DATA COLLECTION FORMS
and
GUIDELINES TO PREPARE FOR YOUR NUTRIENT MANAGEMENT PLAN

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REQUIRED ITEMS FOR COMPREHENSIVE NUTRIENT MANAGEMENT PLANS

INTRODUCTION

The purpose of a nutrient management plan is to meet agricultural production goals and to certify that manure and nutrients are properly managed to minimize adverse impact to surface or groundwater. Plans are written in cooperation with the producer to:

1) Assure proper containment of animal manure and process waste water.
2) Assess resource concerns which exist on the property.
3) Budget nutrient sources to optimize crop water and nutrient needs. Nutrient sources include commercial fertilizers, animal manure, mineralization of previous crop residues, and irrigation water.
4) Assess irrigation water management to minimize movement of nutrients beyond the root zone or with runoff.

Land application of manure at agronomic rates, along with irrigation scheduling, is the most effective way to obtain maximum nutrient benefits from manure, condition the soil, and avoid potential water quality problems downstream. Cattle manure is a valuable resource, which will also improve soil properties such as water holding capacity, infiltration, tilth, structure, porosity, and nutrient retention and release. If animal manure and/or commercial fertilizers are not properly managed, contaminants may impact surface and/or groundwater. Some water resource contaminants associated with poorly managed animal manure and fertilizers are:

Phosphorus in the soil readily adsorbs to soil particles; thus, erosion of soil by surface runoff is the general mode of phosphorus transport. In very low concentrations, phosphorus can result in plant and algae blooms in surface water bodies. Alga blooms are a nuisance to boaters, irrigators, and others. Toxins released by certain algae can be lethal to livestock or other animals that drink the water. Dissolved oxygen in the water is depleted as algae die and decompose, sometimes causing fish kills.

Nitrogen in the form of nitrate (NO_3^-) is highly water-soluble and will move with water, particularly down the soil profile past the root zone if not utilized by plants (thus becoming a groundwater contamination issue). Nitrates are toxic to infants under 6 months, and to livestock at high concentrations. In surface water, excess nitrogen, like phosphorus, can result in nuisance plant and algae growth.

Organic matter in high load decreases dissolved oxygen in a surface water body when it is decomposed. Low levels of dissolved oxygen is harmful or even fatal to fish and other aquatic life.

Bacteria and microorganism illnesses potentially transmitted through water by animal manure are Giardia, Typhoid Fever, Cryptosporidium, and Cholera. Pathogens from animal waste can impact surface and groundwater resources.

INFORMATION NEEDED FOR NUTRIENT MANAGEMENT PLANNING

1. **Producer Name**
2. **Address,**
3. **Phone Numbers**
4. **County**
5. **Soil Conservation District**
6. **Watershed Basin**
7. **Hydrologic Unity Code # (HUC)**
8. **Stream Segment**
9. **GPS Location**
10. **Well Locations**
11. **Complete Livestock Facility Inventory or Check Sizing Worksheet**
12. **Number/Weight of Milkers, Dries, Heifers, Calves**
13. **Where each group is housed/how long**
14. **Bedding used/annually**
15. **Water Use**
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17. **Water used to clean holding pen/Volume**
18. **Water used to clean milk house equipment**
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34. **Field Numbering**
35. **Drain Ditches/Tile Drains**
36. **Field Slope**
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39. **Type of Irrigation Equipment (Number of heads, gates, etc. per set)**
40. **Irrigation Equipment Locations for Map**
41. **Flow rate/Pressure**
42. **Scheduling/Frequency/Set Time**
43. **Runoff**
44. **Pump Information**
45. **General Comments About Irrigation**
46. **Crop Information**
47. **Crop Rotation – Including Years**
48. **Current Crop Locations and Age**
49. **Yield**
50. **Cropping/Tillage Practices**
51. **Current Liquid Waste Application Procedures**
52. **Current Solid Waste Application Procedures**
53. **Current Waste Export Information**
54. **Recent Soil Testing Data**
55. **Commercial Fertilizer Application**

NUTRIENT MANAGEMENT PLAN REQUIREMENTS

The following is a list of requirements for nutrient management plans for Idaho dairy producers.

