Chapter 173-351 WAC
CRITERIA FOR MUNICIPAL SOLID WASTE LANDFILLS

WAC

WAC 173-351-010 Purpose, applicability and effective dates. (1) Purpose. The purpose of this regulation is to establish minimum state-wide standards for all municipal solid waste landfill (MSWLF) units under the authority of chapter 70.95 RCW as amended in order that jurisdictional health departments can enact ordinances equally as or more stringent than this regulation and to have jurisdictional health departments implement such ordinances through a permit system set forth in Section 700. It is also the purpose of this regulation to implement rule making by the Environmental Protection Agency (EPA) under the authority of subtitle D of the Resource Conservation and Recovery Act (RCRA), as amended in 1984, and under the authority of Section 405(d) of the Clean Water Act as amended. The Clean Water Act required EPA "to establish standards for sewage sludge that is co-disposed with municipal solid waste." EPA satisfied both statutory requirements with the publication of 40 CFR Part 258-Criteria For Municipal Solid Waste Landfills on October 9, 1991. These minimum state-wide criteria ensure the protection of human health and the environment.

(2) Applicability.

(a) These criteria apply to new MSWLF units, existing MSWLF units, and lateral expansions, except as otherwise specifically provided in this regulation; all other solid waste disposal facilities and practices that are not regulated under subtitle C of RCRA and chapter 70.105 RCW are subject to the criteria contained in 40 CFR Part 257, Criteria For Classification of Solid Waste Disposal Facilities, and/or chapter 173-304 WAC as amended.

Note: These rules do not apply to facilities that receive only inert and demolition waste, wood waste, industrial solid wastes, or other types of solid waste (other than household waste) disposed of in limited purpose landfills regulated in chapter 173-304 WAC, minimum functional standards for solid waste handling. Co-disposal of any solid waste with household waste is governed by these rules.

(b) These criteria do not apply to MSWLF units that do not receive waste on or after the effective date of this chapter. MSWLF units that stopped receiving waste prior to October 9, 1991, are subject to closure and post-closure rules under chapter 173-304 WAC, the Minimum Functional Standards for Solid Waste Handling. MSWLF units that received waste on and after October 9, 1991, but stop receiving waste prior to the effective date of this rule:

(i) Are also subject to federal closure rules under 40 CFR Part 258.60(a);

(ii) Will be subject to all the requirements of this regulation unless otherwise specified, if such MSWLF units fail to meet the federal closure rules under 40 CFR Part 258.60(a) by April 9, 1994, and the closure standards of chapter 173-304 WAC; except that jurisdictional health departments may grant time extensions to complete closure under 40 CFR Part 258.60(a) by October 9, 1994; and

(iii) Will be subject to the ground water monitoring and corrective action requirements of WAC 173-351-400 and the permitting requirements of WAC 173-351-700 if such MSWLF units are part of a multi-unit ground water monitoring system of WAC 173-351-450(4).

(c) All MSWLF units that receive waste on or after the effective date of this chapter must comply with this chapter by the effective date of this chapter unless:

(i) Later effective dates are specified elsewhere in this chapter, such as WAC 173-351-400 (1)(b), ground water monitoring and WAC 173-351-600 (4)(c); or

(ii) The MSWLF unit is an existing MSWLF unit or an existing lateral expansion of an existing unit that:

(A) Disposed of 100 tons per day or less of solid waste during a representative period prior to the effective date of this chapter;

(B) Does not dispose of more than an average of 100 tons per day of solid waste each month between the effective date of this chapter and April 9, 1994; and

(C) Is not on the National Priorities List (NPL) as found in Appendix B to 40 CFR Part 300.

(d) MSWLF units that meet conditions of (c) of this subsection are exempt from all requirements of this rule but must meet the final cover requirement specified in 40 CFR 258.60(a) and the requirements of chapter 173-304 WAC. The final cover must be installed by October 9, 1994. Owners or operators of MSWLF units described in (c) and (d) of this section that fail to complete cover installation by October 9,

1994, will be subject to all requirements of this chapter, unless otherwise specified.

(e) MSWLF units failing to satisfy these criteria are considered open dumps for purposes of state solid waste management planning under RCRA.

(f) MSWLF units failing to satisfy these criteria constitute open dumps, which are prohibited under section 4005 of RCRA.

(g) MSWLF units containing sewage sludge and failing to satisfy these criteria violate Sections 309 and 405(e) of the Federal Clean Water Act.

Note: All state codes standards, rules and regulations cited in this chapter are available by writing to the Department of Ecology, P.O. Box 4-7600, Olympia, Washington 98504-7600, or call 1-800-RECYCLE for the location of the nearest regional office of the department.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-010, filed 10/26/93, effective 11/26/93.]

WAC 173-351-100 Definitions. Unless otherwise noted, all terms contained in this part are defined by their plain meaning. This section contains definitions for terms that appear throughout this regulation; additional definitions appear in the specific sections to which they apply.

"Active area" means that part of a facility that includes the active portion and portions of a facility that recycle, store, treat, or dispose of solid (including liquid) wastes. The active area includes leachate treatment facilities and runoff ponds. It excludes run-on ponds and on-site roads which are used for any purpose; on-site roads are considered part of the buffer zone. See active portion and buffer zone definition below.

"Active life" means the period of operation beginning with the initial receipt of solid waste and ending at completion of closure activities in accordance with WAC 173-351-500, Closure and post-closure care.

"Active portion" means that part of a facility or MSWLF unit that has received or is receiving wastes and that has not been closed in accordance with WAC 173-351-500, Closure and post-closure care.

"Airport." See WAC 173-351-130 (2)(d)(i).

"Areas susceptible to mass movement." See WAC 173-351-130 (7)(b)(iv).

"Arid" means locations in the state of Washington having less than twelve inches (30 centimeters) of precipitation annually.

"Biosolids" means municipal sewage sludge that is a primarily organic, semisolid product resulting from the wastewater treatment process, that can be beneficially recycled and meets all requirements under chapter 70.95J RCW. Biosolids includes septic tank sludge, also known as septage, that can be beneficially recycled and meets all requirements of chapter 70.95J RCW.

"Bird hazard." See WAC 173-351-130 (2)(d)(ii).

"Buffer zone" means that part of a facility which lies between the active area and the property boundary.

"Closure" means those actions taken by the owner or operator of a MSWLF unit or facility to cease disposal operations and to ensure that a MSWLF unit or facility is closed in conformance with applicable regulations at the time of such closures and to prepare the site for the post-closure period. Closure is considered part of operation. See definition of operation.

"Commercial solid waste" means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes.

"Composite layer." See WAC 173-351-500 (1)(i)(B).

"Composite liner." See WAC 173-351-300 (2)(a)(ii).

"Construction quality assurance" means a planned system of activities that provide assurance that a facility is constructed as specified in the design and that the materials used in construction are manufactured according to specifications. Construction quality assurance includes inspections, verifications, audits, and evaluations of materials and workmanship necessary to determine and document the quality of the constructed facility.

"Construction quality control" means a planned system of activities that is used to directly monitor and control the quality of a construction project. Construction quality controls are the measures under taken by the contractor or installer to determine compliance with requirements for workmanship and materials put forth in the plans and specification for the construction project.

"Contaminate" means to allow to discharge a substance into ground water that would cause:

The concentration of that substance in the ground water to exceed the maximum contamination level specified in chapter 173-200 WAC; or

A statistically significant increase in the concentration of that substance in the ground water where the existing concentration of that substance exceeds the maximum contaminant level specified in chapter 173-200 WAC; or

A statistically significant increase above background in the concentration of a substance which:

Is not specified in chapter 173-200 WAC; and

Is present in the solid waste; and

Has been determined to present a substantial risk to human health or the environment in the concentrations found at the point of compliance by the jurisdictional health department in consultation with the department and the department of health.

"Dangerous wastes" means any solid waste designated as dangerous waste under chapter 173-303 WAC, the Dangerous waste regulations.

"Demolition waste" means solid waste, largely inert waste resulting from the demolition or razing of buildings, roads and other man-made structures.

"Demonstration" means a showing by the owner or operator that human health and the environment can be protected as equally as a given requirement in the regulation. A demonstration is made in the application for a permit under WAC 173-351-700. A successful demonstration allows or authorizes an activity authorized for the life of the facility unless an alternative time period is approved by the jurisdictional health department.

"Department" means the department of ecology.

"Disease vectors." See WAC 173-351-200 (3)(b).

"Displacement." See WAC 173-351-130 (5)(b)(ii).

"Disposal" or "deposition" means the discharge, deposit, injection, dumping, leaking, or placing of any solid waste into or on any land or water.

"Establish" means to construct a new or laterally expanded MSWLF unit.

"Existing MSWLF unit" means any municipal solid waste landfill unit that is receiving solid waste as of the appropriate dates specified in WAC 173-351-010 (2)(c). Waste placement in existing units must be consistent with past operating practices or modified practices to ensure good waste management practices, including operating plans approved under chapter 173-304 WAC. For the purposes of this rule, any existing horizontal expansion approved by the jurisdictional health department for which as-built plans documenting construction prior to the effective date of this chapter, have been prepared and submitted to the jurisdictional health department shall be considered an existing MSWLF unit.

"Fault." See WAC 173-351-130 (5)(b)(i).

"Facility" means all contiguous land and structures, other appurtenances, and improvements on the land used for the disposal of solid waste.

"Floodplain." See WAC 173-351-130 (3)(b)(i).

"Free liquids." See WAC 173-351-200(9).

"Gas condensate." See WAC 173-351-200 (9)(c)(ii).

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

"Holocene." See WAC 173-351-130 (5)(b)(iii).

"Household waste" means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including household hazardous waste) (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas). This term does not include commercial, industrial, inert and demolition waste, or wood waste.

Note: Sanitary waste in septic tanks that is not disposed of in a MSWLF unit is subject to other state and federal rules.

"Hydrostratigraphic unit" means any water-bearing geologic unit or units hydraulically connected or grouped together on the basis of similar hydraulic conductivity which can be reasonably monitored; several geologic formations or part of a geologic formation may be grouped into a single hydrostratigraphic unit; perched sand lenses may be considered a hydrostratigraphic unit or part of a hydrostratigraphic unit, for example.

Note: 'Hydraulically connected' denotes water-bearing units which can transmit water to other transmissive units.

"Inert waste" means noncombustible, nondangerous solid wastes that are likely to retain their physical and chemical structure under expected conditions of disposal, including resistance to biological attack and chemical attack from acidic rain water.

"Industrial solid wastes" means solid waste or waste byproducts generated by manufacturing or industrial processes such as scraps, trimmings, packing, pallets, and other discarded materials not otherwise designated as dangerous waste under chapter 173-303 WAC, the Dangerous waste regulations. This term does not include commercial, inert, demolition, construction, woodwaste, mining waste, or oil and gas waste but does include lunch room, office, or other similar waste generated by employees at the industrial facility.

"Jurisdictional health department" means city, county, city-county, or district public health department as defined in chapters 70.05, 70.08, and 70.46 RCW.

"Landfill." See "Facility."

"Lateral expansion" means a horizontal expansion of the waste boundaries of an existing MSWLF unit that is not an existing horizontal expansion. (See also definition of "existing MSWLF unit.")

"Leachate" means a liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

"Lithified earth material." See WAC 173-351-200 (6)(b)(iii).

"Liquid waste." See WAC 173-351-200 (9)(c)(i).

"Lower explosive limit." See WAC 173-351-200 (4)(d).

"Maximum horizontal acceleration in lithified earth material." See WAC 173-351-200 (6)(b)(ii).

"Modification" means a substantial change in the design or operational plans including removal of a design element of a MSWLF unit previously set forth in a permit application or a disposal or processing activity that is not approved in the permit. To be considered a substantial change, a modification must be reasonably related to a specific requirement of this rule. Lateral expansions, a fifty percent increase or greater in design volume capacity or changes resulting in significant adverse environmental impacts that have lead a responsible official to issue a declaration of significance under WAC 197-11-736 shall not be considered a modification but would require permit reissuance under these rules.

"Municipal sewage sludge" means a semisolid substance consisting of settled sewage solids combined with varying amounts of water and dissolved materials generated from a publicly owned wastewater treatment plant. For the purposes of this rule sewage sludge generated from publicly owned leachate waste treatment works that receive sewage from onsite sanitary facilities shall not be considered to be municipal sewage sludge.

"Municipal solid waste landfill unit (MSWLF unit)" means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under chapter 173-304 WAC, the Minimum functional standards for solid waste handling or chapter 173-218 WAC, Underground injection control program. A MSWLF unit also may receive other types of RCRA subtitle D wastes, such as commercial solid waste, nonhazardous sludge, conditionally-exempt small quantity generator waste, and industrial solid waste. Such a landfill may be publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion.

"New MSWLF unit" means any municipal solid waste landfill unit that has not received waste prior to the effective date of this regulation.

"Nonarid" means locations in the state of Washington having equal to or more than twelve inches (30 centimeters) of precipitation annually.

"Nuisance" means unlawfully doing an act, or omitting to perform a duty, which act or omission either annoys, injures, or endangers the comfort, repose, health or safety of others, offends decency, or unlawfully interferes with, obstructs or tends to obstruct, any lake or navigable river, bay, stream, canal, or basin, or any public park, square, street or highway; or in any way renders other persons insecure in life, or in the use of property.

"100-year flood." See WAC 173-351-130 (3)(b)(ii).

"Open burning" means the combustion of solid waste without:

Control of combustion air to maintain adequate temperature for efficient combustion;

Containment of the combustion reaction in an enclosed device so as to provide sufficient residence time and mixing for complete combustion; and

Control of the emission of the combustion products.

"Operator" means the person(s) responsible for the overall operation of a facility or part of a facility.

"Operation" means those actions taken by an owner or operator of a facility or MSWLF unit beginning with waste acceptance at a facility or MSWLF unit up to and including closure of the facility or MSWLF unit.

"Owner" means the person(s) who owns a facility or part of a facility.

"Point of compliance" means the point located on land owned by the owner of the MSWLF unit, and is no more than one hundred fifty meters (four hundred ninety-two feet) from the waste management unit boundary; see also WAC 173-351-300 (2)(c).

"Poor foundation conditions." See WAC 173-351-130 (7)(b)(ii).

"Post-closure" means those actions taken by an owner or operator of a facility or MSWLF unit after closure.

"Purchase" means execution of a long term lease, securing of options to purchase or execution of agreements to purchase.

"Qualified ground-water scientist." See WAC 173-351-400(2).

"Random inspection." See WAC 173-351-200 (1)(b)(ii).

"Regulated dangerous waste." See WAC 173-351-200 (1)(b)(i).

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

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

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

"Seismic impact zone." See WAC 173-351-130 (6)(b)(i).

"Sewage sludge" means a semisolid substance consisting of settled sewage solids combined with varying amounts of water and dissolved materials generated from a wastewater treatment system, that does not meet the requirements of chapter 70.95J RCW.

"Sludge" means any solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant.

"Sole source aquifer." See WAC 173-351-140 (1)(b)(vii).

"Solid waste" means all putrescible and nonputrescible solid and semisolid wastes including, but not limited to garbage, rubbish, ashes, industrial wastes, commercial waste, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, discarded commodities and recyclable materials.

"Structural components." See WAC 173-351-130 (7)(b)(ii).

"Unstable area." See WAC 173-351-130 (7)(b)(i).

"Vadose zone" means that portion of a geologic formation in which soil pores contain some water, the pressure of that water is less than atmospheric, and the formation occurs above the zone of saturation.

"Vulnerability." See WAC 173-351-140 (1)(b).

"Waste management unit" means a MSWLF unit.

"Waste management unit boundary" means a vertical surface located at the hydraulically down gradient limit of the unit. This vertical surface extends down into the hydrostratigraphic unit(s) identified in the hydrogeologic report.

"Waters of the state" means lakes, rivers, ponds, streams, inland waters, underground waters, salt water, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

"Wetlands." See WAC 173-351-130 (4)(b).

"Woodwaste" means solid waste consisting of wood pieces or particles generated as a by-product or waste from the manufacturing of wood products, handling and storage of raw materials and trees and stumps.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-100, filed 10/26/93, effective 11/26/93.]

WAC 173-351-120 Consideration of other local, state, and federal laws. The owner or operator of a municipal solid waste landfill unit must comply with any other applicable federal, state, and local rules, laws, regulations, or other requirements.

Note: Except for 40 CFR Part 258.60(f) and 258.60(g) set forth in WAC 173-351-010 (2)(b)(ii), 40 CFR Part 258 is not an applicable federal rule for purposes of this section.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-120, filed 10/26/93, effective 11/26/93.]

WAC 173-351-130 Location restrictions. (1) Applicability.

(a) On and after the effective date of this chapter, all MSWLF units shall meet the locational restrictions of this section unless otherwise specified.

(b) Existing MSWLF units that cannot make the demonstration specified in subsection (2)(a) of this section, pertaining to airports, subsection (3)(a) of this section, pertaining to floodplains, subsection (7)(a) of this section, pertaining to unstable areas, must close by October 9, 1996, and conduct post-closure in accordance with WAC 173-351-500, Closure and post-closure care.

(c) The deadline for closure required by (b) of this subsection may be extended up to two years if the owner or operator demonstrates to the jurisdictional health department during the permitting process of WAC 173-351-700 that:

(i) There is no available alternative disposal capacity; and

(ii) There is no immediate threat to human health and the environment.

Note: Owners or operators of MSWLFs should be aware that the state department of health has adopted a state wellhead protection program in accordance with section 1428 of the Safe Drinking Water Act. Owners and operators should also be aware of locational restrictions which may exist through the process of designating and implementing Ground Water Management Areas, under chapter 173-100 WAC, and through the Special Protection Areas of chapter 173-200 WAC.

(2) Airport safety.

(a) Owners or operators of new MSWLF units, existing MSWLF units, and/or lateral expansions that are located within ten thousand feet (three thousand forty-eight meters) of any airport runway end used by turbojet aircraft or within five thousand feet (one thousand twenty-four meters) of any airport runway end used by only piston-type aircraft must demonstrate that the units are designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft.

(b) Owners or operators proposing to site new MSWLF units and/or lateral expansions within a five-mile (eight kilometer) radius of any airport runway end used by turbojet or piston-type aircraft must notify the effected airport and the Federal Aviation Administration (FAA).

(c) The owner or operator must place the demonstration required by (a) of this subsection in the application for a permit under WAC 173-351-700 and be issued a solid waste permit by the jurisdictional health department.

(d) For purposes of this subsection:

(i) "Airport" means public-use airport open to the public without prior permission and without restrictions within the physical capacities of available facilities.

(ii) "Bird hazard" means an increase in the likelihood of bird/aircraft collisions that may cause damage to the aircraft or injury to its occupants.

(3) Floodplains.

(a) Owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions located in 100-year floodplains must demonstrate that the unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health and the environment. The owner or operator must place the demonstration in the application for a permit under WAC 173-351-700 and be issued a solid waste permit by the jurisdictional health department.

(b) For purposes of this subsection:

(i) "Floodplain" means the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, that are inundated by the 100-year flood.

(ii) "100-year flood" or "base flood" means a flood that has a one-percent or less chance of recurring in any given year or a flood of a magnitude equalled or exceeded once in one hundred years on the average over a significantly long period.

(iii) "Washout" means the carrying away of solid waste by waters of the base flood.

(4) Wetlands.

