

Missouri Clean Water Commission
Department of Natural Resources
Lewis and Clark State Office Building
LaCharrette/Nightingale Conference Rooms
1101 Riverside Drive
Jefferson City, Missouri 65102

January 4, 2012

**Clean Water Commission Order of Rulemaking
10 CSR 20-8.300 Manure Storage Design Regulations**

Issue: The Permits and Engineering Section has prepared an Order of Rulemaking for the Manure Storage Design Regulation with an anticipated effective date of April 30, 2012.

Background: The Department has developed this new proposed rulemaking specifically targeting the design of manure management systems. This proposed regulation was developed by a team of state experts and further analyzed in stakeholder's meetings held on September 28, 2010 and October 26, 2010.

The Regulatory Impact Report (RIR) was open for public comment from December 15, 2010 through February 14, 2011. No comments were received on the RIR. On August 15, 2011 this proposed amendment was placed on public notice. The public comment period lasted for 90 days beginning on August 15, 2011 and ending on November 16, 2011. In addition, a public hearing was conducted on November 2, 2011.

During the public hearing, one person provided verbal comment on the proposed rule. One public comment letter was received on the proposed rule. This letter included the submittal of 49 individual comments which were prepared based on an early strawman draft of the proposed rule (developed in 2010 as part of the workgroup process). While the comments did not always follow the proposed rule well, the Department provides a written response to each of them. Changes proposed based on comments and described in the responses and listed at the end of the order.

Recommended Action: The Department recommends the Commission approve the changes to the proposed text and approve the filing of the Order of Rulemaking.

Suggested Motion Language: "The Commission approves the filing of the Order of Rulemaking for 10 CSR 20-8.300, Manure Storage Design Regulation."

List of Attachments:

Order of Rulemaking for 10 CSR 20-8.300
Proposed Amendment Published in the August 15, 2011 *Missouri Register*
Comment Letters

**Title 10—DEPARTMENT OF NATURAL RESOURCES
DIVISION 20—Clean Water Commission
Chapter 6—Permits**

ORDER OF RULEMAKING

By the authority vested in the Secretary of State under section 536.023, RSMo 2007, the secretary adopts a rule as follows:

10 CSR 20– 8.300 is adopted

A notice of proposed rulemaking containing the text of the proposed rule was published in the *Missouri Register* on August 15, 2011 (36 MoReg 1927-1937). Those sections with changes are reprinted here. This proposed rule becomes effective thirty (30) days after publication in the *Code of State Regulations*.

SUMMARY OF COMMENTS: A public hearing on this proposed rule amendment was held November 2, 2011. The public comment period ended November 16, 2011. The Department of Natural Resources indicated that no were made on the proposed amendment at the public hearing and fifty-four (54) comments pertaining to the rule were received via e-mail or letter.

COMMENT #1: Missouri Coalition for the Environment (MCE) - We propose that instead of the 500 year (0.2%), 100 year (1%), or 25 year (25%) floodplain, the alluvial soils map is used to determine flood potential. Unlike the floodplains as delineated by the FIRM's this delineation does not take into account levees, which should not be used to justify exempting CAFOs from this improved regulation. Since levees breach on a regular basis across our state during flood years, and since flood years seem to be getting more and more frequent, it seems only prudent to require that any manure storage be protected to at least the 100-year level, regardless of whether or not it is behind a levee. This will greatly reduce the risk that the damages caused by a levee breach will be compounded by flooded and failing manure storage structures. The alluvial soils map largely coincides with the 100-year flood level, represents areas that have been historically inundated (hence the alluvium), and is available statewide, unlike the DFIRM maps, which are only available for a portion of the counties in Missouri.

RESPONSE: No change was made as a result of this comment. The current rule condition that all CAFOs be protected from damage or inundation from the 100-year flood event is reasonable, practical and protective. Using the 100-year flood level is an accepted industry practice and is routinely used within government agencies as a regulatory standard.

COMMENT #2: MCE - We propose that all operations in the alluvial plane should at least be required to meet the 100 year flood level and that all operations be modified or rebuilt to meet the new, common sense, stormwater requirements for uncovered lagoons, by the time of their next permit renewal. All CAFOs located in the floodplains should have protections to 500 year levels since they store suck incredibly toxic sludge that has the potential to spread disease during flood periods when people are at a higher risk for exposure to polluted surface waters. 150 out of 19095 permitted CAFOs are located in the Alluvial plane, which is more or less synonymous with the 100 year floodplain in Missouri. The 150 operations supposedly account for 88651 animal units according to NPDES shape files acquired from DNR earlier this year. It is very important that these operations be retro-fitted to meet 100-year protections as soon as possible, regardless of whether they are expanding their operation. The fact remains that they are a significant public health hazard in terms of spreading anti-biotic resistant bacteria and other pathogens to human populations, especially during flood conditions.

RESPONSE: No change was made as a result of this comment. This comment contains unverifiable statements to which we are unable to respond. This comment contains inaccurate data, particular as it relates to the number of CAFOs, that is not supported by department data and records. The requirements in this new rule will only apply to new and expanding CAFOs. The suggestion made in this comment that existing CAFOs currently operating in the floodplain be expected to comply with an increased flood protection level is not practical. Very few CAFOs exist in the floodplain and in 2011, during a record high flood year, the department is only aware of one CAFO that was affected by flood waters. This CAFO was on the Mississippi River and was impacted when the levee was intentionally breached by the US Army Corp of Engineers. The current rule condition that all CAFOs be protected from damage or inundation from the 100 year flood event is reasonable, practical and protective. Using the 100-year flood level is an accepted industry practice and is routinely used within government agencies as a regulatory standard.

COMMENT #3: MCE - The proposed improvements should apply to all operations large enough to have to build a waste lagoon, regardless of the reported total animal units, which may be misreported or kept just below the 1000 AU threshold to avoid permit requirements. This rule should be applied to all manure storage facilities, lagoons, etc. regardless of the reported number of animal units. Isn't the value of cleaning up Missouri's water from concentrated waste storage operations worth more than \$25,000/yr? According to this RIR the rule has been crafted to provide "the least costly and intrusive methods, while still providing increased consistency, efficiency, and environmental protection in the regulation of CAFOs." This seems to mean that we have chosen the cheapest possible method for protecting against the impacts of CAFOs, not the best method, the cheapest. The fiscal note for this comes to a whopping \$24,050/yr. This rule does not address the operations currently responsible for water quality and quality of life issues across our state that are not planning on expanding, apparently assuming that these operations do not pose a significant threat to the environment. The proposed improvements should apply to all operations large enough to have to build a waste lagoon, regardless of the reported total animal units, which may be misreported or kept just below the 1000 AU threshold to avoid permit requirements. Nor does this rule address operations that are purposefully operating just below the 1000 animal unit threshold to avoid these common sense rules and other protections that come through an NPDES permitting process. Despite the fact that a hog operation with 2400 finishing hogs produces an amount of fecal waste equivalent to that produced by a city of 24,000 humans, this operation would be able to get by without a permit thanks to our inadequate and imbalanced regulation of these operations. So while public citizens are paying a lot to maintain water quality their investments in waste treatment are being undermined by these operations that take on very little responsibility for the waste they are managing. While, by the most recent data available, it appears that there are 1095 permitted CAFOs in Missouri, the NRCS reports that there were 108,000 operations raising some kind of livestock in Missouri. Surely many of these are small farms, but many are operations that have been designed to skirt the regulations and these should be weeded out and required to get permits. Through our extensive work on CAFO issues in Missouri we have found many instances where facilities have purposefully mis-reported their AU totals, this should be ameliorated by requiring they submit a bill of sale or receipt accounting for every rotation of animals being confined and fed in their operation. This should be a requirement. All operations should be required to have a state operating permit if for no other reason than to allow for a tally of animals by location to be kept for all prudent water quality and environmental quality data to be assessed when making decisions.

RESPONSE: No change was made as a result of this comment. The requirements in this new rule will only apply to new and expanding CAFOs. This comment contains several unverifiable to which we are unable to respond. While existing CAFOs are not subject to this new rule, all CAFOs in Missouri have undergone an engineering and construction permit review by the department in the past. The remaining portion of this comment is beyond the scope of this rulemaking. Statutory provisions found in state law at

640.710 RSMo limits department regulatory and permit authority to Class I CAFOs (greater than 1,000 animal units) only.

COMMENT #4: MCE - The department should explain why these operations can't be required to meet the same consistent standards as a new operation would be held to, despite the fact that they are just as risky and dangerous to public health and new or expanded operations. One of the major reasons to get an NPDES permit is to use technology and improved methods to eliminate pollution in our waters, the permit renewal process is designed to allow for operations to be brought into compliance with current regulations. This is the regulatory process prescribed by the Clean Water Act, and although Federal Regulations may not always make sense, this process is perfectly reasonable and is necessary for us to gradually bring the extensive water pollution in Missouri under control and to give nature a chance to coincide with our social and economic goals.

RESPONSE: No change was made as a result of this comment. This comment contains several anecdotal statements for which we are unable to respond to. The requirements in this new rule will only apply to new and expanding CAFOs. Please reference the response to the related comments above. In addition, it is important to point out that EPA's New Source Performance Standard (NSPS) for CAFOs in 40 CFR 412, which was adopted in the 2008 EPA rule, apply only to new sources (new CAFOs), not to existing operations.

COMMENT #5: MCE - The regulation title should be amended to address instead storage design regulations for "animal waste, litter and process wastewater" Use of only the term 'manure' means that other relevant wastes that are supposed to be regulated [such as process wastewater, feed spoiled or rejected, etc.] become candidates for applicability exclusion when they should be determinately included under EPA regulations.

RESPONSE: No change was made as a result of this comment. This comment is outside the scope of this rulemaking. The scope and purpose of this rulemaking is to set forth specific design criteria for manure management and storage along with setting guidelines for preparing and submitting a construction permit application for a concentrated animal feeding operation.

COMMENT #6: MCE - The Strawman (SM) 8.300 draft regulation is completely silent on silage leachate, which is a significant water pollution problem. Silage leachate can contain high BOD5, COD, ammonia, phosphorus and poses serious waste management and water quality concerns. Silage leachate can be intermingled with animal waste in storage lagoons, but it should not be permitted for uncontrolled discharge to surface waters. In addition, silage leachate can also discharge to groundwater from leaking silage bunkers and other silage storage. The rule language should be amended to ensure that all animal waste, litter and particularly the 'process wastewater' as defined in the federal regulation *at 40 C.F.R. §123(b)(7). MDNR's existing 6.300 regulations on the definition of 'process wastewater' is close to or the same as the federal definition. In the present SM version of draft 6.300 regulations, MDNR is seeking a major change to this definition by dropping the phrase: "'Process wastewater' also includes any water which comes into contact with any raw materials, products, or byproducts including manure, litter, feed, milk, eggs, or bedding" that is present in both the federal and current state definition. Dropping that phrase means that silage leachate, off-specification milk, eggs washing water, leachate from feed rejects and other wastes will no longer be clearly required for regulation. It would further mean that the proposed "manure storage" regulations would not apply to storage and management of these wastes.

RESPONSE: No change was made as a result of this comment. This comment is outside the scope of this rulemaking. The design of silage leachate collection systems was not a component of this rulemaking effort.

COMMENT #7: MCE - The definition of “rainfall minus evaporation” should instead be for “net precipitation. The calculation method for net precipitation and the web location of the NWS atlas should appear, either in the regulation or as a footnote. The definition should be amended in a manner that allows the source determination of net precipitation to be checked and verified against known, identified and published calculation methods and data sources as referenced. The present proposal does not provide a clear, specific and enforceable method to determine net precipitation.

RESPONSE: No change was made as a result of this comment. The term “rainfall minus evaporation” has been long used in Missouri for CAFOs; no change to this term is necessary. The definition in the proposed rule references the National Weather Service Climate Atlas as a source.

COMMENT #8: MCE - Definition (1)(B)(3) The definition of ‘freeboard’ is highly unusual. Freeboard is usually defined as the distance between the top surface of the aqueous waste and the level at which a waste storage lagoon will either overtop the berm or the level of the spillway, whichever is lower. Since spillways are to be required (See section (7)(F) of draft reg on p. 8), ‘freeboard’ should be defined as the distance between the level of aqueous waste being stored and the level of the required spillway. It does not make any sense to define freeboard in the manner proposed.

RESPONSE: No change was made as a result of this comment. The term “freeboard” and its definition in the proposed rule has been used this manner for CAFOs in Missouri for a while. No change to this term or definition is necessary.

COMMENT #9: MCE - The definition of ‘manure’ in the SM8.300 reg attempts to refer back to the 6.300(1)(B) regulations, but there is no definition of ‘manure’ provided in either the current or the SM versions.

RESPONSE: No change was made as a result of this comment. The reference to 6.300(1)(B) in this definition refers to the two terms “dry process waste” and “process wastewater” which are defined in the 6.300 rule.

COMMENT #10: MCE - The Missouri CAFO Nutrient Management Technical Standard (NMTS) is not a Missouri administrative rule, but should be in order to have enforceable rule effectiveness. CAFO operators must be under a duty to ensure that their nutrient management plans comply with the technical standard and that any such NMP ensures appropriate agricultural utilization of applied nutrients. I do not understand how the present non-rule NMTS can have that binding effect.

RESPONSE: No change was made as a result of this comment. This comment is outside the scope of this rulemaking. This is only a definition of a term and not a rule condition or requirement. The requirements and conditions established for the NMTS are found in 10 CSR 20-6.300.

COMMENT #11: MCE - Definition (1)(B)(7) The definition of “Solid Manure” seems to mean that material that can be stacked without free liquids *at the time of stacking* since such materials will pass free liquids once impacted by incident precipitation if it is stored uncovered outdoors. See additional discussion on the Section (10) language on temporary stockpiling of solid manure. Water that comes into contact with a stack of solid manure should be considered process wastewater that must be land applied according to NMP requirements.

RESPONSE: No change was made as a result of this comment. The department believes the definition is sufficiently clear as proposed. The definition does not state anything about “at the time of stacking”.

COMMENT #12: MCE - The ten-year, ten day storm definition seems to lack the concept that the precipitation event must be considered the maximum event based on the amount of precipitation expected to occur. 'Geographical region' is not defined and is not clear. Citations to web URL locations to easily obtain this NWS product should be provided in footnotes or guidance.

RESPONSE: No change was made as a result of this comment. The department believes the definition is sufficiently clear as proposed.

