BUREAU OF WATER QUALITY

PROCEDURAL INSTRUCTIONS

Wisconsin Department of Natural Resources
101 S. Webster Street, P.O. Box 7921
Madison, WI 53707-7921

Landspreading Management Plans for Industrial Wastes (Industrial Liquid Wastes, By-Product Solids, and Industrial Sludges): How to Review and Approve

August 20, 2018

EGAD Number: 3500-2017-07

This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

APPROVED:

Sharon L. Gayan — 08/23/2018

Sharon Gayan, Director
Bureau of Water Quality

Date

Table of Contents

1.0 Definitions

1. Bedrock: means rock that is exposed at the earth's surface or underlies soil material and is encountered when weathered in–place consolidated material, larger than 2 mm in size, is greater than 50% by volume. (referenced from s. NR. 113.03 (7), NR 204.03 (9), NR 214.03 (3), Wis. Adm. Codes).

2. By-product solids: materials from animal product or food processing industry including, but not limited to, remains of butchered animals, paunch manure, and vegetable waste materials such as leaves, cuttings, peelings, and actively fermenting sweet corn silage (referenced from ss. NR 214.03(4), Wis. Adm. Code).

3. Community well or community public water supply system: means a public well which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. Any public well serving 7 or more homes, 10 or more mobile homes, 10 or more apartment units, or 10 or more condominium units shall be considered a community well, unless information is available to indicate that 25 year-round residents will not be served. (referenced from s 214.03(6), Wis. Adm. Code).

4. Detrimental effect: contamination of the lands or waters of the state, or making the same injurious to public health, harmful for commercial or agricultural use, or deleterious to animal or plant health (referenced from s NR 214.03(10), Wis. Adm. Code).

5. Dry run or drainageway: means a drainage pathway, either natural or artificial, with definable banks, which contains a confined flow during periods of runoff.

   Note: For the purposes of these procedural instructions, the terms "dry run" and "drainageway" are interchangeable.

6. Grease interceptor (aka: grease trap): watertight receptacle designed to intercept and retain grease for fatty substances contained in kitchen and other food wastes (referenced from s NR 113.03(21), Wis. Adm. Code). This term should not to be confused with a receptacle for grease collected from fryers (and similar cooking processes) and retained in onsite containers for removal/reuse.

   a. Industrial/process grease interceptor (aka: food processing grease): Watertight receptacle designed to intercept and retain grease connected through process piping (not sanitary plumbing). See s NR 214.18, Wis. Adm. Code.

   b. Sanitary grease interceptor: Watertight receptacle designed to intercept and retain grease connected through sanitary plumbing in and/or from kitchens and restaurants. Sanitary grease contains human pathogens. See ch. NR 113, Wis. Adm. Code.

7. Groundwater: means any of the waters of the state, as defined in s. 299.01 (5), Stats., [ss. 280.01 (2)] occurring in a saturated subsurface geological formation of permeable rock or soil. (referenced from s NR 214.03(16), Wis. Adm. Code).

8. Holding tank: approved watertight receptacle for the collection and holding of sewage (referenced from s NR 113.03(26), Wis. Adm. Code).

    a. Domestic holding tank: watertight receptacle for the collection and holding of domestic wastewater [See definition of wastewater-domestic below].

    b. Nondomestic or mixed (domestic and nondomestic) holding tank: watertight receptacle for the collection and holding of nondomestic wastewaters or a mix of domestic/nondomestic wastewaters [See definition of wastewater-nondomestic below].

9. Incorporation: means the mixing of sludge with topsoil to a minimum depth of 4 inches by such means as discing, mold–board plowing, chisel plowing, rototilling or other tillage methods. (referenced from s. NR 214.03(22), Wis. Adm. Code).

10. Industrial liquid waste or industrial wastewater: process wastewater (non-agriculture process wastewater) and waste liquids, including silage leachate, whey, whey permeate, whey filtrate, contact cooling water, cooling or boiler water containing water additives, and wash water generated in industrial, commercial, and agricultural operations (referenced from s NR 214.03(27), Wis. Adm. Code).

11. Injection: means the subsurface placement of liquid sludge to a depth of 4 to 12 inches. (referenced from s. 214.03(26), Wis. Adm. Code).

12. Land application management plan or land management plan: document that outlines how wastes are stored, transported, and land applied on department approved fields. Management plans are required per s. NR 214.17(6)(c) and NR 214.18(6)(c), Wis. Adm. Code.

13. Landspreading system (landspreading): system where a controlled quantity of liquid or by-product is uniformly applied onto, or incorporated into, the surface soil of designated sites by means of a vehicle with a spreader bar, spray gun, or sub-surface injector. The wastes are to be applied for the benefit of the vegetative cover. Landspreading systems also include those systems where industrial sludges are occasionally applied through temporary irrigation piping at a frequency similar to that of application by vehicle (referenced from s NR 214.03(26), Wis. Adm. Code).

14. Land treatment system: System that utilizes the physical, chemical, and biological abilities of the soil to decompose pollutants in the wastes. Land treatment systems include:
    a. Absorption or seepage pond systems,
    b. Ridge and furrow systems,
    c. Spray irrigation systems,
    d. Overland flow systems,
    e. Subsurface absorption field systems,
    f. Landspreading systems for liquid wastes or organic by-products,
    g. Sludge spreading systems, and
    h. Any other land area receiving liquid wastes, by-products, or sludge discharges (referenced from s NR 214.03(24), Wis. Adm. Code).

