

Comprehensive Nutrient Management Plan

The Comprehensive Nutrient Management Plan (CNMP) is an important part applying for a WY for your Animal Feeding Operation (AFO). This CNMP documents the planning decisions and operation and maintenance for the animal feeding operation. This document shall remain in the possession of the producer/landowner.

Operation Identification: Farm Name c/o
Address, City, State, Zipcode
Telephone: (307
Plan Period: January 7, 2010 – December 31, 2010

Approved Conservation Planner and Certified CNMP Specialist for Nutrient Management

As an Approved Conservation Planner and certified Nutrient Management Specialist, I certify that I have reviewed the *Nutrient Management Plan* documents for technical adequacy and that the elements of the documents are technically compatible, reasonable and can be implemented.

Signature: _____ Date: _____

Printed Name and Title: _____
Address: _____ Telephone: _____

Approved Conservation Planner and Certified CNMP Specialist for Land Treatment

As an Approved Conservation Planner and certified Land Treatment Specialist, I certify that I have reviewed the *Land Treatment* documents for technical adequacy and that the elements of the documents are technically compatible, reasonable and can be implemented.

Signature: _____ Date: _____

Printed Name and Title: _____
Address: Telephone: _____

Approved Certified CNMP Specialist for Manure and Wastewater Handling and Storage

As a certified engineer/technician or an Approved Manure and Wastewater Handling and Storage Technical Service Provider, I certify that I have reviewed the *Nutrient Management Plan* documents for technical adequacy and have included in the plan, the designs and calculations to document adequate collection, storage, and treatment of production area runoff and waste.

Signature: _____ Date: _____

Printed Name and Title: _____
Address: Telephone: _____

Owner/Operator

As the owner/operator of this CNMP, I, as the decision maker, have been involved in the planning process and agree that the items/practices listed in each element of the CNMP are adequate. I understand that I am responsible for keeping all the necessary recordkeeping and annual report associated with the implementation of this CNMP.

Signature: _____ Date: _____

Facility Location –Production Area: Latitude _____ Longitude _____
 Utm: _____

FARM SUMMARY

Identified practices for collection storage, and treatment of production area runoff and waste. Collection and storage capacity to meet 25yr/24 hr storm requirement was certified by an engineer and approved technician. Clean water diversion structures, physical barriers, procedures to maintain/restore wastewater storage capacity and operation and maintenance practices have been identified. (included are EFM, AWM reports)

The vegetative treatment buffer for direct application meets the _____” 25 yr 24 hour containment with soil intake rates calculations of _____and _____available water holding capacity. See location on the map.

Physical barriers are maintained and include(ie. dike) See location on the map.

“Clean water management is diverted by(ie. diversion) See location on the map.

Wastewater storage facility will hold(ie. 80 day storage or pumped out, pipeline to... in 10 days) See AWM, design, location on map.

Stormwater runoff is diverted from the production area by_____ (appropriate response)

Chemicals and other contaminants handled onsite, are not disposed of in any manure, process wastewater, or storm water storage or treatment system. (unless specifically designed to treat such chemicals and other contaminants, then name chemical or contaminant and special considerations to prevent them from being diverted or having direct contact with surface and ground waters)

Direct contact of confined animals with surface waters of the state is prevented by_____

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Emergency Response Plan

In Case of an Emergency Storage Facility Spill, Leak or Failure

Implement the following first containment steps:

- Stop all other activities to address the spill.
- Use skid loader or tractor with blade to contain or divert spill or leak, if possible.
- Call for help and excavator if needed.
- Complete the clean-up and repair the necessary components.
- Assess the extent of the emergency and request additional help if needed.

In Case of an Emergency Spill, Leak or Failure During Transport or Land Application

Implement the following first containment steps:

- Stop all other activities to address the spill.
- Call for help if needed.
- If the spill posed a hazard to local traffic, call for local traffic control assistance and clear the road and roadside of spilled material.
- Contain the spill or runoff from entering surface waters using straw bales, saw dust, soil or other appropriate materials.
- If flow is coming from a tile, plug the tile with a tile plug immediately.
- Assess the extent of the emergency and request additional help if needed.