COMMENT #13: MCE - General - NMPs. The physical facilities of waste management systems are traditionally indicated as NMP components, but the new waste regulations seem to provide new requirements which do not see waste storage facilities as part of the NMP for an individual CAFO site.

RESPONSE: No change was made as a result of this comment. The primary requirements for an NMP are found in 10 CSR 20-6.300 which address the production area.

COMMENT #14: MCE - "General" (2)(A) SM8.300 draft reg contains the following passage: "The manure storage design regulations shall be utilized by all Animal Feeding Operations which need or desire permit coverage. These regulations shall be used when evaluating all new AFOs or new or expanded components of existing AFOs after [Month Day Year (effective date of this regulation)]" This discussion in the "general" section is exceedingly unclear about what regulatory requirements are to be imposed, how such provisions are tied to other requirements in the rule proposal, who is being regulated and for what purpose is the regulation occurring. These are not academic concerns. From the text above it is not clear how or whether the rule have binding effect on what a CAFO owner operation does and what is the role of MDNR in enforcing the requirements. While the first clause claims to require that the regulations 'shall be utilized' by an AFO operator who are required to be permitted, what is missing is how AFO operators who have never previously complied with requirements under the rule will be required to come into compliance and by what date. The rule should be specifically amended to address this problem and to clarify that existing facility must being waste management units into compliance. These provisions should be redrafted to specifically address rule applicability, the binding effect of the rule on AFOs and to eliminate vague language like "shall be utilized" that clouds applicability determinations.

RESPONSE AND EXPLANATION OF CHANGE: The department has revised the proposed rule to better explain and clarify its applicability and purpose. The sections that have been revised include the "purpose" statement, section (2)(A) and section (2)(E).

COMMENT #15: MCE - Permit Apps. Nothing in this entire section explains the relationship between criteria and standards in this section, and application content requirements, and all of the other sections of the draft document. At the very least, permit application content requirements should be incorporated that are tied to these other sections of the rule. The applicant's submitted documents must be requires to show how an applicant will comply with all of the applicable requirements.

RESPONSE: No change was made as a result of this comment. It is unclear exactly what the commenter is requesting in this comment. The proposed rule sufficiently provides the needed guidelines for preparing and submitting a permit application that will demonstrate compliance with the technical requirements. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #16: MCE - Permit Apps (3)(A) The statement is made: 4 "The department will not examine the adequacy or efficiency of the structural or mechanical components of the waste management systems." Although the preamble of this section indicates the applications are subject to approval, the

quoted statement above appears to have the effect of MDNR eschewing all authority to determine the adequacy under the rule of what is contained in the engineering report section of an applicant's submittal. Taken literally, the statement might even be interpreted as an MDNR abdication from decision-making to disapprove demonstrably deficient applications.

RESPONSE: No change was made as a result of this comment. The department disagrees with the commenter's interpretation. The department does not review or provide approval to structural or mechanical components of a proposed waste or wastewater system. This would include the structural engineering plans for a building or foundation, electrical plans and the appropriateness, selection or efficiency of mechanical pumps, motors and the like. The department is not staffed with electrical, mechanical, or structural engineers and reviewing this type of information without the required level of expertise is not appropriate. However, neither is it necessary as this is the responsibility of the applicants consulting Professional Engineer. The department reviews the process design which would include ensuring design system capacities, days of storage, and nutrient management practices.

COMMENT #17: MCE - Apps (3)(A)(1)(F). This section contemplates submitted application which do not meet the design criteria as contained in the rule, but never explains how or why such deviations should be allowed and under what statutory basis the design exception is being taken. Subprovision VI under this section should be specifically modified to bar the disposal of domestic sewage in CAFO process wastewater disposal systems.

RESPONSE: No change was made as a result of this comment. The department has authority and discretion to set design standards and allow deviations when sufficiently justified.

COMMENT #18: MCE - General (3). The provisions of section (3) on applications should be revised and evaluated so that provisions of the draft rules at section 5-14 having physical elements and standard requirements are properly reflected and wholly subsumed within the application requirement provisions of section (3). Presently, it is not clear that all of the provisions at sections 5-14 will necessarily be comprehensively and completely represented in section (3) permit application submittals.

RESPONSE: No change was made as a result of this comment. It is not reasonable or practical to expect that all aspects of every design will be described in this rule. The proposed rule sufficiently characterizes what is needed in permit applications. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #19: MCE - Apps Engineering Nothing here in section (3)(A) clearly connects requirements on the contents of applications to the requirements, standards and criteria shown in other sections of the proposal.

RESPONSE: No change was made as a result of this comment. See response to above related comments.

COMMENT #20: MCE - Apps (3)(C). These provisions addressing NMP land application provisions should be removed from this rule section and integrated into the 6.300 rule. However, if the language is retained, the provisions shown are not adequate to address land application NMPs. There are many deficiencies in what should appear in applications as to NMP land application submittal contents that are outside of the present discussion about storage of animal waste. [to be addressed in the comments on the 6.300 rule.] Notably, (3)(C) does not require the application to identify locations of swales, concentrated flow lines, agricultural drains and field tile outlets.

RESPONSE: No change was made as a result of this comment. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The proposed rule in concert with 10 CSR 20-6.300 sufficiently characterizes what is needed in permit applications. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #21: MCE - Location (5)(A) Instead of saying that structures “shall be protected from inundation or damage due to the 100 year flood,” the provision should explicitly prohibit siting of structures and facilities handling animal waste within a 100 year flood plain or within a wetland. Nothing here prohibits construction of waste storage and other animal waste managing structures in Karst Topography. Nothing here ensures any setbacks at all for waste management facilities from drainage and agricultural ditches and concentrated flow lines leading to waters of the U.S.

RESPONSE: No change was made as a result of this comment. The proposed rule sufficiently explains and defines the required flood protection and setbacks to sensitive features. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #22: MCE - Location (5)(B) The question must be asked here as to whether the named setbacks to streams apply to agricultural drains and other man-made conveyances that lead to waters of the U.S.

RESPONSE: No change was made as a result of this comment. The rule clearly defines the prescribed setbacks. If a setback to a feature is not listed, then it is not included or required.

COMMENT #23: MCE - Sizing (6)(B)(4) This section again falls into an attempt to enact a rule with non-rule language for situations involving uncovered liquid waste management systems with less than 365 days of storage. The provisions say proposals “will be evaluated” without saying who will conduct such an evaluation, and for what purposes in relation to the permit issuance decision, with what minimum procedural and substantive standards for decision making. It is not clear what the decision-making consequences are of the exercise in carrying out what is to be “evaluated.” This section should be rewritten in clear rule form saying what the applicable requirements are and how MDNR will make the decision to allow such uncovered liquid animal waste storage structures.

RESPONSE: No change was made as a result of this comment. This is a design guide and as such the department will evaluate each application on a case by case basis. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #24: MCE - Sizing (6)(D) Excluded from this list is other process wastewater, such as silage leachate, egg cleaning water, compost pad leachate and runoff, off specification dairy product, etc. Provision (6)(D)(1)(F) mentions runoff from pervious and impervious areas due to average rainfall. BMPs should instead that clean, non-animal-waste-contact water should be diverted away from animal/waste/process contact areas. Facilities that take in large amounts of precipitation to be mixed with animal waste and other process wastewater or solid waste are not exercising appropriate BMPs that are required effluent limitations under EPA regulations. Provision (6)(D)(4)(A) makes no sense with the present draft’s articulation of the definition of “freeboard.”

RESPONSE: No change was made as a result of this comment. This comment is outside the scope of this rulemaking. The design of silage leachate collection systems along with other miscellaneous waste treatment systems was not a component of this rulemaking effort. The proposed rule does not allow clean stormwater to impact areas that are in containment, however areas that are exposed to precipitation and are within the manure containment area must be managed as process wastewater.

COMMENT #25: MCE - Concrete The present draft contains no requirements or standards on the physical engineering design of concrete and concrete/steel liquid animal waste structures, such as those frequently used below swine operations. There are no standards for concrete construction, for leak free techniques, for reinforced concrete construction, for corrosion/rust-resistant steel reinforcing wire, sealing, etc.

RESPONSE: No change was made as a result of this comment. This comment is outside the scope of this rulemaking. The department does not review or provide approval to structural or mechanical components of a proposed waste or wastewater system. This would include the structural engineering plans for a building or foundation, electrical plans and the appropriateness or efficiency of mechanical pumps, motors and the like. This is the responsibility of the applicants consulting engineer. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #26: MCE - Geohydro (7)(A) The permit applicants, not MDNR, should be responsible for submitting the required geohydrological investigation to be performed by a qualified geologist, at the expense of the permit applicant. This provision does not identify what are the minimum elements of a site-specific geohydrological investigation, nor does it identify the rating scale and basis for evaluation of "severe" and what "collapse" potential items are considered, the extent of minimum site specific data necessary to support a decision of acceptability of the site and the required qualification and report elements required for those creating geohydrological investigation work product. Provisions at (7)(A)(2) do not provision sufficient procedural or substantive standards for agency decision making in considering liner and other requirements. There must be a clear rule text basis for the procedure and decision making concerning such matters that should be transparent. Where artificial impervious liners are required, there should be a rule basis for requirements on their installation and performance. The implication of the last sentence of (7)(A)(2) is that post construction testing is somehow not required in most situations. However, post-construction testing should always be considered essential and necessary to verify property construction technique and to ensure that liners and soils are meeting the required coefficient of permeability as a matter of meeting minimum performance requirements. The rule as drafted does not appear to guarantee that the criteria of maximum permeability is actually achieved in practical construction after its completion. Provisions should be added to requirements for geohydrological investigation that addresses potential effects on neighboring wells, groundwater transport away from the production area, protection of groundwater quality from CAFO wastewater transport beneath storage structures, identification of all nearby sole source aquifer [as defined by federal Safe Drinking Water Act.], identification of karst topography in the area of the production area, and all likely hydrological connections between animal waste and process wastewater storage facilities and surface waters of the U.S., including wetlands, that may occur.

RESPONSE: No change was made as a result of this comment. The portions referencing the geohydrological requirements are outside the scope of this rulemaking. These requirements are found in other department rules and guidance. In reference to the remaining comment, the department has determined that this design guide rule provides sufficient detail and information to provide the applicants design engineer a standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be

described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #27: MCE - Soils (7)(B)(2) The soils investigation here in these provision should provide recognized industry test methods or ASTM methods for all listed parameters. Saying that the coefficient of permeability (undisturbed and remolded) should determined should be clarified to indicate that 'remolded' determinations are really to be post-construction determinations. Nothing here specifies the number and spatial distribution of required soil test investigations. Nothing indicates a required spatial density of testing depending on the area or size or otherwise explains how many site specific soil determinations must be made or how to make such a decision.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #28: MCE - Basin (7)(C)(3) These provisions should specifically provide for the listed setbacks from groundwater to be 4 ft from the bottom of any compacted clay liner, rather than the floor of the basin. Construction of curtain drains around the waste storage structure may mean the allowing of a hydrological connection between wastewater percolating through the bottom of the liner and transport of such drainage to perimeter drains leading to surface waters, thus creating a regular discharge to waters of the U.S. It does not seem that MDNR has given any consideration to the issue of waste lagoon performance when a direct hydrological connection exists through trans-liner seepage to groundwater that is directly adjacent to surface waters of the U.S. or man-made conveyances (i.e. agricultural ditches) to such surface waters. Discharges to surface waters that occur through a direct hydrological connection from lagoon seep water must be considered under CWA regulatory jurisdiction.

RESPONSE: No change was made as a result of this comment. This comment is outside the scope of this rulemaking. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #29: MCE - Slopes (7)(D) This provision is not written in suitable rule language to create a mandatory binding duty on the permit applicant/owner/operator. Phrases like "consideration should may given" are not enforceable and do not provide either procedural or substantive standards for making decisions.

RESPONSE: No change was made as a result of this comment. The department believes the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #30: MCE - Permeability (7)(G) These provisions should be amended to require post-construction field testing and verification of final waste storage lagoon bottom in-situ soils or the compacted clay liner to be less than $1.0E-7$ cm/second for the coefficient of permeability, with a suggestion of one post construction test determination per every 0.25 acre of lagoon floor according to the published ASTM test method for coefficient of permeability.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #31: MCE - Seals (7)(G)(3) Instead of requiring “sealing” techniques of non-identified efficacy and performance, MDNR should instead require impermeable artificial liners over compacted clay as a state standard for such waste storage basins.