OWNER FACILITY INFORMATION

- ❑ Name of facility _____
- ❑ Owner/Operator of facility _____
- ❑ Address of facility _____
- ❑ Phone numbers of owner/operator Home _____ Barn_____Cell_____
- ❑ Legal description of facility (include all owned land used for application of waste):

  Name of facility:_____ Section _____ Township _____ Range _____
  Name of facility:_____ Section_____ Township_____ Range_____
  Name of facility:_____ Section_____ Township_____ Range_____
  Name of facility:_____ Section_____ Township_____ Range_____

SITE MAPS

Two site maps are required in a comprehensive nutrient management plan – the Facility Site Plan and the Land Application Site Plan. See Appendix C for example Facility Site Plans, and example Land Application Site Plans.

❑ **Facility Site Plan**

Required items on the map:

Livestock:

- ❑ Milk barn
- ❑ Livestock housing and corrals
- ❑ Waste structures
- ❑ Lagoon(s)
- ❑ Separator(s)
- ❑ Solid storage
- ❑ Liquid manure pump station
- ❑ Liquid manure pipelines
- ❑ Feed storage

Hydrologic Features:

- ❑ Drain ditches
- ❑ Springs
- ❑ Seeps
- ❑ Runoff flow direction
- ❑ Runoff containment
- ❑ Waterways (streams, rivers, creeks)
- ❑ Ponds
- ❑ Lakes
- ❑ Wetlands

Other Features:

- ❑ Residences
- ❑ Property lines
- ❑ Wells
- ❑ North arrow
- ❑ Rock outcrops
- ❑ Sink holes
- ❑ Fences
- ❑ Berms
- ❑ Potable water pipelines

❑ **Land Application Site Plan**

Required items on the map:

- ❑ Dairy location
- ❑ Labeled fields with name and acreage
- ❑ Labeled roads and other landmarks

Hydrologic Features:

- ❑ Injection well
- ❑ Residential wells
- ❑ Drain ditches
- ❑ Tile drain outlets
- ❑ Springs
- ❑ Seeps
- ❑ Runoff flow direction
- ❑ Groundwater flow direction
- ❑ Berms
- ❑ Runoff containment

- ❑ Waterways (streams, rivers, creeks)
- ❑ Ponds
- ❑ Lakes
- ❑ Wetlands

Irrigation Features:

- ❑ Wells
- ❑ Canals/laterals
- ❑ Pump station
- ❑ Pipeline
- ❑ Sediment pond
- ❑ Buffer strip
- ❑ Chemigation system

Other Features:

- ❑ Residences
- ❑ Property lines
- ❑ Wells
- ❑ North arrow
- ❑ Rock outcrops
- ❑ Sink holes
- ❑ Fences
- ❑ Berms

FACILITY SITE MAP

(ONEPLAN DEVELOPS A FACILITY SITE MAP, HOWEVER, THE QUALITY CAN BE POOR IF THE FARM MAP ENCOMPASSES A LARGE AREA)

APPLICATION SITE MAP
(USE AERIAL MAP FROM THE GROWER'S FILE)

FIELD IDENTIFICATION

One Plan develops a nutrient management plan based on individual fields and the cropping practices on these fields. Completing the following table will provide the information needed to complete the required information for the plan.

Field Name	Land Use	Distance to Waterway	Field BMPs	Irrigation BMPs	Livestock BMPs	Waterway BMPs

Select from the following land use types and BMPs for each field which will be used by the program. Note: See

Land Use Types
1 - Center Pivot Irrigated Cropland
2 - Surface Irrigated Cropland
3 - Non-Irrigated Cropland
4 - Center Pivot Irrigated Pasture
5 - Surface Irrigated Pasture
6 - Non-Irrigated Pasture
7 - Rangeland
8 - Hand/Wheel Line Irrigated Cropland
9 - Hand/Wheel Line Irrigated Pasture

Field BMPs
1 – Chiseling and Subsoiling
2 – Conservation Cover
3 – Conservation Tillage
4 – Contour Farming
5 – Contour Stripcropping
6 – Cover/Green Manure Crop
7 – Critical Area Planting
8 - Crop Rotation
9- Field Stripcropping
10- Mulching (Full Season)
11- Mulching (Part Season)
12- Residue Management
13- Subsurface Drains
14- Windbreak
15- Terraces

Irrigation BMPs
1 – Drip Irrigation

2 – Irrigation Management (Without Cutbacks)
3 – Irrigation Management (With Cutbacks)
4 – Land Leveling
5 – PAM (Full Season)
6 – PAM (Part Season)
7 – Sprinkler System
8- Surge Irrigation
9 – Tailwater Recovery Pumpback System
10- Irrigation Sediment Pond

