoring well construction form, boring log information form and other forms as required by the department completed as instructed.

NOTE: Copies of these forms may be obtained from the Department of Natural Resources, Bureau of Solid Waste Management, 101 South Webster Street, Natural Resources Building, Madison, WI 53707.

NR 508.12 SAMPLING AND ANALYSIS DOCUMENTATION. Field records of all monitoring activities shall be prepared in sufficient detail to document whether the sampling plan has been followed and should follow department guidelines for groundwater sampling. The facility owner or operator shall retain all field records until the end of the long-term care period for the facility. Field records shall be available for department inspection on request. The owner or operator shall submit sampling results and water elevation data on forms supplied by the department within 60 days from the end of the sampling period. Forms designed by the facility owner may be approved by the department for use in submitting sampling results. Explanation of any deviation from the approved sampling plan or analytical procedures shall be submitted at the same time.

NR 508.13 BORING AND WELL ABANDONMENT DOCUMENTATION. Boring and well abandonment activities shall be documented in accordance with s. NR 141.25(4)

and this section on forms provided by the department in all major plan submittals including initial site reports, feasibility reports, plans of operation, construction documentation reports or in-field conditions reports. If no major plan is being prepared at the time of boring or well abandonment, documentation shall be submitted by the facility owner or operator to the department within 60 days of boring or well abandonment. Documentation shall include the exact location of the well or boring by landfill coordinate system, total depth of the well, date and method of abandonment, materials and volumes of backfill used, status of well casing removal and any special precautions taken. The method used to abandon the wells shall be documented using photographs. If the well is a public or private well, any forms required under s. NR 112.21, such as well abandonment report form 3300-5, shall be submitted. In any case, other forms previously submitted to the department, such as the groundwater monitoring well information form 4400-89, shall be revised to reflect the current condition of the monitoring system.

NOTE: These forms may be obtained from the Department of Natural Resources, Bureau of Solid Waste Management, 101 South Webster Street, Natural Resources Building, Madison, WI 53707.

NR 508.14 BACKGROUND GROUNDWATER QUALITY SAMPLING. Applicants for proposed facilities and the owner or operator of facilities with feasibility reports approved after October 1, 1985 shall establish background water quality in accordance with subs. (1) to (4). Owners or operators of facilities with feasibility reports approved on or before October 1, 1985 or other facilities at which monitoring is required may be required by the department to establish background water quality in accordance with subs. (4) and (5).

(1) BACKGROUND WATER QUALITY FOR INDICATOR PARAMETERS. Background water quality shall be established at all wells outside the proposed limits of waste fill which were installed to evaluate the proposed facility and any adjacent, related facility for each indicator parameter listed in Table 1 of s. NR 508.10 as appropriate for the particular waste types. Additional parameters may be required based on the proposed waste types and characteristics. A minimum of 8 samples shall be used to determine background water quality. A minimum of 4 samples, with at least 30 days between sampling rounds, shall be taken and analyzed and the results shall be submitted with the feasibility report. The remaining samples shall be taken on a quarterly basis and the results shall be submitted with the plan of operation unless otherwise approved in writing by the department.

(2) BACKGROUND WATER QUALITY FOR PUBLIC HEALTH AND WELFARE GROUNDWATER QUALITY STANDARDS. Unless otherwise specified by the department, background water quality shall be established at all wells outside the proposed limits of waste fill which were installed to evaluate the proposed facility and any adjacent, related facility for the public health and welfare groundwater quality standards listed in Table 2. A minimum of 4 samples with at least 30 days between sampling rounds, shall be taken and analyzed and the results shall be submitted with the feasibility report. The department may revise the monitoring requirements in writing for specific parameters at specific wells after examining data from the first 2 sampling rounds.

Table 2

Public Welfare Standards	Public Health Standards
Chloride	Arsenic
Copper	Barium
Dissolved iron	Cadmium
Manganese	Chromium
Sulfate	Fluoride
Total dissolved solids	Lead
Zinc	Mercury
	Nitrate+Nitrite (as N)
	Selenium
	Silver

(3) BACKGROUND WATER QUALITY FOR VOLATILE ORGANIC COMPOUNDS (VOCs). Background water quality shall be established for volatile organic compounds at all wells outside the proposed limits of waste fill which were installed to evaluate the proposed facility and any adjacent, related facility. Facilities designed solely to accept coal ash are exempt from this requirement. The compounds to be tested for include all VOCs listed in Table 1 of s. NR 140.10 plus any additional compounds specified by the department. Samples shall be taken from each well at the same time as the first and second sampling rounds for indicator parameters and public health and welfare groundwater quality standards. The analysis shall be done using a gas chromatograph/mass spectrophotometer in accordance with SW 846 method 8240 or EPA wastewater method 624. As an alternative the analysis may be performed using a gas chromatograph/photoionization detector/Hall detector in accordance with SW 846 methods 8010/8020 or EPA wastewater methods 601/602. Any wells which have VOC concentrations above the limits of quantification shall be resampled for those compounds detected during the following 2 sampling periods. The results of this sampling shall be submitted with the feasibility report.

NOTE: These publications may be obtained from: The superintendant of documents, U.S. government printing office, Washington, D.C. 20402.

(4) BACKGROUND WATER QUALITY AT NEW OR REPLACEMENT MONITORING WELLS. All new or replacement groundwater monitoring wells installed at a facility shall be sampled on a quarterly basis for the parameters specified in subs. (1) to (3) to establish background water quality.

(5) BACKGROUND WATER QUALITY AT EXISTING FACILITIES. The department may require additional sampling and analysis for indicator parameters, public health or welfare groundwater quality standards, volatile organic compounds and other parameters to establish background water quality at existing facilities or if the owner is proposing an expansion to an existing facility.

NR 508.15 CALCULATION OF PREVENTIVE ACTION LIMITS FOR INDICATOR PARAMETERS. The department shall calculate preventive action limits for indicator parameters. For each indicator parameter for which groundwater monitoring is required, the department shall establish the preventive action limit at all wells at the facility according to methodology specified in s. NR 140.20. The department may require the owner or operator to conduct additional sampling if the department determines that the data used to calculate a preventive action limit is not representative of background water quality.

NR 508.16 POINT OF STANDARDS APPLICATION. The points of standards application to determine if a preventive action limit or enforcement standard has been attained or exceeded are specified in s. NR 140.22(2) and (3).

(1) DESIGN MANAGEMENT ZONE. The design management zone and waste boundary are defined in s. NR 140.22 (5)(a). The design management zone

extends horizontally 150 feet beyond the waste boundary for solid waste disposal facilities which have feasibility reports approved after October 1, 1985. For all other solid waste disposal facilities the design management zone extends horizontally 300 feet beyond the waste boundary.

(2) CHANGES TO THE DESIGN MANAGEMENT ZONE. The department may consider an expansion or reduction of the design management zone in accordance with s. NR 140.22(5)(b). The factors which shall be considered by the department are listed in s. NR 140.22(5)(c) and (d). An owner or operator of a facility may submit a written request for approval of an expansion or reduction of the design management zone. The request shall include an evaluation of the factors listed in s. NR 140.22(5)(c) and (d).

NR 508.17 NOTIFICATION PROCEDURES FOR EXCEEDANCES OF ENFORCEMENT STANDARDS AND PREVENTIVE ACTION LIMITS. The owner or operator of a solid waste disposal facility shall notify the department in writing if an enforcement standard, preventive action limit or alternative concentration limit has been attained or exceeded at the point of standards application. This notification shall be given within 60 days from the end of the sampling period and shall be attached to the sampling results as specified in ss. NR 140.24(1)(a) and 140.26(1)(a). The notification shall specify the parameters for which standards have been exceeded, the wells at which the exceedance occurred and provide a preliminary analysis of the cause and significance of the concentration.

NR 508.18 RESPONSES WHEN A GROUNDWATER STANDARD IS EXCEEDED. Upon receipt of a notification that an enforcement standard or preventive action limit has been attained or exceeded, the department shall evaluate the

information. If further information is necessary to assess the cause and significance of the concentration, the department may require the owner or operator to prepare and submit a report within 60 days unless an alternative deadline is specified in writing by the department. The report shall assess the cause and significance of the exceedance based on consideration of the factors listed in s. NR 140.24(1)(c) and shall propose a response to meet the objectives of ss. NR 140.24(2) or 140.26(2). The department may also require that the report include any of the information contained in s. NR 508.20. The department shall respond to the report within 65 business days of receipt. Based on the evaluation of the report, if one is required, and the factors listed in s. NR 140.24(1)(c), the department shall specify responses to be implemented by the owner or operator of the facility in accordance with ss. NR 140.24(2) or 140.26(2).

NOTE: The range of responses for an exceedance of a preventive action limit are specified in Table 5 of s. NR 140.24(4). The range of responses for an exceedance of an enforcement standard are listed in Table 6 of s. NR 140.26(2). The criteria the department must use to determine which responses are appropriate are included in ss. NR 140.24(2) to (6) and 140.26(2), (4), (5) and (6).

NR 508.19 EXEMPTIONS. (1) EXEMPTIONS REQUIRED. The department may not approve a feasibility report for a solid waste disposal facility at a location where a preventive action limit or enforcement standard has been attained or exceeded unless an exemption has been granted under s. NR 140.28. Criteria for granting exemptions and exemption procedures are described in s. NR 140.28.

(2) EXEMPTION SUBMITTAL. A request for an exemption under s. NR 140.28 shall be submitted in writing to the department and shall include the following:

(a) A list of the specific wells and parameters for which an exemption is being requested, and

(b) A discussion of how the circumstances relate to the criteria listed in s. NR 140.28(2), (3) or (4).

(3) COMPLETENESS. An exemption request is not considered complete until the information required to make a decision under s. NR 140.28 is submitted.

(4) ALTERNATIVE CONCENTRATION LIMITS. The department may set alternative concentration limits in its response to the exemption request, if appropriate.

(5) EXEMPTIONS WITHOUT A SUBMITTAL. An owner may be granted an exemption without submitting a written request only under the following circumstances:

(a) The preventive action limits for indicator parameters are currently being calculated,

(b) The parameter for which an exemption is needed is elevated due to background conditions and

(c) The parameter is a public welfare standard.

NR 508.20 IN-FIELD CONDITIONS REPORT. The department, for good cause shown, may require pursuant to s. 144.431(2)(b), Stats., or as a condition of a plan approval under s. 144.44 to 144.47, Stats., the owner or operator of any solid waste land disposal facility, or any person who permits the use of property for such purpose, to submit an in-field conditions report to the department to determine if the facility poses a potential hazard to public health, safety or welfare, or the environment. All in-field conditions reports shall contain the following minimum information unless otherwise approved by the department in writing. Additional information contained in chs. NR 508 or 512 may also be required by the department.

(1) GENERAL FACILITY INFORMATION. An in-field conditions report shall identify the project title; name, address and phone number of the primary contacts including the facility owner and any consultants; present property owner; a general description of the facility location; the facility location by quarter-quarter section, township, range, town and county; total acreage of the property; the existing limits and thickness of fill; the active fill areas; all public and private wells within one-half mile of the facility and the owners of all public and private wells within 1,200 feet of the limits of waste filling. Well logs for all wells within 1,200 feet shall be included in the appendix of the report.

(2) FACILITY HISTORY. An in-field conditions report shall identify the dates the facility began and terminated waste acceptance; the type and volume of waste known to have been disposed, spilled or stored; the potential for the waste to biologically decompose and generate gas; the generators of the wastes disposed of at the facility; the area utilized and disturbed by waste handling and disposal; the methods of waste disposal and overall operation of the facility; the facility base grades and any engineering controls which were installed; and the history of any adjoining active or closed facilities or activities which may contribute to environmental contamination.

(3) LAND USE INFORMATION. The in-field conditions report shall discuss the present and former land uses at the facility and the surrounding area. A thorough discussion of land uses which may have affected groundwater or surface water quality shall be included. The report shall address all areas that may affect or be affected by the proposed facility. At a minimum, this will be the area within one mile of the facility. The discussions shall be supplemented with land use maps. At a minimum, the following items shall be addressed:

(a) Identification and location of the adjacent land owners. This information may be presented on a plat map. However, current ownership conditions shall be verified and any changes noted.

(b) A description of the present land uses in the area shall be included. Particular emphasis shall be placed on the discussion of known recreational, historical, archaeological or environmentally unique areas including natural or scientific areas, county forest lands and critical habitat. A letter from the department's bureau of endangered resources addressing the known presence of any endangered or threatened species, critical habitat and natural or scientific areas shall be included.

(c) The present or proposed transportation routes and access roads including any weight restrictions shall be delineated.

(4) REGIONAL GEOTECHNICAL INFORMATION. An in-field conditions report shall discuss the regional setting of the facility to provide a basis for comparison and interpretation of information obtained through field investigations. This discussion may be limited to information available from publications such as a hydrologic investigations atlas, water supply papers, informational circulars and technical bulletins published by the Wisconsin state geologic and natural history survey, the United States geological survey, the Wisconsin department of natural resources, U.W.-extension, regional planning commissions and the soil conservation service. The regional setting to be described is the area which may affect or be affected by the facility. At a minimum, this will be the area within 5 miles of the limits of filling. The discussions shall be supplemented with available regional bedrock and glacial geology maps, USGS topographic maps, SCS soil maps and regional water table maps. The following items shall be specifically addressed:

(a) The existing topography including predominant topographic features.

(b) The surface water drainage patterns and significant hydrologic features such as surface waters, springs, surface water drainage basins, divides and wetlands.

(c) The origin, texture, nature and distribution of bedrock; the origin, texture, thickness and distribution of the unconsolidated units; and the texture and classification of the surficial soils.

(d) The depth to groundwater, groundwater flow directions and gradients, recharge and discharge areas, groundwater divides, aquifers and identification of the aquifers used by public and private wells in the region. An indication of which aquifer systems are most susceptible to contamination shall be made.

(e) Information on groundwater and surface water quality which is available from the USGS, WSGNHS, DNR, UW-Extension and regional planning commissions.

(5) SPECIFIC FACILITY INVESTIGATIONS. An in-field conditions report shall contain the results of field inspections and investigations which define the topography, subsurface soils, depth to bedrock, type of bedrock, depth to groundwater, groundwater flow direction and gradients at the facility, the extent and thickness of waste placement, background groundwater quality, surface water quality including the presence and location of any leachate seeps, gas generation and migration and the degree and extent of groundwater and surface water contamination. The results of this investigation shall be described in the narrative section of the in-field conditions report. All raw data such as boring logs, well construction diagrams, laboratory tests, field hydraulic conductivity test data, water quality information and water level measurements shall be included in the report appendix. At a minimum, the

following investigations shall be performed unless an alternative geotechnical investigation program is approved by the department in writing:

(a) Borings shall be drilled at 10 separate locations for the first 10 or less acres of disposal area. Five additional borings shall be drilled for each additional 10 or less acres of disposal area. All borings shall be extended a minimum of 25 feet below the estimated sub-base grade or to bedrock, whichever is less. If regional information suggests that bedrock is within 75 feet of the land surface, a minimum of one boring shall be extended to bedrock. The borings shall be distributed so that requirements of this section are met. Samples shall be collected and boring logs prepared in accordance with s. NR 512.11(1)(c) and (e). Borings not converted to wells shall be abandoned in accordance with s. NR 508.07.

(b) Water table observation wells shall be installed to adequately define the depth to groundwater and horizontal gradients. At a minimum, 5 water table observation wells shall be installed for the first 10 or less acres of disposal area and 2 additional wells for each additional 10 or less acres of disposal area. The wells shall be constructed such that the water table intersects the well screen at all times during the year. At a minimum, for each 10 or less acres of disposal area, a piezometer shall be installed adjacent to a water table observation well to create a well nest. In addition, in fine-grained soil environments, a well nest consisting of at least 2 piezometers shall be installed adjacent to a water table observation well for each 10 or less acres of disposal area. All wells shall be constructed, developed and documented in accordance with ch. NR 508.

(c) A hydrogeologist or other qualified person shall observe and direct the drilling of all borings; the installation, development and abandonment of all wells and all in-field hydraulic conductivity tests. The hydrogeologist

or other qualified person shall also visually describe and classify all geologic samples. Any odor associated with the samples shall also be noted.

(d) Laboratory and field analyses shall be conducted to identify the specific geologic and hydrogeologic conditions at the proposed facility in accordance with s. NR 512.11(4) (a) to (d).

(e) Once the wells have been installed and properly developed, at least 3 rounds of water quality sampling shall be performed with a minimum of one month between sampling rounds. The samples shall be analyzed for the public health and welfare groundwater quality standards contained in Table 2 and all appropriate indicator parameters contained in s. NR 508.10(3)(c) for the waste types present in the facility. Unless otherwise approved by the department, at the same time the first round of sampling is undertaken a sample from each well shall be analyzed for all volatile organic compounds listed in Table 1 of s. NR 140.10 and any additional compounds specified by the department. The testing shall be done using a gas chromatograph/mass spectrophotometer in accordance with SW 846 method 8240 or EPA wastewater method 624. As an alternative the analysis may be performed using a gas chromatograph/ photoionization detector/Hall detector in accordance with SW 846 methods 8010/8020 or EPA wastewater methods 601/602. Any wells which have concentrations of VOC's above the limits of quantification shall be resampled during the following 2 sampling rounds. Any private wells within 1,200 feet of the estimated limits of fill shall be sampled at the same time as the monitoring wells and for the same parameters.

NOTE: These publications may be obtained from: The superintendant of documents, U.S. government printing office, Washington, D.C. 20402.

(f) The waste types known to have been disposed of at the facility shall be evaluated for the potential for gas migration. Any facility which contains

or is thought to contain wastes which can biologically decompose shall be instrumented with gas monitoring probes. The probes shall be installed to define the concentration and lateral extent of gas migration. The probes shall be installed in the soil units most likely to allow gas migration. The probes shall be sampled a minimum of 3 times for at least methane. The department shall be notified immediately if any gas probe exceeds the lower explosive limit for the particular gas tested.

(6) DATA PRESENTATION. The results of the subsurface investigations and water quality sampling shall be presented on 24 inch x 36 inch plan sheets unless an alternative size is approved by the department in writing, as follows:

(a) A topographic map of the area showing the estimated limits of filling, property boundaries, fencing, major utility corridors, homes, buildings, man-made features, adjacent or nearby wetlands, public and private water supply wells, the location of soil borings and groundwater monitoring or leachate head wells, the location of gas vents and gas monitoring probes, and the location of all leachate seeps. The base map shall consist of a map having a minimum scale of one-inch equals 200 feet with a 2 foot contour interval sufficient to show relief and drainage features. The map shall contain a local grid system with the location of the origin identified according to latitude and longitude or the state plane coordinate system.

(b) Geologic cross-sections shall be constructed through all borings both perpendicular and parallel to the facility baseline as well as along transects which include major geologic and geomorphic features such as ridges, buried valleys, and buried bedrock valleys. At least one cross-section shall be constructed parallel to groundwater flow. Where more than one interpretation can be reasonably made, conservative assumptions shall be used when evaluating

heterogeneities within the unconsolidated deposits. Information on the geologic cross-sections shall be presented in accordance with s. NR 512.13(2).

