OCTOBER 17, 2014
COALITION PROPOSED AMENDMENTS TO THE DAIRY RULE

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 6 WATER QUALITY
PART 6 GROUND WATER PROTECTION - SUPPLEMENTAL PERMITTING REQUIREMENTS FOR DAIRY FACILITIES

20.6.6.17 ENGINEERING AND SURVEYING REQUIREMENTS FOR ALL DAIRY FACILITIES:

A. Practice of engineering. All plans and specifications, supporting design calculations, record drawings, final specifications, final capacity calculations, grading and drainage reports and plans, and other work products requiring the practice of engineering shall bear the seal and signature of a licensed New Mexico professional engineer pursuant to the New Mexico Engineering and Surveying Practice Act, NMSA 1978, Sections 61-23-1 through 61-23-32, and the rules promulgated under that authority.

B. Practice of surveying. All surveys of wastewater, stormwater, and combination wastewater/stormwater impoundments, monitoring well locations and casing elevations, and other work products requiring the practice of surveying shall bear the seal and signature of a licensed New Mexico professional surveyor pursuant to the New Mexico Engineering and Surveying Practice, NMSA 1978, Sections 61-23-1 through 61-23-32, and the rules promulgated under that authority.

C. Engineering plans and specifications requirements.

(1) **Impoundment plans and specifications.** An applicant or permittee proposing or required to construct a new impoundment or to improve an existing impoundment, including relining of an existing impoundment, shall submit detailed and complete construction plans and specifications and supporting design calculations developed pursuant to this section and 20.6.6.20 NMAC. The applicant or permittee proposing or required to construct an impoundment shall document compliance with the requirements of the dam safety bureau of the state engineer pursuant to Section 72-5-32 NMSA 1978, and rules promulgated under that authority, unless exempt by law from such requirements. The construction plans and specifications for an improvement(s) to an existing impoundment shall address the management of wastewater or stormwater during preparation and construction of the improvements.

(a) Construction plans and specifications proposed by the applicant or permittee shall be submitted to the department with the application for a new, renewed or modified discharge permit.

(b) Construction plans and specifications not proposed by the applicant or permittee but required to achieve compliance with the dairy rule shall be submitted to the department within 90 days of the effective date of the discharge permit.

(2) **Impoundment CQA/CQC.** Construction of a new impoundment or improvement to an existing impoundment shall be done in accordance with a construction quality assurance/construction quality control (CQA/CQC) plan. A CQA/CQC plan shall be included as part of the design plans and specifications. The CQA/CQC plan shall outline the observations and tests to be used to ensure that construction of the impoundment meets, at a minimum, all design criteria, plans and specifications. All testing and evaluation reports shall be signed and sealed by a licensed New Mexico professional engineer experienced in lagoon construction and liner installation. The CQA/CQC plan shall include, at a minimum, the following elements.

(a) The identity of persons responsible for overseeing the CQA/CQC program. The person responsible for overseeing with the CQA/CQC plan shall be a licensed New Mexico professional engineer experienced in lagoon construction and liner installation.

(b) A discussion of how inspections will be performed.

(c) The location, availability, applicability and calibration of testing equipment and facilities, both field and laboratory.

(d) The procedures for observing and testing the liner material.

(e) The procedures for reviewing inspection test results and laboratory and field sampling test results.

(f) The actions to be taken to replace or repair liner material should deficiencies be identified.

(g) The procedures for seaming synthetic liners.

(h) The reporting procedures for all inspections and test data.

(3) **Impoundment improvement - wastewater/stormwater management.** An applicant or permittee proposing or required to improve an existing impoundment, including relining of an existing impoundment, shall submit a plan for managing wastewater or stormwater during the improvement as part of the design plans and specifications. The plan for wastewater or stormwater management shall include the following minimum elements and be implemented upon department approval.

(a) A description of how on-going wastewater discharges or stormwater collection will be handled and disposed of during improvement to the impoundment.

(b) A description of how solids and wastewater or stormwater within the impoundment will be removed and disposed of prior to beginning improvement to the impoundment.

(c) A schedule for implementation through completion of the project.

(d) If the plan proposes temporary use of a location for the discharge of wastewater not authorized by the effective discharge permit, the applicant or permittee shall request temporary permission to discharge from the department.

