

**PROPOSED NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT
FOR
DISCHARGES FROM CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOs) IN
OKLAHOMA (OKG010000)**

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 6

**AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)**

In compliance with provisions of the Clean Water Act, 33 USC 1251 et seq., the “Act,” owners and operators of concentrated animal feeding operations (CAFOs) in Oklahoma, except those CAFOs excluded from coverage in Part I of this permit, are authorized to discharge and must operate their facility in accordance with effluent limitations, monitoring requirements, and other provisions set forth herein.

A copy of this permit must be kept by the permittee at the site of the permitted activity.

This permit will become effective

This permit and the authorization to discharge under the NPDES shall expire at midnight

Signed this

Miguel I. Flores
Director, Water Quality Protection Division
EPA Region 6

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PART I. PERMIT AREA AND COVERAGE

A. Permit Area

This permit offers NPDES permit coverage for discharges from operations defined as concentrated animal feeding operations (CAFOs) in the State of Oklahoma (except Indian Country).

B. Permit Coverage

This permit covers any operation that meets the definition of a CAFO (see Part VII of this permit) and discharges or proposes to discharge pollutants to waters of the United States. A CAFO proposes to discharge if it is designed, constructed, operated, or maintained such that a discharge will occur. Once an operation is defined as a CAFO, the NPDES requirements for CAFOs apply with respect to all animals in confinement at the operation and all manure, litter and process wastewater generated by those animals or the production of those animals, regardless of the type of animal.

C. Eligibility for Coverage

Unless excluded from coverage in accordance with Paragraph D or F below, owners/operators of existing, currently operating animal feeding operations that are defined as CAFOs or designated as CAFOs by the Permitting Authority (See Part VII Definitions, “CAFOs”) and that are subject to 40 CFR Part 412, Subparts A (Horses and Sheep), C (Dairy Cows and Cattle Other than Veal Calves), and D (Swine, Poultry, and Veal Calves) are eligible for coverage under this permit. Eligible CAFOs may apply for authorization under the terms and conditions of this permit, by submitting a notice of intent (NOI) to be covered by this permit (see Appendix A).

CAFO owners/operators may also seek to be excluded from coverage under this permit by (1) submitting to the Director (see Part I.E.4) a notice of termination form (see Appendix B) or (2) by applying for an individual NPDES Permit in accordance with Part I.F.

D. Limitations on Coverage

The following CAFOs are not eligible for coverage under this NPDES general permit, but must apply for an individual permit:

1. CAFOs that have been notified by EPA to apply for an individual NPDES permit in accordance with Part I.F (below) of this permit.
2. CAFOs that have been notified by EPA that they are ineligible for coverage because of a past history of non-compliance.
3. Duck CAFOs.
4. Any new source subject to 40 CFR Part 412, Subpart D (Swine, Poultry, and Veal Calves).
5. Coverage under this permit is available only if your discharge will not adversely affect any species that are federally-listed as endangered or threatened (“listed”) under the Endangered Species Act (ESA) and will not result in the adverse modification or destruction of habitat that is

federally-designated as “critical habitat” under the ESA. CAFOs seeking coverage under this general permit must follow the conditions outlined in Part III.D.8 of this permit.

6. CAFOs that do not meet the National Historic Preservation Act eligibility provisions contained in Appendix C of this permit.

7. CAFOs that discharge or propose to discharge to the following:

- a. waters designated by the State as Tier 3 for antidegradation purposes under 40 CFR 131.13(a)(3), which includes the entire watershed of any waterbody designated with the limitation “Scenic River,” or any waterbody designated with the limitation “Outstanding Resource Water” (ORW) in Appendix A of the Oklahoma Water Quality Standards [785:45].
- b. waters designated by the State as Tier 2 for antidegradation purposes under 40 CFR 131.12(a), which includes any waterbody designated with the limitation “High Quality Water” (HQW) or “Sensitive Public and Private Water Supplies” (SWS) in Appendix A of the Oklahoma Water Quality Standards [785:45].

8. New dischargers to water quality impaired water (CWA, 303d list) unless the operator:

- a. prevents any discharge that contains pollutant(s) for which the waterbody is impaired, and includes documentation of procedures taken to prevent such discharge in the NMP; or
- b. documents that the pollutant(s) for which the waterbody is impaired is not present at the facility, and retains documentation of this finding with the NMP; or
- c. in advance of submitting the NOI, provides to EPA data to support a showing that the discharge is not expected to cause or contribute to an exceedance of a water quality standard, and retains such data onsite with the NMP. To do this, the operator must provide data and other technical information to EPA sufficient to demonstrate:
 - i. For discharges to waters without an EPA approved or established TMDL, that the discharge of the pollutant for which the water is impaired will meet in-stream water quality criteria at the point of discharge to the waterbody; or
 - ii. For discharges to waters with an EPA approved or established TMDL, that there are sufficient remaining wasteload allocations in an EPA approved or established TMDL to allow the facility’s discharge and that existing dischargers to the waterbody are subject to compliance schedules designed to bring the waterbody into attainment with water quality standards.

Operators are eligible under this section if they receive an affirmative determination from EPA Region 6 that the discharge will not contribute to the existing impairment, in which case the operator must maintain such determination onsite with the NMP.

9. CAFOs, other than those subject to 40 CFR Part 412, Subpart D (Swine, Poultry, and Veal Calves), with discharges subject to New Source Performance Standards (NSPS) at 40 CFR Part 412, **unless** the facility has, prior to submittal of the Notice of Intent, complied with Part I.E.5 and obtained and retains documentation of:

- a. Determination of “No Significant Impact” under the National Environmental Policy Act (NEPA); or
- b. A previously completed Environmental Impact Statement in accordance with an environmental review conducted by EPA pursuant to 40 CFR 6.102(a)(6). If the CAFO has previously completed an Environmental Impact Statement or obtained a “No Significant Impact” statement for discharges subject to NSPS, then the CAFO has met its obligation under this provision and shall retain this documentation on-site.

10. CAFOs that are located on Indian lands in Oklahoma.

E. Application for Coverage

1. Owners/operators of CAFOs seeking to be covered by this permit must:
 - a. Submit an NOI to the Director.
 - i. The owner/operator of any CAFO covered under the 1993 CAFO General Permit must submit an NOI to the Director within 90 days of the effective date of this permit;
 - ii. The owner operator of any CAFO that submitted an application for coverage under an individual permit prior to issuance of the general permit must submit an NOI to the Director within 90 days of the effective date of this permit.
 - b. Submit a nutrient management plan (NMP) with the NOI that meets the requirements of 40 CFR 122 and 412, where applicable;
2. CAFO owners/operators may submit an NOI after the applicable date in either a or b, above. Regardless of when the NOI is submitted, the CAFO’s authorization is only for discharges that occur after permit coverage is granted. The Permitting Authority reserves the right to take appropriate enforcement actions for any unpermitted discharges;
3. If a CAFO has submitted an application for coverage under an individual permit prior to issuance of this general permit and is seeking to be covered by this general permit, the CAFO must submit an NOI for coverage.
4. Signature Requirements: The NOI must be signed by the owner/operator or other authorized person in accordance with Part VI.E of this permit.
5. Submittal of NMP: An NMP must be submitted that meets the requirements of the provisions of § 122.42(e) (including, for all CAFOs subject to 40 CFR Part 412, Subpart C or Subpart D, the requirements of 40 CFR 412.4(c), as applicable) and Part III.A of this permit.
6. Where to Submit: CAFOs must 1) submit the NOI and NMP electronically via the EPA Region 6 website (see <http://www.epa.gov/region6/water/index.htm>), or 2) submit a signed copy of the NOI and NMP by mail to:

U.S. Environmental Protection Agency, Region 6
Water Quality Protection Division
Planning and Analysis Branch (6WQ-N)
1445 Ross Avenue
Dallas, TX 75202-2733

CAFOs that submit a NOI electronically will receive an electronic notification of receipt from the EPA. This notice must be signed and submitted to the above address prior to EPA making a determination of NOI completeness, in order to fulfill the signature requirements of 40 CFR 122.22.

7. Upon receipt, EPA will review the NOI and NMP to ensure that all permit requirements are fulfilled. EPA may request additional information from the CAFO owner or operator if additional information is necessary to complete the NOI and NMP or clarify, modify, or supplement previously submitted material. If EPA makes a preliminary determination that the NOI is complete, the NOI, NMP and draft terms of the NMP to be incorporated into the permit will be made available for a 30-day public review and comment period. EPA will respond to comments received during this period and, if necessary, require the CAFO owner or operator to revise the nutrient management plan. If determined appropriate by EPA, CAFOs will be granted coverage under this general permit upon written notification by EPA. (see Part III.A.2)

8. For new sources: The National Environmental Policy Act (NEPA) requires EPA to conduct an environmental review and issue an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FNSI) prior to allowing permit coverage of new sources (i.e., Large CAFOs whose construction began after April 14, 2003). New sources must submit an NOI, and a copy of the Record of Decision (where Region 6 has issued a final EIS) or the Statement of Findings (where Region 6 has issued a FNSI), no later than 30 days prior to the time the CAFO commences operation, or within 30 days after the effective date of this permit, whichever date is later.

In order for EPA to conduct the environmental review required by 40 CFR 6.101(c) and issue the EIS or FNSI, the owner/operator must complete an Environmental Information Document (EID). Information concerning preparation of an EID can be obtained by writing to Office of Planning and Coordination, EPA Region 6, 1445 Ross Ave., Dallas, TX 75202, by accessing <http://www.epa.gov/earth1r6/6en/xp/enxp4c.htm> or by contacting the Office at 214-665-7453. The complete EID must be submitted to EPA well in advance of the time coverage under this permit is sought, in order for EPA to issue the EIS or FNSI.

These NEPA and NOI requirements also apply to new source expansions of existing CAFOs. A new source expansion is one which meets the definition of a new source (40 CFR 122.2) and the new source criteria (40 CFR 122.29(a) and (b)). In order to determine if an expansion is a new source, the applicant must submit to EPA information describing the expansion (i.e., what is being expanded, how the expansion relates to the existing operation, etc.), as well as a map showing the location of the expansion. If EPA determines the expansion to be a new source, the owner/operator must prepare and submit an EID as described above. This information must be submitted to the Region 6 Environmental Clearance Office at the address listed above.

Additional information concerning this requirement may be obtained by contacting the Environmental Clearance Office at 214-665-7453.

F. Requiring an Individual Permit

1. EPA may at any time require any facility authorized by this permit to apply for, and obtain, an individual NPDES permit. EPA will notify the operator, in writing, that an application for an individual permit is required and will set a time for submission of the application. Coverage of the facility under this general NPDES permit is automatically terminated when: (1) the operator fails to submit the required individual NPDES permit application within the defined time frame; or (2) the individual NPDES permit is issued by EPA.
2. Any owner/operator covered under this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner/operator shall submit an application for an individual permit (Form 1 and Form 2B) with the reasons supporting the application to EPA. If a final, individual NPDES permit is issued to an owner/operator otherwise subject to this general permit, the applicability of this NPDES CAFO general permit to the facility is automatically terminated on the effective date of the individual NPDES permit. Otherwise, the applicability of this general permit to the facility remains in full force and effect (for example, if an individual NPDES permit is denied to an owner/operator otherwise subject to this general permit).

G. Continuation of this Permit

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with 40 CFR 122.6 and remain in force and effect. If you were authorized to discharge under this permit prior to the expiration date, any discharges authorized under this permit will automatically remain covered by this permit until the earliest of:

1. Your authorization for coverage under a reissued permit or a replacement of this permit following your timely and appropriate submittal of a complete NOI requesting authorization to discharge under the new permit and compliance with the requirements of the new permit; or
2. Your submittal of a Notice of Termination; or
3. Issuance or denial of an individual permit for the facility's discharges; or
4. A formal permit decision by EPA not to reissue this general permit, at which time EPA will identify a reasonable time period for covered dischargers to seek coverage under an alternative general permit or an individual permit. Coverage under this permit will cease at the end of this time period.

PART II. EFFLUENT LIMITATIONS AND STANDARDS

A. Effluent Limitations and Standards

The following effluent limitations apply to facilities covered under this permit:

1. Technology-based Effluent Limitations and Standards - Production area.

There shall be no discharge of manure, litter, or process wastewater pollutants into waters of the United States from the production area except as provided below.

- a. Whenever precipitation causes an overflow of manure, litter, or process wastewater, pollutants in the overflow may be discharged into waters of the United States provided:
 - i. The production area is properly designed, constructed, operated and maintained to contain all manure, litter, process wastewater plus the runoff and direct precipitation from the 25-year, 24-hour storm event for the location of the CAFO.
 - ii. The design storage volume is adequate to contain all manure, litter, and process wastewater accumulated during the storage period considering, at a minimum, the following:
 - (A) The volume of manure, litter, process wastewater, and other wastes accumulated during the storage period;
 - (B) Normal precipitation less evaporation during the storage period;
 - (C) Normal runoff during the storage period;
 - (C) The direct precipitation from the 25-year, 24-hour storm;
 - (D) The runoff from the 25-year, 24-hour storm event from the production area;
 - (E) Residuals solids after liquid has been removed;
 - (F) Necessary freeboard to maintain structural integrity; and
 - (G) A minimum treatment volume, in the case of treatment lagoons.
- b. The production area must be operated in accordance with the additional measures and records specific in Part II.A.2 of this permit.

2. Other Limitations – Applicable to the Production Area

a. Additional Requirements

In addition to meeting the requirements in Part II.A.1 of this permit, the permittee must implement the following additional requirements.

- i. Conduct weekly visual inspections of all storm water diversion devices, runoff diversion structures, and devices channeling contaminated storm water to the wastewater and manure storage and containment structures.
- ii. Conduct daily visual inspections of all water lines, including drinking water and cooling water lines.
- iii. Install a depth marker in all open surface liquid impoundments. The depth marker must clearly indicate the minimum capacity necessary to contain the runoff and direct precipitation of the 25-year, 24-hour rainfall event. The marker shall be visible from the top of the levee.

- iv. Conduct weekly inspections of the manure, litter, and process wastewater impoundments noting the level as indicated by the depth marker installed in accordance with Part II.A.2.a.iii.
- v. Correct any deficiencies that are identified in daily and weekly inspections in a timely manner.
- vi. Properly dispose of dead animals within three (3) days unless otherwise provided for by the Director. Mortalities must not be disposed of in any liquid manure or process wastewater system that is not specifically designed to treat animal mortalities. Animals shall be disposed of in a manner to prevent contamination of waters of the United States or creation of a public health hazard.
- vii. Maintain complete on-site records documenting implementation of all required additional measures, including the records specified for Operation and Maintenance in Part IV.C, Table IV-A, for a period of at least five years.
- viii. CAFOs constructing new wastewater retention facilities or modifying existing retention facilities shall insure that all retention structure design and construction will, at a minimum, be in accordance with the technical standards developed by the Natural Resources Conservation Service (NRCS). The permittee must use those standards that are current at the time of construction. Existing retention facilities that have been properly maintained and show no signs of structural breakage will be considered to be properly constructed.

The following minimum design standards are required for construction and/or modification of a retention facility: (a) soils used in the embankment shall be free of foreign material such as trash, brush, and fallen trees; (b) the embankment shall be constructed in lifts or layers no more than 6 inches thick and compacted at optimum moisture content; (c) all embankment walls shall be stabilized to prevent erosion or deterioration; (d) site specific variation in embankment construction shall be in accordance with NRCS design standards.

- ix. A rain gauge shall be kept on site and properly maintained. A log of all measurable rainfall events shall be kept with the NMP.
- x. Open lots and associated wastes shall be isolated from run-on from outside surface drainage by ditches, dikes, berms, terraces or other such structures designed to carry peak flows expected at times when a 25-year, 24-hour rainfall event occurs. Clean water and flood waters must be diverted from contact with feedlots and holding pens, and manure and/or process wastewater storage systems. Clean water includes rain falling on the roofs of facilities, runoff from adjacent land, or other sources.
- xi. Facilities shall not expand operations, either in size or numbers of animals, prior to amending or enlarging the waste handling procedures and structures to accommodate any additional wastes that will be generated by the expanded operations.

b. Prohibitions

- i. All discharges to retention facilities shall be composed entirely of manure, litter or process wastewater from the proper operation and maintenance of a CAFO, and the precipitation from the animal confinement, storage and handling areas. The disposal of other materials into these retention facilities is prohibited.
- ii. Animals confined at the CAFO shall not be allowed to come into direct contact with waters of the United States. Fences may be used to restrict such access.
- iii. New facilities shall not be built in a water of the United States as defined in 40 CFR 122.2.

- iv. Wastewater containment facilities, manure storage facilities or holding pens may not be located in the 100-year flood plain unless the facility is protected from inundation and damage that may occur during that flood event.
- v. There shall be no water quality impairment to public and neighboring private drinking water wells due to waste handling at the permitted facility. Facility wastewater retention facilities, holding pens or waste/wastewater disposal sites shall not be located closer to public or private water wells than the distances specified by State regulations or health codes, or State issued permits for that facility.
- vi. There shall be no discharge of manure, litter or process wastewater from retention or control structures to groundwater with a direct hydrologic connection to surface waters of the United States (see Part III.D).
- vii. There shall be no discharge of rainfall runoff from manure or litter storage piles.

3. Water Quality-based Effluent Limitations and Standards - Production Area

EPA has established the following permit conditions to protect water quality standards.