Emergency Contacts

Department / Agency	Phone Number
County Fire Dept	(307)
Rescue Services	911
County Sheriff Dept	(307)

Available equipment/supplies for responding to emergency

Equipment Type	Contact Person	Phone Number
Tractor with Loader		(307)

Contacts to be made by the owner or operator within 24 hours

Organization	Phone Number
EPA Emergency Spill Hotline	(800) 424-8802 EPA Region 8 (303) 293-1788
WY DEQ	(307) 777-7781
County Health Department	(307)
Wind River Environmental Quality Commission	(307) 332-3164

Be prepared to provide the following information for Inspections and annual reports:

- a. Your name and contact information.
- b. Farm location and other pertinent identification information.
- c. Description of emergency.
- d. Estimate of the amounts, area covered, and distance traveled.
- e. Whether manure has reached surface waters or major field drains.
- f. Whether there is any obvious damage: employee injury, fish kill, or property damage.
- g. Current status of containment efforts.

Biosecurity Measures

If checked, the indicated measures will be taken to prevent contaminants from contact to livestock/poultry or their housing (barns, pens, etc), feed or wastes, walking through narrowly confined pens/lots where animals are within reach, some visits are unavoidable to attain the goal of the visit so precaution measures can provide a level of protection.

	Visitor has not come from another farm that day or is not wearing unlaundered clothing worn at another farm.
	You have informed visitor to park vehicles on paved or concrete areas, away from production sites on farms, to avoid contact with soil, mud, or manure.
	You have informed visitor of required coveralls, boots or other precaution measures you require.
	Feed-storage areas will avoid direct contact whenever possible. Feed storage barns, silos, feed troughs, and bunks, or water troughs will be visited on a limited basis as contaminated feed is primary route of infection for most diseases.
	Soap and water or an antibacterial gel will be used before entering and after leaving the premises to avoid transmitting disease agents from person to person.
	After returning to vehicle, a brush and approved EPA disinfectant solution (Virkon-S Oxonia Active/Oxycept 333) will be used to disinfect any equipment (survey equipment, shovels, camera...)

Plan for Catastrophic Death Animal Disposal

The following table describes how you plan to handle and dispose of catastrophic loss of animals in a manner that protects surface and ground water quality. You must follow all national, state and local laws, regulations and guidelines that protect soil, water, air, plants, animals and human health. Contact telephone numbers above immediately.

Fuel Storage & Chemical Handling Check Sheet

If checked, the indicated measures will be taken to prevent fuel, chemicals and other contaminants from contaminating process waste water or storm water storage and treatment systems.

	This facility has fuel tank storage total of less than 1300 gallons or > 1300 gallons with secondary containment around them.
	This facility has fuel tank storage > 1300 gallons; there is no secondary containment around them.
	This is not a regulatory-agency permitted facility. This section does not apply.
	All chemicals are stored in proper containers. Expired chemicals and empty containers are properly disposed of in accordance with state and federal regulations. Pesticides and associated refuse are disposed of in accordance with the FIFRA label.
	Chemical storage areas and tank mixing/loading areas are self-contained with no drains or other pathways that will allow spilled chemicals to exit the storage area.
	Emergency procedures and equipment are in place to contain and clean up chemical spills.
	Chemical handling and equipment wash areas are designed and constructed to prevent contamination of surface waters and waste water and storm water storage and treatment systems
	All chemicals are custom applied and no chemicals are stored at the operation. Equipment wash areas are designed and constructed to prevent contamination of surface waters and waste water and storm water storage and treatment systems.

Section 1. Background and Site Information

1.1. Resource Concerns

The CNMP is designed to address, at a minimum, the soil erosion and water quality concerns on your operation. The following soil and water quality concerns have been identified on your farm. **Annual soil and manure analysis are required.** Manure and process wastewater shall not be applied to frozen, snow-covered, or saturated soil.