(c) At least one water table contour map shall be included. The maps shall be based on stabilized water levels recorded on a single day from all observation wells at the facility. All the wells and the measured water level at each well shall be shown on the water table maps. The topographic map shall be used as a base map. If more than one set of water levels has been taken, base the water table map on the set of data which indicates the highest water table.

(d) At least 3 iso-concentration maps shall be presented for the parameters which most accurately depict the degree and extent of contamination. The concentration of the particular parameter shall be presented for each well.

(7) MAP. An 8 1/2 by 11 inch map shall be submitted. The map shall be drawn to scale and show the facility boundries, the design management zone, the location of all monitoring devices and borings, the estimated limits of filling, the landfill coordinate system, the scale, a north arrow and a key.

(8) FORMS. The groundwater monitoring well information form 4400-89, the groundwater monitoring well construction form, the boring log information form and other forms as required by the department shall be completed as instructed.

(9) WATER BUDGET. A water budget shall be prepared for the facility. At a minimum, the following factors shall be considered in the preparation of the water budget.

(a) Average monthly temperature,

(b) Average monthly precipitation,

(c) Evaporation,

(d) Evapotranspiration,

(e) Surface slope and topsoil texture,

(f) Soil moisture holding capacity and root zone depth,

(g) Runoff coefficients,

(h) Moisture contribution from the waste, and any

(i) Groundwater inflow.

NOTE: In most cases, this will require field investigations to accurately define several of the variables.

(10) DATA ANALYSIS. The results from the sub-surface investigations, water quality sampling, gas monitoring and regional geotechnical information shall be evaluated to determine:

(a) Whether any groundwater standards have been attained or exceeded. If any preventive action limits or enforcement standards established under s. NR 140.10 or 140.12 have been exceeded, the cause and significance of the exceedances shall be addressed. If significant contamination appears to be present, the factors listed in s. NR 140.24(1)(c) shall be addressed.

(b) Whether surface water quality has been impacted by the facility.

(c) Whether gas migration is occurring and whether the concentrations exceed the limits established in ch. NR 506. If it is determined that gas migration is occurring, any residences, businesses, industries or other structures which have or may be affected by gas migration shall be identified.

(11) PROPOSED REMEDIAL ACTIONS. Based on an evaluation of the data generated, the types of remedial actions necessary to return the facility to compliance with the requirements of s. NR 504.04(4) shall be proposed. Sections NR 140.24(4) and 140.26(2) outline the required set of remedial actions depending on what parameters are affected and whether or not a preventive action limit or enforcement standard has been exceeded. A

long-term environmental monitoring program shall be proposed so the performance of the facility and the effects of any remedial action can be evaluated.

3267C.PERM

05/28/87

Chapter NR 510

Initial Site Reports For Landfills

NR 510.01 PURPOSE. The purpose of this chapter is to ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to outline the recommended investigations regarding initial site reports for new solid waste disposal facilities or expansions to existing facilities. The purpose of submitting an initial site report is to obtain an opinion from the department on the potential for development as a solid waste disposal facility and the advisability of spending additional time and funds to prepare a feasibility report. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 510.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste disposal facilities as defined in s. 144.43(5),

Stats., except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181 and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 510.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 510.04 INITIAL INSPECTION. Any person intending to establish a new solid waste disposal facility or expand an existing solid waste disposal facility shall contact the department's district or area office as appropriate to arrange for an initial inspection for the purpose of evaluating compliance with the location and performance standards of s. NR 504.04. This inspection shall be completed prior to submittal of the report.

NR 510.05 GENERAL SUBMITTAL REQUIREMENTS. (1) GENERAL PROVISIONS. Any applicant, prior to submitting a feasibility report, may submit an initial site report to the department. If an initial site report is submitted, it shall address s. NR 500.05 and all requirements of this chapter except s. NR 510.11, regarding needs. A favorable opinion under this chapter does not guarantee a favorable feasibility determination. The department shall review and respond to the initial site report within 65 business days of receipt of the report and the appropriate review fee specified in ch. NR 520.

(2) CONTENT. The initial site report shall identify the project title; name, address and phone number of the primary contacts including the facility owner and any consultants; present property owner; proposed facility owner and operator; facility location by quarter-quarter section; total acreage of the property and proposed limits of fill; proposed facility life and design capacity; municipalities and industries to be served; estimated waste types and characteristics; estimated weekly quantities of each major waste stream; anticipated cover frequency; mode of operation; anticipated base and sub-base grades; and preliminary design concepts.

NR 510.06 LAND USE INFORMATION. The initial site report shall discuss the present and former land uses at the facility and the surrounding area. A thorough discussion of land uses which may have an impact on the suitability of the property for waste disposal or affected groundwater quality shall be included. The report shall address all areas that may affect or be affected by the proposed facility. At a minimum, this will be the area within one-half mile of the limits of filling for facilities with a design capacity of 50,000 cubic yards or less and areas within one mile for facilities with a design capacity greater than 50,000 cubic yards. The discussions shall be supplemented with land use maps. At a minimum, this report shall specifically address the following items:

(1) ADJACENT LAND OWNERS. Identify and locate the adjacent land owners. This information may be presented on a plat map. However, check current ownership conditions and note any changes.

(2) LAND USE ZONING. Include a discussion of land use zoning in the area. Give particular attention to areas where zoning variances will be required, where agricultural impact statements may be required, or where floodplain, shoreland or wetland zoning is designated.

(3) DOCUMENTATION OF PRESENT LAND USES. Include a description of the present land uses in the area. Put particular emphasis on the discussion of known recreational, historical, archaeological or environmentally unique areas including natural or scientific areas, county forest lands and critical habitat. Include a letter from the department's bureau of endangered resources addressing the known presence of any endangered or threatened species, critical habitat and natural or scientific areas and a letter from the state historical society addressing the presence of any known historical, scientific or archaeological areas in the vicinity of the proposed facility. Address the need for an archaeological survey of the area prior to development.

(4) TRANSPORTATION AND ACCESS. Delineate the present or proposed transportation routes and access roads including any weight restrictions.

NR 510.07 REGIONAL GEOTECHNICAL INFORMATION. The initial site report shall discuss the regional setting of the facility to provide a basis for comparison and interpretation of information obtained through field investigations. This discussion may be limited to information available from publications such as a hydrologic investigations atlas, water supply papers, informational circulars and technical bulletins published by the Wisconsin state geologic and natural history survey, the United States geological survey and the soil conservation service. The regional setting to be described is the area which may affect or be affected by the proposed facility. At a minimum, this will be the area within 5 miles of the proposed limits of filling. Supplement the discussions with available regional bedrock and glacial geology maps, USGS topographic maps, SCS soil maps and regional water table maps. Specifically discuss the following items:

(1) TOPOGRAPHY. Describe the existing topography including predominant topographic features.

(2) HYDROLOGY. Describe the surface water drainage patterns and significant hydrologic features such as surface waters, springs, surface water drainage basins, divides and wetlands.

(3) GEOLOGY. Describe the origin, texture, nature and distribution of bedrock; the origin, texture, thickness and distribution of the unconsolidated units; and the texture and classification of the surficial soils.

(4) HYDROGEOLOGY. Indicate the depth to groundwater, groundwater flow directions and hydraulic gradients, recharge and discharge areas, groundwater divides, aquifers and identification of the aquifers used by public and private wells in the region.

(5) WATER QUALITY. Submit information on groundwater and surface water quality which is available from the USGS, WSGNHS, DNR, UW-Extension and regional planning commissions.

NR 510.08 SPECIFIC GEOTECHNICAL INFORMATION. The applicant shall perform field investigations to define the topography, subsurface soils, depth to bedrock, type of bedrock, depth to groundwater, groundwater flow direction and gradients at the facility. The results of this investigation shall be described in the narrative section of the initial site report. Include all raw data such as boring logs, well construction diagrams, laboratory tests and field hydraulic conductivity test data and water level measurements in the report appendix. The following investigations at a minimum shall be performed unless an alternative geotechnical investigation program is approved by the department in writing.

(1) BORINGS. Drill borings at 8 separate locations for the first 10 or less acres of the anticipated limits of filling and one additional boring for each additional 10 or less acres. Extend all borings a minimum of 25 feet below the anticipated sub-base grade or to bedrock, whichever is less.

Distribute the borings on a grid pattern and attempt to locate the borings no further than 300 feet from the anticipated limits of filling. Collect samples and prepare boring logs in accordance with s. NR 512.11(1)(c) and (e). Borings not converted to wells shall be abandoned in accordance with s. NR 508.07.

(2) WELLS. Install water table observation wells to adequately define the depth to groundwater and horizontal gradients. At a minimum, install 3 water table observation wells for the first 10 or less acres of the anticipated limits of filling and one additional well for each additional 10 or less acres. Construct the wells such that the water table intersects the well screen at all times during the year and attempt to locate the wells no further than 150 feet from the anticipated limits of filling. At a minimum, for each 20 or less acres of the anticipated limits of filling install a piezometer adjacent to a water table observation well to create a well nest. All wells shall be installed and developed in accordance with ch. NR 508.

(3) FIELD DIRECTION. A hydrogeologist or other qualified person shall observe and direct the drilling of all borings; the installation, development and abandonment of all wells; and all in-field hydraulic conductivity tests. The hydrogeologist or other qualified person shall also visually describe and classify all geologic samples.

(4) LABORATORY AND FIELD ANALYSES. Conduct laboratory and field analyses to identify the specific geologic and hydrogeologic conditions at the proposed facility:

(a) Analyze a minimum of one representative sample from each major soil unit encountered for grain-size distribution by mechanical and hydrometer tests and Atterberg limits as appropriate for the particular type of material. Classify the material according to the unified soil classification system.

(b) Test a minimum of one representative sample from each major soil unit for laboratory hydraulic conductivity. Conduct the tests using undisturbed soil samples where conditions allow.

(c) Conduct an in-field test on each well installed at the proposed facility to obtain a determination of the in-situ hydraulic conductivity. The test shall be of long enough duration and include a sufficient amount of data to provide a representative estimate of the actual hydraulic conductivity.

(d) Submit any available groundwater or surface water quality data which has been obtained from sampling at the facility. The department recommends that at least one round of baseline groundwater quality sampling be performed on all wells in accordance with s. NR 508.14.

NR 510.09 DATA PRESENTATION. The results of the subsurface investigations shall be presented on 24 inch x 36 inch plan sheets unless an alternative size is approved by the department, as follows:

(1) TOPOGRAPHIC MAP. A topographic map of the area showing the anticipated limits of filling, property boundaries, homes, buildings, man-made features, water supply wells, and the location of soil borings and wells. The base map may consist of an enlarged 7.5 minute USGS map or other map having a minimum scale of one-inch equals 500 feet with contour intervals sufficient to show relief.

(2) GEOLOGIC CROSS-SECTIONS. Construct geologic cross-sections through all borings both perpendicular and parallel to the facility baseline as well as along and across transects which include major geologic and geomorphic features such as ridges, valleys and buried bedrock valleys. Construct at least one cross-section parallel to groundwater flow. Where more than one interpretation can be reasonably made, conservative assumptions shall be used when evaluating heterogeneities within the unconsolidated deposits. Include the following information on the geologic cross-sections:

(a) A dashed line or question mark for inferred lithostratigraphic boundaries, a number or symbol to label major soil units instead of extensive shading and a key containing a description of the soil units.

(b) The anticipated sub-base, base and final grades for the proposed facility.

(c) All boring logs, the USCS classifications and the geologic origin for each major soil unit. Show the results of all lab and field tests beside the boring.

(d) Well construction details including screen and seal length at the appropriate scale along with stabilized water level elevations measured on the same day. When 2 or more water table observation wells are presented on a cross-section, draw a line representing the water table elevation.

(3) WATER TABLE MAP. Present at least one water table contour map. Base the maps on stabilized water levels recorded on the same day from all observation wells at the facility. Show all the wells and the measured water level at each well on the water table maps. The topographic map shall be used as a base map. If more than one set of water levels has been taken, base the water table map on the set of data which indicates the highest water table.

NR 510.10 DATA ANALYSIS AND DESIGN RECOMMENDATIONS. Analyze the results from the sub-surface investigations, regional geotechnical information and land use information and give preliminary conclusions and recommendations on facility development and include a discussion of the following items:

(1) LOCATIONAL CRITERIA. The potential for the facility to meet the location and performance standards set forth in s. NR 504.04.

(2) FACTORS AFFECTING DEVELOPMENT. A discussion of the geologic environment including those factors which may affect the development, design or operation of the facility.

(3) PRELIMINARY DESIGN. A discussion of the preliminary design concepts including type and thickness of liners, leachate collection systems, base slopes, top slopes and side slopes, and proposed final cover. More than one design alternative may be submitted for consideration.

(4) EXISTING FACILITY PERFORMANCE. Evaluate and discuss all existing monitoring data from the facility. Give particular attention to any attainment or exceedance of the groundwater standards contained in ch. NR 140.

NR 510.11 NEEDS. The applicant may submit an evaluation to justify the need for the proposed facility in accordance with s. 144.44(2)(nm), Stats., unless the facility is exempt under s. 144.44(2)(nr), Stats. A favorable preliminary opinion on the need for the facility does not guarantee a favorable determination of needs.

5957Q.PERM

05/21/87

Chapter NR 512

Feasibility Reports For Landfills

NR 512.01 PURPOSE. The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to outline the

requirements regarding feasibility reports for new solid waste disposal, transportation and processing facilities The purpose of the feasibility report is to determine whether a facility has potential for use in disposal of solid waste and to identify any conditions which the applicant must address in the plan of operation. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 512.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste disposal facilities as defined in s. 144.43(5), Stats., except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181, and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 512.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 512.04 INITIAL INSPECTION. Any person intending to establish a new solid waste disposal facility or expand an existing solid waste disposal facility shall contact the department's district or area office as appropriate to arrange for an initial inspection for the purpose of evaluating compliance with the location and performance standards of s. NR 504.04. This inspection shall be completed prior to submittal of the report.

NR 512.05 GENERAL SUBMITTAL REQUIREMENTS. An applicant proposing to construct a new solid waste disposal facility or expand an existing solid waste disposal facility shall submit a feasibility report and related materials in accordance with s. NR 500.05 and this chapter, except as otherwise provided. The applicant shall include all pertinent information from the initial site report in the feasibility report. The feasibility report shall address all department review comments on the initial site report. If the applicant requests any exemptions to the location and performance standards listed in s. NR 504.04, justification for the request shall be provided in the narrative section of the feasibility report. Applicants proposing an alternative design to the requirements contained in s. NR 504.05 shall include an analysis that predicts whether the facility will meet or exceed the performance standards of s. NR 504.04(4)(d) regarding groundwater quality.

NR 512.06 PROCEDURAL REQUIREMENTS. An applicant shall comply with all applicable procedural requirements of s. 144.44, Stats.

(1) LOCAL APPROVALS. An applicant shall submit a written request including the standard notice developed under s. 144.44(1m)(bn), Stats., to each affected municipality for the specification of all applicable local approval requirements under s. 144.44 (1m)(b), Stats. An applicant subject to s. 144.445, Stats., shall apply for all applicable local approvals specified by a municipality under s. 144.44(1m)(b), Stats., at least 120 days prior to submitting the feasibility report to the department. If the municipality either fails to respond within 15 days after the receipt of the written request from the applicant or indicates that there are no applicable local approval requirements, the applicant may submit the feasibility report 135 days after receipt by the municipality of the written request from the

applicant or 120 days after receipt of the response from the municipality indicating that there are no local approval requirements, whichever occurs first. The feasibility report shall contain documentation that this requirement has been met.

(2) SUBMISSION OF REPORTS. An applicant shall submit a feasibility report to the department in accordance with s. 144.44(2), Stats. At the same time, the applicant shall submit a copy of the feasibility report to each participating municipality under s. 144.445(6)(b), Stats. The applicant shall notify the department of when and to whom the copies of the feasibility report were submitted.

(3) COMPLETENESS. Within 60 days after a feasibility report is submitted, the department shall determine whether or not the feasibility report is complete. If the report is complete, the department shall publish a class I public notice in accordance with s. 144.44(2)(k), Stats., and issue a preliminary determination stating whether or not an environmental impact statement is required. If the report is incomplete, the department shall notify the applicant in writing and specify the information which shall be submitted before the feasibility report is complete. The department shall determine the completeness of the feasibility report by determining whether or not the minimum requirements of this chapter have been met. The department may require the applicant to submit additional information after determining that the feasibility report is complete if the department establishes that the feasibility of the facility cannot be determined without the additional information.

NR 512.07 ALTERNATIVE REQUIREMENTS. (1) WASTE TYPES AND VOLUMES. An applicant for a facility for the disposal of municipal solid waste having a proposed design capacity of 50,000 cubic yards or less may submit a

feasibility report which contains all the information described in ch. NR 510. For an industrial or commercial solid waste disposal facility having a proposed design capacity of 50,000 cubic yards or less, the department may allow the applicant to submit a feasibility report which contains all the information described in ch. NR 510, depending on the waste types and the facility location.

(2) REQUIRED INFORMATION. When an applicant submits a feasibility report containing all the information described in ch. NR 510, the information described in ss. NR 512.14, 512.15, 512.18, 512.20 and 512.21 regarding water budget and liner efficiency, waste characterization, borrow source investigation, needs and recycling shall also be included.

NR 512.08 GENERAL FACILITY INFORMATION. The feasibility report shall identify the project title; name, address and phone number of the primary contacts including the facility owner and any consultants; present property owner; proposed facility owner and operator; facility location by quarter-quarter section; total acreage of the property and proposed limits of fill; proposed facility life, design capacity and an estimated date of initial operation; municipalities and industries to be served; estimated waste types and characteristics; estimated weekly quantities of each major waste stream; anticipated cover frequency; mode of operation; anticipated base and sub-base grades; and preliminary design concepts.

NR 512.09 LAND USE INFORMATION. The feasibility report shall discuss the present and former land uses at the facility and the surrounding area. A thorough discussion of land uses which may have an impact on the suitability of the property for waste disposal or affected groundwater quality shall be included. The report shall address all areas that may affect or be affected

by the proposed facility. At a minimum, this will be the area within one-half mile of the limits of filling for facilities with a design capacity of 50,000 cubic yards or less and areas within one mile for facilities with a design capacity greater than 50,000 cubic yards. The discussions shall be supplemented with land use maps. At a minimum specifically address the following items:

(1) ADJACENT LAND OWNERS. Identify and locate the adjacent land owners. This information may be presented on a plat map. However, check current ownership conditions and note any changes.

(2) LAND USE ZONING. Include a discussion of land use zoning in the area. Give particular attention to areas where zoning variances will be required, where agricultural impact statements may be required, or where floodplain, shoreland or wetland zoning is designated.

(3) DOCUMENTATION OF PRESENT LAND USES. Include a description of the present land uses in the area. Put particular emphasis on the discussion of known recreational, historical, archaeological or environmentally unique areas including natural or scientific areas, county forest lands and critical habitat. Include a letter from the department's bureau of endangered resources addressing the known presence of any endangered or threatened species, critical habitat and natural or scientific areas and a letter from the state historical society addressing the presence of any known historical, scientific or archaeological areas in the vicinity of the proposed facility. Address the need for an archaeological survey of the proposed limits of waste fill prior to development.

(4) TRANSPORTATION AND ACCESS. Delineate the present or proposed transportation routes and access roads including any weight restrictions.