- a. Discharges to Water Quality Impaired Waters.
 - i. If the CAFO discharges or proposes to discharge to an impaired water with an EPA approved or established TMDL, EPA will inform the facility if any additional limits or controls are necessary for the discharge to be consistent with the assumptions of any available wasteload allocation in the TMDL, or if coverage under an individual permit is necessary in accordance with Part I.D.1. Any additional limits or controls shall be included in the NMP.
 - ii. If the CAFO discharges or proposes to discharge to an impaired water without an EPA approved or established TMDL, EPA will inform the facility if any additional limits or controls are necessary to meet water quality standards, or if coverage under an individual permit is necessary in accordance with Part I.D.1. Any additional limits or controls shall be included in the NMP.
 - iii. If a CAFO's authorization for coverage under this permit relied on Part I.D.8 for a new discharge to an impaired water, the facility must implement and maintain any control measures or conditions on its site that enabled the CAFO to become eligible under Part I.D.8., and shall include these control measures or conditions in its NMP.
- b. Requirements for Areas with Waters of Recreational and/or Ecological Significance

If the CAFO discharges or proposes to discharge directly to waters within the boundaries of areas listed in Table 1 of Appendix B of Oklahoma Water Quality Standards [785:45] (National and State Parks, National Forests, Wildlife Areas, Wildlife Management Areas, and Wildlife Refuges), EPA may notify the facility that additional analyses, control measures, or other permit conditions are necessary to ensure that the recreational and ecological significance of these waters will be maintained, or notify you that an individual permit application is necessary in accordance with Part.I.D.1. Any such additional requirements shall be included in the NMP.

c. Water Quality-Based Reduction Plan

If discharges occur as a result of storm events smaller than the 25-year, 24-hour event more than once in three (3) years, the discharger must prepare a plan to minimize the frequency of discharges caused by such rainfall events. The plan, which may consist of operational and/or structural modifications, must be developed within six (6) months and implemented within one (1) year of the discharge event triggering action under this section.

d. Corrective Actions

If at any time the facility becomes aware, or EPA determines, that any discharge causes or contributes to an exceedance of applicable water quality standards, the facility must take corrective action as required in Part II.A.3.a. Any changes to the NMP required to fulfill the requirements of Part II.A.3.a shall be done in accordance with Part III.A.6.

4. Technology-based Effluent Limitations and Standards - Land Application Areas under the Control of the CAFO Owner/Operator.

Permittees that apply manure, litter, or process wastewater to land under the permitted CAFO's ownership or operational control must implement an NMP in accordance with the requirements specified below and in Part III.A of this permit.

The NMP that is developed and implemented must incorporate the following requirements:

- a. Nutrient transport potential. The NMP must incorporate elements in paragraphs c – h below based on a field-specific assessment of the potential for nitrogen and phosphorus transport from the field.
- b. Form, source, amount, timing, and method of application. The NMP must address the form, source, amount, timing, and method of application of nutrients on each field to achieve realistic production goals, while minimizing nitrogen and phosphorus movement to surface waters.
- c. Determination of application rates. Application rates for manure, litter, or process wastewater must minimize phosphorus and nitrogen transport from the field to surface waters in compliance with the most current Oklahoma NRCS Conservation Practice Standard Code 590 (Nutrient Management).(see Appendix E)
- d. Site specific conservation practices. Identify appropriate site specific conservation practices to be implemented, including as appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the United States.
- e. Protocols to land apply manure, litter or process wastewater. Establish protocols to land apply manure, litter or process wastewater in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter or process wastewater.
- f. Manure and soil sampling. Manure must be analyzed at least once annually for nitrogen and phosphorus content. Soil must be analyzed at least once every five years. The results of these analyses must be used in determining application rates for manure, litter, and process wastewater;
- g. Inspection of land application equipment for leaks. Equipment used for land application of manure, litter, or process wastewater must be inspected periodically for leaks;

- h. Land application setback requirements. Manure, litter, or process wastewater must not be applied closer than one-hundred (100) feet to any down-gradient water of the United States, open tile line intake structures, sinkholes, agricultural well heads, or other conduits to waters of the United States. The permittee may elect to use a 35-foot vegetated buffer where applications of manure, litter, or process wastewater are prohibited as an alternative to the 100-foot setback to meet this requirement. As a compliance alternative, the permittee may demonstrate that a set-back or buffer is not necessary because implementation of alternative conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions that would be achieved by the 100-foot setback.
- i. Complete on-site records including the site specific NMP must be maintained to document implementation of all required land application practices. Such documentation must include the records specified for Soil and Manure/Wastewater Nutrient Analyses and Land Application in Part IV.C, Table IV-A.

5. Other Limitations for Land Application under the Control of the CAFO Owner/Operator

- a. Additional BMPs to control discharges from land application areas.
 - i. Areas shall be identified that, due to topography, activities or other factors, have a high potential for significant soil erosion. Where these areas have the potential to contribute pollutants to waters of the United States, measures used to limit erosion and pollutant runoff shall be identified.
 - ii. Irrigation Control: Irrigation systems shall be managed so as to reduce or minimize (a) ponding or puddling of wastewater on land application fields, (b) contamination of ground and surface water and (c) the occurrence of nuisance conditions such as odors and flies.
- b. Prohibitions.
 - i. There shall be no discharge of manure, litter, or process wastewater to a water of the United States from a CAFO as a result of the application of manure, litter or process wastewater to land areas under the control of the CAFO, except where it is an agricultural storm water discharge. Where manure, litter, or process wastewater has been applied in accordance with the CAFO's site specific NMP, a precipitation related discharge of manure, litter or process wastewater from land areas under the control of the CAFO is considered to be an agricultural storm water discharge.
 - ii. Waste shall not be applied to land when the ground is frozen, saturated with water, or during rainfall events.
- c. Water Quality-Based Effluent Limitations. There shall be no dry weather discharges from land application sites.

6. Other Limitations

- a. Process wastewater discharges from outside the production area, including: washdown of equipment that has been in contact with manure, raw materials, products or byproducts that occurs outside of the production area; runoff of pollutants from raw materials, products or byproducts (such as manure, feathers, litter, bedding and feed) from the CAFO that have been spilled or otherwise deposited outside the production area that have the potential to contribute pollutants to waters of the United States shall be identified in the NMP. The NMP shall identify measures necessary to meet applicable water quality standards.
- b. Discharges that do not meet the definition of process wastewater, including: discharges associated with feed, fuel, chemical, or oil spills, equipment repair, and equipment cleaning where the equipment has not been in contact with manure, raw materials, products or byproducts; domestic wastewater discharges and have potential to contribute pollutants to waters of the United States shall be identified in the NMP. The NMP shall identify measures necessary to meet applicable water quality standards.
- c.. Storm water discharges that are not addressed under the effluent limitations in Part II above remain subject to applicable industrial or construction storm water discharge requirements.

In addition to meeting the above effluent limitations (Part II.A), the permittee must comply with the special conditions established in Part III of this permit.

B. Other Legal Requirements

No condition of this permit shall release the permittee from any responsibility or requirements under other statutes or regulations, Federal, State/Indian Tribe or Local.

PART III. SPECIAL CONDITIONS

A. Requirements for Developing and Implementing Nutrient Management Plans (NMPs)

The permittee shall develop, submit, and implement a site specific NMP. The NMP shall specifically identify and describe practices that will be implemented to assure compliance with the effluent limitations and special conditions of this permit (Parts II.A and III.A). The NMP must be developed in accordance with the Oklahoma NRCS Conservation Practice Standard Code 590 (Nutrient Management) (see Part II.A and Appendix E).

1. Schedule. The completed NMP must be submitted to EPA along with the notice of intent for CAFOs seeking coverage under this permit. The permittee shall implement its NMP as soon as possible and modify as necessary upon authorization under this permit in accordance with 40 CFR 122.23(h).

2. NMP Review and Terms.
 - a. Upon receipt of the NMP, EPA will review the NMP. If additional information is necessary to complete the NMP, or to clarify, modify, or supplement previously submitted material, the Director may request such information from the CAFO owner or operator.

 - b. The NMP will be used by the Director to identify site specific permit terms, to include the items outlined in Part III.A.3, to be incorporated into this permit. The Director will identify site specific permit terms with respect to protocols for the land application of manure, litter, and process wastewater. The Director will also identify site specific permit terms with respect to manure, litter, and process wastewater storage capacities and site specific conservation practices based on the CAFO's NMP to the extent that such terms are necessary to support the application rates expressed in the NMP.

 - c. When the Director determines that the NMP and notice of intent are complete, the Director will publish the notice of intent submitted by the CAFO, including the CAFO's NMP, and the terms of the NMP to be incorporated into the permit, as determined by the Director, at the EPA Region 6, Water Quality Protection Division internet site (<http://www.epa.gov/earth1r6/6wq/6wq.htm>). The Director will notice the proposal to grant coverage under the permit and the availability of the aforementioned documentation for public review and comment. The notice will also provide the opportunity for a public hearing on the NOI and draft NMP in accordance with 40 CFR 124.11 and 12.

 - d. The period of time for the public to comment and request a hearing on the proposed terms of the NMP to be incorporated into the permit shall be thirty (30) days.

 - e. The Director will respond to comments received during the comment period, as provided in 40 CFR 124.17, and, if necessary, require the CAFO owner or operator to revise the NMP in order to be granted permit coverage.

 - f. When the Director authorizes the CAFO owner or operator to discharge under the general permit, the terms of the NMP shall be incorporated as terms and conditions of the permit for the CAFO. The Director will notify the CAFO owner or operator that coverage has been authorized and of the applicable terms and conditions of the permit. Notice of

permit coverage and site specific permit terms will be provided to the permittee in a written permit authorization notice.

- g. Each CAFO covered by this permit must comply with the site specific permit terms established by the Director based on the CAFO's site specific NMP.
3. NMP Content. The site specific NMP at a minimum must include practices and procedures necessary to implement the applicable effluent limitations and standards. In addition, the NMP and each CAFO covered by this permit must, as applicable:
- a. Ensure adequate storage of manure, litter, and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities. All wastewater and manure containment structures shall at a minimum be designed, constructed, operated, and maintained in accordance with the standards of the *Natural Resources Conservation Service, Field Office Technical Guide*. Storage capacity must be sufficient to meet the minimum requirements of Part II.A.1, as stated above, and also must be sufficient to allow the CAFO to comply with the land application schedule specified in the NMP. To the extent that the NMP depends on off-site transport or other means of handling to ensure adequate storage capacity this must be described in the NMP.

If the CAFO needs to maintain storage capacity that exceeds the minimum capacity requirements of Part II.A.1, as stated above, to comply with the land application provisions of the NMP or Part II.A., the storage capacity shall become a term of this permit and EPA will develop site specific terms based on the submitted NMP.
 - b. Ensure that clean water is diverted, as appropriate, from the production area. Any clean water that is not diverted and comes into contact with raw materials, products, or byproducts including manure, litter, process wastewater, feed, milk, eggs, or bedding is subject to the effluent limitations specified in Part II.A of this permit. Where clean water is not diverted the permittee must document that it has been accounted for in meeting the requirement to ensure adequate storage capacity as a condition of this permit. Clean water includes, but is not limited to, rain falling on the roofs of facilities and runoff from adjacent land.
 - c. Ensure that chemicals and other contaminants handled on-site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals or contaminants. All wastes from dipping vats, pest and parasite control units, and other facilities utilized for the management of potentially hazardous or toxic chemicals shall be handled and disposed of in a manner sufficient to prevent pollutants from entering the manure, litter, or process wastewater retention structures or waters of the United States. Include references to any applicable chemical handling protocols and indicate that other protocols included in the NMP will be reviewed.
 - d. Identify appropriate site specific conservation practices to be implemented, including as appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the United States and specifically, to minimize the runoff of nitrogen and phosphorus. Each CAFO covered by this permit must implement the site specific conservation practices determined by the Permitting Authority to be a term of this permit, as specified in the CAFO's permit authorization notice. These practices may include, but are not limited to, residue management, conservation crop rotation, grassed waterways, strip cropping,

vegetated buffers, riparian buffers, setbacks, terracing, and diversions. The plan shall identify areas which, due to topography, activities, or other factors, have a high potential for significant erosion. Where these areas have the potential to contribute pollutants to waters of the United States, the NMP shall identify measures used to limit erosion and pollutant runoff.

- e. Identify protocols for appropriate testing of manure, litter, process wastewater, and soil. Manure, wastewater and soil sampling must be conducted in accordance with the requirements of Parts III.A.7.d and e.
- f. Establish protocols to land apply manure, litter, or process wastewater in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater.

The permittee's site specific NMP shall document the calculation of land application rates of manure, litter, or process wastewater. The Oklahoma NRCS Conservation Practice Standard 590 (Nutrient Management) shall be used for calculating these rates (see Appendix E). The rate calculation shall address the form, source, amount, timing, and method of application on each field to achieve realistic production goals while minimizing nitrogen and phosphorus movement to surface water. The rate calculation shall be based on the results of a field specific assessment of the potential for nitrogen and phosphorus transport from the field to surface waters using the assessment tools and procedures described in Oklahoma NRCS Conservation Practice Standard 590 (Nutrient Management), including the Oklahoma Phosphorus Assessment Worksheet (see Oklahoma NRCS Conservation Practice Standard 590 (Nutrient Management), Tables 8 and 9).

The permittee shall comply with site specific permit terms established by the Director for land application of manure, litter, and process wastewater. Development of site specific terms shall be based upon the Director's review of the NMP submitted in accordance with the requirements of parts I.E and III.A of this permit. To support the development of site specific terms the submitted NMP must include at a minimum:

- i. The fields available for land application;
 - ii. Field-specific rates of application properly developed as specified in Part III.A.3.g below in the following chemical forms: (1) nitrogen (N) and (2) phosphorus oxide (P_2O_5);
 - iii. The information specified in Part III.A.3.g below for the selected approach; and
 - iv. Any additional information necessary to assess the adequacy of the application rates included in the NMP.
- g. Application rates shall be expressed in the NMP consistent with one of the following two approaches.
 - i. Linear Approach
 - (A) The Linear Approach expresses rates of application as pounds of nitrogen and phosphorus. Permittees selecting the linear approach to address rates of application must include in the NMP submitted to the Director the following information for each crop, field, and year covered by the NMP, which will be used by the Director to establish site specific permit terms:

- (1) The maximum application rate (pounds/acre/year of nitrogen and phosphorus) from manure, litter, and process wastewater;
 - (2) The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field. The potential for nitrogen and phosphorus transport shall be determined using the assessment tools and procedures described in Oklahoma NRCS Conservation Practice Standard 590 (Nutrient Management), including the Oklahoma Phosphorus Assessment Worksheet (see Oklahoma NRCS Conservation Practice Standard 590 (Nutrient Management), Tables 8 and 9). The CAFO must specify any conservation practices used in calculating the risk rating;
 - (3) The crops to be planted or any other uses of a field such as pasture or fallow fields;
 - (4) The realistic annual yield goal for each crop or use identified for each field;
 - (5) The nitrogen and phosphorus recommendations from EPA approved sources for each crop or use identified for each field;
 - (6) Credits for all residual nitrogen in each field that will be plant-available;
 - (7) Consideration of multi-year phosphorus application. For any field where nutrients are applied at a rate based on the crop phosphorus requirement, the NMP must account for single-year nutrient applications that supply more than the crop's annual phosphorus requirement;
 - (8) Accounting for all other additions of plant available nitrogen and phosphorus (i.e., from sources other than manure, litter, or process wastewater or credits for residual nitrogen);
 - (9) The form and source of manure, litter, and process wastewater to be land-applied;
 - (10) The timing and method of land application. The NMP also must include storage capacities needed to ensure adequate storage that accommodates the timing indicated;
 - (11) The methodology that will be used to account for the amount of nitrogen and phosphorus in the manure, litter, and wastewater to be applied; and
 - (12) Any other factors necessary to determine the maximum application rate identified in accordance with the Linear Approach.
- (B) Large CAFOs using the Linear Approach must calculate the maximum amount of manure, litter, and process wastewater to be land applied at least once each year using the results of the most recent representative manure, litter, and process wastewater tests of nitrogen and phosphorus. Such representative tests must be taken within twelve (12) months of the date of land application.

ii. Narrative Rate Approach

- (A) The Narrative Rate Approach expresses a narrative rate of application that results in the amount, in tons or gallons, of manure, litter, and process wastewater to be land applied. Permittees selecting the narrative rate approach to address rates of application must include in the NMP submitted to the Director the following information for each crop, field, and year covered by the NMP, which will be used by the Director to establish site specific permit terms:
- (1) The maximum amounts of nitrogen and phosphorus that will be derived from all sources of nutrients (pounds/acre for each crop and field);
 - (2) The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field. The potential for nitrogen and phosphorus transport shall be determined using the assessment tools and procedures described in Oklahoma NRCS Conservation Practice Standard 590 (Nutrient Management), including the Oklahoma Phosphorus Assessment Worksheet (see Oklahoma NRCS Conservation Practice Standard 590 (Nutrient Management), Tables 8 and 9) The CAFO must specify any conservation practices used in calculating the risk rating;
 - (3) The crops to be planted in each field or any other uses of a field such as pasture or fallow fields, including alternative crops if applicable. Any alternative crops included in the NMP must be listed by field, in addition to the crops identified in the planned crop rotation for that field;
 - (4) The realistic annual yield goal for each crop or use identified for each field for each year, including any alternative crops identified;
 - (5) The nitrogen and phosphorus recommendations from EPA approved sources for each crop or use identified for each field, including any alternative crops identified;
 - (6) The methodology (including formulas, sources of data, protocols for making determination, etc.) and actual data that will be used to account for: (a) the results of soil tests required by Parts II.A.4.f and III.A.3.e, (b) credits for all nitrogen in the field that will be plant-available, (c) the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied, (d) consideration of multi-year phosphorus application (for any field where nutrients are applied at a rate based on the crop phosphorus requirement, the methodology must account for single-year nutrient applications that supply more than the crop's annual phosphorus requirement), (e) accounting for all other additions of plant available nitrogen and phosphorus to the field (i.e., from sources other than manure, litter, or process wastewater or credits for residual nitrogen), (f) the timing and method of land application, and (g) volatilization of nitrogen and mineralization of organic nitrogen.