RESPONSE: No change was made as a result of this comment. The department believes the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #32: MCE - Permeability The provision at (7)(G)(3)(A) is vague and the second sentence does not make sense in the context of the regulation.. “...areas where potable water might become contaminated or when the wastewater contains industrial contributions of concern...” is too vague of a concept to be enforceable since the draft does not define any of the criteria by which a decision on such “areas” would be made. Regulations written in this manner do not properly identify MDNR to be the decision maker when the text of the rule calls for a decision to be made. In addition, such poorly written regulations do not properly identify the criteria for making such decisions under the rule. In the absence of a properly written rule text, the draft text potentially encourage operators to make invalid and/or nondefeasible self-determinations with high potential impacts and commitment of natural resources. The rule must be amended to identify the final decision maker as MDNR as part of the permit issuance process and that it is the CAFO operator’s responsibility to submit an application and to comply with requirements for such CAFO operations. There must be clear standards of decision making. In order to protect both public health and public water resources, decisions on allowing high effluent practices must be publicly vetted proposals by the permit-authorizing authority, and decisions about which groundwater resources must be protected must be a transparent process involving final decision making by a permit authorizing authority. Finally, the public must be afforded a role for at least notice and comment about decisions affecting public water resources and the issuance of effluent permits for concentrated animal feeding operations. Finally, MDNR should publicly identify the regulatory basis and/or rationale for the two different rates cited [500 and 3500 gallons per acre per day]. Further, MDNR should identify how using these two rates would affect both a nominal case and a separate worst case situation of waste lagoon groundwater discharge through seepage and the potential impacts of such practices on neighboring groundwater and surface water resources. Assessing such impacts from agricultural wastewater must ensure that all relevant pollutants and potential pollutant transformation should be considered.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #33: MCE - Liners (7)(G)(3)(B) The liner thickness rule uses both the term “liner thickness” and “seal thickness” These terms should be explained/reconciled. The basis of the equation and/or the objective of its use should be explained and justified. Since soils for liners can be obtained on an economic basis in most locations from offsite sources if they are not available onsite, MDNR’s decision to allow liners with soils of permeability coefficients greater than 1.0E-07 cm/sec appears to condone non-exemplary siting and practices which may cause greater impacts to groundwater quality than what would occur from readily available means of achieving a 1.0E-07 cm/sec coefficient of permeability.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #34: MCE - Waste lagoon site Nothing anywhere in the regulation states that a site to be used for a waste lagoon must not be underlain with old agricultural drains/tiles which can lead to catastrophic failures and leaks of waste lagoon systems. All such tiling should be excavated from a site and such voids filled and re-compacted before final liner construction.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #35: MCE - Alt liners (7)(J) This provision on alternate liners is not effective and does not place any minimum floor or standard on what liners are used and what performance they achieve. The approaches mentioned have widely varying efficacy on controlling seepage.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #36: MCE - Perc losses (7)(K) There is no basis, rule or findings on when percolation tests are required and when they are not. MDNR is not identified as the decision maker as to percolation loss testing. Notwithstanding the Percolation loss testing provision, such a provision cannot be a substitute for engineering verification of the coefficient of permeability by post- construction required testing by an ASTM method. There is no clear basis or discussion of the relationship between the 1/16 inch seepage rate per day and the rates in different units shown in (7)(G)(3)(A). A rate of 1/16 acre-inch per day is 1697 gallons per acre per day. As a result, it is not clear why the 3000 gallon per acre per day rule should

be considered acceptable as presently shown at (7)(G)(3)(A). The barrel test combined evaporation/precipitation approach of the 10 barrel method is likely to understate evaporation during windy conditions if the liquid level in the barrel is shielded from incident wind impacts.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #37: MCE - Sludge (7)(M) The sludge accumulation provision is not written in a manner that is enforceable. The provision should require periodic operator inspection of waste lagoons to determine the thickness of the sludge layer. The CAFO operator should be required to remove such sludge accumulations when the sludge accumulation level exceeds the design basis used to justify sizing of the waste lagoon for purposes of determining the ability of the waste lagoon to contain a 5 year 24 hour storm or a chronic precipitation event.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #38: MCE - Tanks (8)(A) This rule should be amended to give a definition of a "pit." There must be clarity that this section does not create another category of waste storage/management facilities that are earthen lined/bounded liquids enclosures. The requirement should provide a 4 ft margin from the bottom of tank structures to the seasonal high water table level; the way this is indicated here conflicts with the way application requirements are described for the 4 ft rule at (3)(A)(3)(E) That an applicant has installed perimeter foundation drains around a tank structure should not mean that the facility is exempted from the requirement to maintain the 4 foot margin to the water table elevation from the bottom of the facility liner. A perimeter drain installed 1 foot below the foundation floor may lower the water table, but it is not likely to lower such water table level by the amount of 4 foot. This particular subsection probably mixes discussion of perimeter drains with other types of drains in a manner not conducive to accurate description within the text of the rule.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #39: MCE - Headspace (8)(B) Use of floating roofs and plastic covers placed directly on the surface of liquid waste lagoons are a recognized method of reducing emissions of odors, ammonia and volatile organic compounds from waste storage facilities. The rule should not interfere with that engineering approach to gas management from liquid waste lagoon facilities.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #40: MCE - Drain (8)(D) The benefits of using of granular drain material as an engineering method for perimeter drain installation will be defeated unless the use of soil cloth for drain material boundaries to keep soil particles out of the drain material interstitial spaces in not also made a requirement. Provisions here do not explicitly say that the soils and foundation 11 review must be done prior to commencement of construction of the tank or pit and that such information should be part of a construction permit application.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #41: MCE - Concrete (9)(F) This provision is too vague to be enforceable. The concrete construction requirements of the rule should be explicitly stated with specific references to specific known and published standards which must guide all such concrete construction in Missouri. Concrete construction of waste storage facilities should feature preprepared and poured wall footings, reinforced wall and floor construction and impermeable keyed-in water tight sealing at the junctures of walls and floors to prevent leaks. Concrete construction standards should feature mandatory use of corrosion/rust-resistant coated steel reinforcement rods to address damaging effects of wastewater constituents on uncoated steel reinforcements. In construction of swine or dairy confinement buildings featuring slatted flooring and waste storage beneath such flooring, support pillars for such elevated slatted flooring should be placed over pre-poured supports under such pillars to avoid tank floor cracking from shear stresses.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #42: MCE - Construction (9)(A) The text of this provision should be recast to require diversion for precipitation run-on and run-off, rather than for “surface water” which can be mistakenly interpreted as waters of the United States. Nothing in this permit is authorizing the diversion of ambient stream surface waters. Instead, the draft should be amended to specifically cite the duty for clean water diversion shown at 40 CFR Sec. 122.42(e)(1)(iii).

RESPONSE: No change was made as a result of this comment. The department believes this section of the design guide rule provides sufficient detail and information.

COMMENT #43: MCE - Rain gage Nothing in the draft rules requires operation of a rain gage at CAFO production areas, including a requirement for the collection of daily precipitation records and the requirement to record weather conditions and precipitation in association with land application activities.

RESPONSE: No change was made as a result of this comment. The department believes the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #44: MCE - Construction (9) Subsection (9)(B) attempts to describe requirements in a single combined section that addresses all “Floors of Covered and Uncovered feedlots, poultry buildings and other solid manure storage areas.” This section should be completely reorganized to focus on each of the physical elements as they are included as being included. Standards of addressing covered vs. uncovered structures should be completely separated because uncovered structures must address process wastewater containment arising from defined storm events. Uncovered structures will always require more specifically stated requirements to address waste containment.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #45: MCE - (9)(C)(3) The uncovered solid storage area requirements to “...have a runoff collection structure that meets the requirements of 10 CSR 20- 800...” is vague and indeterminate since no “runoff collection” physical elements or performance requirements are described in the rule text. The need for specific physical element and minimum environmental performance requirements covering solid waste storage is essential since operation of such waste management units as part of the production area cannot be allowed to cause a discharge of process wastewater except as a direct consequence of a storm event exceeding a 25 year, 24 hour storm event.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #46: MCE - Feedlots (9) What is demonstrably inadequate from this rule subsection are rule requirements for the management duties, physical elements and engineering design requirements and operational standards of how an uncovered, outdoor feedlot owner/operator shall ensure that the operating unit combination of an uncovered feedlot together with the /runoff control system does not cause any discharge to surface waters except during a storm event that exceeds the level of precipitation for the CAFO site for a 25 year 24-hour storm event. Also missing from this section are requirements for solid waste composting operations and mortality composting operations to avoid discharges from these production area facilities.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #47: MCE - Trackout nothing in the draft rule addresses trackout on vehicle tires of animal wastes and subsequent discharge of such wastes to stormwaters in violation of production area no discharge requirements. Control of trackout to keep animal waste from coming into contact with precipitation may require tire washing.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #48: MCE – Nothing in the draft rule addresses the requirement that CAFO waste entrained in spreader equipment pressure washing operation effluent must be collected for waste storage and not discharged to surface waters.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #49: MCE - Airborne deposition nothing in the draft rule recognizes that ammonia evaporative and fugitive dust emissions from CAFO production area site operations can lead to physical deposition of airborne CAFO wastes to local adjacent waterbodies and wetlands, and thus constitute a discharge of CAFO waste to surface waters of the U.S. The commentator is aware of at least one case of EPA enforcement in Region V against a turkey CAFO for discharge to surface waters from CAFO ventilation dust deposited in an adjacent agricultural drain. A recent EPA guidance document on CAFO

discharges cited an example of irrigation overspray being directed towards an agricultural drain and that such an operation constituted a discharge to surface waters of the U.S.

RESPONSE: No change was made as a result of this comment. This comment is outside the scope of this rulemaking.

COMMENT #50: MCE - Feedlots (9) The commentator raises the question of whether an 'uncovered' feedlot must be a structure in order to have applicability for the 'floor' requirements shown, or whether all exterior, uncovered feedlots are covered by 'floor' requirements.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #51: Temp Piles (10) This entire section is intended to create an unlawful exception from waste storage facility requirements to allow waste storage in the form of temporary stockpiles of CAFO solid wastes located in land application fields with plainly insufficient runoff control and virtual certainty of a discharge. Once a waste storage area has been established, it must be considered that it is part of a production area at a CAFO since waste storage is a necessarily a production area activity. MDNR cannot validly create an exception from requirements that a waste storage area have no discharge to surface waters except during a storm event exceeding a 25 year, 24 hour storm event. The proposed management measures outlined in section (10)(B) cannot ensure there will be no discharge to surface waters of the U.S. In addition, there is no possible interpretation that forming temporary storage piles in land application areas constitutes land application at an agronomic rate that ensures appropriate agriculture utilization of all nutrients in the waste. The subsection (10)(B)(4) provision is an implicit admission by MDNR that such temporary storage situations discharge to waters of the U.S. Because there are no monitoring, record-keeping and reporting requirements to address temporary stockpile process wastewater generation and discharge, this provision will have little or no protective effect in actual practice. The 'protective measure' provision of (10)(B)(1)(B) is neither specific, nor is it effective, and it certainly does not reflect a no discharge requirement. The separation distances provided for the location of stockpiles and other features that use separation distances similar to those provide for agronomic land application. However, the existence of a large uncovered stockpile of animal waste solids creates a much higher potential for precipitation induced discharge than mere agronomic waste application under ideal field conditions. As a result these should be justification for greater separation distance requirements for stockpiles than for land application from critical water and public features.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule.

COMMENT #52: MCE - Stream Cross (11) The provisions here address structures which are permanent stream crossings by CAFO waste conveyance piping. However, the physical practice of using temporary and mobile irrigation piping across streams in association with irrigation of waste effluents is not

addressed in the draft rule text and presents the greater risks of accidents and spills because of common industry practice. Such irrigation operations should be subject to operational standards, operator training, operator tending and maintenance requirements.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #53: MCE - Monitoring (13) This provision does not require specific elements of the case-by-case determination that must be made and the natural resource protection basis of criteria for requiring groundwater monitoring. For example, there is no citation to the need to protect existing high quality uses of groundwater, to protect groundwater with an immediate hydrological path to surface water, or to otherwise protect against rapid percolation of CAFO process wastewater to groundwater in Karst topography, etc. in relation to groundwater monitoring requirements near CAFO waste storage lagoons. The rule needs to quantify the threshold criteria and physical elements that would be present that mitigate for groundwater monitoring requirements for both production areas and land application areas. One such condition might be the present condition of excessive ammonia, nitrates and/or pathogens already known to be present in area groundwater. The rule is written to require hydrogeological investigation only after a case-by-case decision is made citing the listed factors [presently with no quantitative threshold basis]. This properly raises the question of what level and specificity of hydrogeological investigation is necessary is properly necessary to support the initial case-by-case finding called for by the rule. This should be a required application content item, but it does not appear the proposal is written in such a manner.

RESPONSE: No change was made as a result of this comment. The department believes this design guide rule provides sufficient detail and information to provide the applicants design engineer an appropriate standard to base design decisions and engineering certification on. The department requires all design documents and construction applications be sealed by a Missouri licensed Professional Engineer. It is not reasonable or practical to expect that all aspects of a design and application will be described or characterized in this rule. The department has determined that the level of documentation required in 8.300 is appropriate to effectively provide the necessary level of regulatory review for CAFOs in Missouri.

COMMENT #54: Hoehne -Definitions. (B) 2. Freeboard – The elevation difference between the bottom of the spillway to the lowest point on the top of the berm for an earthen manure storage basin.

RESPONSE: No change was made as a result of this comment. The department agrees the elevation must be at the lowest point of the top of berm, however, the department determined this additional detail is not necessary to add to rule.

10 CSR 20-8.300 Concentrated Animal Feeding Operations

PURPOSE: This rule sets forth criteria prepared as a guide for the design of manure management systems at concentrated animal feeding operations. This rule shall be used together with 10 CSR 20-6.300 Concentrated Animal Feeding Operations. This rule reflects the minimum requirements of the Missouri Clean Water Commission in regard to adequacy of design, submission of plans, and approval of plans. It is not reasonable or practical to include all aspects of design in this standard. The design engineer should obtain appropriate reference materials which include but are not limited to: copies of ASTM International standards, design manuals such as Water Environment Federation's Manuals of Practice, and other design manuals containing principles of accepted engineering practice. Deviation from these minimum requirements will be allowed where sufficient documentation is presented to justify the deviation.

(2)(A) Applicability. This rule shall apply to new or expanding concentrated animal feeding operations (CAFOs) that commence construction on or after April 30, 2012.

(2)(E) Deviations. Deviations from these rules may be approved by the department when engineering justification satisfactory to the department is provided. Justification must substantially demonstrate in writing and through calculations that a variation(s) from the design rules will result in either at least equivalent or improved effectiveness. Deviations are subject to case-by case review with individual project consideration.

**Title 10—DEPARTMENT OF NATURAL RESOURCES
Division 20—Clean Water Commission
Chapter 8—Design Guides**

PROPOSED RULE

10 CSR 20-8.300 Manure Storage Design Regulations

PURPOSE: This rule sets forth specific design criteria for manure management systems and guidelines for preparing and submitting construction permit applications for concentrated animal feeding operations. This rule shall be used together with 10 CSR 20-6.300 Concentrated Animal Feeding Operations.

(1) Definitions.

(A) Definitions as set forth in the Missouri Clean Water Law, Chapter 644, Concentrated Animal Feeding Operation (Hog Bill) section 640.703, RSMo, 10 CSR 20-2.010, and 10 CSR 20-6.300 shall apply to the terms in this rule unless otherwise defined by subsection (1)(B) below.

(B) Other applicable definitions are as follows:

1. Design storage period—The calculated number of days that will fill the manure storage structure from the lower to the upper operating level during a period of average rainfall minus evaporation (R-E).

A. For a design storage period of fewer than three hundred sixty-five (365) days, the largest consecutive average monthly R-E, corresponding with the number of months of the storage period, shall be used.