(a) New MSWLF units and lateral expansions shall not be located in wetlands, unless the owner or operator can make the following demonstrations during the permit process of WAC 173-351-700:

(i) The construction and operation of the MSWLF unit will not:

(A) Cause or contribute to violations of chapter 173-201A WAC, Water quality standards for surface waters of the state of Washington and chapter 173-200 WAC, Water quality standards for ground waters of the state of Washington;

(B) Violate any applicable toxic effluent standard or prohibition under Section 307 of the Federal Clean Water Act or chapter 173-220 WAC, the National Pollutant discharge elimination system permit program;

(C) Jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Federal Endangered Species Act of 1973; and

(D) Violate any requirement under the Federal Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary;

(ii) The MSWLF unit will not cause or contribute to significant degradation of wetlands. The owner or operator must demonstrate during the permit process of WAC 173-351-700 the integrity of the MSWLF unit and its ability to protect ecological resources by addressing the following factors:

(A) Erosion, stability, and migration potential of native wetland soils, muds, and deposits used to support the MSWLF unit;

(B) Erosion, stability, and migration potential of dredged and fill materials used to support the MSWLF unit;

(C) The volume and chemical nature of the waste managed in the MSWLF unit;

(D) Impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste;

(E) The potential effects of catastrophic release of solid waste to the wetland and the resulting impacts on the environment; and

(F) Any additional factors, as necessary, to demonstrate during the permit process of WAC 173-351-700 that ecological resources in the wetland are sufficiently protected.

(iii) Where applicable under Section 404 of the Federal Clean Water Act or applicable state wetlands laws and regulations (e.g. chapter 173-22 WAC, Adoption of designations of wetlands associated with shorelines of the state), the presumption that a practicable alternative to the proposed landfill is available which does not involve wetlands is clearly rebutted;

(iv) To the extent required under Section 404 of the Federal Clean Water Act steps have been taken to attempt to achieve no net loss of wetlands (as defined by acreage and function) by:

(A) Avoiding impacts to wetlands to the maximum extent practicable as required by (a)(iii) of this subsection;

(B) Minimizing unavoidable impacts to the maximum extent practicable; and

(C) Finally offsetting remaining unavoidable wetlands impacts through all appropriate and practicable compensa-

tory mitigation actions (e.g., restoration and maintenance of existing degraded wetlands or creation of man-made wetlands);

(v) Sufficient information is available to make a reasonable determination with respect to these demonstrations.

(b) For purposes of this subsection, "wetlands" means those areas that are defined in 40 CFR 232.2(r): Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include, but are not limited to, swamps, marshes, bogs, and similar areas.

(5) Fault areas.

(a) New MSWLF units and lateral expansions shall not be located within two hundred feet (sixty meters) of a fault that has had displacement in Holocene time unless the owner or operator demonstrates during the permit process of WAC 173-351-700 that an alternative setback distance of less than two hundred feet (sixty meters) will prevent damage to the structural integrity of the MSWLF unit and will be protective of human health and the environment.

(b) For the purposes of this subsection:

(i) "Fault" means a fracture or a zone of fractures in any material along which strata on one side have been displaced with respect to that on the other side.

(ii) "Displacement" means the relative movement of any two sides of a fault measured in any direction.

(iii) "Holocene" means the most recent epoch of the Quaternary period, extending from the end of the Pleistocene Epoch to the present.

(6) Seismic impact zones.

(a) New MSWLF units and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates during the permit process of WAC 173-351-700 to the jurisdictional health department that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site. The owner or operator must place the demonstration in the application for a permit under WAC 173-351-700 and be issued a solid waste permit by the jurisdictional health department.

(b) For the purposes of this subsection:

(i) "Seismic impact zone" means an area with a ten percent or greater probability that the maximum horizontal acceleration in lithified earth material, expressed as a percentage of the earth's gravitational pull, will exceed 0.10g in two hundred fifty years.

(ii) "Maximum horizontal acceleration in lithified earth material" means the maximum expected horizontal acceleration depicted on a seismic hazard map, with a ninety percent or greater probability that the acceleration will not be exceeded in two hundred fifty years, or the maximum expected horizontal acceleration based on a site-specific seismic risk assessment.

(iii) "Lithified earth material" means all rock, including all naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by crystallization of magma or by induration of loose sediments. This term does not include man-made materials, such as fill, concrete, and asphalt, or unconsolidated earth materials, soil, or regolith lying at or near the earth surface.

(7) Unstable areas.

(a) Owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions located in an unstable area must demonstrate that engineering measures have been incorporated into the MSWLF unit's design to ensure that the integrity of the structural components of the MSWLF units will not be disrupted. The owner or operator must place the demonstration in the application for a permit under WAC 173-351-700 and be issued a solid waste permit by the jurisdictional health department. The owner or operator must consider the following factors, at a minimum, when determining whether an area is unstable:

(i) On-site or local soil conditions that may result in significant differential settling;

(ii) On-site or local geologic or geomorphologic features; and

(iii) On-site or local human-made features or events (both surface and subsurface).

(b) For purposes of this subsection:

(i) "Unstable area" means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill structural components responsible for preventing releases from a landfill. Unstable areas can include poor foundation conditions, and areas susceptible to mass movements.

(ii) "Structural components" means liners, leachate collection systems, final covers, run-on/run-off systems, and any other component used in the construction and operation of the MSWLF that is necessary for protection of human health and the environment.

(iii) "Poor foundation conditions" means those areas where features exist which indicate that a natural or man-induced event may result in inadequate foundation support for the structural components of a MSWLF unit.

(iv) "Areas susceptible to mass movement" means those areas of influence (i.e., areas characterized as having an active or substantial possibility of mass movement) where the movement of earth material at, beneath, or adjacent to the MSWLF unit, because of natural or human-induced events, results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include, but are not limited to, landslides, avalanches, debris slides and flows, soil fluction, block sliding, and rock fall.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-130, filed 10/26/93, effective 11/26/93.]

WAC 173-351-140 Other location restrictions. (1) Ground water.

(a) Liner separation. No new MSWLF unit or lateral expansion shall be located at a site where the bottom of the lowest liner is any less than ten feet (three meters) above the seasonal high level of ground water in any water bearing unit which is horizontally and vertically extensive, hydraulically recharged and volumetrically significant as to harm or endanger the integrity of the liner at any time, unless a demonstration during the permit process of WAC 173-351-700 can be made that a hydraulic gradient control system or the equiva-

lent can be installed to control ground water fluctuations and maintain a five foot (1.5 meter) separation between the controlled seasonal high level of ground water in the identified water-bearing unit and the bottom of the lowest liner. The owner or operator must place the demonstration in the application for a permit under WAC 173-351-700 and be issued a solid waste permit by the jurisdictional health department.

This demonstration must include:

(i) A hydrogeologic report required in WAC 173-351-490 including a discussion showing the effects from subsoil settlement, changes in surrounding land uses affecting ground water levels, liner leakage or other impacts will not bring any hydrostratigraphic unit to within five feet (1.5 meters) of the bottom of the lowest liner during the active life, closure and post-closure of the MSWLF unit;

(ii) Any currently available ground/surface water quality data for aquifers, springs, or streams in direct hydrologic contact with landfill's active area;

(iii) A showing that any gradient-control discharges to ground water will not adversely impact existing ground water/surface water users or the instream flow of surface waters in direct hydrologic contact or continuity with the landfill's hydraulic gradient control system;

(iv) Conceptual engineering drawings of the proposed MSWLF unit and discussion as to how the hydraulic gradient control system will not affect the structural integrity nor performance of the liner;

(v) Design specifications for the proposed ground and surface water monitoring systems; and

(vi) Preliminary engineering drawings of the hydraulic gradient control system (if applicable).

(b) Sole source aquifers. No new MSWLF unit or lateral expansion shall be located over a designated sole source aquifer unless the owner or operator can demonstrate during the permit process of WAC 173-351-700 that the sole source aquifer is not vulnerable to potential ground water contamination from the active area. Vulnerability is defined as the propensity or likelihood of a sole source aquifer to become contaminated should the integrity of the engineering control (including liners) fail; it is a measure of the propensity to deteriorate the water quality of a sole source aquifer, and takes into account an assessment of the physical barriers, the physical movement of contaminants, the hydraulic properties of the subsurface lithology; the rate of a contaminant plume movement; the physical and chemical characteristics of contaminants; and it also includes an assessment of the likelihood and ease for contaminant removal or clean-up, or the arrest of contamination, so as to not impact any further portion of the designated sole source aquifer. The owner or operator must place the demonstration in the application for a permit under WAC 173-351-700 and be issued a solid waste permit by the jurisdictional health department. Such a vulnerability demonstration must include the submission of a hydrogeologic report as required in WAC 173-351-490 and additionally must meet the following performance criteria:

(i) Demonstrates the presence of confining units or other lithology that will prevent the migration of ground water contamination;

(ii) Addresses the fate and transport of contaminants, including interactions in the lithologic framework, hydrogeochemical facies, contaminant travel times;

(iii) Defines and summarizes the ground water budgets for the active area and the sole source aquifer including recharge and discharge areas and includes flow net diagrams;

(iv) Provides a contingency and ground water assessment plan for the immediate arrest of any ground water contamination and steps to assess the extent of contamination;

(v) Design specifications for the proposed ground and surface water monitoring systems;

(vi) Is prepared by a hydrogeologist or other professional ground water scientist in accordance with WAC 173-351-400(2); and

(vii) "Sole source aquifer" means an aquifer designated by the Environmental Protection Agency pursuant to Section 1424e of the Safe Drinking Water Act (PL 93-523).

(c) Drinking water supply wells. No new MSWLF unit or lateral expansion active area shall be located closer than one thousand feet (three hundred meters) to any drinking water supply well, in use and existing at the time of the purchase of the property containing the active area unless the owner or operator can demonstrate during the permit process of WAC 173-351-700 that the active area is no less than a ninety-day hydraulic travel time to the nearest down-gradient drinking water supply well in the first useable aquifer. The owner or operator must place the demonstration in the application for a permit under WAC 173-351-700 and be issued a solid waste permit by the jurisdictional health department. Such a demonstration must include:

(i) A hydrogeologic report required in WAC 173-351-490; and the necessary calculations for showing compliance with the ninety-day travel time; the ninety-day travel time shall be based on the peak or full pumping capacity of installed nearby wells and include potentiometric surface maps showing well capture zones and radius of influence;

(ii) Any currently available ground/surface water quality data for aquifers, springs, or streams in direct hydrologic contact with landfill's active area;

(iii) The waste management unit boundaries at facility closure;

(iv) Design specifications for the proposed ground and surface water monitoring systems; and

(v) A statement that the demonstration has been prepared by a hydrogeologist or qualified ground water scientist in accordance with 173-351-400(2).

(2) Surface water. No new MSWLF unit or lateral expansion active area shall be located within two hundred feet (sixty-one meters) measured horizontally from the ordinary high water mark, of a shoreline of the state as defined in RCW 90.58.030 (which includes some wetlands associated with waters of the state), nor any public land that is being used by a public water system for watershed control for municipal drinking water purposes in accordance with WAC 246-290-450.

See also wetlands in WAC 173-351-130(4). Local wetlands protection ordinances should be consulted to determine if greater setbacks are required.

(3) Land use. No new MSWLF unit or lateral expansion shall be located:

(a) In areas designated by the United States Fish and Wildlife Service or the department of wildlife as critical habitat for endangered or threatened species of plants, fish, or wildlife;

(b) So that the active area is any closer than one hundred feet (thirty meters) to the facility property line for land zoned as nonresidential or for unzoned lands, except that the active area shall be no closer than two hundred fifty feet (seventy-six meters) to the property line of adjacent land zoned as residential, existing at the time of the purchase of the property containing the active area.

(c) So as to be at variance with any locally-adopted land use plan or zoning requirement unless otherwise provided by local law or ordinance; and

(d) So that the active area is any closer than one thousand feet (three hundred meters) to any state or national park.

(4) Toxic air emissions. See WAC 173-351-200 (5)(a).

(5) Cover material. See WAC 173-351-200 (2)(a).

(6) Capacity. See WAC 173-351-010 (2)(c).

(7) Climatic factors. See WAC 173-351-300 (2)(b) for climatic factors.

(8) Natural soils. See WAC 173-351-300(2) for soil liner standards.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-140, filed 10/26/93, effective 11/26/93.]

WAC 173-351-200 Operating criteria. (1) Procedures for excluding the receipt of dangerous waste.

(a) Owners or operators of all MSWLF units must implement a program at the facility for detecting and preventing the disposal of regulated dangerous wastes including polychlorinated biphenyls (PCB) waste as defined in chapter 173-303 WAC, the Dangerous waste regulations. This program must include, at a minimum:

(i) Random inspections of incoming loads unless the owner or operator takes other steps (for example, instituting source controls and restricting the type of waste received) to ensure that incoming loads do not contain regulated dangerous waste or PCB wastes;

(ii) Records of any inspections;

(iii) Training of facility personnel to recognize regulated dangerous waste and PCB wastes; and

(iv) Immediate notification of the department and the jurisdictional health department if a regulated dangerous waste or PCB waste is discovered at the facility.

(b) For purposes of this subsection:

(i) "Regulated dangerous waste" means a solid waste that is a dangerous waste as defined in WAC 173-303-070, Designation of dangerous waste, including asbestos not managed in accordance to 40 CFR Part 61, that is not excluded from regulation as a dangerous waste under WAC 173-303-071 or was not generated by an exempted small quantity generator as defined in WAC 173-303-070; and

(ii) "Random inspection" means:

(A) Discharging a random waste load onto a suitable surface. A suitable surface shall be chosen to avoid interference with operations so that sorted waste can be distinguished from other loads of uninspected waste, so as to avoid litter and to contain runoff;

(B) Viewing the contents prior to actual disposal of the waste; and

(C) Allowing the facility owner or operator to return excluded wastes to the hauler, arrange for disposal of excluded wastes at a facility permitted to manage dangerous waste, or take other measures to prevent disposal of the excluded wastes at the facility.

(2) Cover material requirements.

(a) Except as provided in (b) of this subsection, the owners or operators of all MSWLF units must cover disposed solid waste with six inches (fifteen centimeters) of earthen material, i.e., soils, at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging.

(b) Alternative materials of an alternative thickness other than at least six inches (15 centimeters) of earthen material may be approved by the jurisdictional health department if the owner or operator demonstrates during the permit process of WAC 173-351-700 that the alternative material and thickness control disease vectors, fires, odors, blowing litter, provides adequate access for heavy vehicles, will not adversely affect gas or leachate composition and controls and scavenging without presenting a threat to human health and the environment.

(c) The jurisdictional health department may grant a temporary waiver not to exceed three months from the requirement of (a) and (b) of this subsection if the owner or operator demonstrates that there are extreme seasonal climatic conditions that make meeting such requirements impractical.

(3) Disease vector control.

(a) Owners or operators of all MSWLF units must prevent or control on-site populations of disease vectors using techniques appropriate for the protection of human health and the environment.

(b) For purposes of this subsection, "disease vectors" means any rodents, flies, mosquitoes, or other animals, including insects, capable of transmitting disease to humans.

(4) Explosive gases control.

(a) Owners or operators of all MSWLF units must ensure that:

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

(ii) The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary or beyond; and

(iii) The concentration of methane gases does not exceed one hundred parts per million by volume of methane in off-site structures.

(b) Owners or operators of all MSWLF units must implement a routine methane monitoring program to ensure that the standards of (a)(i) and (ii) of this subsection are met.

(i) The type and frequency of monitoring must be determined based on the following factors:

(A) Soil conditions;

(B) The hydrogeologic conditions surrounding the facility;

(C) The hydraulic conditions surrounding the facility; and

(D) The location of facility structures and property boundaries.

(ii) The minimum frequency of monitoring shall be quarterly.

Note: All gas monitoring wells shall be constructed and decommissioned to ensure protection of the ground water and to prevent ground water contamination and follow the requirements of chapter 173-160 WAC, Minimum standards for construction and maintenance of wells, unless otherwise approved by the jurisdictional health department.

(c) If methane gas levels exceeding the limits specified in subsection (4)(a)(i) or (ii) of this section are detected, the owner or operator must:

(i) Immediately take all necessary steps to ensure protection of human health including:

(A) Notifying the jurisdictional health department;

(B) Where subsection (4)(a)(ii) of this section is exceeded, monitoring of off-site structures for compliance with subsection (4)(a)(iii) of this section;

(C) Daily monitoring of methane gas levels unless otherwise authorized by the jurisdictional health department; and

(D) Evacuation of buildings affected by landfill gas shall be determined by the jurisdictional health department and fire department.

(ii) Within seven calendar days of detection, place in the operating record, the methane gas levels detected and a description of the steps taken to protect human health; and

(iii) Within sixty days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the jurisdictional health department that the plan has been implemented. The plan shall describe the nature and extent of the problem and the remedy.

(iv) The jurisdictional health department may establish alternative schedules for demonstrating compliance with (c)(ii) and (iii) of this subsection.

(d) For purposes of this subsection, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at twenty-five degrees C and atmospheric pressure.

(5) Air criteria.

(a) Owners or operators of all MSWLF units must ensure that the units not violate any applicable requirements developed under the Washington state implementation plan approved or promulgated by the Federal Environmental Protection Agency pursuant to Section 110 of the Federal Clean Air Act, as amended.

(b) Open burning of solid waste is prohibited at all MSWLF units, except: For the infrequent burning of agricultural wastes, silvicultural wastes, landclearing debris, diseased trees or debris from emergency cleanup operations, provided that such open burning is not inconsistent with policies, regulations, and permits administered by the jurisdictional air pollution control agency or the department under the Washington Clean Air Act, chapter 70.94 RCW. Household waste shall not be open burned.

(6) Access requirements. Owners or operators of all MSWLF units must control public access and prevent unauthorized vehicular traffic, illegal dumping of wastes, and controls to keep animals out by using artificial barriers, natural barriers, or both, as appropriate to protect human health and the environment. A lockable gate shall be required at each entry to the facility.

(7) Run-on/run-off control systems.

(a) Owners or operators of all MSWLF units must design, construct, and maintain:

(i) A run-on control system to prevent flow onto the active portion of the landfill during the peak discharge from a twenty-five year storm;

(ii) A run-off control system from the active portion of the landfill to collect and control at least the water volume resulting from a twenty-four hour, twenty-five year storm.

(b) Run-off from the active portion of the landfill unit must be handled in accordance with WAC 173-351-200(8).

(8) Surface water requirements. MSWLF units shall not:

(a) Cause a discharge of pollutants into waters of the state, including wetlands, that violates any requirements of chapter 90.48 RCW, Water pollution control, including, but not limited to, chapter 173-201A WAC, Water quality standards for surface waters of the state of Washington, chapter 173-220 RCW, the National pollutant discharge elimination system permit program and chapter 173-216 WAC, State waste discharge permit program.

(b) Cause the discharge of a nonpoint source of pollution to waters of the state, including wetlands, that violates any requirement of an area-wide or state-wide water quality management plan that has been approved under Section 208 or 319 of the Federal Clean Water Act, as amended.

(9) Liquids restrictions.

(a) Bulk or noncontainerized liquid waste may not be placed in MSWLF units unless:

(i) The waste is household waste other than septic waste; or

(ii) The waste is leachate or gas condensate derived from the MSWLF unit, or water added in a controlled fashion and necessary for enhancing decomposition of solid waste, as approved during the permitting process of WAC 173-351-700, whether it is a new or existing MSWLF, or lateral expansion and the MSWLF unit:

(A) Is designed with a leachate collection system and composite liner as described in WAC 173-351-300 (2)(a)(i) and (ii) or (iii); and

(B) Is accepting leachate, condensate or water resulting from an emergency in disposing of such liquids.

