A National Template for Preparing a Dairy Feed Management Plan

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Disclaimer
This fact sheet reflects the best available information on the topic as of the publication date.
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This project is affiliated with the LPELC http://lpe.unl.edu

USDA United States Department of Agriculture

NRCS Natural Resources Conservation Service

Introduction

This fact sheet has been developed to support the implementation of the Natural Resources Conservation Service Feed Management 592 Practice Standard. The Feed Management 592 Practice Standard was adopted by NRCS in 2003 as another tool to assist with addressing resource concerns on livestock and poultry operations. Feed management can assist with reducing the import of nutrients to the farm and reduce the excretion of nutrients in manure.

The Natural Resources Conservation Service has adopted a practice standard called Feed Management (592) that is defined as “managing the quantity of available nutrients fed to livestock and poultry for their intended purpose”. The national version of the practice standard can be found in a companion fact sheet entitled “An Introduction to Natural Resources Feed Management Practice Standard 592”. Please check in your own state for a state-specific version of the standard.

The national Feed Management Education team has developed a systematic 5-step development and implementation process for the Feed Management Practice Standard. A complete description of the 5-steps can be found in a companion fact sheet entitled **“**Five Steps to the Development and Implementation of a Feed Management Plan”.

The fourth step of this process focuses on the development of the Feed Management Plan. Key participants at step 4 are the producer and their nutritionist. The key tools to be used at step 4 are the Feed Management Plan Checklist (FMP) and the Feed Management Plan Template.

The Feed Management Plan (FMP) is intended to assist the producer with documentation of those practices that affect whole farm nutrient management and contribute towards achieving nutrient balance at a whole farm level. Nitrogen and phosphorus are the two nutrients that are required to be managed as part of a FMP in a Comprehensive Nutrient Management Plan. When nitrogen and phosphorus imports exceed nitrogen and phosphorus exports there is an imbalance at a whole farm level. These imbalances can lead to impaired water quality in nearby water bodies due to both surface runoff or leaching of nutrients to ground water. Excess nitrogen can also be volatilized and contribute to impaired air quality. Potassium is a nutrient that can lead to production and health problems if it is not monitored in dairy rations, therefore it is included as a nutrient to monitor.

The FMP template is designed to provide a common format to address all areas noted in the Feed Management 592 practice standard.

The FMP template is organized with the following sections:

- Contact Information
- General purpose and background information about the 592 Standard
- Specific purpose selection for the operation
- When the plan was written
- When the plan will be reviewed
- Specific farm information for use with the electronic manure excretion estimator tool.
- Summary of Feeding Practices and Equipment/Technologies utilized on the farm
- Record keeping
- Recommendations

Estimate of Manure Nutrient Excretion

As part of the FMP, the impact that feed management will have on manure volume and nutrient content is estimated. The specific farm information section has been included to collect farm-specific descriptive information for use with the electronic manure excretion estimator tool. This tool is described in a companion fact sheet entitled "Estimating Manure Nutrient Excretion".

Feed Management Practices

This section should include a list and narrative of those practices that have been adopted. One way to document the practices is to insert a copy of the completed Feed Management Plan Checklist. Proprietary information or specific ration formulations need not be included.

Guidance Sections

There are two important sections of the Feed Management Plan that should contain specific guidance about sampling and analyses procedures, these are:

- Record of Feed Sampling and Feed Analysis
- Final Recommendations

On pages 4 to 10 is a copy of the National Feed Management Plan template. On pages 12 to 20 is a copy of a completed Feed Management Plan.

Project Information

Detailed information about training and certification in Feed Management can be obtained from Joe Harrison, Project Leader, jhharrison@wsu.edu, or Rebecca White, Project Manager, rawhite@wsu.edu.