B. For multiple storage stages, the storage period is the sum of available storage days in each stage;

2. Freeboard—The elevation difference between the bottom of the spillway to the top of the berm for an earthen manure storage basin;

3. Groundwater table—The seasonal high water level occurring beneath the surface of the ground, including underground watercourses, artesian basins, underground reservoirs and lakes, aquifers, other bodies of water located below the surface of the ground, and water in the saturated zone. For the purposes of this rule, groundwater table does not include the perched water table;

4. Manure—The fecal and urinary excretion of animals and process wastewater and dry process waste as defined in 10 CSR 20-6.300(1)(B);

5. Missouri Concentrated Animal Feeding Operation Nutrient Management Technical Standard (NMTS)—The current version of the technical standard published by the department;

6. Rainfall minus evaporation (R-E)—The average depth of monthly liquid precipitation minus evaporation as published in the most recent National Weather Service Climate Atlas for the geographical region of the proposed structure;

7. Safety depth—One foot (1') of liquid depth or the depth needed to hold the volume of the ten (10)-year, ten (10)-day storm, whichever is greater;

8. Solid manure—Manure that can be stacked without free flowing liquids;

9. Storage volume—The volume of manure between the lower and upper operating levels; and

10. Ten (10)-year, ten (10)-day storm—The depth of rainfall occurring in a ten (10)-day duration over a ten (10)-year return frequency as defined by the most recent publication of the National Weather Service Climate Atlas for the geographical region of the proposed manure storage structure.

(2) General.

(A) The manure storage design regulations shall be utilized by all animal feeding operations (AFOs) which need or desire permit coverage. These regulations shall be used when evaluating all new AFOs or new or expanded components of existing AFOs after April 30,

2012.

(B) These design regulations may also be applicable to other types of agricultural waste management systems regulated by the department. Other facilities that wish to use this regulation when preparing a permit application shall first obtain written approval from the department.

(C) Careful consideration should be given to the type of storage, treatment, and land application before choosing a final system design. Important factors to consider include: location and topography of the operation; concentration and quantity of the manure to be managed; land available for manure utilization; operating costs; and the probable type of supervision and maintenance the operation will require.

(D) New Processes, Methods, and Equipment. The policy of the department is to not obstruct the development of new methods, equipment, and management practices for manure management. The lack of inclusion in this standard of a particular type of treatment process or equipment should not be construed as precluding its use. The department will approve other types of processes or equipment under the following conditions:

1. The operational reliability and effectiveness of the process or device shall have been demonstrated with a suitably-sized prototype unit operating at its design load conditions to the extent required by the department; and

2. The department may require additional tests including:

A. Results and engineering evaluations demonstrating the efficiency of the processes or equipment; and

B. Appropriate, independent testing/evaluation conducted under the supervision of an engineer not employed by the manufacturer or developer.

(3) Permit Application Documents. Applications for a construction permit, or for an operating permit that did not previously receive a construction permit, shall submit one (1) set of documents described in this section for department approval as part of the permit application process.

(A) Engineering Documents. The engineering documents shall provide the basic information, present design criteria and assumptions, examine alternate systems, where appropriate, and provide plans and specifications. The documents shall also include process description, sizing, data, controlling assumptions, and considerations for the functional operation of a manure management system. All engineering documents shall be prepared by or under the direct supervision of a registered professional engineer licensed to practice in Missouri. The department will not examine the adequacy or efficiency of the structural, mechanical, or electrical components of the manure management systems, only adherence to rules and regulations.

1. Engineering report—The following paragraphs should be utilized as a guideline for the content of the project engineering report to be submitted to the department for review and approval:

A. Letter of transmittal. A one (1)-page letter typed on the design engineer's letterhead should be included in the submission of the report;

B. Title page. Title of project, date, operation's name and address, name and address of firm preparing the report, and seal and signature of the engineer;

C. Project location map. This map shall include state and county roads, county boundaries, and city boundaries, and show the location of the proposed project;

D. The table of contents shall include section and subsection headings. All pages of the report shall be numbered and the table of contents shall reference these numbers;

E. Narrative project summary. This section should provide an explanation of any existing conditions at the operation and a summary of the proposed modifications to the operation;

F. Technical information and design criteria. This section should include the design data, calculations, all assumptions, and all

relevant information used to justify the design. If the engineering documents contain known deviations from the design criteria contained in this rule, documentation and justification for the deviation should be submitted with the design criteria. The following items should be included:

(I) Each animal type and number within the production area, the maximum design animal capacity, and the average weight for each animal type;

(II) A detailed explanation of the process by which manure is deposited, handled, managed, and transferred within the operation;

(III) Calculations showing the estimated annual amount of manure generated at the production area.

(a) Where possible, design manure volume shall be based on past operating records or operating data from facilities with similar feed inputs and animal characteristics. Documentation of these volumes shall be included.

(b) If operating data is not available, the design manure volume shall be estimated using the most recent edition of a research-based reference. The reference name, edition, and data shall be included;

(IV) Design calculations justifying the size of manure storage structures. For anaerobic treatment lagoons, the volume of treatment shall be based on the geographical region of the proposed structure and calculated using the most recent edition of a research-based reference. The reference name, edition, and data shall be included;

(V) Depth and volume tables on at least one-foot (1') increments for all manure storage basins with design operating depths clearly identified;

(VI) Collection, treatment, and disposal of all domestic wastewater flows associated with the operation; and

(VII) If applicable, justifications for constructing an uncovered manure storage structure. Covered storages are preferred due to the lower risk of environmental damage from excessive rainfall;

G. Soils report/soils information. The engineering report shall contain county soil survey information for the soil types and characteristics of the production areas. Unless required otherwise by the department, soils information shall include soil series name, soil texture, soil permeability, and water-holding capacity. If a county soils map is available, the approximate boundaries of the different soils shall be shown. When applicable, the engineering report shall incorporate all recommendations by the Division of Geology and Land Survey. Any soil boring logs shall also be included in the report; and

H. Operation and maintenance plan—An operation and maintenance plan shall be provided to explain the key operating procedures. At a minimum, the plan shall address operation and maintenance of mechanical equipment.

2. General layout drawings. Plans shall include both an aerial and a topographic map or drawing that shows the spatial location and extent of the production area. Each drawing or map must be easily readable and include a visual scale, a north directional arrow, a fixed geographic reference point, and the date the drawing or map was completed. Each drawing or map shall include the following:

A. All confinement barns, open lots, manure storage, and control structures, along with the other various components of the operation such as areas designated for stockpiling, composting, and for the management of animal mortalities;

B. The source of the operation's water supply and all wells within three hundred feet (300') of the production area; and

C. The location of all surface water features within the boundaries or immediately adjacent to the production area.

3. Construction plan drawings. Plan drawings shall include the following:

A. The name of the operation and the scale in feet, a graphic scale, a north directional arrow, and the signed and dated engineer's seal;

B. The plans shall be clear and legible. They shall be drawn

to a scale which will permit all necessary information to be plainly shown. The size of the plans generally should not be larger than thirty inches by forty-two inches (30" × 42"), with a preference for smaller sizes;

C. Locations of all test borings with date shall be shown on the plans;

D. Detail plans shall consist of plan views, elevations, sections, and supplementary views which, together with the specifications and general layouts, provide the working information for the construction of the containment facilities; and

E. Include dimensions and relative elevations of structures, the location and outline form of equipment, storage tanks, location and size of piping, and ground elevations.

4. Specifications. When specifically directed by the department, technical specifications shall accompany the plans.

(B) Other Documents.

1. Neighbor notice and buffer verification. One (1) copy of the neighbor notice letter and proof that the notification has been sent. A map shall also be included that meets the requirements of 10 CSR 20-6.300(3)(C)4.

2. Geohydrologic evaluation by the department's Division of Geology and Land Survey. This is required only for proposed earthen manure storage basins.

3. An emergency response plan, if not included in the nutrient management plan.

(C) Nutrient Management Plan. The application shall include a nutrient management plan that meets the specifications of the NMTS and the requirements of 10 CSR 20-6.300(5). This plan shall include:

1. Land application maps—An aerial, topographic, and soils map that shows the spatial boundaries of planned land application areas. The aerial map(s) must clearly show the following within three hundred feet (300') beyond the field boundaries:

A. The location and extent of all permanent flowing streams, intermittent flowing streams, wetlands, and sinkholes;

B. Open tile line intake structures that will not be plugged during land application;

C. Lakes, reservoirs, or other private and publicly-owned water impoundments;

D. Private and public wells;

E. Public roads;

F. Public use areas;

G. Public dwellings; and

H. Property boundaries; and

2. All additional components necessary to prove compliance with 10 CSR 20-6.300(5).

(4) Revisions to Approved Plans. Deviations from approved plans affecting storage capacity, flow, or location must be approved in writing before these changes are made. Revised plans shall be submitted well in advance of any construction work which will be affected by these changes to allow sufficient time for review and approval. Structural revisions or other minor changes not affecting storage capacity, flow, or location will be permitted during construction without approval. As-built plans clearly showing these alterations shall be submitted to the department after the completion of the work.

(5) Location.

(A) Protection from Flooding—Manure storage structures, confinement buildings, open lots, composting pads, and other manure storage areas in the production area shall be protected from inundation or damage due to the one-hundred (100)-year flood.

(B) The minimum setback distances from manure storage structures, manure storage areas, confinement buildings, open lots, or mortality composters are as follows:

1. Ten feet (10') to public water supply pipelines;

2. Fifty feet (50') to property lines;

3. Fifty feet (50') to public roads;
4. One hundred feet (100') to wetlands, ponds, or lakes not used for human water supply;
5. One hundred feet (100') to gaining streams (classified or unclassified; perennial or intermittent);
6. Three hundred feet (300') to human water supply lakes or impoundments; and
7. Three hundred feet (300') to losing streams (classified or unclassified; perennial or intermittent) and sinkholes.

(C) Distances from earthen manure storage basins shall be measured from the outside edge of the top of the berm.

(D) Separation distance from wells for manure storage structures or confinement buildings shall be in accordance with 10 CSR 23-3.010.

(E) An all-weather access road shall be provided from a public road to the AFO. Sufficient room shall be provided at the site to permit turning vehicles around. In determining the type of roadway and method of construction, consideration shall be given to the types of vehicles and equipment necessary to maintain and operate the AFO.

(6) Manure Storage Sizing.

(A) No Discharge Requirement. All manure storage structures shall comply with the design standards and effluent limitations of 10 CSR 20-6.300(4).

(B) Design Storage Period.

1. The recommended design storage period is three hundred sixty-five (365) days.

2. The minimum design storage period for liquid manure and for solid manure that will be used in the land application area is one hundred eighty (180) days.

3. Solid manure to be sold or used as bedding shall have a minimum design storage period of ninety (90) days unless justification is given for a shorter time period.

4. An operation proposing an uncovered, liquid manure storage structure, with less than three hundred sixty-five (365) days of storage, will be evaluated based upon the ability to actively manage the system. The following, at a minimum, will be evaluated:

A. Does the AFO owner(s) have at least fifty percent (50%) ownership in the land application equipment;

B. Does the AFO owner(s) own at least fifty percent (50%) of the needed annual land application area;

C. Is at least fifty percent (50%) of the needed annual land application area in permanent, perennial vegetation; and

D. Is the available equipment and labor capable of lowering the liquid level by ten percent (10%) of the storage volume in one (1) working day?

5. The design storage period must be accounted for in the Nutrient Management Plan.

6. The minimum design storage period for anaerobic treatment lagoons without an impermeable cover is three hundred sixty-five (365) days.

(C) New Class I swine, veal, or poultry operations shall evaluate proposed uncovered manure storage structures in accordance with applicable federal regulation as set forth in 40 CFR 412.46(a)(1), November 20, 2008, which is hereby incorporated by reference, without any later amendments or additions, as published by the Office of the Federal Register, National Archives and Records Administration, Superintendent of Documents, Pittsburgh, PA 15250-7954.

(D) Sizing Manure Storage Structures.

1. The structure shall be designed to hold all inputs, between the upper and lower operating levels, anticipated during the design storage period. This typically includes:

A. Animal manure;

B. Bedding material;

C. Wash water;

D. Flush water (excluding recycled flush water);

E. Cooling water for animals or from equipment; and

F. Runoff from pervious and impervious areas, due to average rainfall.

2. Uncovered liquid storages shall also include:

A. R-E from the surface of the structure, held between the operating levels; and

B. Safety depth, above the upper operating level.

3. Tanks and pits shall also include six inches (6") of depth below the lower operating level for incomplete removal allowance unless there is adequate justification for not including this depth.

4. Earthen manure storage basins shall also include:

A. Freeboard of at least one foot (1'). Two feet (2') is required for structures that receive storm water from open lots larger than the surface area of the storage structure;

B. Two feet (2') of permanent liquid depth below the lower operating level. Anaerobic treatment volume greater than two feet (2') will satisfy this requirement;

C. Sludge accumulation volume; and

D. Anaerobic treatment lagoons shall include treatment volume below the lower operating level.

(7) Construction and Maintenance of Earthen Manure Storage Basins.

(A) Geohydrologic Evaluation. A geohydrologic evaluation of the proposed earthen manure storage basin prepared by the department's Division of Geology and Land Survey shall be submitted. To obtain a geohydrologic evaluation of the proposed site, the engineer shall submit the appropriate request form to the Division of Geology and Land Survey. All potential basin sites will receive two (2) ratings from the geohydrologic evaluation. The ratings will infer the relative geological limitations for designing and constructing a basin at the site in question.

1. Collapse potential rating. If the geohydrologic evaluation gives a severe rating for collapse potential, an earthen basin is not acceptable. Concrete or steel structures or an alternate site should be considered.

2. Overall geologic limitations rating. Sites that have a severe rating for the overall geologic limitations but a slight or moderate collapse potential will be reviewed on a case-by-case basis. The department may require artificial liners or additional geotechnical exploration and design implementation and/or post-construction testing in these situations.

(B) Detailed Soils Investigation.

1. A detailed soils investigation is required to substantiate feasibility. The quantity and quality of soil materials on-site and from a borrow area must be identified and evaluated for use in the basin and/or liner.

2. Exploration shall be sufficient to identify and define the quantity and quality of the soil material. The use of test pits, split spoon (barrel), or thin-walled tube sampling or a combination of these techniques may be used depending on the total area of investigation and the depth to which exploration is needed. The following information, in whole or in part, is required:

A. Atterburg limits;

B. Standard proctor density (moisture/density relationships);

C. Coefficient of permeability (undisturbed and remolded);

D. Depth to bedrock;

E. Particle size analysis; and

F. Depth to seasonal high groundwater table.

3. Information gathered from the investigation shall be presented on a map drawn to scale. Slope, location, and other surface features should also be included. The soil profile should be shown of the representative soil material. Copies of original boring and other soil test logs shall also be included. An interpretation of the collected data shall be incorporated into the report. Any site constraints and how they will be dealt with should be discussed.

(C) Shape and Location.