The owner or operator must place the demonstration in the application for a permit under WAC 173-351-700 and be issued a solid waste permit by the jurisdictional health department.

Note: Condensate and leachate are subject to designation to determine whether either is a dangerous waste under chapter 173-303 WAC.

(b) Containers holding liquid waste may not be placed in a MSWLF unit unless:

(i) The container is a small container similar in size to that normally found in household waste;

(ii) The container is designed to hold liquids for use other than storage; or

(iii) The waste is household waste.

(c) For purposes of this subsection:

(i) "Liquid waste" means any waste material that is determined to contain "free liquids" as defined by Method

9095 (Paint Filter Liquids Test), as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846.

(ii) "Gas condensate" means the liquid generated as a result of gas recovery processes at the MSWLF unit.

(10) Recordkeeping requirements.

(a) The owner or operator of a MSWLF unit must record and retain the required information as it becomes available. The operating record must be retained at or near the facility in an operating record or in an alternative location approved by the jurisdictional health department during the permitting process of WAC 173-351-700. The required information includes:

(i) Copies of all initial, renewal, reissued and modified permit applications including all demonstrations, and issued permits;

(ii) Inspection records, training procedures, and notification procedures required in subsection (1) of this section, Procedures for excluding the receipt of hazardous waste, and inspection documents associated with the plan of operation, WAC 173-351-210 (1)(b).

(iii) Gas monitoring results from monitoring and any remediation plans required by WAC 173-351-200(4);

(iv) Any demonstration, certification, declaration of construction, finding, monitoring, testing, or analytical data as required by WAC 173-351-400 (Ground water monitoring systems and corrective action);

(v) Major deviations from the plan of operation required in WAC 173-351-210; and

(vi) Daily records of weights or volumes of solid waste and, if available, types of waste received at the facility.

(b) The owner or operator must notify the jurisdictional health department when the documents from (a) of this subsection have been placed in or added to the operating record, unless:

(i) Such documents have been made a part of a permit application under this regulation;

(ii) Notification occurs under the renewal application requirements of WAC 173-351-730 (3)(b)(iv); or

(iii) The documents are daily records of weights or volumes specified in WAC 173-351-200 (10)(a)(vi).

(c) The jurisdictional health department can set alternative schedules during the permitting process of WAC 173-351-700 for recordkeeping and notification requirements as specified in (a) and (b) of this subsection, except for the notification requirements in WAC 173-351-130 (2)(b), the Federal Aviation Administration and in WAC 173-351-440 (6)(c), notification of land owners under assessment monitoring.

(d) All information contained in the operating record must be furnished upon request to the jurisdictional health department or be made available at all reasonable times for inspection by the jurisdictional health department and the department.

(11) Annual reports. Each owner or operator shall prepare and submit a copy of an annual report to the jurisdictional health department and the department by April 1 of each year. The annual report shall:

(a) Include information on facility activities during the previous year;

(b) Be on forms supplied by the department; and

(c) Include the following information:

(i) Facility location;

(ii) Facility contact;

(iii) Operational and/or post-closure information;

(iv) Permit status;

(v) Compliance information;

(vi) Facility capacity information;

(vii) Information on ground water monitoring as required in WAC 173-351-415(1) except, prior to the effective date of the ground water monitoring requirements of WAC 173-351-400, ground water monitoring information and existing summaries collected under ground water monitoring systems installed according to chapter 173-304 WAC.

(viii) Information on violation of ambient standards for surface water and explosive gases whose monitoring is required by chapter 173-351 WAC or performed as part of the permit issued under WAC 173-351-700; and

(ix) Other information as required.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-200, filed 10/26/93, effective 11/26/93.]

WAC 173-351-210 Plan of operation. Each owner or operator shall develop, keep, and abide by a plan of operation approved as part of the permitting process in WAC 173-351-700. The plan of operation shall describe the facilities' operation and shall convey to site operating personnel the concept of operation intended by the designer. The plan of operation shall be available for inspection at the request of the jurisdictional health officer. The facility must be operated in accordance with the plan of operation or the plan must be so modified with the approval of the jurisdictional health department.

Each plan of operation shall include:

(1) How solid wastes are to be handled on-site during its active life including transportation, routine filling, grading, cover, and housekeeping;

(2) How inspections are conducted and their frequency;

(3) Actions to take if there is a fire or explosion;

(4) Actions to take for sudden releases (e.g., failure of run-off containment system);

(5) How equipment such as leachate collection and gas collection equipment are to be operated and maintained;

(6) A safety plan or procedure; and

(7) Other such details as required by the jurisdictional health department.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-210, filed 10/26/93, effective 11/26/93.]

WAC 173-351-220 Additional operating criteria. All owners or operators of MSWLF units shall operate the facility so as to:

(1) Control road dust;

Note: Operators should carefully select dust suppressants approved by the jurisdictional health departments that do not pose a threat to surface or ground water quality.

(2) Collect scattered litter as necessary to prevent vector harborage, a fire hazard, an aesthetic nuisance, or adversely affect wildlife or its habitat;

(3) Prohibit scavenging;

(4) Landfill personnel. All landfills shall:

(a) Ensure that at least two landfill personnel are on-site with one person at the active portion when the site is open to the public for landfills with a permitted capacity of greater than fifty thousand cubic yards per year; and

(b) Comply with the certification requirements of chapter 173-300 WAC, Certification of operators of solid waste incinerator and landfill facilities.

Note: The definition of operators in chapter 173-300 WAC is not the same as the definition of operator in this rule.

(5) Ensure that reserve operational equipment shall be available to maintain and meet these standards;

(6) Clearly mark the active area boundaries authorized in the permit, with permanent posts or using equivalent method clearly visible for inspection purposes;

(7) Thoroughly compact the solid waste before succeeding layers are added except for the first lift over a liner;

(8) Maintain the monitoring system required in WAC 173-351-400, Ground water monitoring systems and corrective action, WAC 173-351-200(4), explosive gas monitoring of this regulation and any other monitoring specified in the permit issued in WAC 173-351-700.

(9) Require recycling.

(a) All owners and operators shall provide the opportunity for the general public to conveniently recycle cans, bottles, paper, and other material brought to the landfill site and for which a market exists or as required according to the most recently adopted county comprehensive solid waste management plan:

(i) During the normal hours of operation; and

(ii) In facilities convenient to the public (i.e., near entrance to the gate).

(b) Owners or operators shall conduct recycling activities in an orderly, sanitary manner and in a way that does not interfere with MSWLF operations.

(c) Owners or operators may demonstrate during the permit process of WAC 173-351-700 alternative means to providing an opportunity to the general public to recycle household solid waste including other conveniently located facilities which offer recycling opportunities.

(10) Prohibiting disposal of municipal sewage sludge or biosolids in MSWLF units.

(a) The disposal of municipal sewage sludge or biosolids or any material containing municipal sewage sludge or biosolids in a MSWLF unit is prohibited unless the municipal sewage sludge or biosolids or material containing municipal sewage sludge or biosolids is not a liquid as defined in this rule, and such disposal is specifically approved as part of a valid NPDES permit, or a valid permit issued in accordance with chapter 70.95J RCW and rules promulgated under that authority.

(b) Notwithstanding WAC 173-351-220 (10)(a), the jurisdictional health department may allow disposal of municipal sewage sludge or biosolids, or any material containing municipal sewage sludge or biosolids in a landfill on a temporary basis if the jurisdictional health department determines that a potentially unhealthful circumstance exists and other management options are unavailable or would pose a threat to human health or the environment.

(c) In accordance with (b) of this subsection upon determination that a potentially unhealthful circumstance exists, the jurisdictional health department shall notify the department in writing, of its findings and basis for its determination. In its notification, the jurisdictional health department shall state the date on which disposal is approved to commence, any conditions and the date after which continued disposal shall be prohibited.

(d) For the purposes of this regulation, the use of sewage sludge or biosolids or any material containing sewage sludge or biosolids, which is subject to regulation under 40 CFR Part 503 and or chapter 70.95J RCW, as daily cover or as an amendment to daily cover shall be considered disposal.

(11) Disposal of dangerous waste prohibited. Owners or operators of landfills shall not knowingly dispose, treat, store, or otherwise handle dangerous waste unless the requirements of the Dangerous waste regulation, chapter 173-303 WAC are met.

(12) Jurisdictional health department inspection of activities. In accordance with RCW 70.95.190, employees of the jurisdictional health department or their agents may enter upon, inspect, sample, and move freely about the premises of any MSWLF, after presentation of credentials.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-220, filed 10/26/93, effective 11/26/93.]

WAC 173-351-300 Design criteria. (1) Applicability. Existing MSWLF units are not subject to this section. Waste placement in existing units must be consistent with past operating practices or modified practices to ensure good management, including operating plans approved under chapter 173-304 WAC.

(2) New MSWLF units and lateral expansions shall be constructed:

(a) For nonarid landfills, in accordance with a standard design as follows:

(i) A composite liner as defined in (a)(ii) of this subsection and a leachate collection system that is designed and constructed to maintain less than a 1 foot (30 cm) depth of leachate over the liner.

Note: Leachate head in leachate pump sump areas, only, shall not be allowed to exceed two feet (60 cm).

(ii) For purpose of this section, "composite liner" means a system consisting of two components; the upper component must consist of a minimum of 60 mil thickness high density polyethylene (HDPE) geomembrane. The lower component must consist of at least a two-foot (60 cm) layer of compacted soil with a hydraulic conductivity of no more than $1X10^{-7}$ cm/sec. The geomembrane must be installed in direct and uniform contact with the compacted soil component. Thinner geomembranes of other than high density polyethylene may be used provided that a demonstration can be made that the alternative has equivalent mechanical strength, permeability, chemical resistance and other factors under conditions of construction and use. Minimum thickness of geomembranes other than high density polyethylene shall be 30 mils.

(iii) Equivalent liner designs and liner materials may be used provided a demonstration during the permitting process of WAC 173-351-700 can be made that the liner is equivalent to the composite liner design:

(A) With respect to hydraulic effectiveness as shown by the use of the hydraulic evaluation of landfill performance (HELP) model or other approved models or methods;

(B) With respect to mechanical strength;

(C) With respect to chemical resistance;

(D) With respect to potential physical damage during construction and operation;

(E) With respect to attenuative capacity; and

(F) And other factors identified by the jurisdictional health department and the department on a case-by-case basis.

(b) For arid landfills, in accordance with a design that ensures that the maximum contaminant levels listed in Table 1 of this section will not be exceeded in the hydrostratigraphic unit(s) identified in the hydrogeologic characterization/report at the relevant point of compliance as specified during the permitting process in WAC 173-351-700. When approving a design that complies with the arid landfill design of (b) of this subsection, the jurisdictional health department shall consider at least the following factors:

(i) The hydrogeologic characteristics of the facility and surrounding land;

(ii) The climatic factors of the area; and

(iii) The volume, physical and chemical characteristics of the leachate.

Note: When determining the need for a liner in arid settings and its ability to meet the performance standard of this section, considering (b)(i), (ii), and (iii) of this subsection, the owner or operator may use:

(A) Existing information such as vadose zone, ground water monitoring, or leachate characterization that has previously been conducted at the facility;

(B) Contaminant transport modeling in accordance with the requirements of WAC 173-351-480; and/or

(C) Other information determined as appropriate and relevant by the jurisdictional health department.

(c) The relevant point of compliance approved during the permitting process in WAC 173-351-700, shall be no more than one hundred fifty meters (four hundred ninety-two feet) from the waste management unit boundary and shall be located on land owned by the owner of the MSWLF unit. In approving the relevant point of compliance the jurisdictional health department shall consider at least the following factors:

(i) The hydrogeologic characteristics of the facility and surrounding land;

(ii) The volume, and physical/chemical characteristics of the leachate;

(iii) The quantity and quality, and direction, of flow of ground water;

(iv) The proximity and withdrawal rate of the ground water users;

(v) The availability of alternative drinking water supplies;

(vi) The existing quality of the ground water, including other sources of contamination and their cumulative impacts on the ground water, and whether the ground water is currently used or reasonably expected to be used for drinking water;

(vii) Public health, safety, and welfare effects; and

(viii) Practical capability of the owner or operator.

TABLE 1

CHEMICAL	Maximum Contaminant Levels (MCL (mg/l))
ARSENIC	0.00005
BARIUM	1.0
BENZENE	0.001
CADMIUM	0.01
CARBON TETRACHLORIDE	0.0003
CHROMIUM (HEXAVALENT)	0.05
2,4-DICHLOROPHENOXY ACETIC ACID	0.1
1,4-DICHLOROBENZENE	0.004
1,2-DICHLOROETHANE	0.0005
1,1 DICHLOROETHYLENE	0.007
ENDRIN	0.0002
FLUORIDE	4
LINDANE	0.00006
LEAD	0.05
MERCURY	0.002
METHOXYCHLOR	0.1
NITRATE	10
SELENIUM	0.01
SILVER	0.05
TOXAPHENE	0.00008
1,1,1-TRICHLOROETHANE	0.20
TRICHLOROETHYLENE	0.003
2,4,5-TRICHLOROPHENOXY ACETIC ACID	0.01
VINYL CHLORIDE	0.00002

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-300, filed 10/26/93, effective 11/26/93.]

WAC 173-351-400 Ground water monitoring systems and corrective action. (1) Applicability.

(a) The requirements of WAC 173-351-400 through WAC 173-351-490 apply to MSWLF units whose owners and operators are required to perform ground water monitoring under chapter 173-351 WAC.

(b) Owners and operators of MSWLF units must comply with the ground water monitoring requirements of this regulation according to the following schedule:

(i) Existing MSWLF units and lateral expansions less than one mile (1.6 kilometers) from a drinking water intake (surface or subsurface) must be in compliance with the ground water monitoring requirements specified in WAC 173-351-400 through 173-351-450, and 173-351-490 by October 9, 1994;

Note: A drinking water intake is any surface water or ground water intake that is used for the purposes of drinking water i.e., water supply wells.

(ii) Existing MSWLF units and lateral expansions greater than one mile (1.6 kilometers) from a drinking water intake (surface or subsurface) must be in compliance with the ground water monitoring requirements specified in WAC 173-351-400 through 173-351-450, and 173-351-490 by October 9, 1995;

(iii) New MSWLF and lateral expansions units must be in compliance with the ground water monitoring requirements specified in WAC 173-351-400 through 173-351-450, and 173-351-490 before waste can be placed in the MSWLF unit.

(c) Existing MSWLF units and lateral expansions with ground water contamination as defined under WAC 173-304-

100 and chapter 173-200 WAC must begin an assessment ground water monitoring program under WAC 173-351-440 by October 9, 1994.

(d) Interim ground water monitoring programs. Prior to the compliance schedules in (b) of this subsection, all existing MSWLF units and lateral expansions must either:

(i) Continue to monitor under WAC 173-304-490; or

(ii) Begin to monitor under this section.

(e) All MSWLF units closed in accordance with chapter 173-304 WAC must continue to monitor ground water in accordance with chapter 173-304 WAC.

(2) Personnel qualifications. For the purposes of this regulation, a "qualified ground water scientist" must be a hydrogeologist, geologist, engineer, or other scientist who meets all of the following criteria:

(a) Has received a baccalaureate or post-graduate degree in the natural sciences or engineering; and

(b) Has sufficient training and experience in ground water hydrology and related fields as may be demonstrated by state registration, professional certifications, or completion of accredited university programs that enable that individual to make sound professional judgments regarding ground water monitoring, contaminant fate and transport, and corrective action.

(3) A qualified ground water scientist is required to prepare the following reports, demonstrations and information:

(a) The hydrogeologic report(s) of WAC 173-351-490;

(b) The ground water monitoring program(s) including the ground water monitoring system design and well placement of WAC 173-351-405; the ground water sampling and analysis plan of WAC 173-351-410; the detection monitoring program(s) of WAC 173-351-430; and the assessment monitoring program(s) of WAC 173-351-440;

(c) Any demonstration(s) under WAC 173-351-430 (4)(c) or 173-351-440 (6)(e), or 173-351-140(1);

(d) Any modification(s) proposals/requests to the approved ground water monitoring program in accordance with WAC 173-351-450; and

(e) Any ground water modeling demonstrations made under WAC 173-351-480.

Note: A hydrogeologist or other qualified ground water scientist is **NOT** required for the actual ground water sampling.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-400, filed 10/26/93, effective 11/26/93.]

WAC 173-351-405 Performance standards for ground water monitoring system designs. Ground water monitoring well placement.

The ground water monitoring system design shall meet the following performance criteria:

(1) A sufficient number of wells must be installed at appropriate locations and depths to yield representative ground water samples from those hydrostratigraphic units which have been identified as the earliest target hydraulic pathways and conduits of flow for ground water and contaminant movement, and storage.

(2) The number, spacing, and depths of monitoring wells must be based on the site characteristics including the area of the MSWLF unit and the hydrogeological characterization of WAC 173-351-490, and requires a demonstration based on all of the following information:

(a) A ground water flow path analysis which supports why the chosen hydrostratigraphic unit best serves the installation of a detection or assessment ground water monitoring well system capable of providing early warning detection of any ground water contamination.

(b) Documentation and calculations of all of the following information:

(i) Hydrostratigraphic unit thicknesses including confining units and transmissive units;

(ii) Vertical and horizontal ground water flow directions including seasonal, man-made, or other short term fluctuations in ground water flow;

(iii) Stratigraphy and lithology;

(iv) Hydraulic conductivity; and

(v) Porosity and effective porosity.

(3) Hydraulically placed upgradient wells (background wells) must meet the following performance criteria:

(a) Must be installed in ground water that has not been affected by leakage from a MSWLF unit; or

(b) If hydrogeologic conditions do not allow for the determination of a hydraulically placed upgradient well then sampling at other monitoring wells which provide representative background ground water quality may be allowed; and

(4) Hydraulically placed down-gradient wells (compliance wells) must meet the following performance criteria:

(a) Represent the quality of ground water passing the relevant point of compliance specified by the jurisdictional health department. The downgradient monitoring system must be installed at the relevant point of compliance specified by the jurisdictional health department during the permitting process of WAC 173-351-700. Additional wells may be required by the jurisdictional health department based upon areal extent of the MSWLF unit, complex hydrogeologic settings or to define the extent of contamination under WAC 173-351-440 and 173-351-450.

(b) When physical obstacles preclude installation of ground water monitoring wells at the relevant point of compliance at existing units, the downgradient monitoring system may be installed at the closest practicable distance hydraulically down gradient from the relevant point of compliance that ensures detection of ground water contamination in the chosen hydrostratigraphic unit.

(5) All monitoring wells must be cased in a manner that maintains the integrity of the bore hole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of samples. The annular space between the bore hole and well casing above the sampling depth must be sealed to prevent contamination of samples and ground water. All wells must be constructed in accordance with chapter 173-160 WAC, Minimum standards for construction and maintenance of water wells and chapter 173-162 WAC, Regulation and licensing of well contractors and operators. All wells must be clearly labeled, capped, and locked.

