GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Land Protection Branch
4244 International Parkway
Suite 104
Atlanta, Georgia 30354
404-362-2537

DRAFT HIGH MOISTURE CONTENT WASTE MANAGEMENT PLANS AT SOLID WASTE FACILITIES GUIDANCE DOCUMENT

June 2020
Revised February 2020

PURPOSE

This document is intended to clarify the Design & Operational (D&O) plan requirements for Municipal Solid Waste Landfills (MSWL) and Industrial Landfills in Georgia where a significant portion, greater than 5% by weight, of the waste stream consists of waste with a moisture content that could negatively affect the stability of the subject facility.

LEGAL AUTHORITY:

391-3-4-.07(6) High Moisture Content Waste Management Plans: "Owners or operators of MSWLs and Commercial Industrial Landfills must incorporate a High Moisture Content Waste (HMCW) management plan into the facility's Design and Operational Plan by major modification before the initial receipt of HMCW if planning to accept greater than 5% HMCW by weight. MSWLs and Commercial Industrial Landfills that accepted High Moisture Content Waste before the effective date of the Rule and will continue to accept HMCW greater than 5% by weight after the effective date must incorporate a HMCW management plan into the facility's Design and Operational Plan by minor modification as part of the facility's permit review required by 391-3-4-.02."

BACKGROUND

Due to instances of waste mass instability and leachate management issues at various disposal facilities throughout Georgia the Rules for Solid Waste Management have been amended to include a requirement for a High Moisture Content Waste (HMCW) Management Plan to be included in a permitted facility's D&O Plan. HMCW compacts well and can form a low permeability layer within the waste mass hindering the downward percolation of leachate to the leachate collection system. The result of this hindered leachate flow can be elevated pore pressures within the waste mass contributing to instability. In addition, many HMCW streams have a low shear strength that provides little resistance to sliding and movement. Polymers used in the clarification process of wastewater treatment facilities further reduce the shear strength of the associated waste. This waste can form a vicus layer that may become a failure plane for instability events.

APPLICABILITY

The following facilities defined in Rule 391-3-4-.01 that are active are subject to the requirements of this guidance:

- Municipal Solid Waste Landfills (MSWL),
- Commercial Industrial Landfills

Exceptions

Permitted solid waste facilities that receive 5% or less of their total waste stream as HMCW are exempt from the requirements of Rule 391-3-4-.07(6) and this guidance.

Private Industrial Solid Waste Landfill Facilities (PISWF's) where HMCW disposal was not a consideration in the design and operation of the facility may be required to directly address some sections of this guidance. All PISWF's that handle HMCW are subject to *Section 4. Leachate Release Protocol* without regard to the environmental monitoring (explosive gas and groundwater) requirements of the facility's permit. Please contact the Solid Waste Management Program prior to starting the 5-year permit review submittal process to determine the appropriate sections of this guidance your site should address during permit review.

HMCW solidified via a Solidification/Stabilization (S/S) process may be considered exempt from HMCW Management Plan acceptance restrictions. To be eligible for this exemption, the facility permit must be modified to include the S/S process. Evaluations of resulting S/S materials, differentiated by generator waste profile parameters and/or reagent ratios, must be performed to ensure that the placement of these materials will not negatively affect the long-term stability or increase pore pressures within the landfill.

In the S/S operational narrative, procedures must be specified that will ensure that the material conforms to minimum material shear strengths, in both the drained and undrained condition. A combination of friction and cohesion may be considered in determining whether the S/S materials meet or exceed the required minimum shear strengths. S/S materials, differentiated by generator waste profile parameters / reagent ratios, must be evaluated at least annually or more frequently dependent upon waste receipt confirmatory testing. The evaluations must demonstrate that the minimum strength required for stability is being achieved. This confirmatory testing shall include a combination of laboratory testing and field methods to ensure results are representative of as-built conditions within the Cell.

Components of HMCW Management Plans

Required components of HMCW Management Plans will be variable dependent on what fraction of the facility's total waste stream consists of HMCW.

1. Define high moisture content waste and disposal limits.

a. Waste with a moisture content greater than 40% by weight (weight of liquid / total weight of sample); Non-Hazardous liquids and Bulk Solidification Agents
b. Place a restriction to the highest percentage of HMCW allowed (based on site specific conditions and stability analysis) over a 30-day rolling average. Should a higher percentage of HMCW be accepted a demonstration must be made, that includes field investigations, that elevated pore pressures are not adversely affecting the stability of the facility.