Author Information

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Deb Wilks – Standard Nutrition

Feed Management Plan Template (11. 16. 07)

Producer's Name: _____

Address: _____

Address: _____

Town, State, Zip: _____

Farm Name: _____

Phone: _____

Fax: _____

e-mail: _____

Consultant's Name: _____

Address: _____

Address: _____

Town, State, Zip: _____

Business Name: _____

Phone: _____

Fax: _____

e-mail: _____

Planner's Name: _____

Address: _____

Address: _____

Town, State, Zip: _____

Business Name: _____

Phone: _____

Fax: _____

e-mail: _____

General Purpose and Background

Feeding management is one of six components of a Comprehensive Nutrient Management Plan (CNMP) as defined by the Natural Resource Conservation Service. Feed management practices may reduce the volume and nutrient content of manure and may be an effective approach to minimizing the import of nutrients to the farm. Feed Management as part of a CNMP should be viewed as a "consideration" but not a "requirement" as some practices will not be economical on some dairies. The Feed Management Plan (FMP) is designed to assist the producer with documentation of those practices that affect whole farm nutrient management and contribute towards achieving nutrient balance at a whole farm level. Nitrogen and phosphorus are the two nutrients that are required to be managed as part of a FMP in a CNMP. When nitrogen and phosphorus imports exceed nitrogen and phosphorus exports there is an imbalance at a whole farm level. These imbalances may lead to impaired water quality in nearby water bodies due to both surface runoff or leaching of nutrients to ground water. Excess nitrogen can also be volatilized and contribute to impaired air quality. Potassium is a nutrient that can lead to production and health problems if it is not monitored in dairy rations, therefore it is included as a nutrient to monitor.

Specific Purpose

- ☐ **Supply the quantity of available nutrients required by livestock and poultry for maintenance, production, performance, and reproduction; while reducing the quantity of nutrients, especially nitrogen and phosphorus, excreted in manure by minimizing the over-feeding of these and other nutrients.**
- ☐ **Improve net farm income by feeding nutrients more efficiently.**

Date Plan Written: _____

The Plan will be reviewed at (what interval, i.e. yearly) and by whom: _____

Specific Farm Information- Collect for manure volume and nutrient excretion estimate

1) Enter animal information (Step 3)

A) Dairy Cattle:	**Group 1**	**Group 2**	**Group 3**	**Group 4**	**Group 5**	**Group 6**	**Group 7**
Define Groups (i.e. production level, dry, heifers)							
Group Animal Data:							
Average weight							
Average Number of animals in group							
Average Milk Production lbs							
Average Milk True Protein %							
% Manure collected							
Group Ration Information:							
Indicate how the following information will be reported -Wet or Dry basis?							
If Wet basis, what is the diet DM?							
Feed intake lbs/ cow/ day							
% Ash							
Dietary %CP							
Dietary %P							
Dietary %K							

Rolling Herd Average? _____

<u>Manure Management and Application-</u> Additional data collection for FNMP$ evaluation tool *(step # refers to step in FNMP$ tool)*

List group numbers from above to matching facility types. Continue through data collection table describing each facility and how manure is managed.

2a) Producer's name of animal facility or location (Step2) ***Identify most closely matching manure system:*** ***Choose One***	**EXAMPLE**	**Facility 1**	**Facility 2**
Group #s/ Producer's name	**1, 2&3/ Main**		
Open lot or feedlot - scraped or stockpiled solids			
Open lot or feedlot - composted solids			
Runoff Collection System from Open Lot			
Manure pack under roof			
Manure pack under roof -composted			
Bedded pack for swine (e.g. hoop building)			
Bedded pack & compost for swine (e.g. hoop building).			
Solid/semi-solid manure & bedding held in roofed storage			
Solid/semi-solid manure & bedding held in unroofed storage			
Liquid/slurry storage in covered storage			
Liquid/slurry storage in uncovered storage	**X**		
Storage (pit beneath slatted floor)			
Poultry manure stored in pit beneath slatted floor			
Poultry manure on shavings or sawdust held in housing			
Poultry manure on shavings or sawdust held in housing - Composted			
1-Cell anaerobic treatment lagoon			
Multi-cell anaerobic treatment lagoon			

2b)

Is runoff Collected? Yes/No (Step 2 cont)	**NO**		
Additional Notes:			

3) Manure Application Method (Step 4a)

Choose one	**EXAMPLE**	**Facility 1**	**Facility 2**
Injection			
Immediate Incorporation			
Sprinkler including pivot			
Big Gun Irrigation			
Flood irrigation			
Dragline with injection toolbar			
Dragline with Aerway toolbar			
Dragline- Surface application			
a. Days from application to Incorporation			
Surface Broadcast	**X**		
a. Days from Broadcasting to Incorporation	**1**		
b. soil conditions: Cool Soils Warm, Wet Soils Warm, Dry Soils	**COOL SOILS**		