15. Manure (animal waste): material that consists primarily of litter or excreta, treated or untreated, from livestock, poultry or other animals. Manure includes material mixed with runoff, bedding contaminated with litter or excreta, or process wastewater (referenced from s NR 243.03(36), Wis. Adm. Code).

16. Manure storage unit: Any above or below ground unit designed (NRCS 313 standards) and approved to store manure. Manure storage units may be approved by the county land and water conversation department or pursuant to ch. NR 243, Wis. Adm. Code requirements. For the purposes of these procedural instructions, manure digesters are considered a manure transfer structure that transfers waste into manure storage units.

17. Non-Permitted farm: farm that does not have a WPDES permit (general or individual) that authorizes the application of liquid industrial waste or manure to cropland.

18. Permitted contract haulers: business that has been issued a WPDES permit to haul, comingle, store, and land apply wastes.

19. Permitted farm: livestock operation that has a WPDES permit (example: Concentrated Animal Feeding Operation or CAFO) that authorizes the application of liquid and/or solid manure to croplands or authorizes a discharge to surface waters.

20. Portable restroom: fixtures, incorporating holding tank facilities, designed to directly receive human excrement. Portable restrooms are self-contained units, may be designed for one or more person's use at a given time and are readily transportable (referenced in s NR 113.03(41), Wis. Adm. Code).

21. Private water supply well or private well: means a residential water supply or a livestock water supply. (referenced from s. NR 123.03(16), Wis. Adm. Code)

22. Privy: cavity in the ground or a portable above ground device constructed for toilet uses which receive human excrement either to be partially absorbed directly by the surrounding soil or stored for decomposition and periodic removal (referenced in s NR 113.03(43), Wis. Adm. Code).

23. Sewage sludge (or biosolids): solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works (referenced from s NR 204(55), Wis. Adm. Code). Sewage sludge includes scum or solids removed in primary, secondary or advanced wastewater treatment processes and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

24. Sludge (industrial sludge): accumulated solids generated during the biological, physical or chemical treatment, coagulation or sedimentation of water or wastewater (referenced from s NR 214.18(34), Wis. Adm. Code).

25. Sludge spreading system: system where a controlled quantity of industrial sludge is uniformly applied onto, or incorporated into, the surface soil of designated sites by means

of a vehicle with a spreader bar, spray gun, or sub-surface injector. The sludge is landspread as a soil amendment or for nutrient reuse. Only sludges which have been exempted from regulation under ch. NR 518, Wis. Adm. Code, and have been shown to have beneficial properties as a soil conditioner or fertilizer, and not have detrimental effects on the soil crops or groundwater may be spread on the land.

26. Storage structure: lagoon, slurry store, storage pad, etc. that has been reviewed and approved by the department to store industrial liquid wastes, by-product solids, and industrial sludges. These storage structures are registered under the waste generator's WPDES permit.

27. Total volume: total gallons of manure retained in the storage unit just prior to landspreading.

28. Wastewater-domestic: wastewater originating solely from human and domestic activities such as sanitary, bath, laundry, dishwashing, garbage disposal, and the cleaning of domestic areas or utensils. Wastewater from restaurants is considered domestic wastewater. [clarified pursuant to DSPS (DComm) and DNR Memo of Understanding dated December 16, 1999].

29. Wastewater non-domestic: means wastewater that is typically not generated from homes and similar sources, including, but is not limited to wastes collected from non-residential garages used for storage, maintenance, or washing of motor vehicles, commercial food processing, commercial laundromats, animal shelters or kennels, animal rendering, metal fabricating, electronic component manufacturing, chemical manufacturing, milk houses and other industrial and commercial process water. [clarified pursuant to DSPS (DComm) and DNR Memo of Understanding dated December 16, 1999]. Note: Non-domestic wastewater may include a mix of non-domestic and domestic wastes.

30. Wetland: means those areas were water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation, and which have soils or vegetation indicative of wet conditions (referenced from s. NR 214.03(38), Wis. Adm. Codes).

2.0 Acronyms

1. CAFO: Concentrated Animal Feeding Operation

2. DNR: Department of Natural Resources (the department)

3. DSPS: Department of Safety and Professional Services (formerly Department of Commerce)

4. LMP: Landspreading Management Plan (aka Land Management Plan)

5. MSDS: Material Safety Data Sheet (aka Safety Data Sheet or SDS)

6. NMP: Nutrient Management Plan

7. NRCS: Natural Resource Conservation Service (formerly known as the U.S. Soil Conservation Service (SCS))

8. SOP: Standard Operating Procedure

9. SWAMP: System for Wastewater Applications, Monitoring, and Permits

10. WPDES: Wisconsin Pollutant Discharge Elimination System

11. WWTF: Wastewater Treatment Facility

3.0 Applicability

These procedural instructions outline the Landspreading Management Plan (LMP) requirements for Wisconsin Pollutant Discharge Elimination System (WPDES) industrial waste generators.

The following wastes and situations are excluded from the use of this document as well as other wastes and situations:

- Sewage sludge (biosolids) that is stored and landspread by its waste generator;
- Septage wastes (including, but not limited to, septage, holding tank, sanitary grease, portable restroom, privy, etc.) landspread under a Wisconsin septage business license;
- WPDES permitted contract haulers that temporarily store and landspread various wastes;
- Septage haulers that have been issued a WPDES permit;
- Wastes excluded per s. NR 214.02(3), Wis. Adm. Code;
- Farm process wastewater regulated per ch. NR 243, Wis. Adm. Code;
- Farm process wastewater from non-permitted farms; and
- Hazardous wastes.

