Chapter NR 507

APPENDIX I

BASELINE AND DETECTION MONITORING REQUIREMENTS

Table 1

DETECTION GROUNDWATER MONITORING FOR LANDFILLS
ACCEPTING MUNICIPAL SOLID WASTE

Waste Type	Detection Parameters[1]	Frequency for All Wells	Frequency for Subtitle D Wells
Municipal solid waste	Alkalinity Chloride Field conductivity (at 25°C) Field pH Field temperature Groundwater elevation Hardness	Semi–annual	Semi–annual
	VOC scan[2]	Annual	Semi–annual
Municipal solid waste combustor residue	Alkalinity Boron Cadmium Chloride Field conductivity (at 25°C) Field pH Field temperature Groundwater elevation Hardness Lead Selenium Sulfate	Semi–annual	Semi–annual

1 Additional parameters are required if other waste types are accepted at the landfill. See Table 2.

2 Refer to ch. NR 507 Appendix III for a list of the individual volatile organic compounds required for a VOC Scan.

Table 1A

DETECTION GROUNDWATER MONITORING FOR CCR WELLS AT CCR LANDFILLS

Waste Type	Detection Parameters[1]	Monitoring Frequency
Coal combustion residuals	Alkalinity Boron Calcium Chloride Fluoride Field conductivity (at 25°C) Field pH Field temperature Groundwater elevation Hardness Total Dissolved Solids (TDS) Sulfate	Semi–annual

[1] Groundwater samples collected at CCR wells must be unfiltered.

Table 2

DETECTION GROUNDWATER MONITORING FOR LANDFILLS ACCEPTING WASTE TYPES OTHER THAN MUNICIPAL SOLID WASTE

Waste Type	Detection Parameters	Frequency for All Wells
Paper mill sludge	Ammonia nitrogen Alkalinity Chloride COD Field conductivity (at 25°C) Field pH Field temperature Groundwater elevation Hardness Nitrate + Nitrite (as N) Sulfate	Semi−annual
Fly or bottom ash[1]	Alkalinity Boron COD Field conductivity (at 25°C) Field pH Field temperature Groundwater elevation Hardness Sulfate	Semi−annual
Foundry waste	Alkalinity COD Field conductivity (at 25°C) Field pH Field temperature Fluoride Groundwater elevation Hardness Sodium	Semi−annual
Demolition waste	Demolition monitoring requirements are listed in ch. NR 503	
Other solid waste	As specified in writing by the department	

1 Detection monitoring parameters apply to all wells monitoring CCR landfills that are not defined as CCR wells under s. NR 500.03 (26y).

Table 3

BASELINE AND ASSESSMENT GROUNDWATER MONITORING
PUBLIC HEALTH AND WELFARE PARAMETERS

All Wells	Additional Parameters for Subtitle D Wells	Additional Parameters for CCR Wells
Arsenic Barium Cadmium Chromium Copper Fluoride Lead Manganese Mercury Nitrate + Nitrite (as N) Selenium Silver Sulfate Zinc	Antimony Beryllium Cobalt Nickel Thallium Vanadium	Antimony Beryllium Cobalt Lithium Molybdenum Thallium Ra−226 and Ra−228, combined[1]

1 The maximum contaminant level (MCL) for combined radium is 5 pCi/L under s. NR 809.50 (1) (a).

Table 4

DETECTION LEACHATE MONITORING FOR ALL LANDFILLS[1,2]

Municipal Solid Waste and Municipal Solid Waste Combustor Residue	Paper Mill Sludge	Fly or Bottom Ash	Foundry Waste
The volume of the leachate removed shall be recorded at least monthly and reported to the department semi–annually.			
Semi–Annual Monitoring Parameters			
BOD_5 Field conductivity (at 25°C) Field pH Alkalinity Cadmium Chloride COD Hardness Iron Lead Manganese Mercury Ammonia nitrogen Total Kjeldahl nitrogen Sodium Sulfate Total suspended solids VOC scan[3] Other parameters specified by waste type in this table if accepted at the landfill	BOD_5 Field conductivity (at 25°C) Field pH Alkalinity Cadmium Chloride COD Hardness Iron Lead Manganese Mercury Ammonia nitrogen Total Kjeldahl nitrogen Sodium Sulfate Total suspended solids VOC scan[3]	BOD_5 Field conductivity (at 25°C) Field pH Alkalinity Boron Cadmium Chloride COD Hardness Iron Lead Manganese Mercury Selenium Total suspended solids **Additional Parameters for CCR Landfills** Antimony Beryllium Cobalt Fluoride Lithium Molybdenum Ra^{226} and Ra^{228} combined Sulfate Thallium	BOD_5 Field conductivity (at 25°C) Field pH Alkalinity Cadmium Chloride COD Fluoride Hardness Iron Lead Manganese Mercury Sodium Sulfate Total suspended solids VOC scan[3]
Annual Monitoring Parameters			
Semivolatile organic compound scan[4]	Semivolatile organic compound scan[4]	Semivolatile organic compound scan[4]	Semivolatile organic compound scan[4]

1 Leachate monitoring for other solid waste not included in this table may be done as specified by the department in writing.

2 Leachate samples may not be filtered. The color, odor and turbidity shall also be noted for all samples.

3 Refer to ch. NR 507 Appendix III for a list of the individual volatile organic compounds required for a VOC Scan.

4 Refer to ch. NR 507 Appendix IV for a list of the individual semivolatile organic compounds required for a semivolatile organic compound scan.

Table 5

DETECTION LYSIMETER MONITORING FOR ALL LANDFILLS[1,2]

Municipal Solid Waste	Municipal Solid Waste Combustor Residue	Paper Mill Sludge	Fly or Bottom Ash	Foundry Waste
The volumes of lysimeter fluid removed shall be recorded and be reported to the department semi–annually.				
Semi–annual Monitoring Parameters				
Field conductivity (at 25°C) Field pH Alkalinity Hardness Chloride COD Total Kjeldahl nitrogen Sodium Sulfate Other parameters specified by waste type in this table if accepted at the landfill	Field conductivity (at 25°C) Field pH Alkalinity Cadmium Hardness Chloride COD Lead Total Kjeldahl nitrogen Sodium Sulfate	Field conductivity (at 25°C) Field pH Alkalinity Hardness Chloride COD Total Kjeldahl nitrogen Sodium Sulfate	Field conductivity (at 25°C) Field pH Alkalinity Boron Hardness Chloride COD Total Kjeldahl nitrogen Sulfate	Field conductivity (at 25°C) Field pH Alkalinity Hardness Chloride COD Fluoride Total Kjeldahl nitrogen Sulfate
Annual Monitoring Parameters				
VOC scan[3]	VOC scan[3]	VOC scan[3]		VOC scan[3]

1 Lysimeter monitoring for landfills accepting waste not included in this table shall be done as specified by the department in writing.

2 Lysimeter samples may not be filtered. When only small sampling volumes are obtained, the VOC scan shall take precedence. The color, odor and turbidity shall also be noted for all samples.

3 Refer to ch. NR 507 Appendix III for a list of the individual volatile organic compounds required for a VOC scan.