1. Shape of cells. The shape of all cells should be such that there are no narrow or elongated portions. Round, square, or rectangular

cells (length not exceeding three (3) times the width) are recommended. No islands, peninsulas, or coves shall be permitted.

2. Constant elevation of floor. The floor of the structure shall be a consistent elevation. Finished elevations shall not be more than three inches (3") above or below the average elevation of the floor.

3. Distance to groundwater and bedrock. The floor of the basin shall be at least four feet (4') above the high water table or the water table as modified by subsurface drainage. In addition, the floor shall be at least two feet (2') above bedrock. For perched water tables, a curtain drain with a positive outlet may be installed around the structure to permanently lower the water table.

(D) Slopes. Inner and outer berm slopes shall not be steeper than three to one (3:1), horizontal to vertical. Inner slopes shall not be flatter than four to one (4:1). Consideration may be given to steeper inner slopes provided special attention is given to stabilizing the slope with rip-rap, concrete, or other rigid materials. These stabilization methods shall be specified. The flatness of the outer slope is of no concern provided surface water can be diverted around the lagoon. Long outer slopes should be flatter than three to one (3:1) to assist in safe mowing of vegetation.

(E) Berm Construction and Width.

1. Soil used in constructing the basin floor (not including clay liner) and berm cores shall be relatively incompressible, tight, and compacted between two percent (2%) below and four percent (4%) above the optimum water content and compacted to at least ninety percent (90%) standard proctor density.

2. Compaction of lifts for berm construction shall not exceed twelve inches (12").

3. Maximum rock size should not exceed one-half (1/2) of the thickness of the compacted lift.

4. The minimum top of berm width shall be four feet (4'). If large equipment is to be used for mowing, a top minimum width of at least eight feet (8') shall be provided.

(F) Emergency Spillway. To prevent overtopping and cutting of berms, an emergency overflow shall be provided. The spillway shall—

1. Be located in the location with the minimum amount of constructed earthen fill;

2. Provide passage of liquid at a safe velocity to a point outside of the berm(s);

3. Have a minimum bottom width of ten feet (10') and a minimum depth of one foot (1'); and

4. Be compacted and vegetated or otherwise constructed to prevent erosion due to possible flow.

(G) Compacted Clay Liner. The following criteria are for design and construction of soil liners. Engineering reports, plans, and specifications should address these criteria.

1. Soils information. The soils used for construction of an earthen basin liner should meet the following minimum specifications:

A. Be classified under the Unified Soil Classification Systems as CL, CH, GC, or SC;

B. Allow more than fifty percent (50%) passage through a Number 200 sieve;

C. Have a liquid limit equal to or greater than thirty (30);

D. Have a plasticity index equal to or greater than twenty (20); and

E. Have a coefficient of permeability equal to or less than 1×10^{-7} centimeters per second (cm/sec) when compacted to ninety percent (90%) of standard proctor density with the moisture content between two percent (2%) below and four percent (4%) above the optimum moisture content.

2. Liner construction.

A. Construction shall include scarification and compaction of base material between two percent (2%) below and four percent (4%) above the optimum water content and compacted to at least ninety percent (90%) standard proctor density.

B. Compaction of lifts shall not exceed six inches (6"). Maximum rock size should not exceed one-half (1/2) of the thickness

of the compacted lift.

C. The completed seal shall be maintained at or above the optimum water content until the basin is prefilled with water in accordance with this section of the rule.

3. Permeability. All earthen basins shall be sealed so that seepage loss through the seal is minimized. The basin seal shall cover the floor and extend up the inner slope to where the side slope intersects with the top of the berm.

A. The design permeability of the basin seal shall not exceed five hundred (500) gallons per acre per day in areas where potable groundwater might become contaminated or when the wastewater contains industrial contributions of concern. Design seepage rates up to three thousand five hundred (3,500) gallons per acre per day may be considered in other areas where potable groundwater contamination is not a concern, provided that the cells will maintain adequate water levels to provide treatment and avoid nuisance conditions.

B. Liner thickness. The minimum thickness of the liner is twelve inches (12"). For soils which have a coefficient of permeability greater than 1×10^{-7} centimeter per second (cm/sec), unusual depth or potable ground water contamination potential, liner thickness of more than twelve inches (12") may be required. The following equation shall be used to determine minimum seal thickness:

$$t = (H \times K) / 5.4 \times 10^{-7} \text{cm/sec}$$

where

K = permeability coefficient of the soil in question;

H = head (maximum water level depth) of water in the basin; and

t = thickness of the soil seal.

Units for H and t may be English (feet) or metric (meters); however, they must be the same.

4. Soil additives. Bentonite, soda ash, or other sealing aids may be used to achieve an adequate seal in systems using soil. The design shall include information on the type of soil additive and the method of application.

(H) Prefilling. The basin shall be prefilled in order to protect the liner, prevent weed growth, reduce odor, allow measurement of percolation losses, and maintain moisture content of the seal. However, the berms must be completely prepared before the introduction of water. If the clay liner is allowed to dry, the liner must be scarified and recompact as described in this section of the rule.

(I) Protection of Berms.

1. Livestock, burrowing animals, and woody vegetation must be excluded from basins to protect the integrity of the berms and liners.

2. The berms, diversion ditches, and terraces shall be seeded and a good vegetative cover established to minimize erosion and aid in weed control. The inner berms should be seeded down to the upper operating level of the structure. Where the structure is not anticipated to reach its upper operating level during the first growing season, consideration should be given to further seeding on the berm slope. Long rooted grasses shall not be used for seeding of berms. Fertilization needs, mulching, and watering must be considered for all basins to ensure that a good growth of grass occurs rapidly and is sustained. Specifications shall detail specific amounts and variety of seeds to be used, mulching, and fertilizer requirements as appropriate and the proper time period for application to be reasonably assured that vegetative cover will be established.

3. Rip-rap or some other acceptable method of erosion control is required as a minimum around all piping entrances and exits. For aerated cell(s), the design should ensure erosion protection on the slopes and floor in the areas where turbulence will occur.

4. For basins with a surface area greater than five (5) acres, consideration shall be given to providing embankment protection from wave action.

(J) Alternative Liners. Seals consisting of asphalt, concrete, soil cement, or synthetic liners may be used provided the permeability, durability, and integrity of the proposed materials can be satisfactorily demonstrated for anticipated conditions.

(K) Percolation Losses. Measurement of percolation losses, when required, shall consider flow into and out of the lagoon, rainfall and evaporation, and changes in water level. Measured percolation losses in excess of one-sixteenth inch (1/16") per day will be considered excessive. The barrel test as described in 10 CSR 20-8.020(16) is an acceptable water balance study. Other tests will require department approval.

(L) Depth Gauges. A permanent depth measurement gauge or marker shall be installed and maintained in the basin and shall be easily readable at one-foot (1') increments or smaller. It shall clearly display the lower and upper operating levels and the spillway elevation. The gauge shall be placed in a suitable location where it is easily accessible during routine operations.

(M) Sludge Accumulation. Sludge levels shall be maintained so as to not reduce the approved storage volume of the basin.

(8) Construction of Tanks and Pits.

(A) Soils and Foundation. A thorough site investigation shall be made to determine the physical characteristics and suitability of the soil and foundation for the fabricated storage structure. The floor of the below-ground storage tanks shall be two feet (2') above the high water table unless curtain drains or interception drains are installed around the perimeter of the structure to permanently lower the water table. The drain shall be at an elevation of at least one foot (1') below the floor to permanently lower the water table. A sump or a positive outlet for the drain shall be provided.

(B) Depth Allowance for Agitation and Ventilation. An allowance of one foot (1') should be provided at the top of covered structures for agitation and/or ventilation requirements.

(C) Depth Gauges. Uncovered tanks and pits shall include a permanent depth measurement gauge or marker that is easily readable at one-foot (1') increments or smaller.

(D) Footing Drains/Perimeter Tiling. Perimeter tiling and granular backfill are required for below ground pits unless justification is given that they are not needed. Tiles should be located below the base of the outside of the footing. At least two feet (2') of granular drain material, such as pea gravel or three-quarter inch (3/4") crushed rock shall be placed around the tile. A positive outlet or sump for the drain shall be provided.

(E) Tank and pit footings are to be located at or below the maximum frost depth unless adequate justification is given that it is not needed. A compacted foundation of frost-free material such as drained granular material, extending to below frost depth, may be used as an alternate to extending the structural footing.

(F) Concrete and steel features shall be designed according to published guidelines. These guidelines must be referenced in the application packet.

(G) Watertight Requirement. Tanks and pits must be designed, constructed, and maintained to be watertight.

(9) Construction of Solid Manure Systems. This section covers the construction of poultry buildings, open lots, stacking pads, and other similar structures.

(A) Surface water shall be diverted around or away from animal confinement areas and buildings.

(B) Floors and Pads. The base of covered and uncovered lots, poultry buildings, and other solid manure storage areas can be made of concrete or other rigid, essentially watertight materials or from a firm, compacted, earthen base that meets the following criteria:

1. The floor shall be evaluated for suitable soils and groundwater table to a depth of four feet (4') below the proposed floor elevation;

2. The finished earthen floor shall be a minimum of two feet (2') above the apparent high water table or the water table as modified by subsurface drainage;

3. The finished earthen floor shall be at least two feet (2') above bedrock;

4. The existing soils shall have at least one (1) continuous foot

of suitable soils within four feet (4') of the proposed earthen floor in order to use existing soils without amendments. Suitable soils are defined in this section as Unified Soil Classification System (USCS) class CH, MH, CL, GC, or SC and permeability group III or IV according to the United States Department of Agriculture's (USDA's) National Engineering Handbook, Agricultural Waste Management Field Handbook;

5. Existing soils can be modified using soil amendments provided that the modified soil has at least one (1) compacted, continuous foot of soil modified to meet permeability group III or IV;

6. Borrow soils can be used for the floor. Borrow soils must provide at least one (1) compacted, continuous foot of suitable soils as defined above; and

7. The use of one (1) five foot (5')-deep test pit, near the center of each proposed set of four (4) buildings, or each acre, will generally be sufficient to satisfy the intent of this section.

(C) Uncovered solids storage areas must also meet the following:

1. Have an overall slope between two percent (2%) and four percent (4%) for unpaved lots;

2. Be maintained in a way that prevents ponding; and

3. Have a runoff collection structure that meets the requirements of this rule.

(D) Roofed areas of five thousand (5,000) square feet or less, that are used for mortality composting or to store solid manure, are exempt from the requirements of this section.

(10) Temporary Stockpiling of Solid Manure.

(A) Temporary stockpiling of uncovered solid manure within the production area, without runoff collection, is not allowed.

(B) Temporary stockpiling within the land applications areas shall be in accordance with the following:

1. Location.

A. Any temporary stockpiles need to be placed to prevent storm water from draining into or through the pile. If storm water does drain through the pile, a one-foot (1') berm will be required on the up-slope side of the pile.

B. No location shall be used for stockpiling for more than two (2) weeks, unless the pile is covered.

C. Separation distances shall be maintained between the stockpile and other features as follows:

(I) Three hundred feet (300') from any losing stream, well, sinkhole, water supply (for human consumption) reservoir, non-owned dwelling or residence, public building, or public use area;

(II) One hundred feet (100') from intermittent and permanent flowing streams; and

(III) Fifty feet (50') from public roads and property lines.

D. Stockpiles cannot be placed on slopes steeper than six percent (6%).

2. Size. No temporary storage site can be larger than two (2) acres.

3. Formation. All piles shall be placed so as to minimize forming pockets, hollows, or mini-dams that would collect and hold water. One (1) pile with an angle of repose so that it forms a crust and will tend to shed water off the pile will be the desirable design. If there are two (2) or more stockpiles, they should be placed far enough apart that they do not trap and hold water.

4. In no case shall runoff from a stockpile cause a violation of water quality standards.

(11) Design and Construction of Pipelines, Pump Stations, and Land Application Systems.

(A) General. Design of pipelines shall be in accordance with sound engineering principles considering the manure properties, management operations, exposure, etc.

1. The minimum pipeline capacity from storage/treatment facilities to utilization areas shall ensure the storage/treatment facilities can be emptied within the time limits stated in the nutrient management plan.

2. All pipes shall be designed to convey the required flow without plugging, based on the type of material and total solids content.

3. All pressure pipelines shall be installed at a depth sufficient to protect against freezing.

4. Pipelines shall be installed with appropriate connection devices to prevent contamination of private or public water supply distribution systems and ground water.

5. Pumps shall be sized to transfer material at the required system head and volume. Type of pump shall be based on the consistency of the material and the type of solids. Requirements for pump installations shall be based on manufacturer's recommendations.

6. The top of all pipelines entering or crossing streams shall be at sufficient depth below the natural floor of the stream bed to protect the pipe. The top of the pipe should be a minimum of three feet (3') below the natural stream floor. Pipelines crossing streams should be designed to cross the stream as nearly perpendicular to the stream flow as possible. Aerial pipeline crossing of streams shall be in accordance with 10 CSR 20-8.120(9).

7. Buried pipeline crossings under roads shall be properly cased.

8. Potable water line and buried manure pipeline separation. There shall be no permanent physical connection between a potable water supply and buried manure pipeline or appurtenances thereto which will permit the passage of wastewater or contaminated water into the potable water supply. Whenever possible, buried manure pipelines and pump stations should be located at least ten feet (10') horizontally from any existing or proposed water line. Should local conditions prevent a lateral separation of ten feet (10'), a manure pipeline may be laid closer than ten feet (10') if it is in a separate trench or if it is in the same trench with the waterline located at one (1) side on a bench of undisturbed earth. In either case, the elevation of the top of the manure pipeline must be at least eighteen inches (18") below the base of the water line.

(B) Gravity Pipelines.

1. The minimum slope for a gravity pipe installation is one percent (1%). The design slope shall account for the head differential and the percent solids of the manure.

2. Clean-out access shall be provided for gravity pipelines at a maximum interval of one hundred fifty feet (150') unless an alternative design is approved. Gravity pipelines shall not have horizontal curves or bends except minor deflections (less than ten (10) degrees) in the pipe joints unless special design considerations are used.

3. Gravity discharge pipes used for emptying a storage/treatment structure shall have a minimum of two (2) gates or valves in series, one (1) of which shall be manually operated.

(C) Force Mains and Pressure Pipes. To minimize settling of solids in the pipeline, design velocities shall be between three (3) and six (6) feet per second.