Note: Process wastewater (milkhouse waste, silage leachate, etc.) generated at the agricultural facility (permitted and non-permitted) and discharged into a manure storage unit is typically classified as an agricultural waste. In contrast, process wastewater generated at an industrial facility and discharged as a waste is considered an industrial liquid waste (regulated pursuant to s. NR 214.17, Wis. Adm. Code). Wastes from agricultural and industrial facilities may be characteristically similar but are regulated pursuant to the type and/or origin of waste generation.

4.0 Background

Landspreading Management Plans (LMP) outline how industrial wastes (industrial liquid wastes, by-product solids, and industrial sludges) are stored, transported, and landspread on department approved fields. The management plan typically serves as a standard operating procedure (SOP) for the permittee's employees to reference and implement. This document is also utilized by department staff to ensure that the permittee meets WPDES permit and code requirements when landspreading.

LMPs include information such as a waste volume and characterization, storage locations and land application outfalls, type of transportation and landspreading vehicles/equipment, contingency plans for periods of adverse or inclement weather, spill response procedures (large and small spills), daily record keeping, annual reporting requirements, and any other pertinent information.

Each industrial facility that stores, handles, disposes and/or landspreads industrial wastes is required to have a department approved LMP per s. NR 214.17(6) (c) and NR 214.18(6) (c), Wis. Adm. Code. If the facility wishes to operate differently than specified in the approved plan, a written request shall be submitted to the department for approval to amend the management plan prior to implementing operational changes.

LMPs are tools for permittees and their employees to use in managing their landspreading program pursuant to its WPDES permit and ch. NR 214, Wis. Adm. Code.

This landspreading management plan may also include information on lagoon desludge projects. Sludge is removed infrequently from lagoon systems (typically once per 15-20 years, depending on the rate of sludge buildup). The desludge plan details how the facility will continue to function during the lagoon drawdown, how surface water discharge limits will be met (if discharging), and precautions to prevent liner damage.

The department recommends that copies of the final LMPs be kept in all vehicles and office locations. The document should be readily available, so it can be located and referred to as needed.

Given the increasing complexity of industrial landspreading permits, as well as the growing number of compliance related issues regarding the landspreading of industrial wastes, the department developed these procedural instructions to create a standard outline of items that industrial waste landspreaders must address in their landspreading management plans. The permittee must submit a landspreading management plan that optimizes performance and demonstrates compliance with the permittee's WPDES permit and ch. NR 214, Wis. Adm. Code.

Following the landspreading management plan approval by the department, the permittee must operate in conformance with the approved landspreading management plan. Again, if the permittee wishes to operate differently than specified in the approved plan, a written request must be submitted to the department for approval to amend the management plan prior to implementing the operational changes.

> *Legal note: This document is intended solely as procedural instructions and does not contain any mandatory requirements, except requirements found in state statute or administrative rule. These procedural instructions do not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. The procedural instructions do not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by these procedural instructions will be made by applying the governing statutes and administrative rules to the relevant facts. Each item on the outline must be adequately discussed in the plan. If an item is omitted, the permittee must have an explanation as to why the requested information is not relevant.*

5.0 Landspreading Management Plan Requirements

Landspreading Management Plans (LMPs) include the following sections:

1. Cover Page;
2. Industrial Waste Information;
3. Waste Storage Structures (Storage Outfalls);
4. Waste Characteristics;
5. Waste Transport;
6. Landspreading;
7. Mixing Industrial Wastes into Manure Storage Structures (if applicable);
8. Additional Disposal Options;
9. Record Keeping and Reporting; and
10. Lagoon Desludge Projects (if applicable).

5.1 Cover Page

The cover page includes the following information:

1. Permittee name,
2. WPDES permit number,
3. Mailing address of facility,
4. Authorized representative for permittee,
5. Contact information (phone number, email address, etc.) of authorized representative
6. Management plan developer,
7. Contact information (phone number, email address, etc.) of landspreading management plan developer, and
8. The version number or draft number and date of the landspreading management plan.

5.2 Waste Information

The waste information section includes the following information:

1. A description of the industrial or commercial processes that generate the wastewater and/or solids. A list the raw materials used, and the products produced is included.

2. This section specifies the type of wastewater treatment processes utilized prior to landspreading. These processes may include, but is not limited to: screening, settling, aeration, aerobic digestion, and anaerobic digestion.

3. A listing of chemicals used in the industrial or waste treatment process is included. Also included is a listing of the material safety data sheets (MSDS or SDS) of chemicals used, if applicable.

4. Identification of any potential pollutants of concern in the wastewater/solids is also provided. This may include, but is not limited to: chloride, lead, zinc, copper, nickel, and cadmium.

5.3 Waste Storage Structures (Storage Outfalls)

This section relates to storage structures with outfalls (not including manure storage structures used for disposal):

1. A list all DNR approved storage structures including the following information:
    a. DNR designated sample point number (outfall number),
    b. Storage structure name,
    c. Legal description of unit,
    d. Construction description (type and material),
    e. Structure capacity (gallons, cubic yards, or tons),
    f. Waste type (liquid, solid, cake, etc.) stored in structure, and
    g. Approximate waste volume stored annually in each structure.