NR 512.10 REGIONAL GEOTECHNICAL INFORMATION. The feasibility report shall discuss the regional setting of the facility to provide a basis for comparison and interpretation of information obtained through field investigations. This discussion may be limited to information available from publications such as a hydrologic investigations atlas, water supply papers, informational circulars and technical bulletins published by the Wisconsin state geologic and natural history survey, the United States geological survey and the soil conservation service. The regional setting to be described is the area which may affect or be affected by the proposed facility. At a minimum, this will be the area within 5 miles of the proposed limits of filling. Supplement the discussions with available regional bedrock and glacial geology maps, USGS topographic maps, SCS soil maps and regional water table maps. Specifically discuss the following items:

(1) TOPOGRAPHY. Describe the existing topography including predominant topographic features.

(2) HYDROLOGY. Describe the surface water drainage patterns and significant hydrologic features such as surface waters, springs, surface water drainage basins, divides and wetlands.

(3) GEOLOGY. Describe the origin, texture, nature and distribution of bedrock; the origin, texture, thickness and distribution of the unconsolidated units; and the texture and classification of the surficial soils.

(4) HYDROGEOLOGY. Indicate the depth to groundwater, groundwater flow directions and hydraulic gradients, recharge and discharge areas, groundwater divides, aquifers and identification of the aquifers used by public and private wells in the region.

(5) WATER QUALITY. Submit information on groundwater and surface water quality which is available from the USGS, WSGNHS, DNR, UW-Extension and regional planning commissions.

NR 512.11 SPECIFIC GEOTECHNICAL INFORMATION. The applicant shall perform laboratory and field investigations to define the physical characteristics of the facility including soils, bedrock and groundwater. At a minimum, these investigations shall include the requirements specified below unless an alternative geotechnical investigation program is approved by the department in writing. The applicant shall provide supporting justification for any reductions to the requirements in the section.

(1) BORINGS. Borings sufficient to define sub-surface conditions shall be drilled both inside and outside the proposed limits of waste filling.

(a) At a minimum, borings shall be drilled in 10 separate locations for the first 5 or less acres of the proposed fill area. Three borings shall be drilled for each additional 5 or less acres of proposed fill area. The borings shall be located on a grid pattern and such that there is a minimum of one boring in each major geomorphic feature such as ridges, lowlands and drainage swales. All borings shall be within 300 feet of the proposed limits of waste filling. The department may require more borings in complex hydrogeologic environments.

(b) Borings shall extend a minimum of 25 feet below the anticipated sub-base grade or to bedrock, whichever is less. If regional information suggests that bedrock is within 100 feet of the land surface, at least one boring shall be extended into bedrock. Every attempt shall be made to locate this boring outside the proposed limits of waste filling. The boring log shall identify the lithology of the bedrock.

(c) Where conditions permit, samples shall be collected using undisturbed sampling techniques. Samples may not be composited for testing purposes. In fine-grained soil environments, continuous samples shall be collected from each boring beginning at the land surface to at least 25 feet below the anticipated sub-base grade. In uniform, coarse-grained soil environments or

following the continuous sampling in fine-grained soil environments, samples shall be collected from each major soil unit encountered and at maximum 5-foot intervals. Each soil sample shall be described including its structure, mottling, voids, layering, lenses and geologic origin and visually classified according to the unified soil classification system and Muncell color chart. Continuous core samples of the bedrock shall be taken and the rock properties including fracture frequency, RQD and percent recovery shall be determined for the borings extended into bedrock.

(d) Borings not converted to wells shall be abandoned in accordance with s. NR 508.07(2).

(e) A boring log shall be submitted for each boring. Each boring log shall include soil and rock descriptions, methods of sampling, sample depths and elevations, date of boring, land surface elevation, bottom of boring elevation, moisture content, and consolidation test results such as blow counts, vane sheer or pocket penetrometer. All elevations shall be corrected to USGS datum. If the boring is converted to a well, include the water level at time of drilling, dates of water level measurements and a well construction diagram on the log.

(2) WELLS. Groundwater monitoring wells sufficient to define the hydrogeologic and groundwater quality conditions shall be installed. At a minimum, this includes:

(a) Water table observation wells shall be installed to adequately define the water table surface and horizontal gradients. At a minimum, 5 water table observation wells shall be installed for the first 5 or less acres of disposal area and one additional well for each additional 5 or less acres of disposal area. The wells shall be constructed so that the screens intersect the water table at all times during the year and attempt to locate the wells no further than 150 feet from the anticipated limits of filling. At a minimum, for the

first 5 or less acres of disposal area, a piezometer shall be installed adjacent to a water table observation well at 2 separate locations to create well nests. One additional piezometer for each additional 10 or less acres of disposal area shall be installed to create additional well nests. In addition, in fine-grained soil environments, 2 well nests consisting of at least 2 piezometers shall be installed adjacent to a water table observation well for the first 5 or less acres of disposal area and one additional well nest consisting of at least 2 piezometers for each additional 10 or less acres of disposal area.

(b) All wells shall be designed, installed, developed, sampled and documented in accordance with ch. NR 508. Alternative methods of well design and installation must be approved prior to well construction.

(3) FIELD DIRECTION. A hydrogeologist or other qualified person shall observe and direct the drilling of all borings, the installation and development of all wells and all in-field hydraulic conductivity tests. The hydrogeologist shall also visually describe and classify all of the geologic samples.

(4) LABORATORY AND FIELD ANALYSIS. Laboratory and field analyses shall be conducted to identify the specific geologic, hydrogeologic and groundwater quality conditions at the proposed facility as outlined below:

(a) For each major soil unit encountered, at least 5 representative samples shall be analyzed for grain size distribution by mechanical and hydrometer tests and Atterberg limits as appropriate for the particular type of material. Each representative sample shall be classified according to the unified soil classification system.

(b) Laboratory hydraulic conductivity tests shall be conducted on at least 2 representative samples from each major soil unit. Tests shall be run on undisturbed samples when conditions allow.

(c) The department may require that other tests be conducted as appropriate for the particular type of material.

(d) An in-field test shall be conducted on each well to determine the in-situ hydraulic conductivity. The test shall be of long enough duration and include a sufficient amount of data to provide a representative estimate of the actual hydraulic conductivity.

(e) After each well has been properly developed, successive water level measurements shall be taken until stabilized readings are obtained. Thereafter, water level measurements shall be obtained on a monthly basis for a minimum of 6 months prior to submittal of the feasibility report. After this period, quarterly water level monitoring shall be performed until a feasibility determination is made. In addition, stabilized water level measurements shall be obtained on a quarterly basis from surface water bodies including streams, lakes, ponds, drainage ditches and wetlands located within 1,200 feet of the proposed facility. Where public or private wells are present, stabilized water level readings from these wells may be required if access can be obtained from the owner. The water level monitoring program shall continue until a feasibility determination has been issued by the department.

(f) At least 4 rounds of baseline groundwater quality sampling shall be performed on all wells outside the proposed limits of waste filling in accordance with s. NR 508.14 and submitted along with the feasibility report.

(g) The department may require other work such as pump tests, geophysical investigations, isopach maps or a fence diagram to assess the hydrogeologic conditions at the proposed facility.

(5) SAMPLE RETENTION. All soil and bedrock samples shall be retained until the department issues a feasibility determination. Representative samples of all major soil units and bedrock formations shall be retained until the department issues an operating license for the facility.

NR 512.12 SUBSURFACE DATA ANALYSIS. Data on subsurface investigations shall be presented in the narrative section of the report as follows:

(1) SOIL AND BEDROCK DESCRIPTIONS. Each major soil unit and bedrock formation shall be described using data from both subsurface investigations and regional information. The descriptions shall include:

(a) Grain size distribution, geologic origin and classification of materials using the USCS system and Muncell color chart.

(b) The lateral and vertical extent of each major soil unit including description of lenses or other heterogeneities and the strike and dip of rock formations.

(c) The presence and frequency of joints, fractures, voids, solution openings, faults or other structural features.

(d) Testing data shall be summarized by major soil unit in a table in the report. The table shall contain the following information: geologic origin, sample ID number, percentages of gravel, sand, silt and clay-sized materials, P200 content, liquid limit, plasticity index, and lab and field hydraulic conductivity. If average values are calculated for any of these test results, a range and standard deviation shall also be presented.

(2) HYDROGEOLOGIC PROPERTIES. The properties of each saturated soil unit or rock formation and its function in the groundwater flow system shall be described including the following:

(a) Hydraulic conductivity.

(b) Role as a confining unit.

(c) Hydraulic connection to other units.

(d) Actual or potential use as a water supply.

(e) Depth to groundwater and seasonal variations in groundwater elevation.

(f) Location and extent of perched groundwater.

(g) Local and regional flow directions including the location of groundwater divides.

(h) Horizontal and vertical gradients, particularly between soil units of differing hydraulic conductivity and between unconsolidated deposits and bedrock.

(i) The saturated thickness of the uppermost aquifer at the facility boundary which can be expected to attenuate contaminants which may enter the flow system and estimates of the quantity of flow passing under the proposed waste fill area.

(3) APPENDIX. All raw data including boring logs, well construction diagrams, soil tests and water level measurements shall be included in the appendices of the report.

NR 512.13 DATA PRESENTATION. The results from the subsurface investigations shall be presented on 24 inch x 36 inch plan sheets, unless an alternative size is approved by the department in writing, as follows:

(1) EXISTING CONDITIONS. A detailed topographic survey of the proposed facility and all areas within a distance of 1,500 feet from the proposed limits of filling. The minimum scale shall be one inch = 200 feet with a maximum 2 foot contour interval. The contour interval selected shall be sufficiently small to clearly show surface water flow patterns within and around the facility. This plan sheet shall show the following features:

(a) 100-year floodplain area.

(b) Surface waters, including intermittent and ephemeral streams and wetlands.

(c) Homes, buildings, man-made features and utility lines.

(d) Surrounding land uses, such as residential, commercial, agricultural and recreational.

(e) Property and waste boundaries, including any previous fill areas.

(f) Access control, such as fences and gates.

(g) Water supply wells including irrigation and stock wells, as well as public and private water supply wells.

(h) Boring, test pit and well locations.

(i) Other structures including runoff control systems, agricultural drain tile systems, access and internal roads, and storm and sanitary sewerage systems.

(2) GEOLOGIC CROSS-SECTIONS. Cross-sections shall be constructed through all borings, both perpendicular and parallel to the facility baseline, as well as along and across transects which include major geologic and geomorphic features such as ridges, valleys and buried bedrock valleys. At least one cross-section shall be constructed parallel to groundwater flow. Where more than one interpretation can be reasonably made, conservative assumptions shall be used when evaluating heterogeneities within the unconsolidated deposits. The following information shall be presented on the geologic cross-sections:

(a) Inferred or questionable lithostatigraphic boundaries shall be shown with a dashed line or question mark.

(b) For clarity, a number or symbol shall be used to label major soil units instead of extensive shading. A key shall be provided which contains a description of each major soil unit including geologic description and origin, USCS classification and color.

(c) Boring logs showing the USCS classification of each major soil unit, the results of grain size analyses, Atterberg limits, and lab and field hydraulic conductivity tests. The data shall be correlated to the sample location.

(d) Well construction details shown to scale including the well screen and filter pack length, the location of the upper and lower seals and stabilized water level elevations measured on the same day. Where 2 or more

water table observation wells are presented on a cross-section, a line representing the water table shall be drawn. The date the measurements were taken shall be specified in the key.

(3) WATER TABLE MAPS. At least 2 water table contour maps shall be presented. The maps shall be based on monthly water table elevations documenting the seasonal high and low water table. For each sampling round, all water level elevations shall be measured on the same day. The water table maps shall show all wells and the measured water level elevation at each well. If 3 or more bedrock wells are installed, a bedrock piezometric map shall be prepared.

(4) BEDROCK MAP. Where at least 3 borings to bedrock are required, a bedrock contour map shall be prepared from specific and regional data.

(5) FLOW NET. A flow net shall be constructed parallel to the direction of groundwater flow to show the distribution of recharge and discharge.

NR 512.14 WATER BUDGET AND LINER EFFICIENCY. (1) WATER BUDGET. A water budget shall be prepared for the periods of time during active operations when the maximum amount of area has been filled but not capped and following facility closure. At a minimum, the following factors shall be considered in the preparation of the water budget:

(a) Average monthly temperature,

(b) Average monthly precipitation,

(c) Evaporation,

(d) Evapotranspiration,

(e) Surface slope and topsoil texture,

(f) Soil moisture holding capacity and root zone depth,

(g) Runoff coefficients,

(h) Moisture contribution from the waste, and

(i) Any groundwater contribution.

(2) LEACHATE COLLECTION SYSTEM EFFICIENCY. The collection efficiency of the leachate collection system shall be calculated using an approved analytical or numerical method. The factors to be considered in the calculation of collection efficiency shall include:

(a) The saturated hydraulic conductivity of the liner,

(b) Liner thickness,

(c) The saturated hydraulic conductivity of the drainage blanket,

(d) Drainage blanket porosity,

(e) The base slope of the liner,

(f) The maximum flow distance across the liner,

(g) Annual infiltration, and

(h) Any groundwater inflow.

(3) LEACHATE GENERATION. Information gained from the collection efficiency calculations shall be used to predict the daily volume of leachate collected and the volume of liquid that may permeate through the liner.

NR 512.15 WASTE AND LEACHATE CHARACTERIZATION. (1) INDUSTRIAL WASTES. Unless otherwise approved, the physical and chemical characteristics of all wastes and leachates shall be analyzed and described. When more than one waste is generated, testing shall be performed on each waste stream. All leaching tests shall be done in accordance with published test procedures. Physical tests shall be done in accordance with ASTM standards or published test procedures. All testing procedures shall be documented. The proposed testing program including the leaching test method, the leaching media, the parameters to be analyzed for and the detection limits for each parameter specified should be discussed with the department prior to initiation of the work. Actual field leachate data may be substituted for chemical characterization data of the waste at facilities for the disposal of industrial wastes only, if approved in writing by the department.

(2) MUNICIPAL WASTES. Actual field leachate data from existing facilities of similar size, design and waste type or an estimate of the anticipated leachate quality available from the department shall be included for all facilities for the disposal of municipal solid waste.

NR 512.16 CONSTRAINTS ON FACILITY DEVELOPMENT. The feasibility report shall contain a discussion of constraints for the development of the proposed facility. This shall include:

(1) LOCATION AND PERFORMANCE STANDARDS. A demonstration that the facility will meet location and performance standards in s. NR 504.04.

(2) GEOTECHNICAL INFORMATION. An analysis of the geologic, hydrogeologic, topographic and hydrologic features of the facility that may be favorable or unfavorable for landfill development.

(3) CONSTRUCTION AND OPERATION. A discussion of materials and support services required for landfill construction and operation. These shall include leachate treatment alternatives, limitations of any proposed wastewater treatment plants to treat leachate, quality and quantity of acceptable materials available for landfill liner and cap, and any specialized engineering structures to support landfilling activities.

(4) EXISTING CONDITIONS. For an expansion of an existing facility, the effectiveness of the existing design and operation shall be discussed. This shall include an evaluation of relevant monitoring data and a discussion of all plan modifications and remedial actions. Attainment or exceedances of any of the groundwater standards contained in ch. NR 140 shall also be noted and discussed.

NR 512.17 PROPOSED DESIGN. The feasibility report shall contain a proposed design based on conclusions outlined in the design constraints section of the feasibility report. This portion of the submittal shall

consist of a report and preliminary engineering plans prepared in accordance with ch. NR 504. A general discussion of the proposed operating procedures shall also be included.

(1) REPORT PREPARATION. At a minimum, this portion of the narrative section of the feasibility report shall include the following information:

(a) Preliminary materials balance calculations, including sources for berms, liner, final cover system, drainage blanket, topsoil, daily and intermediate cover, and any other fill needed to construct the facility.

(b) Proposed methods for leachate and gas control including collection, containment and treatment. The capability of the wastewater treatment plants to accept leachate shall be discussed. An identification of the wastewater treatment plants the applicant is negotiating with to accept the leachate, if the plant is not directly controlled by the applicant.

(c) Proposed operating procedures including the method of facility development, filling sequence, access control for each phase, surface water control, screening, covering frequency as applicable and other special design features.

(d) A description of the proposed groundwater, leachate, surface water, gas, air, unsaturated zone and other monitoring programs to be implemented to meet the requirements of chs. NR 508 and 140.

(e) Proposed final use.

(f) Proposed method of demonstrating financial responsibility for closure and long-term care requirements. This shall include preliminary itemized cost estimates for land acquisition, facility preparation, construction of each major phase, daily operation, closure and long-term care. An estimated cost per ton for disposal shall also be included.

(2) PRELIMINARY ENGINEERING PLANS. The preliminary engineering design shall be presented on 24 inch x 36 inch plan sheets, unless an alternative size is approved by the department in writing, as follows:

(a) Proposed access, lateral extent of filling, phases of facility development, sub-base and base grades, slopes and the leachate collection system. The existing conditions map shall be used as a base map for this plan sheet.

(b) A plan sheet showing present topography, proposed base and sub-base grades, final grades, liner and final cover system configuration displayed on all geologic cross-sections intersecting the landfill.

(c) A monitoring plan sheet showing the proposed groundwater, leachate, surface water, gas, air, unsaturated zone and any other monitoring programs.

(d) A detailed plan sheet showing proposed closure sequence and final grades.

(e) A plan sheet showing the details of proposed design features for the major engineering structures at the facility.

NR 512.18 IDENTIFICATION AND CHARACTERIZATION OF POTENTIAL BORROW SOURCES.

(1) GENERAL. The feasibility report shall contain a discussion of each proposed borrow source for liner and capping purposes including the volume of acceptable material, total acreage, ownership, location by quarter - quarter section, present land use, transportation routes and any access restrictions, travel distance from the proposed waste disposal facility, surface water drainage patterns and significant hydrologic features such as surface waters, springs, drainage divides and wetlands. Clay borrow sources containing less than 5 feet of uniform thickness are approvable provided the applicant demonstrates a construction methodology and a documentation procedure to ensure the liner meets the requirements of ss. NR 504.05(5) or 504.07(4). A

clay enriched subsoil horizon less than 5 feet thick developed by soil forming processes over course grained parent material may not be an acceptable source of material for liner or cap construction. Specifications for acceptable material are contained in ss. NR 504.05(5) and 504.07(4).

(2) FIELD AND LABORATORY INVESTIGATIONS. At a minimum, preliminary field and laboratory investigations to define the physical characteristics of the proposed clay borrow material shall include the information specified below unless an alternative geotechnical investigation program is approved by the department in writing. Applicants may submit an alternative program in cases where previous information exists regarding the proposed source.

(a) Ten test pits or borings for the first 5 or less acres and one test pit or boring for each additional one or less acres shall be excavated or drilled on a uniform grid pattern across each proposed borrow source to document the depth, lateral extent and uniformity of acceptable material. The department recommends using test pits as the method of borrow source investigation. Logs identifying the geologic origin, testing results, USCS classification and a visual description of each major soil unit encountered shall be included.

(b) A minimum of 2 representative samples from each test pit or boring shall be collected and tested in the laboratory for grain size distribution to the 0.002 millimeter particle size and Atterberg limits.

(c) A minimum of 5 representative samples for the first 10 or less acres and one additional sample for each additional 5 or less acres shall be tested for the relationship of water content to dry density using either the modified or standard Proctor method. Each Proctor curve shall be developed with a minimum of 5 points.