- (7) Any other factors necessary to determine the amounts of nitrogen and phosphorus to be applied in accordance with the Narrative Rate Approach.
 - (B) NMPs using the Narrative Rate Approach must also include the following projections, which will not be used by the Director in establishing site specific permit terms:
 - (1) Planned crop rotations for each field for the period of permit coverage;
 - (2) Projected amount of manure, litter, or process wastewater to be applied;
 - (3) Projected credits for all nitrogen in the field that will be plant-available;
 - (4) Consideration of multi-year phosphorus application;
 - (5) Accounting for other additions of plant-available nitrogen and phosphorus to the field; and
 - (6) The predicted form, source, and method of application of manure, litter, and process wastewater for each crop.
 - iii. Identify and maintain all records necessary to document the development and implementation of the NMP and compliance with the permit.
4. Signature. The NMP shall be signed by the owner/operator or other signatory authority in accordance with Part VI.E (Signatory Requirements) of this permit.
 5. A current copy of the NMP shall be kept on site at the permitted facility in accordance with Part IV.C of this permit and provided to the Permitting Authority upon request.
 6. Changes to the nutrient management plan
 - a. When a CAFO owner or operator covered by this permit makes changes to the CAFO's NMP previously submitted to the Director, the CAFO owner or operator must provide the Director with the most current version of the CAFO's NMP and identify changes from the previous version, with the exception of annual calculations of application rates for manure, litter, and process wastewater as required in Parts III.A.3.g.i(B) (for the Linear Approach) and III.A.3.g.ii(C) (for the Narrative Rate Approach), which are not required to be submitted to the Director.
 - b. When changes to a NMP are submitted to the Director, the Director will review the revised NMP to ensure that it meets the requirements of Parts II.A.4 and III.A.3. If the Director determines that the changes to the NMP necessitate revision to the terms of the NMP incorporated into the permit issued to the CAFO, the Director must determine whether such changes are substantial. Substantial changes to the terms of a NMP incorporated as terms and conditions of a permit include, but are not limited to:
 - i. Addition of new land application areas not previously included in the CAFO's NMP, except that if the added land application area is covered by the terms of a NMP incorporated into an existing NPDES permit and the permittee complies with such terms when applying manure, litter, and process wastewater to the added land;
 - ii. For NMPs using the Linear Approach, changes to the field-specific maximum annual rates of land application (pounds of N and P from manure, litter, and

- process wastewater). For NMPs using the Narrative Rate Approach, changes to the maximum amounts of nitrogen and phosphorus derived from all sources for each crop;
- iii. Addition of any crop or other uses not included in the terms of the CAFO's NMP; and
 - iv. Changes to site specific components of the CAFO's NMP, where such changes are likely to increase the risk of nitrogen and phosphorus transport to waters of the United States
- c. If the Director determines that the changes to the terms of the NMP are not substantial, the Director will include the revised NMP in the permit record, revise the terms of the permit based on the site specific NMP, and notify the permittee and the public of any changes to the terms of the permit based on revisions to the NMP.
 - d. If the Director determines that the changes to the terms of the NMP are substantial, the Director will notify the public, make the proposed changes and the information submitted by the CAFO owner or operator available for public review and comment, and respond to all significant comments received during the comment period. The public notice will be provided using the guidelines described in Part III.A.2.c above. The Director may require the permittee to further revise the NMP, if necessary. Once the Director incorporates the revised terms of the NMP into the permit, the Director will notify the permittee of the revised terms and conditions of the permit.

7. Requirements for implementing nutrient management plans

- a. Permittee must have adequate storage of manure, litter, and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities.
- b. Clean water must be diverted, as appropriate from the production area.
- c. Chemicals and other contaminants handled on-site may not be disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants.
- d. **Manure, Litter, and Process Wastewater Testing.** Representative samples of manure, litter, and process wastewater shall be collected and analyzed for nutrient content, including nitrogen and phosphorus, at least annually, in accordance with the protocols established in the NMP under Part III.A.3.g. Manure sampling and analysis shall be conducted as close to the time of application as possible. Separate samples shall be taken from each manure storage site that represents a different animal type, size, age, diet, management practice, type of manure storage and handling, production period, or other factor that could affect nutrient values. Steps must be taken to ensure the collection of a representative sample. The sample shall be sent for analysis as soon after collection as practical and, where necessary, specific preservation procedures shall be utilized to prevent the degradation of the sample.
- e. **Soil Testing.** Representative samples of soil for all fields under the control of the CAFO operator where manure and wastewater may be applied must be collected and analyzed for phosphorus content at least once every five (5) years, in accordance with the protocols established in the NMP under Part III.A.3.g. Representative samples shall be collected from each field included in the NMP. Each sample area should consist of only one

general soil type or condition. If a field varies in slope, color, drainage or texture, and if those areas can be fertilized separately, collect and analyze a separate sample for each area. Samples shall be collected according to Oklahoma NRCS or Oklahoma State University Extension guidance. Avoid sampling in old fence rows, dead furrows, low spots, feeding areas, and other areas that might not provide representative results. Soil samples shall not be taken when the soil is wet or frozen or shortly after applying lime or fertilizer. Collect at least 10 soil cores for small areas and up to thirty (30) cores for larger fields. Take the soil cores randomly throughout the sampling area and combine the cores into a single sample. An individual sample should represent no more than twenty (20) acres except when soils, past management, and cropping history are uniform.

In all cases the sampling frequency for manure, litter, process wastewater and soil shall be consistent with the Oklahoma NRCS Conservation Practice Standard Code 590 (Nutrient Management).

- f. CAFOs that use the Narrative Rate Approach must calculate maximum amounts of manure, litter, and process wastewater to be land applied at least once each year using the methodology specified in the NMP pursuant to Part III.A.3.g.ii(A) before land applying manure, litter, and process wastewater. Such calculations must rely on the following data:
 - i. A field-specific determination of soil levels of nitrogen and phosphorus. For nitrogen, the determination must include a concurrent determination of nitrogen that will be plant available. For phosphorus, the determination must include the results of the most recent soil test conducted as required in Parts II.A.4.d and III.A.3.g.
 - ii. The results of the most recent representative manure, litter, and process wastewater tests for nitrogen and phosphorus taken within 12 months of the date of land application, as required in Parts II.A.4.d and III.A.3.g, in order to determine the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied.
8. Certified Specialists to Develop NMPs. EPA promotes and supports the use of certified specialists to develop or modify NMPs, which will help to ensure the quality of NMPs. EPA encourages CAFO owners/operators to use these certified specialists to prepare their NMPs. Although a certified specialist may be used, CAFO owners/operators are solely responsible for assuring their NMPs comply with all permit conditions and are properly implemented.

B. Facility Closure Requirements

The following conditions shall apply to the closure of lagoons and other earthen or synthetic lined basins and other manure, litter, or process wastewater storage and handling structures:

1. Closure of Lagoons and Other Surface Impoundments
 - a. No lagoon or other earthen or synthetic lined basin shall be permanently abandoned.
 - b. Lagoons and other earthen or synthetic lined basins shall be maintained at all times until closed in compliance with this section.
 - c. All lagoons and other earthen or synthetic lined basins must be properly closed if the permittee ceases operation. In addition, any lagoon or other earthen or synthetic lined basin that is not in use for a period of twelve (12) consecutive months must be properly closed unless the facility is financially viable, intends to resume use of the structure at a

later date, and either: (1) maintains the structure as though it were actively in use, to prevent compromise of structural integrity; or (2) removes manure and wastewater to a depth of one foot or less and refills the structure with clean water to preserve the integrity of the synthetic or earthen liner. In either case, the permittee shall submit a written report to EPA within thirty (30) days of basin closure detailing the actions taken, and shall conduct routine inspections, maintenance, and record keeping as though the structure were in use. Prior to restoration of use of the structure, the permittee shall notify EPA in writing and provide the opportunity for inspection.

- d. All closure of lagoons and other earthen or synthetic lined basins must be consistent with Oklahoma NRCS Conservation Practice Standard Code 360 (Closure of Waste Impoundments). Consistent with this standard the permittee shall remove all waste materials to the maximum extent practicable and dispose of them in accordance with the permittee's nutrient management plan, unless otherwise authorized by EPA.
- e. Unless otherwise authorized by EPA, completion of closure for lagoons and other earthen or synthetic lined basins shall occur as promptly as practicable after the permittee ceases to operate or, if the permittee has not ceased operations, twelve (12) months from the date on which the use of the structure ceased, unless the lagoons or basins are being maintained for possible future use in accordance with the requirements above.

2. Closure Procedures for Other Manure, Litter, or Process Wastewater Storage and Handling Structure

No other manure, litter, or process wastewater storage and handling structure shall be abandoned. Closure of all such structures shall occur as promptly as practicable after the permittee has ceased to operate, or, if the permittee has not ceased to operate, within twelve (12) months after the date on which the use of the structure ceased. To close a manure, litter, or process wastewater storage and handling structure, the permittee shall remove all manure, litter, or process wastewater and dispose of it in accordance with the permittee's nutrient management plan, or document its transfer from the permitted facility in accordance with off-site transfer requirements specified in Part III.C below, unless otherwise authorized by EPA.

C. Requirements for the Transfer of Manure, Litter, and Process Wastewater to Other Persons

1. In cases where CAFO-generated manure, litter, or process wastewater is sold or given away the permittee must comply with the following conditions:
 - a. Maintain records showing the date and amount of manure, litter, and/or process wastewater that leaves the permitted operation;
 - b. Record the name and address of the recipient;
 - c. Provide the recipient(s) with representative information on the nutrient content of the manure, litter, and/or process wastewater; and
 - d. These records must be retained on-site, for a period of five (5) years, and be submitted to the Permitting Authority upon request.

D. Additional Special Requirements

1. Liner Requirement: The permittee shall document that no direct hydrologic connection exists between the contained wastewater and surface waters of the United States. Where the permittee cannot document that no direct hydrologic connection through ground water exists, the ponds, lagoons and basins of the containment facilities must have a liner which will prevent the potential contamination of surface waters.

- a. Documentation of no direct hydrologic connection. The permittee can document lack of hydrologic connection by either: (1) documenting that there will be no significant leakage from the retention structure; or (2) documenting that any leakage from the retention structure would not migrate to surface waters. For documentation of no significant leakage, in-situ materials must, at a minimum, meet the minimum criteria for hydraulic conductivity and thickness described in 4.b, below. Documentation that leakage will not migrate to a surface water must include maps showing ground water flow paths, or that the leakage enters a confined environment. This documentation must be certified in writing by a NRCS engineer or a Professional Engineer and must include information on the hydraulic conductivity and thickness of the natural materials underlying and forming the walls of the containment structure up to the wetted perimeter.
 - b. Liner Construction. Liners constructed and maintained in accordance with NRCS design specifications shall be considered to prevent hydrologic connection which could result in the contamination of surface waters. Where no site-specific assessment has been done by a NRCS engineer or Professional Engineer, the liner shall be constructed to have hydraulic conductivities no greater than 1×10^{-7} cm/sec, with a thickness of 1.5 feet or greater or its equivalency in other materials.
 - c. Liner Maintenance. The permittee must maintain the liner to inhibit infiltration of wastewaters. Liners shall be protected from animals by fences or other protective devices. No trees shall be allowed to grow within the potential distance of the root zone. Any mechanical or structural damage to the liner must be evaluated by a Professional Engineer within thirty (30) days of the damage. Documentation of liner maintenance shall be kept with the Nutrient Management Plan (NMP). The permittee shall have a NRCS engineer or Professional Engineer review the documentation and do a site evaluation a minimum of once every five (5) years. If notified by the State or EPA that the potential exists for the contamination of surface waters or drinking water, the permittee shall install a leak detection system or monitoring wells in accordance with that notice. Documentation of compliance with the notification must be kept with the NMP, as well as all sampling data. Data from the monitoring wells must be kept on site for three (3) years with the NMP. The first year's sampling shall be considered the baseline data and must be retained on site for the life of the facility.
2. Retention Structure Dewatering: A schedule must be developed for liquid waste removal from the retention structure(s). A date log indicating weekly inspection of wastewater level in the retention facility, including specific measurement of wastewater level must be kept. Retention facilities shall be equipped with either irrigation or evaporation or liquid removal systems capable of dewatering the retention facilities. Operators using pits, ponds, or lagoons for storage and treatment of storm water, manure and process generated wastewater, including flush water waste handling systems, shall maintain sufficient available storage capacity to contain the runoff and the direct precipitation from a 25-year, 24-hour rainfall event. The operator shall restore the storage capacity as soon as possible after any rainfall event or accumulation of wastes reduces such storage capacity, weather permitting.
 3. Spills: Appropriate measures necessary to prevent spills and to cleanup spills of any toxic and other pollutants shall be taken. If possible spills are anticipated, materials handling procedures and storage must be specified in the NMP. Procedures for cleaning up spills shall be identified, and the necessary equipment to implement clean up shall be made available to facility personnel. All spills must be reported to EPA and ODEQ (see Part IV below).

4. Solids, sludges, manure or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner to prevent pollutants from being discharged to waters of the United States.
5. Manure, litter, and process wastewater handling, treatment, and management shall not result in the destruction or adverse modification of the critical habitat of endangered or threatened species, or contribute to the taking of endangered or threatened species of plant, fish or wildlife. The operator shall notify the U.S. Fish and Wildlife Service in the event of any significant fish, wildlife, or migratory bird/endangered species kill or die-off on or near retention ponds, or in fields where waste has been applied, and which could reasonably have resulted from waste management at the facility.
6. Manure, litter, and process wastewater handling, treatment, and management shall not create an environmental or public health hazard; shall not result in the contamination of drinking water; shall conform to State guidelines and/or regulations for the protection of surface water quality.
7. Employee Training: Employees responsible for permit compliance must be regularly trained or informed of any information pertinent to the proper operation and maintenance of the facility and waste disposal. Training shall include topics such as land application of wastes, proper operation and maintenance of the facility, good housekeeping and material management practices, necessary record-keeping requirements, and spill response and clean up. The permittee is responsible for determining the appropriate training frequency for different levels of personnel and the NMP shall identify periodic dates for such training.

8. Endangered Species

All CAFO operations that discharge or propose to discharge to the following watersheds, as specified by 11-digit Hydrologic Unit Code (HUC)(see also Appendix D – Map of Oklahoma Areas of Concern with Endangered Species Requirements),

11040008030; 11040006060; 11040008010; 11040008060; 11040006050; 11050001020; 11070205050; 11070205060; 11070206010; 11040006050; 11040006050; 11040006050; 11040006050; 11040006050; 11040006020; 11050001030; 11050001010; 11050001040; 11050001070; 11050001050; 11050001080; 11050001060; 11050002070; 11050001090; 11050002010; 11050002140; 11050002040; 11050002080; 11050002150; 11050003030; 11050002020; 11050003010; 11050002050; 11050003040; 11090201010; 11090201030; 11050002030; 11090201020; 11050003020; 11090201040; 11090201050; 11050002120; 11050002060; 11050002160; 11050002110; 11050002090; 11050002130; 11090201060; 11090201070; 11050002100; 11090202010; 11090202040; 11090203010; 11090202020; 11090203020; 11090204060; 11090202030; 11090204050; 11090203030; 11090202050; 11090202060; 11090203040; 11090202080; 11090202070; 11140105020; 11140105030; 11140105010; 11140108010; 11140108010; 11140105040; 11140107010; 11140108040; 11140108030; 11140108010; 11140108010; 11140107040; 11140108010; 11140105060; 11140108050; 11140107020; 11140109190; 11140109200; 11140107030; 11140107050; 11140108060; 11140105080; 11140109170; 11140109180

or are located in the counties of Ottawa, Delaware, or Mayes:

- a. shall develop and implement an Emergency Action Plan (EAP). The minimum requirements for such a plan include:
 - i. phone numbers for fire ambulance, law enforcement, spill recovery, spill reporting, farm personnel.
 - ii. a description of recovery equipment and where it its located.
 - iii. an action plan that addresses fire, personal injury, spills from the containment structure, spills during pumping, and spills during transport.
- b. shall implement an emergency cut-off system for any wastewater conveyance line that is operated by a pump and has a surficial hydrologic connection to waters in any of the above areas of concern. Any wastewater conveyance line that is installed after the CAFO is granted permit coverage must be designed and installed in accordance with the Oklahoma NRCS Conservation Practice Standard Codes 430 (Irrigation Water Conveyance, Pipeline) and 634 (Manure Transfer).
- c. shall develop and implement sampling of sludge and/or slurry from wastewater retention structures for the metals selenium, copper, and zinc prior to land application of any such materials. Samples shall be collected in accordance with the requirements of Part III.A.7.d. Steps must be taken to ensure the collection of a representative sample.

PART IV. DISCHARGE MONITORING AND NOTIFICATION REQUIREMENTS

A. Notification of Discharges Resulting from Manure, Litter, and Process Wastewater Storage, Handling, On-site Transport and Application

If, for any reason, there is a discharge of pollutants to a water of the United States, the permittee is required to make immediate oral notification within 24-hours to EPA Region 6, Compliance and Assurance Division, Water Enforcement Branch (6EN-W), Dallas, Texas at 214-665-6595, and notify EPA and ODEQ in writing within fourteen (14) working days of the discharge from the facility. In addition, the permittee shall keep a copy of the notification submitted to EPA together with the other records required by this permit. The discharge notification shall include the following information:

- a. A description of the discharge and its cause, including a description of the flow path to the receiving water body and an estimate of the flow and volume discharged.
- b. The period of non-compliance, including exact dates and times, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate and prevent recurrence of the discharge.