(D) Testing. Hydro-pressure tests shall be made only after the completion of backfilling operations and after the concrete thrust blocks have set for at least thirty-six (36) hours.

1. The duration of pressure tests shall be a minimum of one (1) hour unless otherwise directed by the engineer.

2. The minimum test pressure shall be the maximum system operating pressure. All tests are to be conducted under the supervision of the engineer.

3. The pipe line shall be slowly filled with water. The specified pressure measured at the lowest point of elevation shall be applied by means of a pump connected to the pipe in a manner satisfactory to the engineer.

(E) Pump Stations.

1. Water supply protection. There shall be no physical interconnection between any potable water supply and a pump station or any of its components which under any conditions might cause contamination of a potable water supply unless otherwise approved by the department's Division of Geology and Land Survey. Manure pumping stations shall be located at least three hundred feet (300') from any potable water supply well.

2. Alarm systems. Alarm systems are required for pumping stations where a failure could cause an overflow. Alarm systems shall be activated in cases of power failure, pump failure, or any cause of high water in the wet well.

(F) Land Application Systems. The following shall be considered in the design of land application systems:

1. Any spray application equipment specified shall minimize the formation of aerosols;

2. The pumping system and distribution system shall be sized for the flow and operating pressure requirements of the distribution equipment and the application restrictions of the soils and topography;

3. Provisions shall be made for draining the pipes to prevent freezing, if pipes are located above the frost line;

4. A suitable structure shall be provided for either a portable pumping unit or a permanent pump installation. The intake to the pumping system shall provide the capability for varying the withdrawal depth. The intake elevation should be maintained twelve to twenty-four inches (12"-24") below the liquid elevation. The intake shall be screened so as to minimize clogging of the sprinkler nozzle or distribution system orifices. For use of a portable pump, a stable platform and flexible intake line with flotation device to control depth of intake will be acceptable;

5. Thrust blocking of pressure pipes shall be provided. For use of above-ground risers for sprinklers, a concrete pad and support bracing should be considered; and

6. Automatic pump or engine shut-offs, in case of pressure drop, are required.

(12) General System Details.

(A) Mechanical Equipment. Mechanical equipment shall be used and installed in accordance with manufacturers' recommendations and specifications. Major mechanical units should be installed under the supervision of the manufacturer's representative.

(B) Construction Materials. Due consideration should be given to the use of construction materials which are resistant to the action of hydrogen sulfide and other corrosives frequently present in manure.

(C) Grading and Groundcover. Upon completion of construction, the ground shall be graded and reseeded to prevent erosion and the entrance of surface water into any storage structure or animal confinement area.

(D) Potable Water Supply Protection. No piping or other connections shall exist in any part of the manure management system which, under any conditions, might cause the contamination of a potable water supply.

(13) Groundwater Monitoring. An approved groundwater monitoring program may be required around the perimeter of a manure storage site and/or land application areas to facilitate groundwater monitoring. The necessity of a groundwater monitoring program, which may include monitoring wells and/or lysimeters, will be determined by the department's Division of Geology and Land Survey on a case-by-case basis and will be based on potential to contaminate a drinking water aquifer due to soil permeability, bedrock, distance to aquifer, etc. Where the Division of Geology and Land Survey has deemed groundwater monitoring necessary, a geohydrological site characterization will be required prior to the design of the groundwater monitoring program.

(14) Mortality Management.

(A) Class I operations shall not use burial as a permanent mortality management method to dispose of routine mortalities.

(B) Operations shall first receive approval from the department before burying significant numbers of unexpected mortalities and shall conduct the burial in accordance with Missouri Department of Agriculture requirements. Rendering, composting, incineration, or landfilling, in accordance with Chapter 269, RSMo Supp. 2010,

shall be considered acceptable options and do not require prior approval.

AUTHORITY: sections 640.710 and 644.026, RSMo 2000. Original rule filed July 14, 2011.

PUBLIC COST: This proposed rule will not cost the department or other state agencies and political subdivisions more than five hundred dollars (\$500) in the aggregate.

PRIVATE COST: This proposed rule will cost private entities twenty-four thousand fifty dollars (\$24,050) in the aggregate.

NOTICE OF PUBLIC HEARING AND NOTICE TO SUBMIT COMMENTS: Anyone may file a statement in support of or in opposition to this proposed rule with the Department of Natural Resources, Division of Environmental Quality, Water Protection Program, Barbara Li, PO Box 176, Jefferson City, MO 65102. Comments may be sent with name and address through email to barbara.li@dnr.mo.gov. Public comments must be received by November 16, 2011. The Missouri Clean Water Commission will hold a public hearing at 9:00 a.m., November 2, 2011, at the Lewis and Clark State Office Building, Nightingale Creek Conference Room, 1 East, 1101 Riverside Drive, Jefferson City, Missouri.

**FISCAL NOTE
PRIVATE COST**

- I. Department Title: MISSOURI DEPARTMENT OF NATURAL RESOURCES
Division Title: Environmental Quality
Chapter Title: 10 CSR 20-8.300 Manure Storage Design Regulations**

Rule Number and Title:	10 CSR 20-8.300 Manure Storage Design Regulations
Type of Rulemaking:	New rulemaking

II. SUMMARY OF FISCAL IMPACT

Estimate of the number of entities by class which would likely be affected by the adoption of the rule:	Classification by types of the business entities which would likely be affected:	Estimate in the aggregate as to the cost of compliance with the rule by the affected entities:
Four dairy operations each year	New or expanding dairies	\$20,400/yr
Ten poultry operations each year	New or expanding poultry operations	\$2,500/yr
One CAFO every three years	Expanding CAFO of any animal type, currently located within the 100 year floodplain	\$800/yr
Seven swine operations every five years	New or expanding swine operations with earthen basins	\$350/yr
Total Construction & Engineering costs		\$24,050/yr cost to comply in the aggregate

III. WORKSHEET

1. Four new or expanding grazing dairies per year, spending an extra \$4600 each to build a larger earthen manure storage basin plus \$500 for additional soils investigation.

$$4 \text{ dairies/year} \times (\$4,600 \text{ per dairy} + \$500) = \$20,400/\text{yr}$$

2. Ten poultry operations spending \$250 to conduct soils investigations per year, not previously required.

$$10 \text{ poultry operations/year} \times \$250 \text{ per operation} = \$2,500/\text{yr}$$

3. One confinement operation building a levee to protect the expanding operation from the 100-year flood per year. This is estimated to happen only once every three years.

$$\text{One (swine or other) operation} \times \$2,400/3 \text{ years} = \$800/\text{yr}$$

4. Seven swine operations every five years spending an additional \$500 on soils investigation per operation.

$$7 \text{ swine operation/5 years} \times \$250 \text{ per operation} = \$350/\text{yr}$$

IV. ASSUMPTIONS

The past five years, January 2006 through December 2010, were used as a baseline to predict what will be built in the future.

The cost of compliance for new or expanding operations is \$24,050.

All estimates were calculated based on 2010 dollar values. No inflation rate was used.

The costs are reported on an annual basis and will be incurred indefinitely.

This rule applies to new or expanding operations after the effective date of the rule. Only new operations or existing operations proposing a construction project will be impacted.

New grazing dairies will need to build larger earthen manure holding basins due to the increase in the minimum days of storage from 90 days to 180 days in an average year. Based on an analysis of the 20 grazing dairy basins permitted over the last five years, it is estimated that the rules will increase the cost of construction by about \$4,600 per basin, which represents an increase of almost 30%. At four built per year, this is a total increase of \$18,400/year. This cost will be incurred by the dairy owners.

There will be a new soil testing requirement before building earth-floored poultry houses. Forty-nine (49) permits have been issued for new sets of poultry houses in the last five years. The National Resource Conservation Service, NRCS, provides technical services on nearly all permitted poultry construction in Missouri. NRCS is assumed to incur the cost of analyzing the soil. They conduct a site visit already and therefore will not need to spend additional resources to classify the soil. If NRCS does not provide this service in the future, the private sector will need to provide the service. The expense of hiring a private soil scientist to conduct this evaluation is estimated at \$250. For the purposes of this fiscal note, NRCS is assumed to provide this service.

The permittee will have to provide the open soils pit. Assuming that a backhoe is rented for this purpose, the cost estimate is \$250 for the backhoe rental and associated costs. At approximately ten per year, the total annual cost is estimated at \$2,500.

It is assumed there is no expense associated with *not* locating a poultry building at a location the previous regulations allowed. It is assumed that producers will select a different site rather than amend the soil or install a rigid floor.

The private sector will incur expenses to build a small levee to protect an expanding operation from the 100-year floodplain. For much of Missouri this will equate to two feet of elevation above the 25 year floodplain. The total cost of the small levee is estimated at \$2,400. This will be a rare occurrence and will likely take place not more than once every three years. This leaves a total annual cost of \$800 per year. There are no assumed expenses associated with *not* locating a new CAFO below the 100 year floodplain.

The proposed regulation will increase the required level of soil testing before building an earthen basin. NRCS provided technical services for most of the seven swine basins that the Department permitted in the last five years. NRCS reports that the increased testing will not affect them as their lab costs are fixed. Their clients building earthen basins will have to spend approximately \$250 for the backhoe rental and associated costs. This was approximately five operations over the past five years, all swine operations.

The twenty dairy basins permitted in the last five years were designed by the private sector. Most private engineering firms were already using test pits and in-depth soils investigation, pre-construction. The increased cost to them for slightly more testing and preparing a soils report is estimated at \$500/basin.

There were no increased costs resulting from the following assumptions.

Like the dairy basins, swine earthen basins will face increased days of storage requirements. Unlike grazing dairy basins, most swine basins are built as anaerobic lagoons with significantly more storage capacity. Over the past five years, only seven swine earthen basins were permitted and of these only three were newly built basins. Of these seven, only one would not meet the proposed regulatory changes. This anaerobic lagoon would have needed very minor modifications at negligible expense. Based on this analysis, the additional cost to meet the increased days of storage requirements for earthen basins, other than dairy, is zero.

New swine, veal and poultry basins will need to conduct an evaluation of their storage facility in accordance with federal regulations, including running a SPAW-Soil, Plant, Atmosphere and Water, model. A proposed swine or veal basin is unlikely due to the present use of superior technology. No such basins have been proposed in the last five years. Swine earthen basins are still being permitted, including seven within the last five years. Based on previous scenarios, basins with 365 days of storage need not be evaluated as the results will always be favorable. Only swine basins proposing less than 365 days of storage will need to run this scenario. Based on the swine basins built in the last five years, this is an unlikely scenario. Due to the unlikelihood, the projected cost is zero. If such an evaluation is deemed necessary, the models will likely be run by staff at MDNR or NRCS. This additional work can be absorbed by current staff without the need to hire additional people.

Neither the private nor public sector is expected to need additional staff to comply with this rule. Any additional review time will be offset by the time savings associated with having clearer guidance as to permitting requirements.

It was initially assumed that the USDA Natural Resources Conservation Service (NRCS) would incur additional expenses as a result of this rule. Upon further analysis, the Department, in conjunction with NRCS, has been determined that the additional costs will be absorbed by current staff and resources.



November 16, 2011

Mr. Derrick Steen
cc: Melissa Bagley, John Madras
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, Missouri 65 102-01 76

Mr. Steen,

Attached you will find two sets of comments that have been drafted to provide a perspective during this rulemaking process that is not explicitly or implicitly funded by any agency or corporation with a financial stake in the operation of CAFOs in Missouri. These two attached comment documents were developed in collaboration with a professional environmental consultant who was hired specifically to address the modifications to Missouri's CAFO regulations proposed for 10 CSR 20 - 6.300 and 10 CSR 20 - 8.300. These letters address the strawman rules that were available in September of 2010. Please respond thoroughly to these comments for the benefit of our membership and the public that we represent.

Additionally I am providing the following commentary on CAFO regulation in Missouri:

We propose that instead of the 500 year(.2%), 100 year(1%), or 25 year(25%) floodplain, the alluvial soils map is used to determine flood potential. Unlike the floodplains as delineated by the FIRM's this delineation does not take into account levees, which should not be used to justify exempting CAFOs from this improved regulation. Since levees breach on a regular basis across our state during flood years, and since flood years seem to be getting more and more frequent, it seems only prudent to require that any manure storage be protected to at least the 100-year level, regardless of whether or not it is behind a levee. This will greatly reduce the risk that the damages caused by a levee breach will be compounded by flooded and failing manure storage structures. The alluvial soils map largely coincides with the 100-year flood level, represents areas that have been historically inundated (hence the alluvium), and is available statewide, unlike the DFIRM maps, which are only available for a portion of the counties in Missouri.

We propose that all operations in the alluvial plane should at least be required to meet the 100 year flood level and that all operations be modified or rebuilt to meet the new, common sense, stormwater requirements for uncovered lagoons, by the time of their next permit

renewal. All CAFOs located in the floodplains should have protections to 500 year levels since they store such incredibly toxic sludge that has the potential to spread disease during flood periods when people are at a higher risk for exposure to polluted surface waters. 150 out of 19095 permitted CAFOs are located in the Alluvial plane, which is more or less synonymous with the 100 year floodplain in Missouri. The 150 operations supposedly account for 88651 animal units according to NPDES shapefiles acquired from DNR earlier this year. It is very important that these operations be retro-fitted to meet 100-year protections as soon as possible, regardless of whether they are expanding their operation. The fact remains that they are a significant public health hazard in terms of spreading anti-biotic resistant bacteria and other pathogens to human populations, especially during flood conditions.

No rulemaking regarding CAFOs should move forward until the public has been provided with accurate information on CAFOs in Missouri. It is impossible to make informed comments without information. Unfortunately, the only publicly available GIS file on AFOs is inaccurate in terms of recording the functional capacity in animal units for all permitted CAFO operations in Missouri. The publicly available dataset on CAFOs has been modified to reflect operations that may have been shut down over violations, lawsuits, etc. but could very well be producing meat and polluting our waters despite the fact that this information has not been made accurately and fully available to the public. For example, of the 150 operations found to be in the alluvial plane, 101 operations show 0 in the column of PF_TOTALAU, despite the fact that these are in fact some of the largest operations in the state of Missouri. Without accurate information we cannot fully participate the public notice process and this file should be kept updated on a monthly basis and available to the public at all times. It is highly likely that many of the 101 operations that report zero animal units are currently in operation, but the data does not reflect this and has apparently not been updated in almost a year. It is impossible for the public to participate in this process without accurate information on the impacts purportedly being mitigated.