    Note: The landspreading management plan must detail leachate containment for storage units containing industrial cake sludge or by-product solids.

2. The location of each storage structure on an aerial photograph.

3. Flow diagrams detailing how wastes are discharged into and removed from each storage structure.

4. The procedure(s) for regularly inspecting and maintaining each storage unit. This procedure should address spill management, leakage and structural failure mitigation procedures.

5. A template inspection and maintenance/repair log. It is recommended that this log include the following information:
    a. Date and time of inspection,
    b. Storage structure(s) inspected,
    c. Inspector(s),
    d. Observations,
    e. Recommended repairs/maintenance, and
    f. Date of repairs/maintenance.

6. When a new or different a storage structure is approved by the department (as part of a WPDES permit modification or reissuance), the specific information as outlined above must be provided as an amendment to the LMP.

5.4 Waste Characteristics

This section will provide information related to the waste characteristics, where and how samples are collected and other related information. The following information is expected to be included in the landspreading management plan.

1. A detailed description of how and where representative samples are collected from each sample location (outfall).

> The department recognizes that the permittee may use other state certified laboratories. It is recommended that the permittee update the LMP when changes to the laboratory occurs. If using more than one laboratory, include a listing of each lab.

2. A list all waste parameters and the monitoring frequency associated for each outfall.

3. A listing of the current state certified laboratories used to analyze the permittee's samples.

4. A template sampling log that includes the following information:
   a. Date, exact place, method and time of sampling or measurement;
   b. The individuals who performed the sampling or measurements;
   c. The laboratory that completed the analysis;
   d. The analytical techniques or methods used; and
   e. The results of the analysis.

5. A table summarizing the most recent laboratory data for each outfall. The department recommends calculating the average concentration (last 5 calendar years) for each pollutant. A range of data may be included as well to show expected range of data results.

Note: The generator of industrial wastes is responsible for the handling and landspreading of the wastes. However, when an independent landspreading contractor has been issued a WPDES permit for the land treatment of these wastes the WPDES permitted landspreading contractor assumes responsibility for hauling and landspreading these wastes. A person may not land apply industrial waste or discharge industrial waste to a land treatment system unless the land application or discharge is authorized by a WPDES permit (reference: s. NR 214.02, Wis. Adm. Code).

5.5 Waste Transport

The waste transport section of the landspreading management plan includes the following:

1. A description of methods for pumping liquid waste from the storage unit to the hauling vehicle. When transporting a solid material, a description of how solids are loaded into hauling vehicle is provided.

2. A description of each vehicle used for hauling detailing the type (year, make, model) and capacity (gallons, cubic yards, tons).

3. Listing of all contractors or sub-contractors used for removing liquids/solids (if applicable).

4. Description of measuring the total volume hauled from each outfall and the types of records that will be maintained. The department recommends that a transport log be kept. This log should record the following information:
   a. Permittee name,
   b. Date and time waste is removed from storage structure,
   c. Truck identification number,
   d. Driver's name,
   e. Disposal location (landspreading field, wastewater treatment facility (WWTF), landfill, etc.),
   f. Date and time of disposal, and
   g. Approximate volume (gallons, cubic yards, or tons).

5. Explanation of how each application vehicle is unloaded at disposal location. If landspreading with the same vehicle, further explanation all types of equipment

(including but not limited to high pressure spraying guns, spreader bars, splash plates, or other devices).

6. A description of contingency plans developed for periods of adverse or inclement weather.

7. A spill response plan for transportation and landspreading spills. This plan should include an SOP for clean-up of both minor (<50 gallons) and large spills (>50 gallons). This plan must include DNR notification procedures, including the DNR 24-hour spill hotline phone number (1-800-943-0003). The plan should also include local emergency response information, including but not limited to, contacts for the local police department, sheriff's department, and state patrol. Smaller facilities may consider a mutual assistance agreement with other local facilities/businesses. The permittee may consider including emergency after-hours contact information for facility personnel.

> The permittee shall notify the department immediately of any spill in accordance with ch. NR 706, Wis. Adm. Code.

5.6 Landspreading Site Submittal Procedures for Requesting New Sites

The site submittal section of the landspreading management plan includes the following information describing how to obtain new sites/fields for landspreading:

1. A complete Land Application Site Request Form (Form 3400-053) is provided for each requested site.

2. The location of each landspreading site/field is shown on an aerial photograph.

3. A soil map is provided for each site.

4. Proof of ownership is provided for each site. Proof of ownership can be obtained from a county's tax parcel website or office of land records.

5. All potential sites restrictions are provided, including, but not limited to:
   a. Bedrock,
   b. Groundwater,
   c. Permeability and available water holding capacity,
   d. Slope and erodibility,
   e. Residences,
   f. Private and community wells,
   g. Surface water (streams, rivers, ponds, lakes, etc.),
   h. Wetlands,
   i. Drainageways and dry runs,
   j. Drainage tiles, and
   k. Other site-specific conditions.

> There are several websites that can be used to generate aerial photographs including the WDNR Surface Water Data Viewer or the NRCS Web Soil Survey. In addition, aerial photos can be obtained at most county land records offices and online through the county land records programs.

6. Proposed areas that are suitable for landspreading are shown on each site map (per ch. NR 214, Wis. Adm. Code),

7. Potential crops to be grown and/or the dominant vegetation on the landspreading site are provided along with the anticipated harvest and removal schedule.