(d) A minimum of 20% of the samples used to develop the Proctor curves shall be used to evaluate the relationship between compaction and hydraulic

conductivity. This shall be accomplished by testing the sample corresponding to each point established on the chosen Proctor curves for hydraulic conductivity.

(e) All samples shall be classified according to the unified soil classification system.

(3) DATA PRESENTATION. The following information shall be submitted with the feasibility report:

(a) The calculated volume of acceptable material based on the information obtained from the test pits or borings.

(b) Property boundaries and test pit/boring locations shall be shown on a topographic map with a scale of one inch = 500 feet. The mapped area shall extend a minimum of 500 feet beyond the proposed borrow source.

(c) An isopach map showing the thickness of acceptable material.

(d) A description of the methods to be used for separating the acceptable material from any unacceptable material.

(e) A proposal for maintaining drainage, sedimentation control and proper abandonment of the property.

(f) All data obtained from the testing program.

NOTE: It may be necessary to obtain federal or state permits prior to excavating materials from a borrow source near surface waters or wetlands. It is the responsibility of the applicant or property owner to obtain any such permits.

NR 512.19 ENVIRONMENTAL REVIEW. To aid the department in determining the need for an environmental impact report or environmental impact statement, the feasibility report shall include an environmental assessment section. This assessment shall address the following items:

(1) PROJECT SUMMARY. A brief summary of the project shall be included. Particular attention shall be given the following areas:

(a) The purpose and need for the proposed project including the history and background on the project.

(b) A listing of the statutory authority and other relevant local, state and federal permits or approvals required as well as a discussion of the need for exemptions, zoning changes and any other special permits.

(c) The estimated cost and funding source for the project.

(2) PROPOSED PHYSICAL CHANGES. A brief description of the proposed physical changes including:

(a) The changes in terrestrial resources. This discussion shall cover the quantity of material to be excavated and the lateral extent of soil removal; the quantity and source of materials to be imported for construction of the liner, final cover system, drainage blanket and perimeter berms. Any other significant terrestrial modifications such as soil placement necessary to reach the proposed sub-base grades, construction of access roads, surface water drainage features and sedimentation controls shall also be outlined.

(b) The changes in aquatic resources including the potential impacts to streams, wetlands, lakes and flowages. This discussion shall include discharge rates and volumes for groundwater control structures, leachate collection systems and surface water runoff under existing conditions as well as that anticipated during active operations and following closure.

(c) Buildings, treatment units, roads and other structures to be constructed in conjunction with the facility. This discussion shall include the size of the facilities and the number of miles of road to be constructed.

(d) Emissions and discharges such as dust, diesel exhaust, odors, gases, leachate, surface water runoff and collected groundwater associated with

facility preparation, construction, operation, closure and following closure of the facility.

(e) Other changes anticipated with facility development.

(f) Maps, plans and other descriptive material to clarify the discussion such as a county map showing the general area of the project, a USGS topographic map, a plat map, zoning map, county wetlands map and a facility development plan.

(3) EXISTING ENVIRONMENT. A brief description of the existing environment that may be affected shall be included. At a minimum this shall contain:

(a) A description of the physical environment including the regional and local topography, geology, surface water drainage features, hydrogeologic conditions, air, wetlands and earth borrow sources as well as an evaluation of the groundwater quality data and overall performance of any existing solid waste facility.

(b) The dominant aquatic and terrestial plant and animal species and habitats found in the area including threatened or endangered species and amount, type and hydraulic value of wetlands.

(c) Land use including dominant features and zoning in the area.

(d) Social and economic conditions including any ethnic or cultural groups.

(e) Other special resources such as archaeological, historical, state natural areas, and prime agricultural lands.

(4) ENVIRONMENTAL CONSEQUENCES. A brief discussion of the probable adverse and beneficial impacts including primary, indirect and secondary impacts shall include:

(a) The physical impacts which would be associated with facility design, construction and operation, including visual impacts, if applicable.

(b) The biological impacts including destruction and creation of habitat, alteration of the physical environment and any impacts to endangered or threatened species.

(c) The impacts on land use.

(d) The social and economic impacts to local residents and cultural groups and the communities and industries served by the facility.

(e) Other special resources such as archaeological, historical, state natural areas and prime agricultural lands.

(f) Probable adverse impacts that cannot be avoided including groundwater and surface water impacts, modifications of topography and any borrow source limitations on development around the facility, any loss of agricultural or forest land, displacement of wildlife and adverse aesthetic impacts for people in and around the facility.

(5) ALTERNATIVES. Identify, describe and discuss feasible alternatives including taking no action; enlargement, reduction or modification of the project; other facilities, locations or methods to the proposed action and their impacts. Particular attention shall be given to alternatives which might avoid some or all adverse environmental impacts, including proposed and existing solid waste disposal, recycling, incineration, transfer and reduction facilities that may serve to handle the waste expected to be disposed of at the proposed facility, taking into account the economics of waste collection, transportation and disposal.

NR 512.20 NEEDS. The feasibility report shall contain an evaluation to justify the need for the proposed facility in accordance with s. 144.44(2)(nm), Stats., unless the facility is exempt under s. 144.44(2)(nr), Stats.

NR 512.21 WASTE REDUCTION AND RECOVERY. The feasibility study shall include a detailed discussion of the alternatives to land disposal, as well as a description of any waste reduction incentives and recycling services to be instituted or provided with the proposed facility. At a minimum, this shall include:

(1) WASTE TYPES AND QUANTITIES. A description of the quantity and types of household, commercial, industrial, demolition and other wastes, plus a calculation of waste quantities by composition based on state estimated figures or other data if readily available. This includes newspaper, corrugated containers, glass, metal, plastic, yard waste, tires and other waste categories anticipated at the land disposal facility.

(2) EXISTING REQUIREMENTS. A summary of state laws and programs encouraging or mandating waste reduction and recovery and their application to the proposed facility for waste anticipated at the facility.

(3) DESCRIPTION OF TECHNOLOGIES. A brief description of the technologies and methodologies of waste reduction, reuse, recycling, composting and energy recovery as applicable to the anticipated wastes to be accepted at the proposed facility.

(4) ON-GOING PROGRAMS. A description of any known waste reduction or recovery programs in the area to be served by the proposed facility handling the type of waste anticipated at the proposed facility, including a description of their potential for expansion.

(5) RECOMMENDATIONS. A description of any recommendations for waste reduction and recovery in approved areawide solid waste management plans for all counties in the area to be served by the proposed facility.

(6) CURRENT STUDIES. A description of any known waste reduction or recovery studies being conducted for waste anticipated to be disposed of at the land disposal facility.

(7) AVAILABLE RECOVERY MARKETS. A description of the nearest available known markets for recoverable material from the waste anticipated to be disposed of at the proposed facility including:

(a) Market name and address,

(b) Market requirements for minimum quantities and preparation for deliverable material, and

(c) Prices paid for materials, including both current prices and ranges for the past 3 years, if available to the public.

(8) POTENTIAL ENERGY MARKETS. A description of energy users within the service area capable of using at least 25% of the energy available in the waste stream anticipated at the land disposal facility, or for the energy available from a minimum of 25 tons of waste per day, whichever is greater. At a minimum, consideration shall be given to both electrical generation and to steam production.

(9) COSTS. An estimate of the tonnage recovered, the capital costs, annual expenses, annual income and the net income or loss, based on current prices and for both the high ranges and low ranges of prices as determined in sub. (7)(c), for implementing each of the following as appropriate:

(a) Source separation drop off center,

(b) Curbside collection of recyclables from households,

(c) Collection of source separated recyclables from commercial and industrial generators,

(d) A mechanical processing facility for the recovery of materials,

(e) A yard waste composting program, including both home composting and a community composting drop-off program,

(f) A composting facility for mixed solid waste,

(g) Energy recovery, and

(h) Other recovery systems as appropriate.

(10) FUTURE EFFORTS. A description of any efforts to be implemented to either assist in the expansion of existing waste reduction and recovery programs or to develop new programs for waste reduction and recovery.

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Chapter NR 514

Plan of Operation and Closure Plans for Landfills

NR 514.01 PURPOSE. The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to outline the requirements for preparation of plans of operation and closure plans for solid waste facilities. This chapter is adopted under ss. 144.43 to 144.47 and 227.11, Stats.

NR 514.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste disposal facilities as defined in s. 144.43(5), Stats., except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181, and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 514.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 514.04 PROCEDURAL REQUIREMENTS. (1) GENERAL. No person may establish or construct a facility for the land disposal of solid waste or expand an existing land disposal facility until a plan of operation has been submitted in accordance with s. NR 500.05 and this chapter and has been approved in writing by the department. No person may establish, construct or close an approved facility for the land disposal of solid waste except in accordance with this chapter, s. NR 506.08 and with the approved plan of operation. No person may submit a plan of operation for a new or expanded solid waste disposal facility prior to the submittal of a feasibility report by that person.

(2) DATA PRESENTATION. All plans of operation for land disposal facilities shall contain the complete plans and specifications necessary for the construction, operation, monitoring, closing and long-term care of the facility. Because these documents are to be used for the day-to-day construction, operation and closure of the facility, the information must be presented in a manner that is clear and understandable.

(3) COMPLETENESS. Within 30 days after a plan of operation is submitted or, if the plan of operation is submitted with the feasibility report, within 30 days after the department issues notice that the feasibility report is complete, the department shall provide written notification to the applicant and any other person who has filed a written request whether or not the plan of operation is complete. If the submittal is deemed incomplete, the department will specify the information which must be submitted before the plan may be deemed complete. The department will determine if the plan of

operation is complete by determining whether or not the minimum requirements of this chapter and the conditions of any feasibility approval have been met. The department may require the applicant to submit additional information after determining that the plan of operation is complete if the department establishes that the plan of operation is insufficient without the additional information.

(4) REVIEW TIMES. The department may not approve or disapprove a plan of operation until after the applicant obtains a favorable determination of feasibility for the facility. The department shall either approve or disapprove the plan in writing within 90 days after submission of a complete plan of operation or within 60 days after a favorable determination of feasibility, whichever is later.

(5) PLAN APPROVAL MODIFICATIONS. Any proposed changes to the approved plan shall be submitted to and approved by the department prior to implementation.

NR 514.05 ENGINEERING PLANS. The plan of operation shall contain a set of engineering plans which are drawn on standard 24 inch by 36 inch plan sheets, unless an alternative size is approved by the department, in accordance with ss. NR 500.05, 504.05, 504.07 and the following requirements. All plan sheets except the title sheet, existing conditions sheet, cross-sections and details sheets shall utilize the existing conditions sheet as a base map.

(1) TITLE SHEET. A title sheet shall be included indicating the project title, who prepared the plans, the date the plans were prepared, the applicant for whom the plans were prepared, a table of contents, a map showing the location of the facility within the county or multicounty area, the location of the county or multicounty area within the state and the area to be served.

(2) EXISTING CONDITIONS. An existing conditions plan shall be included consisting of a detailed topographic map of the proposed facility and all areas within 1,500 feet of the proposed limits of filling prior to development. The minimum scale shall be 1 inch = 200 feet with a maximum 2 foot contour interval. The contour interval selected shall be sufficiently small to clearly show surface water flow patterns within and around the facility. All elevations shall be related to USGS datum. The plan shall identify and define the following:

(a) Surface waters including intermittent and ephemeral streams and wetlands.

(b) Property boundaries.

(c) The proposed facility boundary.

(d) The proposed limits of waste filling.

(e) A facility survey grid and its relationship to the state plane coordinate system.

(f) Surveying monuments.

(g) North arrow.

(h) Residential structures and other buildings.

(i) Soil boring and well locations.

(j) Public and private water supply wells as well as irrigation and stock wells.

(k) Utility lines, access control and other man-made topographic and drainage features.

(3) SUB-BASE GRADES. A plan sheet shall be included which indicates either the facility sub-base grades or, if the facility is designed without engineering modifications, the base grades.

(4) ENGINEERING DESIGN FEATURES. A separate plan sheet shall be included to depict each major engineering design feature for the entire facility. If the facility will be constructed in phases, the limits of the engineering design features for each phase shall also be presented. For facilities with engineering modifications this plan shall depict the layout and slope of the liner and leachate collection system including pipes, manholes, trenches, berms, lift stations, surface water control structures, pipe cleanouts and other pertinent structures. Invert elevations shall be provided on 100 foot centers and at any changes in grade for all leachate and groundwater collection and transfer systems.

(5) PHASING. A series of phasing plan sheets shall be included to show facility development through time. The location of peripheral features such as support buildings, access roads, drainage ditches, sedimentation basins and screening berms shall be indicated on this plan. At a minimum, a separate plan sheet shall be provided for initial facility construction and for each subsequent phase of development or new area where substantial construction is to be performed. These subsequent phasing plan sheets shall present the final filling surfaces in the previous phases of facility development; the limits of clearing, grubbing and topsoil removal; the base grades of the new phase of filling; the anticipated surface contours of soil stockpiles at the time depicted on the plan sheet; and surface water drainage features. Each plan shall include a list of construction items and quantities necessary to prepare the phase of development indicated on the plan.

(6) WATER TABLE MAPS. At least 2 water table contour maps shall be presented to indicate high and low water table conditions. All water level elevations for an individual map shall be measured on the same day. The water table maps shall show the location of all wells and the measured water level elevation shall be noted adjacent to each well.

(7) MONITORING. A facility monitoring plan sheet shall be included to show the location of the design management zone as determined under s. NR 140.22 and all devices for: the monitoring of leachate quality and quantity; unsaturated zone water quality and flow rate; groundwater quality; surface water quality; and gas production, migration and venting. This plan sheet shall also include a table indicating the devices to be monitored, the proposed parameters and the proposed frequency of monitoring before and during facility development and during the period of long-term care.

(8) FINAL TOPOGRAPHY. A final topography plan sheet shall be included to indicate the appearance of the entire facility following closure including surface water drainage features and the location of gas vents. The details necessary to prepare the facility for final closure and long term care shall be included on this plan sheet.

(9) LONG-TERM CARE. A long-term care plan sheet shall be included showing the topography of the facility following closure. This plan shall list those items anticipated to be performed during the period of long-term care including the proposed schedule for monitoring and facility maintenance. This information may be included on the final topography plan sheet if clarity is not compromised.

(10) CROSS-SECTIONS. A series of cross-sections shall be included to illustrate all important construction features. These cross-sections shall be drawn perpendicular and parallel to the facility baseline through each major phase of development at a maximum distance of 500 feet between cross-sections. For clarity, a number or symbol shall be used to label major soil units instead of extensive shading. The location of the cross-sections shall be illustrated by a reduced scale plan view on each cross-section. Each combined engineering and geologic cross-section shall show:

(a) Existing grades.

(b) Sub-base, base and final grades.

(c) Soil borings and monitoring wells which the section passes through or is adjacent to.

(d) Soil and bedrock types.

(e) Stabilized water table contours.

(f) Leachate collection and monitoring systems.

(g) Gas venting and monitoring systems.

(h) Limits of refuse filling.

(i) Drainage control structures.

(j) Access roads and ramps on the perimeter of the disposal area and within the active fill area.

(k) The filling sequence or phasing interfaces, and other facility features.

(11) DETAILS. Drawings showing details and typical sections shall be included for surface water drainage control structures; access roads; fencing; final cover and base liner systems; leachate and gas control systems such as pipe bedding, manholes, transfer lines, force mains and storage tanks; leachate transfer lines which extend through the liner; groundwater and unsaturated zone monitoring devices; and buildings and signs. This plan sheet shall include all other construction details such as leachate and refuse containment berms between subsequent phases of development.

NR 514.06 OPERATIONS MANUAL AND DESIGN REPORT. The plan of operation shall contain an operations manual and design report which, at a minimum, consists of the following information:

(1) TABLE OF CONTENTS. The report shall include a table of contents which outlines by section title and page number the discussion required in this section.

(2) GENERAL INFORMATION. The report shall identify the facility title; engineering consultants; facility owner, licensee and operator; the location of the facility by quarter-quarter section, township, range, town and county; the proposed area of waste fill; the facility life and disposal capacity; waste contributors including all municipalities and major commercial and industrial customers; waste types and quantities to be disposed; any exemptions requested from the department; and a list of the conditions of facility development as stated in the feasibility determination and the measures incorporated in the plan of operation to address those conditions.

(3) SPECIFICATIONS. The report shall include specifications for construction, operation and closure of the facility. These specifications shall include detailed instructions to the facility operator and any contractors for all aspects of construction and operation. References to specifications on the plan sheets shall be described. This may include such information as tank manufacturer installation instructions and pump performance criteria.

(4) INITIAL FACILITY PREPARATIONS. The report shall include a discussion of initial preparations and facility construction methods relating to clearing and grubbing, topsoil stripping and other excavations; soil storage and visual screening development; drainage control features; base liner and granular drainage layers; leachate collection and gas venting systems; access roads and entrance area screening and fencing; environmental monitoring device installation and other special design features. This discussion shall propose a schedule of field measurements, photographs to be taken, and sampling and testing procedures to be utilized to verify that the infield conditions encountered were the same as those defined in the feasibility report.

(5) SOIL TESTING. The report shall include a proposed testing schedule to document the placement of all general soil fill and backfill, base liner, final cover layers and all venting or drainage layers used in facility development or closure. Construction and documentation shall be in accordance with the requirements of ch. NR 516.

(6) MONITORING. The report shall include a proposed groundwater, surface water, gas, unsaturated zone and leachate monitoring program developed in accordance with ch. NR 508 and the specific requirements of the feasibility approval.

(7) OPERATIONS. The report shall describe the daily operations including a discussion of the timetable for the phases of facility development; waste types accepted or excluded; typical waste handling techniques and methods for handling unusual waste types; hours of operation; traffic routing; drainage and erosion control; windy, wet and cold weather disposal operations; fire protection equipment; anticipated staffing requirements; methods for vector, dust and odor control; daily cleanup; direction of filling; salvaging; record keeping; and parking for visitors, users and employees. A listing of the backup equipment available for facility operation with names and telephone numbers where additional equipment may be obtained shall be included in this discussion. The proposed operations shall be in accordance with ch. NR 506 unless an exemption is granted by the department in writing.

(8) PHASED DEVELOPMENT. The report shall describe the relationship between facility operations and the development of subsequent phases. This discussion shall define the critical stage of refuse disposal for each phase as it relates to the start of construction of subsequent phases. The purpose of this planning is to ensure that the scheduling of future construction takes into account the short construction season and the capacity remaining in existing phases such that an orderly transition is maintained. In addition,

the phasing of facility monitoring, abandonment of fill areas, and the installation and maintenance of gas and leachate control structures shall be discussed.

(9) CLOSURE. The report shall include a discussion of the anticipated sequence of the required events for facility closure and a discussion of those actions necessary to prepare the facility for long-term care and final use.

(10) LONG-TERM CARE. The report shall include a proposed long-term care schedule describing the procedures to be utilized for the inspection and maintenance of cover vegetation, runoff control structures, refuse or ground surface settlement or siltation, erosion damage, gas and leachate control features, gas, leachate and groundwater monitoring, and other long-term care needs. A final use plan for the facility shall be outlined and discussed.

(11) WRITTEN AGREEMENTS. The appendix of the report shall include the following written agreements:

(a) A draft leachate treatment agreement.