(6) The owner or operator must apply for a permit modification under WAC 173-351-720(5) or must apply during the renewal process of WAC 173-351-720 (1)(i), for any proposed changes to the design, installation, development, and

decommission of any monitoring wells, piezometers, and other measurement, sampling, and analytical devices. Upon completing changes, all documentation, including date of change, new well location maps, boring logs, and well diagrams must be submitted to the jurisdictional health department and must be placed in the operating record of WAC 173-351-200(10).

(7) All monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to design specifications throughout the life of the monitoring program.

(8) The ground water monitoring system and hydrogeologic report including any changes to the ground water monitoring system shall be prepared by a hydrogeologist or other qualified ground water scientist and include a statement of personnel qualifications.

(9) The prepared ground water monitoring system design and hydrogeologic report must be made a part of the permit application in accordance with WAC 173-351-730 (1)(b)(iii).

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-405, filed 10/26/93, effective 11/26/93.]

WAC 173-351-410 Ground water sampling and analysis requirements. (1) The ground water monitoring program must include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of ground water quality at the background and downgradient wells installed in compliance with WAC 173-351-400 and with this section. The owner or operator must submit the sampling and analysis program documentation as a part of the permit application in accordance with WAC 173-351-730 (1)(b)(iii). The program must include procedures and techniques for:

(a) Sample collection and handling;

(b) Sample preservation and shipment;

(c) Analytical procedures;

(d) Chain-of-custody control;

(e) Quality assurance and quality control;

(f) Decontamination of drilling and sampling equipment;

(g) Procedures to ensure employee health and safety during well installation and monitoring; and

(h) Well operation and maintenance procedures.

(2) The ground water monitoring program must include sampling and analytical methods that are appropriate for ground water sampling and that accurately measure hazardous constituents and other monitoring parameters in ground water samples or reflect an acceptable practical quantitation limit (PQL). Ground water samples shall not be field-filtered for organic constituents prior to laboratory analysis. All analyses must be sent to an accredited laboratory in accordance with chapter 173-50 WAC, Accreditation of environmental laboratories.

(3) Ground water elevations must be measured in each well immediately prior to purging, each time ground water is sampled. The owner or operator must determine the rate and direction of ground water flow each time ground water is sampled. Ground water elevations in wells which monitor the same MSWLF unit must be measured within a period of time short enough to avoid any ground water fluctuations which could preclude the accurate determination of ground water flow rate and direction. All ground water elevations must be determined:

(a) By a method that ensures measurement to the 0.01 (one/one hundredth) of a foot (3mm) relative to the top of the well casing; and

(b) The orthometric elevation of the top of the well casing is related to a vertical benchmark based on the national geodetic vertical datum of 1929 (NGVD 29) and be established to 3rd order classification standards per federal geodetic control committee, or its successor, as specified in WAC 332-130-060.

(4) The owner or operator must establish background ground water quality in hydraulically placed upgradient or background well(s) for each of the monitoring parameters or constituents required in the particular ground water monitoring program that applies to the MSWLF unit, as determined under this section. Background ground water quality may be established at wells that are not located hydraulically upgradient from the MSWLF unit if it meets the requirements of WAC 173-351-400 through 173-351-490.

(5) The number of samples collected to establish water quality data must be consistent with the appropriate statistical procedures determined pursuant to WAC 173-351-420. The sampling procedures shall be those specified under WAC 173-351-430 for detection monitoring, WAC 173-351-440 for assessment monitoring, and WAC 173-351-440(6) of corrective action.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-410, filed 10/26/93, effective 11/26/93.]

WAC 173-351-415 Ground water reporting. (1) The annual report shall be included with the facility annual report as required in WAC 173-351-200(11) and shall be on forms developed by the department which will request the following information:

(a) A brief summary of statistical results and/or any statistical trends including any findings of any statistical increases for the year;

(b) A brief summary of ground water flow rate and direction for the year, noting any trends or changes;

(c) A xerox copy of all potentiometric surface maps developed for each quarter or approved semi-annual period; and

(d) A summary geochemical evaluation noting any changes or trends in the cation-anion balances, Trilinear diagrams and general water chemistry for each well.

(2) A quarterly ground water report shall be submitted to the jurisdictional health department and the department no later than sixty days after the receipt of the quarterly analytical data and shall include all of the following:

(a) All ground water monitoring data for the sampling period;

(b) All statistical calculations and summaries;

(c) Notification of any statistical increase and concentrations above MCL's;

(d) Static water level readings for each monitoring well for each sampling event;

(e) Potentiometric surface elevation maps depicting ground water flow rate and direction;

(f) Cation-anion balances and Trilinear diagrams; and

(g) Leachate analyses.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-415, filed 10/26/93, effective 11/26/93.]

WAC 173-351-420 Statistical methods for ground water monitoring. (1) The owner or operator must calculate and evaluate all of the following statistics using background ground water quality data:

(a) The background mean;

(b) The background variance;

(c) The standard deviation of the background data;

(d) The coefficient of variation of the background data;

(e) The standard error of the background data; and

(f) Other statistics testing for homogeneity of variance and the normality of the background data.

(2) The owner or operator must specify in the permit application in accordance with WAC 173-351-730 (1)(b)(iii) one of the following statistical methods to be used in evaluating ground water monitoring data for each hazardous constituent. The statistical test chosen shall be conducted separately for each hazardous constituent in each well. The statistical methods to be used are:

(a) A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit;

(b) A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent;

(c) An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent;

(d) A control chart approach that gives control limits for each constituent; or

(e) Another statistical test method that meets the performance standards of this section. The owner or operator must place a justification for this alternative in the permit application in accordance with WAC 173-351-730 (1)(b)(iii). The justification must demonstrate that the alternative method meets the performance standards of this section.

(3) Any statistical method chosen under this section shall comply with the following performance standards, as appropriate:

(a) The statistical method used to evaluate ground water monitoring data shall be appropriate for the distribution of chemical parameters or hazardous constituents. If the distribution of the chemical parameters or hazardous constituents is shown by the owner or operator to be inappropriate for a normal theory test, then the data must be evaluated to determine if nonnormal conditions are due to laboratory or sampling error, poor well construction, seasonal or spatial variability, or actual site conditions. Transformed or a distribution-free theory test may be used, upon a determination of why nonnormal conditions exist. If the distributions for the constituents differ, more than one statistical method may be needed.

(b) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a ground water protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparison procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts.

(c) If a control chart approach is used to evaluate ground water monitoring data, the specific type of control chart and its associated parameter values shall be protective of human health and the environment. The parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(d) If a tolerance interval or a predictional interval is used to evaluate ground water monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be protective of human health and the environment. These parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(e) The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit (PQL) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(f) If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(4) The owner or operator must determine whether or not there is a statistically significant increase over background values for each parameter or constituent required in the particular ground water monitoring program that applies to the MSWLF unit after each sampling event and as determined under this section.

(a) In determining whether a statistically significant increase has occurred, the owner or operator must compare the ground water quality of each parameter or constituent at each monitoring well designated pursuant to WAC 173-351-430 or 173-351-440 to the background value of that constituent, according to the statistical procedures and performance standards specified under this section.

(b) Within thirty days after receipt of the analytical data, the owner or operator must determine whether there has been a statistically significant increase over background at each monitoring well (at all hydraulically placed upgradient and downgradient wells).

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-420, filed 10/26/93, effective 11/26/93.]

WAC 173-351-430 Detection monitoring program. (1) Detection monitoring is required at MSWLF units at all ground water monitoring wells defined under WAC 173-351-405. At a minimum, a detection monitoring program must include the monitoring for the constituents listed in Appendix I and II of this regulation.

(2) Background data development.

(a) A minimum of eight independent samples shall be collected for each well (background and downgradient) and must be collected and analyzed for the Appendix I constituents for the first year of ground water monitoring.

(b) Each independent sampling event shall be no less than one month apart from the previous independent sampling event.

(c) Sampling for Appendix II parameters shall be done quarterly.

(d) MSWLF units which have previously developed background for those constituents listed in Appendix I will be waived from (a) of this subsection on a parameter by parameter basis providing all performance criteria of WAC 173-351-400 are met.

(3) Foreground data development. The monitoring frequency for all constituents listed in Appendix I and II shall be quarterly during the active life of the MSWLF unit including closure and the post-closure period and begins after the first year of background data development, for all monitoring wells (upgradient and downgradient).

Note: Foreground denotes the period of time following the development of the back ground data set, for all monitoring wells (upgradient and downgradient).

(4) If the owner or operator determines, pursuant to WAC 173-351-420, that there is a statistically significant increase over background for one or more of the constituents listed in Appendix I, at any monitoring well at the boundary specified under WAC 173-351-405, the owner or operator:

(a) Must, within fourteen days of this finding, place a notice in the operating record indicating which constituents have shown statistically significant changes from background levels, and send the same notice to the jurisdictional health department and the department;

(b) Must establish an assessment monitoring program meeting the requirements of WAC-173-351-440 within ninety days except as provided for in (c) of this subsection;

(c) May demonstrate that a source other than a MSWLF unit caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in ground water quality. A report documenting this demonstration must be prepared by a hydrogeologist or other qualified ground water scientist and approved by the jurisdictional health department and be placed in the operating record. If a successful demonstration is made and documented, the owner or operator may continue detection monitoring as specified in this section. If, after ninety days, a successful demonstration is not made, the owner or operator must initiate an assessment monitoring program as required in WAC 173-351-440; and

(d) Must submit the assessment monitoring program to the jurisdictional health department at the end of ninety days as provided in (b) of this subsection.

(5) A geochemical evaluation of Appendix II parameters shall be conducted at each well on a quarterly basis and include all of the following methods:

(a) A cation-anion balance evaluating the difference between the cation and anion sums expressed in milliequivalents per liter; if a greater than a five to ten percent difference occurs then the owner or operator shall provide a summary explanation and examine whether the difference is due to a laboratory error, poor well conditions, or other ions not accounted for in natural or impacted ground water conditions; if the total cation-anion sums are less than 5.0 meq/liter then a ten percent difference threshold, may be used.

(b) A plot of cations and anions for each well on a trilinear diagram, as recommended in hydrogeologic texts and/or the department guidance documents.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-430, filed 10/26/93, effective 11/26/93.]

WAC 173-351-440 Assessment monitoring program. (1) Assessment monitoring is required whenever a statistically significant increase over background has been detected for one or more of the constituents listed in the Appendix I or in the alternative list approved in accordance with WAC 173-351-450, Alternative ground water monitoring programs.

(2) Within ninety days of triggering into an assessment monitoring program, and quarterly thereafter, the owner or operator must sample and analyze the ground water for all constituents identified in Appendix III of this part. A minimum of one sample from each downgradient well must be collected and analyzed during each sampling event. For any constituent detected in the downgradient wells as a result of the complete Appendix III analysis, a minimum of four independent samples from each well (background and downgradient) must be collected within a time period of one hundred eighty days, and analyzed to establish background for the constituents. Each independent sample shall be collected no less than one month apart from the previous sampling event.

(3) After obtaining the results from the initial or subsequent sampling events required in subsection (2) of this section, the owner or operator must:

(a) Within fourteen days, notify the jurisdictional health department of the increase, identifying the Appendix III constituent(s) that have been detected and place this notice in the operating record;

(b) Within ninety days, and on a quarterly basis thereafter, resample all wells, conduct analyses for all constituents in Appendix I and II, and, for those constituents in Appendix III that are detected in response to subsection (2) of this section, record their concentrations in the facility operating record and notify the jurisdictional health department. At least one sample from each well (background and downgradient) must be collected and analyzed during these sampling events;

(c) Establish background concentrations for any constituents detected pursuant to subsection (2) of this section;

(d) Establish ground water protection standards for all constituents detected pursuant to subsection (2) or (3) of this section. The ground water protection standards shall be established in accordance with subsection (7) of this section; and

(e) Continue performing geochemical evaluations in accordance with WAC 173-351-430(5) on a quarterly basis.

(4) If the concentrations of all Appendix III constituents are shown to be at or below background values, using the statistical procedures in WAC 173-351-420, for two consecutive sampling events, and before returning to detection monitoring the owner or operator must:

(a) Notify the jurisdictional health department of this finding;

(b) Receive approval in writing from the jurisdictional health department; and

(c) Place the notice and the approval in (a) and (b) of this subsection in the operating record of WAC 173-351-200(10).

(5) If the concentrations of any Appendix III constituents are above background values, but all concentrations are below the ground water protection standard established under subsection (7) of this section, using the statistical procedures in WAC 173-351-420, the owner or operator must continue assessment monitoring in accordance with this section.

(6) If one or more Appendix III constituents are detected at statistically significant levels above the ground water protection standard established under subsection (7) of this section in any sampling event, the owner or operator must, within fourteen days of this finding, notify the jurisdictional health department, the department and all appropriate local government officials of the increase and place a notice in the operating record identifying the Appendix III constituents that have exceeded the ground water protection standard. The owner or operator also:

(a) Must characterize the chemical composition of the release, the contaminant fate and transport characteristics; the rate and extent of contamination in all ground water flow paths by installing additional monitoring wells;

(b) Must install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well in accordance with subsection (2) of this section;

(c) Must notify all persons who own the land or reside on the land that directly overlies any part of the plume of contamination if contaminants have migrated off-site if indicated by sampling of wells in accordance with subsection (6) of this section; and

(d) Must initiate an assessment, selection, and implementation of corrective measures as required by chapter 173-340 WAC, the Model Toxics Control Act regulation; or

(e) May demonstrate that a source other than a MSWLF unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in ground water quality. A report documenting this demonstration must be prepared by a hydrogeologist or other qualified ground water scientist and approved by the jurisdictional health department and placed in the operating record. If a successful demonstration is made the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section, and may return to detection monitoring if the Appendix III constituents are at or below background as specified in subsection (4) of this section. Until a successful demonstration is made, the owner or operator must comply with this subsection (6) including initiating an assessment of corrective measures.

(7) The owner or operator:

(a) Must establish a ground water protection standard using the ground water quality criteria of chapter 173-200 WAC; and

(b) For constituents for which the background level is higher than the protection standard identified under (a) of this subsection, must use the background concentration for the constituents established from wells in accordance with WAC 173-351-405 through 173-351-430.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-440, filed 10/26/93, effective 11/26/93.]

WAC 173-351-450 Alternate ground water monitoring programs. (1) The owner or operator may propose changes and/or alternate ground water monitoring programs for detection after the second year of ground water monitoring under WAC 173-351-430, or the assessment monitoring program of WAC 173-351-440 as follows:

(a) An alternate ground water monitoring frequency for sampling and analysis of Appendix I and II constituents of no less than semiannual monitoring;

(b) A deletion or alternate ground water monitoring constituents for Appendix I, II and III;

(c) An appropriate subset of wells to be sampled and analyzed for Appendix III under WAC 173-351-440(2).

(2) All proposed changes in ground water monitoring frequency must be no less than semiannually for detection ground water monitoring and no less than quarterly for assessment monitoring. The owner or operator must apply for a permit modification under WAC 173-351-720(5) or must apply during the renewal process of WAC 173-351-720 (1)(i) for changes in ground water monitoring frequency making a demonstration based on the following information:

(a) A characterization of the hydrostratigraphic unit(s) including the unsaturated zone, transmissive and confining units and include all of the following:

(i) Hydraulic conductivity; and

(ii) Ground water flow rates.

(b) Minimum distance between upgradient edge of the MSWLF unit and downgradient monitoring wells (minimum distance of travel); and

(c) Contaminant fate and transport characteristics.

(3) The owner or operator must apply for a permit modification under WAC 173-351-720(5) or must apply during the renewal process of WAC 173-351-720 (1)(i) for all proposed deletions or changes to ground water monitoring constituents of Appendix I, II, and III based on all of the following information:

Verification that the removed constituents are not reasonably expected to be in or derived from the waste contained in the unit, by:

(a) Leachate monitoring results consisting of those parameters listed in Appendix IV; all leachate monitoring shall be quarterly unless otherwise approved by the jurisdictional health department and the department;

(b) The types, quantities, and concentrations of constituents in wastes managed at the MSWLF unit;

(c) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the MSWLF unit;

(d) The detectability of indicator parameters, waste constituents, and reaction products in the ground water; and

(e) The concentration or values and coefficients of variation of monitoring parameters or constituents in the ground water background.

(4) Multi-unit ground water monitoring systems.

An owner or operator may propose during the permitting process of WAC 173-351-700 a multi-unit ground water monitoring system instead of separate ground water monitoring systems for each MSWLF unit, including MSWLF units which were closed in accordance with chapter 173-351, 173-304, or 173-301 WAC when the facility has several MSWLF units, provided the multi-unit system meets all of the requirements of WAC 173-351-400 through WAC 173-351-490 and will be as protective of human health and environment as individual ground water monitoring systems for each MSWLF unit. Permit approval for multi-unit ground water monitoring systems and programs will be based on the ability to provide early warning detection of any contaminant releases including:

(a) Number, spacing, and orientation of units;

(b) Hydrogeologic setting;

(c) Site history;

(d) Engineering design of the MSWLF units;

(e) Type of waste accepted at the MSWLF units; and

(f) Leachate analysis as referenced in subsection (3)(a) of this section.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-450, filed 10/26/93, effective 11/26/93.]

WAC 173-351-460 Role of jurisdictional health department in corrective action. The jurisdictional health department:

(1) May participate in all negotiations, meetings, and correspondence between the owner and operator and the department in implementing the model toxics control action;

(2) May comment upon and participate in all decisions made by the department in assessing, choosing, and implementing a corrective action program;

(3) Shall require the owner or operator to continue closure and post-closure activities as appropriate under these rules, after corrective action measures are completed; and

(4) Shall continue to regulate all MSWLF units during construction, operation, closure and post-closure, that are not directly impacted by Model Toxics Control Act.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-460, filed 10/26/93, effective 11/26/93.]

WAC 173-351-465 Role of department of ecology in corrective action. The department shall carry out all the responsibilities assigned to it under the Model Toxics Control Act (MTCA), chapter 70.105D RCW, during the corrective action process.

Note: Ecology encourages and will support owners or operators who perform independent corrective action(s) consistent with MTCA.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-465, filed 10/26/93, effective 11/26/93.]

WAC 173-351-480 Ground water modeling. All ground water and contaminant fate and transport modeling must meet the following performance standards:

(1) The model shall have supporting documentation that establishes its ability to represent ground water flow and contaminant transport and any history of previous applications;

(2) The set of equations representing ground water movement and contaminant transport must be theoretically sound and well documented;

(3) The numerical solution methods must be based upon sound mathematical principles and be supported by verification and checking techniques;

(4) The model must be calibrated against site-specific field data;

(5) A sensitivity analysis shall be conducted to measure the model's responses to changes in the values assigned to major parameters, specified tolerances, and numerically assigned space and time discretizations;

(6) Mass balance calculations on selected elements in the model shall be performed to verify physical validity. Where the model does not prescribe the amount of mass entering the system as a boundary condition, this step may be ignored;

(7) The values of the model's parameters requiring site specific data shall be based upon actual field or laboratory measurements; and

(8) The values of the model's parameters which do not require site specific data shall be supported by laboratory test results or equivalent methods documenting the validity of the chosen parameter values.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-480, filed 10/26/93, effective 11/26/93.]

WAC 173-351-490 The hydrogeologic report contents. (1) The hydrogeologic report shall meet all of the following performance standards as follows:

(a) Examine existing site conditions for compliance with ground water and surface water location restrictions under WAC 173-351-130 and 173-351-140;

(b) Determine existing or background ground water quality conditions, including any ground water contamination; and

(c) Define a detection ground water monitoring program capable of immediate and early warning detection for potential contamination as required in WAC 173-351-400 and the information required in subsection (2) of this section.