Livestock BMPs
1 – Brush Management
2 – Composting Facility
3 – Grazing Mechanical Treatment
4 – Heavy Use Protection
5 – Prescribed Grazing
6 – Roof Runoff
7 - Use Exclusion
8 – Watering Facility

Waterway BMPs
1 – Buffer Strip
2 – Channel Stabilization
3 – Channel Vegetation
4 – Dike or Berm
5 – Diversion
6 – Filter Strip
7 – Fish Stream Improvement
8 – Grassed Waterway
9 – Riparian Forest Buffer
10- Sediment Basin
11- Streambank Protection
12- Gully Plug
13- Wetland Development

Note: Additional Forms Available in Appendix A

THE WEATHER STATION

You will be asked to identify the weather station for the facility. The weather data will be used to calculate runoff from livestock facilities and to calculate the date when liquid bio-nutrients can be applied in the spring. The best weather station to use is generally the one closest to the farm; however, weather patterns are not always uniform. If that is the case for your farm, select a weather station that best describes your situation.

Weather stations being used for this facility_____

LIVESTOCK INFORMATION

Nutrient management planners estimate annual manure production based on animal type, animal weight, and number of animals. The nutrient content of manure (N,P,K) is estimated from animal type and bodyweight. Fill out the form below for each class of livestock on your operation. Proportioning annual bedding needs between classes of livestock may not be possible. At minimum, estimate the total annual amount of bedding used on your operation.

Animal Class	Housing Type	Number of Animals	Average weight per animal (lbs)	Bedding Type	Tons of bedding used/yr

Animal Classes
Dairy Lactating Cow
Dairy Dry Cow
Dairy Heifer
Dairy Calf
Beef – High Forage
Beef – High Energy
Layer
Pullet
Broiler
Turkey
Duck
Sheep
Swine – Grower 40-220#
Swine – Replacement Gilt
Sow Gestation
Sow Lactation
Boar
Nursery Pig 5 – 40#
Goat
Horse

Housing Types
Freestall
Open Lot
Covered Shed
Covered Pens
Crates
Concrete Pens
Litter Building
Cages
Open Lot non-vegetated
Winter Feeding Area

Bedding Types
Sand
Compost
Long Straw
Chopped Straw
Shavings

Note: Additional Forms Available in Appendix B

MANURE DISTRIBUTION ON THE FARM

Identifying the manure distribution and handling systems on the farm is critical in developing a plan based on the best estimates of nutrients available from bio-nutrient sources. In the preceding section, animal units were identified. In this section, the manure that is being produced by the various animal units on the farm are assigned to manure groups where they will be evaluated for nutrient losses. Some assumptions will be made on the distribution of manure based on the responses provided for manure handling when the program is used in the Assisted Mode. The planner can use a manual mode and assign his/her own values for manure groups.

Animal Class	Flush Feed Area (Y or N)	Flush Housing Area (Y or N)	Scrape Parlor (Y or N)	Scrape Holding Pen (Y or N)	Percent of Time on Pasture

SOLID SEPARATORS

Solid separators are often used to reduce the amount of solids going into the waste storage. If a separator is used the amount of solids that are being separated from the liquids will automatically be calculated. This will create a separated solids bio-nutrient group. The planner should select the appropriate type of separator(s) being used. Note: The expected rate of solid separation is displayed in the appropriate columns.

Type of Separator Being Used	First Separator	Second Separator
Gravity Concrete	❑ 60%	❑ 40%
Gravity Earthen	❑ 50%	❑ 30%
Sloped Screen Mechanical	❑ 15%	❑ 0%
Mechanical	❑ 30%	❑ 0%
Double Screen Mechanical	❑ 40%	❑ 0%

Note: Additional Forms Available in Appendix C

NUTRIENT CONTENT OF MANURE OR OTHER BIO-NUTRIENTS

Bio-Nutrient Group	Storage System	Application Method	Days to Incorporation
Waste Storage Pond(s)			
Pasture(s)			
Solid Stack(s)			
Separated Solid(s)			