(b) A signed clay procurement agreement or option for acquisition of the borrow source property for the volumes necessary to construct and close the first major phase of the facility.

(c) Any miscellaneous agreements such as easements.

(12) DESIGN CALCULATIONS. The report shall include and explain all design calculations to facilitate department review and provide the necessary information on financial responsibility for facility closure and long-term care as required by ss. 144.44 and 144.441, Stats., including the following information:

(a) A discussion of the reasoning and logic behind the design of the major engineering features. Design features such as base grade configuration and relationships to subsurface conditions, anticipated waste types and characteristics, phases of development, traffic routing, liner design,

facility monitoring, final capping and other similar design features shall be included in this discussion. Any features related to facility closure and long-term care shall also be discussed.

(b) A discussion of all calculations, such as refuse to cover balance computations, base liner and final covering soils materials needs related to available borrow soil volumes, stockpile sizing estimates, estimates of runoff, infiltration and leachate collection and leakage volumes shall be included. All calculations shall be summarized with the detailed equations presented in the appendix of the report. References to the appropriate plan sheets, from which variables are obtained for these calculations shall be included in these summaries.

(13) FINANCIAL RESPONSIBILITY ANALYSIS. A detailed analysis in accordance with ch. NR 520 shall be made of the financial responsibility for long-term care from the time of facility closure to termination of the owner's responsibility. This shall include an itemized cost estimate for phased and final facility closure and long-term care. All assumptions used in developing the cost estimates shall be justified.

(14) CONTINGENCY PLAN. The report shall contain a comprehensive plan of action to be taken in the event that gas migration is detected. This plan shall include but not be limited to, analysis of the significance of the data, more frequent sampling, installation of additional gas probes, additional monitoring parameters and a discussion of potential alternatives to protect public health and welfare and to correct any gas migration problems.

(15) APPENDIX. An appendix shall be included which lists the references used and includes any additional data not previously presented, supplemental design calculations, material specifications, operating agreements such as draft leachate treatment agreements or signed soil borrow agreements, documents related to long-term care funding and other appropriate information.

NR 514.07 CLOSURE PLANS. (1) APPLICABILITY. Closure plans may be required by the department for solid waste disposal facilities which do not have an approved plan of operation under s. 144.44(3), Stats. Closure plans shall present the complete plans and engineering analysis necessary for evaluation of the design, operation, monitoring, closing and post closure care of the facility. These closure plans shall address all the requirements of s. NR 506.08. The department may require that the plans address any or all of the information contained in chs. NR 504, 508, 512, 514 and 516.

(2) ENGINEERING PLANS. The engineering plans necessary for department review of facility closure shall be prepared on standard 24 inch by 36 inch plan sheets in accordance with ss. NR 500.05, 504.07 and the following requirements unless an exemption is granted by the department in writing:

(a) A title sheet shall be included indicating the facility title, who prepared the plans, the date the plans were prepared, the facility owner and operator for whom the plans were prepared, a table of contents, a map showing the location of the facility within the county or multicounty area, the location of the county or multicounty area within the state, the area currently served by the facility and the previous service area if different from the area currently served.

(b) An existing conditions plan shall be included indicating the conditions at the facility at the time of plan preparation. This plan shall include a detailed topographic survey of the facility and the area within at least 500 feet from the limits of fill. This area may need to be extended to show significant surface water drainage features. At a minimum, the scale of this plan shall be 1 inch = 200 feet with a maximum 2 foot topographic contour interval. All elevations shall be related to USGS datum. The plan shall identify and define the following: the existing and final limits of waste placement, the facility and adjacent property boundaries, the facility survey

grid and its relationship to the state plane coordinate system, north arrow, surveying monument locations, surface water drainage channels, residential buildings and other structures, soil boring and well locations, public and private water supply wells, and other man-made topographic and drainage features.

(c) A water table map shall be included to show horizontal gradients at the facility. This map shall be based on data from monitoring wells which have been installed to meet the requirements of s. NR 508.20. All water elevations shall be measured on the same day. This map shall show all wells and the measured water level elevations at each well. The contour interval shall be sufficiently small to adequately show flow directions but no greater than 5 feet. The existing conditions plan sheet shall be used as a base map.

(d) A final topography plan sheet shall be submitted indicating the appearance of the entire facility following closure. The final waste limits and surface water drainage patterns shall be included on this plan sheet. This plan shall include the details and list of construction items and quantities necessary to prepare the facility for post closure care.

(e) A series of cross sections drawn perpendicular and parallel to the facility baseline at a maximum distance of 500 feet between cross sections to illustrate all important topographic and geologic features shall be submitted. The location of the cross sections shall be illustrated by a reduced scale plan view on each cross section plan sheet. Each cross section shall show existing contours, estimated base grades of waste disposal, the proposed final grades, soil borings and monitoring wells which the section passes through or is adjacent to, soil and bedrock types and stabilized water table contours. For clarity, a number or symbol shall be used to label major soil units instead of extensive shading.

(f) A facility monitoring plan sheet shall be submitted to show the location of all environmental monitoring devices. At a minimum, this plan shall include proposed locations for the monitoring of gas production, venting and migration; surface water and groundwater quality and levels; and leachate quality and levels. This plan sheet shall also indicate the location of the design management zone and include a table indicating the parameters to be monitored, and the frequency of monitoring. The plan shall show the topography of the facility following closure and define the anticipated schedule for facility maintenance.

(g) Drawings of details and typical sections shall be submitted indicating surface water drainage control structures, gas venting systems, access roads, fencing and final cover systems and other details necessary to demonstrate the ability to complete facility closure and maintain the facility as designed after closure.

(3) DESIGN REPORT. A closure design report shall be submitted which, at a minimum, includes the following information:

(a) A table of contents which shows the organization of the discussion required in this section.

(b) The facility title; engineering consultants; facility owner, licensee and operator; the location of the facility by quarter-quarter section, township, range, town and county; the amount and area of waste filling; the municipalities and industries served; the waste types and quantities disposed; surveying controls and adjacent land use.

(c) The existing surface topography and groundwater conditions at the facility shall be described in this report. This description shall include at a minimum a discussion of current operational practices and grades, the underlying soil types, the estimated base of waste disposal, the relation of the waste disposal limits to the local water table elevation, the volume and

type of wastes in place, the volume and type of wastes proposed for disposal through facility closure and the potential for the waste to biologically decompose and generate gas. The discussion shall also evaluate and discuss all existing monitoring data. Particular attention shall be given to any attainment or exceedances of the groundwater standards contained in ch. NR 140 and the potential for gas migration.

(d) If any existing or anticipated non-compliance with the requirements of s. NR 504.04 are identified in the discussion of s. NR 514.07(3)(c), the closure report shall present a proposal to prevent the non-compliance or return the facility to compliance.

(e) The proposed details of final facility closure regarding final cover system design as it affects surface water drainage, leachate and gas production and control shall be described in the closure design report. This discussion shall include a testing program to document all closure construction in accordance with ch. NR 516.

(f) A description of the logic of the monitoring plan proposal as required by s. NR 514.07(2)(f).

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Chapter NR 516

Landfill Construction Documentation

NR 516.01 PURPOSE. The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to outline the requirements regarding testing and construction documentation for solid waste landfills and surface impoundments. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 516.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste disposal facilities as defined in s. 144.43(5), Stats., except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181 and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or

permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 516.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 516.04 GENERAL REQUIREMENTS. (1) CONSTRUCTION DOCUMENTATION. The construction associated with the establishment and closure of all landfills and surface impoundments shall be documented by a professional engineer registered in the state of Wisconsin. A registered professional engineer or qualified technician under the direct supervision of a registered professional engineer shall be present at all times during critical construction periods such as liner and final cover placement, leachate collection system construction, leachate storage and transfer device construction, granular drainage material placement, gas collection and control device installation and clay borrow source excavation. The department may require that a registered professional engineer be present during major construction activities. The engineer shall render an opinion in writing, based on testing results and actual inspections, as to whether the facility has been constructed or closed in substantial conformance with the plan of operation or other approved plans.

(2) REPORT PREPARATION. A report documenting all aspects of construction shall be prepared for the initial construction of the facility; the construction of all subsequent phases or portions thereof; the construction of any surface water, groundwater, leachate or gas control structures; the implementation of remedial actions; and the closure of each major disposal area. Approval of the report which documents the construction of the landfill base shall be obtained from the department prior to initiating disposal operations in the newly established area. The department shall review and

respond to each construction documentation report within 65 business days after receiving a complete submittal and the appropriate review fee specified in ch. NR 520.

NR 516.05 SOIL TESTING REQUIREMENTS. Soil testing shall be performed during the construction and closure of any landfill areas. At a minimum, this testing shall include:

(1) LINER AND CAP CONSTRUCTION. For all recompacted clay soil and for all clay liner and cap construction the following tests shall be performed:

(a) Dry density and as-placed moisture content shall be determined on an approximate 100-foot grid pattern for each one-foot thickness of clay placed. The grid pattern shall be offset on each subsequent layer of tests. At least 5 sets of tests shall be performed for each acre for every one-foot thickness of clay placed. A minimum of 2 density and moisture content tests for each one-foot thickness of clay placed shall be performed to fully define the degree of soil compaction obtained in confined areas where equipment movement is hindered or hand compaction is necessary.

(b) One moisture-density curve shall be developed for every 5,000 cubic yards or less of clay placed and for each major soil type utilized. At least 5 points shall be established on each curve. A representative sample for every 5,000 cubic yards or less of clay placed shall be analyzed for grain size distribution through the .002 millimeter particle size and for Atterberg limits. If apparent changes in soil quality are observed during clay placement, a one-point Proctor analysis shall be utilized to verify the applicability of previously analyzed moisture-density curves.

(c) A minimum of one undisturbed sample for each acre or less for every one-foot thickness of clay placement shall be retrieved and analyzed for

Atterberg limits, grain size distribution through the .002 millimeter particle size, moisture content and dry density. Laboratory hydraulic conductivity tests using the falling head method shall be performed on every third undisturbed sample. The department may require that a portion of the hydraulic conductivity testing for liner documentation be performed using leachate.

(2) DRAINAGE BLANKET. During placement of the granular drainage blanket material the following testing shall be performed:

(a) One grain size distribution to the #200 sieve for each 1,000 cubic yards of material placed. For lesser volumes, a minimum of 4 samples shall be tested. The department may allow a reduction in the testing frequency if a uniform gravel material is used.

(b) One remolded laboratory hydraulic conductivity test for each 2,500 cubic yards of material placed. The samples shall be tested at the anticipated field density. The moisture content and density of each sample shall be recorded. The department may require that a portion of the hydraulic conductivity tests be performed using leachate. For lesser volumes, a minimum of 2 samples shall be tested. The department may allow a reduction in testing frequency if a uniform gravel material is used.

(c) The department may require that chemical durability testing of the material when exposed to leachate be performed.

(3) BEDDING MATERIAL. During placement of all leachate or groundwater collection pipe bedding material, the following tests shall be performed:

(a) One grain size distribution to the #200 sieve for each 1000 linear feet of trench. For trench lengths less than 3000 feet, a minimum of 3 grain size analyses shall be conducted.

(b) The department may require that chemical durability testing of the material when exposed to leachate and laboratory hydraulic conductivity testing be performed.

(4) FINAL COVER. If placement of a gas venting layer is required under s. NR 504.07(3) the following tests shall be performed:

(a) One grain size distribution to the #200 sieve for each 1000 cubic yards of material placed. For lessor volumes, a minimum of 4 samples shall be tested.

(b) One remolded laboratory hydraulic conductivity test for each 2,500 cubic yards of material placed. The samples shall be tested at the anticipated field density. The moisture content and density of each sample shall be recorded. For lesser volumes, a minimum of 2 samples shall be tested.

(5) TOPSOIL. At least 2 representative topsoil samples for each acre shall be analyzed for soil pH, nitrogen, phosphorus and potassium and classified under the USDA soil classification system. For areas less than 2 acres, a minimum of 3 samples shall be tested.

NR 516.06 CONSTRUCTION OF LANDFILL AREAS. Reports documenting the construction of all new landfill areas shall contain the following minimum information:

(1) ENGINEERING PLANS. A set of 24 inch by 36 inch engineering plan sheets, or alternative size if approved by the department in writing, shall be prepared in accordance with s. NR 500.05 and contain:

(a) A plan view documenting the constructed grades for the sub-base, sidewalls and leachate collection trench undercuts prior to liner placement. Documentation of the grades shall consist of spot elevations taken on a maximum 50-foot grid pattern, with leachate collection trench undercut

elevations at least every 25 linear feet. The approved sub-base grades shall also be shown for the same area in a clear and legible manner.

(b) A plan view showing the locations of the various soil testing performed. Each test location shall be clearly labeled. Each plan view shall also clearly show any areas where removal and recompaction of clay was necessary in order to attain the minimum required specifications. Multiple plan views may be shown on a single plan sheet if legibility is not compromised.

(c) A plan sheet documenting the constructed elevations for the liner. This plan sheet shall contain spot elevations of the base, sidewalls and leachate collection trenches. Documentation of grades shall include spot elevations taken on a maximum 50-foot grid pattern, with leachate collection trench elevations taken every 25 linear feet. The approved base grades shall be shown for the same area in a clear and legible manner. A plan sheet shall also be included which shows the granular blanket depth throughout the prepared area.

(d) A plan view drawing showing the constructed base grades as well as the locations and elevations of all leachate collection and transfer piping, manholes, lift stations, culverts, berms and the location of all unsaturated zone, groundwater, gas, leachate monitoring and cleanout devices, surface drainage features and other pertinent structures. This information may be shown on the plan sheet required in par. (c) if legibility is not compromised.

(e) Cross-sections through the constructed area parallel and perpendicular to the base line of the facility at 200-foot intervals. A minimum of 4 cross-sections shall be prepared, 2 of which shall be in each direction. Each of these cross-sections shall show actual and design sub-base and base grade contours, the top of the granular drainage blanket, leachate and groundwater

pipe elevations and the actual base and sub-base contours of adjacent filled areas.

(f) Detailed drawings, both plan view and cross-sections, of all manholes, lift stations, storage tanks, all locations where leachate transfer piping exits the lined area and other pertinent construction details. At a minimum, these drawings shall show base and top elevations, the invert elevations of all associated piping, pump details, float level elevations and the extent of recompacted clay placed around and below the structures.

(g) Additional plan sheets, patterned after those specified in pars. (a) to (f), shall be included for those facilities designed with multiple liners, groundwater gradient control systems or other nonstandard design features.

(2) REPORT PREPARATION. A comprehensive report containing a detailed narrative describing the construction of the area in chronological fashion. Particular emphasis shall be given to any deviations from the approved plan of operation and to all locations where leachate transfer piping exits the lined waste fill area. This report shall include the following information at a minimum:

(a) An analysis and discussion of all soil testing work performed. All density and moisture content testing results shall clearly indicate which Proctor curve is applicable to the soil being compacted. Any changes in the referenced Proctor curve shall be identified as to when they occurred and why the change was made. All raw data from the soil testing performed shall be included in an appendix to the construction documentation report.

(b) Documentation of the initial leachate collection pipe cleanout, and pressure testing of force mains and leachate storage tanks. All provisions used to seal pipe connections, manhole sections and leachate storage tanks including protective coatings and corrosion protection shall be described.

The manufacturer's recommendations for the installation of all equipment shall be included. Any deviations from the recommendations shall be discussed.

(c) A series of properly labeled 35 millimeter color prints documenting all major aspects of facility construction. This shall include close-up photographs of the construction process including liner placement, leachate pipe placement including all places where transfer piping exits the lined waste fill area, and the installation of all manholes, lift stations and storage tanks. Panoramic views shall be included showing the prepared sub-base and the completed liner before and after granular blanket placement.

(d) A cover letter under the seal of a registered professional engineer rendering an opinion as to whether the facility has been constructed in substantial conformance with the approved plans. Any deviations from the approved plan shall be noted and explained.

NR 516.07 CLOSURE OF LANDFILL AREAS. All construction documentation reports for the closure of landfill areas shall contain the following minimum information:

(1) ENGINEERING PLANS. A set of 24 inch by 36 inch engineering plan sheets, unless an alternative size is approved by the department in writing, prepared in accordance with s. NR 500.05 and including:

(a) A plan sheet documenting the final refuse grades, including daily or intermediate cover. Documentation of grades shall include spot elevations taken on a maximum 100-foot grid after grading has been performed to establish uniform slopes. Approved final refuse grades shall also be shown for the same area in a clear and legible manner. For areas less than 4 acres, a 50-foot grid shall be used.

(b) A plan view drawing for each one-foot thickness of clay placed showing the locations of the various soil testing performed at each test location.

Multiple plan views may be presented on a single engineering plan sheet if legibility is not compromised. The plan view of the uppermost lift of clay shall also document the final clay grades on a maximum 100-foot grid. For areas less than 4 acres, a 50-foot grid shall be used.

(c) A plan sheet documenting the constructed final cap grades prior to topsoil placement on a maximum 100-foot grid. Approved final cap grades shall be shown for the same area in a clear and legible manner. For areas less than 4 acres, a 50-foot grid shall be used.

(d) A plan sheet documenting the final landfill surface following topsoil placement. Documentation of grades shall include spot elevations taken on a maximum 100-foot grid. The approved final grades shall also be shown in a clear and legible manner. This plan sheet shall also show the locations of all manholes, lift stations, risers, head wells, gas venting systems, surface water drainage control structures and other appurtenances. For areas less than 4 acres, a 50-foot grid shall be used.

(e) Cross-sections through the closed area which are constructed parallel and perpendicular to the base line of the facility at maximum 200-foot intervals. A minimum of 4 cross sections shall be submitted, 2 of which shall be in each direction. Each of these cross-sections shall show all surficial and subsurface features encountered including gas vents, leachate lines, and other landfill structures and shall be tied into the grades of adjacent previously filled areas. At a minimum, each cross section shall show sub-base grades, base grades, final refuse grades, final cap system configuration and grades, and final topsoil grades.

(2) REPORT PREPARATION. A comprehensive report containing a detailed narrative chronologically describing the closure of the area. Particular

emphasis shall be placed on any deviations from the approved plans. This report shall also include the following information at a minimum:

(a) An analysis and discussion of all soil testing work performed. All raw data from the soil testing performed shall be included in an appendix to the closure documentation report.

(b) The results of all required topsoil testing along with the rates and types of fertilizer and seed applied. Liming requirements shall also be included along with the actual rate of application.

(c) A series of properly labeled 35 millimeter color prints which document all major aspects of facility closure. This shall include panoramic views of the closed area as well as close-up photos of the construction process and completed engineering structures such as gas vents, cleanout ports, manholes, leachate storage tank access, leachate loadout areas and other pertinent structures.

(e) A cover letter under the seal of a registered professional engineer rendering an opinion as to whether the area has been closed in substantial conformance with the approved plans. Any deviations from the approved plan shall be noted and explained.

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Chapter NR 518

Land Spreading of Solid Waste

NR 518.01 PURPOSE. The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to outline the requirements regarding land spreading of solid waste. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 518.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste land spreading facilities as defined in s. NR 500.03, except hazardous waste facilities as defined in s. 144.61(5m), Stats., and regulated under ch. NR 181, and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

NR 518.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 518.04 EXEMPTIONS. No person may operate or maintain a solid waste land spreading facility unless the person has obtained written approval from the department under s. NR 518.06, except as otherwise provided in this section.