4) Manure characteristics (Step 4c)	**EXAMPLE**	**Facility 1**	**Facility 2**
% Ash (Optional)			
a. Excreted	**15%**		
b. Harvested	**15%**		
Dry weight of Bedding added (tons/ yr) *Excluding soil or sand*	**UNKNOWN**		
% Moisture	**92%**		
Liquid or slurry? Yes/ No	**YES**		
Additional Manure Characteristics (Optional) (Step 4a&b)			
% N retention	**UNKNOWN**		
% Organic N available to crop			
% Ammonium N available to crop			
% P retention			
P availability to crop %			

5) Equipment characteristics for manure application (Step 6)

Choose One: I, II, OR III	**EXAMPLE**	**Facility 1**	**Facility 2**
I. Spreader or Tanker Application: Injection, immediate incorporation, OR surface broadcast			
a. Equipment (Choose One)			
Truck Mounted -			
3000 gallon tanker			
4000 gallon tanker			
16 ton spreader			
20 ton spreader			
22 ton spreader			
28 ton spreader			
Tractor Pulled -			
3000 gallon tanker surface			
3000 gallon tanker injection			
4200 gallon tanker surface	**X**		
4200 gallon tanker injection			
6000 gallon tanker surface			
6000 gallon tanker injection			
9500 gallon tanker surface			
9500 gallon tanker injection			
10 ton spreader			
16 ton spreader			
20 ton spreader			
22 ton spreader			
b. Operating parameters (**Optional)			
Road Speed (mph)/Pipe laydown speed**	**UNKNOWN**		
Field Speed (mph)/Single irrigation application rate**			
Swath Width (feet)**			
Number of application rigs	**2**		

	EXAMPLE	Facility 1	Facility 2
II. Towed Hose Application: **Dragline with injection toolbar, Dragline with Aerway toolbar, OR Dragline- Surface application**			
a. Equipment (Choose One)			
Liquid/ Slurry Supply method			
Aluminum Pipe			
Delivery hose			
Dragline hose			
b. Operating parameters (**Optional)			
Number of Rigs			
Pipe/hose laydown speed (hours/mile)**			
Average field speed (mph)**			
Application Swath Width (feet)**			
Number of passes before equipment is moved to next field**			
Setup time per subfield (hours)**			
Maximum application rate (1000 gal/acre/pass)**			
Length of dragline hose**			
III. Big Gun Application:			
a. Equipment (Choose One)			
Traveling Gun -Alum pipe - 300 gpm, 250' width			
Traveling Gun -Alum pipe - 400 gpm, 300' width			
Traveling Gun -Delivery Hose - 300 gpm, 250' width			
Traveling Gun -Delivery Hose - 400 gpm, 300' width			
b. Operating parameters (**Optional)			
Pipe/hose laydown speed (hrs/mile)**			
Average pull speed (hrs/mile)**			
Irrigation spray spread width (ft) **			
Number of passes before equipment is moved to next field**			
Setup time per subfield (hrs)**			
Maximum application rate (1000 gallons/acre/pass)**			
Length of travel for one pull**			
Liquid/Slurry Supply method *(choose one)*			
Aluminum Pipe			
Delivery hose			
Dragline hose			
Number of traveling guns			

	EXAMPLE	Facility 1	Facility 2
6) Equipment characteristics for Nurse Tank or Truck (Spreader, Tanker, OR Towed Hose Application only)			
Nurse tank/truck hauls manure to field? Yes/No	**YES**		
If YES, Nurse Tank/ Truck for hauling to field: (choose one)			
Liquid tanker truck	**X**		
OTR Nurse truck - 10 tons dry haul			
OTR Nurse truck - 15 tons dry haul			
OTR Nurse truck - 20 tons dry haul			
Number of Nurse tank/ truck rigs	**1**		

7) Crop system and nutrient inputs (Step 5)

