Land Application Management Plans

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Overview

1) Land application management plan 101
2) Components
3) Plans as useful compliance tools
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1) Land application management plan 101
2) Components
3) Plans as useful compliance tools
What are Land Application Management Plans??

• Facility’s “Playbook”
• Standard Operating Procedure (SOP) for how waste is stored, transported, land applied, and reported
Code Requirements

• Industrial wastes—required per NR 214.17(6)(c) and NR 214.18(6)(c), Wis. Adm. Code

• Municipal wastes—may be required per NR 204.11(1), Wis. Adm. Code (recommended)

• Septage—not required (however a landspreading SOP is recommended)
Comprehensive “Playbook”

• Written document
• Logs daily spreading activities
• Improves communication
• Minimizes
  – Errors
  – Complaints
  – Potential impacts to surface and groundwater
  – Potential impacts to public health
Permit Compliance

• WPDES permit requirement

• Following approval, facility must operate in conformance with playbook

• Playbook = Enforceable document

• Change the plan → written request & approval
Overview

1) Land application management plan 101
2) Components
3) Plans as useful compliance tools
Sections of Management Plans

1) Waste sources
2) Storage units
3) Waste characterization
4) Transport
5) Land application
6) Disposal locations
7) Record keeping and reporting
1) Waste Sources

- Treatment processes
- Pollutants of concern
  - Metals
  - Radium
  - Chloride
  - Hazardous substances
- Potential odor
2) Storage Units

- Sample point designation
- Location(s)
- Capacity
- Waste(s) stored
- Flow diagram
- Regular maintenance and inspection of storage unit
3) Waste Characterization

- Method for collecting representative sample
- Sample parameters and monitoring
- State certified laboratory
4) Transport

• Method pumping waste to transport vehicle
• Type and capacity each vehicle
• Volume measured?
• Method for unloading waste
• Transport log
Example
Transport Log
(Optional)

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>Truck ID #:</th>
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<tbody>
<tr>
<td>Date:</td>
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<td>Load #</td>
<td>Time AM/PM</td>
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<td>Discharge Location</td>
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<td>Time Disposal</td>
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<td>Total Volume (Gallons/Day)</td>
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4) Transport (Continued)

• Contingency plan (weather)

• Spill plan
  – Clean-up SOP
  – Minor (<50 gallons)
  – Major (>50 gallons) – report within 24 hours
  – Spill hotline #: 1-800-943-0003
  – Mutual assistance response
5) Land Application (Field Prep)

- Approved site list
- Acreage estimate
- Identify setback/restricted areas
  - Flags
  - Cones
  - GPS unit
- Soil testing (biosolids)
5) Land Application (Continued)

- In spreading vehicle
  - 3400-122 form
  - Approval map
  - Spreading log
  - Playbook
5) Land Application

- Application method
  - Injection
  - Incorporation
  - Surface

- Pathogen control
- Vector attraction reduction

- Uniform application of wastes (start/stop)
- Hydraulic rate calculations for equipment

Biosolids & Septage
Hydraulic Rate Calculation Example #1

Application Method: Splash Plate
Truck Capacity: 4,000 gallons

Area Spread
Area = length x width
Area = 14,000 sq. ft.

Convert Square Feet to Acres
14,000 sq. feet x 1 acre/43,560 sq. feet
14,000/43,560 = 0.321 Acres

Hydraulic rate
4,000gal/0.321acre = **12,460 gallons/acre**
Hydraulic Rate Calculation Example #2

Total Gallons: 818,550

Hydraulic Rate:
818,550 gallons / 53.5 acres = 15,300 gallons/acre
Daily Land Application Logs

Content permit requires

- DNR #
- Outfall #
- Total acres
- Total volume
- Spreading method
- Hydraulic rate (ex: gal/acre/day)
- Load rate (N lbs/acre)
- Load rate (Chloride lbs/acre)
<table>
<thead>
<tr>
<th>Product Applied</th>
<th>To Storage / Disposition</th>
<th>Application Options</th>
<th>Application Info</th>
<th>Weather Conditions</th>
<th>Soil Conditions</th>
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<td>Wastewater</td>
<td>Storage</td>
<td>Splash Plate</td>
<td>Total Gallons Applied</td>
<td>Clear</td>
<td>Dry</td>
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<td>Sludge</td>
<td>Other Storage (Name)</td>
<td>Spray Gun</td>
<td>Total Acres Covered</td>
<td>Cloudy</td>
<td>Other:</td>
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<td>Permeate</td>
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<td>Spray Irrigator</td>
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<td>Salt Brine</td>
<td>WWTP (City)</td>
<td>Other:</td>
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<td>Septic Waste</td>
<td>Other:</td>
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<tr>
<th>Load</th>
<th>Driver</th>
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**Total Gallons:**

**Customer Name:**

**Customer I.D.:**

**Location:**

**Date:** / /
5) Land Application

- Nutrient and chloride calculations
- Additional sources of nitrogen
  - Manure
  - Commercial fertilizer
  - Carry-over
- Odor abatement
- Additional considerations
  - Spray guns (misting)
  - Lagoon desludge projects
6) Disposal Options

- List all potential disposal options
  - WWTF
  - Landfill
  - Incineration
  - Non permitted farm
  - Permitted farm

Approval Needed
## Disposal Log (Optional)

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7) Record Keeping and Reporting

- Location of records
- Responsible individual
- Annual reports (3400-049, 52, and 55 forms)
Overview

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Compliance Example #1

- Industrial sludge
- Injection required
- Odor complaints
- Tines not in ground
Compliance Example #2

- Industrial wastewater
- Plan → mark stop location with cone
- Unable ID start/stop location
- Uniform application of waste?
Compliance Example #3

- Industrial Wastewater
- Permeable soils (rate restriction)
- Complaints
  - Close to residence?
  - Exceed gal/acre?
Compliance Example #3 (Cont.)

- Plan → flag setbacks
- Setbacks not marked on site
- Rangefinder/GPS unit to verify distance
- Spray drifted within setback
Compliance Example #3 (Cont.)

- Spray gun calibrated? (6800 gal/acre)
- Rain gages—verify actual rate
- Determined exceeding daily rate
Compliance Example #4

- Municipal lagoon desludge project
- Odor complaint
- No notification prior to landspreading
- Uniform application?
- Injection?
Facility’s Take Away

• Develop a comprehensive “playbook”
  – Cover all categories?
  – Easy to follow? Usable for staff?
  – Contractor—does the permittee have a full understanding of what they do?
  – Living document—current (new equipment, wastes, etc.)?
  – Minimize issues
Department’s Take Away

• Guidance *in progress*

• Goals:
  – Consistent plan requirements across all landspreaders
  – Clearly define expectations
  – Expedite review
  – Better plan ➔ strong enforcement tool
Questions??

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