(2) The hydrogeologic report contents shall include the following information:

(a) A summary of local and regional geology and hydrology, including faults, zones of joint concentrations, unstable slopes and subsidence areas on site; areas of ground water recharge and discharge; stratigraphy; erosional and depositional environments and facies interpretation(s);

(b) A borehole program which identifies all performance criteria of WAC 173-351-405 including lithology, soil/bedrock types and properties, preferential ground water flow paths or zones of higher hydraulic conductivity, the presence of confining unit(s) and geologic features such as fault zones, cross-cutting structures etc., and the target hydrostratigraphic unit(s) to be monitored.

(i) A minimum of twenty subsurface borings is required for MSWLF sites which are 50 acres or less in aerial extent. For sites greater than fifty acres, twenty borings, plus three borings for each additional ten acres thereafter, is required. Soil borings shall be established in a grid pattern with a boring in each major geomorphic feature such as topographic divides and lowlands;

(ii) Each boring will be of sufficient depth below the proposed grade of the bottom liner as to identify soil, bedrock and hydrostratigraphic unit(s) conditions as required in WAC 173-351-405.

(iii) The jurisdictional health department and the department may approve alternate methods including geophysical techniques, either surface or downhole including electric logging, some sonic logging, nuclear logging, seismic profiling, electromagnetic profiling and resistivity profiling in lieu of some of the number of borings required in the subsurface borehole program of (b)(i) of this subsection, provided sufficient hydrogeological site characterization can be accomplished and prior approval is obtained.

(iv) At each boring samples shall be collected from each lithologic unit and tested for all of the following:

(A) Particle size distribution by both sieve and hydrometer analyses in accordance with approved ASTM methods (D422 and D1120);

(B) Atterburg limits following approved ASTM methods (D4318); and

(C) Classification under the unified soil classification system, following ASTM standard D2487-85.

(iv) Each lithologic unit on site will be analyzed for:

(A) Moisture content, following approved ASTM methods (D2216); and

(B) Hydraulic conductivity by an in-situ field method or laboratory method approved by the jurisdictional health department and the department. All samples collected for the determination of permeability shall be collected by standard ASTM procedures.

(v) All boring logs shall be submitted with the following information:

(A) Soil and rock descriptions and classifications;

(B) Method of sampling;

(C) Sample depth;

(D) Date of boring;

(E) Water level measurements;

(F) Soil test data;

(G) Boring location; and

(H) Standard penetration number of ASTM standard D1586-67.

(vi) All borings not converted to monitoring wells or piezometers shall be carefully backfilled, plugged and recorded in accordance with WAC 173-160-420.

(vii) During the borehole drilling program, any on-site drilling and lithologic unit identification must be performed by a hydrogeologist, geologist or other qualified ground water scientist who is trained to sample and identify soils and bedrock lithology.

(c) Depths to ground water and hydrostratigraphic unit(s) including transmissive and confining units;

(d) Potentiometric surface elevations and contour maps; direction and rate of horizontal and vertical ground water flow;

(e) A description of regional ground water trends including vertical and horizontal flow directions and rates;

(f) All elevations and top of well casings shall be related to the national geodetic vertical datum of 1929 (NGVD 29) and the horizontal datum shall be in accordance with chapter 58.20 RCW, Washington Coordinate System and as amended per chapter 332-130 WAC.

(g) Quantity, location, and construction (where available) of private and public wells within a two thousand foot (six hundred ten meter) radius of site;

(h) Tabulation of all water rights for ground water and surface water within a two thousand foot (six hundred ten meter) radius of the site;

(i) Identification and description of all surface waters within a one-mile (1.6 kilometer) radius of the site;

(j) A summary of all previously collected ground water and surface water analytical data, and for expanded facilities, identification of impacts of existing facility of the applicant to date upon ground and surface waters from landfill leachate discharges;

(k) Calculation of a site water balance;

(l) Conceptual design of a ground water and surface water monitoring system, including proposed installation methods for these devices and where applicable a vadose zone monitoring plan, including well construction diagrams;

(m) Land use in the area, including nearby residences; and

(n) A topographic map of the site and drainage patterns; an outline of the waste management area and MSWLF units, property boundary, the proposed location of ground water monitoring wells;

(o) Geologic cross-sections.

(3) Ground water flow path analysis. The hydrogeologic report shall include a summary ground water flow path analysis which includes all supportive documentation, and calculations of the performance criteria of WAC 173-351-405.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-490, filed 10/26/93, effective 11/26/93.]

WAC 173-351-500 Closure and post-closure care. (1) Closure criteria.

(a) Nonarid areas. Owners or operators of all MSWLF units located in areas having mean annual precipitation of equal to or greater than twelve inches, must install a final cover system that is designed to minimize infiltration and erosion.

(i) The final cover system must be designed and constructed to:

(A) Minimize infiltration through the closed MSWLF by the use of an anti-infiltration layer that contains a composite layer as defined in (a)(i)(B) of this subsection;

(B) For the purpose of this section, "composite layer" means a system consisting of two components; the upper component must consist of a minimum of 30 mil (0.76 mm) thickness of geomembrane (60 mils (1.5 mm) for high density polyethylene geomembranes). The lower component must consist of at least a two-foot (60 cm) layer of compacted

soil with a hydraulic conductivity of no more than $1X10^{-5}$ cm/sec. The geomembrane must be installed in direct and uniform contact with the compacted soil component;

(C) Minimize erosion of the final cover by use of an anti-erosion layer that contains a minimum of a one-foot (30 cm) layer of earthen material of which at least six inches (15 cm) of the uppermost layer is capable of sustaining native plant growth; and

(D) Address anticipated settlement (with a goal of achieving no less than two to five percent slopes after settlement), drainage and/or the need for drainage layers, gas generation and/or the need for gas layers, freeze-thaw, desiccation and stability and mechanical strength of the design.

(ii) The jurisdictional health department may approve an alternative final cover design equivalent to that specified in (a)(i) of this subsection that includes:

(A) An anti-infiltration layer that achieves an equivalent reduction in infiltration as the anti-infiltration layer specified in (a)(i)(A) and (B) of this subsection;

(B) An anti-erosion layer that provides equivalent protection from wind and water erosion as the anti-erosion layer specified in (a)(i)(C) of this subsection; and

(C) The additional design features of (a)(i)(D) of this subsection.

(b) Arid areas. Owners or operators of all MSWLF units located in arid areas must install a final cover system that is designed to minimize infiltration and erosion.

(i) The final cover system must be designed and constructed to:

(A) Minimize infiltration through the closed MSWLF by the use of an anti-infiltration layer that contains at least a two-foot (60 cm) layer of compacted soil with a hydraulic conductivity of no more than $1X10^{-5}$ cm/sec;

(B) Minimize erosion of the final cover by use of an anti-erosion layer that contains a minimum of one-foot (30 cm) layer of earthen material of which at least six inches (15 cm) of the uppermost layer is capable of sustaining native plant growth; and

(C) Address anticipated settlement (with a goal of reaching two to five percent slopes after settlement), drainage and/or the need for drainage layers, gas generation and/or the need for gas layers, freeze-thaw, desiccation and stability and mechanical strength of the design.

(ii) The jurisdictional health department may approve an alternative final cover design to that specified in (b)(i) of this subsection that includes:

(A) An anti-infiltration layer that achieves an equivalent reduction in infiltration as the anti-infiltration layer specified in (b)(i)(A) of this subsection;

(B) An anti-erosion layer that provides equivalent protection from wind and water erosion as the anti-erosion layer specified in (b)(i)(B) of this subsection; and

(C) The additional design features of (b)(i)(C) of this subsection.

(c) The owner or operator must prepare a written closure plan that describes the steps necessary to close all MSWLF units at any point during its active life. The closure plan must be approved by the jurisdictional health department during the permit process of Section 700 and, at a minimum, must include the following information:

(i) A description of the final cover, designed in accordance with (a) or (b) of this subsection and the methods and procedures to be used to install the cover;

(ii) An estimate of the largest area of the MSWLF unit or all MSWLF units ever requiring a final cover as required under (a) or (b) of this subsection at any time during the active life;

(iii) An estimate of the maximum inventory of wastes ever on-site over the active life of the facility; and

(iv) A schedule for completing all activities necessary to satisfy the closure criteria in this subsection (1), Closure criteria including sequencing of each MSWLF unit and the use of intermediate cover.

(d) The owner or operator of existing MSWLF units must no later than the effective date of this chapter:

(i) Prepare a closure plan;

(ii) Place the closure plan in the operating record; and

(iii) Notify the jurisdictional health department that (d)(i) and (ii) of this subsection have occurred.

(e) One hundred eighty days (but no sooner than the effective date of this chapter) prior to beginning closure activities of each MSWLF unit or all MSWLF units as specified in (f) of this subsection, the owner or operator must:

(i) Notify the jurisdictional health department and the financial assurance trustee and/or insurer of the intent to close the MSWLF unit or all MSWLF units according to the approved closure plan; and

(ii) Submit final engineering closure plans for review, comment, and approval by the jurisdictional health department.

(f) The owner or operator must begin closure activities of each MSWLF unit or all MSWLF units no later than thirty days after the date on which the MSWLF unit or all MSWLF units receives the known final receipt of wastes or, if the MSWLF unit or all MSWLF units has remaining capacity and there is a reasonable likelihood that the MSWLF unit or all MSWLF units will receive additional wastes, no later than one year after the most recent receipt of wastes. Extensions beyond the one-year deadline for beginning closure may be granted by the jurisdictional health department if the owner or operator demonstrates during the permit process of WAC 173-351-700 that the MSWLF unit or all MSWLF units has the capacity to receive additional waste and the owner or operator has taken and will continue to take all steps including the application of intermediate cover necessary to prevent threats to human health and the environment from the unclosed MSWLF unit or all MSWLF units.

(g) The owner or operator of all MSWLF units must complete closure activities of each MSWLF unit or all MSWLF units in accordance with the closure plan within one hundred eighty days following the beginning of closure as specified in (f) of this subsection. Extensions of the closure period may be granted by the jurisdictional health department if the owner or operator demonstrates that closure will, of necessity, take longer than one hundred eighty days and he/she has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed MSWLF unit.

(h) Following closure of each MSWLF unit or all MSWLF units, the owner or operator must submit to the

jurisdictional health department a certification or declaration of construction signed by an independent registered professional engineer verifying that closure has been completed in accordance with the approved final engineering plans and the closure plan.

(i) Notation on the deed.

(i) Following closure of all MSWLF units, the owner or operator must record a notation on the deed to the facility property, and send a copy of the notation as recorded to the jurisdictional health department.

(ii) The notation on the deed must in perpetuity notify any potential purchaser of the property that:

(A) The land has been used as a landfill facility; and

(B) Its use is restricted under subsection (2)(c)(iii) of this section.

(j) The owner or operator may request permission from the jurisdictional health department to remove the notation from the deed if all wastes (including any contaminated ground water and soils) are removed from the facility.

(2) Post-closure care requirements.

(a) Following closure of each MSWLF unit or all MSWLF units, the owner or operator must conduct post-closure care. Post-closure care must be conducted for thirty years, except as provided under (b) of this subsection and consist of at least the following:

(i) Maintaining the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, maintaining the vegetative cover (including cutting of vegetation when needed) or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(ii) Maintaining and operating the leachate collection system in accordance with the requirements in WAC 173-351-300 if applicable. The jurisdictional health department may recommend to the department and the department under its authority in chapter 90.48 RCW, the Water Pollution Control Act, may allow the owner or operator to stop managing leachate if the owner or operator demonstrates that leachate no longer poses a threat to human health and the environment;

(iii) Monitoring the ground water in accordance with the requirements of WAC 173-351-400, Ground water monitoring systems and corrective action and maintaining the ground water monitoring system, if applicable; and

(iv) Maintaining and operating the gas monitoring system in accordance with the requirements of WAC 173-351-200(4).

(b) The length of the post-closure care period may be:

(i) Decreased by the jurisdictional health department if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the jurisdictional health department; or

(ii) Increased by the jurisdictional health department if the jurisdictional health department determines that the lengthened period is necessary to protect human health and the environment.

(c) The owner or operator of all MSWLF units must prepare a written post-closure plan that is approved by the jurisdictional health department during the permit process of Section 700 and that includes, at a minimum, the following information:

(i) A description of the monitoring and maintenance activities required in (a) of this subsection for each MSWLF unit or all MSWLF units, and the frequency at which these activities will be performed;

(ii) Name, address, and telephone number of the person or office to contact about the facility during the post-closure period; and

(iii) A description of the planned uses of the property during the post-closure period. Post-closure use of the property shall not disturb the integrity of the final cover, liner(s), or any other components of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements of this regulation. The jurisdictional health department may approve any other disturbance if the owner or operator demonstrates that disturbance of the final cover, liner or other component of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment.

(d) The owner or operator of existing MSWLF units must notify the jurisdictional health department that a post-closure plan has been prepared and placed in the operating record no later than the effective date of this regulation.

(e) Following completion of the post-closure care period for each MSWLF unit or all MSWLF units, the owner or operator must submit to the jurisdictional health department and the financial assurance trustee and/or insurer a certification or declaration of construction signed by an independent registered professional engineer verifying that post-closure has been completed in accordance with the post-closure plan.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-500, filed 10/26/93, effective 11/26/93.]

WAC 173-351-600 Financial assurance criteria. (1) Applicability and effective date.

(a) The requirements of this section apply to owners and operators of all MSWLF units.

(b) The requirements of this section are effective on the effective date of this rule, except as provided herein.

(2) Financial assurance for closure.

(a) The owner or operator must have a detailed written estimate, in current dollars, of the cost of hiring a third party to close the largest area of all MSWLF units ever requiring a final cover as required under WAC 173-351-500(1), Closure criteria, at any time during the active life in accordance with the closure plan. The owner or operator must place the detailed written estimate in the application for a permit under WAC 173-351-700 in order for the jurisdictional health department to determine whether a solid waste permit should be issued.

(i) The cost estimate must equal the cost of closing the largest area of the MSWLF unit or MSWLF units ever requiring a final cover at any time during the active life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan see WAC 173-351-500 (1)(c)(ii).

(ii) During the active life of the MSWLF unit or MSWLF units, the owner or operator must annually adjust the closure cost estimate for inflation.

(iii) The owner or operator must increase the closure cost estimate and the amount of financial assurance provided under (b) of this subsection if changes to the closure plan or MSWLF unit conditions increase the maximum cost of closure at any time during the remaining active life.

(iv) The owner or operator may reduce the closure cost estimate and the amount of financial assurance provided under (b) of this subsection if the cost estimate exceeds the maximum cost of closure at any time during the remaining life of the MSWLF unit or all MSWL units. The owner or operator must submit justification for the reduction of the closure cost estimate and the amount of financial assurance to the jurisdictional health department for approval as a condition of the solid waste permit.

(b) The owner or operator of each MSWLF unit or all MSWLF units must establish financial assurance for closure of the MSWLF unit or all MSWLF units in compliance with WAC 173-351-600(5), Allowable mechanisms. The owner or operator must provide continuous coverage for closure until released from financial assurance requirements by demonstrating compliance with WAC 173-351-500 (1)(h) and (i).

(3) Financial assurance for post-closure care.

(a) The owner or operator must have a detailed written estimate, in current dollars, of the cost of hiring a third party to conduct post-closure care for the MSWLF unit or all MSWLF units in compliance with the post-closure plan developed under WAC 173-351-500(2). The post-closure cost estimate used to demonstrate, during the permit process of WAC 173-351-700, financial assurance in (b) of this subsection must account for the total costs of conducting post-closure care, including annual and periodic costs as described in the post-closure plan over the entire post-closure care period. The owner or operator must place the detailed written estimate in the application for a permit under WAC 173-351-700 in order for the jurisdictional health department to determine whether a solid waste permit should be issued.

(i) The cost estimate for post-closure care must be based on the most expensive costs of post-closure care during the post-closure care period.

(ii) During the active life of the MSWLF unit or all MSWLF units and during the post-closure care period, the owner or operator must annually adjust the post-closure cost estimate for inflation.

(iii) The owner or operator must increase the post-closure care cost estimate and the amount of financial assurance provided under (b) of this subsection if changes in the post-closure plan or MSWLF unit conditions increase the maximum costs of post-closure care.

(iv) The owner or operator may reduce the post-closure cost estimate and the amount of financial assurance provided under (b) of this subsection if the cost estimate exceeds the maximum costs of post-closure care remaining over the post-closure care period. The owner or operator must submit justification for the reduction of the post-closure cost estimate and the amount of financial assurance to the jurisdictional health department for approval as a condition of the solid waste permit.

(b) The owner or operator of each MSWLF unit or all MSWLF units must establish, in a manner in accordance with subsection (5) of this section, financial assurance for the costs of post-closure care as required under WAC 173-351-500(2). The owner or operator must provide continuous coverage for post-closure care until released from financial assurance requirements for post-closure care by demonstrating compliance with WAC 173-351-500 (2)(e).

(4) Financial assurance for corrective action.

(a) An owner or operator of a MSWLF unit or all MSWLF units required to undertake a corrective action program under WAC 173-351-440(6) must have a detailed written estimate, in current dollars, of the cost of hiring a third party to perform the corrective action in accordance with the program required under WAC 173-351-440(6). The corrective action cost estimate must account for the total costs of corrective action activities as described in the corrective action plan for the entire corrective action period. The owner or operator must submit the corrective action cost estimate to the jurisdictional health department for approval.

(i) The owner or operator must annually adjust the estimate for inflation until the corrective action program is completed in accordance with WAC 173-351-440(6).

(ii) The owner or operator must increase the corrective action cost estimate and the amount of financial assurance provided under (b) of this subsection if changes in the corrective action program or MSWLF unit conditions increase the maximum costs of corrective action.

(iii) The owner or operator may reduce the amount of the corrective action cost estimate and the amount of financial assurance provided under (b) of this subsection if the cost estimate exceeds the maximum remaining costs of corrective action. The owner or operator must submit justification for the reduction of the corrective action cost estimate and the amount of financial assurance to the jurisdictional health department for approval.

(b) The owner or operator of each MSWLF unit or all MSWLF units required to undertake a corrective action program under WAC 173-351-440(6), must establish, in a manner in accordance with subsection (5) of this section, financial assurance for the most recent corrective action program. The owner or operator must provide continuous coverage for corrective action until released from financial assurance requirements for corrective action under the Model Toxics Control Act regulation, chapter 173-340 WAC.

(c) The requirements of this subsection become effective April 9, 1994.

(5) Allowable mechanisms. The mechanisms used to demonstrate financial assurance under WAC 173-351-600 must ensure that the funds necessary to meet the costs of closure, post-closure care, and corrective action for known releases will be available whenever they are needed. Except as otherwise provided herein, owners and operators of MSWLF units must use the financial mechanisms specified in (a) or (b) of this subsection.

(a) For MSWLF units owned or operated by municipal corporations, the closure, post-closure, and corrective action reserve account shall be handled in one of the following ways:

(i) Reserve account. Cash and investments accumulated and restricted for closure, post-closure, and corrective action for known releases with an equivalent amount of fund balance reserved in the fund accounting for solid waste activity; or

(ii) The cash and investments held in a nonexpendable trust fund as specified in (c) of this subsection.