Year of Crop Rotation	Crops Receiving Manure		Crop Yields		Crop Nutrient Requirements (lbs of nutrient/acre) ***Optional*		Crop Nutrient Credits from non manure sources (ie fertilizer) (lbs of nutrient/acre)	
	Checked if Manured	Identify Crops in Rotation (All 4 Years Must Be Entered)	Yield	Units	N	P_2O_5	N	P_2O_5
1								
2								
3								
4								

Crop Options:

Grains	**Stovers/Straws**	**Grasses/Hays**		**Hi Moisture Forages**	**Food Crops**
Barley	Barley Straw	Alfalfa mid-bloom	Prairie hay, mature	Alfalfa Haylage, mid-bloom	Potatoes
Buckwheat	Corn Stover	Birdsfoot trefoil	Reed canarygrass	Corn Silage	Sugar Beet Roots
Corn	Oat Straw	Bluestem, mature	Small grain hay, boot	Small Grain Silage, dough	Sugar Beet Tops
Millet	Rye Straw	Bluestem, early heading	Small grain hay, dough	Sorghum-Sudan Silage	Sweet Corn
Oats	Sorghum Stover	Brome Grass	Soybean hay	Sorghum Silage	Dry Beans
Rye	Soybean Stover	Clover, red	Switchgrass		Popcorn (grain)
Sorghum	Wheat Straw	Fescue, Tall, full-bloom	Timothy, mid-bloom		
Soybeans		Millet, foxtail	Vetch, hairy		
Sunflower		Orchardgrass, latebloom	Wheat Grass		
Wheat					

Summary of Feeding Practices and Equipment/Technologies utilized on the farm

Narrative of those practices that have been adopted and/or insert the completed Farm Plan Assessment Checklist.

Include how diet formulation was achieved, to what standards (ie., NRC or proprietary recommendations, etc).

Indicate when lab analyses were conducted on feeds and by what lab.

Indicate if nutrient analysis of drinking water was included in diet formulation.

Note the expected volume of manure excreted on manure storage requirements.

Note the potential of any feed byproducts fed and their impact on nutrients in manure.

Note the impact of feed management practices, animal management practices, and diet manipulation on manure odors, pathogens, animal health and well-being.

Note use of manure on farm for production of forages and crops.

Make note of use of manure analysis (as excreted or stored) to estimate the impact of feeding strategies.

Record of Feed Sampling and Feed Analysis

Describe routine feed analysis plan.

- What feeds need to be sampled and when
- What analyses need to be preformed

Note why feeding rates for N and P may differ from recommendations (i.e. it is less expensive).

The following records need to be kept for five years:

Records of feed analysis and ration formulation, including initial ration formulation prior to development of FMP.

Record of the initial estimate of the impact of adopted feed strategies on manure content.

Record of any manure analysis that was done after the feeding strategy was implemented.

Recommendations:

This section should summarize the feed management practices that need to be implemented.

Dairy Feed Management Plan Template (EXAMPLE PLAN)

Producer's Name:	A & J Werks
Address:	18125 Loop Drive
Address:	
Town, State, Zip:	Eeornom, WA 00123
Farm Name:	A & J Werks Dairy
Phone:	345-906-9087
Fax:	
e-mail:	
Consultant's Name:	D Wilks, PhD PAS and J Harrison
Address:	Dan Emmott, WA 99089
Address:	
Town, State, Zip:	
Business Name:	Nutrition for Profit and Stewardship
Cell Phone:	890-786-1234
Fax:	
e-mail:	
Planner's Name:	Lara, Ron, Becca, and Mike
Address:	
Address:	Helens View Lane
Town, State, Zip:	Oly, WA 76539
Business Name:	Nutrient Management Advocates Inc
Phone:	
Fax:	
e-mail:	

General Purpose and Background

Feed management is one of six components of a Comprehensive Nutrient Management Plan (CNMP) as defined by the Natural Resource Conservation Service. Feed management practices can reduce the volume and nutrient content of manure and contribute to minimize the import of nutrients to the farm. Feed Management as part of a CNMP should be viewed as a "consideration" but not a "requirement" as some practices will not be economical on some dairies. The Feed Management Plan (FMP) is designed to assist the producer with documentation of those practices that affect whole farm nutrient management and contribute towards achieving nutrient balance at a whole farm level. Nitrogen and phosphorus are the two nutrients that are required to be managed as part of a FMP in a CNMP. When nitrogen and phosphorus imports exceed nitrogen and phosphorus exports there is an imbalance at a whole farm level. These imbalances may lead to impaired water quality in nearby water bodies due to both surface runoff or leaching of nutrients to ground water. Excess nitrogen can also be volatilized and contribute to impaired air quality. Potassium is a nutrient that can lead to production and health problems if it is not monitored in dairy rations, therefore it is included as a nutrient to monitor.