Soil Quality Concerns

Water Quality Concerns

Other Concerns

Soil Quality Concerns		Water Quality Concerns		Other Concerns
Ephemeral Gully Erosion		Nutrients in Groundwater		Regulations
Gully Erosion		Facility Wastewater Runoff		Air Quality; Odors, Ozone
Sheet and Rill Erosion		Manure Runoff (Field Application)		Energy Reduction; Minimize Nutrient Costs
Stream/Ditchbank Erosion	X	Silage Leachate		Neighbor Relations, Aesthetics
Soil Compaction	X	Nutrients in Surface Water		Maximize Nutrient Utilization, Profitability
		Pesticides in Surface or Groundwater		Time and Acres Available for Manure Application

- 1.2. **Aerial photo or map(s)** with legal descriptions, field (name or number), acres
- Identify surface waters (irrigation canals/ditches, riparian areas, wetlands, ponds, rivers, domestic well)
 - Production Areas – **Animal confinement area** – open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milk rooms, milk centers, cow yards, barn yards, medication pens, walkers, animal walkways, and stables. **Manure Storage areas** – lagoons, runoff ponds, storage sheds, stockpiles, pit storages, liquid impoundments, static piles, and composting piles. **Raw materials storage area** – feed silos, silage bunkers, bedding materials. **Waste containment area**- settling basins, any area used in the storage, handling, treatment or disposal of mortalities.
 - Land application area (acres) all areas that may receive manure, litter and waste water during this year
 - Identify filter strips or setback areas
 - Identify land you lease and life of lease – you operate but owned by another
 - Identify other land that you apply manure to but owned / operated by others

Section 2. NRCS Conservation Plan (Land Treatment and Farm Headquarters)
(Optional) NRCS Conservation Plan of Planned Conservation Practices & Alternatives

Section 3. Manure and Wastewater Handling and Storage
(See Engineering Design(s))

3.1. Manure Storage

Storage	Year	Type of Storage	Pumpable or Spreadable Capacity	Annual Manure Produced* in a Year Cu ft/33 = Tons	Maximum Days Of Storage Not to exceed 356 days

* Attach WY-ECS=45A, WY-ECS-45B step 3d. See details for total in following table.

3.2. Animal Inventory

Animal Group	Type or Production Phase	Number of Animals	Average Weight (Lbs)	Confinement Period	Storage Where Manure Will Be Stored

- (1) Number of Animals is the average number of animals that are present in the facility at any one time.
- (2) Manure production worksheet WY-ECS-45a,b Step 3d. Complete for each age group and enter total in Table 3.1.

3.3. Mortality Management

To decrease non-point source pollution of surface and ground water resources, reduce the impact of odors that result from improperly handled animal mortality, and decrease the likelihood of the spread of disease or other pathogens, approved disposal methods should be implemented in the handling of normal mortality losses.

COUNTY or TRIBAL

Follow County or Wind River Environmental Quality Commission rules/regulations for animal disposal.

Example: Do not dispose of the animal in water drainages, and if an animal is disposed in a way that others may deem unacceptable, the animal disposal method could result in a nuisance violation.

STATE

Wyoming Department of Environmental Quality (DEQ) rules & regulations for animal disposal within 48 hours. (Wyoming Statute 35-10-104)

1. Operator may bury the animal on their property provided the following criteria are met: a minimum of two feet of cover and cannot be in contact with groundwater.
2. Operator may haul the animal to a disposal area on their property provided it is at least ½ mile from human habitation, and cannot be in contact with surface water.
3. Dead animals from animal operations are considered “trade wastes”. Trade wastes from any industry may not be burned as a method of removal or disposal unless the operator has an air quality permit allowing them to burn trade wastes as a disposal method and the operator has a licensed incinerator in which to burn the trade waste.

CITY

Animals may be taken to city landfills.

Planned Method of Disposal

Type of Livestock	Weight of Livestock	Number of Mortalities	Disposal Method

Section 4. Soil and Environmental Risk Assessment

Complete these tables for all fields nutrients are applied to:

4.1. General Soil Information Soil Report: Non-Technical Soil Description Soils Report

Field	Map Unit old –new symbol	Soil Component Name	Surface Texture	Slope Range (%)	Water Table* (in.)	Drainage Class	Available Water Holding Capacity Top 5 feet (in)	Permeability	Salinity mmhos/cm

* **NA=No water table** **Coarse textured soils** are sands, loamy sands, sandy loams. **Medium-textured soils** are silts, silt loams, loams, sandy clay loams. **Fine textured** are sandy clays, clay loams, silty clay loams, silty clays, and clays.