B. Monitoring Requirements for All Discharges from Retention Structures

In the event of any overflow or other discharge of pollutants from a manure and/or wastewater storage or retention structure, whether or not authorized by this permit, the following actions shall be taken:

1. All discharges shall be sampled and analyzed. Samples must, at a minimum, be analyzed for the following parameters: total nitrogen, nitrate nitrogen, ammonia nitrogen, total phosphorus, *E. coli* bacteria, five-day biochemical oxygen demand (BOD₅), total suspended solids, pH, and temperature. The discharge must be analyzed in accordance with approved EPA methods for water analysis listed in 40 CFR Part 136.
2. Record an estimate of the volume of the release and the date and time.
3. Samples shall consist of grab samples collected from the over-flow or discharges from the retention structure. A minimum of one sample shall be collected from the initial discharge (within 30 minutes). The sample shall be collected and analyzed in accordance with EPA approved methods for water analysis listed in 40 CFR 136. Samples collected shall be representative of the monitored discharge.
4. If conditions are not safe for sampling, the permittee must provide documentation of why samples could not be collected and analyzed. For example, the permittee may be unable to collect samples during dangerous weather conditions (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.). However, once dangerous conditions have passed, the permittee shall collect a sample from the retention structure (pond or lagoon) from which the discharge occurred.
5. Monitoring results must be submitted to EPA Region 6, Compliance Assurance and Enforcement Division, within thirty (30) days of the discharge event at the address listed in Part V.1 of this permit.

C. General Inspection, Monitoring, and Record keeping Requirements

The permittee shall inspect, monitor, and record the results of such inspection and monitoring in accordance with Table IV–A:

Table IV-A NPDES Large CAFO Permit Record Keeping Requirements		
Parameter	Units	Frequency
Permit and Nutrient Management Plan <i>(Note: Required by the NPDES CAFO Regulation – applicable to all CAFOs)</i>		
The CAFO must maintain on-site a copy of the current NPDES permit, including the permit authorization notice.	N/A	Maintain at all times
The CAFO must maintain on-site a current site specific NMP that reflects existing operational characteristics. The operation must also maintain on-site all necessary records to document that the NMP is being properly implemented with respect to manure and wastewater generation, storage and handling, and land application. In addition records must be maintained that the development and implementation of the NMP is in accordance with the minimum practices defined in 40 CFR 122.42(e).	N/A	Maintain at all times
Soil and Manure/Wastewater Nutrient Analysis <i>(Note: Required by the CAFO ELG – applicable to Large CAFOs)</i>		
Analysis of manure, litter, and process wastewater to determine nitrogen and phosphorus content. ¹	ppm Pounds/ton	At least annually after initial sampling
Analysis of soil in all fields where land application activities are conducted to determine phosphorus content. ¹	ppm	At least once every 5 years after initial sampling
Operation and Maintenance <i>(Note: Required by the CAFO ELG – applicable to Large CAFOs)</i>		
Visual inspection of all water lines	N/A	Daily ²
Documentation of depth of manure and process wastewater in all liquid impoundments	Feet	Weekly
Documentation of all corrective actions taken. Deficiencies not corrected within 30 days must be accompanied by an explanation of the factors preventing immediate correction.	N/A	As necessary
Documentation of animal mortality handling practices	N/A	As necessary
Design documentation for all manure, litter, and wastewater storage structures including the following information: <ul style="list-style-type: none"> • Volume for solids accumulation • Design treatment volume • Total design storage volume³ • Days of storage capacity 	Cubic yards/gallons Cubic yards/gallons Cubic yards/gallons Days	Once in the permit term unless revised

Table IV-A NPDES Large CAFO Permit Record Keeping Requirements		
Parameter	Units	Frequency
Documentation of all overflows from all manure and wastewater storage structures including: <i>(Note: Required by the NPDES Regulation – applicable to all CAFOs)</i>		
<ul style="list-style-type: none"> Date and time of overflow 	Month/day/year	Per event
<ul style="list-style-type: none"> Estimated volume of overflow 	Total gallons	Per event
<ul style="list-style-type: none"> Analysis of overflow (as required by the Permitting Authority) 	ppm	Per event
Land Application <i>(Note: Required by the CAFO ELG – applicable to Large CAFOs)</i>		
For each application event where manure, litter, or process wastewater is applied, documentation of the following by field:		
<ul style="list-style-type: none"> Date of application 	Month/day/year	Daily
<ul style="list-style-type: none"> Method of application 	N/A	Daily
<ul style="list-style-type: none"> Weather conditions at the time of application and for 24 hours prior to and following application 	N/A	Daily
<ul style="list-style-type: none"> Total amount of nitrogen and phosphorus applied⁴ 	Pounds/acre	Daily
Documentation of the crop and expected yield for each field	Bushel/acre	Seasonally
Documentation of the actual crop planted and actual yield for each field		
Documentation of test methods and sampling protocols used to sample and analyze manure, litter, and wastewater and soil.	N/A	Once in the permit term unless revised
Documentation of the basis for the application rates used for each field where manure, litter, or wastewater is applied.	N/A	Once in the permit term unless revised
Documentation showing the total nitrogen and phosphorus to be applied to each field including nutrients from the application of manure, litter, and wastewater and other sources	Pounds/acre	Once in the permit term unless revised
Documentation of manure application equipment inspection	N/A	Seasonally
Manure Transfer <i>(Note: Required by the NPDES CAFO Regulation – applicable to Large CAFOs)</i>		
For all manure transfers the CAFO must maintain the following records:		
<ul style="list-style-type: none"> Date of transfer 	N/A	As necessary
<ul style="list-style-type: none"> Name and address of recipient 	N/A	As necessary
<ul style="list-style-type: none"> Approximate amount of manure, litter, or wastewater transferred 	Tons/gallons	As necessary
¹ Refer to the state nutrient management technical standard for the specific analyses to be used. ² Visual inspections should take place daily during the course of normal operations. The completion of such inspection should be documented in a manner appropriate to the operation. Some operations may wish to maintain a daily log. Other operations may choose to make a weekly entry, when they update other weekly records, that required daily inspections have been completed. ³ Total design volume includes normal precipitation less evaporation on the surface of the structure for the storage period, normal runoff from the production area for the storage period, 25-year, 24-hour precipitation on the surface of the structure, 25-year, 24-hour runoff from the production area, and residual solids. ⁴ Including quantity/volume of manure, litter, or process wastewater applied and the basis for the rate of phosphorus application.		

PART V. ANNUAL REPORTING REQUIREMENTS

1. The annual report shall be submitted to EPA and ODEQ at the addresses listed below. The first annual report shall be submitted on the 28th day of the 12th month after the permittee's NOI was submitted for coverage under this general permit, and every twelve (12) months, thereafter.

Addresses for submitting required reports:

EPA Region 6: Compliance Assurance and Enforcement Division
Water Enforcement Branch (6EN-W)
U.S. EPA, Region 6
P.O. Box 50625
Dallas, TX 75250

ODEQ: Water Quality Division
Oklahoma Department of Environmental Quality
P.O. Box 1677
Oklahoma City, OK 73101-1677

2. The annual report must include the following information:
 - a. The number and type of animals, whether in open confinement or housed under roof;
 - b. Estimated amount of total manure, litter and process wastewater generated by the CAFO in the previous twelve (12) months (tons/gallons);
 - c. Estimated amount of total manure, litter and process wastewater transferred to other person by the CAFO in the previous twelve (12) months (tons/gallons);
 - d. Total number of acres for land application covered by the NMP;
 - e. Total number of acres under control of the CAFO that were used for land application of manure, litter and process wastewater in the previous twelve (12) months;
 - f. Summary of all manure, litter and process wastewater discharges from the production area that have occurred in the previous twelve (12) months, including date, time, and approximate volume; and
 - g. A statement indicating whether the current version of the CAFO's NMP was developed or approved by a certified nutrient management planner.
 - h. Actual crops planted and actual yields for each field for the preceding twelve (12) months.
 - i. Results of all samples of manure, litter or process wastewater for nitrogen and phosphorus content for manure, litter and process wastewater that was land applied.
 - j. Results of calculations conducted in accordance with Parts III.A.3.g.i(B) (for the Linear Approach) and III.A.3.g.ii (for the Narrative Rate Approach).
 - k. Amount of manure, litter, and process wastewater applied to each field during the preceding twelve (12) months.
 - l. For CAFOs using the Narrative Rate Approach to address rates of application:
 - i. The results of any soil testing for nitrogen and phosphorus conducted during the preceding twelve (12) months.
 - ii. The data used in calculations conducted in accordance with Part III.A.3.h.ii.
 - iii. The amount of any supplemental fertilizer applied during the preceding twelve (12) months.

PART VI. STANDARD PERMIT CONDITIONS

A. General Conditions

1. In accordance with the provisions of 40 CFR Part 122.41, et. seq., this permit incorporates by reference all conditions and requirements applicable to NPDES Permits set forth in the Clean Water Act, as amended, (hereinafter known as the “Act”) as well as all applicable regulations.
2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation, and reissuance; for denial of a permit renewal application; and/or for requiring a permittee to apply for and obtain an individual NPDES permit.
3. The permittee shall comply with effluent standards and prohibitions established under section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.
4. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
5. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State/Tribal or local laws or regulations.
6. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.
7. Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Any false or materially misleading representation or concealment of information required to be reported by the provisions of the permit, the Act, or applicable regulations, which avoids or effectively defeats the regulatory purpose of the Permit may subject the Permittee to criminal enforcement pursuant to 18 U.S.C. Section 1001.
8. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State/Tribal law or regulation under authority preserved by Section 510 of the Act.
9. The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
10. Bypass
 - a. *Definitions*
 - i. Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
 - ii. Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial

and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

- b. *Bypass not exceeding limitations.* The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of 10.c. and 10.d. of this section.
 - c. *Notice*
 - i. *Anticipated bypass.* If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
 - ii. *Unanticipated bypass.* The permittee shall submit notice of unanticipated bypass as required in D.5. of this section (24-hour notice).
 - d. *Prohibitions of bypass.*
 - i. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:
 - (A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - (C) The permittee submitted notices as required under paragraph 10.c. of this section
 - ii. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 10.d.(i).
 - e. Any bypass allowed by Part VI.A.10 of this permit must, where practicable, be released to vegetated fields for filtering, or captured in secondary containment to minimize discharges to waters of the United States.
11. Upset
- a. *Definition. Upset* means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance caused by operational error, improperly designed treatment facilities, lack of preventive maintenance, or careless or improper operation.
 - b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 11.c. of this section are met.
 - c. *Conditions necessary for a demonstration of upset.* A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred and that the permittee can identify the cause(s) of the upset;

- ii. The permitted facility was at the time being properly operated; and
 - iii. The permittee submitted notice of the upset as required in paragraph D.5. of this section (24-hour notice).
 - iv. The permittee complied with any remedial measures required under paragraph 14. of this section.
 - c. *Burden of proof.* In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.
12. *Duty to reapply.* If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit, except where Part I.G of this permit applies.
 13. *Need to halt or reduce activity not a defense.* It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
 14. *Duty to mitigate.* The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
 15. *Inspection and entry.* The permittee shall allow the Director or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law to:
 - a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

B. Proper Operation and Maintenance

1. It shall not be a defense for a permittee in an enforcement action to plead that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
2. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
3. The permittee shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

C. Monitoring and Records

1. The permittee shall allow the EPA, or an authorized representative of EPA, upon the presentation of credentials and other documents as may be required by law, to:
 - a. Enter the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect, at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and
 - d. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.
2. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
3. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five (5) years from the date of the sample, measurement, report, or application. This period may be extended by request of the Permitting Authority at any time.
4. Records of monitoring information shall include:
 - a. The date, exact place, and time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. The date(s) analyses were performed;
 - d. The individual(s) who performed the analyses;
 - e. The analytical techniques or methods used; and
 - f. The results of such analyses.
5. The permittee shall follow the following monitoring procedures:
 - a. Any required monitoring must be conducted according to test procedures approved in 40 CFR Part 136, unless other test procedures have been specified in this permit or approved by the Regional Administrator.
 - b. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instruments at intervals frequent enough to insure accuracy of measurements and shall maintain appropriate records of such activities.
 - c. An adequate analytical quality control program, including the analyses of sufficient standards, spikes, and duplicate samples to insure the accuracy of all required analytical results shall be maintained by the permittee or designated commercial laboratory.

D. Reporting Requirements

1. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
 - a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in § 122.29(b); or

- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under § 122.42(a)(1).
 - c. The alteration or addition results in a significant change in the permittee's manure use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit., including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to a NMP.
2. The permittee shall give advance notice to EPA of any planned physical alterations or additions or changes in activity which may result in noncompliance with requirements in this permit.
 3. This permit is not transferable to any person except after notice to EPA. EPA may require modification or revocation and reissuance of the permit to change the name or the permittee and incorporate such other requirements as may be necessary under the CWA.
 4. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.
 5. The permittee shall report any noncompliance that may endanger human health or the environment. Any information must be provided orally to within twenty-four (24) hours from the time that the permittee becomes aware of the circumstances to EPA at 214-665-6595. A written submission shall also be provided to EPA within fourteen (14) days of the time the permittee becomes aware of the circumstances. The report shall contain the following information:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - c. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
 6. The following shall be included as information which must be reported within twenty-four (24) hours:
 - a. Any unanticipated bypass which exceeds any effluent limitation in the permit.
 - b. Any upset which exceeds any effluent limitation in the permit.
 - c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within twenty-four (24) hours.The Director may waive the written report on a case-by-case basis for reports under the above if the oral report has been received within twenty-four (24) hours.
 7. The permittee shall report all instances of noncompliance not reported under above and of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in D.6.
 8. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to EPA, it shall promptly submit such facts or information to EPA

E. Signatory requirements

All applications, reports, or information submitted to EPA shall be signed and certified consistent with 40 CFR §122.22:

1. All notices of intent shall be signed as follows:
 - a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - i. A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - ii. The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures; or
 - b. For a partnership or sole proprietorship: By a general partner for a partnership or the proprietor, respectively.
2. All reports required by the permit and other information requested by EPA shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or any individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or an individual occupying a named position; and,
 - c. The written authorization is submitted to EPA.

F. Certification

Any person signing a document under this section shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

G. Availability of Reports

Any information submitted pursuant to this permit may be claimed as confidential by the submitter. If no claim is made at the time of submission, information may be made available to the public without further notice.

H. Penalties for Violations of Permit Conditions

1. Criminal Penalties:
 - a. Negligent violations: The Act provides that any person who negligently violates Section 301, 302, 306, 307, 308, 318, or 405 of the Act or any condition or limitation implementing those provisions in a permit issued under Section 402 is subject to a fine of not less than \$2,750 nor more than \$37,500 per day of violation, or by imprisonment for not more than one year, or both.
 - b. Knowing violations: The Act provides that any person who knowingly violates Sections 301, 302, 306, 307, 308, 318, or 405 of the Act or any permit conditions implementing those provisions is subject to a fine of not less than \$5,500 nor more than \$55,000 per day of violation, or by imprisonment for not more than three years, or both.
 - c. Knowing endangerment: The Act provides that any person who knowingly violates Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act or permit conditions implementing those provisions and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than \$275,000, or by imprisonment for not more than 15 years, or both.
 - d. False statements: The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than \$11,000, or by imprisonment for not more than two years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than \$22,000 per day of violation, or by imprisonment of not more than four years, or by both. [See Section 309(c)4 of the Clean Water Act]
2. Civil penalties: The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed \$27,500 per day for each violation. [See Section 309(d)]
3. Administrative penalties: The Act provides that the Administrator may assess a Class I or Class II administrative penalty if the Administrator finds that a person has violated Sections 301, 302, 306, 307, 308, 318, or 405 of the Act or a permit condition or limitation implementing these provisions, as follows [See Section 309(g)]:
 - a. Class I penalty: Not to exceed \$11,000 per violation nor shall the maximum amount exceed \$27,500.
 - b. Class II penalty: Not to exceed \$11,000 per day for each day during which the violation continues nor shall the maximum amount exceed \$137,500.

PART VII. DEFINITIONS

Animal feeding operation (AFO) means a lot or facility (other than an aquatic animal production facility) where the following conditions are met: (i) animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of forty-five (45) days or more in any 12-month period, and (ii) crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

Application means the EPA standard national forms for seeking coverage under an NPDES permit, including any additions, revisions or modifications to the forms; or forms approved by EPA for use in “approved States,” including any approved modifications or revisions [e.g. for NPDES general permits, a written “notice of intent” pursuant to 40 CFR 122.28; for NPDES individual permits, Form 1 and 2B pursuant to 40 CFR 122.1(d)].

Concentrated animal feeding operation (CAFO) means an AFO which is defined as a Large CAFO or Medium CAFO by 40 CFR 122.23 (4) and (6), or that is designated as a CAFO.

E. coli means the bacterial count (Parameter 1) at 40 CFR 136.3 in Table 1A, which also cites the approved methods of analysis.

Grab sample means a sample which is taken from a waste stream on a one-time basis without consideration of the flow rate of the waste stream and without consideration of time.

Land application means the application of manure, litter, or process wastewater onto or incorporated into the soil.

Land application area means land under the control of an CAFO owner or operator, whether it is owned, rented, or leased, to which manure, litter, or process wastewater from the production area is or may be applied.