Specific Purpose

[X]	Supply the quantity of available nutrients required by livestock and poultry for maintenance, production, performance, and reproduction; while reducing the quantity of nutrients, especially nitrogen and phosphorus, excreted in manure by minimizing the over-feeding of these and other nutrients.
[X]	Improve net farm income by feeding nutrients more efficiently.

Date Plan Written:	June 21, 2006
The Plan will be reviewed at (what interval, i.e. yearly) and by whom:	Yearly in June

Specific Farm Information- Collect for manure volume and nutrient excretion estimate

1) Enter animal information (Step 3)

A) Dairy Cattle:	**Group 1**	**Group 2**	**Group 3**	**Group 4**	**Group 5**	**Group 6**	**Group 7**
Define Groups (i.e. production level, dry, heifers)	Fresh	Pen 1	Pen 2	Pen 3	Pen 5	Pen 6	Pen 7 mastitis
Group Animal Data:							
Average weight	1350	1400	1400	1400	1450	1450	1400
Average Number of animals in group	66	128	130	94	91	91	89
Average Milk Production lbs	95	100	98	82	76	85	80
Average Milk True Protein %	3.0	3.0	3.0	3.0	3.0	3.0	3.0
% Manure collected	100	100	100	100	100	100	100
Group Ration Information:							
Indicate how the following information will be reported -Wet or Dry basis?	dry						
If Wet basis, what is the diet DM?							
Feed intake lbs/ cow/ day	41	61	61	56	53	56	59
% Ash	8	8	8	8	8	8	8
Dietary %CP	18.5	18.5	18.5	18.5	18.5	18.5	18.5
Dietary %P	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Dietary %K	1.51	1.51	1.51	1.51	1.51	1.51	1.51

Rolling Herd Average? ____29,000 #_____

A) Dairy Cattle:	**Group 8**	**Group 9**	**Group 10**	**Group 11**	**Group 12**	**Group 13**	**Group 14**
Define Groups (i.e. production level, dry, heifers)	Heifers to 400 #	Dry Cows					
Group Animal Data:							
Average weight	325	1500					
Average Number of animals in group	246	90					
Average Milk Production lbs							
Average Milk True Protein %							
% Manure collected	100	100					
Group Ration Information:							
Indicate how the following information will be reported -Wet or Dry basis?	dry						
If Wet basis, what is the diet DM?							
Feed intake lbs/ cow/ day	9	32					
% Ash	8	8					
Dietary %CP	13	14					
Dietary %P	0.28	0.35					
Dietary %K	0.5	1.18					

<u>Manure Management and Application-</u> Additional data collection for FNMP$ evaluation tool *(step # refers to step in FNMP$ tool)*

List group numbers from above to matching facility types. Continue through data collection table describing each facility and how manure is managed.

2a) Producer's name of animal facility or location (Step2)
Identify most closely matching manure system: **EXAMPLE** **Facility 1** **Facility 2**
Choose One

Group #s/ Producer's name	**1, 2&3/ Main**	**Main**	
Open lot or feedlot - scraped or stockpiled solids			
Open lot or feedlot - composted solids			
Runoff Collection System from Open Lot			
Manure pack under roof			
Manure pack under roof -composted			
Bedded pack for swine (e.g. hoop building)			
Bedded pack & compost for swine (e.g. hoop building).			
Solid/semi-solid manure & bedding held in roofed storage			
Solid/semi-solid manure & bedding held in unroofed storage			
Liquid/slurry storage in covered storage			
Liquid/slurry storage in uncovered storage	X		
Storage (pit beneath slatted floor)			
Poultry manure stored in pit beneath slatted floor			
Poultry manure on shavings or sawdust held in housing			
Poultry manure on shavings or sawdust held in housing - Composted			
1-Cell anaerobic treatment lagoon		**XXXXX**	
Multi-cell anaerobic treatment lagoon			