Storage System
Anaerobic Lagoons
Imported Liquid Manure
Imported Solid Manure
Manure and Bedding Held in Roofed Storage
Manure and Bedding Held in Unroofed Storage
Manure Liquids/Storage Stored in Covered Structure
Manure Liquids/Storage Stored in Uncovered Structure
Manure Stored in Open Lot, Arid Region
Manure Stored in Open Lot, Humid Region
Manure Stored in Pits Beneath Slatted Floors
Non-manure Liquid Bio-Nutrients
Non-manure Stored Bio-Nutrients
Pasture
Waste Storage Pond, Diluted <50%
Waste Storage Pond, Diluted >50%

Application Method
Irrigation
Broadcast, Incorporated deeper than 3”
Broadcast, Incorporated less than 3”
Broadcast, No incorporation, with containment
Broadcast, No incorporation, with no containment

Days to Incorporation
1-3 days
4-7 days
>7 days

Note: Additional Forms Available in Appendix D

DAILY WATER USE IN THE MILKING CENTER

Your nutrient management planner needs to estimate the volume of liquid dairy waste produced on your farm. This worksheet provides the necessary calculations for estimating the amount of liquid waste produced per day.

Type of Parlor _____ Stanchions/side _____

Parlor Types are Herringbone, Parallel, Rotary, Flat, Walk Through, and Tie Stall

Number of Milkings per Day _____ Number Hours per Day Used for Milking _____

Do you load milk directly into truck? ❑ Yes ❑ No

Pipeline Cleaning. Most dairy operations fill their cleaning vat four times per milking with a pre-milking sanitizing, post-milking rinse, detergent cycle, and acid rinse. The equation for calculating pipeline cleaning volume is shown below. You will need to measure the volume of water that is used for each cycle.

_____ x _____
# of cycles/milking gallons/cycle

Bulk Tank(s) Cleaning. The amount of water used to clean a bulk tank varies depending on whether the tank is cleaned manually or with an automatic washer. Approximately 30 to 50 gallons are used to manually wash bulk tanks. A refined estimate is possible by calculating water flow rate from the hose and estimating the number of minutes used to spray the tank (calculation similar to parlor wash-up below). Automatic washers use 60 to 120 gallons per wash. Your milking equipment dealer can provide a water use estimate for your particular automatic tank washer.

Tank 1	_____	_____	_____
	Size of Tank	Gal/wash	Washes per Day
Tank 2	_____	_____	_____
	Size of Tank	Gal/wash	Washes per Day

Holding Pen Sprinklers. Do you use holding pen sprinklers to wash cows prior to milking? ❑ Yes ❑ No If yes:

Capacity of Holding Pen…..._____ Cows

Number of Sprinklers in Pen _____ Sprinklers are on timer ❑ Yes ❑ No

Amount of Time Sprinklers Are Used on Each String _____

Flow Rate of Sprinklers……_____ gpm

If you are designing storage for a 6 months period of time, it is important to accurately account for months sprinklers are in use, so storage is not over-estimated:

Months sprinklers are used (circle months used):

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec All

Preparing Cows for Milking. Dairies that pre-dip cows generally use water on only a few cows per milking. Herds which manually wash udders will use ¼ to 1 gallon of water per cow per milking. Use the higher estimate if "liberal amounts" are used to prep cows.

a) Do you iodine pre-dip your cows? ❑ Yes ❑ No

b) Do you manually wash cows prior to milking? ❑ Yes ❑ No

If yes enter the water use _____ gal/cow/milking

Provide a brief description of milking preparation procedures_____

_____

_____

_____.

Backflushing Milking Units. Approximately ¼ to ½ gallon of water is used to manually backflush milking units. Automatic backflush units will use 1 to 4 gallons per backflush cycle. You can refine the estimate for your dairy by catching the water used to backflush a unit in a 5 gallon bucket.

Is there a backflush unit on your milking units? ❑ Yes ❑ No

If yes, enter water use: _____ Gals/unit/flush

Parlor Cleaning The amount of water used to clean the parlor floor varies tremendously between dairies.

Hose: In general, you will use 5 gallons of water per minute from a conventional pressure system and 20 gallons per minute from a booster pump system. You can refine your estimate by timing how long it takes to fill a 5 gallon bucket with water.

_____ x _____ x _____

gal/min from hose min /washdown # wash/day

Flush: Enter the following information if a flush system is being used.

_____ x _____ x _____

total flowrate (gpm) min flush # flush/day

Deck Flush: Enter the following information if a flush system is being used.