(b) For MSWLF units owned by private disposal companies, the closure, post-closure, and corrective action for known releases financial assurance account shall be a trust account as spelled out in (c) of this subsection, except that established financial assurance accounts shall not constitute an asset of the facility owner or operator.

(c) Trust fund.

An owner or operator may satisfy the requirements of this section by establishing a trust fund which conforms to the requirements of (c)(i) through (xi) of this subsection.

(i) The trustee must be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency. The owner or operator must place a copy of the trust agreement in the application for a permit under WAC 173-351-700 in order for the jurisdictional health department to determine whether a solid waste permit should be issued.

(ii) Payments into the trust fund must be made annually by the owner or operator over the duration (as defined in WAC 173-351-750) of the initial permit or over the remaining life of the MSWLF unit or all MSWLF units, whichever is shorter, in the case of a trust fund for closure or post-closure care, or over one-half of the estimated length of the corrective action program in the case of corrective action for known releases. This period is referred to as the pay-in period.

(iii) For a trust fund used to demonstrate financial assurance for closure and post-closure care, the first payment into each fund must be at least equal to the current cost estimate for closure or post-closure care, except as provided in (d) of this subsection, divided by the number of years in the pay-in period as defined in (c) of this subsection. The amount of subsequent payments must be determined by the following formula:

$$\textit{Next Payment} = \frac{CE\text{-}CV}{Y}$$

where CE is the current cost estimate for closure or post-closure care (updated for inflation or other changes), CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(iv) For a trust fund used to demonstrate financial assurance for corrective action, the first payment into the trust fund must be at least equal to one-half of the current cost estimate for corrective action, except as provided in (d) of this subsection, divided by the number of years in the corrective action pay-in period as defined in (c)(ii) of this subsection. The amount of subsequent payments must be determined by the following formula:

$$\textit{Next Payment} = \frac{RB\text{-}CV}{Y}$$

where RB is the most recent estimate of the required trust fund balance for corrective action (i.e., the total costs that will be incurred during the second half of the corrective action period), CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(v) The initial payment into the trust fund must be made before the initial receipt of waste or before the effective date of this section, whichever is later, in the case of closure and post-closure care, or no later than one hundred twenty days after the corrective action remedy has been selected in accordance with the requirements of WAC 173-351-480 (6) and (7).

(vi) If a municipal corporation owning or operating MSWLF units establishes a trust fund after having used cash and investments held in a nonexpendable reserve account specified in (a)(i) of this subsection, the initial payment into the trust fund must be at least the amount that the fund would contain if the trust fund were established initially and annual payments made according to the specifications of this paragraph and (c) of this subsection as applicable.

(vii) The owner or operator, or other person authorized to conduct closure, post-closure care, or corrective action activities may request reimbursement from the trustee for these expenditures. Requests for reimbursement will be granted by the trustee only if:

(A) Sufficient funds are remaining in the trust fund to cover the remaining costs of closure, post-closure care, or corrective action;

(B) If justification and documentation of the cost is submitted to the jurisdictional health department for review and approval; and

(C) The owner or operator has a post-closure permit in effect according to WAC 173-351-730 (4)(c).

(viii) The trust fund may be terminated by the owner or operator only if:

(ix) In the case of a municipal corporation owning or operating MSWLF units, the municipal corporation substitutes a reserve account as specified in (a)(i) of this subsection; or

(x) Any owner or operator is no longer required to demonstrate financial responsibility in accordance with the requirements of subsection (2)(b), (3)(b), or (4)(b) of this section.

(d) Use of multiple financial mechanisms. A municipal corporation owning or operating MSWLF units may satisfy the requirements of this section by establishing more than one financial mechanism per facility. The mechanisms must be as specified in (a) and (b) of this subsection, except that it is the combination of mechanisms, rather than the single mechanism, which must provide financial assurance for an amount at least equal to the current cost estimate for closure, post-closure care or corrective action, whichever is applicable.

(e) For MSWLF units undergoing corrective action, allowable financial assurance mechanisms include:

(i) Any method approved by EPA under 40 CFR 258.74(f);

(ii) An interlocal agreement entered into under the Interlocal Cooperation Act, chapter 39.34 RCW, obligating the

participating local governments to pay for the corrective action.

(f) The language of the mechanisms listed in (a) and (b) of this subsection must ensure that the instruments satisfy the following criteria:

(i) The financial assurance mechanisms must ensure that the amount of funds assured is sufficient to cover the costs of closure, post-closure care, and corrective action for known releases when needed;

(ii) The financial assurance mechanisms must ensure that funds will be available in a timely fashion when needed;

(iii) The financial assurance mechanisms must be obtained by the owner or operator by the effective date of these requirements or prior to the initial receipt of solid waste, whichever is later, in the case of closure and post-closure care, and no later than one hundred twenty days after the corrective action remedy has been selected in accordance with the requirements of WAC 173-351-460, until the owner or operator is released from the financial assurance requirements under subsection (2)(b), (3)(b), or (4)(b) of this section.

(g) The financial assurance mechanisms must be legally valid, binding, and enforceable under state and federal law.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-600, filed 10/26/93, effective 11/26/93.]

WAC 173-351-700 Permitting requirements. (1) WAC 173-351-700 through 173-351-750 shall constitute the permitting requirements of chapter 173-351 WAC, Criteria for municipal solid waste landfills. Except as provided for in subsection (5) of this section, no owner or operator shall construct, operate, close, or perform post-closure activity with respect to a facility except in conformance with a valid MSWLF permit issued pursuant to this chapter.

(2) Transition rules for existing MSWLF units. The following constitute the transition rules for this section:

(a) Existing MSWLF units with valid chapter 173-304 WAC permits expiring before the effective date of this chapter. Owners or operators of existing MSWLF units having valid permits expiring before the effective date of this chapter, must apply for a valid MSWLF permit no later than ninety days after promulgation of this regulation, to continue operation under the terms of this regulation. Each valid chapter 173-304 WAC permit expiring before the effective date of this chapter, is hereby continued until the valid MSWLF permit is issued under these rules. For these transition rules, the owner or operator shall prepare applications according to WAC 173-351-730(4), Reissuance/transition applications. Upon issuance of a valid MSWLF permit, the owner or operator must comply with the requirements of this regulation.

Note: MSWLF units that do not accept waste on or after the effective date of this chapter, and close under chapter 173-304 WAC, Minimum functional standards for solid waste handling, and the federal rules for closure under 40 CFR Part 258.60 would continue to be permitted under chapter 173-304 WAC unless such MSWLF units are part of a multi-unit ground water monitoring system according to WAC 173-351-450(4).

(b) Existing MSWLF units with valid chapter 173-304 WAC permits expiring on or after the effective date of this chapter. Each valid chapter 173-304 WAC permit (for existing MSWLF units) expiring on or after the effective date of this rule, is hereby continued until the expiration date set forth in the permit. Owners and operators must comply with the conditions of the permit and the regulations of chapter 173-304 WAC, in effect on October 8, 1993, for the duration of that permit. Owners or operators of existing MSWLF units with valid chapter 173-304 WAC permits expiring on or after the effective date of this chapter, must apply for a valid MSWLF permit no later than ninety days after promulgation of this regulation. For these transition rules, the owner or operator shall prepare applications according to WAC 173-351-730(4), Reissuance/transition applications. Upon issuance of a valid MSWLF permit, the owner or operator must comply with the requirements of this regulation.

Note: See also WAC 173-351-720 (6)(a), filing for reissuance.

(3) New and laterally expanded MSWLF units. New and laterally expanded MSWLF units receiving waste after the effective date of this chapter, shall meet the requirements of this section before construction has begun and before waste is accepted to the MSWLF unit or lateral expansion.

Note: Any owner or operator planning to incorporate a 50 percent increase or greater in design volume capacity not previously authorized in permit, or unpermitted changes resulting in significant adverse environmental impacts that have lead a responsible official to issue a declaration of significance under WAC 197-11-736 shall meet the requirements of this section before construction has begun and before waste is accepted to the MSWLF unit, or lateral expansion.

(4) Exemptions. The MSWLF units identified in this subsection are exempt from this section:

(a) MSWLF units that are excluded under WAC 173-351-010 (2)(b);

(b) Single family residences and single family farms dumping or depositing solid waste resulting from their own domestic, on-site activities onto or under the surface of land owned or leased by them when such action does not create a nuisance, violate any other statutes, ordinances, regulations, or this regulation, provided that such facilities:

(i) Are fenced or otherwise protected by natural barriers from unauthorized entry by the general public and large animal scavengers; and

(ii) Have placed a monthly soil cover to allow no visible solid waste.

(c) Corrective actions at a MSWLF unit performed by the state and/or in conjunction with the United States Environmental Protection Agency to implement the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), the Model Toxics Control Act or corrective actions taken by others to comply with a state and/or federal cleanup order provided that:

(i) The action results in an overall improvement of the environmental impact of the site;

(ii) The action does not require or result in additional waste being delivered to the facility or increase the amount of waste or contamination present at the facility;

(iii) The facility standards of WAC 173-351-300, 173-351-320, and 173-351-500 are met; and

(iv) The jurisdictional health department is informed of the actions to be taken and is given the opportunity to review and comment upon the proposed corrective action plans.

Note: MSWLF units not covered under corrective action are not exempted from permitting under this section.

(5) Renewal required. The owner or operator of a facility shall apply for renewal of the facility's permit annually, except for that year that a permit has been or will be reissued under WAC 173-351-720(6).

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-700, filed 10/26/93, effective 11/26/93.]

WAC 173-351-720 Permit application procedures. (1) Initial procedures.

(a) Forms and complete application. An application for any permit under this regulation must be submitted on a form prescribed by the department. In order to be determined complete:

(i) Two or more copies (as determined by the jurisdictional health department) of the application must have been signed by the owner and operator and received by the jurisdictional health department;

(ii) The application must include evidence of compliance with the State Environmental Policy Act (SEPA) rules, chapter 197-11 WAC; and

(iii) The application must include the plans, reports, and other supporting information required by this regulation.

(b) Notice. Once the jurisdictional health department determines that an application for a permit is factually complete, it shall:

(i) Refer one copy to the appropriate regional office of the department for review and comment;

(ii) For all permits except renewal, modified and transition permits give notice of its receipt of a proposed complete permit application to the public and to interested persons for public comment for thirty days after the publication date of the notice;

(iii) For all permits except renewal, modified and transition permits perform the following additional public notification requirements:

(A) Mail the notice to persons who have requested notice in writing;

(B) Mail the notice to state agencies and local governments with a regulatory interest in the proposal;

(C) Include in the public notice a statement that any person may express their views in writing to the jurisdictional health department within thirty days of the last date of publication;

(D) Mail a copy of the MSWLF permit decision to any person who has made written request for such decision; and

(E) Add the name of any person, upon request, to a mailing list to receive copies of notices for all applications, within the state or within a geographical area.

(c) Standards for approval. The jurisdictional health department shall investigate every application to determine whether the facility meets all applicable laws and regulations, conforms with the most recently adopted comprehensive solid waste management plan in effect at the time of application and complies with all zoning requirements. A land use permit or letter from the jurisdictional zoning authority shall be sufficient demonstration of compliance with zoning requirements.

(d) Fees. The jurisdictional health department may establish reasonable fees for permits and renewal of permits. All permit fees collected by the health department shall be deposited in the account from which the jurisdictional health department's operating expenses are paid.

(e) Department's findings. The department shall report to the jurisdictional health department its findings on each permit application within forty-five days of receipt of a complete application or inform the jurisdictional health department as to the status of the application and when it expects its findings will be transmitted to the jurisdictional health department. Additionally, the department shall recommend for or against the issuance of each permit by the jurisdictional health department.

(f) Permit approval. When the jurisdictional health department has evaluated all information in the public record, it shall issue or deny a permit. Every completed solid waste permit application shall be approved or disapproved within ninety days after its receipt by the jurisdictional health department or the owner or operator shall be informed as to the status of the application with a schedule for final determination.

(g) Permit format. Every permit issued by a jurisdictional health department shall be on a format prescribed by the department and shall contain specific requirements necessary for the proper operation of the facility including the requirement that final engineering plans and specifications be submitted for approval to the jurisdictional health department.

(h) Filing permits with the department. The jurisdictional health department shall mail all issued permits to the department no more than seven days after the date of issuance. The department shall review and may appeal the permit as set forth in RCW 70.95.185 and 70.95.190.

(i) Renewal procedures. The owner or operator of a facility shall apply for renewal of the MSWLF permit annually, except for that year that a permit has been or will be reissued under subsection (6) of this section. The owner or operator is authorized to continue all activities authorized under the currently expired permit, if the jurisdictional health department has not rendered a decision on renewal by the yearly renewal date of the current permit. The jurisdictional health department shall annually:

(A) Review the original application and such additional information as required in WAC 173-351-730 (3)(b) for compliance with these regulations:

(B) Collect the renewal fee if the jurisdictional health department so chooses;

(C) If the requirements of (b)(i)(A) of this subsection are met, renew the permit; and

(D) File the renewed permit with the department no more than seven days after the date of renewal. The department shall review and may appeal the renewal as set forth in RCW 70.95.185 and 70.95.190. See also reissuance under subsection (6) of this section.

(2) SEPA review. The State Environmental Policy Act (SEPA), the SEPA rules and the local SEPA rules apply to permit decisions made pursuant to this chapter.

(3) Preapplication meetings. Preapplication meetings between the jurisdictional health department and the owner

or operator are encouraged to address, among other things, the development of a complete application pertaining to the owner's or operator's prospective project.

(4) Activities authorized in permits, generally.

(a) Construction. Issuance of a valid MSWLF permit entitles the permittee to construct the MSWLF unit or MSWLF units, subject to any appropriate conditions the jurisdictional health department may impose. If the facility is to be constructed in several or more MSWLF units, the initial application must contain the conceptual design for the entire facility and the information of WAC 173-351-730 (1)(b) for the initial MSWLF unit. In addition, information of WAC 173-351-730 (1)(b) may be submitted covering all other MSWLF units that will be constructed up to the first ten years of facility operation. The permit will identify the extent of each permitted MSWLF unit and the specific time frames for the first MSWLF unit and estimated time frames for subsequent MSWLF units within which construction activities must begin and end for each MSWLF unit. Authorization to construct each subsequent MSWLF unit must, as to that MSWLF unit, contain the detailed construction plans as specified in this regulation, and those plans and the construction of that MSWLF unit must comply with all requirements of the SEPA and of this regulation and other regulations applicable at the time jurisdictional health department approval is granted.

(b) Operation. Except for MSWLF units governed by the transition rules of WAC 173-351-700(2), the jurisdictional health department's approval to accept solid waste will not be given until the permittee has demonstrated to the jurisdictional health department's satisfaction that the MSWLF unit has been constructed in accordance with the approved plans and specifications for that MSWLF unit. If a facility is to be constructed in several or more MSWLF units, the jurisdictional health department must determine that each specific MSWLF unit has been constructed in accordance with the approved permit before operation will be permitted in that specific MSWLF unit.

(c) Post-closure activities. The jurisdictional health department's approval for post-closure activities will not be given until the permittee has demonstrated to the jurisdictional health department's satisfaction that the MSWLF unit or all the MSWLF units have been closed in accordance with the final engineering plans WAC 173-351-500 (1)(e)(ii) and the approved closure plan.

Note: Failure to obtain approval for post-closure activities may prevent reimbursement under post-closure financial assurance in WAC 173-351-600.

(5) Permit modifications.

(a) Any owner or operator intending to modify a valid MSWLF permit must file a modification application at least thirty days before the intended modification. A modification application must be made on forms authorized by the jurisdictional health department and the department, and the forms must include information identified in WAC 173-351-730 (3)(a).

(b) The jurisdictional health department shall follow the procedures of subsection (1) of this section in issuing a permit modification except for the following:

(i) Subsection (1)(b)(ii) and (iii) of this section, public notice; and

(ii) Subsection (1)(i) of this section, renewal procedures.

(c) In order to allow for permit modifications to be authorized at the time of permit renewal, any owner or operator may combine the application required for a permit modification in WAC 173-351-730 (3)(a) with the application required for a renewal permit in WAC 173-351-730 (3)(b), at the time of permit renewal.

(6) Permit reissuance. Except for permits during transition under subsection (2) of this section, any owner or operator intending to continue construction, operation or post-closure beyond the permitted duration of a valid MSWLF permit must file a reissuance application at least ninety days before the existing permit expires. Reissuance applications are subject to the public notification process of subsection (1)(b) of this section. A reissuance application must be made on forms authorized by the jurisdictional health department and the department, and must include information identified in WAC 173-351-730(4).

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-720, filed 10/26/93, effective 11/26/93.]

WAC 173-351-730 Contents of applications. (1) Applications for MSWLF permits and level of detail, generally.

(a) General requirements for MSWLF permit applications and level of detail.

(i) An application for an MSWLF permit to construct, operate, and conduct post-closure activities at a facility must include all applicable information identified in this section pertaining to the facility for which the permit is being sought.

(ii) The information in every application submitted under this regulation must be of sufficient detail so as to allow the jurisdictional health department to fulfill its responsibilities under SEPA and this regulation by:

(A) Having detail sufficient to be readily understood by the persons using the documents contained in the application to enable them to determine how the facility will be constructed, operated, and closed and how it will be monitored and maintained after closure;

(B) Providing the jurisdictional health department with sufficient detail to ascertain the environmental impact of the proposed project; and

(C) Providing sufficient detail to demonstrate that the location, design, construction, operation, closure, and post-closure monitoring and maintenance of the MSWLF will be capable of compliance with the applicable requirements of this regulation.

(b) Specific requirements for permit applications. In addition to other requirements set forth in this section, complete applications for MSWLF permits must contain the following:

(i) Engineering plans that set forth the proposed facility's location, property boundaries, adjacent land uses, and detailed construction plans pursuant to subsection (5)(a) of this section;

(ii) How the facility will meet the location standards of WAC 173-351-130 and 173-351-140 including demonstrations;

(iii) A hydrogeologic report and water quality monitoring plan prepared in accordance with the provisions of WAC 173-351-400 (including all demonstrations);

(iv) The plan of operation that prescribes how the facility will fulfill the operating requirements set forth in WAC 173-351-200, 173-351-210, and 173-351-220, including the demonstrations of this regulation;

(v) An engineering report comprehensively describing the existing site conditions and an analysis of the facility, including closure, post-closure criteria, and any necessary demonstrations with subsection (5)(b) of this section;

(vi) A construction quality assurance and quality control plan prepared in accordance with subsection (6) of this section;

(vii) The closure and post-closure plans required by WAC 173-351-500, including the schedule of WAC 173-351-500 (1)(c)(iv) and for the submission of final engineering plans for closure six months prior to closure of the facility or the MSWLF unit. See WAC 173-351-500 (1)(e)(ii);

(viii) Either a legal document (contract, local permit, a signed permit application etc.) certifying acceptance of leachate by the operator of a wastewater treatment facility for the discharge of leachate to that facility, or an application for a National Discharge Elimination System (NPDES) permit pursuant to chapter 173-220 WAC or a state discharge permit (for solar evaporation ponds having no surface water discharge) pursuant to chapter 173-216 WAC or other necessary environmental permit applications (including air quality permit applications) for otherwise managing leachate;

(ix) For small landfills, the demonstration of WAC 173-351-010 (2)(c);

(x) A demonstration of how the MSWLF conforms with the approved local comprehensive solid waste management plan in place at the time of application.