(4) **Manure solids separation plans and specifications - new wastewater system.** An applicant or permittee proposing or required to construct a new manure solids separator as a component of a newly designed wastewater storage or disposal system shall submit construction plans and specifications and supporting design calculations that include the separator, pursuant to this section.

(a) Construction plans and specifications proposed by the applicant or permittee shall be submitted to the department with the application for a new, renewed or modified discharge permit.

(b) Construction plans and specifications not proposed by the applicant or permittee but required to achieve compliance with the dairy rule shall be submitted to the department within 90 days of the effective date of the discharge permit.

(5) **Manure solids separation plans and specifications - existing wastewater system.** An applicant or permittee proposing or required to construct a new manure solids separator as a component of an existing wastewater storage or disposal system shall submit a scaled design schematic and supporting documentation, including design calculations. The separator shall be designed to accommodate, at a minimum, the maximum daily discharge volume authorized by the discharge permit, and the volume of manure solids associated with the wastewater discharge. Components of the separator that collect, contain or store manure solids prior to removal or land application shall be designed with an impervious material(s) to minimize generation and infiltration of leachate.

(a) A scaled design schematic and supporting documentation for a proposed separator shall be submitted to the department with the application for a new, renewed or modified discharge permit.

(b) A scaled design schematic and supporting documentation for a separator not proposed by the applicant or permittee but required to achieve compliance with the dairy rule shall be submitted to the department within 90 days of the effective date of the discharge permit.

(6) **Grading and drainage report and plan.** An applicant shall submit with the application for a new discharge permit, a grading and drainage report and a grading and drainage plan, including supplemental information associated with the plan. The submittal shall include, at a minimum, the following information.

(a) A scaled map showing:

(i) the dairy facility and the property boundaries of the dairy facility;

(ii) all existing and proposed structures at the dairy facility, with the associated finished floor elevations;

(iii) existing and proposed ground surface contours at two foot vertical intervals; and

(iv) all existing and proposed stormwater management structures at the dairy facility including construction materials, size, type, slope, capacity and inlet and invert elevation of the structures, as applicable.

(b) A copy of the relevant federal emergency management administration, FEMA, flood insurance rate map (FIRM) or flood boundary and floodway map with the dairy facility clearly identified along with all flood zones.

(c) A description of existing drainage conditions at the dairy facility.

(d) A description of the proposed post-development drainage conditions.

(e) Supplemental information supporting the grading and drainage plan shall be submitted to the department with the plan and shall include, at a minimum, the following information:

(i) all hydrologic and hydraulic calculations for design storm events used;

(ii) hydraulic calculations demonstrating capacity or adequacy of existing and proposed stormwater impoundments;

(iii) hydraulic calculations demonstrating capacity of existing and proposed conveyance channels to contain and transport runoff to the stormwater impoundment(s); and

(iv) a description of computer software, documents, circulars, manuals, etc. used to develop the hydrologic and hydraulic calculations.

(7) **Flow metering plans.** An applicant or permittee proposing or required to install a flow meter(s) shall submit documentation to support the selection of the proposed device as appropriate for the expected flow rate along with a description of the location and information on the installation or construction of each device.

(a) Such information proposed by the applicant or permittee shall be submitted to the department with the application for a new, renewed or modified discharge permit.

(b) Such information not proposed by the applicant or permittee but required to achieve compliance with the dairy rule shall be submitted to the department within 90 days of the effective date of the discharge permit.

D. Engineering design requirements.

(1) **Impoundment capacity requirements.** Impoundments designed to store wastewater prior to discharging to a land application area or to dispose of wastewater by evaporation shall meet the capacity requirements specified in the dairy rule. The dairy rule does not specify capacity requirements for the containment of stormwater. However, the dairy rule does not exempt a dairy facility from other applicable local, state and federal regulations or laws, including the EPA regulatory requirements for concentrated animal feeding operations pursuant to 40 Code of Federal Regulations, Parts 122 and 412, as amended.

(2) **Impoundment capacities - wastewater or wastewater/stormwater combination.**

(a) Capacity requirements for dairy facilities discharging wastewater to a land application area.

(i) The wastewater impoundments intended to store wastewater prior to discharging to a land application area shall be designed to contain the maximum daily discharge volume authorized by the discharge permit for a minimum period of 60 days to accommodate periods when land application is not feasible, while preserving two feet of freeboard. This capacity requirement may be satisfied by a single wastewater impoundment or by the collective capacity of multiple impoundments intended to store wastewater.