_____ x _____ x _____ x _____

# of nozzles Sec / flush nozzle flowrate (gpm) # flushes/day

Other Cleaning Method: Enter the volume of water and describe the cleaning method.

_____ gal/day **Description:**_____

_____

Cleaning the Holding Pen. Large volumes of waste water are generated if the holding pen is washed down with a hose or cleaned with a flush system.

Hose: In general, you will use 5 gallons of water per minute from a conventional pressure system and 20 gallons per minute from a booster pump system. You can refine your estimate by timing how long it takes to fill a 5 gallon bucket with water.

_____ x _____ x _____
gal/min from hose min /wash down # wash/day

Flush: Enter the following information if a flush system is being used.

_____ x _____ x _____
total flowrate (gpm) min flush # flush/day

Other Cleaning Method: Enter the volume of water and describe the cleaning method.

_____ gal/day **Description:**_____

_____

Cooling Equipment.

Do you have a water cooled compressor for your cooling milk? If so, enter the following:

_____ _____
gal/min from hose hours / day

Do you have a water driven vacuum pump? If so, enter the following:

_____ _____
gal/min from hose hours / day

Do you recycle the cooling water?

If yes where is it used:

- ❑ **C**leaning Milk Barn/ Washing Cows
- ❑ Cow Drinking

Milk Cooling Substantial amounts of "waste water" can be generated from a plate cooler or pre-cooler. As a general rule, two gallons of water is used to pre-cool one gallon of milk. Most dairies recycle the pre-cooler water for other purposes (example use water to pre-cool milk then use to water cows). The volume of water must be considered in lagoon sizing if it is not recycled for other uses.

Enter the average milk produced per cow daily _____ lbs / cow / day

If milk is pre-cooled – how is it cooled?

- ❑ Pre-Cooler / Plate Cooler Enter Water to Milk Ratio _____ gal to 1 gal milk
- ❑ Glycol Chiller
- ❑ Bulk Tank Air Cooled

Do you recycle the cooling water?

If yes where is it used ❑ Cleaning Milk Barn/ Washing Cows

❑ Cow Drinking

Miscellaneous Water Uses. A "fudge" factor is typically added to cover items not listed above. Two common examples include: cleaning calf bottles and washing off boots.

Washing Machines for Clothes or Cow Drying Towels Loads per Week _____

Washing Machine Water is disposed of in (Lagoon, Septic, Other)

Water Used Per Load of Wash…….._____gal/load

Miscellaneous water used per day – goes to lagoon……._____ gal / day

Milk House Floor Wash Down……_____gal / day

Freestall Flush Systems

Do you flush freestalls/alleys……(❑ Yes or ❑ No)

Do you flush freestalls/alleys with recirculated water..…(❑ Yes or ❑ No)

If No Number of Flush Pumps……._____

RUNOFF AREAS

On all dairies, liquid storage ponds are sized to contain contaminated runoff from cow yards, feed lanes, and feed storage areas. The volume of runoff is dependent on the type of surface and the slope. Your nutrient management planner will need to know if runoff is diverted to your liquid waste storage.

Name of Area Contributing Runoff	Surface Type	Width (ft)	Length (ft)	Slope	Containment Method

Type of Surface	Slope	Containment Method
Earthen	>3%	Storage Pond
Concrete/Paved	< 3%	Containment Berms
Roofed		Containment within Corrals
Concrete/Paved Scraped Daily		Not Contained

Note: Additional Forms Available in Appendix E

IDENTIFYING AND SIZING MANURE STORAGE UNITS

Name Of Storage	Length	Width	Depth	Freeboard	Side Slope	Yrs Between Cleaning

Years between cleaning is the years between cleaning of sludge from the system

Separated Solid Storage requires storage for 6 months only or 50% of total

CROP ROTATIONS

Crop rotation information is used to determine the nutrient uptake. Rotation information will need to be entered for each different cropping pattern that is being used on the farm.

Rotation Name / Number_____

Year	Crop	Avg Yield	Lbs/ Bu	Bio-Nutrients Used
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Note: Additional Forms Available in Appendix F

FIELD CROP ROTATION INFORMATION

Each field must have a crop rotation pattern assigned. This rotation pattern will be used to evaluate nutrient needs for each year in the plan. To complete the table, enter the field name, give the rotation a name and identify which year the field falls within the rotation.