8. The adjacent land use (commercial, residential, industrial, agricultural, forest, etc.) is described and mapped as well as any other relevant land features associated with the site.

9. A copy of the completed landowner permission form is included.

10. A recent soil test report is provided (if applicable). The locations of each composite soil test result are delineated on an aerial photograph.

11. If other sources of nitrogen (commercial fertilizers, manure, etc.) will be applied to each field an estimate of proposed additional fertilizer use is provided.

    Note: Fields may have an approved Nutrient Management Plan (NMP). This NMP may further limit application rate (nitrogen pounds/acre/crop year) of the industrial waste. The farmer and waste generator (permittee) may need implement changes to the NMP to account for the industrial waste and to adjust landspreading rates accordingly.

5.7 Landspreading

This section details the actual practices used during the landspreading activities and includes the following:

1. Detailed procedures for obtaining and regularly updating the list of the department approved landspreading sites/fields ("Approved Site List").

2. Example field loadings that show the nitrogen and chloride calculations for each outfall.

3. Example field loadings that show metal calculations for each outfall (applicable for industrial sludges).

4. Estimates that show approximate acreage needed to landspread waste from each outfall (based on nitrogen and/or chloride restrictions). Approximate acreage can be estimated by averaging the past five years wastewater characteristic data.

5. Spreading method descriptions for each outfall (examples include, but are not limited to: splash plate, spray irrigator, incorporation, injector, etc.). For wastes that contain pathogens (examples: meat and poultry processors), describe any special restrictions on cropping practices or limitations (See s. NR 214.17(4)(c) for details that limit crop harvesting due to pathogen issues.)

6. Explanation for outlining how setbacks and restricted areas are identified on each site/field (examples include: flagging, cones, rangefinder, GPS unit, etc.)

The Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin (A2809) from the UW-Extension and the UW soils department should be used to determine the agronomic needs of a crop.

Chloride is limited to 170 lbs/ac/year or 340 lbs/ac/2 years.

7. Templates or copies of the daily landspreading log. Generally, a landspreading log contains the following information:
    a. Permittee name,
    b. Date,
    c. Sample point number (outfall),
    d. DNR site number,
    e. Site/field name,
    f. Property owner,
    g. Time of each application event,
    h. Gallons of each application event,
    i. Total daily volume landspread,
    j. Application rate (gallons/acre, tons/acre, cubic yard/acre),
    k. Application method (incorporation, injection, surface),
    l. Total acres landspread,
    m. Crop year and intended cover crop,
    n. Applicator name,
    o. Wind direction if using spray guns, and
    p. Other relevant information

> Log requirements may vary based on waste type (by-product solids, sludge, wastewater) and WPDES permit conditions.

8. Examples of daily landspreading maps. These maps identify the locations where wastewater/solids are landspread on each approved site/field per day.

9. Detailed description explaining how wastewater is uniformly spread on each site/field. Describe how the start and stop locations are identified on each field (examples include but are not limited to: injection "tracks" for drag line system, and cones or flags when using splash plate).

10. Detailed descriptions for how the hydraulic application rates are calculated for each type of spreading equipment. For tractors using an on-board (in-cab) flow meters, the LMP should detail the frequency of meter calibration.

> The department recommends at a minimum, annual calibration of all in-cab flow meters.

11. When spray guns (truck-mounted, hose reel, etc.) are utilized by the permittee, detailed descriptions are provided for how "misting" or "drift" is minimized (examples: monitoring and recording of wind direction, identification of optimal fields for spray equipment, increasing setbacks from roadways/houses when using equipment, etc.).

12. Description for how additional nitrogen sources are tracked for each site/field to ensure nitrogen loading rate limits are not exceeded. The department recommends that the permittee develop a SOP for communicating with each site owner and renter/farmer (if applicable).

13. Description of procedures to minimize odors.

14. Description that explains how the permittee complies with the time requirements between waste application and for meeting minimum incorporation requirements into the surface soils if required by the WPDES permit or code requirements.

15. Description of temporary and/or permanent staging areas of waste, and an explanation of how these staging areas are managed as approved and specified in the WPDES permit.

5.8 Lagoon Desludge Projects

For lagoon desludging projects, additional information is provided in the landspreading management plan and include the following:

1. A list of all lagoon(s) that are included in the desludge project.

2. Detailed explanation describing how the industrial facility will continue to function during the lagoon drawdown. Description should include how surface water and groundwater discharge limits will be met (if discharging).

3. Detailed description for whether liquids, solids, or both are landspread. Estimate total volume of each and provide calculations for estimated water depth and sludge thickness for each lagoon.

> The sludge depth of a lagoon is typically taken using a sludge depth indicator, such as a "Sludge Judge" a Gag-Simtech Tru-Core Sludge Sampler, or similar sampling device.

4. Estimates detailing the expected nitrogen and chloride loading rates. These rates must be based on analysis of representative sludge samples (see the "Waste Characterization" section above). Using this rate, calculations are provided detailing the total number of acres needed to meet the agronomic needs of the intended crop(s).

5. Estimates explaining the hydraulic loading rate proposed for landspreading (total gallons, tons or cubic yards per day, and total volume per week). The total number of acres needed to landspread the contents of the lagoon(s) is provided by using the hydraulic application rate).

6. A list of all approved sites/fields for which industrial waste will be used to landspread. New landspreading sites need to be submitted to the department for review (see the "Landspreading Site Submittal Procedures for Requests New Sites" section above).