4.2. Environmental Risk Assessment

Nitrogen Leaching Index – Agronomy Note 25 (> 50# N of agronomic rate is applied and/or Soil test N >25 ppm)

Field	Soil Test N (ppm)	Nitrogen Application Rate	Net Score	Risk	Pounds of Nitrogen applied over agronomic rate.

4.3 Environmental Risk Assessment

Wyoming Phosphorus Index – Agronomy Note 15 (Mandatory if manure is applied and/or soil test P >18 ppm.)

Field	Soil Test P (ppm)	P ₂ O ₅ Application Rate	Net Score	Risk	Nitrogen or Phosphorus-Based Application Rate

Section 5. Nutrient Management

5.1. Annual Soil Test Data

Field	Test Year	NO ₃ -N (ppm)	P	K	Mg	Ca	Na	Units	Soil pH	OM (%)	CEC (meq/100g)	P Test Used	EC (mmhos/cm)

5.2. Annual Manure Nutrient Analysis

Manure Source	Dry Matter (%)	Total N	Organic N	NH ₄ -N	NO ₃ -N	Total P ₂ O ₅	Total K ₂ O	Max. Avail. N	Avail. P ₂ O ₅	Avail. K ₂ O	Units	Analysis Source	Date of Most Recent Analysis

(1) (NO₃-N avg 1.5) + (Ammonia N is 1.5 avg) + Organic N = Total N

(2) Wyoming assumes that 45% of the organic manure nitrogen, 90% of manure phosphorus and 95% of manure potassium is crop available the first year.

Suggestions for manure testing: Annually manure sample as close to the time of application as practical, at least 30 days before application. For each manure pile or lagoon, get 6 to 20 subsamples and mix them together. If you cannot get the sample to the lab immediately, store it in a freezer until you can deliver it. The analysis should include moisture content, total nitrogen (TKN, NH₃-N, Organic N, NO₃-N), phosphorus, and potassium, and organic matter. Ammonia should also be included for liquid manures, but is usually not necessary for solid manures.

Suggestions for soil testing: Soil sample annually prior to nutrient applications. It is recommended to soil test within 90 days prior to planting. A soil sample will be take according to University of Wyoming recommendations on every 20 acres or 40 acres if crop rotation and soils are similar. A soil test will be needed on every field that a manure application will be made on in this five year plan period. Ideally, every field should have a soil test, currently soil tests less than 5 years are acceptable. Avoid the field edges, low or high areas of a field. Use an accredited laboratory (University of Wyoming) as our high pH soils need soil test P analyzed by the Olsen method (bicarbonate). Air-dry the soil sample prior to sending it. **A nutrient management plan will be developed on a narrative-approach so every field, on every crop that could be grown in the five-year plan period, application rates developed from an actual annual manure sample (WY-ECS-45a for every 3 crops), and a Phosphorus Index and Nitrogen Leaching Index will be included.**

5.3A. Whole Farm Nutrient Use Summary Manure Applications Records are in Section 5.6 and 5.7

Planned Crops and Recommendations based on Land Grant University references :

Field	Acres	Crop	Avg Yield	Soil Test Recommendations N & P & K			Manure Application Rate tons/acre or -1000 gal/acre ⁻¹	Manure Applied Per Field-- ton/gal x field acres	COMMERICAL FERTILIZER	DATE
				-----lb/acre-----						
				N	P ₂ O ₅	K ₂ O				
Whole Farm Totals										