2b)

Is runoff Collected? Yes/No (Step 2 cont)	**NO**	**YES**	
Additional Notes:			

3) Manure Application Method (Step 4a)

Choose one	**EXAMPLE**	**Facility 1**	**Facility 2**
Injection			
Immediate Incorporation			
Sprinkler including pivot			
Big Gun Irrigation			
Flood irrigation			
Dragline with injection toolbar		**XXXXX**	
Dragline with Aerway toolbar			
Dragline- Surface application			
a. Days from application to Incorporation			
Surface Broadcast	**X**		
a. Days from Broadcasting to Incorporation	**1**		
b. soil conditions: Cool Soils Warm, Wet Soils Warm, Dry Soils	**COOL SOILS**	**COOL SOILS**	

4) Manure characteristics (Step 4c)	**EXAMPLE**	**Facility 1**	**Facility 2**
% Ash (Optional)			
a. Excreted	**15%**		
b. Harvested	**15%**		
Dry weight of Bedding added (tons/ yr) *Excluding soil or sand*	**UNKNOWN**		
% Moisture	**92%**		
Liquid or slurry? Yes/ No	**YES**	**YES**	
Additional Manure Characteristics (Optional) (Step 4a&b)			
% N retention	**UNKNOWN**	**Use default**	
% Organic N available to crop		**Use default**	
% Ammonium N available to crop		**Use default**	
% P retention		**Use default**	
P availability to crop %		**Use default**	

5) Equipment characteristics for manure application (Step 6)

Choose One: I, II, OR III	**EXAMPLE**	**Facility 1**	**Facility 2**
I. Spreader or Tanker Application: Injection, immediate incorporation, OR surface broadcast			
a. Equipment (Choose One)			
Truck Mounted -			
3000 gallon tanker			
4000 gallon tanker			
16 ton spreader			
20 ton spreader			
22 ton spreader			
28 ton spreader			
Tractor Pulled -			
3000 gallon tanker surface			
3000 gallon tanker injection			
4200 gallon tanker surface	**X**		
4200 gallon tanker injection			
6000 gallon tanker surface			
6000 gallon tanker injection			
9500 gallon tanker surface			
9500 gallon tanker injection			
10 ton spreader			
16 ton spreader			
20 ton spreader			
22 ton spreader			
b. Operating parameters (**Optional)			
Road Speed (mph)/Pipe laydown speed**	**UNKNOWN**		
Field Speed (mph)/Single irrigation application rate**			
Swath Width (feet)**			
Number of application rigs	**2**		

	EXAMPLE	Facility 1	Facility 2
II. Towed Hose Application: **Dragline with injection toolbar, Dragline with Aerway toolbar, OR Dragline- Surface application**			
a. Equipment (Choose One)			
Liquid/ Slurry Supply method			
Aluminum Pipe			
Delivery hose		**XXXXXX**	
Dragline hose			
b. Operating parameters (**Optional)			
Number of Rigs		1	
Pipe/hose laydown speed (hours/mile)**		1	
Average field speed (mph)**		1	
Application Swath Width (feet)**		20	
Number of passes before equipment is moved to next field**		10	
Setup time per subfield (hours)**		1	
Maximum application rate (1000 gal/acre/pass)**		20	
Length of dragline hose**		200	
III. Big Gun Application:			
a. Equipment (Choose One)			
Traveling Gun -Alum pipe - 300 gpm, 250' width			
Traveling Gun -Alum pipe - 400 gpm, 300' width			
Traveling Gun -Delivery Hose - 300 gpm, 250' width			
Traveling Gun -Delivery Hose - 400 gpm, 300' width			
b. Operating parameters (**Optional)			
Pipe/hose laydown speed (hrs/mile)**			
Average pull speed (hrs/mile)**			
Irrigation spray spread width (ft) **			
Number of passes before equipment is moved to next field**			
Setup time per subfield (hrs)**			
Maximum application rate (1000 gallons/acre/pass)**			
Length of travel for one pull**			
Liquid/Slurry Supply method *(choose one)*			
Aluminum Pipe			
Delivery hose			
Dragline hose			
Number of traveling guns			