(2) Combined applications. Owners or operators may file a combined application for MSWLF units and other solid waste handling facilities, such as surface impoundments, composting facilities, storage piles, and MSWLF units closed under and/or regulated by chapter 173-304 WAC, Minimum functional standards for solid waste handling or other rules promulgated under the authority of chapter 70.95 RCW, including this regulation. The combined application must contain information required by each applicable regulation.

(3) Modification and renewal applications.

(a) Modification applications. An application on forms specified by the jurisdictional health department and the department to modify a valid MSWLF permit issued pursuant to WAC 173-351-700 must include, and address, the following at a minimum:

(i) A description of the proposed modification;

(ii) The reasons for the proposed modification;

(iii) A description of the impacts from the proposed modification upon the MSWLF unit or the facility as presently permitted; and

(iv) A showing that, as modified, the MSWLF unit will be capable of compliance with the applicable requirements of this regulation.

(b) Renewal applications. An application on forms specified by the jurisdictional health department and the department to renew a permit issued pursuant to WAC 173-351-700 must include and address the following at a minimum:

(i) Any changes in operating methods, closure cost or post-closure costs or other changes not falling under the definition of a permit modification;

(ii) Any changes as revealed by inspections, or complaints;

(iii) Evidence that the annual report of WAC 173-351-200(11) has been submitted;

(iv) A list of documents added to the operating record according to WAC 173-351-200(10); and

(v) Evidence that all MSWLF unit operators have continued to comply with the certification requirements of chapter 173-300 WAC, Certification of operators of solid waste incinerator and landfill facilities.

(4) Reissuance/transition applications. An application to reissue a permit previously issued pursuant to this regulation or to convert a chapter 173-304 WAC permit to a valid MSWLF permit under the transition permit rules of WAC 173-351-700(2) must, at a minimum, include and address the following:

(a) Review the original application and permit for compliance with these regulations and submit such additional information as follows:

(i) A compliance summary showing how the facility's construction, operation, closure and post-closure activities, as applicable, have been undertaken either in compliance or not in compliance with the terms and conditions of the expiring permit;

(ii) Specifying any changes proposed by the owner or operator to, and detailing any changes in circumstance that may affect, the design, construction, operation, closure, or post-closure care of the facility and describing how compliance with the applicable requirements of this regulation will be assured.

(b) Review of information collected from inspections, complaints, or known changes in the operations including:

(i) Results of ground water monitoring taken during the operation (including closure/post-closure) of the facility according to WAC 173-351-400 or 173-304-490 as appropriate; and

(ii) Results of surface water and methane monitoring taken during the operation (including closure/post-closure) of the facility.

(5) Engineering plans, reports, and specifications. Unless otherwise specified in chapter 173-351 WAC, all engineering plans, reports, and specifications must comply with the requirements of this subsection. Engineering plans, reports, specifications, programs, and manuals submitted to the jurisdictional health department must be prepared and certified by an individual licensed in engineering disciplines associated with landfill design and construction or with experience in landfill design and construction and to practice engineering in the state of Washington.

(a) Engineering plans. Unless otherwise specified in this chapter, the engineering plans for all MSWLF units must be submitted using the following format:

(i) The sheet size with title blocks must be twenty-two inches by thirty-four inches or twenty-four inches by thirty-six inches.

(ii) The cover sheet must include the project title, owner's and operator's name, sheet index, legend of symbols, and the engineer's name, address, signature, date of signature, and seal.

(iii) The preliminary engineering plans relating the project to its environmental setting must include:

(A) A regional plan or map (having a minimum scale of 1:62,500) and indicate directions and distances to airports within five miles (eight kilometers) of the facility;

(B) A vicinity plan or map (having a minimum scale of 1:24,000) that must show the area within one mile (1.6 kilometers) of the property boundaries of the facility in terms of, the existing and proposed zoning and land uses within that area; and residences, public and private water supply wells, known private water supply aquifers, sole source aquifers, ground water management areas, well-head protection zones, special protection areas and surface waters (with quality classifications), access roads, bridges, railroads, airports, historic sites, and other existing and proposed man-made or natural features relating to the facility; and

(C) An overall site plan (having a minimum scale of 1:2,400 with five foot (or one meter) minimum contour intervals) that must show the landfill's property boundaries (as certified by an individual licensed to practice land surveying in the state of Washington), offsite and onsite utilities (such as electric, gas, water, storm, and sanitary sewer systems) and right-of-way easements; the 100-year floodplain, wetlands, Holocene faults, unstable areas; the names and addresses of contiguous property owners; the location of soil borings, excavations, test pits, gas venting structures, wells (including down-gradient drinking water supply wells within two thousand feet (six hundred ten meters) of the property boundary), lysimeters, piezometers, environmental and facility monitoring points and devices (with each identified in accordance with a numbering system acceptable to the jurisdictional health department and whose horizontal location are accurate to the nearest 0.5 foot (0.15 meter) and all orthometric evaluations should be related to a vertical benchmark based on the national geodetic vertical datum of 1929 (NGVD29) and be established to 3rd order classification standards per federal geodetic control committee, or its successor, as specified in WAC 332-130-060 as measured from the ground surface and top of well casing), benchmarks and permanent survey markers, and onsite buildings and appurtenances, fences, gates, roads, parking areas, drainage culverts, and signs; the delineation of the total landfill area including planned staged development of the landfill's construction and operation, and the lateral and vertical limits of previously filled areas; the location and identification of the sources of cover materials; the location and identification of special waste handling areas; a wind rose; and site topography with five foot (or one meter) minimum contour intervals.

Note: All horizontal locations shall be based upon a control station related to a horizontal datum specified in chapter 58.20 RCW and chapter 332-130 WAC (NAD.83 (1991)).

(D) Detailed plans of the landfill must clearly show in plan and cross-sectional views, the original, undeveloped site topography before excavation or placement of solid waste; the existing site topography (if different from the original, undeveloped site topography) including the location and approximate thickness and nature of any existing solid waste; the seasonal high ground water table; generalized geologic units; known and interpolated bedrock elevations; the proposed limits of excavation and waste placement; the location and placement of each liner system and of each leachate collection system, locating and showing all critical grades and elevations of the collection pipe inverts and drainage envelopes, manholes, cleanouts, valves, sumps, and drainage blanket thicknesses; all berms, dikes, ditches, swales and other devices as needed to divert or collect surface water runon or runoff; the final elevations and grades of the landfill cover system including the grading and gas venting layer, low permeability barrier, topsoil layers; the system used for monitoring and venting the decomposition gases generated within the landfill; ground water monitoring wells; geophysical and geochemical monitoring devices or structures; leachate storage, treatment and disposal systems including the collection network, sedimentation ponds and any treatment, pretreatment, or storage facilities; typical roadway sections, indicating the pavement type, dimensions, slopes and profiles; the building floor plans, elevations, appurtenances; and plans detailing the landfill entrance area including gates, fences, and signs.

(b) Engineering reports. The engineering reports for a facility must:

(i) Contain a cover sheet, stating the project title and location, the owner's or operator's name, and the engineer's name, address, signature, date of signature, and seal.

(ii) Have its text printed on 8 1/2" by 11" pages (paginated consecutively);

(iii) Contain a table of contents or index describing the body of the report and the appendices;

(iv) Include a body of report whose content is described by (c) of this subsection; and

(v) Include all appendices.

(c) An engineering report containing a description of the existing site conditions and, at a minimum, an analysis of the proposed facility that must:

(i) Describe current operating practices, expected life and any pending litigation or corrective actions relating to the existing or past facilities;

(ii) Specify the proposed design capacity of the MSWLF unit for which approval is being sought, describing the number, types, and the minimum specifications of all the necessary machinery and equipment needed to effectively operate the landfill at the proposed design capacity;

(iii) Contain a site analysis of the proposed action including:

(A) The location of the closest population centers;

(B) A comprehensive description of the primary transportation systems and routes in the facility service area (i.e., highways, airports, railways, etc.);

(C) An analysis of the existing topography, surface water and subsurface geological conditions in accordance with the hydrogeologic report requirements of WAC 173-351-490;

(D) A description of the materials and construction methods used for the placement of each monitoring well pursuant to the requirements of WAC 173-351-400; all gas venting systems; each liner and leachate collection and removal system; leachate storage, treatment, and disposal systems;

and cover systems to demonstrate conformance with the design requirements found in WAC 173-351-300, 173-351-320, and 173-351-500. This description also must include a discussion of provisions to be taken to prevent frost action upon each liner system in areas where refuse has not been placed;

(E) An estimate of the expected quantity of leachate to be generated, including:

(I) An annual water budget that estimates leachate generation quantities during initial operation, upon application of intermediate cover, and following MSWLF unit or all MSWLF units closure. At a minimum, the following factors must be considered in the preparation of the water budget to determine the amount of leachate generated as a result of precipitation infiltration into the MSWLF unit or all the MSWLF units: Average monthly temperature, average monthly precipitation, evaporation, evapotranspiration which considers the vegetation type and root zone depth, surface/cover soil conditions and their relation to precipitation runoff which must account for the surface conditions and soil moisture holding capacity and all other sources of moisture contribution to the landfill;

(II) Liner and leachate collection system efficiencies that must be calculated using an appropriate analytical or numerical assessment. The factors to be considered in the calculation of collection system efficiency must include, at a minimum, the saturated hydraulic conductivity of the liner, the liner thickness, the saturated hydraulic conductivity of the leachate collection system, the leachate collection system porosity, the base slope of the liner and leachate collection and removal system interface, the maximum flow distance across the liner and leachate collection and removal system interface to the nearest leachate collection pipe, the estimated leachate generation quantity as computed in accordance with the requirements of (c)(iii)(E)(I) of this subsection; and

(III) Predictions of the static head of leachate on the liners, volume of leachate to be collected, and the volume of leachate that may permeate through the entire liner system, all on a monthly basis. Information gained from the collection efficiency calculations required in (c)(iii)(E)(I) and (II) of this subsection must be used to make these predictions. This assessment also must address the amount of leachate expected to pass through the liner system in gallons per acre per day (liters per square meter per day).

(d) Discuss the closure and post-closure maintenance and operation of the facility which must include, but not be limited to:

(i) A closure design consistent with the requirements of WAC 173-351-500;

(ii) A post-closure water quality monitoring program consistent with the requirements of WAC 173-351-400 and 173-351-500;

(iii) An operation and closure plan for the leachate collection, treatment, and storage facilities consistent with the requirements of this regulation and WAC 173-304-430; and

(iv) A discussion of the future use of the facility, including the specific proposed or alternative uses during the post-closure period. Future uses must not adversely affect the final cover system. See WAC 173-351-500 (2)(c)(iii).

(e) Appendices submitted as part of an engineering report submitted with an application to construct a new or laterally expanded MSWLF unit must contain:

(i) Appropriate charts and graphs;

(ii) Copies of record forms used at the MSWLF unit;

(iii) Test pit logs, soil boring logs, and geological information (such as stratigraphic sections, geophysical and geochemical surveys, and water quality analyses);

(iv) Engineering calculations (including the raw data from which they were made);

(v) Other supporting data, including literature citations.

(6) Construction quality assurance and construction quality control plans.

The construction quality assurance (QA) and construction quality control (QC) plan must address the construction of the MSWLF unit according to the designs set forth in chapter 173-351 WAC. (Construction QA and construction QC are defined in WAC 173-351-100.) The owner or operator may submit separate construction QA plans and construction QC plans. For each specified phase of construction, these plans must include, but not be limited to:

(a) A delineation of the responsibilities for the QA management organization and the QC management organization, including the chain of command of the QA inspectors and contractors and the QC inspectors and contractors; quality assurance shall be performed by a third party organization that is independent of the landfill owner/operator/contractor.

(b) A description of the required level of experience and training for the contractor, his/her crew, and QA and QC inspectors for every major phase of construction in sufficient detail to demonstrate that the approved installation methods and procedures will be properly implemented; and

(c) A description of the QA and QC testing protocols for every major phase of construction, which must include, at a minimum, the frequency of inspection, field testing, sampling for laboratory testing, the sampling and field testing procedures and equipment to be utilized, the calibration of field testing equipment, the frequency of performance audits, the sampling size, the laboratory procedures to be utilized, the calibration of laboratory equipment and QA/QC of laboratory procedures, the limits for test failure, and a description of the corrective procedures to be used upon test failure.

Note: It is intended that owners or operators will select and pay for the independent third party construction quality assurance firm, who will report to the owner or operator.

(7) Signature and verification of applications.

(a) All applications for permits must be accompanied by evidence of authority to sign the application and must be signed by the owner or operator as follows:

(i) In the case of corporations, by a duly authorized principal executive officer of at least the level of vice-president; in the case of a partnership or limited partnership, by:

(ii) A general partner;

(iii) Proprietor; or

(iv) In the case of a sole proprietorship, by the proprietor;

(v) In the case of a municipal, state, or other governmental entity, by a duly authorized principal executive officer or elected official.

(b) Applications must be sworn to by, or on behalf of, the owner or operator, in respect to the veracity all statements

therein; or must bear an executed statement by, or on behalf of, the owner or operator to the effect that false statements made therein are made under penalty of perjury.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-730, filed 10/26/93, effective 11/26/93.]

WAC 173-351-740 Permit issuance criteria. The jurisdictional health department may issue, reissue, or modify a MSWLF permit to a facility, only if:

(1) The application's engineering and hydrogeological data and construction plans and specifications required by this regulation pertaining to such a MSWLF unit or MSWLF units substantiate that the proposed MSWLF unit or MSWLF units meets the requirements of this regulation;

(2) The application demonstrates the facility's ability to operate and close in accordance with the requirements of this regulation;

(3) The application demonstrates the facility's ability to conduct post-closure activities in accordance with the requirements of this regulation; and a form of surety or financial responsibility for post-closure activities has been filed with the jurisdictional health department; and

(4) The application demonstrates the facility's consistency with the local solid waste management plan in effect at the time of application.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-740, filed 10/26/93, effective 11/26/93.]

WAC 173-351-750 Permit provisions. (1) Mitigation of adverse impacts. The jurisdictional health department may impose conditions in each permit, to assure mitigation of adverse environmental impacts pursuant to SEPA, chapter 43.21C RCW and to insure compliance with the requirements identified in WAC 173-351-130 through 173-351-600, with the applicable sections pertaining to such a MSWLF unit or all MSWLF units, and with other applicable laws and regulations.

(2) Transferability.

(a) All permits issued pursuant to this regulation are transferable only upon prior written approval of the jurisdictional health department and a demonstration that the prospective transferee will be able to comply with applicable laws and regulations, permit conditions, and other requirements to which the prospective transferor is subject.

(b) Upon transfer of ownership of all or part of a facility, a provision must be included in the property deed indicating the period of time during which the facility has been disposing of solid waste, a description of the solid waste contained within, and the fact that the records for the facility have been filed with the jurisdictional health department. The deed also must reference a map, which must be filed with the county clerk, showing the limits of the active areas as defined in WAC 173-351-100.

(3) Duration of permits. The jurisdictional health department must specify the duration of the MSWLF permit not to exceed ten years. Permits must be renewed annually according to WAC 173-351-730(3), and reissued according to WAC 173-351-720(6).

(4) Preconstruction review condition. The jurisdictional health department shall include in each permit for a new MSWLF unit or lateral expansion a condition requiring the owner or operator, to submit the following documents sixty days prior to beginning construction, and to obtain the jurisdictional health department's approval that the following documents conform with the engineering report and with the requirements of this chapter:

(a) Final design drawings;

(b) Construction specifications; and

(c) A construction quality assurance manual for the following MSWLF components:

(i) Bottom liner;

(ii) Leachate collection and removal system;

(iii) Landfill gas control system;

(iv) Leachate and landfill gas condensate treatment and disposal system; and

(v) Final cover system.

(5) Supervision and certification or declaration of construction. The construction of a MSWLF unit must be undertaken:

(a) Under the supervision of an individual licensed to practice engineering in the state of Washington; and

(b) In conformance with the construction quality assurance plan of WAC 173-351-730(6).

(6) Preoperation review conditions. Each permit issued under this chapter for a new MSWLF unit or lateral expansion shall contain a condition requiring that upon completion of construction, the licensed engineered who supervised construction shall certify or declare in writing that the construction is in accordance with the terms of the applicable permit and tested in accordance with construction quality assurance plans of WAC 173-351-730(6). Except as specified elsewhere in this regulation, this certification or declaration must be submitted to the jurisdictional health department within three months after completion of construction and must include recorded construction drawings and specifications. The operator must notify the jurisdictional health department, in writing, of the date when solid waste will be first received at the MSWLF unit.

(7) Cessation of construction or operation activities. If construction or operation activities started under a permit issued pursuant to this chapter cease for a period of twelve consecutive months, the jurisdictional health department may in its discretion revoke the permit. The jurisdictional health department shall provide notice to the owner or operator in writing explaining the reasons for revocation. The jurisdictional health department shall not revoke a permit where the cessation of construction or operation is caused by factors beyond the reasonable control of the permittee or when such cessation is in accordance with the provisions of the permit.

(8) Design volume capacity. Every MSWLF permit must set forth the facility's approved design volume capacity.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-750, filed 10/26/93, effective 11/26/93.]

WAC 173-351-760 Appeals. Whenever the jurisdictional health department denies a permit or suspends a permit for a solid waste disposal site, it shall, upon request of the application or holder of the permit, grant a hearing on such denial or suspension within thirty days after the request therefor is made. Notice of the hearing shall be given to all inter-

ested parties including the county or city having jurisdiction over the site and the department. Within thirty days after the hearing the health officer shall notify the applicant or the holder of the permit in writing of his determination thereof. Any party aggrieved by such determination may appeal to the pollution control hearings board by filing with the hearings board a notice of appeal within thirty days after receipt of notice of the determination of the health officer. The hearings board shall hold a hearing in accordance with the provisions of the Administrative Procedure Act, chapter 34.05 RCW, as now or hereafter amended.

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-760, filed 10/26/93, effective 11/26/93.]

WAC 173-351-990 Appendices.