Large CAFO means an AFO that stables or confines as many as or more than the numbers of animals specified in any of the following categories: (i) 700 mature dairy cattle, whether milked or dry; (ii) 1,000 veal calves; (iii) 1,000 cattle other than mature dairy cows or veal calves. Cattle includes but is not limited to heifers, steers, bulls and cow/calf pairs; (iv) 2,500 swine each weighing 55 pounds or more; (v) 10,000 swine each weighing less than 55 pounds; (vi) 500 horses; (vii) 10,000 sheep or lambs; (viii) 55,000 turkeys; (ix) 30,000 laying hens or broilers, if the AFO uses a liquid manure handling system; (x) 125,000 chickens (other than laying hens), if the AFO uses other than a liquid manure handling system; (xi) 82,000 laying hens, if the AFO uses other than a liquid manure handling system; (xii) 30,000 ducks (if the AFO uses other than a liquid manure handling system); or (xiii) 5,000 ducks (if the AFO uses a liquid manure handling system).

Liquid manure handling system means a system that collects and transports or moves waste material with the use of water, such as in washing of pens and flushing of confinement facilities. This would include the use of water impoundments for manure and/or wastewater treatment.

Manure is defined to include manure, litter, bedding, compost and raw materials or other materials commingled with manure or set aside for land application or other use.

Medium CAFO means any AFO that stables or confines as many as or more than the numbers of animals specified in any of the following categories: (i) 200 to 699 mature dairy cattle, whether milked or dry cows; (ii) 300 to 999 veal calves; (iii) 300 to 999 cattle other than mature dairy cows or veal calves. Cattle

includes but is not limited to heifers, steers, bulls and cow/calf pairs; (iv) 750 to 2,499 swine each weighing 55 pounds or more; (v) 3,000 to 9,999 swine each weighing less than 55 pounds; (vi) 150 to 499 horses, (vii) 3,000 to 9,999 sheep or lambs, (viii) 16,500 to 54,999 turkeys, (ix) 9,000 to 29,999 laying hens or broilers, if the AFO uses a liquid manure handling system; (x) 37,500 to 124,999 chickens (other than laying hens), if the AFO uses other than a liquid manure handling system; (xi) 25,000 to 81,999 laying hens, if the AFO uses other than a liquid manure handling system; (xii) 10,000 to 29,999 ducks (if the AFO uses other than a liquid manure handling system); or (xiii) 1,500 to 4,999 ducks (if the AFO uses a liquid manure handling system) **and** either one of the following conditions are met (a) pollutants are discharged into waters of the United States through a man-made ditch, flushing system, or other similar man-made device; or (b) pollutants are discharged directly into waters of the United States which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation.

Notice of Intent (NOI) is a form submitted by the owner/operator applying for coverage under a general permit. It requires the applicant to submit the information necessary for adequate program implementation, including, at a minimum, the legal name and address of the owner or operator, the facility name and address, type of facility or discharges, and the receiving stream(s). [(40 CFR §128.28(b)(2)(ii)].

Process wastewater means water directly or indirectly used in the operation of the CAFO for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other AFO facilities; direct contact swimming, washing, or spray cooling of animals; or dust control. Process wastewater also includes any water which comes into contact with or is a constituent of raw materials, products, or byproducts including manure, litter, feed, milk, eggs, or bedding.

Production area means that part of an AFO that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The animal containment area includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milkrooms, milking centers, cowyards, barnyards, medication pens, walkers, animal walkways, and stables. The manure storage area includes but is not limited to lagoons, runoff ponds, storage sheds, stockpiles, under house or pit storages, liquid impoundments, static piles, and composting piles. The raw materials storage area includes but is not limited to feed silos, silage bunkers, and bedding materials. The waste containment area includes but is not limited to settling basins, and areas within berms and diversions which separate uncontaminated storm water. Also included in the definition of production area is any egg washing or egg processing facility, and any area used in the storage, handling, treatment, or disposal of mortalities.

Small CAFO means an AFO that is designated as a CAFO and is not a Medium CAFO.

Setback means a specified distance from waters of the United States or potential conduits to waters of the United States where manure, litter, and process wastewater may not be land applied. Examples of conduits to surface waters include but are not limited to: Open tile line intake structures, sinkholes, and agricultural well heads.

The Act means Federal Water Pollution Control Act as amended, also known as the Clean Water Act as amended, found at 33 USC 1251 et seq.

Vegetated buffer means a narrow, permanent strip of dense perennial vegetation established parallel to the contours of and perpendicular to the dominant slope of the field for the purposes of slowing water

runoff, enhancing water infiltration, and minimizing the risk of any potential nutrients or pollutants from leaving the field and reaching waters of the United States.

APPENDIX A – APPLICATION FORM 2B FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (AND CONCENTRATED AQUATIC ANIMAL PRODUCTION FACILITIES)

EPA I.D. NUMBER (copy from Item 1 of Form 1)

FORM 2B NPDES	EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY APPLICATIONS FOR PERMIT TO DISCHARGE WASTEWATER CONCENTRATED ANIMAL FEEDING OPERATIONS AND AQUATIC ANIMAL PRODUCTION FACILITIES
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GENERAL INFORMATION Applying for: Individual Permit G Coverage Under General Permit G

A. TYPE OF BUSINESS	B. CONTACT INFORMATION	C. FACILITY OPERATION STATUS
<input type="checkbox"/> 1. Concentrated Animal Feeding Operation (complete items B, C, D, and section II) <input type="checkbox"/> 2. Concentrated Aquatic Animal Production Facility (complete items B, C, and section III)	Owner/or Operator Name: Telephone: (.....)..... Address: Facsimile: (.....)..... City: State: Zip Code:	<input type="checkbox"/> 1. Existing Facility <input type="checkbox"/> 2. Proposed Facility

D. FACILITY INFORMATION

Name: Telephone: (.....).....
 Address: Facsimile: (.....).....
 City: State: Zip Code:
 County: Latitude: Longitude:

If contract operation: Name of Integrator:
 Address of Integrator:

II. CONCENTRATED ANIMAL FEEDING OPERATION CHARACTERISTICS

A. TYPE AND NUMBER OF ANIMALS			B. Manure, Litter, and/or Wastewater Production and Use
2. ANIMALS			1. How much manure, litter, and wastewater is generated annually by the facility? tonsgallons 2. If land applied how many acres of land under the control of the applicant are available for applying the CAFOs manure/litter/wastewater? acres 3. How many tons of manure or litter, or gallons of wastewater produced by the CAFO will be transferred annually to other persons?tons/gallons (circle one)
1. TYPE	NO. IN OPEN CONFINEMENT	NO. HOUSED UNDER ROOF	
<input type="checkbox"/> Mature Dairy Cows			
<input type="checkbox"/> Dairy Heifers			
<input type="checkbox"/> Veal Calves			
<input type="checkbox"/> Cattle (not dairy or veal calves)			
<input type="checkbox"/> Swine (55 lbs. or over)			
<input type="checkbox"/> Swine (under 55 lbs.)			

<input type="checkbox"/> Horses			
<input type="checkbox"/> Sheep or Lambs			
<input type="checkbox"/> Turkeys			
<input type="checkbox"/> Chickens (Broilers)			
<input type="checkbox"/> Chickens (Layers)			
<input type="checkbox"/> Ducks			
<input type="checkbox"/> Other Specify			
3. TOTAL ANIMALS			

C. TOPOGRAPHIC MAP

D. TYPE OF CONTAINMENT, STORAGE AND CAPACITY

1. Type of Containment	Total Capacity (in gallons)	
<input type="checkbox"/> Lagoon		
<input type="checkbox"/> Holding Pond		
<input type="checkbox"/> Evaporation Pond		
<input type="checkbox"/> Other: Specify		

2. Report the total number of acres contributing drainage:acres

3. Type of Storage	Total Number of Days	Total Capacity (gallons/tons)	
<input type="checkbox"/> Anaerobic Lagoon			
<input type="checkbox"/> Storage Lagoon			
<input type="checkbox"/> Evaporation Pond			
<input type="checkbox"/> Aboveground Storage Tanks			
<input type="checkbox"/> Belowground Storage Tanks			
<input type="checkbox"/> Roofed Storage Shed			
<input type="checkbox"/> Concrete Pad			
<input type="checkbox"/> Impervious Soil Pad			
<input type="checkbox"/> Other: Specify			

E. NUTRIENT MANAGEMENT PLAN

Note: Effective February 27, 2009, a permit application is not complete until a nutrient management plan is submitted to the Permitting Authority.

1. Please indicate whether a nutrient management plan has been included with this permit application. G Yes G No

2. If no, please explain:

3. Is a nutrient management plan being implemented for the facility? G Yes G No

4. The date of the last review or revision of the nutrient management plan. Date:

5. If not land applying, describe alternative use(s) of manure, litter, and or wastewater:

F. LAND APPLICATION BEST MANAGEMENT PRACTICES

Please check any of the following best management practices that are being implemented at the facility to control runoff and protect water quality:

- Buffers Setbacks Conservation tillage Constructed wetlands Infiltration field Grass filter Terrace

III. CONCENTRATED AQUATIC ANIMAL PRODUCTION FACILITY CHARACTERISTICS

A. For each outfall give the maximum daily flow, maximum 30- day flow, and the long-term average flow.			B. Indicate the total number of ponds, raceways, and similar structures in your facility.			
1. Outfall No.	2. Flow (gallons per day)			1. Ponds	2. Raceways	3. Other
	a. Maximum Daily	b. Maximum 30 Day	c. Long Term Average	C. Provide the name of the receiving water and the source of water		
				1. Receiving Water	2. Water Source	

D. List the species of fish or aquatic animals held and fed at your facility. For each species, give the total weight produced by your facility per year in pounds of harvestable weight, and also give the maximum weight present at any one time.

1. Cold Water Species			2. Warm Water Species		
a. Species	b. Harvestable Weight (pounds)		a. Species	b. Harvestable Weight (pounds)	
	(1) Total Yearly	(2) Maximum		(1) Total Yearly	(2) Maximum
E. Report the total pounds of food during the calendar month of maximum feeding.			1. Month	2. Pounds of Food	

IV. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. Name and Official Title (print or type)	B. Phone No. ()
C. Signature	D. Date Signed

INSTRUCTIONS

<p>GENERAL</p> <p>This form must be completed by all applicants who check “yes” to Item II-B in Form 1. Not all animal feeding operations or fish farms are required to obtain NPDES permits. Exclusions are based on size and whether or not the facility discharges proposed to discharge. <i>See</i> the description of these exclusions in the CAFO regulations at 40 CFR 122.23.</p> <p>For aquatic animal production facilities, the size cutoffs are based on whether the species are warm water or cold water, on the production weight per year in harvestable pounds, and on the amount of feeding in pounds of food (<i>for cold water species</i>). Also, facilities which discharge less than 30 days per year, or only during periods of excess runoff (<i>for warm water fish</i>) are not required to have a permit.</p> <p>Refer to the Form 1 instructions to determine where to file this form.</p> <p>Item I-A</p> <p>See the note above to be sure that your facility is a “concentrated animal feeding operation” (CAFO).</p> <p>Item I-B</p> <p>Use this space to give owner/operator contact information.</p> <p>Item I-C</p> <p>Check “proposed” if your facility is not now in operation or is expanding to meet the definition of a CAFO in accordance with the CAFO regulations at 40 CFR 122.23.</p> <p>Item I-D</p> <p>Use this space to give a complete legal description of your facility’s location including name, address, and latitude/longitude. Also, if a contract grower, the name and address of the integrator.</p> <p>Item II</p> <p>Supply all information in item II if you checked (1) in item I-A.</p> <p>Item II-A</p> <p>Give the maximum number of each type of animal in open confinement or housed under roof (either partially or totally) which are held at your facility for a total of 45 days or more in any 12 month period. Provide the total number of animals confined at the facility.</p> <p>Item II-B</p> <p>Provide the total amount of manure, litter, and wastewater generated annually by the facility. Identify if manure, litter, and wastewater generated by the facility is to be land applied and the number of acres, under the control of the CAFO operator, suitable for land application. If the answer to question 3 is yes, provide the estimated annual quantity of manure, litter, and wastewater that the applicant plans to transfer off-site.</p> <p>Item II-C</p> <p>Check this box if you have submitted a topographic map of the entire operation, including the production area and land under the operational control of the CAFO operator where manure, litter, and/or wastewater are applied with Form 1.</p>	<p>Item II-D</p> <ol style="list-style-type: none"> 1. Provide information on the type of containment and the capacity of the containment structure (s). 2. The number of acres that are drained and collected in the containment structure (s). 3. Identify the type of storage for the manure, litter, and/or wastewater. Give the capacity of this storage in days. <p>Item II-E</p> <p>Provide information concerning the status of submitting a nutrient management plan for the facility to complete the application. In those cases where the nutrient management plan has not been submitted, provide an explanation. If not land applying, describe the alternative uses of the manure, litter, and wastewater (e.g., composting, pelletizing, energy generation, etc.).</p> <p>Item II-F</p> <p>Check any of the identified conservation practices that are being implemented at the facility to control runoff and protect water quality.</p> <p>Item III</p> <p>Supply all information in Item III if you checked (2) in Item I-A.</p> <p>Item III-A</p> <p>Outfalls should be numbered to correspond with the map submitted in Item XI of Form 1. Values given for flow should be representative of your normal operation. The maximum daily flow is the maximum measured flow occurring over a calendar day. The maximum 30-day flow is the average of measured daily flow over the calendar month of highest flow. The long-term average flow is the average of measure daily flows over a calendar year.</p> <p>Item III-B</p> <p>Give the total number of discrete ponds or raceways in your facility. Under “other,” give a descriptive name of any structure which is not a pond or a raceway but which results in discharge to waters of the United States.</p> <p>Item III-C</p> <p>Use names for receiving water and source of water which correspond to the map submitted in Item XI of Form 1.</p> <p>Item III-D</p> <p>The names of fish species should be proper, common, or scientific names as given in special Publication No. 6 of the American Fisheries Society. “A List of Common and Scientific Names of Fishes from the United States and Canada.” The values given for total weight produced by your facility per year and the maximum weight present at any one time should be representative of your normal operation.</p> <p>Item III-E</p> <p>The value given for maximum monthly pounds of food should be representative of your normal operation.</p> <p>Item IV</p> <p>The Clean Water Act provides for severe penalties for submitting false information on this application form.</p> <p>Section 309(C)(2) of the Clean Water Act provides that “Any person who knowingly makes any false statement, representation, or certification in any application..shall upon conviction, be punished by a fine of no more than \$10,000 or by imprisonment for not more than six months, or both.”</p>
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Federal regulations require the certification to be signed as follows:

- A. For corporation, by a principal executive officer of at least the level of vice president.
- B. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- C. For a municipality, State, federal, or other public facility, by either a principal executive officer or ranking elected official.

Paper Reduction Act Notice

The public reporting and recordkeeping burden for this collection of information is estimated to average 9.5 hours per response. The public reporting and recordkeeping burden for development of the nutrient management plan to be submitted with the form is estimated to average 46 hours per response. The estimate includes time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the collection of information. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address. Send comments regarding the burden estimate or any other aspect of this collection of information to the Chief, Information Strategies Branch (2822T), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20460, and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503, Attention: Desk Officer for EPA. Please refer to EPA ICR No. 1989.05 for additional information.

APPENDIX B – NOTICE OF TERMINATION

Notice of Termination (NOT)

NPDES Permit Number: _____

Date NOI was submitted: _____

Name and Address of Facility (include County):

Telephone Number: _____

Name of Operator: _____

Reason for the termination of permit coverage:

(Add attached sheets if necessary.)

I certify that I am familiar with the operation of this facility; the facility closure requirements of OKG010000 have been fulfilled in accordance with Part III.B; and, to the best of my knowledge, the information provided is true, complete, and accurate.

Name (print): _____ Title: _____

Signature: _____ Date Signed: _____

Signature must be in accordance with Part VI.E of OKG010000.

APPENDIX C - HISTORIC PROPERTIES REQUIREMENTS

Coverage under this permit is available only if your CAFO discharges and discharge-related activities meet one of the eligibility criteria below, following the procedures in Appendix C:

Criterion A. Your CAFO discharges do not have the potential to have an effect on historic properties and you are not constructing or installing new control measures on your site that cause subsurface disturbance; or

Criterion B. Your discharge-related activities (i.e., construction and/or installation of control measures that involve subsurface disturbance) will not affect historic properties; or

Criterion C. Your CAFO discharges and discharge-related activities have the potential to have an effect on historic properties; you have consulted with the State Historic Preservation Officer (SHPO), State Archeologist, Tribal Historic Preservation Officer (THPO), or other tribal representative regarding measures to mitigate or prevent any adverse effects on historic properties; and, you have either (1) obtained and are in compliance with a written agreement that outlines all such measures, or (2) been unable to reach agreement on such measures; or

Criterion D. You have contacted the SHPO, State Archeologist, THPO, or other tribal representative and EPA in writing informing them that you have the potential to have an effect on historic properties and you did not receive a response from the SHPO, THPO, or tribal representative within 30 days of receiving your letter.

If you have been unable to reach agreement with a SHPO, State Archeologist, THPO, or other tribal representative regarding appropriate measures to mitigate or prevent adverse effects, EPA may notify you of additional measures you must implement to be eligible for coverage under this permit.

CAFO operators must determine whether their permit-related activities have potential to affect a property that is either listed or eligible for listing on the National Register of Historic Places. CAFO operators must contact the SHPO, State Archeologist, THPO, and/or any Indian tribe that attaches religious and cultural significance to historic properties that may be affected. In instances where a Tribe does not have a THPO, CAFO operators should contact the appropriate Tribal government office.