¹ WY-ECS-45a, b Step 8 (11-22-39) and considers first year availability for Nitrogen, Phosphorus, and Potassium from manure test values in step 4. (AWMFH Table 11-9) 11 Ton x 11# N = 121# N, 11 Ton x 22# P₂O₅ = 242# P₂O₅, and 11 Ton x 39# K = 429# K₂O applied on each acre. Potassium is naturally high in western soils but most is not readily available to the plant. Manure applications add high levels of potassium. Caution should be taken when crop is used for forage as a buildup of potassium will be taken up with the plant and may prove toxic to cattle (ie: milk fever). Manure applications may not cover all the nutrients so an additional commercial fertilizer application may be necessary to meet crop needs. WY-ECS-44 documents the balance of recommendations with nutrients from manure and fertilizer. A manure application generally provides an excess of P. A Phosphorus Index is always calculated prior to a manure application. If it has a Low or Medium Index -Nitrogen-based application rate than a manure application is acceptable. If the Phosphorus Index was High, the Phosphorus application rate (only 1/3 of an application rate) can be applied so it is recommended to apply manure to another field/crop really needing the phosphorus. No application if the Phosphorus Index is rated Very High. See NRCS Agronomy Technical Note 15 Phosphorus Index. From the manure test values Organic nitrogen is only 45% available the first year, Phosphorus 90%, Potassium 95%. Nitrogen from that same application is 25% available the second year. WY-ECS-45 assists in these calculations.

*****Producer Output or Step 13 & 16 on WY-ECS-45A shows acres and application rate to utilize the manure produced.**

5.5 Field Information and Setbacks

Field ID	Total Acres	Spreadable Acres	FSA Farm	FSA Tract	Predominant Soil Type	Slope (%)	Manure Application Setback(s) (ft)

5.6. On-site Land Application Recordkeeping **ATTACH** annual Soil and Manure Analysis Reports _____ Year

Date	Field	Crop	Applied Acres	Manure Source	Litter Ver. 2.51	Process Waste water	Method of Application	Rate/Acre	Equipment	Days to Incorporate	Loads, Speed or Time

5.7. Manure Application Climate Record Recordkeeping _____ Year

App. #	Hauler's Name (1)	Ground Cover % (2)	Soil Condition (3)	Air Temp. (4)	Wind Speed (5)	Wind Dir. (6)	Weather (7)	Rain Before (8)	Rain After (9)	Notes/Comments Do not apply to frozen or snow covered land. Do not apply While it is raining or snowing.
1										
2										
3										

App. #	Hauler's Name (1)	Ground Cover % (2)	Soil Condition (3)	Air Temp. (4)	Wind Speed (5)	Wind Dir. (6)	Weath-er (7)	Rain Before (8)	Rain After (9)	Notes/Comments Do not apply to frozen or snow covered land. Do not apply While it is raining or snowing.
4										
5										

- 1) Name or initials of the person who applied the manure. (2) Percent residue or ground cover at time of application.
- (3) Soil condition at time of application: Dry, Firm, Wet, Muddy (4) Air temperature at time of application.
- (5) Wind speed at time of application: Calm (0-2 mph), Light (2-5 mph), Breezy (5-15 mph), Windy (>15 mph).
- (6) Wind direction at time of application: N, NE, E, SE, S, SW, W, NW.
- (7) Weather condition at time of application: Sunny, Partly Cloudy, Cloudy
- (8) Amount of rainfall during the 24 hours prior to application. (9) Amount of rainfall during the 24 hours after application.

5.8. Commercial Fertilizer and Irrigation Water Nitrate Applications

_____ Crop Year

Month-Year	Field	Crop	Fertilizer Analysis	Irrigation Water Analysis	Application Method	Material Rate/Acre	Acres Covered.	Area of Field	Total Material Applied	N (Lbs/A)	P ₂ O ₅ (Lbs/A)	K ₂ O (Lbs/A)

- (1) With commercial fertilizers, enter the analysis in the form of N-P₂O₅-K₂O (examples: Urea 46-0-0, Monoammonium phosphate is 11-52-0).
- (2) With irrigation water, enter the nitrate concentration in ppm.

Section 6. Feed Management

Beef nutrition self-assessment: Circle appropriate answer or delete incorrect one.