The proposed improvements should apply to all operations large enough to have to build a waste lagoon, regardless of the reported total animal units, which may be misreported or kept just below the 1000 AU threshold to avoid permit requirements.

This rule should be applied to all manure storage facilities, lagoons, etc. regardless of the reported number of animal units. Isn't the value of cleaning up Missouri's water from concentrated waste storage operations worth more than \$25,000/yr? According to this RIR the rule has been crafted to provide "the least costly and intrusive methods, while still providing increased consistency, efficiency, and environmental protection in the regulation of CAFOs." This seems to mean that we have chosen the cheapest possible method for protecting against the impacts of CAFOs, not the best method, the cheapest. The fiscal note for this comes to a whopping \$24,050/yr. This rule does not address the operations currently responsible for water quality and quality of life issues across our state that are not planning on expanding, apparently assuming that these operations do not pose a significant threat to the environment. The proposed improvements should apply to all operations large enough to have to build a waste lagoon, regardless of the reported total animal units, which may be misreported or kept just below the 1000 AU threshold to avoid permit requirements.

Nor does this rule address operations that are purposefully operating just below the 1000 animal unit threshold to avoid these common sense rules and other protections that come through an NPDES permitting process. Despite the fact that a hog operation with 2400 finishing hogs produces an amount of fecal waste equivalent to that produced by a city of 24,000 humans, this operation would be able to get by without a permit thanks to our inadequate and imbalanced regulation of these operations. So while public citizens are paying a lot to maintain water quality their investments in waste treatment are being undermined by these operations that take on very little responsibility for the waste they are managing. While, by the most recent data available, it appears that there are 1095 permitted CAFOs in Missouri, the NRCS reports that there were 108,000 operations raising some kind of livestock in Missouri. Surely many of these are small farms, but many are operations that have been designed to skirt the regulations and these should be weeded out and required to get permits. Through our extensive work on CAFO issues in Missouri we have found many instances where facilities have purposefully mis-reported their AU totals, this should be ameliorated by requiring they submit a bill of sale or receipt accounting for every rotation of animals being confined and fed in their operation. This should be a requirement. All operations should be required to have a state operating permit if for no other reason than to allow for a tally of animals by location to be kept for all prudent water quality and environmental quality data to be assessed when making decisions.

The department should explain why these operations can't be required to meet the same consistent standards as a new operation would be held to, despite the fact that they are just as risky and dangerous to public health and new or expanded operations. One of the major reasons to get an NPDES permit is to use technology and improved methods to eliminate pollution in our waters, the permit renewal process is designed to allow for operations to be brought into compliance with current regulations. This is the regulatory process prescribed by the Clean Water Act, and although Federal Regulations may not always make sense, this process is perfectly reasonable and is necessary for us to gradually bring the extensive water pollution in Missouri under control and to give nature a chance to coincide with our social and economic goals.

We appreciate your thorough and expeditious response to our comments, please address any deficiencies in the rule that have been brought up in our comments. Please let me know if you have any questions regarding our comments.

Thank you,



Lorin Crandall
Clean Water Program Director
Missouri Coalition for the Environment

Comments and discussion – “Manure Storage Design Regulations (10 CSR 20.8.300)”
[09/22/2010 ‘strawman’ version] – v.10 - 11/27/2010

Title The regulation title should be amended to address instead storage design regulations for “animal waste, litter and process wastewater” Use of only the term ‘manure’ means that other relevant wastes that are supposed to be regulated [such as process wastewater, feed spoiled or rejected, etc.] become candidates for applicability exclusion when they should be determinately included under EPA regulations.

Silage leachate The Strawman (SM) 8.300 draft regulation is completely silent on silage leachate, which is a significant water pollution problem. Silage leachate can contain high BOD5, COD, ammonia, phosphorus and poses serious waste management and water quality concerns. Silage leachate can be intermingled with animal waste in storage lagoons, but it should not be permitted for uncontrolled discharge to surface waters. In addition, silage leachate can also discharge to groundwater from leaking silage bunkers and other silage storage.

The rule language should be amended to ensure that all animal waste, litter and particularly the ‘process wastewater’ as defined in the federal regulation *at 40 C.F.R. §123(b)(7). MDNR’s existing 6.300 regulations on the definition of ‘process wastewater’ is close to or the same as the federal definition. In the present SM version of draft 6.300 regulations, MDNR is seeking a major change to this definition by dropping the phrase: “‘Process wastewater’ also includes any water which comes into contact with any raw materials, products, or byproducts including manure, litter, feed, milk, eggs, or bedding” that is present in both the federal and current state definition.

Dropping that phrase means that silage leachate, off-specification milk, eggs washing water, leachate from feed rejects and other wastes will no longer be clearly required for regulation. It would further mean that the proposed “manure storage” regulations would not apply to storage and management of these wastes.

Definition (1)(B)(1) The definition of “rainfall minus evaporation” should instead be for “net precipitation. The calculation method for net precipitation and the web location of the NWS atlas should appear, either in the regulation or as a footnote. The definition should be amended in a

manner that allows the source determination of net precipitation to be checked and verified against known, identified and published calculation methods and data sources as referenced. The present proposal does not provide a clear, specific and enforceable method to determine net precipitation.

Definition (1)(B)(3) The definition of ‘freeboard’ is highly unusual. Freeboard is usually defined as the distance between the top surface of the aqueous waste and the level at which a waste storage lagoon will either overtop the berm or the level of the spillway, whichever is lower. Since spillways are to be required (See section (7)(F) of draft reg on p. 8), ‘freeboard’ should be defined as the distance between the level of aqueous waste being stored and the level of the required spillway. It does not make any sense to define freeboard in the manner proposed.

Definition (1)(B)(4) The definition of ‘manure’ in the SM8.300 reg attempts to refer back to the 6.300(1)(B) regulations, but there is no definition of ‘manure’ provided in either the current or the SM versions.

Definition (1)(B)(5) The Missouri CAFO Nutrient Management Technical Standard (NMTS) is not a Missouri administrative rule, but should be in order to have enforceable rule effectiveness. CAFO operators must be under a duty to ensure that their nutrient management plans comply with the technical standard and that any such NMP ensures appropriate agricultural utilization of applied nutrients. I do not understand how the present non-rule NMTS can have that binding effect.

Definition (1)(B)(7) The definition of “Solid Manure” seems to mean that material that can be stacked without free liquids *at the time of stacking* since such materials will pass free liquids once impacted by incident precipitation if it is stored uncovered outdoors. See additional discussion on the Section (10) language on temporary stockpiling of solid manure. Water that comes into contact with a stack of solid manure should be considered process wastewater that must be land-applied according to NMP requirements.

Definition (1)(B)(9) The ten-year, ten day storm definition seems to lack the concept that the precipitation event must be considered the maximum event based on the amount of precipitation expected to occur. ‘Geographical region’ is not defined and is not clear. Citations to web URL locations to easily obtain this NWS product should be provided in footnotes or guidance.

General t - NMPs The physical facilities of waste management systems are traditionally indicated as NMP components, but the new waste regulations seem to provide new requirements which do not see waste storage facilities as part of the NMP for an individual CAFO site.

“General” (2)(A) SM8.300 draft reg contains the following passage:

“The manure storage design regulations shall be utilized by all Animal Feeding Operations which need or desire permit coverage. These regulations shall be used when evaluating all new AFOs or new or expanded components of existing AFOs after [Month Day Year (effective date of this regulation)]”

This discussion in the “general” section is exceedingly unclear about what regulatory requirements are to be imposed, how such provisions are tied to other requirements in the rule proposal, who is being regulated and for what purpose is the regulation occurring. These are not academic concerns. From the text above it is not clear how or whether the rule have binding effect on what a CAFO owner operation does and what is the role of MDNR in enforcing the requirements. While the first clause claims to require that the regulations ‘shall be utilized’ by an AFO operator who are required to be permitted, what is missing is how AFO operators who have never previously complied with requirements under the rule will be required to come into compliance and by what date. The rule should be specifically amended to address this problem and to clarify that existing facility must being waste management units into compliance.

These provisions should be redrafted to specifically address rule applicability, the binding effect of the rule on AFOs and to eliminate vague language like “shall be utilized” that clouds applicability determinations.

Permit Apps Nothing in this entire section explains the relationship between criteria and standards in this section, and application content requirements, and all of the other sections of the draft document. At the very least, permit application content requirements should be incorporated that are tied to these other sections of the rule. The applicant’s submitted documents must be requires to show how an applicant will comply with all of the applicable requirements.

Permit Apps (3)(A) The statement is made:

“The department will not examine the adequacy or efficiency of the structural or mechanical components of the waste management systems.”

Although the preamble of this section indicates the applications are subject to approval, the quoted statement above appears to have the effect of MDNR eschewing all authority to determine the adequacy under the rule of what is contained in the engineering report section of an applicant’s submittal. Taken literally, the statement might even be interpreted as an MDNR abdication from decisionmaking to disapprove demonstrably deficient applications.

Apps (3)(A)(1)(F) This section contemplates submitted application which do not meet the design criteria as contained in the rule, but never explains how or why such deviations should be allowed and under what statutory basis the design exception is being taken.

Subprovision VI under this section should be specifically modified to bar the disposal of domestic sewage in CAFO process wastewater disposal systems.

General (3) The provisions of section (3) on applications should be revised and evaluated so that provisions of the draft rules at section 5-14 having physical elements and standard requirements are properly reflected and wholly subsumed withing the application requirement provisions of section (3). Presently, it is not clear that all of the provisions at sections 5-14 will necessarily be comprehensively and completely represented in section (3) permit application submittals.

Apps Engineering Nothing here in section (3)(A) clearly connects requirements on the contents of applications to the requirements, standards and criteria shown in other sections of the proposal.

Apps (3)©) These provisions addressing NMP land application provisions should be removed from this rule section and integrated into the 6.300 rule. However, if the language is retained, the provisions shown are not adequate to address land application NMPs. There are many deficiencies in what should appear in applications as to NMP land application submittal contents that are outside of the present discussion about storage of animal waste. [to be addressed in the comments on the 6.300 rule.] Notably, (3)(C) does not require the application to identify locations of swales, concentrated flow lines, agricultural drains and field tile outlets.

Location (5)(A) Instead of saying that structures “shall be protected from inundation or damage due to the 100 year flood,” the provision should explicitly prohibit siting of structures and facilities handling animal waste within a 100 year flood plain or within a wetland.

Nothing here prohibits construction of waste storage and other animal waste managing structures in Karst Topography.

Nothing here ensures any setbacks at all for waste management facilities from drainage and agricultural ditches and concentrated flow lines leading to waters of the U.S.

Location (5)(B) The question must be asked here as to whether the named setbacks to streams apply to agricultural drains and other man-made conveyances that lead to waters of the U.S.

Sizing (6)(B)(4) This section again falls into an attempt to enact a rule with non-rule language for situations involving uncovered liquid waste management systems with less than 365 days of storage. The provisions say proposals “will be evaluated” without saying who will conduct such an evaluation, and for what purposes in relation to the permit issuance decision, with what minimum procedural and substantive standards for decisionmaking. It is not clear what the decision-making consequences are of the exercise in carrying out what is to be “evaluated.” This section should be re-written in clear rule form saying what the applicable requirements are and how MDNR will make the decision to allow such uncovered liquid animal waste storage structures.

Sizing (6)(D) Excluded from this list is other process wastewater, such as silage leachate, egg cleaning water, compost pad leachate and runoff, off-specification dairy product, etc.

Provision (6)(D)(1)(F) mentions runoff from pervious and impervious areas due to average rainfall. BMPs should instead that clean, non-animal-waste-contact water should be diverted away from animal/waste/process contact areas. Facilities that take in large amounts of precipitation to be mixed with animal waste and other process wastewater or solid waste are not exercising appropriate BMPs that are required effluent limitations under EPA regulations.

Provision (6)(D)(4)(A) makes no sense with the present draft’s articulation of the definition of “freeboard.”

Concrete The present draft contains no requirements or standards on the physical engineering design of concrete and concrete/steel liquid animal waste structures, such as those frequently used below swine operations. There are no standards for concrete construction, for leak free techniques, for reinforced concrete construction, for corrosion/rust-resistant steel reinforcing wire, sealing, etc.

Geohydro (7)(A) The permit applicants, not MDNR, should be responsible for submitting the required geohydrological investigation to be performed by a qualified geologist, at the expense of the permit applicant.

This provision does not identify what are the minimum elements of a site-specific geohydrological investigation, nor does it identify the rating scale and basis for evaluation of “severe” and what “collapse” potential items are considered, the extent of minimum site specific data necessary to support a decision of acceptability of the site and the required qualification and report elements required for those creating geohydrological investigation workproduct..

Provisions at (7)(A)(2) do not provision sufficient procedural or substantive standards for agency decisionmaking in considering liner and other requirements requirements. There must be a clear rule-text basis for the procedure and decisionmaking concerning such matters that should be transparent.

Where artificial impervious liners are required, there should be a rule basis for requirements on their installation and performance.

The implication of the last sentence of (7)(A)(2) is that post-construction testing is somehow not required in most situations. However, post-construction testing should always be considered essential and necessary to verify property construction technique and to ensure that liners and soils are meeting the required coefficient of permeability as a matter of meeting minimum performance requirements. The rule as drafted does not appear to guarantee that the criteria of maximum permeability is actually achieved in practical construction after its completion.

Provisions should be added to requirements for geohydrological investigation that addresses potential effects on neighboring wells, groundwater transport away from the production area, protection of groundwater quality from CAFO wastewater transport beneath storage structures, identification of all nearby sole source aquifer [as defined by federal Safe Drinking Water Act.], identification of karst

topography in the area of the production area, and all likely hydrological connections between animal waste and process wastewater storage facilities and surface waters of the U.S., including wetlands, that may occur.

Soils (7)(B)(2) The soils investigation here in these provision should provide recognized industry test methods or ASTM methods for all listed parameters.

Saying that the coefficient of permeability (undisturbed and remolded) should determined should be clarified to indicate that 'remolded' determinations are really to be post-construction determinations.

Nothing here specifies the number and spatial distribution of required soil test investigations. Nothing indicates a required spatial density of testing depending on the area or size or otherwise explains how many site specific soil determinations must be made or how to make such a decision.

Basin (7)(C)(3) These provisions should specifically provide for the listed setbacks from groundwater to be 4 ft from the bottom of any compacted clay liner, rather than the floor of the basin.