Oklahoma SHPO, State Archeologist, THPO and Tribal officials may be contacted at the following addresses:

Historic Preservation Officers (SHPO)

State Historic Preservation Office
Oklahoma Historical Society
2401 North Laird Avenue
Oklahoma City, OK 73105
Telephone: 405-521-6249; FAX: 405-522-0816
<http://www.okhistory.org/shpo/shpom.htm>

State Archeologist

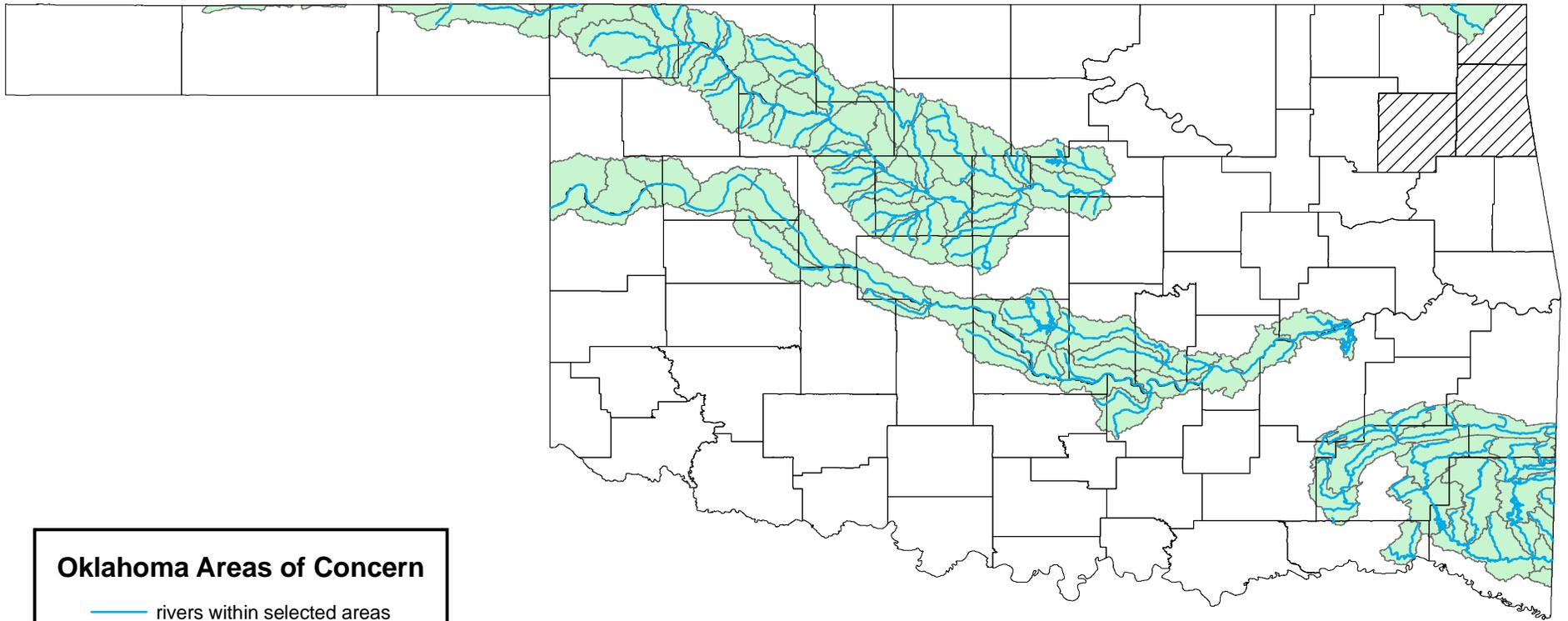
State Archeologist
Oklahoma Archeological Survey
111 E. Chesapeake, Room 102
Norman, OK 73019-5111

Tribal Government Officials

The most recent contact information for Tribal governments and Tribal Historic Preservation Officers may be accessed at: <http://www.epa.gov/earth1r6/6dra/oejta/tribalaffairs/index.html> or by contacting EPA, Region 6 Tribal Affairs Office at:

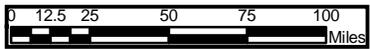
Region 6 Office of Environmental Justice and Tribal Affairs
1445 Ross Ave., Suite 1200
Dallas, TX 75202
Telephone 1-800-887-6063

APPENDIX D – MAP OF OKLAHOMA AREAS OF CONCERN WITH ENDANGERED SPECIES REQUIREMENTS



Oklahoma Areas of Concern

-  rivers within selected areas
-  county border
-  okhuc11_cl
-  selected county



APPENDIX E – OK NRCS CONSERVATION PRACTICE STANDARD CODE 590 (NUTRIENT MANAGEMENT) FROM MARCH 2007

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

NUTRIENT MANAGEMENT

(Acre)

CODE 590

DEFINITION

Managing the amount, source, placement, form and timing of the application of nutrients and soil amendments.

PURPOSES

- ◆ To budget and supply nutrients for plant production.
- ◆ To properly utilize manure or organic by-products as a plant nutrient source.
- ◆ To minimize agricultural nonpoint source pollution of surface and ground water resources.
- ◆ To protect air quality by reducing nitrogen emissions (ammonia and NO_x compounds) and the formation of atmospheric particulates.
- ◆ To maintain or improve the physical, chemical and biological condition of soil.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands where plant nutrients and soil amendments are applied.

CRITERIA

General Criteria Applicable to All Purposes

A nutrient budget for nitrogen (N), phosphorus (P), and potassium (K) shall be developed that considers all potential sources of nutrients including, but not limited to animal manure and organic by-products, waste water, inorganic/commercial fertilizer, crop residues, legume credits, and irrigation water.

Realistic yield goals shall be established using guidance outlined in **Oklahoma State University Extension (OSU) Fact Sheet F-2225, OSU Soil Test Interpretations**. A realistic yield goal is generally the average yield over the last 5 years plus 20%. Rates of nutrient application established by OSU will be the basis for nutrient recommendations.

For new crops or varieties, industry yield recommendations may be used until documented yield information is available.

Plans for nutrient management shall specify the form, source, amount, timing and method of application for each field to achieve realistic production goals and minimize the loss of nutrients to erosion, runoff, volatilization, and leaching.

Lime shall be applied, as needed, to adjust soil pH when below a crop's tolerance except as noted for the establishment of permanent grasses in **Tables 4 and 5**. Crop pH preferences are listed in **Table 5** and Liming requirements are listed in **Table 4**.

Plans for nutrient management that are elements of a more comprehensive conservation plan shall recognize other requirements of the plan and be compatible with those requirements.

Nutrient applications associated with irrigation systems shall be applied in accordance with the requirements of Oklahoma NRCS Irrigation Water Management (449) standard and according to the NRCS National Engineering Handbook, Part 652, Irrigation Guide.

Using effluent water for irrigating crops and grasses can increase salt concentrations in the soil creating a negative impact on plant growth. Oklahoma Technical Note Agronomy OK-17 contains guidance for irrigating with effluent water.

SOIL AND TISSUE SAMPLING LABORATORY ANALYSIS (TESTING)

A current soil test will be no older than three (3) years unless otherwise required by federal, state or local laws. Nutrient planning shall be based on current soil or tissue (where used as a supplement) test results developed in accordance with OSU guidance.

Soil samples shall be taken at least once every three (3) years for analysis or more often if the crop rotation changes.

Soil salinity testing to monitor salt accumulation in the soil is recommended when large quantities of manure or organic by-products are being applied annually. This salinity analysis can be done in conjunction with routine soil testing every 3 years.

A soil salinity analysis shall be performed when waste water effluent used for irrigation has been applied on an area for 3 years or more. The area shall be monitored for salinity accumulation annually using a soil salinity analysis as long as effluent is being applied. This analysis should include results for Na, Ca, Mg, K, B, EC, TSS (total soluble salts), Sodium Adsorption Ratio (SAR), Exchangeable Sodium Percentage (ESP), and pH.

Grass plantings done under the Oklahoma NRCS Pasture and Hay Planting (512) or Range Planting (550) standards shall have a current soil analysis for plant available N, P, K and pH. Nitrogen will be assumed to be zero (0) if the test is older than 60 days. **Tables 1, 2, 3, and 4** provide detailed guidance for determining fertilizer and lime requirements for grass establishment.

All grass plantings done under the Oklahoma NRCS Critical Area Planting (342) standard should have a soil analysis performed. In lieu of a current soil test, a fertilizer application of 40 lbs/ac N, 40 lbs/ac P₂O₅, and 40 lbs/ac K₂O will be recommended.

Manure or organic by-products (excluding effluent water) may be used for the establishment of permanent grasses however, application rates and application timing will be determined according to the guidance used for inorganic/commercial fertilizers.

Fertilizer applications for grass establishment should be done in a timely manner that allows the grass to utilize nutrients for quicker establishment, to minimize weed populations, and to avoid loss of fertilizer from the crop zone. When nitrogen is required for grass plantings, the application shall be made between March 1 and June 30 for warm season species and September 1 through November 15 for fall planted cool season species or March 1 through April 30 for spring planted cool season species. Phosphorus and potassium applications may be made at the same dates as above or incorporated at the last tillage for seedbed preparation prior to planting. Lime applications will be incorporated into the soil prior to planting grass.

All soil samples will be collected at the 0 to 6-inch depth. Occasionally, there will be reasons for taking shallower soil samples (1-3 inch depth) for

analysis (e.g. potential pH concerns on a no till field).

A minimum of 15 to 20 core samples shall be taken randomly from the field or sample area. The core samples shall be collected and mixed thoroughly in a clean plastic container. Approximately one (1) pint of the mixed core samples will be placed in a bag and sent for testing.

When the soil test for N exceeds the recommended plant requirements (excessive), a representative soil sample will be taken for the subsoil in addition to the 6-inch sample. This sample shall represent the soil layer from 7 to 24 inches in depth. *Subsoil samples will not be required for grass establishment.* The OSU County Extension Service Office is available to assist with the soil testing process. Additional information concerning soil sampling can be found in the **OSU Extension Fact Sheet F-2207, How to Get a Good Soil Sample.**

If a soil test laboratory other than OSU is used, the lab shall use the same phosphorus and potassium extractant (Mehlich-3) as used by the OSU lab and nutrient recommendations will be the same as those used by OSU. The soil testing laboratory shall be a member of the North American Proficiency Testing Program.

Soil testing shall include analysis for any nutrients for which specific information is needed to develop the nutrient management plan (e.g. pH, N, P, and K). Additional information concerning soil testing can be found in the **OSU Extension Fact Sheet F-2225, OSU Soil Test Interpretations and Fact Sheet F-2901, Procedures Used by OSU Soil, Water, and Forage Analytical Laboratory.**

Additional Criteria to Budget and Supply Nutrients for Plant Production

Inorganic/Commercial Nutrient Application Rates

Application rates of inorganic/commercial sources of nutrients shall be based on recommendations that consider current soil test results, realistic yield goals and management capabilities. OSU nutrient recommendations for major crops and grasses are contained in **Tables 1, 2, 3, and 4.**

The following guidance shall also be used when applying inorganic/commercial sources of nutrients:

- ◆ **Nitrogen Application** - N application rates shall match the required rates as closely as possible (**Table 1**).

- ◆ **Phosphorus (P₂O₅) Application** - P₂O₅ application rates shall match the required rates as closely as possible (**Table 2**).
- ◆ **Potassium (K₂O) Application** - K₂O application rates shall match the required rates as closely as possible (**Table 3**).
- ◆ **Other Plant Nutrients** - The planned rates of application for secondary and micronutrients shall be consistent with **OSU guidance (OSU Extension Fact Sheet F-2225)**.
- ◆ **Available fertilizer blends make it difficult to apply fertilizer to meet specific recommendations. Applications of inorganic/commercial nutrients will be considered adequate when:**
 - ◆ *The applied rate is no more than 10% below or 10 pounds less, whichever is greater, than the recommended application rate.*
 - ◆ The applied rate of either N or P₂O₅ does not exceed 50 lbs/ac of the recommended application rate.
- ◆ **Starter Fertilizers** - Starter fertilizers containing N, P, and/or K may be applied to row crops to overcome early stress of the root environment such as a cool, wet soil. Starter fertilizers are applied in the row with the seed or banded along side the seed. In general, OSU guidance recommends no more than 30 lbs. of either N or K₂O per acre or in combination for wheat or 7 lbs/ac for corn. No more than 90 lbs. per acre of P₂O₅ will be used in a starter fertilizer. These rates will vary with crop selection and climate conditions. The OSU County Extension Service Office is available for assistance in this area. The amount of starter fertilizer applied will be included in the nutrient budget.
- ◆ **Maintenance Fertilizers** - USDA Farm Programs such as the Conservation Reserve Program (CRP) require a periodic maintenance amount of fertilizer to maintain a stand of grass. In these long-term deferment programs the fertilizer maintenance recommendations for N, P, and K are contained in **Tables 1, 2, and 3 on page 15**.

Nutrient Application Timing and Method

Timing and method of nutrient application shall correspond as closely as possible with plant nutrient uptake characteristics, cropping system limitations, weather and climatic conditions, and field accessibility.

Nutrients will not be applied to frozen, snow covered or saturated soil.

Additional Criteria Applicable to Utilizing Manure or Organic By-Products as a Plant Nutrient Source

Nutrient values of manure and organic by-products (excluding sewage sludge) shall be determined prior to land application based on laboratory analysis. The analysis shall include the results for moisture content, N, P, and K as a minimum. In the case of applying solid or semi-solid manure, the waste shall be sampled and analyzed at least once each year. The manure testing laboratory shall be certified through the Manure Analysis Proficiency Program administered by the Minnesota Department of Agriculture and Soil Science Society of America. A list of labs certified in this program can be found at the website below:

<http://www.mda.state.mn.us/appd/manurelabs.htm?SEARCH.X=15&SEARCH.Y=10>

Historic laboratory analysis for solid and semi-solid manure values may be used in lieu of annual manure testing provided at least 3 years of manure testing history are available prior to application. The historic values must provide an accurate analysis of the material being applied. Manure analysis will be performed at least once every three years or sooner depending on federal, state or local laws. It is recommended that this be timed with soil testing procedures.

All waste water effluent shall be tested prior to land application. Refer to the Oklahoma NRCS Waste Utilization (633) standard, Oklahoma Technical Note Agronomy OK-17, job sheets JS 633 01 and JS 633 02 for guidance.

Preliminary planning decisions may be based on values found in the **Agricultural Waste Management Field Handbook, Chapter 4 - Agricultural Waste Characteristics**. Actual application rates will be adjusted accordingly based on the current manure analysis.

Plant nutrient removal rates can be found in **Table 7**. Crops not listed in **Table 7** may be found in the **Agricultural Waste Management Field Handbook, Chapter 6 – Role of Plants in Waste Management (Table 6-6)**.

Do not apply manure or organic by-products in the following situations as described in the Published County Soil Survey or Section II of the NRCS Field Office Technical Guide:

- ◆ Liquid animal manure will not be land applied within 500 feet of the corner of an occupied

residence not owned or operated by the feeding operation.

- ◆ Liquid animal manure will not be land applied within 300 feet of an existing public or private drinking water well.
- ◆ To areas within 100 feet of a perennial stream, pond, well, or sinkhole, unless an established buffer strip is present. The width of the buffer strip will be used as a set back distance for application purposes. The buffer strip must meet the requirements for design and maintenance established in the appropriate NRCS buffer standard and specification.
- ◆ To areas within 50 feet of an intermittent stream unless an established buffer strip is present. The width of the buffer strip will be used as a set back distance for application purposes. The buffer strip must meet the requirements for design and maintenance established in the appropriate NRCS buffer standard and specification.
- ◆ To fields with > 15% slope.
- ◆ To soils less than 10 inches in depth to parent material.
- ◆ On soils that are frequently flooded.
- ◆ On soils that are frozen, snow covered, or water saturated (including periods of heavy rain when water ponding has occurred on the soil surface).
- ◆ On soils where the rock fragments in the surface layer are 3 to 10 inches in diameter and exceed 50% by weight.
- ◆ On soils where the rock fragments in the soil surface layer are > 10" in diameter and exceed 25% by weight.
- ◆ On soils where the rock fragments are > 10 inches in diameter which covers > 3% of the soil surface and the slope is > 8%. (Soil map unit name will include the description of Extremely Stony, Extremely Bouldery, or Extremely Rubbly or Very Rubbly)
- ◆ On areas eroding at levels greater than the soil loss tolerance, "T", from wind or water erosion or active gullies unless following a conservation plan that will reduce erosion below "T". Use current Oklahoma NRCS soil loss prediction methods.
- ◆ On soils that are occasionally flooded. However, manure may be applied between June 20 and September 20 on soils classified as occasionally flooded. Manure may also be applied to soils classified as

occasionally flooded between February 1 and April 20 if the area is established to cool season grasses 4 inches in height at the time of application. In no case will manure be applied when the soil is water saturated or when ponding has occurred on the soil surface after periods of heavy rain.

Organic Nutrient Application Rates

Timing and method of nutrient application shall correspond as closely as possible with plant nutrient uptake characteristics, cropping system limitations, weather and climatic conditions, and field accessibility. Nutrients materials will be applied uniformly to the area.

The application rate for waste water effluent applied with irrigation shall not exceed field capacity for the soil, create runoff and shall minimize ponding.