	EXAMPLE	Facility 1	Facility 2
6) Equipment characteristics for Nurse Tank or Truck (Spreader, Tanker, OR Towed Hose Application only)			
Nurse tank/truck hauls manure to field? Yes/No	**YES**	**YES**	
If YES, Nurse Tank/ Truck for hauling to field: (choose one)			
Liquid tanker truck	**X**	**X**	
OTR Nurse truck - 10 tons dry haul			
OTR Nurse truck - 15 tons dry haul			
OTR Nurse truck - 20 tons dry haul			
Number of Nurse tank/ truck rigs	**1**	1	

7) Crop system and nutrient inputs (Step 5)

Year of Crop Rotation	Crops Receiving Manure		Crop Yields		Crop Nutrient Requirements (lbs of nutrient/acre) ***Optional*		Crop Nutrient Credits from non manure sources (ie fertilizer) (lbs of nutrient/acre)	
	Checked if Manured	Identify Crops in Rotation (All 4 Years Must Be Entered)	Yield	Units	N	P_2O_5	N	P_2O_5
1	X	Corn Silage	26	Wet tons	250	80		
2	X	Corn Silage	26	Wet tons	250	80		
3	X	Corn Silage	26	Wet tons	250	80		
4	X	Corn Silage	26	Wet tons	250	80		

Crop Options:

Grains	**Stovers/Straws**	**Grasses/Hays**		**Hi Moisture Forages**	**Food Crops**
Barley	Barley Straw	Alfalfa mid-bloom	Prairie hay, mature	Alfalfa Haylage, mid-bloom	Potatoes
Buckwheat	Corn Stover	Birdsfoot trefoil	Reed canarygrass	Corn Silage	Sugar Beet Roots
Corn	Oat Straw	Bluestem, mature	Small grain hay, boot	Small Grain Silage, dough	Sugar Beet Tops
Millet	Rye Straw	Bluestem, early heading	Small grain hay, dough	Sorghum-Sudan Silage	Sweet Corn
Oats	Sorghum Stover	Brome Grass	Soybean hay	Sorghum Silage	Dry Beans
Rye	Soybean Stover	Clover, red	Switchgrass		Popcorn (grain)
Sorghum	Wheat Straw	Fescue, Tall, full-bloom	Timothy, mid-bloom		
Soybeans		Millet, foxtail	Vetch, hairy		
Sunflower		Orchardgrass, latebloom	Wheat Grass		
Wheat					

Summary of Feeding Practices and Equipment/Technologies utilized on the farm

Narrative of those practices that have been adopted and/or insert the completed Farm Plan Assessment Checklist. See checklist for practices that have been adopted.

Include how diet formulation was achieved, to what standards (ie., NRC or proprietary recommendations, etc).

Diets are formulated according to NRC Nutrient requirements of Dairy Cattle, 2001 and adjusted based on field experience with high producing herds (30,000#).

Lactating – There are seven groups of lactating cows. The lactating cows are grouped as follows: Fresh pen – fresh cows less than 30-40 DIM and at 80% pen capacity; Pen 1 & 2 – large cows and > than 40 DIM; Pens 3, 5, 6 – heifers and small cows; and, Pen 7 – mastitis cows that are segregated. The lactating cows are fed the same TMR and based on DMI. Trace minerals and vitamins are formulated for production and health. Cows are offered a TMR once per day and feed is pushed up 4 times per day. Cows are fed for minimal feed refusal, 5% refusal rate. Feed bunks are cleaned daily. Feed is loaded into the mixer wagon equipped with load cells in the sequence based on manufacturer recommendations and modified based on quality of alfalfa hay. Commodity feeds are stored in 30 ton commodity bays and mixed twice per week into a complete mixed grain for daily use in the TMR mix. On a daily basis, alfalfa hay, corn silage, complete mixed grain, molasses, and water are mixed to form the TMR. Individual feeds currently used consist of: processed corn silage, alfalfa hay, wheat straw, whole cotton seed, steam rolled corn, beet pulp, canola meal, soybean meal, porcine blood meal, dried distillers grains, molasses, and vitamin-mineral pre-mix. In addition, yeast and rumensin, are fed, and rBST is administered.

Tools – Monitoring tools include: MUN, N intake/N Output, water quality, and feed efficiency (lbs milk/lbs DMI).