(1) GENERAL. The following land spreading facilities are exempt from the requirements of this chapter provided the solid waste or solid waste derived product is applied as a soil conditioner or fertilizer in accordance with accepted agricultural practices and the facility is operated and maintained in a safe, nuisance-free manner.

(a) Facilities used for the land spreading of nonhazardous solid waste from a single family or household, a member of which is the owner, occupant or lessee of the property used for solid waste disposal.

(b) Farms on which only nonhazardous agricultural solid wastes resulting from the operation of a farm, including farm animal manure, are disposed.

(c) Facilities receiving only sludge from a publicly-owned treatment work or a privately-owned domestic sewage treatment work having a permit under ch. 147, Stats., providing the sludge disposal is accomplished in accordance with the requirements of the permit.

(d) Facilities used exclusively for the disposal of waste regulated under s. 146.20, Stats.

(e) Facilities used for the disposal of treated liquid municipal or industrial wastewater approved under s. 144.04, Stats., or permitted under ch. 147, Stats.

(f) Facilities used for the land spreading of whey.

(g) Facilities used for the land spreading of vegetable waste from canned, frozen or preserved fruit and vegetable processing operations.

(h) Facilities used for the land spreading of composted leaves, grass, brush and other similar vegetable matter.

(2) RESEARCH PROJECTS. Facilities used solely for research purposes under the direction of a registered professional engineer in the state of Wisconsin or a scientist employed by a university located within this state are exempt from the plan submittal requirements of this chapter if the applicant provides to the department information sufficient to show that the project meets the following requirements:

(a) The net plot area, excluding plot borders and buffer strips, may not exceed 4 acres,

(b) The available nitrogen and heavy metal additions averaged over the total plot area may not exceed the rates specified by the department in ch. NR 204 for municipal sewage sludges or those identified in the literature as being toxic to specific plants or plant groups,

(c) The facility shall be developed, operated, monitored and maintained in a safe, nuisance-free manner, and

(d) Copies of the research proposal shall be provided to the department in advance of initiating the research. Written approval from the department is not required prior to initiation of the project. However, the research proposal should discuss the project objectives, methods for demonstrating beneficial characteristics and methods for evaluating project performance. If

the department finds, after review of this material, that the proposal would not provide the information necessary to make a determination, a response will be issued which contains recommendations on how the study should be amended. All reports and research publications pertaining to the facility shall be provided to the department. The final report shall, at a minimum, summarize the project performance, any limitations and areas of further study.

(3) LIME SLUDGE. Facilities used for the land spreading of lime sludges from papermills or water supply treatment facilities are exempt from the requirements of this chapter provided that the proposal is reviewed and approved by the department and the material meets the following requirements. This section does not apply to lime sludges from papermills which were being landspread prior to January 1, 1987.

(a) Analyzed in accordance with s. NR 518.06(1),

(b) Determined by the department to have value as a soil conditioner or fertilizer, and

(c) Applied in accordance with accepted agricultural practices and any department issued approval.

(4) INDUSTRIAL SLUDGES. Facilities used exclusively for the land spreading of nonhazardous industrial sludges are exempt from the requirements of this chapter provided that the material is:

(a) Analyzed in accordance with s. NR 518.06(1),

(b) Determined by the department to have value as a soil conditioner or fertilizer. The department may on a case-by-case basis require greenhouse or experimental field studies and may consider federal regulations, technical guidelines and other related research in determining whether a sludge has value as a soil conditioner or fertilizer,

(c) Generated at an industrial wastewater treatment facility and the land spreading facility has been approved or permitted under ch. NR 214, and

(d) Not repeatedly applied such that excessive accumulation of hazardous substances occur in soil or vegetation, or cause a detrimental effect on surface water quality or cause a detrimental effect on groundwater quality or cause or exacerbate an attainment or exceedance of any preventive action limit or enforcement standard at a point of standards application as defined in ch. NR 140.

(5) WOOD AND COAL ASH. Facilities used for the landspreading of wood or coal ash are exempt from the requirements of this chapter provided that the proposal is reviewed and approved by the department and the material is:

(a) Analyzed in accordance with s. NR 518.06(1),

(b) Determined by the department to have value as a soil conditioner or fertilizer,

(c) Applied in accordance with accepted agricultural practices and any department issued approval. As part of this approval, the department may require additional testing, monitoring, reporting or other information as appropriate, and

(d) Not repeatedly applied such that excessive accumulation of hazardous substances occur in soil or vegetation, or cause a detrimental effect on surface water quality or cause a detrimental effect on groundwater quality or cause or exacerbate an attainment or exceedance of any preventive action limit or enforcement standard at a point of standards application as defined in ch. NR 140.

(6) OTHER WASTES. Facilities for the land spreading of other wastes such as fish or the remains of butchered animals may be exempted from the requirements of this chapter provided that the department approves the proposal in writing and the following requirements are met:

(a) The material is analyzed in accordance with s. NR 518.06(1),

(b) The material is determined by the department to have value as a soil conditioner or fertilizer,

(c) A brief discussion is included which identifies the facility location, proposed application rates, the proposed method for incorporating the material and the length of time each facility will be used, and

(d) The material is applied in accordance with accepted agricultural practices and any department issued approval.

NR 518.05 LOCATION AND PERFORMANCE STANDARDS. (1) GENERAL. An applicant submitting a land spreading plan shall demonstrate to the department that the proposed facility will comply with all of the location and performance standards of this section unless an exemption is granted.

(2) EXEMPTIONS. Exemptions from compliance with sub. (3)(a) to (d) and sub. (4)(a), (b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant such an exemption. Exemptions from compliance with sub. (4)(c) will not be granted. Exemptions from compliance with sub. (4)(d) may be granted only according to the procedures set forth in ch. NR 140.

(3) LOCATION STANDARDS. No person may establish, construct, operate, maintain or permit the use of property as a land spreading facility within the following areas:

(a) Within 100 feet of any navigable body of water.

(b) Within 10,000 feet of any airport runway used or planned to be used by turbojet aircraft or within 5,000 feet of any airport runway used only by piston type aircraft or within such other areas where a substantial potential bird hazard to aircraft would be created. This criteria is only applicable where a facility is used for disposing of putrescible waste.

(c) Within 1,000 feet of public water supply wells or 200 feet of private water supply wells.

(d) Within 500 feet of any residence, unless written consent is obtained from the resident. This distance may also be reduced for the residence of the property owner on whose land solid waste is spread.

(4) PERFORMANCE STANDARDS. No person may establish, construct, operate, maintain or permit the use of property as a land spreading facility within an area where there is a reasonable probability that the facility will cause:

(a) A significant adverse impact on wetlands

(b) A significant adverse impact on critical habitat areas.

(c) A detrimental effect on any surface water.

(d) A detrimental effect on groundwater quality or will cause or exacerbate an exceedance of any preventive action limit or enforcement standard at a point of standards application as defined in ch. NR 140. For the purposes of design, the point of standards application is defined by s. NR 140.22(1).

(e) The migration and concentration of explosive gases in any structures or in the soils or air at or beyond the facility property boundary in excess of 25% of the lower explosive limit for such gases at any time.

(f) The emission of any hazardous air contaminant exceeding the limitations for those substances contained in s. NR 445.03.

NR 518.06 SOLID WASTE LAND SPREADING PLAN. No person may establish, construct, operate or maintain a solid waste land spreading facility or expand an existing facility without first obtaining written approval from the department of a solid waste land spreading plan as provided in this section. Specific requirements of this section may be waived by the department based on a review of the material characteristics.

(1) WASTE CHARACTERIZATION. The land spreading plan shall include a detailed description and analysis of each waste type proposed to be spread at a land spreading facility. Unless otherwise approved by the department in writing, data on waste types shall include, at a minimum, the following information:

(a) The sources, processes or treatment systems from which the wastes originate including a list of all chemicals added during these processes. Material safety data sheets or other data sources providing information specific to these chemicals shall be included.

(b) Waste pretreatment or waste processing techniques utilized prior to land spreading.

(c) The volumes of solid waste to be spread, stored or disposed.

(d) Physical characteristics of the waste material including the solids fraction and the organic fraction.

(e) A priority pollutant scan of the waste material for all priority pollutants as identified by the U.S. environmental protection agency and any chemicals identified in par. (a) which have the potential to adversely affect the environment.

(f) pH of the waste material.

(g) Nutrient content including Kjeldahl-nitrogen, ammonia-nitrogen, nitrate and nitrite-nitrogen, phosphorous and potassium.

(h) Metals content including aluminum, barium, boron, calcium, copper, iron, manganese, magnesium, sodium, strontium and zinc.

(i) Salt content including chlorides, fluorides and sulfates.

(j) Biological populations including total coliform, fecal coliform and any virus present in the waste material.

(k) Leach tests shall be performed on the waste material, the soil types most representative of the proposed facilities to be used and on a mixture of waste material and soil for those parameters identified under the testing program described in s. NR 518.06(1)(e) to (i). This analysis shall use detection limits which are at or below the preventive action limits established in ch. NR 140. If no preventive action limit exists, the detection limits shall be the lowest level achievable using approved methods. The leach tests performed on the mixture of waste material and soil shall represent the anticipated field conditions.

(1) Bulk chemical analyses performed on the waste material and soil shall be accompanied with a list of detection limits, the limits of accuracy and a statement whether these limits were selected for environmental or health-related impacts.

(2) WASTE USE DETERMINATION. An assessment and analysis of data including conclusions drawn concerning the potential benefits and adverse effects of the land spreading program shall be included. This assessment shall include information showing that the waste has value as a soil conditioner or fertilizer or will not cause a detrimental effect to public health, welfare or the environment. At a minimum, the following information shall be submitted:

(a) Documentation of previous successful uses of the solid waste, or other solid wastes with similar composition, properties and characteristics.

(b) Documentation of compliance with existing Wisconsin department of agricultural, trade and consumer protection regulations pertaining to the licensing and marketing of fertilizers or soil conditioners.

(c) Successful completion of an approved experimental solid waste land spreading program.

(d) Other justification for use of the solid waste.

(3) FACILITY CHARACTERISTICS. Information on the characteristics of the facilities to be used for the land spreading program shall include, at a minimum, the following:

(a) The facility locations, including copies of soils maps, plat maps and USGS topographic maps.

(b) A description of the contracts or agreements covering use of the land including the owner's name, address and telephone number.

(c) A description of land uses at the facility and current land uses on surrounding properties.

(d) A description of the regional geology and hydrogeology near the facility including the depth to groundwater, groundwater flow direction and soil conditions.

(e) An identification of all homes and private wells located within 1/2 mile of the facility.

(f) A description of the crops to be grown or dominant vegetation on the facility.

(g) Soil test results from samples taken at the facility. Parameters to be analyzed shall include soil pH, organic matter, available phosphorus, available potassium, and any other parameters deemed necessary for analysis and design of the proposed operation.

(h) A description of other soil additives to be used.

(i) Identification of the floodplain and its relationship to the proposed facility.

(4) FACILITY DESIGN, DEVELOPMENT AND OPERATION. Information to be submitted regarding the design, development and operating plans for the facility shall include the following:

(a) Provisions for interim waste storage and disposal when normal land spreading facilities are unavailable or inaccessible including the type of storage or disposal facility, the location and capacity of the facility, construction details, any property interest or contractual agreement allowing use of the facility, future anticipated use of the facility and an evaluation of the environmental effects resulting from use of the facility.

(b) Proposed mode of waste transportation including the transporter of the waste, method of transportation, type of vehicles used for waste transportation, spill contingency plans and notification procedures.

(c) Proposed waste application rates, techniques, disposal frequencies and locations.

(d) Proposed maximum rates of application, both annual and cumulative, for nitrogen, arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc and other heavy metals in accordance with ch. NR 204, technical bulletin 88 and any other appropriate technical literature.

Note: Copies of technical bulletin 88, dealing with the landspreading of municipal wastewater sludge, may be obtained from the Department of Natural Resources, Bureau of Solid Waste Management, 101 South Webster Street, Natural Resources Building, Madison, WI 53707.

(e) Proposed crop, soil, groundwater and surface water monitoring.

(f) Proposed record keeping and reporting procedures to be used for monitoring waste volumes applied, application rates, disposal locations and cumulative waste loading applied to each facility.

NR 518.07 LAND SPREADING OPERATION AND MONITORING. (1) OPERATING REQUIREMENTS. No person may operate or maintain a solid waste land spreading facility except in accordance with any solid waste land spreading plan approval issued by the department and the following minimum requirements:

(a) Only approved waste types shall be disposed at the facility. Plans to accept additional waste types require separate written approval from the department.

(b) Depending on the type of operation to be conducted, solid waste materials shall be plowed, disced or otherwise incorporated into the surface soil layer at appropriate intervals as specified in the solid waste land spreading plan to minimize surface water runoff, surface leaching and to control objectionable odors. A vegetative buffer strip shall be maintained between any navigable water and the application area.

(c) No solid waste may be deposited in areas containing ponded or standing water.

(d) Maximum one time and cumulative application rates for cadmium and other heavy metals shall be in accordance with ch. NR 204, technical bulletin 88 and any other appropriate technical literature.

(e) Waste materials with significant pathogen bacteria content shall be properly stabilized prior to land spreading.

(f) Food chain crops grown on solid waste land spreading facilities which have received waste applications containing pesticides or persistent organic materials may not be marketed or used for human or animal consumption unless the crops meet all applicable contaminant levels as established by the United States food and drug administration or the state of Wisconsin.

(2) MONITORING. The owner or operator of a solid waste land spreading facility with an approved solid waste land spreading plan shall submit monitoring reports to the department on a frequency specified in the land spreading plan approval. The report shall include the following information for each facility utilized during the preceding reporting period:

(a) The amount of solid waste applied in tons per acre on a dry weight basis.

(b) The amount of nitrogen applied in pounds per acre on a dry weight basis.

(c) The estimated mineralization rate of the applied nitrogen.

(d) The amount of cadmium applied in pounds per acre on a dry weight basis.

(e) The total amount of each specific metal specified by the department applied in pounds per acre on a dry weight basis.

(f) The department may require monitoring as part of the land spreading plan approval including soil concentrations, surface water, groundwater, plant tissue or other parameters as appropriate. If borings or wells are required, they shall be installed in accordance with ch. NR 508.

(g) A description of any adverse environmental health, or social effects that occurred due to solid waste disposal.

(h) A description of any action not in conformance with the approved land spreading plan.

NR 518.08 CLOSURE OF LAND SPREADING FACILITIES. The owner or operator of a land spreading facility, or any person who permits the use of property for

such purpose, shall accomplish closure, maintenance and long-term care of the facility in accordance with any solid waste land spreading plan approval issued by the department and with the following minimum practices.

(1) NOTIFICATION. At least 120 days prior to the closing of a solid waste land spreading facility, the owner or operator shall notify the department, in writing, of the intent to close the facility. The department will review the notice of intent to close the facility and shall approve or disapprove in writing the proposed closure procedures. The department may require additional information, or may require additional closure, maintenance or long-term care procedures to be implemented to insure proper closure of the facility. This notice shall include the following information:

(a) The proposed final date by which all solid waste disposal or land spreading operations will be terminated.

(b) The current waste types, sources and volumes of solid wastes being land spread at the facility.

(c) The cumulative volumes of waste which were applied to the facility during active operations.

(d) The reasons for closing the facility.

(e) The proposed future land uses of those areas previously used for waste deposition.

(f) Special precautions to be utilized to limit access to the facility, and to insure that no further solid waste materials are deposited after the closure date.

(g) The proposed monitoring and long-term care procedures to be implemented following closure of the facility. These procedures shall be in accordance with the approved solid waste land spreading plan and any modifications to the plan.

(h) The alternate licensed or approved facilities to be utilized for waste disposal or land spreading purposes following closure of the facility.

(2) CLOSURE. No person may deposit any solid waste materials at a closed facility without prior written approval from the department. Within 90 days of the final closure date of a facility, all closure work shall be completely and finally performed in accordance with this section. Final closure of a land spreading facility shall include, but is not limited to:

(a) Discing, plowing or otherwise incorporating all deposited solid waste materials into the surface soil layers, or covering all land spreading areas with an adequate thickness of final earth cover material.

(b) Providing for the control of surface water runoff to minimize adverse effects on surface water and groundwater quality.

(c) Establishing a vegetative cover to promote evapotranspiration and to control soil erosion, and otherwise preparing the land surface for the intended future land use.

(d) Continuing to grow crops and conducting the associated monitoring work.

(e) Performing the required environmental monitoring work associated with the approved final closure and long-term care plans.

NR 518.09 LICENSING. Land spreading facilities which are approved under this chapter are exempt from the licensing requirements of s. 144.44, Stats.

NR 518.10 WASTE MANAGEMENT FUND. Land spreading facilities which are approved under this chapter are exempt from having to contribute to the waste management fund.

NR 518.11 PROOF OF FACILITY REGISTRY. The owner or operator shall submit proof that a notation of the existence of the facility has been recorded in the office of the register of deeds in each county in which a portion of the facility is located.

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Chapter NR 520

Solid Waste Management Fees and Financial Responsibility Requirements

NR 520.01 PURPOSE. The purpose of this chapter is to ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to establish solid waste license and review fees, environmental fees and financial responsibility requirements. This chapter is adopted under ss. 144.43 to 144.47, and 227.11, Stats.

NR 520.02 APPLICABILITY. (1) Except as otherwise provided, this chapter governs all solid waste facilities as defined by s. 144.43(5), Stats., except hazardous waste facilities as defined by s. 144.61(5m), Stats. and regulated under ch. NR 181 and metallic mining operations as defined in s. 144.81(5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the ultimate disposal of solid waste.

NR 520.03 DEFINITIONS. The terms used in this chapter are defined in s. NR 500.03.

NR 520.04 LICENSES AND FEES. (1) ISSUANCE OF AN OPERATING LICENSE. No person may operate or maintain a solid waste facility without an operating license from the department unless an exemption is granted under s. NR 500.08. The license period shall be a minimum of one year.

(a) Application for an initial license for a new solid waste facility may be submitted at any time during the license period. Initial licenses issued during the license period shall expire at the end of that license period. Fees for initial licenses are proratable. The license period is divided into 6-month periods. The applicant for initial licensing of a facility shall submit the appropriate fees as shown in Table 1 or Table 2, "Fee Schedule", whichever is applicable.

(b)The department will mail application forms to renewal applicants. Application for renewal of a solid waste disposal license shall be submitted to the department. Applicants failing to submit the relicensing application within the specified time shall pay a late processing fee equal to 50% of the renewal fee or $150.00, whichever is less, in addition to the relicensing fee.

(c) Application for an operating license shall be submitted on forms supplied by the department and shall be accompanied by the appropriate fees as shown in Table 1 or Table 2, "Fee Schedule", whichever is applicable.

(d) License fees for solid waste facilities are not refundable.

(2) TRANSFER OF AN OPERATING LICENSE. The department will issue a new operating license to a person acquiring rights of ownership, possession or operation of a licensed facility in accordance with s. 144.444, Stats. Feasibility approvals and plan of operation approvals are not transferable prior to the licensing of a facility.