The following shall also be used when applying manure or organic by-products:

- ◆ **Nitrogen Application** – The amount of N applied from manure will not exceed the annual crop requirement for N. In some situations, additional N from inorganic/commercial sources may be required to supplement the organic sources. The N applied from inorganic/commercial sources shall match the crop requirement as closely as possible and shall not exceed 10% of the recommended inorganic/commercial fertilizer rate. Manure maybe applied to a legume crop at a rate equal to the estimated N removal in the harvested plant biomass.
- ◆ **Phosphorus Application** – The maximum planned rates of P application shall be determined using the Oklahoma Phosphorus Assessment Worksheet (**Tables 8 and 9**).

Field Risk Assessment

When applications of manure or other organic by-products are planned, a field-specific assessment of the potential for P transport from the site shall be completed. This assessment shall be done using the Oklahoma Phosphorus Assessment Worksheet (**Exhibit 2, Tables 8 and 9**).

Heavy Metals Monitoring

When sewage sludge is applied, the accumulation of potential pollutants (including arsenic, cadmium, copper, lead, mercury, selenium, and zinc) in the soils shall be monitored in accordance with the US Code, Reference 40CFR, Parts 403 and 503, and/or any applicable state and local laws or regulations. The role of monitoring the application of sewage or municipal sludge in

Oklahoma is the responsibility of the Oklahoma Department of Environmental Quality (DEQ). Contact DEQ for information concerning the use of municipal sludge.

The Oklahoma Corporation Commission regulates land applications of waste material from oil and gas wells. Contact the Oklahoma Corporation Commission for information concerning regulations and permitting for land applications of these materials.

Additional Criteria to Minimize Agricultural Non-point Source Pollution of Surface and Ground Water Resources

For water bodies in watersheds identified by the Oklahoma Water Resources Board (OWRB) as Nutrient Limited Waters (NLW) in Appendix A and as designated in 785:45-5-29 of the Oklahoma's Water Quality Standards, an assessment shall be completed for the potential transport of P when manure or organic by-products are to be applied to a field. The Oklahoma Phosphorus Assessment Worksheet will be used to make the assessment.

Additional Criteria to Protect Air Quality by Reducing Nitrogen Emissions and the Formation of Atmosphere Particulates

When tillage can be performed, surface applications of manure and commercial fertilizer N formulations that are subject to volatilization on the soil surface (e.g. urea) shall be incorporated into the soil within 24 hours of application unless formulations with nitrification inhibitors, urease inhibitors, etc. are used that stabilize and slow the release of N.

When applying liquid forms of manure with irrigation equipment, select application conditions when there is high humidity, little/no wind, and/or other conditions that will minimize volatilization losses into the atmosphere.

Handle and apply poultry litter or other dry types of animal manures when weather conditions are calm and there is less potential for blowing and emission of particulates into the atmosphere.

Additional Criteria to Improve the Physical, Chemical, and Biological Condition of the Soil

Manure or organic by-products incorporated into the soil will improve soil structure.

Incorporate surface applied solid/semi-solid manure or other organic by-products, where tillage is possible, into the soil within 72 hours of application to minimize nutrient losses. Avoid applying materials that will not decompose in the soil.

When non-legume crop residues are returned to the soil, additional N may be needed to supplement the N being used by the soil microbes to breakdown residues. The additional N may be needed to avoid N deficiencies in the next crop.

Estimated N amounts needed per ton of crop residue are:

- Add 10 lbs. of N per ton of dry residue from non-legume crops.
- Add 5 lbs. of N per ton of non-legume green manure crop produced.

Most of the N legumes fix from the atmosphere is generally used for its own growth. Typical amounts of N remaining for the next crop are shown in **Table 6**.

High sodium concentrations in the soil will cause soil particles to disperse and deteriorate soil structure. The use of nutrient sources with high salt content and SAR will be minimized unless provisions are used to leach salts below the crop root zone.

CONSIDERATIONS

Avoid induced deficiencies of nutrients due to excessive levels of other nutrients.

Consider cover crops whenever possible to utilize and recycle residual nutrients.

Consider the following application methods, timing, and fertilizer materials that reduce the risk of nutrients being transported to ground and surface waters, or into the atmosphere by:

- ◆ using split applications of N to provide nutrients at times for maximum crop utilization,
- ◆ using Ramped Calibration Strips or N Rich Strips to determine mid-season (split) N application rates,
- ◆ using sensor technology (e.g. Green Seeker) to determine plant biomass production in conjunction with N rich strips or calibration strips,
- ◆ using application equipment with sensor technology (e.g. Green Seeker) to apply nutrients,
- ◆ using equipment with precision guided tools (e.g. GPS) for nutrient application,
- ◆ avoiding winter N application for spring seeded crops,
- ◆ banding P near the seed row,

- ◆ immediate incorporation of land applied manure or organic by-products,
- ◆ delaying field application of animal manures or other organic by-products if precipitation capable of producing runoff and erosion is forecast within 24 hours of the time of the planned application,
- ◆ using commercially available enhanced efficiency fertilizers or fertilizer additives (e.g. nitrification inhibitors, urease inhibitors and slow or controlled release fertilizers) that more closely match nutrient release and availability for plant uptake.

Consider the potential problems from odors associated with the land application of animal manure, especially when applied near or upwind of residences.

Consider the potential to affect National Register listed or eligible cultural resource sites.

Consider annual reviews to determine if changes in the nutrient budget are desirable (or needed) for the next planned crop.

On sites which have special environmental concerns, consider other sampling techniques. (For example: Soil profile sampling for N or surface sampling for P accumulation or pH changes.)

Consider ways to modify the chemistry of animal manure, including modification of the animal's diet to reduce the manure nutrient content, to enhance the producer's ability to manage manure effectively.

When applying manure with irrigation equipment, modification of the equipment can reduce the potential for volatilization of N from the time the manure leaves the application equipment until it reaches the surface of the soil (e.g. drop down tubes for center pivots). Nitrogen volatilization from manure in a surface irrigation system will be reduced when applied under a crop canopy.

Consider the combined effects of nutrient application methods and tillage operations on greenhouse gas emissions (e.g. nitrous oxide N₂O, carbon dioxide CO₂), and the potential for carbon sequestration.

PLANS AND SPECIFICATIONS

Plans and specifications shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose(s), using nutrients to achieve production goals and to prevent or minimize water quality impairment.

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The following components shall be included in the nutrient management plan as applicable:

- ◆ aerial photograph or map and a soil map of the site,
- ◆ current and/or planned plant production sequence or crop rotation,
- ◆ results of soil, plant, water, manure or organic by-product sample analyses,
- ◆ realistic yield goals for the crops in the rotation,
- ◆ recommended nutrient rates, timing, form, and method of application and incorporation,
- ◆ location of designated sensitive areas or resources and the associated, nutrient management restriction,
- ◆ guidance for implementation, operation, maintenance, recordkeeping, and
- ◆ complete a nutrient budget for N, P, and K for the rotation or crop sequence.

If increases in soil phosphorus levels are expected, plans shall document:

- ◆ the soil phosphorus levels at which it may be desirable to convert to phosphorus based implementation,
- ◆ the relationship between soil phosphorus levels and potential for phosphorus transport from the field, and
- ◆ the potential for soil phosphorus drawdown from the production and harvesting of crops and
- ◆ the management activities or techniques used to reduce the potential for phosphorus loss.

When applicable, plans shall include other practices or management activities as determined by specific regulation, program requirements, or producer goals.

OPERATION AND MAINTENANCE

The owner/client is responsible for safe operation and maintenance of this practice including all equipment. The owner/client should consider addressing the following:

- ◆ Review plans periodically to determine if adjustments or modifications are needed. Changes in animal numbers, feed rations, crop rotations, storage facilities, and/or application timing or methods would be reasons for modifications to the nutrient management plan. Plans should be reviewed every three (3) years in conjunction

with the soil test cycle or with applicable federal, state or local laws.

- ◆ Calibration of application equipment to ensure uniform distribution of material at planned rates.
- ◆ Protect fertilizer, manure and/or organic by-products storage facilities from weather and accidental leakage or spillage.
- ◆ Documentation of the actual rate at which nutrients were applied. When the actual rates used differ from or exceed the recommended and planned rates, records will indicate the reasons for the differences.
- ◆ Records should be maintained to document plan implementation. As applicable, records should include:
 - ◆ soil test results and recommendations for nutrient application,
 - ◆ quantities, analyses and sources of nutrients applied,
 - ◆ dates and method of nutrient applications,
 - ◆ weather conditions and soil moisture at the time of application; time when a rainfall event or irrigation occurred after application of manure; time incorporation occurred after application of manure.
 - ◆ crops planted, planting and harvest dates, yields, and crop residues removed,
 - ◆ results of plant, water, manure, and organic by-product analyses, and
 - ◆ dates of review and person performing the review and recommendations that resulted from the review.

Records should be maintained for five (5) years; or for a period longer than five years if required by other Federal, state, or local ordinances, or program or contract requirements.

Workers shall avoid unnecessary exposure to hazardous chemical fertilizers and/or organic by-products. Protection should include the use of protective clothing when working with plant nutrients. Extra caution must be taken when handling ammonia sources of nutrients, or when dealing with organic wastes stored in unventilated enclosures.

Material generated by cleaning nutrient application equipment should be disposed of according to state and local guidelines and regulations. Excess material should be collected and stored or field applied in an appropriate manner.

Nutrient containers should be recycled in compliance with state and local guidelines or regulations.

REFERENCES

- Follett, R.F. 2001. Nitrogen Transformation and Transport Processes. pp. 17-44, In R.F. Follett and J. Hatfield. (eds.). 2001. Nitrogen in the Environment; Sources, Problems, and Solutions. Elsevier Science Publishers. The Netherlands. 520 pp.
- Sims, J.T. (ed.) 2005. Phosphorus: Agriculture and the Environment. Agron. Monogr. 46. ASA, CSSA, and SSSA, Madison, WI.
- Stevenson, F.J. (ed.) 1982. Nitrogen in Agricultural Soils. Agron. Series 22. ASA, CSSA, and SSSA, Madison, WI.

SOIL TEST INTERPRETATIONS

Information contained in Tables 1, 2, 3, 4, and 5 comes directly from Oklahoma State Universities Extension Fact Sheet, *F-2225, OSU Soil Test Interpretations, and the Oklahoma USDA Cost-Share Lime and Fertilizer Recommendations (May 2004)*. The information contained in the tables should be used in conjunction with current soil test analysis to prepare nutrient budgets and to develop nutrient management plans for land users.

Nutrient requirements for crops not listed on the following tables should be referred to the OSU Extension Agent or Specialist.

Oklahoma State Extension Fact Sheets are available on-line at the following web site:

<http://pods.dasnr.okstate.edu/docushare/dsweb/View/Collection-12>

TABLE 1
Nitrogen Requirements

The nitrogen requirement is calculated by subtracting the soil test nitrogen value from the nitrogen required for a selected crop and yield goal.

N Required lbs/ac	Wheat	Barley	Oat	Grain Sorghum		Corn		Cotton	
	Yield Goal bu/ac			N Required lbs/ac	Yield Goal lbs/ac	N Required lbs/ac	Yield Goal bu/ac	N Required lbs/ac	Yield Goal bales/ac
30	15	20	25	30	2000	40	40	30	0.50
40	20	25	35	40	2500	50	50	45	0.75
60	30	35	55	50	3000	60	60	60	1.00
80	40	50	70	70	4000	85	85	75	1.25
100	50	60	90	85	4500	110	100	90	1.50
125	60	75	105	100	5000	130	120	105	1.75
155	70	90	125	160	7000	190	160	120	2.00
185	80	100	140	195	8000	215	180	135	2.25
240	100	125	175	230	9000	240	200	150	2.50
						300	250	165	3.00
						360	300	180	3.50

Cool Season Grasses (Fescue, Orchard,)		Established Weeping Lovegrass		Established Old World Bluestem		Established Bermudagrass	
N Required lbs/ac	Yield Goal tons/ac	N Required lbs/ac	Yield Goal tons/ac	N Required lbs/ac	Yield Goal tons/ac	N Required lbs/ac	Yield Goal tons/ac
60	1	35	1	35	1	50	1
120	2	70	2	70	2	100	2
180	3	110	3	110	3	150	3
240	4	160	4	150	4	200	4
300	5	220	5	200	5	260	5
						320	6
						400	7

Alfalfa	Peanuts	Soybeans	Mungbeans, Cowpeas, Guar
10 to 20 lbs/ac for establishment. None needed for maintenance	10 to 20 lbs/ac with P and K	10 to 20 lbs/ac with P and K	10 to 20 lbs/ac with P and K

TABLE 1 (Cont.)
Nitrogen Requirements

The nitrogen requirement is calculated by subtracting the soil test nitrogen value from the nitrogen required for a selected crop and yield goal.

Canola		Virgin Native Hay Meadow		Small Grains for Grazing		Forage Sorghum or Corn Silage		
N Required lbs/ac	Yield Goal lbs/ac	N Required lbs/ac	Yield Goal tons/ac	N Required lbs/ac	Yield Goal tons/ac	N Required lbs/ac	Yield Goal	
							Silage tons/ac	Hay tons/ac
50	1000	0	1.0	30	0.5	45	5	2.5
75	1500	50	1.5	60	1.0	90	10	5.0
100	2000	100	1.6	90	1.5	135	15	7.5
125	2500			120	2.0	185	20	10.0
150	3000			150	2.5	240	25	12.5
175	3500			180	3.0	300	30	15.0

Nitrogen Recommendations for Establishing Grass

Soil Test N ^{1/}	Native Grass / Bluestem Establishments	All Other Grass Establishments
	N Required lbs/ac	
0	0	40
1	0	39
2	0	38
3	0	37
4	0	36
5	0	35
6	0	34
7	0	33
8	0	32
9	0	31
10	0	30
11	0	29
12	0	28
13	0	27
14	0	26
15	0	25
16	0	24
17	0	23
18	0	22
19	0	21
20	0	20
21+	0	0

^{1/} Nitrogen soil test values are only valid if test is within the last 60 days; therefore assume nitrogen soil test of zero (0) when old tests are used.

Note: For recommendations on maintenance of grass stands for long-term deferment programs (e.g. CRP) follow the guidance in Tables 1, 2, 3 on Page 15 of this standard.

TABLE 2
Phosphorus Requirements

P Soil Test Index	Small Grains		Grain Sorghum		Corn		Cotton	
	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency
0	80	25	60	40	80	30	75	55
10	60	45	50	60	60	60	60	70
20	40	80	40	80	40	80	45	85
40	20	90	20	95	20	95	30	95
65+	0	100	0	100	0	100	0	100

P Soil Test Index	Established Cool Season Grasses		Established Weeping Lovegrass		Established Old World Bluestem		Established Bermudagrass	
	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency
0	80	30	60	50	60	50	75	50
10	60	50	50	70	40	70	60	65
20	40	70	40	85	30	85	40	80
40	20	95	20	95	20	95	20	95
65+	0	100	0	100	0	100	0	100

P Soil Test Index	Canola		Small Grains for Grazing		Legumes in Pasture		Virgin Native Hay Meadows	
	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency
0	80	25	80	25	75	50	40	50
10	60	45	60	45	60	65	20	80
20	40	80	40	80	40	80	0	95
40	20	90	20	90	20	95	0	100
65+	0	100	0	100	0	100	0	100

P Soil Test Index	Alfalfa		Peanuts		Soybeans		Mungbean, Cowpeas, Guar	
	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency	P ₂ O ₅ lbs/ac	Percent Sufficiency
0	200	20	80	40	70	40	70	40
10	150	50	60	60	50	60	50	60
20	100	70	40	80	30	80	30	80
40	60	90	20	95	20	95	20	95
65+	0	100	0	100	0	100	0	100

TABLE 2 (Cont.)
Phosphorus Requirements

Phosphorus Recommendations for Establishing Grass

P Soil Test Index	Bermudagrass Establishments	Fescue and Cool Season Grass Establishments	Bluestem and Lovegrass Establishments	Native Grass Establishments
	P ₂ O ₅ lbs/ac			
0	40	40	40	40
1	40	40	40	38
2	40	40	40	36
3	40	40	40	34
4	40	40	40	32
5	40	40	40	30
6	40	40	40	28
7	40	40	40	26
8	40	40	40	24
9	40	40	40	22
10	40	40	40	20
11-20	40	40	30	0
21-40	30	30	20	0
41-48	20	20	0	0
49+	0	0	0	0

Note: For recommendations on maintenance of grass stands for long-term deferment programs (e.g. CRP) follow the guidance in Tables 1, 2, 3 on Page 15 of this standard.

P Soil Test Index	Forage Sorghum or Corn Silage	
	P ₂ O ₅ lbs/ac	Percent Sufficiency
0	100	30
10	75	60
20	45	80
40	25	95
65+	0	100

TABLE 3
Potassium Requirements

K Soil Test Index	Small Grains		Grain Sorghum		Corn		Cotton	
	K ₂ O lbs/ac	Percent Sufficiency						
0	60	50	100	40	120	40	110	40
75	50	70	75	65	80	60	80	60
125	40	80	50	80	60	75	60	75
200	20	95	30	95	40	90	40	90
250+	0	100	0	100	0	100	0	100

K Soil Test Index	Established Cool Season Grasses		Established Weeping Lovegrass		Established Old World Bluestem		Established Bermudagrass	
	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency
0	70	60	80	40	80	40	140	40
75	60	70	60	60	60	60	80	60
125	50	80	40	80	40	80	50	75
200	30	95	20	95	20	95	30	90
250+	0	100	0	100	0	100	0	100

K Soil Test Index	Canola		Small Grains for Grazing		Legumes in Pasture		Virgin Native Hay Meadows	
	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency
0	60	50	60	50	80	50	40	40
75	50	70	50	70	60	65	30	70
125	40	80	40	80	40	80	20	85
200	20	95	20	95	20	95	0	95
250+	0	100	0	100	0	100	0	100

Potassium Recommendations for Establishing Grass

Potassium (K) Soil Test Index	Bermudagrass Establishments	Fescue and Cool Season Grass Establishments	Bluestem and Lovegrass Establishments	Native Grass Establishments
	K ₂ O lbs/ac			
0-40	40	40	40	40
41-80	40	40	40	30
81-125	40	40	30	20
126-200	30	30	20	0
201-216	20	20	0	0
217+	0	0	0	0

Note: For recommendations on maintenance of grass stands for long-term deferment programs (e.g. CRP) follow the guidance in Tables 1, 2, 3 on Page 15 of this standard.