(ii) The combination wastewater/stormwater impoundments intended to contain both wastewater and stormwater runoff for storage prior to discharging to a land application area shall be designed to contain the sum of the maximum daily discharge volume authorized by the discharge permit for a minimum period of 60 days to accommodate periods when land application is not feasible and the additional volume intended for the containment of stormwater runoff and direct precipitation, while preserving two feet of freeboard. This capacity requirement may be satisfied by a single combination wastewater/stormwater impoundment or by the collective capacity of multiple impoundments intended to store wastewater or wastewater/stormwater.

(b) Capacity requirements for dairy facilities discharging to an evaporative wastewater or combination wastewater/stormwater disposal system.

(i) The wastewater impoundments intended to dispose of wastewater by evaporation shall be designed to contain the maximum daily discharge volume authorized by the discharge permit for disposal by evaporation, while preserving two feet of freeboard. This capacity requirement may be satisfied by a single wastewater impoundment or by the collective capacity of multiple impoundments intended to dispose of wastewater by evaporation.

(ii) The combination wastewater/stormwater impoundments intended to dispose of both wastewater and stormwater runoff by evaporation shall be designed for disposal by evaporation, the sum of the maximum daily discharge volume authorized by the discharge permit and the additional volume intended for the containment of stormwater runoff and direct precipitation while preserving two feet of freeboard. This capacity requirement may be satisfied by a single combination wastewater/stormwater impoundment or by the collective capacity of multiple impoundments intended to dispose of wastewater or wastewater/stormwater by evaporation.

(c) An impoundment designed and used for solids settling shall not be used to satisfy the impoundment capacity requirements of this subsection.

(d) Notwithstanding Subparagraphs (a) and (b) of this paragraph, a wastewater impoundment or system of wastewater impoundments existing as of the effective date of the dairy rule may continue to be operated based upon the design capacity required under the applicable discharge permit as last issued or amended before the effective date of the dairy rule.

(3) **Stormwater conveyance channels.** Stormwater conveyance channels shall be designed in accordance with the grading and drainage report and plan required by this section.

(4) **Impoundment design and construction - general.** Impoundments required to be synthetically lined shall meet the following design and construction requirements.

(a) The inside slopes of an impoundment shall be a maximum of three (horizontal) to one (vertical), and a minimum of four (horizontal) to one (vertical).

(b) The outside slopes of an impoundment shall be a maximum of three (horizontal) to one (vertical).

(c) The sub-grade of an impoundment shall be compacted to a minimum of 90 percent of standard proctor density. If the existing material is unsuitable for compaction, a minimum depth of 18 inches of suitable material shall be used as sub-grade.

(d) The sub-grade of an impoundment shall provide a firm, unyielding surface with no sharp changes or abrupt breaks in grade.

(e) The minimum dike width of an impoundment shall be 12 feet to allow vehicle traffic for maintenance.

(5) **Impoundment design and construction - liner.** Synthetic impoundment liners shall meet the following additional design and construction requirements.

(a) The liner shall be installed with sufficient slack in the liner material to accommodate shrinkage due to temperature changes. Folds in the liner material shall not be present in the completed liner.

(b) The sub-grade shall be free of sharp rocks, vegetation and stubble to a depth of at least six inches below the liner. The surface in contact with the liner shall be smooth to allow for good contact between liner and sub-grade. The surface shall be dry during liner installation. The liner installer shall provide the owner with a sub-grade acceptance certificate prior to installing the liner indicating acceptance of the earthwork.

(c) The liner shall be anchored in an anchor trench. The trench shall be a minimum of 12 inches wide, 12 inches deep and shall be set back at least 24 inches from the top inside edge of the impoundment.

(d) The liner panels shall be oriented such that all sidewall seams are vertical.

(e) If practicable, decomposing organic materials shall be removed from areas over which a liner will be installed. If such materials remain, a liner vent system shall be installed.

(f) Any opening in the liner through which a pipe or other fixture protrudes shall be sealed in accordance with the liner manufacturer's requirements. Liner penetrations shall be detailed in the construction plans and record drawings.

(g) The liner shall be installed by, or the installation supervised by, an individual that has the necessary training and experience as required by the liner manufacturer.

(h) Manufacturer's installation and field seaming guidelines shall be followed.