Forage Management practices include: maximizing use of home grown corn silage, harvest crop at optimum maturity, silage storage BMPs, storing hay according to quality, processing corn silage, and analyzing silages and hay for quality parameters.

Dry cows – Three to 4 weeks prepartum dry cows are fed corn silage, low potassium and low DCAD hay and a complete grain formulated with the forage analyses. The grain contains protein sources, corn, beet pulp along with all vitamins, minerals and yeast needed by close-up cows. At dry off until 3 to 4 weeks prepartum, cows are fed push out from the lactating herds along with feeder quality hay.

Calves – Calves are milk fed (pasteurized waste milk) at a rate of 4 qts twice a day for 7 weeks and offered starter grain at 2-3 days of age. Calves are weaned at 8 weeks of age.

Heifers – Heifers from 2 months of age until 400 # are fed calf grower grain and high quality hay. Heifers are transported to a heifer raiser from 8 months to 21 months of age.

Water troughs are cleaned twice per week.

Indicate when lab analyses were conducted on feeds and by what lab.

Lab analyses are conducted on commodity feeds every 6 months by Custom Dairy Services in Lynden, WA. Commodities are analyzed for moisture, protein, ADF, NDF and macro minerals.

Alfalfa is purchased based on test and analyzed on a monthly basis.
Corn silage is analyzed for DM every few days upon opening a new pit and then approximately every 4 months. Corn silage is analyzed more frequently at the beginning of the bunk. As analyses become consistent, the frequency is reduced to approximately every 4 to 6 months. Both alfalfa and corn silage are analyzed for moisture, protein, NDF, macro minerals along with sulfur and chlorine.

Indicate if nutrient analysis of drinking water was included in diet formulation.

Water is analyzed for nitrates. Nutrients that may be in the water are not formulated into diets.

Note the expected volume of manure excreted on manure storage requirements.

Expected volume of manure is 93,499, 572 # or 1,497,961 cu ft and based upon the ASAE manure excretion estimator.

Note the potential of any feed byproducts fed and their impact on nutrients in manure.

No high phosphorus byproducts are currently fed and no phosphorus is added to either the lactating or dry cow minerals.

Note the impact of feed management practices, animal management practices, and diet manipulation on manure odors, pathogens, animal health and well-being.

Animals are fed according to 2001 NRC Nutrient requirements for dairy cattle. No specific additional feed management practices have been adopted for odors or pathogens. Animals are housed in free-stalls of sizes according to industry standards. Animals are housed in capacity of 100 – 120 % of stall numbers.

Note use of manure on farm for production of forages and crops.

Manure solids and manure laden sand is exported off-farm. All liquid manure is used for production of corn silage.

Make note of use of manure analysis (as excreted or stored) to estimate the impact of feeding strategies.

As excreted nutrients in manure were estimated with the ASAE manure excretion estimator. See on-farm file for specific values.

Record of Feed Sampling and Feed Analysis

Describe routine feed analysis plan.

- What feeds need to be sampled and when
- What analyses need to be preformed
-

Alfalfa hay is purchased based on test for NDF and CP.

Corn silage is tested for protein, NDF, macro minerals and sulfur and chlorine every 4 months.

Commodity feeds are tested for moisture, protein, ADF, NDF and macro minerals every 6 months.

Water is tested monthly for nitrates.

DM of corn silage is tested weekly on-farm.

Note why feeding rates for N and P may differ from recommendations (i.e. it is less expensive).

No additional sources of P are included in the ration. Higher levels of phosphorus have been fed in the past with no reduction in performance when removed from the ration.

Nitrogen is adjusted based on MUN levels in the milk over time.

The following records need to be kept for five years:

- Feed analysis
- Ration formulation, including initial ration formulation prior to development of FMP.
- Initial estimate of the impact of adopted feed strategies on manure content.
- Record of any manure analysis that was done after the feeding strategy was implemented.

Recommendations:

This section should summarize the feed management practices that need to be implemented.

- It is recommended if economics are favorable that the following practices be implemented:

- Reduce diet CP by 1 % unit with addition of quality RUP sources and amino acid supplements.

- Increase particle size of processed corn silage.

Consider growing grass silage to replace some import of feed nit