2. Operational Practices - Provide operational best management practices to ensure landfill stability and odor control. These practices include but are not limited to:
   a. Thin lift placement of sludge to ensure thorough blending with MSW; and
   b. Limiting the location of blended MSW/HMCW to beyond 50 feet or more of the outside edge of slope; and
   c. Avoiding "pocket fills" of HMCW to be covered by a bridge lift of MSW; and
   d. Avoiding HMCW placement in known areas of instability and leachate outbreaks; and
   e. Placement of Daily Cover over the working face at the end of each operational day; and
   f. Removal of Daily Cover prior to incorporating HMCW into the waste mass.
3. Leachate Management Plan
   a. Detail leachate outbreak repair practices. These practices include but are not limited to:
      i. removing the material associated with the leachate outbreak, backfilling, and repair of the clay infiltration layer.
      ii. Installation of a stone trenches and/or drains to send leachate down to the leachate collection system.
      iii. Installation of temporary sumps to remove leachate.
   b. All temporary or permeant infrastructure shall be documented in the facility operating record.
   c. Specify the installation of caissons along the approximate locations of gas extraction wells to facilitate vertical percolation of leachate to the leachate collection system.
   d. Daily inspection and prompt repair of leachate collection sumps to include but not limited to:
      i. Monitoring leachate levels to ensure compliant levels in sumps.
      ii. Ensure there are no leaks present.
      iii. Confirm pumps are operating properly.
      iv. Report issues/observations to the General Manager
4. Leachate Release Protocol
   a. Define Leachate Release ~~to mean the release of leachate outside the lined area of the facility~~ in a manner consistent with *Monitoring of Surface*

Water and Underdrain Systems at Solid Waste Facilities guidance document issued [DATE].

b. Reference how the release will be contained and mitigated in accordance with the facility's most recent Stormwater Pollution Prevention Plan (SWPPP); and

c. Detail specific procedures to be implemented to mitigate the impact of released leachate to include but not be limited to:

i. Stopping the potential source of leachate
ii. Estimating the amount of leachate released
iii. Evaluating the extent of the release
iv. Diversion berms
v. Notification of EPD SWMP within 48 hours of release and Watershed Protection Branch, as appropriate

vi. Implementing sampling, analysis and reporting requirements detailed in *Monitoring of Surface Water and Underdrain Systems at Solid Waste Facilities* guidance document issued [DATE].

5. Odor Control Plan
   a. List best management practices used to control odors at the facility.
   b. How odor complaints will be managed.
      i. Log
      ii. Investigation
      iii. If the complaint is verified to be coming from the landfill, how was the odor was addressed.
      iv. Documentation of mitigation activities
6. Stability Monitoring and Reporting
   a. Weekly inspections of waste slopes and areas of concern
      i. Recorded on a form and kept in the facility operating record for a minimum of 5 years.
      ii. The form shall contain at a minimum:
         1. Placement lift thickness
         2. Proper horizontal compaction
         3. Proper mixing of MWL/HMCW
         4. Instances of plastic liners limiting incorporation/mixing.
         5. Removal of daily or intermediate cover
         6. Sliver fill
         7. Benching into slopes
         8. Gas seepage
         9. Leachate seepage
         10. Ponding of leachate and/or Stormwater on lined area
         11. Insufficient or breached stormwater controls
         12. Large areas that do not promote positive drainage.
         13. Inoperable or low flow from leachate and gas condensate sumps
   b. Additional observations to be made by landfill staff, reported to the

General Manager, and documented in the operating record as they occur include but are not limited to:

i. Wet areas of the landfill
ii. Leachate Outbreaks and/or Releases
iii. Gas Outbreaks
iv. Uneven slope surfaces due to the waste being too wet to grade properly.
v. Uneven slope surfaces due to differential settlement and/or sloughs to the slope.
vi. Liquid blowing out of gas wells.
vii. Increased odors
viii. Bent leachate collection pipes and/or gas stickups on the side slopes of the facility.
ix. Cracking of waste cover soils parallel with the toe of slope or in a crescent moon shape. Discontinuous 1/8" wide crack shall be reported to a geotechnical engineer if they collectively extend over a length of 100 ft.
x. Scarps or dropouts of the waste mass
xi. Bulging
xii. Sliding of soils over the toe of slope

c. The facility General Manager will be provided copies of the inspection reports and shall follow up with a professional geotechnical engineer, licensed to practice in the State of Georgia.

i. Within 24 hours of observing slope movements or bulges, and/or when the facility is advised by the geotechnical engineer that corrective measures are required to improve the stability of the existing MSW and/or HMCW/MSW mass, the Landfill will notify the EPD Solid Waste Management Program and provide details of the movement observed or measured, and the analysis to be performed
ii. Within 30 days of this official notification to EPD, the facility will notify EPD of the immediate corrective measures that are to be implemented and a schedule for implementation. Long term corrective measures and implementation schedules shall be submitted as a minor modification to the permit within 60 days of official notification to EPD.

_____ _____

William Cook, Manager Date
Solid Waste Management Program