TABLE 3 (Cont.)
Potassium Requirements

K Soil Test Index	Alfalfa		Peanuts		Soybeans		Mungbeans, Cowpeas, Guar	
	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency	K ₂ O lbs/ac	Percent Sufficiency
0	280	20	80	40	100	40	80	50
75	210	50	60	60	70	60	60	60
125	140	70	40	75	60	75	45	80
200	80	90	30	90	40	90	30	90
250	40	100	0	100	0	100	0	100
350+	0	100	0	100	0	100	0	100

K Soil Test Index	Forage Sorghum or Corn Silage	
	K ₂ O lbs/ac	Percent Sufficiency
0	180	40
75	130	60
125	90	75
200	60	90
250+	0	100

Nutrient Requirements for Maintenance of Grasses in USDA Deferment Programs (e.g., CRP)

Table 1	
Soil Test N	Stand Maintenance of All Grasses
	N lbs/acre
0	40
1	39
2	38
3	37
4	36
5	35
6	34
7	33
8	32
9	31
10	30
11	29
12	28
13	27
14	26
15	25
16	24
17	23
18	22
19	21
20	20
21+	0

Table 2			
P Soil Test Index	Native Grass Stand Maintenance	Bluestem and Lovegrass Stand Maintenance	Stand Maintenance of All Other Grasses
0	40	40	40
1	38	40	40
2	36	40	40
3	34	40	40
4	32	40	40
5	30	40	40
6	28	40	40
7	26	40	40
8	24	40	40
9	22	40	40
10	20	40	40
11-20	0	30	40
21-40	0	20	30
41-48	0	0	20
49+	0	0	0

Table 3			
K Soil Test Index	Native Grass Stand Maintenance	Bluestem and Lovegrass Maintenance	Stand Maintenance for All Other Grasses
0-40	40	40	40
41-80	30	40	40
81-125	20	30	40
126-200	0	20	30
201-216	0	0	20
217+	0	0	0

TABLE 4
Liming Requirements

Lime required to raise the soil pH to 6.8 for all crops and 5.5 for continuous wheat or for grass establishment

Soil Buffer Index	All Crops, Established Grasses, or Legumes except Continuous Wheat	*Continuous Wheat and New Seedlings of Grass (Establishment)
	**ECCE Lime (tons/ac)	**ECCE Lime (tons/ac)
6.0	5.2	1.4
6.1	4.7	1.2
6.2	4.2	1.0
6.3	3.7	0.9
6.4	3.1	0.8
6.5	2.5	0.6
6.6	1.9	*** 0.5
6.7	1.4	*** 0.5
6.8	1.2	*** 0.5
6.9	1.0	*** 0.5
7.0	0.7	*** 0.5
7.1	***0.5	*** 0.5
7.2	0.0	*** 0.5

* Lime will be required for grass establishment when the soil test pH is <4.5 for fescue and lovegrass and <5.0 for all other grasses.

** Effective Calcium Carbonate Equivalent - Pure calcium carbonate ground fine enough to be 100% effective. The rate of aglime to apply can be determined from the ECCE requirement using the following formula: Tons of aglime/ac = Tons ECCE lime required / %ECCE x 100.

*** Lime applications at or below 0.5 tons per acre are recommended, but not required due to economics.

TABLE 5
Crop pH Preference *

Crop	Preferred pH Range
Cowpeas, Mungbeans, Corn, Guar, Oats, Rye, Sorghum, Sudan, Wheat	5.5 – 7.0
Cotton	5.7 – 7.0
Canola, Soybeans, Peanuts,	5.8 – 7.0
Barley	6.5 – 7.0
**Forages	Preferred pH Ranges
Bluestem, Native Hay, Fescue, Weeping Lovegrass	4.5 – 7.0
Vetch, Crimson Clover, Orchardgrass, Ryegrass	5.5 – 7.0
Bermudagrass	5.7 – 7.0
Alsike, Red and White (ladino) Clovers, Arrowleaf Clover	6.0 – 7.0
Alfalfa, Sweet Clover	6.2 – 7.5

* Most legumes will tolerate a pH 0.5 units less and 1.0 unit higher than indicated above, but production will be significantly reduced. Non-legumes tend to tolerate a pH 0.5 to 1.0 unit less (but not less than a pH of 4.0) and 1.0 to 2.0 units higher than indicated above.

** Lime will be required for grass establishment when the soil test pH is <4.5 for fescue and lovegrass and <5.0 for all other grasses.

TABLE 6
Nitrogen Credits

Average Nitrogen Remaining After Legume Crop

Legume	*Nitrogen remaining for next crop (Legume hayed or harvested)	**Green manure crop nitrogen remaining (Legume unharvested)
Alfalfa	80	200
Ladino Clover	60	180
Sweet Clover	60	120
Red Clover	40	115
White Clover	20	100
Soybeans	20	60
Cowpeas	30	90
Vetch	40	80
Lespedeza (annual)	20	85
Peas	40	70
Peanuts	20	40
Beans	20	40

* These numbers are derived from crops that are harvested and have the remaining crop residues returned to the soil by tillage. (Reference - Oklahoma Soil Fertility Handbook, Sixth Edition (2006), pg. 18)

** A green manure crop is not harvested or grazed and is returned to the soil just prior to maturity. These numbers reflect the amount of nitrogen available for the next crop when the legume is used as a green manure crop. The numbers are adjusted to account for 30% nitrogen loss due to volatilization, leaching, and microbial action. (Reference – Soil Fertility and Fertilizers, Tidsdale and Nelson, pg. 128 and 566)

TABLE 7
Crop Nutrient Removal *

Crop Nutrient Removal *					
% of Dry Material Harvested					
Crop	Unit	Weight/Unit	% N	% P	% K
Barley	grain	48 lbs/bu	1.82	0.34	0.43
	straw	72 lbs/bu	0.75	0.11	1.25
Corn	grain	56 lbs/bu	1.61	0.28	0.40
	stover	56 lbs/bu	1.11	0.20	1.34
Oats	grain	32 lbs/bu	1.95	0.34	0.49
	straw	64 lbs/bu	0.63	0.16	1.66
Rye	grain	56 lbs/bu	2.08	0.26	0.49
	straw	84 lbs/bu	0.50	0.12	0.69
Sorghum	grain	56 lbs/bu	1.67	0.36	0.42
	stover	56 lbs/bu	1.08	0.15	1.31
Soybeans	beans	60 lbs/bu	6.25	0.64	1.90
	stover	75 lbs/bu	2.25	0.22	1.04
Wheat	grain	60 lbs/bu	2.08	0.62	0.52
	straw	102 lbs/bu	0.67	0.07	0.97
Cotton	lint & seed	500 lbs/bale	2.67	0.58	0.83
	burs & stalks	3 lbs/lb of lint	1.75	0.22	0.83
% of Dry Material Harvested					
Forage Crop			% N	% P	% K
Alfalfa			2.25	0.22	1.87
Bermuda			1.88	0.19	1.40
Tall Fescue			1.97	0.20	2.00
Ryegrass			1.67	0.27	1.42
Wheatgrass			1.42	0.27	2.68
Dallisgrass			1.92	0.20	1.72
Native Hay			1.06	0.40	1.58
Clovers			2.00	0.22	1.66
Lespedeza			2.33	0.21	1.06

* These crop nutrient removal figures come from the NRCS Agricultural Waste Management Field Handbook, Chapter 6, Role of Plants in Waste Management (Table 6-6). The handbook lists additional crops not listed above. These numbers represent average figures taken from multiple sources and are nutrients removed in the harvested portion of the crop. These figures can be used as guidance for waste management planning purposes. Actual waste application will be based on soil test.

Example calculation to estimate nutrients removed

Wheat: Yield 40 bu/ac = 60 lbs/bu x 40 bu = 2400 lbs of grain

40 bu/ac x 102 lbs/bu straw = 4080 lbs/ac straw produced

1 ton/ac straw baled and removed from field = 1 ton/ac x 2000 lbs = 2000 lbs of straw/ac

Grain: 2400 lbs/ac x 0.0208 (%N/lb) = 49.92 lbs/ac Nitrogen in grain

2400 lbs/ac x 0.0062 (%P/lb) = 14.88 lbs/ac Phosphorus in grain

2400 lbs/ac x 0.0052 (%K/lb) = 12.48 lbs/ac Potassium in grain

Straw: 2000 lbs/ac x 0.0067 (%N lb) = 13.40 lbs/ac Nitrogen in straw

2000 lbs/ac x 0.0007 (%P lb) = 1.40 lbs/ac Phosphorus in straw

2000 lbs/ac x 0.0097 (%K/lb) = 19.40 lbs/ac Potassium in straw

Total Nutrient Removed = 63.32 lbs/ac N removed, 16.28 lbs/ac P removed, 31.88 lbs/ac K removed

Exhibit 1 Oklahoma Nutrient Budget Worksheet							
Landowner:				Field No.:		Acres:	
Crop Sequence/Rotation				Expected Yield			
Nutrient Content of Manure per <input type="checkbox"/> Ton <input type="checkbox"/> lbs./1000 gal.							
N Test	N Remaining	P ₂ O ₅		K ₂ O			
Current Soil Test Levels							
N	P	K	pH	SOM%	EC		
Recommended Nutrients to Meet Expected Yield and Grass Establishment (See Tables in 590 Standard)							
N	N for Grass Est.	P ₂ O ₅	K ₂ O	Lime	Other		
Nutrient Sources							
Credits		N		P ₂ O ₅		K ₂ O	
1. Nitrogen credits from previous legume crop							
2. Residual from long-term manure application							
3. Irrigation water							
4. Other (Atmosphere, etc.)		0					
5. Total Credits		0		0		0	
Applied Nutrients		N		P ₂ O ₅		K ₂ O	
		Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 1	Alt. 2
6. Fertilizer	Starter						
	Other						
7. Manure or Organic by-products							
8. Total Applied Nutrients		0	0	0	0	0	0
9. Total Nutrients (add lines 5 and 8 plus N from Soil Test)		0	0	0	0	0	0
10. Recommended Nutrients		0	0	0	0	0	0
11. Nutrient Status (subtract line 10 from 9)		0	0	0	0	0	0
<p><i>If line 11 is a negative number, this is the amount of additional nutrients needed to meet the crop recommendation.</i></p> <p><i>If line 11 is a positive number, this is the amount by which the applied nutrients exceed the crop requirements.</i></p>							
Nutrient Management Decision - Including method, rate, form and timing of application.					Producer Selected Alternative:		
Ctrl + d clears worksheet							

Exhibit 2 OKLAHOMA PHOSPHORUS ASSESSMENT WORKSHEET

Client Name:		Field(s):		Date:	
Planner:		Location:		Crop:	
Nutrient Limited Watershed (yes/no):				Ctrl + C clears worksheet	

Site Characteristics

Soil Test P Index Mehlich III (lbs./ac)			
Application Method	Surface applied and incorporated within 7 days or injected 2" below the surface	Surface applied or incorporated more than 7 days after application	Surface applied on frozen, snow covered, or water saturated ground
Land Slope %	0 - 8 %	8.1 - 15 %	> 15.1 %

Transport Characteristics

Erosion Rate Greater Than "T"	No		Yes
Flooding Frequency	None	Occasionally	Frequently
Distance of Manure Application to Perennial Stream, Pond, Well, Sinkhole, or Residence	> 100 ft. to perennial stream, pond, well, sinkhole or a Buffer Strip is Established >300 ft. to Drinking Water Well (Liquid Manure Application) >500 ft. to an Occupied Residence (Liquid Manure Application)	<100 ft. to a perennial stream, pond, well, or sinkhole <300 ft. to Drinking Water Well (Liquid Manure Application) <500 ft. to an Occupied Residence (Liquid Manure Application)	
Distance of Manure Application to Intermittent Stream	> 50 ft. or a Buffer Strip is Established		< 50 ft.
Depth of Soil	> 20.1 in.	10.1 - 20 in.	0 - 10 in.
Rock Fragments in Soil Surface 3" to 10" in diameter and exceed 50% by weight or > 10" in diameter and exceed 25% by weight	No		Yes
Rocks > 10" in diameter which cover > 3% of the Soil Surface	No		Yes

Non - Nutrient Limited Watershed – Manure Application Rates

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Nutrient Limited Watershed – Manure Application Rates

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Table 8
Annual Manure Application Rates for Non-Nutrient Limited Waters

Rating	Soil Test P Index	0 – 8% Slope	8 to 15% Slope	0 to 15% Slope
		Soil > 20” Deep	Soil > 20” Deep	Soil 10” to 20” Deep
*Low	0 – 65	Full Rate	Full Rate Split Application	Half Rate
*Moderate	66 – 250	Full Rate	Half Rate	Half Rate
*High	251 – 400	Half Rate	Half Rate	Half Rate
*Very High	> 400	Plant Removal ¹	Plant Removal ¹	Plant Removal ¹
*Severe	*	No Application	No Application	No Application

Rating	Soil Test P Index	Rocks >10” in diameter which cover >3% of the soils surface and <8% slope
*Low	0 – 65	Half Rate
*Moderate	66 – 250	Half Rate
*High	251 – 400	Half Rate
*Very High	> 400	Plant Removal ¹
*Severe	*	No Application

¹ Note – It may not be feasible to calibrate equipment and make manure applications at the Plant Removal rate.

Table 9
Annual Manure Application Rates for Nutrient Limited Waters

Rating	Soil Test P Index	0 – 8% Slope	8 to 15% Slope	0 to 15% Slope
		Soil > 20” Deep	Soil > 20” Deep	Soil 10” to 20” Deep
*Low	0 – 65	Full Rate	Full Rate Split Application	Half Rate
*Moderate	66 – 120	Full Rate	Half Rate	Half Rate
*High	121 – 300	Half Rate	Half Rate	Half Rate
*Severe	> 300	No Application	No Application	No Application

Rating	Soil Test P Index	Rocks >10” in diameter which cover >3% of the soils surface and <8% slope
*Low	0 – 65	Half Rate
*Moderate	66 – 120	Half Rate
*High	121 – 300	Half Rate
*Severe	> 300	No Application

* See Severe Rating - No Application listed below. Check for specific site characteristics which may deem the field inadequate for manure application from the list below.

Annual manure application rates are listed and explained below.

Manure Application Rates

Full Rate – Not to exceed the Nitrogen requirement of the crop and the following P₂O₅ rates:

1. 200 lbs P₂O₅ per acre when surface applied.
2. 300 lbs P₂O₅ per acre when application is by sprinkler irrigation and managed to prevent runoff from the field.
3. 400 lbs P₂O₅ per acre if injected below the soil surface or surface applied and incorporated within 7 days.

Half Rate – Not to exceed the Nitrogen requirement of the crop and the following P₂O₅ rates:

1. 100 lbs P₂O₅ per acre when surface applied.
2. 150 lbs P₂O₅ per acre when application is by sprinkler irrigation and managed to prevent runoff from the field.
3. 200 lbs P₂O₅ per acre if injected below the soil surface or surface applied and incorporated within 7 days.

Split Application – Not to exceed the Nitrogen requirement of the crop

Application will be no more than ½ the allowed P₂O₅ rate per application at least 30 days apart.

Severe Rating - No Manure Application

Do not apply manure or organic by-products in the following situations. Reference the Published County Soil Survey or Section II of the NRCS Field Office Technical Guide.

- Liquid animal manure will not be land applied within 500 feet of the corner of an occupied residence not owned or operated by the feeding operation.
- Liquid animal manure will not be applied within 300 feet of an existing public or private drinking water well.
- To areas within 100 feet of a perennial stream, pond, well, or sinkhole, unless an established buffer is present. The width of the buffer will be used as a set back distance for application purposes. The buffer must meet the requirements for design and maintenance established in the NRCS buffer standard and specification.
- To areas within 50 feet of an intermittent stream unless an established buffer is present. The width of the buffer will be used as a set back distance for application purposes. The buffer must meet the requirements for design and maintenance established in the NRCS buffer standard and specification.
- To fields with > 15% slope.
- To soils with less than 10 inches in depth to parent material.
- On soils that are frequently flooded.
- On soils that are frozen, snow covered, or water saturated (including periods of heavy rain when water ponding has occurred on the soil surface).
- On soils where the rock fragments in the surface layer are 3 to 10 inches in diameter and exceed 50% by weight.
- On soils where the rock fragments in the soil surface layer are > 10" in diameter and exceed 25% by weight.
- On soils where the rock fragments are > 10 inches in diameter which covers > 3% of the soil surface and the slope is > 8%.
- On areas eroding at levels greater than the soil loss tolerance, "T", from wind or water erosion or active gullies unless following a conservation plan that will reduce erosion below "T". Use current Oklahoma NRCS erosion prediction methods.
- On soils that are occasionally flooded. However, waste may be applied between June 20 and September 20 on soils classified as occasionally flooded. Manure may also be applied to soils classified as occasionally flooded between February 1 and April 20 if the area is established to cool season grasses 4 inches in height at the time of application. In no case will manure be applied when the soil is water saturated or when ponding has occurred on the soil surface after periods of heavy rain.