7. A detailed explanation describing how the wastes will be removed and hauled to spreading sites (equipment types and hauling vehicle capacity) is included. A description of precautions to prevent liner damage and spillage is provided.

8. An adverse or inclement weather plan is provided.

9. Notification details describing how the department will be notified prior to landspreading, including the amount of time for which the advanced notice will be given (in hours).

5.9 Mixing Industrial Wastes into Manure Storage Structures

When industrial wastes are proposed to be mixed into manure storage structures the following information is provided as part of the landspreading management plan:

1. A description explaining how industrial liquid waste (<10% exemption total volume) is discharged into manure storage structures. If liquid manure storage structures are used to store a mixture of manure and wastewater, the permittee submits a "Notice of Intent to Store Industrial Wastes in Existing Off-Site Manure Storage Structure" (form 3400-196) detailing information on the structure volume, the wastewater volume to be discharged, evidence to show the structure meets or exceeds USDA NRCS Technical Bulletin Section IV Design Criteria 313 (or equivalent sealing specifications,), and who is responsible for landspreading the manure/wastewater mixture. Staff should reference the "Mixing Industrial Wastes into Manure Storage Units: How to Review and Approve" procedural instructions for discharge request submittal requirements.

> A "10% exemption" for mixing by-product solids and industrial sludge into manure storage structures does not exist within administrative code. Staff should reference the "Mixing of Industrial Waste into Manure Storage Units: How to Review and Approve" procedural instructions for more details.

2. Once a manure structure is approved, the permittee maintains a list of all manure storage units approved under their WPDES permit within the LMP, containing the following information:
    a. Manure storage unit name,
    b. Legal description of unit,
    c. Construction description,
    d. Structure capacity,
    e. Typical waste(s) and sources stored in structure, and
    f. Approximate waste volume (gallons) discharged annually into each manure storage unit.

3. A template or photocopy of the daily discharge log into the manure storage structure is included with the LMP, including, but not limited to the following:
    a. Permittee name,
    b. Outfall number,
    c. Date and time the waste is removed from storage structure,
    d. Truck identification number,
    e. Driver name,
    f. Disposal location (manure storage unit name, DNR #),
    g. Disposal date and
    h. Datetime to manure storage unit,
    i. Approximate volume (gallons, tons, cubic yards), and
    j. Other relevant information.

4. A brief outline describing the procedure(s) for regularly inspecting and maintaining each manure storage unit is included in the LMP.

5. A description for who is responsible for updating the farm's NMP (if applicable), providing industrial wastewater characteristic data to the unit owner, and landspreading the manure mixture is included in the LMP.

6. A template or photocopy of the inspection and maintenance log for the manure storage structure is part of the LMP. This log should include, but is not limited to, the following information:
    a. Date and time of inspection,
    b. Storage structure(s) inspected,
    c. Inspector(s),
    d. Observations,
    e. Recommended repairs/maintenance, and
    f. Date of repairs/maintenance.

5.10 Additional Disposal Options

As part of the LMP, information relating to other disposal options is provided:

1. A list all the potential disposal options is included. Disposal locations may include, but are not limited to:
    a. Incineration
    b. Landfill,
    c. Hauling to a WWTF, or
    d. Authorized WPDES permitted entity.

> All additional storage options need to be itemized on the Other Methods of Disposal Report (form 3400-052).

2. A template or photocopy of the daily discharge log for using these other disposal methods include the location of these other disposal location(s). The disposal log may include, but is not limited to, following information:
    a. Permittee name,
    b. Outfall number,
    c. Date and time the waste is removed from storage structure,
    d. Truck identification number,
    e. Driver's name,
    f. Disposal location (WWTF, manure storage unit, etc.),
    g. Disposal date and time,
    h. Approximate volume (gallons, cubic yards, or tons).
    i. WPDES Permit number (if applicable), and
    j. Other relevant information.

5.11 Record Keeping and Reporting

As large part of the LMP is ensuring the person responsible and the reports necessary for maintaining compliance. The LMP includes:

1. Identification of the person responsible for maintaining the daily log records and identifying the location for as where the records are kept.

2. Include a list all required annual reports, the general due date for each report, and the name of the person who is responsible for submitting those reports to the department. Required annual reports include:
    a. Wastewater Characteristic Report (form 3400-049) and any associated lab reports.
    b. Other Methods of Disposal and Distribution Report (form 3400-052)
    c. Annual Land Application Report (form 3400-55)

> Laboratory reports may be required along with the submittal of the Wastewater Characteristic Report (form 3400-049) (refer to the facility's WPDES permit requirements).

6.0 Landspreading Management Plan Review

Once received, review of the Landspreading Management Plan should be conducted by the department's facility regulator. Appendix A includes a checklist that can be used to review the draft LMP. Once the review has been completed, the facility regulator sends an approval or denial letter to the industrial waste generator's authorized representative (see Appendix B). If the LMP is not complete, the plan should be denied and returned. Assistance may be necessary to help the applicant complete the satisfactory LMP.

7.0 SWAMP Documentation

For consistency efforts, and to better query activities within the wastewater program, wastewater staff are required to update SWAMP after the Landspreading Management Plan review is complete.

1. *Event Tracker*:
    a. Add the submittal and review date for the management plan into SWAMP's Event Tracker tab under "Contact Events."

> Insert into SWAMP's Event Tracker the date of LMP receipt and review.