APPENDIX I[1]

Appendix I - Constituents for Detection Monitoring

	COMMON NAME[2]	CAS RN[3]
Inorganic Constituents		
1)	Antimony	(Dissolved)
2)	Arsenic	(Dissolved)
3)	Barium	(Dissolved)
4)	Beryllium	(Dissolved)
5)	Cadmium	(Dissolved)
6)	Chromium	(Dissolved)
7)	Cobalt	(Dissolved)
8)	Copper	(Dissolved)
9)	Lead	(Dissolved)
10)	Nickel	(Dissolved)
11)	Selenium	(Dissolved)
12)	Silver	(Dissolved)
13)	Thallium	(Dissolved)
14)	Vanadium	(Dissolved)
15)	Zinc	(Dissolved)
16)	Nitrate	
Organic Constituents		
17)	Acetone	67-64-1
18)	Acrylonitrile	107-13-1
19)	Benzene	71-43-2
20)	Bromochloromethane	74-97-5
21)	Bromodichloromethane	75-27-4
22)	Bromoform; Tribromomethane	75-25-2
23)	Carbon disulfide	75-15-0
24)	Carbon tetrachloride	56-23-5
25)	Chlorobenzene	108-90-7
26)	Chloroethane; Ethyl chloride	75-00-3
27)	Chloroform; Trichloromethane	67-66-3
28)	Dibromochloromethane; Chlorodibromomethane	124-48-1
29)	1,2-Dibromo-3-chloropropane; DBCP	96-12-8
30)	1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4
31)	o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
32)	p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
33)	trans-1,4-Dichloro-2-butene	110-57-6
34)	1,1-Dichloroethane; Ethylidene chloride	75-34-3
35)	1,2-Dichloroethane; Ethylene dichloride	107-06-2
36)	1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4
37)	cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
38)	trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5
39)	1,2-Dichloropropane; Propylene dichloride	78-87-5
40)	cis-1,3-Dichloropropene	10061-01-5
41)	trans-1,3-Dichloropropene	10061-02-6
42)	Ethylbenzene	100-41-4
43)	2-Hexanone; Methyl butyl ketone	591-73-6
44)	Methyl bromide; Bromomethane	74-83-9
45)	Methyl chloride; Chloromethane	74-87-3
46)	Methylene bromide; Dibromomethane	74-95-3
47)	Methylene chloride; Dichloromethane	75-09-2
48)	Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
49)	Methyl iodide; Iodomethane	74-88-4
50)	4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
51)	Styrene	100-42-5
52)	1,1,1,2-Tetrachloroethane	630-20-6
53)	1,1,2,2-Tetrachloroethane	79-34-5
54)	Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
55)	Toluene	108-88-3
56)	1,1,1-Trichloroethane; Methyl chloroform	71-55-6
57)	1,1,2-Trichloroethane	79-00-5
58)	Trichloroethylene; Trichloroethene	79-01-6
59)	Trichlorofluoromethane; CFC-11	75-69-4
60)	1,2,3-Trichloropropane	96-18-4
61)	Vinyl acetate	108-05-4
62)	vinyl chloride	75-01-4
63)	Xylenes	1330-20-7

[1]This list contains 47 volatile organics for which possible analytical procedures provided in EPA Report SW-846 "Test Methods for Evaluating Solid Waste," third edition, November 1986, as revised December 1987, includes Method 8260; and 15 metals for which SW-846 provides either Method 6010 or a method from the 7000 series of methods.

[2] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[3] Chemical Abstracts Service registry number.

APPENDIX II

GROUND WATER QUALITY PARAMETERS

Field Parameters

pH

specific conductance
temperature
static water level

Geochemical Indicator Parameters

Calcium (Ca)Sodium (Na)
Bicarbonate (HCO_3)Chloride (Cl)
Magnesium (Mg)Potassium (K)
Sulfate (SO_4)Alkalinity (as Ca CO_3)
Iron (Fe)
Manganese (Mn)

Leachate Indicators

Ammonia (NH_3-N)
Total Organic Carbon (TOC)
Total Dissolved Solids (TDS)

APPENDIX III

List of Hazardous Inorganic and Organic Constituents.[1]

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100	200
			8270	10
Acenaphthylene	208-96-8	Acenaphthylene	8100	200
			8270	10
Acetone	67-64-1	2-Propanone	8260	100
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8270	10
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	20
Acrolein	107-02-8	2-Propenal	8030	5
			8260	100
Acrylonitrile	107-13-1	2-Propenenitrile	8030	5
			8260	200
Aldrin	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4, 4a,5,8,8a-hexahydro- (1α,4α, 4aβ,5α,8α,8aβ)-	8080	0.05
			8270	10
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010	5
			8260	10
4-Aminobiphenyl	92-67-1	[1,1 1 -Biphenyl]-4-amine	8270	20
Anthracene	120-12-7	Anthracene	8100	200
			8270	10
Antimony	(Dissolved)	Antimony	6010	300
			7040	2000
			7041	30
Arsenic	(Dissolved)	Arsenic	6010	500
			7060	10
			7061	20
Barium	(Dissolved)	Barium	6010	20
			7080	1000
Benzene	71-43-2	Benzene	8020	2
			8021	0.1
			8260	5
Benzo[a]anthracene; Benzanthracene	56-55-3	Benz[a]anthracene	8100	200
			8270	10

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
Benzo[b]fluoranthene	205-99-2	Benz[e]acephenanthrylene	8100	200
			8270	10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100	200
			8270	10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100	200
			8270	10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100	200
			8270	10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Dissolved)	Beryllium	6010	3
			7090	50
			7091	2
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3β,4α,5β,6β)-	8080	0.05
			8270	10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2β,3α,4β,5α,6β)-	8080	0.05
			8270	20
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3α,4β,5α,6β)-	8080	0.1
			8270	20
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3β,4α,5α,6β)-	8080	0.05
			8270	20
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1 1 -[methylenebis(oxy)]bis[2-chloro-	8110	5
			8270	10
Bis(2-chloroethyl) ether; Dichloroethyl ether	111-44-4	Ethane, 1,1 1 -oxybis[2-chloro-	8110	3
			8270	10
Bis-(2-chloro-1-methylethyl) ether; 2,2 1 -Dichlorodiisopropyl ether; DCIP, See note 7	108-60-1	Propane, 2,2 1 -oxybis[1-chloro-	8110	10
			8270	10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	8060	20
Bromochloromethane; Chlorobromomethane	74-97-5	Methane, bromochloro-	8021	0.1
			8260	5
Bromodichloromethane; Dibromochloromethane	75-27-4	Methane, bromodichloro-	8010	1
			8021	0.2
			8260	5
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010	2
			8021	15
			8260	5
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8110	25
			8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	8060	5
			8270	10
Cadmium	(Dissolved)	Cadmium	6010	40
			7130	50
			7131	1
Carbon disulfide	75-15-0	Carbon disulfide	8260	100
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010	1
			8021	0.1
			8260	10
Chlordane	See Note 8	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-	8080	0.1
			8270	50
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
Chlorobenzene	108-90-7	Benzene, chloro-	8010	2
			8020	2
			8021	0.1
			8260	5
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-α-(4-chlorophenyl)-α-hydroxy-, ethyl ester	8270	10
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	59-50-7	Phenol, 4-chloro-3-methyl-	8040	5
			8270	20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010	5
			8021	1
			8260	10
Chloroform; Trichloromethane	67-66-3	Methane, trichloro-	8010	0.5
			8021	0.2
			8260	5
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-	8120	10
			8270	10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040	5
			8270	10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8110	40
			8270	10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-	8010	50
			8260	20
Chromium	(Dissolved)	Chromium	6010	70
			7190	500
			7191	10
Chrysene	218-01-9	Chrysene	8100	200
			8270	10
Cobalt	(Dissolved)	Cobalt	6010	70
			7200	500
			7201	10
Copper	(Dissolved)	Copper	6010	60
			7210	200
			7211	10
m-Cresol; 3-methylphenol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol; 2-methylphenol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol; 4-methylphenol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	9010	200
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4 1 -DDD	72-54-8	Benzene 1,1 1 -(2,2-dichloroethylidene)bis[4-chloro-	8080	0.1
			8270	10
4,4 1 -DDE	72-55-9	Benzene, 1,1 1 -(dichloroethyenylidene)bis[4-chloro-	8080	0.05
			8270	10
4,4 1 -DDT	50-29-3	Benzene, 1,1 1 -(2,2,2-trichloroethylidene)bis[4-chloro-	8080	0.1
			8270	10
Diallate	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-,S-(2,3-dichloro-2-propenyl) ester	8270	10
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene	8100	200
			8270	10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	8010 8021 8260	1 0.3 5
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibrome-3-chloro-	8011 8021 8260	0.1 30 25
1,2-Dibromoethane; Ethylene dribromide; EDB	106-93-4	Ethane, 1,2-dibromo-	8011 8021 8260	0.1 10 5
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	8060 8270	5 10
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	8010 8020 8021 8120 8260 8270	2 5 0.5 10 5 10
m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1	Benzene, 1,3-Dichloro-	8010 8020 8021 8120 8260 8270	5 5 0.2 10 5 10
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	8010 8020 8021 8120 8260 8270	2 5 0.1 15 5 10
3,3 1 -Dichlorobenzidine	91-94-1	[1,1 1 -Biphenyl]-4,4 1 -diamine, 3,3 1 -dichloro-	8270	20
trans-1,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8260	100
Dichlorodifluoromethane; CFC 12;	75-71-8	Methane, dichlorodifluoro-	8021 8260	0.5 5
1,1-Dichloroethane; Ethyldidene chloride	75-34-3	Ethane, 1,1-dichloro-	8010 8021 8260	1 0.5 5
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,1-dichloro-	8010 8021 8260	0.5 0.3 5
1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	8010 8021 8260	1 0.5 5
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	Ethene, 1,2-dichloro-, (Z)-	8021 8260	0.2 5
trans-1,2-Dichloroethylene trans-1,2-Dichloroethene	156-60-5	Ethene, 1,2-dichloro-, (E)-	8010 8021 8260	1 0.5 5
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040 8270	5 10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane; Propylene dichloride	78-87-5	Propane, 1,2-dichloro-	8010 8021 8260	0.5 0.05 5
1,3-Dichloropropane; Trimethylene dichloride	142-28-9	Propane, 1,3-dichloro-	8021 8260	0.3 5

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
2,2-Dichloropropane; Isopropylidene chloride	594-20-7	Propane, 2,2-dichloro-	8021 8260	0.5 15
1,1-Dichloropropene	563-58-6	1-Propene, 1,1-dichloro-	8021 8260	0.2 5
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010 8260	20 10
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010 8260	5 10
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexa, chloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aα,2β,2aα,3β,6β, 6aα,7β,7aα)-	8080 8270	0.05 10
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	8060 8270	5 10
0,0-Diethyl 0-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	Phosphorothioic acid, 0,0-diethyl 0-pyrazinyl ester	8141 8270	5 20
Dimethoate	60-51-5	Phosphorodithioic acid, 0,0-dimethyl S-[2-(methylamino)-2-oxoethyl] ester	8141 8270	3 20
p-(Dimethylamino)azobenzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12-dimethyl-	8270	10
3,3 1 -Dimethylbenzidine	119-93-7	[1,1 1 -Biphenyl]-4,4 1 -diamine, 3,3 1 -dimethyl-	8270	10
2,4-Dimethylphenol; m-Xylenol	105-67-9	Phenol, 2,4-dimethyl-	8040 8270	5 10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060 8270	5 10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	20
4,6-Dinitro-o-cresol 4,6-Dinitro-2-methylphenol	534-52-1	Phenol, 2-methyl-4,6-dinitro	8040 8270	150 50
2,4-Dinitrophenol;	51-28-5	Phenol, 2,4-dinitro-	8040 8270	150 50
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090 8270	0.2 10
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090 8270	0.1 10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	8150 8270	1 20
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060 8270	30 10
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, 0,0-diethyl S-[2-(ethylthio)ethyl] ester	8140 8141 8270	2 0.5 10
Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide,	8080 8270	0.1 20
Endosulfan II	33213-65-9	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10, 10-hexa- chloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aα, 6β,9β,9aα)-	8080 8270	0.05 20

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexa- chloro-1,5,5a,6,9,9a-hexahydro-,3-3-dioxide	8080 8270	0.5 10
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aα, 2β,2aβ,3α,6α, 6aβ,7β,7aα)-	8080 8270	0.1 20
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta[cd]pentalene-5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahydro-, (1α,2β, 2aβ,4β,4aβ,5β,6aβ,6bβ,7R*)-	8080 8270	0.2 10
Ethylbenzene	100-41-4	Benzene, ethyl-	8020 8221 8260	2 0.05 5
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8260 8270	5 10 10
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester	8270	20
Famphur	52-85-7	Phosphorothioic acid, 0-[4-[(dimethylamino)sulfonyl]phenyl] 0,0-dimethyl ester	8270	20
Fluoranthene	206-44-0	Fluoranthene	8100 8270	200 10
Fluorene	86-73-7	9H-Fluorene	8100 8270	200 10
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a-hexahydro-, (1aα, 1bβ, 2α, 5α, 5aβ, 6β, 6aα)	8080 8270	1 10
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8120 8270	0.5 10
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8021 8120 8260 8270	0.5 5 10 10
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120 8270	5 10
Hexachloroethane	67-72-1	Ethane, hexachloro-	8120 8260 8270	0.5 10 10
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	8270	10
2-Hexanone; Methyl butyl ketone	591-78-6	2-Hexanone	8260	50
Indeno(1,2,3-cd)pyrene	193-39-5	Indeno(1,2,3-cd)pyrene	8100 8270	200 10
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-	8015 8240	50 100

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene,1, 2,3,4,10,10- hexachloro-1,4,4a, 5,8,8a hexahydro- (1α,4α,4aβ, 5β,8β,8aβ)-	8270 8260	20 10
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8090 8270	60 10
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	10
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1, 1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	8270	20
Lead	(Dissolved)	Lead	6010 7420 7421	400 1000 10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	8015 8260	5 100
Methapyrilene	91-80-5	1,2-Ethanediamine, N.N-dimethyl-N 1 -2-pyridinyl-N1/2-thienylmethyl)-	8270	100
Methoxychlor	72-43-5	Benzene,1,1 1 -(2,2,2, trichloroethylidene)bis[4-methoxy-	8080 8270	2 10
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	8010 8021	20 10
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	8010 8021	1 0.3
3-Methylcholanthrene	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	8270	10
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	2-Butanone	8015 8260	10 100
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-	8010 8260	40 10
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	8015 8260	2 30
Methyl methanesulfonate	66-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion; Parathion methyl	298-00-0	Phosphorothioic acid, 0,0-dimethyl	8140 8141 8270	0.5 1 10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-	8015 8260	5 100
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-	8010 8021 8260	15 20 10
Methylene chloride; Dichloromethane	75-09-2	Methane, dichloro-	8010 8021 8260	5 0.2 10
Naphthalene	91-20-3	Naphthalene	8021 8100 8260 8270	0.5 200 5 10
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione	8270	10
1-Naphthylamine	134-32-7	1-Naphthalenamine	8270	10
2-Naphthylamine	91-59-8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010 7520	150 400

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
o-Nitroaniline; 2-Nitroaniline	88-74-4	Benzenamine, 2-nitro-	8270	50
m-Nitroaniline; 3-Nitroanile	99-09-2	Benzenamine, 3-nitro-	8270	50
p-Nitroaniline; 4-Nitroaniline	100-01-6	Benzenamine, 4-nitro	8270	20
Nitrobenzene	98-95-3	Benzene, nitro-	8090	40
			8270	10
o-Nitrophenol; 2-Nitrophenol	88-75-5	Phenol, 2-nitro-	8040	5
			8270	10
p-Nitrophenol; 4-Nitrophenol	100-02-7	Phenol, 4-nitro-	8040	10
			8270	50
N-Nitrosodi-n-butylamine	924-16-3	1-Butanamine, N-butyl-N-nitroso-	8270	10
N-Nitrosodiethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-	8270	20
N-Nitrosodimethylamine	62-75-9	Methanamine, N-methyl-N-nitroso-	8070	2
N-Nitrosodiphenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-	8070	5
N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine	621-64-7	1-Propanamine, N-nitroso-N-propyl-	8070	10
N-Nitrosomethylethalamine	10595-95-6	Ethanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitroso-	8270	20
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-	8270	40
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-	8270	10
Parathion	56-38-2	Phosphorothioic acid, 0,0-diethyl 0-(4-nitrophenyl) ester	8141	0.5
			8270	10
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	20
Pentachlorophenol	87-86-5	Phenol, pentachloro-	8040	5
			8270	50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenl)	8270	20
Phenanthrene	85-01-8	Phenanthrene	8100	200
			8270	10
Phenol	108-95-2	Phenol	8040	1
p-Phenylenediamine	106-50-3	1,4-Benzenediamine	8270	10
Phorate	298-02-2	Phosphorodithioic acid, 0,0-diethyl S-[(ethylthio)methyl] ester	8140	2
			8141	0.5
			8270	10
Polychlorinated biphenyls; PCBs; Aroclors	See Note 9	1,1'-Biphenyl, chloro derivatives	8080	50
			8270	200
Pronamide	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015	60
			8260	150
Pyrene	129-00-0	Pyrene	8100	200
			8270	10
Safrole	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-	8270	10
Selenium	(Dissolved)	Selenium	6010	750
			7740	20
			7741	20
Silver	(Dissolved)	Silver	6010	70
			7760	100
			7761	10
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020	1
			8021	0.1
			8260	10

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
Sulfide	18496-25-8	Sulfide	9030	4000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	8150	2
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010	5
			8021	0.05
			8260	5
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	8010	0.5
			8021	0.1
			8260	5
Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4	Ethene, tetrachloro-	8010	0.5
			8021	0.5
			8260	5
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Thallium	(Dissolved)	Thallium	6010	400
			7840	1000
			7841	10
Tin	(Dissolved)	Tin	6010	40
Toluene	108-88-3	Benzene, methyl-	8020	2
			8021	0.1
			8260	5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10
Toxaphene	See Note 10	Toxaphene	8080	2
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8021	0.3
			8120	0.5
			8260	10
			8270	10
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	8010	0.3
			8021	0.3
			8260	5
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010	0.2
			8260	5
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro-	8010	1
			8021	0.2
			8260	5
Trichlorofluoromethane; CFC-11	75-69-4	Methane, trichlorofluoro-	8010	10
			8021	0.3
			8260	5
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8040	5
			8270	10
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	8010	10
			8021	5
			8260	15
0,0,0-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, 0,0,0-triethyl-ester	8270	10
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Dissolved)	Vanadium	6010	80
			7910	2000
			7911	40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8260	50
Vinyl chloride; Chloroethene	75-01-4	Ethene, chloro-	8010	2
			8021	0.4
			8260	10

Common Name[2] (mg/L)[6]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL
Xylene (total)	See Note 11	Benzene, dimethyl-	8020	5
			8021	0.2
			8260	5
Zinc	(Dissolved)	Zinc	6010	20
			7950	50
			7951	0.5

Notes:

1 The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6. Also, note that the state ground water quality criteria, chapter 173-200 WAC, takes precedence over these recommended PQL's.

2 Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

3 Chemical Abstracts Service registry number. Where "Total" is entered, all species in the ground water that contain this element are included.

4 CAS index are those used in the 9th Collective Index.

5 Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846 "Test Methods for Evaluating Solid Waste", third edition, November 1986, as revised, December 1987. Analytical details can be found in SW-846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

6 Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in ground waters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 mL samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

7 This substance is often called Bis(2-chloroisopropyl) ether, the name Chemical Abstracts Service applies to its noncommercial isomer, Propane, 2,2"-oxybis[2-chloro- (CAS RN 39638-32-9).

8 Chlordane: This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-chlordane (CAS RN 5103-74-2), gamma-chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6). PQL shown is for technical chlordane. PQLs of specific isomers are about 20 µg/L by method 8270.

9 Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.

10 Toxaphene: This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2), i.e., chlorinated camphene.

11 Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7). PQLs for method 8021 are 0.2 for o-xylene and 0.1 for m-or p-xylene. The PQL for m-xylene is 2.0 µg/L by method 8020 or 8260.

APPENDIX IV

PARAMETERS FOR LEACHATE ANALYSIS

Appendix I[1] Parameters
Appendix II Parameters
Nitrite
Total Colliform
COD
BOD
Cyanide

1_ All metals analysis should be for total recoverable metals, for the leachate analysis only.

Important Note: All other appendices require dissolved metals (field-filtration for metals).

[Statutory Authority: Chapter 70.95 RCW and 40 CFR 258. 93-22-016, § 173-351-990, filed 10/26/93, effective 11/26/93.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.