Construction of curtain drains around the waste storage structure may mean the allowing of a hydrological connection between wastewater percolating through the bottom of the liner and transport of such drainage to perimeter drains leading to surface waters, thus creating a regular discharge to waters of the U.S. It does not seem that MDNR has given any consideration to the issue of waste lagoon performance when a direct hydrological connection exists through trans-liner seepage to groundwater that is directly adjacent to surface waters of the U.S. or man-made conveyances (i.e. agricultural ditches) to such surface waters. Discharges to surface waters that occur through a direct hydrological connection from lagoon seepwater must be considered under CWA regulatory jurisdiction.

Slopes (7)(D) This provision is not written in suitable rule language to create a mandatory binding duty on the permit applicant/owner/operator. Phrases like "consideration should may given" are not enforceable and do not provide either procedural or substantive standards for making decisions.

Permeability (7)(G) These provisions should be amended to require post-construction field testing and verification of final waste storage lagoon bottom

in-situ soils or the compacted clay liner to be less than 1.0E-7 cm/second for the coefficient of permeability, with a suggestion of one post construction test determination per every 0.25 acre of lagoon floor according to the published ASTM test method for coefficient of permeability.

Seals (7)(G)(3)

Instead of requiring “sealing” techniques of non-identified efficacy and performance, MDNR should instead require impermeable artificial liners over compacted clay as a state standard for such waste storage basins.

Permeability

The provision at (7)(G)(3)(A) is vague and the second sentence does not make sense in the context of the regulation.. ‘....areas where potable waster might become contaminated or when the wastewater contains industrial contributions of concern....’ is too vague of a concept to be enforceable since the draft does not define any of the criteria by which a decision on such “areas” would be made. Regulations written in this manner do not properly identify MDNR to be the decisionmaker when the text of the rule calls for a decision to be made. In addition, such poorly written regulations do not properly identify the criteria for making such decisions under the rule. In the absence of a properly written rule text, the draft text potentially encourage operators to make invalid and/or non-defeasible self-determinations with high potential impacts and commitment of natural resources.

The rule must be amended to identify the final decisionmaker as MDNR as part of the permit issuance process and that it is the CAFO operator’s responsibility to submit an application and to comply with requirements for such CAFO operations. There must be clear standards of decision making. In order to protect both public health and public water resources, decisions on allowing high effluent practices must be publicly vetted proposals by the permit-authorizing authority, and decisions about which groundwater resources must be protected must be a transparent process involving final decisionmaking by a permit-authorizing authority. Finally, the public must be afforded a role for at least notice and comment about decisions affecting public water resources and the issuance of effluent permits for concentrated animal feeding operations.

Finally, MDNR should publicly identify the regulatory basis and/or rationale for the two different rates cited [500 and 3500 gallons per acre per day]. Further, MDNR should identify how using these two rates would affect both a nominal case and a separate worst case situation of waste lagoon groundwater discharge through seepage

and the potential impacts of such practices on neighboring groundwater and surface water resources. Assessing such impacts from agricultural wastewater must ensure that all relevant pollutants and potential pollutant transformation should be considered.

Liners (7)(G)(3)(B) The liner thickness rule uses both the term “liner thickness” and “seal thickness” These terms should be explained/reconciled. The basis of the equation and/or the objective of its use should be explained and justified. Since soils for liners can be obtained on an economic basis in most locations from offsite sources if they are not available onsite, MDNR’s decision to allow liners with soils of permeability coefficients greater than 1.0E-07 cm/sec appears to condone non-exemplary siting and practices which may cause greater impacts to groundwater quality than what would occur from readily available means of achieving a 1.0E-07 cm/sec coefficient of permeability.

Waste lagoon site Nothing anywhere in the regulation states that a site to be used for a waste lagoon must not be underlain with old agricultural drains/tiles which can lead to catastrophic failures and leaks of waste lagoon systems. All such tiling should be excavated from a site and such voids filled and re-compacted before final liner construction.

Alt liners (7)(J) This provision on alternate liners is not effective and does not place any minimum floor or standard on what liners are used and what performance they achieve. The approaches mentioned have widely varying efficacy on controlling seepage.

Perc losses (7)(K) There is no basis, rule or findings on when percolation tests are required and when they are not. MDNR is not identified as the decisionmaker as to percolation loss testing.

Notwithstanding the Percolation loss testing provision, such a provision cannot be a substitute for engineering verification of the coefficient of permeability by post- construction required testing by an ASTM method.

There is no clear basis or discussion of the relationship between the 1/16 inch seepage rate per day and the rates in different units shown in (7)(G)(3)(A). A rate of 1/16 acre-inch per day is 1697 gallons per acre per day. As a result, it is not clear why the 3000 gallon per acre per day rule should be considered acceptable as presently shown at (7)(G)(3)(A).

The barrel test combined evaporation/precipitation approach of the

barrel method is likely to understate evaporation during windy conditions if the liquid level in the barrel is shielded from incident wind impacts.

Sludge (7)(M) The sludge accumulation provision is not written in a manner that is enforceable. The provision should require periodic operator inspection of waste lagoons to determine the thickness of the sludge layer. The CAFO operator should be required to remove such sludge accumulations when the sludge accumulation level exceeds the design basis used to justify sizing of the waste lagoon for purposes of determining the ability of the waste lagoon to contain a 25 year 24 hour storm or a chronic precipitation event.

Tanks (8)(A) This rule should be amended to give a definition of a “pit.” There must be clarity that this section does not create another category of waste storage/management facilities that are earthen lined/bounded liquids enclosures. The requirement should provide a 4 ft margin from the bottom of tank structures to the seasonal high water table level; the way this is indicated here conflicts with the way application requirements are described for the 4 ft rule at (3)(A)(3)(E) That an applicant has installed perimeter foundation drains around a tank structure should not mean that the facility is exempted from the requirement to maintain the 4 foot margin to the water table elevation from the bottom of the facility liner. A perimeter drain installed 1 foot below the foundation floor may lower the water table, but it is not likely to lower such water table level by the amount of 4 foot. This particular subsection probably mixes discussion of perimeter drains with other types of drains in a manner not conducive to accurate description within the text of the rule.

Headspace (8)(B) Use of floating roofs and plastic covers placed directly on the surface of liquid waste lagoons are a recognized method of reducing emissions of odors, ammonia and volatile organic compounds from waste storage facilities. The rule should not interfere with that engineering approach to gas management from liquid waste lagoon facilities.

Drain (8)(D) The benefits of using of granular drain material as an engineering method for perimeter drain installation will be defeated unless the use of soil cloth for drain material boundaries to keep soil particles out of the drain material interstitial spaces is not also made a requirement.

Provisions here do not explicitly say that the soils and foundation

review must be done prior to commencement of construction of the tank or pit and that such information should be part of a construction permit application.

Concrete (9)(F) This provision is too vague to be enforceable. The concrete construction requirements of the rule should be explicitly stated with specific references to specific known and published standards which must guide all such concrete construction in Missouri.

Concrete construction of waste storage facilities should feature pre-prepared and poured wall footings, reinforced wall and floor construction and impermeable keyed-in water tight sealing at the junctures of walls and floors to prevent leaks. Concrete construction standards should feature mandatory use of corrosion/rust-resistant coated steel reinforcement rods to address damaging effects of wastewater constituents on un-coated steel reinforcements. In construction of swine or dairy confinement buildings featuring slatted flooring and waste storage beneath such flooring, support pillars for such elevated slatted flooring should be placed over pre-poured supports under such pillars to avoid tank floor cracking from shear stresses.

Construction (9)(A) The text of this provision should be recast to require diversion for precipitation run-on and run-off, rather than for “surface water” which can be mistakenly interpreted as waters of the United States. Nothing in this permit is authorizing the diversion of ambient stream surface waters. Instead, the draft should be amended to specifically cite the duty for clean water diversion shown at 40 CFR Sec. 122.42(e)(1)(iii).

Rain gage Nothing in the draft rules requires operation of a rain gage at CAFO production areas, including a requirement for the collection of daily precipitation records and the requirement to record weather conditions and precipitation in association with land application activities.

Construction (9) Subsection (9)(B) attempts to describe requirements in a single combined section that addresses all “Floors of Covered and Uncovered feedlots, poultry buildings and other solid manure storage areas.” This section should be completely reorganized to focus on each of the physical elements as they are included as being included. Standards of addressing covered vs. uncovered structures should be completely separated because uncovered structures must address process wastewater containment arising from defined storm events. Uncovered structures will always require more specifically stated

requirements to address waste containment.

(9)(C)(3)

The uncovered solid storage area requirements to “...have a runoff collection structure that meets the requirements of 10 CSR 20-800...” is vague and indeterminate since no “runoff collection” physical elements or performance requirements are described in the rule text. The need for specific physical element and minimum environmental performance requirements covering solid waste storage is essential since operation of such waste management units as part of the production area cannot be allowed to cause a discharge of process wastewater except as a direct consequence of a storm event exceeding a 25 year, 24 hour storm event.

Feedlots (9)

What is demonstrably inadequate from this rule subsection are rule requirements for the management duties, physical elements and engineering design requirements and operational standards of how an uncovered, outdoor feedlot owner/operator shall ensure that the operating unit combination of an uncovered feedlot together with the /runoff control system does not cause any discharge to surface waters except during a storm event that exceeds the level of precipitation for the CAFO site for a 25 year 24-hour storm event.

Also missing from this section are requirements for solid waste composting operations and mortality composting operations to avoid discharges from these production area facilities.

Trackout

Nothing in the draft rule addresses trackout on vehicle tires of animal wastes and subsequent discharge of such wastes to stormwaters in violation of production area no discharge requirements. Control of trackout to keep animal waste from coming into contact with precipitation may require tire washing.

Spreader cleaning

Nothing the draft rule addresses the requirement that CAFO waste entrained in spreader equipment pressure washing operation effluent must be collected for waste storage and not discharged to surface waters.

Airborne deposition

Nothing in the draft rule recognizes that ammonia evaporative and fugitive dust emissions from CAFO production area site operations can lead to physical deposition of airborne CAFO wastes to local adjacent waterbodies and wetlands, and thus constitute a discharge of CAFO waste to surface waters of the U.S. The commentator is aware of at least one case of EPA enforcement in Region V against a turkey CAFO for discharge to surface waters from CAFO ventilation dust deposited in an adjacent agricultural drain. A recent EPA

guidance document on CAFO discharges cited an example of irrigation overspray being directed towards an agricultural drain and that such an operation constituted a discharge to surface waters of the U.S.

Feedlots (9) The commentator raises the question of whether an ‘uncovered’ feedlot must be a structure in order to have applicability for the ‘floor’ requirements shown, or whether all exterior, uncovered feedlots are covered by ‘floor’ requirements.

Temp Piles (10) This entire section is intended to create an unlawful exception from waste storage facility requirements to allow waste storage in the form of temporary stockpiles of CAFO solid wastes located in land application fields with plainly insufficient runoff control and virtual certainty of a discharge.

Once a waste storage area has been established, it must be considered that it is part of a production area at a CAFO since waste storage is a necessarily a production area activity. MDNR cannot validly create an exception from requirements that a waste storage area have no discharge to surface waters except during a storm event exceeding a 25 year, 24 hour storm event. The proposed management measures outlined in section (10)(B) cannot ensure there will be no discharge to surface waters of the U.S. In addition, there is no possible interpretation that forming temporary storage piles in land application areas constitutes land application at an agronomic rate that ensures appropriate agriculture utilization of all nutrients in the waste.

The subsection (10)(B)(4) provision is an implicit admission by MDNR that such temporary storage situations discharge to waters of the U.S. Because there are no monitoring, record-keeping and reporting requirements to address temporary stockpile process wastewater generation and discharge, this provision will have little or no protective effect in actual practice.

The ‘protective measure’ provision of (10)(B)(1)(B) is neither specific, nor is it effective, and it certainly does not reflect a no discharge requirement.

The separation distances provided for the location of stockpiles and other features that use separation distances similar to those provide for agronomic land application. However, the existence of a large uncovered stockpile of animal waste solids creates a much higher potential for precipitation-induced discharge than mere agronomic

waste application under ideal field conditions. As a result these should be justification for greater separation distance requirements for stockpiles than for land application from critical water and public features.

Stream Cross (11) The provisions here address structures which are permanent stream crossings by CAFO waste conveyance piping. However, the physical practice of using temporary and mobile irrigation piping across streams in association with irrigation of waste effluents is not addressed in the draft rule text and presents the greater risks of accidents and spills because of common industry practice. Such irrigation operations should be subject to operational standards, operator training, operator tending and maintenance requirements.

Monitoring (13) This provision does not require specific elements of the case-by-case determination that must be made and the natural resource protection basis of criteria for requiring groundwater monitoring. For example, there is no citation to the need to protect existing high quality uses of groundwater, to protect groundwater with an immediate hydrological path to surface water, or to otherwise protect against rapid percolation of CAFO process wastewater to groundwater in Karst topography, etc. in relation to groundwater monitoring requirements near CAFO waste storage lagoons. The rule needs to quantify the threshold criteria and physical elements that would be present that mitigate for groundwater monitoring requirements for both production areas and land application areas. One such condition might be the present condition of excessive ammonia, nitrates and/or pathogens already known to be present in area groundwater.

The rule is written to require hydrogeological investigation only after a case-by-case decision is made citing the listed factors [presently with no quantitative threshold basis]. This properly raises the question of what level and specificity of hydrogeological investigation is necessary is properly necessary to support the initial case-by-case finding called for by the rule. This should be a required application content item, but it does not appear the proposal is written in such a manner.

Li, Barbara

From: Hoehne, John Albert (Emeritus) [hoehnej@missouri.edu]
Sent: Sunday, October 16, 2011 5:55 PM
To: Li, Barbara
Cc: Zulovich, Joseph M.
Subject: Comments

Barbara,

I have an additional comment for 10 CSR 20-6.300 that I just found. Also, if you are coming to ITWG, we should probably visit about the Mattson closure project.

10 CSR 20-8.300

- (1) Definitions. (B) 2. Freeboard - The elevation difference between the bottom of the spillway to the lowest point on the top of the berm for an earthen manure storage basin.

10 CSR 20-6.300 (1) Definitions. (B) [10] *Dry Litter* - was deleted.

10 CSR 20-6.300 (1) Definitions. (B) 11. Dry Process Waste - (very good definition). References through the regulation; however, refer to litter and not to dry process waste. I thought that was also true in for 8.300 but could not find this afternoon.

If I can answer any questions or be of any additional help, please let me know.

John