2. *Permit Documents*:
    a. Add the management plan summary letter into SWAMP's Permit Documents tab.
    b. Title the document "LMP Approval Letter."
    c. Add the final LMP into SWAMP's Permit Documents tab.
    d. Title the document "LMP Approved [*Enter Approval Date*]"

8.0 Landspreading Management Plan Updates

Following approval by the department, the permittee must operate in conformance with the landspreading management plan. If the permittee wishes to operate differently than specified in the approved plan, a written request must be submitted to the department for approval to amend the management plan (per ss. NR 214.17(6)(c) and NR 24.18(6)(c), Wis. Adm. Code. Deviating from the LMP without department approval may result in violations of the facility's WPDES permit and/or code requirements. Further, the department may implement stepped enforcement on a case-by-case basis.

Appendices

9.1 Appendix A. Checklist for reviewing landspreading management plans.

LANDSPREADING MANAGEMENT PLAN (LMP) CHECKLIST	
DNR REVIEWER:	
NAME OF FACILITY:	**DATE SUBMITTED:**
FID:	**PERMIT NUMBER:**
SUBMITTER:	**WASTE(S) TYPES:**

NOTE: FOR ADDITIONAL DETAILS REFER TO PROCEDURAL INSTRUCTIONS

1. LANDSPREADING MANAGEMENT PLAN REQUIREMENTS

	Sufficient	Not Sufficient	Not Applicable
1. Cover Page	☐	☐	☐
2. Industrial Waste Information	☐	☐	☐
3. Waste Storage Structures	☐	☐	☐
4. Waste Characteristics	☐	☐	☐
5. Waste Transport	☐	☐	☐
6. Landspreading	☐	☐	☐
7. Mixing Wastes into Manure Storage	☐	☐	☐
8. Additional Disposal Options	☐	☐	☐
9. Record Keeping and Reporting	☐	☐	☐
10. Lagoon Desludge Projects	☐	☐	☐

Comments:

2. COVER PAGE

	Sufficient	Not Sufficient	Not Applicable
1. Permittee Name	☐	☐	☐
2. WPDES Permit Number	☐	☐	☐
3. Mailing Address of Facility	☐	☐	☐
4. Authorized Representative	☐	☐	☐
5. Contact Information	☐	☐	☐
6. Management Plan Developer	☐	☐	☐
7. Draft Number (Version) & Date of Management Plan	☐	☐	☐

Comments:

3. WASTE INFORMATION			
	Sufficient	Not Sufficient	Not Applicable
1. Description of Industrial or Commercial Processes that Generate Wastewater	☐	☐	☐
2. Specify the Type of Wastewater Treatment Processes Prior to Landspreading	☐	☐	☐
3. Identification Pollutants of Concern	☐	☐	☐
Comments:			

4. WASTE STORAGE STRUCTURE			
	Sufficient	Not Sufficient	Not Applicable
1. List all DNR Approved Storage Structures (Outfalls)	☐	☐	☐
2. Identification of Each Storage Structure on Aerial Photograph	☐	☐	☐
3. Flow Diagram	☐	☐	☐
4 Inspection and Maintenance Procedures	☐	☐	☐
NOTE: Each time a storage structure is approved by the Department (as part as a WPDES permit modification or reissuance), the above information must be provided as an amendment to the landspreading management plan.			
Comments:			

5. WASTE CHARACTERISTICS			
	Sufficient	Not Sufficient	Not Applicable
1. Detail Where and How Representative Samples are Collected from Each Outfall	☐	☐	☐
2. Identify Collector of Representative Samples	☐	☐	☐
3. List all Wastes Parameters & Monitoring Frequencies Associated with each Outfall	☐	☐	☐
4. Identify Current State Laboratory Used	☐	☐	☐
Comments:			

6. WASTE TRANSPORT			
	Sufficient	Not Sufficient	Not Applicable
1. Describe Method of Removing Waste from Storage Unit to Hauling Vehicle	☐	☐	☐
2. Detail Type (Make/Model/Year) and Capacity Hauling Vehicle(s)	☐	☐	☐
3. Identify Contractor / Responsible Party for Removing Liquids / Solids	☐	☐	☐
4. Detail How Total Volume Hauled is Measured and Recorded	☐	☐	☐
5. Explanation how each Vehicle is Unloaded at Disposal Location	☐	☐	☐
6. Contingency Plan (Inclement Weather)	☐	☐	☐
7. Outline Spill Response Plan for Transportation and Landspreading Spills. Note: Include DNR 24-Hour Spill Hotline Phone Number (1-800-943-0003)	☐	☐	☐
Comments:			

7. LANDSPREADING SITE SUBMITTAL PROCEDURES FOR NEW SITES			
	Sufficient	Not Sufficient	Not Applicable
1. Submittal of 3400-053 Form	☐	☐	☐
2. Show Each Landspreading Field on Map	☐	☐	☐
3. Proof of Ownership	☐	☐	☐
4. Map Showing Suitable Conditions for Landspreading	☐	☐	☐
5. Crops / Dominant Vegetation & Harvest Schedule	☐	☐	☐
6. Describe Adjacent Land Use and Land Features	☐	☐	☐
7. Copy of Land Owner Permission Form	☐	☐	☐
8. Copy of Soil Test Report	☐	☐	☐
9. Determination if Other Sources of Nitrogen will be Applied to each Field	☐	☐	☐
Comments:			