Feeding Practices	Reduces N Excretion	Reduces P Excretion	Reduces Purchased Feed Used	Is this option currently used on your operation?	Is this a viable option for future adoption?
· Group cattle by weight and class and formulate multiple rations	x	x		Yes No	Yes No
· Feed ration 11-12% CP, 29% RUP for growing/finishing	x			Yes No	Yes No
· Feed phosphorus according to Average Daily Gain: .5 lb = .12%; .75 lb = .14%; 1.0 lb = .16%; 1.5 lb = .17%; 2.0 lb = .18%; 2.5 lb = .21%; 3.0 lb = .24%; 3.5 lb = .28%; 4.0 lb = .34%		x		Yes No	Yes No
· Feed ration with 9% CP and 30% RUP for late lactation cows and phosphorus content = .12 - .21% depending on stage of life	x			Yes No	Yes No
· Improve quality of home-grown feeds	x	x	x	Yes No	Yes No
· Increase dry matter intake	x		x	Yes No	Yes No
· Blend legume and corn silage in ration to meet protein requirements	x			Yes No	Yes No
· Test all forages and feed ingredients and adjust rations accordingly	x	x	x	Yes No	Yes No

CP=crude protein; RUP=rumen undegradable protein (given as % of total CP).

Information in this section was modified from Livestock and Poultry Environmental Stewardship Program, Lesson 12, Feeding Dairy Cows to Reduce Nitrogen, Phosphorus, and Potassium Excretion into the Environment, by Rick Grant of University of Nebraska.

Dairy nutrition self-assessment: Circle appropriate answer or delete incorrect one.

Feeding Practices	Reduces N Excretion	Reduces P Excretion	Reduces Purchased Feed Used	Is this option currently used on your operation?	Is this a viable option for future adoption?
· Group cattle by milk production or lactation stage and formulate multiple rations	x	x		Yes No	Yes No
· Feed ration with % P of 0.49% for fresh cows (first 3 weeks)		x		Yes No	Yes No
· Feed ration with % P of 0.28%-0.41% for early to mid-lactation cows		x		Yes No	Yes No
· Feed ration with 17% CP and 40% RUP for fresh cows	x			Yes No	Yes No
· Feed ration with 16%-18% CP and 36%-38% RUP for early to mid-lactation cows	x			Yes No	Yes No
· Feed ration with 14% CP and 30% RUP for late lactation cows	x			Yes No	Yes No
· Improve quality of home-grown feeds			x	Yes No	Yes No
· Increase dry matter intake	x		x	Yes No	Yes No
· Monitor MUN (should be between 12 and 18 mg/dl)	x			Yes No	Yes No
· Blend legume and corn silage in ration to meet protein requirements	x			Yes No	Yes No
· Test all forages and feed ingredients and adjust rations accordingly	x	x	x	Yes No	Yes No

CP=crude protein; RUP=rumen undegradable protein (given as % of total CP); MUN=milk urea nitrogen.

Section 7. Other Utilization Options: Composting

Section 8. Recordkeeping Forms

8.1. Manure Exports off the Farm *Manure test was given to Receiver* _____ Year

Manure Source	Date	Amount Gal or Ton	Receiving Operation	Address	Contact	Phone

8.2. Discharge(s) Summary _____ Year

Manure Source	Date	Amount Gal or Ton	Manure Destination

8.3. Manure Imports onto the Farm _____ Year

Manure's Animal Type and Form	Date	Amount Gal or Ton	Originating Operation	Address	Contact	Phone

8.4. Inspection of Equipment/Monitoring Records _____ Year

Attach the following Wyoming DEQ Recordkeeping Documents:

- ✓ CAFO Weekly Storage and Containment Structure Inspections Log Sheet
- ✓ Water Line Inspection Log Sheet
- ✓ CAFO Nutrient Land Application Log Sheet (or above table 5.6, 5.7)
- ✓ Manure, Litter, and Process Wastewater Transfer Record Form, if applicable

All Recordkeeping forms are to be kept current and available at the facility.

**8.5. Operational Changes Due to Soil Tests, Land Leases, Monitoring Records ...
for _____ Year**

RECORDKEEPING AND TESTING

Maintain records on-site for five years.