(3) LICENSURE DURING THE CLOSURE AND LONG-TERM CARE PERIOD. The owner or operator and any successor in interest shall maintain a license during the closure and long-term care period indicated in s. 144.441, Stats. The license fees are specified in Table 2.

(4) PLAN REVIEW AND LICENSE FEES. For the purposes of plan review and license fees charged to land disposal facilities as provided in Table 2, the following shall apply:

(a) Plan review fees shall be charged on the basis of the design capacity of the facility, cell or module for which plans have been submitted. As an example, if a plan of operation report is submitted for a one million cubic yard facility, a review fee for a facility greater than 500,000 cubic yards applies. Construction documentation reports, however, may be submitted over time for several modules. Each construction documentation report review would be charged on the basis of the design capacity of the module submitted. For construction documentation reports for which a design capacity cannot be applied, such as sedimentation basins or remedial actions, a review fee of $200.00 shall apply.

(b) License fees shall be based on the design capacity of the facility being licensed including solid waste already deposited at the facility. For facilities which do not have a plan approval, the department shall make a reasonable estimate of the capacity of the facility based on licensed acreage and probable depth of fill and shall charge a fee accordingly.

(5) CONSTRUCTION INSPECTION FEES. A construction inspection fee of $500.00 per inspection required under s. NR 500.09 shall be paid to the department by the applicant at the time of submittal of a construction documentation report or as specified in the plan approval. A maximum of 10 inspections per major phase of construction may be required.

NR 520.05 FINANCIAL RESPONSIBILITY FOR CLOSURE AND LONG-TERM CARE. (1) CLOSURE. The owner of an approved facility for the land disposal of solid waste shall submit, as part of the initial operating license application and annually thereafter for the period of active facility life, proof of financial responsibility to ensure compliance with the closure requirements of the approved plan of operation.

(2) LONG-TERM CARE. The owner of an approved facility for the land disposal of solid waste shall be responsible for the long-term care of the facility for either 20 or 30 years after facility closure, unless the owner's responsibility is terminated earlier in accordance with s. 144.441(2)(d), Stats. An owner responsible for long-term care shall specify at the time of submittal of the plan of operation whether the owner chooses to be responsible for 20 years, subject to department approval, or 30 years and shall submit, as part of the initial operating license application and annually thereafter for the period of active facility life, proof of financial responsibility to ensure compliance with the long-term care requirements of the plan of operation.

(3) SUCCESSORS IN INTEREST. Any person acquiring rights of ownership, possession or operation of a licensed facility shall be subject to all requirements of the license for the facility and shall provide any required proof of financial responsibility to the department in accordance with this section. The previous owner shall maintain proof of financial responsibility until the person acquiring ownership, possession or operation of the facility obtains department approval of proof of financial responsibility.

NR 520.06 METHODS OF PROVIDING PROOF OF FINANCIAL RESPONSIBILITY. Financial assurances for closure and long-term care shall be established separately. The owner shall specify, as part of the plan of operation submittal, which method of providing proof of financial responsibility will be used for closure and for long-term care. To provide proof of financial responsibility, the applicant shall use one of the following methods for each account:

(1) PERFORMANCE OR FORFEITURE BOND. (a) If the owner chooses to submit a bond, it shall be in the amount determined according to s. NR 520.08(3) and (4) conditioned upon faithful performance by the owner and any successor in interest, of all closure or long-term care requirements of the approved plan of operation. The bond shall be delivered to the department as part of the initial operating license application. Bond forms shall be supplied by the department.

(b) Bonds shall be issued by a surety company authorized to do surety business in this state. At the option of the owner, a performance bond or a forfeiture bond may be filed. The department shall be the obligee of the bond. Surety companies may have the opportunity to complete the closure or long-term care of the facility in lieu of cash payment to the department if the owner or any successor in interest fails to carry out the closure or long-term care requirements of the approved plan of operation. The department shall mail notification of its intent to use the funds for that purpose to the last known address of the owner. If the owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall, prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation have been carried out.

(c) Each bond shall provide that, as long as any obligation of the owner for closure or long-term care remains, the bond may not be cancelled by the surety, unless a replacement bond or other proof of financial responsibility under this section is provided to the department by the owner. If the surety proposes to cancel such a bond, the surety shall provide notice to the department and to the owner in writing by registered or certified mail not less than 90 days prior to the proposed cancellation date. Not less than 30 days prior to the expiration of the 90-day notice period, the owner shall deliver to the department a replacement bond or other proof of financial responsibility under this section, in the absence of which all disposal operations shall immediately cease and the bond shall remain in effect as long as any obligation of the owner remains for closure or long-term care. The surety may discharge its obligation under the bond at anytime by paying the unused portion of the bond to the department.

(d) If the surety company becomes bankrupt or insolvent or if its authorization to do business is revoked or suspended, the owner shall, within 30 days after receiving written notice, deliver to the department a replacement bond or other proof of financial responsibility under this section, in the absence of which all disposal operations shall immediately cease and the bond shall remain in effect as long as any obligation of the owner remains for closure or long-term care.

(2) DEPOSIT WITH THE DEPARTMENT. If the owner chooses to deposit cash, certificates of deposit or U.S. government securities with the department, the amount of the deposit shall be determined according to s. NR 520.08(1) and (2) and shall be submitted as part of the initial license application. Cash deposits placed with the department shall be segregated and invested in an interest bearing account. All interest payments shall be accumulated in the account. The department shall have the right to use part or all of the funds to carry out the closure or long-term care requirements of the approved plan of operation if the owner fails to do so. The department shall mail notification of its intent to use funds for that purpose to the last known address of the owner. If the owner submits a written request for a hearing to the secretary of the

department within 20 days after the mailing of notification, the department shall, prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation have been carried out.

(3) ESCROW ACCOUNT. If the owner establishes an escrow account, the amount shall be determined according to s. NR 520.08(1) and (2) and the account shall be with a bank or financial institution located within the state of Wisconsin which is examined and regulated by the state or a federal agency. The assets in the escrow account shall consist of cash, certificates of deposit or U.S. government securities. All interest payments shall be accumulated in the account. A duplicate original of the escrow agreement with original signatures shall be submitted to the department as part of the initial operating license application. Escrow account forms shall be supplied by the department. The department shall be a party to the escrow agreement, which shall provide that there shall be no withdrawals from the escrow account except as authorized in writing by the department. The escrow agreement shall further provide that the department shall have the right to withdraw and use part or all of the funds in the escrow account to carry out the closure or long-term care requirements of the approved plan of operation if the owner fails to do so. The department shall mail notification of its intent to use funds for that purpose to the last known address of the owner. If the owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall, prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation have been carried out.

(4) IRREVOCABLE TRUST. If the owner creates an irrevocable trust, it shall be exclusively for the purpose of ensuring that the owner or any successor in interest will comply with the closure or long-term care requirements of the approved plan of operation. The trust agreement shall designate the department as sole beneficiary. The trustee shall be a bank or other financial institution located within the state of Wisconsin which has the authority to act as a trustee and whose trust operations are regulated and examined by the state or a federal agency. The trust corpus shall consist of cash, certificates of deposit or U.S. government securities in the amount determined according to s. NR 520.08(1) and (2). All interest payments shall be accumulated in the account. A duplicate original of the trust agreement with original signatures shall be submitted to the department for approval as part of the initial operating license application. Trust forms shall be supplied by the department. The trust agreement shall provide that there shall be no withdrawal from the trust fund except as authorized in writing by the department. The trust agreement shall further provide that sufficient monies shall be paid from the trust fund to the beneficiary in the event that the owner or any successor in interest fails to complete the closure or long-term care requirements of the approved plan of operation. The department shall mail notification of its intent to use funds for that purpose to the last known address of the owner. If the owner submits a

written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall, prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation have been carried out.

(5) LETTER OF CREDIT. (a) If the owner chooses to submit a letter of credit, it shall be in the amount determined according to s. NR 520.08(3) and (4) and available exclusively for the purpose of assuring that all closure or long-term care requirements of the approved plan of operation will be complied with. The original letter of credit shall be delivered to the department as part of the initial operating license application. Letter of credit forms shall be supplied by the department.

(b) Letters of credit shall be issued by a bank or financial institution which is examined and regulated by a federal agency, or in the case of a bank or financial institution located within the state of Wisconsin, which is examined and regulated by the state or a federal agency. The department shall be the beneficiary of the letter of credit.

(c) The letter of credit shall provide either that the unused portion of the letter of credit shall be payable in full to the department upon the expiration of the letter of credit or that as long as any obligation of the owner for closure or long-term care remains, the letter of credit may not be cancelled by the bank or financial institution, unless a replacement letter of credit or other proof of financial responsibility under this section is provided to the department by the owner. If the bank or financial institution proposes to cancel a letter of credit, the bank or financial institution shall provide notice to the department and the owner in writing by registered or certified mail not less than 90 days prior to the proposed cancellation date. Not less than 30 days prior to the expiration date of the 90-day notice period, the owner shall deliver to the department a replacement letter of credit or other proof of financial responsibility under this section, in the absence of which all disposal operations shall immediately cease and either the letter of credit shall remain in effect as long as any obligation of the owner remains for closure or long-term care or the unused portion of the letter of credit shall be payable in full to the department.

(d) If the bank or financial institution becomes bankrupt or insolvent or if its authorization to do business is revoked or suspended, the owner shall, within 30 days after receiving written notice, deliver to the department a replacement letter of credit or other proof of financial responsibility under this section, in the absence of which all disposal operations shall immediately cease and the letter of credit shall either remain in effect as long as any obligation of the owner remains for closure or long-term care or be payable in full to the department.

(e) The letter of credit shall further provide that the department has the right to withdraw and use part or all of the funds to carry out the closure or long-term care requirements of the plan of operation if the owner fails to do so. The department shall mail notification of its intent to use

the funds for that purpose to the last known address of the owner. If the owner submits a written request or a hearing to the secretary of the department, within 20 days after the mailing of the notification, the department shall, prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation have been carried out.

(6) NET WORTH TEST. (a) Only a company that meets the definition in s. 144.443(1)(b), Stats., may use the net worth method of providing proof of financial responsibility.

(b) The company shall comply with the net worth test requirements of s. 144.443(4) and (6) or (7), Stats., and the minimum security requirements of s. 144.443(8) or (9), Stats., whichever is applicable.

(c) A company using the net worth test to provide proof of financial responsibility for more than one facility shall use the total cost of compliance for all facilities in determining the net worth to closure and long-term care cost ratio.

(d) The department determinations under the net worth test shall be done in accordance with s. 144.443(5), Stats.

(7) INSURANCE. (a) If the owner chooses to submit an insurance policy for closure or long-term care, it shall be issued for the maximum risk limit determined according to s. NR 520.08(5) and (6). A certificate of insurance shall be delivered to the department as part of the initial operating license application. Certificate of insurance forms shall be supplied by the department.

(b) At a minimum, the agent or broker shall be licensed as a surplus lines insurance agent or broker. The department shall determine the acceptability of a surplus lines insurance company to provide coverage for proof of financial responsibility. The department shall base the determinations on any evaluations prepared in accordance with s. 618.41(6)(d), Stats., by the office of the commissioner of insurance. The department shall be the beneficiary of the insurance policy.

(c) The insurance policy shall provide either that the unused proceeds of the policy shall be payable in full to the department upon expiration of the policy or that, as long as any obligation of the owner for closure or long-term care remains, the insurance policy may not be cancelled by the insurer unless a replacement insurance policy or other proof of financial responsibility under this section is provided to the department by the owner. If the insurer proposes to cancel an insurance policy, the insurer shall provide notice to the department and to the owner in writing by registered or certified mail not less than 90 days prior to the proposed cancellation date. Not less than 30 days prior to the expiration of the 90-day notice period, the owner shall deliver to the department a replacement insurance policy or other proof of financial responsibility under this section, in the absence of which all disposal operations shall immediately cease and either the policy shall remain in effect as long as any obligation of the owner remains for closure or long-term care or the proceeds of the policy shall be payable in full to the department.

(d) If the insurance company becomes bankrupt or insolvent or if the company receives an unfavorable evaluation under s. 618.41(6)(d), Stats., the owner shall, within 30 days after receiving written notice, deliver to the department a replacement insurance policy or other proof of financial responsibility under this section in the absence of which all disposal operations shall immediately cease and the policy shall either remain in effect as long as any obligation of the owner remains for closure or long-term care or be payable in full to the department.

(e) The insurance policy shall further provide that funds, up to an amount equal to the maximum risk limit of the policy, will be available to the department to carry out the closure and long-term care requirements of the approved plan of operation if the owner fails to do so. The department shall mail notification of its intent to use the funds for that purpose to the last known address of the owner. If the insurer or owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall, prior to using funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation have been carried out.

(f) Each insurance policy shall contain a provision allowing assignment of the policy to a successor owner or operator. Assignment may be conditioned upon the consent of the insurer, provided consent is not unreasonably refused.

Note: These forms may be obtained from the Department of Natural Resources, Bureau of Solid Waste Management, P.O. Box 7921, Madison, WI 53707 or any DNR district office.

(8) OTHER METHODS. The department shall consider other financial commitments made payable to or established for the benefit of the department to ensure the owner or operator will comply with the closure and long-term care requirements of the approved plan of operation. The department shall review the request of any owner or operator to establish proof of financial responsibility to determine whether the proposed method provides a degree of assurance that is comparable to that provided by the methods listed in this section. The owner shall submit the request and all supporting information as part of the plan of operation.

NR 520.07 COST ESTIMATES. (1) GENERAL. For the purpose of determining the amount of proof of financial responsibility that is required in s. NR 520.06, the owner shall estimate the total cost of closure for the point in time during operation of the facility when the extent and manner of its operation make closure most expensive, estimate the annual cost of long-term care of the facility for the period of owner responsibility and submit the estimated closure and long-term care costs together with all necessary justification to the department for approval as part of the plan of operation submittal. The costs shall be based on a third party performing the work and reported on a per unit basis. The source of estimates shall be indicated.

(2) CLOSURE COSTS. At a minimum, closure costs shall include; the purchasing, hauling, placement and documentation testing of the final cover material and topsoil; seeding, fertilizing, mulching and labor; the installation of gas venting devices; the cost of preparing an engineering report documenting the work performed and a 10% contingency.

(3) LONG-TERM CARE COSTS. At a minimum, long-term care costs shall include, where applicable, land surface care; gas monitoring; unsaturated zone monitoring; leachate pumping, transportation, monitoring and treatment; groundwater monitoring including sample collection and analysis; leachate collection line cleaning on an annual basis; and a 10% contingency. For the purposes of preparing the long-term care cost estimates, all monitoring requirements specified in the plan of operation shall be assumed to apply over the entire long-term care period. Leachate strengths shall not be assumed to decrease over time and the calculation of leachate generation volumes shall be performed assuming that the waste is at field capacity unless an alternative method is approved by the department in writing. Only detailed performance data will be considered when evaluating estimates for leachate strengths and leachate generation volumes. Leachate treatment costs shall be based on those available from a municipal wastewater treatment plant capable of accepting the leachate in accordance with the applicable requirements of its WPDES permit.

(4) INFLATION RATE. The estimated rate of inflation shall be the latest percent change in the annual gross national product implicit price deflator published in the survey of current business by the bureau of economic analysis, U.S. department of commerce.

(5) INTEREST RATES. The estimated annual rate of interest for escrow accounts or trust accounts shall be the rate specified by the financial institution managing the fund or deposit. The estimated annual rate of interest for deposits with the department, bonds or letters or credit shall be the rate specified by the department.

NR 520.08 FORMULAS FOR CALCULATING THE AMOUNT OF THE PROOF OF FINANCIAL RESPONSIBILITY. The owner shall, as part of the plan of operation submittal, perform the calculation of the formula for the chosen method of providing proof of financial responsibility for closure and for long-term care.

(1) DEPOSITS IN ESCROW, TRUST OR DEPARTMENT ACCOUNTS FOR CLOSURE. The formula for interest bearing accounts for closure shall be:

$$D = C \frac{(1 + f)}{(1 + i)}$$

in which:

D = unknown deposit for closure

C = the estimated cost of closure in today's dollars for the maximum area to be open at any point in time

f = the estimated annual rate of inflation, expressed as a decimal

i = the estimated annual rate of interest, expressed as a decimal

(2) DEPOSITS IN ESCROW, TRUST OR DEPARTMENT ACCOUNTS FOR LONG-TERM CARE. The following information used in calculating the amounts deposited to the interest bearing accounts for long-term care shall be specified in the plan of operation submittal: the rate of outpayment during the period of long-term care, expressed in equal annual outpayments or unequal annual outpayments, and the equal annual rate of inpayment, expressed as either real dollar inpayments or actual dollar inpayments.

(a) When equal annual outpayments, actual dollar inpayments and a closure period are used, the formula shall be expressed as:

$$A = \left[R\,(1+f)^{RSL}\left(\frac{1+f}{1+(f+.02)}\right)^{C}\left[\frac{1-\left(\frac{1+f}{1+(f+.02)}\right)^{LTC}}{\left(\frac{1+(f+.02)}{1+f}\right)-1}\right]\right] \div \left[(1+i)\left[\frac{(1+i)^{RSL}-1}{i}\right]\right]$$

(b) When equal annual outpayments, actual dollar inpayments and no closure period are used, the formula shall be expressed as:

$$A = \left[R(1+f)^{RSL}\left[\frac{1-\left(\frac{1+f}{1+(f+.02)}\right)^{LTC}}{\left(\frac{1+(f+.02)}{1+f}\right)-1}\right]\right] \div \left[(1+i)\left[\frac{(1+i)^{RSL}-1}{i}\right]\right]$$

(c) When unequal annual outpayments, actual dollar inpayments and a closure period are used, the formula shall be expressed as:

$$A = \left[\sum_{x}\left[R_x\,(1+f)^{RSL}\left(\frac{1+f}{1+(f+.02)}\right)^{x+c}\right]\right] \div \left[(1+i)\left[\frac{(1+i)^{RSL}-1}{i}\right]\right]$$

(d) When unequal annual outpayments, actual dollar inpayments and no closure period are used, the formula shall be expressed as:

$$A = \left[\sum_{x}\left[R_x\,(1+f)^{RSL}\left(\frac{1+f}{1+(f+.02)}\right)^{x}\right]\right] \div \left[(1+i)\left[\frac{(1+i)^{RSL}-1}{i}\right]\right]$$

(e) When equal annual outpayments, real dollar inpayments and a closure period are used, the formula shall be expressed as:

$$A = \left[R\,(1+f)^{RSL}\left(\frac{1+f}{1+(f+.02)}\right)^{C}\left[\frac{1-\left(\frac{1+f}{1+(f+.02)}\right)^{LTC}}{\left(\frac{1+(f+.02)}{1+f}\right)-1}\right]\right] \div \left[(1+i)^{RSL+1}\left[\frac{1-\left(\frac{1+f}{1+i}\right)^{RSL}}{i-f}\right]\right]$$

(f) When equal annual outpayments, real dollar inpayments and no closure period are used, the formula shall be expressed as:

$$A = \left[R\,(1+f)^{RSL}\left[\frac{1-\left(\frac{1+f}{1+(f+.02)}\right)^{LTC}}{\left(\frac{1+(f+.02)}{1+f}\right)-1}\right]\right] \div \left[(1+i)^{RSL+1}\left[\frac{1-\left(\frac{1+f}{1+i}\right)^{RSL}}{i-f}\right]\right]$$

(g) When unequal annual outpayments, real dollar inpayments and a closure period are used, the formula shall be expressed as:

$$A = \left[\sum \left[R_x \ (1 + f)^{RSL} \left(\frac{1 + f}{1 + (f + .02)} \right)^{x + c} \right] \right] \div \left[(1 + i)^{RSL + 1} \left[\frac{1 - \left(\frac{1 + f}{1 + i} \right)^{RSL}}{i - f} \right] \right]$$

(h) When unequal annual outpayments, real dollar inpayments and no closure period are used, the formula shall be expressed as:

$$A = \left[\sum \left[R_x \ (1 + f)^{RSL} \left(\frac{1 + f}{1 + (f + .02)} \right)^{x} \right] \right] \div \left[(1 + i)^{RSL + 1} \left[\frac{1 - \left(\frac{1 + f}{1 + i} \right)^{RSL}}{i - f} \right] \right]$$

in which:

A = the unknown inpayment for long-term care per year of active facility life

i = the estimated annual rate of interest, expressed as a decimal

f = the estimated annual rate of inflation, expressed as a decimal

(f + .02) = the estimated rate of inflation plus 2% expressed as a decimal

RSL = the estimated remaining life of the facility in years rounded to the nearest whole number

R = the estimated annual costs

R_x = the estimated unequal annual costs

x = the year of long-term care

LTC = the period of long-term care

c = the closure period as a fraction of one year, expressed as a decimal

$\sum$ = the sum from year 1 through the last year of LTC

(3) BONDS AND LETTERS OF CREDIT FOR CLOSURE. The formula for noninterest bearing accounts for closure shall be:

$$CB = C \ (1 + f)$$

in which:

CB = the unknown amount of the bond or letter of credit for closure

C = the estimated closure cost

f = the estimated annual rate of inflation, expressed as a decimal

(4) BONDS AND LETTERS OF CREDIT FOR LONG-TERM CARE. For noninterest bearing accounts for long-term care, the rate of outpayment shall be as specified in s. NR 520.08(2) and the rate of inpayment shall be in equal actual dollar inpayments.