(i) Liner seams shall be field tested by the installer and verification of the adequacy of the seams shall be submitted to department along with the record drawings.

(j) Concrete slabs installed on top of a liner for operational purposes shall be completed in accordance with manufacturer and installer recommendations to ensure liner integrity.

(6) **Impoundment liner - wastewater or wastewater/stormwater combination.** An applicant or permittee proposing or required to construct a new or to improve an existing wastewater or combination wastewater/stormwater impoundment, shall, at a minimum, ~~use a single liner that is at least 60-mil HDPE or other material having equivalent characteristics with regard to permeability, resistance to degradation by ultraviolet light, compatibility with the liquids anticipated to be collected in the impoundment, tensile strength, and tear and puncture resistance.~~ utilize a double synthetic liner system with leak detection composed of an upper liner, a lower liner, a drainage layer, and a fluid removal system that is designed and constructed to meet the following requirements:

(a) The upper liner material shall be a minimum of 60-mil high density polyethylene (HDPE) or other synthetic material having equivalent characteristics with regard to permeability, resistance to degradation by ultraviolet light, compatibility with the liquids anticipated to be collected in the impoundment, tensile strength, and tear and puncture resistance.

(b) The lower liner material shall be a minimum of 40-mil HDPE or other synthetic material having equivalent characteristics with regard to permeability, resistance to degradation by ultraviolet light, compatibility with the liquids anticipated to be collected in the impoundment, tensile strength, and tear and puncture resistance.

(c) The drainage layer shall be constructed between the upper and lower liner in the following manner:

(i) The drainage layer shall include drainage material, such as a geosynthetic drainage net (geonet) or other synthetic drainage system that has a hydraulic conductivity of 1×10^{-2} centimeters/second (cm/sec) or greater.

(ii) The drainage layer shall be designed and constructed with a slope of at least two percent (2%) that is calculated to be sufficient to cause leakage to flow towards the fluid removal system in a timely manner considering the maximum length of the flow path.

(iii) A filter layer shall be constructed between the upper liner and the drainage layer in order to protect the upper liner from puncture by underlying material and to provide a filter of fine particles from any leakage passing through the upper liner.

(iv) The drainage layer shall be underlain by a protective material designed to protect the lower liner from puncture.

(v) A series of perforated fluid collection pipes or equivalent transport mechanism shall be installed in the drainage layer to transmit leakage fluid from the drainage layer to a fluid collection sump(s). Collection pipe material, diameter, wall thickness, connections and slot size and distribution shall be sufficient to prevent deflection, buckling, collapse or other failure.

(vi) Collection pipes shall be installed with slopes equivalent to the slope of the drainage layer.

(vii) Collection pipe systems shall be designed to allow for cleaning of all collection pipes with standard pipe cleaning equipment.

(d) The fluid removal system shall be designed and constructed in the following manner to collect fluids in the drainage layer and transport the fluids quickly to a fluid collection sump(s) where it is collected and measured prior to the fluids being pumped back into the impoundment:

(i) The fluid removal system shall consist of a sump(s), a dedicated pump(s), an automated pump activation system, a totalizing flow meter, and an automated alarm system.

(ii) The automated pump activation system shall activate the pump(s) when fluid is collected at a specific level to prevent overtopping.

(iii) The totalizing flow meter shall provide a permanent record of amount of flow per day to be reported monthly to the Department.

(iv) The automated alarm system shall provide warning of pump failure such that the operator can prevent spills and overtopping.

(7) **Impoundment liner - stormwater.** Any applicant or permittee required to improve an existing stormwater impoundment pursuant to Subsection B of 20.6.6.27 NMAC shall, at a minimum, use a liner that is at least 60-mil HDPE or other material having equivalent characteristics with regard to permeability, resistance to degradation by ultraviolet light, compatibility with the liquids anticipated to be collected in the impoundment, tensile strength, and tear and puncture resistance.

(8) **Separation between impoundments and ground water.** Impoundments shall not be constructed in a location where the vertical distance between the seasonal high ground water level and the finished grade of the floor of the impoundment is less than or equal to four feet as documented through the most recent ground water data obtained from an on-site test boring(s) or monitoring well(s).

(9) **Impoundment spillways.** Impoundments intended to contain only wastewater shall not be designed with a spillway.

[20.6.6.17 NMAC - N, 01/31/2011; A, 12/31/2011]

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