Annual soil and manure analysis are required.

Is a written Operation and Maintenance (O & M) plan maintained and available to key employees on the following:

- Manure storage, operation, and maintenance? Yes No
- How to inspect storage facilities? Yes No
- There is an emergency response plan? Yes No
- Manure equipment is calibration prior to application? Yes No

8.6 ANNUAL REPORT due April 15

Submit to: **Wyoming Department of Environmental Quality**
WYPDES Program, Water Quality Division (307) 777-7090
Herschler Building, 4 West 122 West 25th Street
Cheyenne, WY 82002

8.7 FARM Crop Nutrient Recommendations Planned for Crop Year _____

FARM Crop Nutrient Recommendations Using the University of Wyoming’s “Guide to Wyoming Fertilizer Recommendations” B-1045, the following crop nutrient needs were determined. Texture of soil changes should be noted.

SOLID WASTE

Crop Year _____

The **solid manure analysis** from the feedlot was taken on

- NO₃-N -lbs/ton Nitrate Nitrogen
- NH₃-N -lbs/ton Ammonia Nitrogen - estimated
- N --lbs/ton Organic Nitrogen
- P₂O₅ -lbs/ton Oxidized Phosphorus
- K₂O - lbs/ton Oxidized Potassium

Soil test was taken _____ to a depth less than one foot

- Organic Matter %
- Nitrate N ppm
- Phosphorus ppm (Olsen or Bicarbonate)
- Potassium ppm

Section 9. Online References

Wyoming Nutrient Management Plan Technical Standards

http://deq.state.wy.us/wqd/WYPDES_Permitting/WYPDES_CAFO/Nutrients/4-0944.pdf

WYDEQ Water Quality Rules and Regulations, Chapter 2, Appendix G Concentrated Animal Feeding Operations (CAFO)

http://deq.state.wy.us/wqd/WQDrules/Chapter_02.pdf

North American Proficiency Testing Program (NAPT-PAP)

Certified Soil Testing Labs: <http://www.naptprogram.org/pap/>

Certified Manure Testing Laboratories:

<http://www2.mda.state.mn.us/webapp/lis/manurelabs.jsp>

Crop Fertilizer Recommendation Guidelines

University of WY Fertilizer Guide B-1045 <http://uwadmnweb.uwyo.edu/soilFert/>

Manure Equipment Calibration

<http://www.ces.purdue.edu/extmedia/ID/ID-309.pdf>

Manure Nutrient Availability

WY USDA-NRCS <http://www.wy.nrcs.usda.gov/> eFOTG (electronic Field Office Technical Guide)
Section 1, Table of Contents/ B. Reference lists/11. Technical Notes/Agronomy Technical Notes and
C. Tools & Forms (WY-ECS)

Agronomy Technical Notice No.13 Soil and Manure testing procedures
Agronomy Tech Note 11.7 Nutrient Management Balance Jobsheet & Instructions
Agronomy Tech Note 12.2.Solid Manure; 12.6 Liquid Manure) Jobsheets & Instructions
Agronomy Tech Note 19 Nutrient Management Plan, CNMP Checklist
Agronomy Tech Note 20, 24 Manure Applications
Agronomy Tech Note 15 Phosphorus Index
Agronomy Tech Note 25 Nitrogen Index

Section IV, 590 Nutrient Management Standard, Specification, Job Sheets WY-ECS-44 Nutrient
Balance of Commercial fertilizer and Manure, WY-ECS 45a Solid manure production,
WY-ECS- 45b Liquid slurry production, WY-ECS-60 AFO/CAFO Inventory, WY-ECS-86 CNMP
Template

Best Management Practices for Nitrogen Fertilizer

<http://www.ext.colostate.edu/pubs/crops/xcm172.pdf>

Best Management Practices for Phosphorus Fertilizer

<http://www.ext.colostate.edu/pubs/crops/xcm175.pdf>

National Engineering Handbook: Part 651 AWMFH Agricultural Waste Management Field Handbook

<http://directives.sc.egov.usda.gov/>