(a) When equal annual outpayments are used, the formula shall be expressed as:

$$PB = \left[R\ (1 + f)^{RSL+1+C} \left[\frac{(1 + f)^{LTC} - 1}{f} \right] \right] \div RSL$$

(b) When unequal annual outpayments, are used, the formulas shall be expressed as:

$$PB = \left[\sum \left[R_x\ (1 + f)^{RSL + x + c} \right] \right] \div RSL$$

in which:

PB = the unknown bond or letter of credit amount for long-term care to increase per year of active facility life

i = the estimated annual rate of interest, expressed as a decimal

f = the estimated annual rate of inflation, expressed as a decimal

(f + .02) = the estimated rate of inflation plus 2% expressed as a decimal

R = the estimated annual costs

R_x = the estimated unequal annual costs

LTC = the long-term care period

RSL = the estimated remaining life of the facility in years rounded to the nearest whole number

x = the year of long-term care

c = the closure period as a fraction of one year, expressed as a decimal

$\sum$ = the sum from year 1 through the last year of LTC

(5) INSURANCE TO COVER CLOSURE. The formula for closure shall be:

$$CI = C(1+f)$$

in which:

CI = the unknown amount of the closure insurance

C = the estimated closure cost

f = the estimated annual rate of inflation, expressed as a decimal

(6) INSURANCE TO COVER LONG-TERM CARE. The rate of outpayment shall be as specified in s. NR 520.08(2).

When equal annual outpayments are used, the formula shall be:

$$INS = \left[R(1 + f)^{RSL+1+c} \left[\frac{(1 + f)^{LTC} - 1}{f} \right] \right]$$

When unequal annual outpayments are used, the formula shall be:

$$INS = \left[\sum \left[R_x \ (1 + f)^{RSL+x+c} \right] \right]$$

in which:

INS = the unknown amount of the long-term care insurance

f = the estimated annual rate of inflation, expressed as a decimal

RSL = the estimated remaining active life of the facility in years

R = the estimated annual costs

R_x = the estimated unequal annual costs

LTC = the long-term care period

x = the year of long-term care

c = the closure period as a fraction of a year, expressed as a decimal

$\sum$ = the sum of year 1 through the last year of LTC

NR 520.09 CHANGING METHODS OF PROOF OF FINANCIAL RESPONSIBILITY. The owner of a solid waste land disposal facility may change from one method of providing proof of financial responsibility under s. NR 520.06 to another, but not more than once per year. A change may only be made on the anniversary of the submittal of the original method of providing proof of financial responsibility. The amount of the new method of providing proof of financial responsibility shall be in the amount that is equal to the amount that would have accumulated had the new method been used as the original method.

NR 520.10 ADJUSTMENT OF FINANCIAL RESPONSIBILITY. Proof of the increase in the amount of all bonds, letters of credit, escrow accounts and trust accounts, or other approved methods established under this chapter shall be submitted annually to the department. The department may adjust the amount of the required proof of financial responsibility for closure or long-term care based upon prevailing or projected interest and inflation rates and the latest cost estimates, and may annually require the owner to adjust the amount of proof of financial responsibility accordingly. The owner of a facility for the land disposal of solid waste shall prepare and submit a new closure cost estimate whenever a change in the closure plan affects the cost of closure, and a new long-term care cost estimate whenever a change in the long-term care requirements in the approved plan of operation affects the cost of long-term care.

NR 520.11 ACCESS AND DEFAULT. Whenever on the basis of any reliable information, and after opportunity for a hearing, the department determines that an owner or operator of a solid waste land disposal facility is in violation of any of the requirements for closure or long-term care specified in the approved plan of operation, the department and its designees shall have the right to enter upon the facility and carry out the closure or long-term care requirements. The department may use part or all of the money deposited with it, or the money deposited in escrow or trust accounts, or performance or forfeiture bonds, or letters of credit, insurance, or funds accumulated under other approved methods to carry out the closure or long-term care requirements.

NR 520.12 AUTHORIZATION TO RELEASE FUNDS. (1) CLOSURE. When an owner or operator has completed closure, the owner may apply to the department for release of the bond, insurance or the letter of credit or return of the money held on deposit, in escrow, or in trust for closure of the facility. The application shall be accompanied by an itemized list of costs incurred and a report under the seal of a registered professional engineer which documents that the facility has been closed in accordance with the plan of operation approval and ch. NR 514. Upon determination by the department that complete closure has been accomplished, the department shall authorize in writing the release and return of all funds accumulated in such accounts or give written permission for cancellation of the bond, insurance or letter of credit. Determinations shall be made within 90 days of the application.

(2) LONG-TERM CARE. One year after closure, and annually thereafter for the period of owner responsibility, the owner who has carried out all necessary long-term care during the preceding year may make application to the department for reimbursement from an escrow account, trust account, deposit with the department, or other approved methods, or for reduction of the bond, insurance or letter of credit equal to the estimated costs for long-term care for that year. The application shall be accompanied by an itemized list of costs incurred. Upon determination that the expenditures incurred are in accordance with the long-term care requirements anticipated in the approved plan of operation, the department may authorize in writing the release of the funds or approve a reduction in the bond, insurance or letter of credit. Prior to authorizing a release of the funds or a reduction of the bond, insurance or letter of credit, the department shall determine that adequate funds exist to complete required long-term care work for the remaining period of owner responsibility. Determinations shall be made within 90 days of the application. Any funds remaining in an escrow account, trust account, or on deposit with the department at the termination of the period of owner responsibility shall be released to the owner.

NR 520.13 BANKRUPTCY NOTIFICATION. The owner or operator of a facility for the land disposal of solid waste shall notify the department by certified mail of the commencement of a voluntary or involuntary proceeding under the bankruptcy code, 11 USC s. 101, et seq., naming the owner or operator as debtor, within 10 days after commencement of the proceeding.

NR 520.14 ENVIRONMENTAL FEES. (1) WASTE MANAGEMENT FUND. All owners or operators of approved licensed solid waste land disposal facilities shall pay to the department a tonnage fee for each ton of solid waste received and disposed of at the facility, or a minimum waste management fund base fee as specified in s. 144.441(5)(c), Stats., whichever is greater, until the facility no longer receives waste and begins closure activities, except as otherwise provided in s. 144.441(3)(b) or (c), Stats. The department shall deposit all tonnage and waste management base fees into the waste management fund provided for in s. 25.45, Stats. The department may use the money accumulated in the waste management fund only at approved facilities . The monies in the waste management fund shall be expended exclusively as set forth in s. 144.441(6), Stats.

(a) For all approved solid waste land disposal facilities the owner or operator shall pay fees into the waste management fund in accordance with s. 144.441(4) or (5), Stats., whichever is greater.

(b) For those companies which have provided proof of financial responsibility by the net worth method under s. 144.443(4) and (8), Stats., the fees to be paid by the owner or operator into the waste management fund shall be in accordance with s. 144.441(4)(h) or (5), Stats., whichever fee is greater.

(c) For all nonapproved solid waste land disposal facilities, the total annual tonnage fees for all solid waste received by the facility shall be reduced by the amount of the environmental repair base fee. If the environmental repair base fee for a nonapproved facility is greater than the annual tonnage fee imposed under s. 144.441(4), Stats., the waste received by the facility is exempt from the waste management tonnage fee for that year.

(d) The hazardous waste tonnage fees established in s. 144.441(4)(b),(c), (e) and (f), Stats., shall be paid for each ton of hazardous waste received and disposed of at an approved solid waste land disposal facility.

(2) ENVIRONMENTAL REPAIR FUND. (a) All owners or operators of licensed solid waste land disposal facilities shall pay to the department an environmental repair fee for each ton of solid waste received and disposed of at the facility, until the facility no longer receives waste and begins closure activities. The environmental repair fee shall be as specified in s. 144.442(1m)(c) and (cm), Stats.

(b) All licensed nonapproved facilities shall pay to the department an environmental repair base fee for each calendar year until the facility no longer receives waste and begins closure activities. The environmental repair base fees shall be as specified in s. 144.442(2)(b), Stats. The environmental repair base fees may be reduced in accordance with s. 144.442(2)(d), Stats. The environmental repair surcharge shall be as specified in s. 144.442(3), Stats.

(c) The department shall deposit all environmental repair fees, environmental repair base fees, and environmental repair surcharge fees into the environmental repair fund provided for in s. 25.46, Stats. The monies in the environmental repair fund shall be expended exclusively as set forth in s. 144.442(6) and (6m), Stats.

(3) GROUNDWATER FUND. All owners or operators of licensed solid waste land disposal facilities shall pay to the department a groundwater fee for each ton of solid waste received and disposed of at the facility, until the facility no longer receives wastes and begins closure activities. The amount of the groundwater fee shall be as specified in s. 144.441(7)(c), Stats. The department shall deposit all groundwater fees into the groundwater fund as provided for in s. 25.48, Stats. The monies in the groundwater fund shall be expended as set forth in ss. 20.115(1)(s), 20.370(2)(mq) and (ms), 20.435(1)(q) and 20.445(1)(q), Stats.

(4) CERTIFICATION. The owner or operator of a licensed solid waste land disposal facility shall certify, on a form provided by the department, the amount of solid waste received and disposed of during the preceding reporting period. The department shall specify the term of the reporting period on the certification form. The department shall mail the certification form to the owner or operator every January. The certification form shall be completed and returned to the department if the tonnage or categories of solid waste disposed of during the preceding reporting period are different from the year immediately proceeding the reporting period. The certification form shall be returned to the department within 45 days after mailing of the form by the department to the owner or operator. The department shall mail the fees notice in May and the owner or operator has 30 days after mailing of the fees notice to remit the appropriate fees to the department. An owner or operator failing to remit the appropriate fees within 30 days after mailing of the fees notice to the owner or operator shall pay a late processing fee of $50.

NR 520.15 DETERMINATION OF WASTE TONNAGES. (1) DETERMINATION BY OWNER OR OPERATOR. The owner or operator shall, subject to department approval, use one of the following methods for determining the number of tons of waste received and disposed of at the solid waste land disposal facility.

(a) The owner or operator may use actual weight or volume records.

(b) The owner or operator may establish by field measurement the volume of waste disposed and convert to a weight using an assumed compaction density and cover material ratio using the conversion factors in table 3.

(c) The owner or operator may conduct a survey during a representative period of operation to establish average representative weights or volumes of waste disposed. Changes in seasonal population shall be considered when establishing representative weights or volumes.

(d) The owner or operator may use a waste generation rate of 2 pounds per capita per day and apply it over the number of days in the reporting period. Changes in seasonal population shall be considered when applying a per capita generation rate. This method may be used only for rural facilities serving a population equivalent of 2,500 or less and receiving little or no industrial waste.

(2) CONVERSION FACTORS. The conversion factors in table 3 shall be used. All conversion factors are based on wet densities. The densities provided for domestic residential waste and commercial waste in table 3 are subject to mechanical compaction, such as packer trucks or enclosed roll off containers coupled to hydraulic compactors. If the waste is loose, 200 pounds per cubic yard shall be used as the conversion factor.

TABLE 3
CONVERSION FACTORS

Municipal solid waste	
As delivered	
Domestic residential	425 pounds/cubic yard
Commercial	375 pounds/cubic yard
Industrial - other than specified below	300 pounds/cubic yard
Bulky	400 pounds/cubic yard
Trees and brush	300 pounds/cubic yard
Demolition	1,250 pounds/cubic yard
Liquids	8.34 pounds/gallon
Compacted in place	1,000 pounds/cubic yard
facilities receiving only demolition waste	1,400 pounds/cubic yard
Municipal wastewater sludge	8.34 pounds/gallon
	1,684 pounds/cubic yard
Municipal incinerator ash	
As delivered - uncompacted	1,500 pounds/cubic yard
In-field - compacted	2,700 pounds/cubic yard
Pulp and papermill sludge	
As delivered - uncompacted	1,800 pounds/cubic yard
In-field - consolidated	2,200 pounds/cubic yard
Utility ash - fly and bottom	
As delivered - uncompacted	2,200 pounds/cubic yard
In-field - compacted	2,400 pounds/cubic yard
Foundry wastes	
As delivered - uncompacted	2,600 pounds/cubic yard
In-field - compacted	3,000 pounds/cubic yard

(3) DEPARTMENT ESTIMATES. The department may estimate by waste category the number of tons received at a solid waste land disposal facility. The estimate shall appear on the certification form and shall be based on the number of tons received and reported for the previous reporting period.

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TABLE 1
FEE SCHEDULE - ALL FACILITIES EXCEPT LANDFILLS AND SURFACE IMPOUNDMENTS

NR	FACILITY TYPE	LICENSE REQUIRED	PLAN REVIEW REQUIRED	PLAN REVIEW FEES[1] [2]		LICENSE FEES			
				PLAN OF OPERATION	FACILITIES CONSTRUCTION DOCUMENTATION	0-6 months	6-12 months	12-18 months	18-24 months and 2 yr renewals
500.08	Exemption Request	No	Yes	500					
502.05	STORAGE FACILITY								
	Containerized	Yes	No			40	80	120	160
	Non-containerized	Yes	Yes	600	150	75	150	225	300
502.06	Collection and Transportation	Yes	No			40	80	120	160
502.07	Transfer Facility	Yes	Yes	300	150	75	150	225	300
502.08	Processing Facility [3]	Yes	Yes	600	150	75	150	225	300
502.09	Incineration [3]	No	No						
502.10	Air Curtain Destructor	Yes	Yes	300	150	75	150	225	300
502.11	Woodburning	Yes	Yes	150		75	150	225	300
502.12	One Time Disposal	No	Yes	150					
502.13	Small Demolition Facilities	No	Yes	500	150				
518	Land Spreading	No	Yes	500					

[1] The plan review fees specified in Table 1 cover the department's review from initial submittal through approval or denial of the report or plan. An applicant may withdraw and revise or supplement a report or plan prior to it being deemed complete and resubmit it without paying an additional review fee. The applicant shall pay a plan review fee as specified in Table 1 for resubmittal of a plan which has been withdrawn after having been determined to be complete.

[2] The department may waive any plan review fee if it determines that the total review time is not likely to exceed 4 hours.

[3] The department shall waive the plan review fees and license fees for a processing facility or incinerator which has a primary purpose of converting solid waste into usable materials, products or energy.

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TABLE 2
FEE SCHEDULE – LANDFILLS AND SURFACE IMPOUNDMENTS

FACILITY TYPE	LICENSE REQUIRED	PLAN REVIEW REQUIRED	PLAN REVIEW FEES[1] [2]					LICENSE FEES				
			INITIAL SITE REPORT[3] NR 510	FEASIBILITY REPORT NR 512	PLAN OF OPERATION NR 514	CONSTRUCTION DOCUMENTATION(8) NR 516	CLOSURE PLAN NR 514	0–6 months	6–12 months	12–18 months	18–24 months & 2 yr renewals	CLOSURE & LONG-TERM CARE PERIOD[10]
LANDFILLS AND SURFACE IMPOUNDMENTS[5]	Yes	Yes										
50,000 yds	Yes	Yes	700	1500	1500	150	150	100	200	300	400	500
50,000–500,000 yds	Yes	Yes	700	3000	2500	200[7]	900	400	800	1200	1600	1000
500,000 yds	Yes	Yes	700	4500	2500	400	1200	1125	2250	3375	4500	1500
Plan Modification[6]	No	Yes		600	600[9]		150					

(1) The plan review fees specified in Table 2 cover the department's review from initial submittal through approval or denial of the report or plan. An applicant may withdraw and revise or supplement a report or plan prior to it being deemed complete and resubmit it without paying an additional review fee. The applicant shall pay a plan review fee as specified in Table 2 for resubmittal of a plan which has been withdrawn after having been determined to be complete.

(2) The department may waive any plan review fee if determines that the total review time is not likely to exceed 4 hours.

(3) For an initial site report submittal which includes more than one location, the applicant shall pay a separate fee, as shown in Table 2, for each location.

(5) The applicant shall pay a maximum 2-year license fee of $1600 for landfills which are licensed to accept only wastewater treatment plant sludge, ash, foundry waste, wood waste, demolition waste and other wastes of a similar nature not requiring daily cover pursuant to ch. NR 506.

(6) A plan modification, as referred to in Table 2, is a submittal which proposes to modify a feasibility report, plan of operation or closure plan previously approved by the department. This fee also applies to a submittal which proposes to change the design management zone (DMZ) or requests recalculation of indicator preventive action limits (PAL's) as defined in ch. NR 140. The $600 fee applies to facilities which request a modification to the DMZ or indicator PAL's and have an approved plan of operation and the $150 fee applies to those facilities which have an approved closure plan.

(7) This review fee also applies to construction documentation reports for which a design capacity cannot be applied, such as sedimentation basins or remedial actions.

(8) These review fees apply to each facility construction documentation report submitted.

(9) This fee also applies to any facility which requests an exemption to the groundwater standards contained in ch. NR 140.

(10) This fee is a one-time payment only for the term of the licensee's long-term care responsibility.

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The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on June 25, 1987.

The rules shall take effect the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22 (2)(intro.), Stats.

Dated at Madison, Wisconsin November 11, 1987

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By Carroll D. Besadny
Carroll D. Besadny, Secretary

(SEAL)