8. LANDSPREADING			
	Sufficient	Not Sufficient	Not Applicable
1. Details of Obtaining "Approved Sites List" Report	☐	☐	☐
2. Example Nitrogen & Chloride Calculations for each Outfall	☐	☐	☐
3. Example Metal Calculations	☐	☐	☐
4. Details for Completing Regular Soil Testing and Obtaining Results	☐	☐	☐
5. Description of how Waste is Landspread from each Outfall	☐	☐	☐
6. Outline how Setbacks and Restricted Areas are Identified on each Site	☐	☐	☐
7. Provide a Template Copy of Daily Landspreading Log	☐	☐	☐
8. Provide an Example Copy of Daily Landspreading Map	☐	☐	☐
9. Details how Waste is Uniformly Spread	☐	☐	☐
10. Hydraulic Rate Calculation (for Each Type of Spreading Equipment)	☐	☐	☐
11. Details how "Misting" and "Drift" are Minimized (Spray Gun)	☐	☐	☐
12. Outline Tracking of Additional Nitrogen Sources	☐	☐	☐
13. Outline Tracking of Procedures to Minimize Odors	☐	☐	☐
14. Description of Timeframe of Incorporation of Wastes	☐	☐	☐
15. Description and Management of Temporary / Permanent Staging Areas	☐	☐	☐
Comments:			

9. LAGOON DESLUDGE PROJECTS			
	Sufficient	Not Sufficient	Not Applicable
1. Identify all lagoon(s) Included in Project	☐	☐	☐
2. Detail how Facility will Continue Function During Lagoon Drawdown	☐	☐	☐
3. Detail Whether Solids, Liquids, or both are Landspread	☐	☐	☐
4. Estimate Expected Hydraulic and Nitrogen Loading Rates	☐	☐	☐
5. Estimate Hydraulic Loading Rate used During Application	☐	☐	☐
6. List of all Approved Sites on Which Waste will be Spread	☐	☐	☐
7. Detail how Waste will be Removed and Hauled to Spreading Site	☐	☐	☐
8. Inclement Weather Plan	☐	☐	☐
9. Describe how DNR will be Notified Prior to Landspreading	☐	☐	☐
Comments:			

10. MIXING INDUSTRIAL WASTES INTO MANURE STORAGE STRUCTURES			
	Sufficient	Not Sufficient	Not Applicable
1. List of Approved Manure Storage Structures	☐	☐	☐
2. Provide a Template Copy of Daily Discharge Log to the Manure Storage Unit	☐	☐	☐
Comments:			

11. ADDITIONAL DISPOSAL OPTIONS			
	Sufficient	Not Sufficient	Not Applicable
1. List all Potential Disposal Options (Incineration, Landfill, WWTF, etc.)	☐	☐	☐
2. Provide Template Copy of Daily Discharge Log to the Disposal Location(s)	☐	☐	☐
Comments:			

12. RECORD KEEPING & REPORTING			
	Sufficient	Not Sufficient	Not Applicable
1. Identify Employee Responsible for Maintaining Daily Log Records & Location Records are Stored	☐	☐	☐
2. List all Required Annual Reports and Employee Responsible for Submitting those Reports	☐	☐	☐
Comments:			

13. ADDITIONAL COMMENTS

9.2 Appendix B. Template approval letter for landspreading management plans.

[*ENTER DATE*]

[*ENTER WPDES PERMITTEE CONTACT INFORMATION*]

RE: Approval of Landspreading Management Plan for [*ENTER WPDES PERMITTEE NAME*] (WPDES Permit # [*ENTER WPDES PERMIT #*])

Dear [*ENTER NAME*],

Thank you for submitting a copy of [*ENTER WPDES PERMITTEE NAME*]'s (WPDES permit # [*ENTER WPDES PERMIT #*])] Landspreading Management Plan. The Department of Natural Resources (department) has reviewed and approved this draft document.

Effective immediately, the [*ENTER WPDES PERMITTEE NAME*] must operate in conformance with this landspreading management plan.

If [*ENTER WPDES PERMITTEE NAME*] wishes to operate differently than specified in the approved landspreading management plan, a written request must be submitted to the department for approval to amend the landspreading management plan (per s. NR 214.17(6)(c) and/or NR 214.18(6)(c), Wis. Adm. Code. Deviating from the landspreading management plan without department approval may result in violations of [*ENTER WPDES PERMITTEE NAME*]'s WPDES permit and/or code requirements.

If you have any questions regarding this approval letter, please call me at [*ENTER PHONE NUMBER*] or email me at [*ENTER EMAIL ADDRESS*].

Sincerely,

[*REGULATOR'S SIGNATURE*]
[*ENTER SIGNATURE BLOCK*]

cc. permit file
[*enter Wastewater Supervisor name*]
[*enter other WDNR staff as appropriate*]

10.0 Acknowledgements

This guidance was developed by the WDNR Wastewater Program Landspreading Work Group. This group is composed of the following member: Lacey Hillman, Kelley O'Connor, Fred Hegeman, Steve Warrner, Emily James, Leanne Hinke, Michelle Balk, Alison Canniff, Danielle Luke, Trevor Moen, Alexis Heim Peter, Ian Hansen, and Nate Willis. The Wastewater Program Landspreading Work Group would also like to thank the following staff for assistance drafting this guidance document: Doris Thiele, Heidi Schmitt-Marquez, Mark Corbett, Ken Denow, and Dan Heim. For any questions regarding this guidance document, please contact the group's co-coordinators: Fred Hegeman and Steve Warrner.