Field Name	Rotation Name	Year in Rotation	Residue Management	Fertilization Date

*Crop residue management options: *Enter the number for the practice used and a value for tons if residue is incorporated*

1) Residue Burned
2) Residue Incorporated in Late Summer (around August 15)
3) Residue Incorporated in Early Fall (around September 15)
4) Residue Incorporated in Fall (around October 15)
5) Residue Incorporated in Late Fall (around November 15)
6) Residue Incorporated in Early Spring (around March 15)
7) No-till or Direct seed
8) Residue Removed with or after Crop Harvest
9) Perennial Crop/no tillage

Note: Additional Forms Available in Appendix G

IRRIGATION INFORMATION

Irrigation water management is very important in nutrient management. If irrigation water is over-applied what the crop uses, there is potential for runoff and/or leaching of nutrients. If irrigation water is under-applied, the crop will not have optimal growth conditions. Crop irrigation water requirements changes through the growing season depending on climate conditions and crop evapotranspiration rate. Proper irrigation water management responds to these crop demands.

Information your Nutrient Management Planner will need:

- ❑ *Wheel lines/handlines (per field, per crop)*

  Field name:_____Acres:_____Crop:_____

  Nozzle flow rate:_____ (gpm) *OR* Nozzle diameter:_____ (in) Pump pressure:_____ (psi)

  Number of nozzles:_____

  Date of Initial Irrigation:_____ Date of Final Irrigation:_____

  No. of days to completely irrigate field:_____ Down time per day:_____ (hrs)

  Days between irrigation:_____

  Evaporation/Drift Losses (5-10):_____ (%) Estimated runoff:_____ (%)

- ❑ *Pivot (per field, per crop)*

  Field name**:** _____ Acres:_____

  System flow rate:_____ (gpm) Pivot lateral length:_____ (ft)

  Date of Initial Irrigation:_____ Date of Final Irrigation:_____

  Time to complete one cycle:_____ (hrs) Days between irrigation:_____

  Evaporation/Drift Losses (5-10):_____ (%) Estimated runoff:_____ (%)

- ❑ *Surface Irrigation (per field, per crop)*

  Field name:_____Acres:_____Slope of field:_____(%)

  Condition of field at the end of the furrows:

  ❑ Less than 6 inches from field level grade to bottom of tail water ditch

  ❑ More than 6 inches from field level grade to bottom of tail water ditch

  Longest furrow length:_____ (ft) Furrow border spacing:_____ (ft)

  Time to reach end of furrow:_____ (hrs) Furrow flow rate:_____ (gpm) *OR*

  Date of Initial Irrigation:_____ Date of Final Irrigation:_____

  Set Time for Single Furrow Run _____(hrs)

  Delivery Method: ❑ Gated pipe ❑ Siphon tubes ❑ Earthen ditch with cutouts

  ❑ Gated pipe: Width of opening:_____ (in) Height of opening:_____ (in)
  Elevation difference between head ditch water surface and gate:_____ (in)

  ❑ Siphon tube: Tube diameter:_____ (in) Number of tubes per furrow:_____
  Elevation difference between head ditch water surface and furrow:_____ (in)

  ❑ Earthen ditch with cutouts

Note: Additional Forms Available in Appendix H

WELL TEST INFORMATION

Nutrient Management Planners typically provide the latest well test information in the Nutrient Management Plan. The Idaho State Department of Agriculture has tested the wells of every dairy in Idaho. Dairy producers were provided with the report of that test.

Well Test Information (if applicable)

Well Name	Test Date	Hardness (ppm)	EC (uS/m)	pH	Potassium (ppm)	Nitrate (ppm)	Nitrite (ppm)	Ammonia (ppm)	Sodium Bicarbonate (ppm)	Coliform (cnt/100ml)

Note: Additional Forms Available in Appendix I

SOIL TEST INFORMATION

ISDA-Dairy Bureau regulation uses soil test phosphorus as the indicator for environmental impact from agricultural production practices. The regulations are based on a threshold soil test phosphorus level (PTH), above which there is no agronomic advantage to application of nutrients.

- ❑ Fields with no runoff: **if the water table is greater than 5 feet from ground surface**,

  PTH = 30 ppm (Olsen P method, 18-24" soil depth)

  = 45 ppm (Bray 1, 18-24" soil depth)

  = 4.5 ppm (Morgan P method, 18-24" soil depth)

- ❑ Fields with no runoff: **if the water table is less than 5 feet from ground surface**,

  PTH = 20 ppm (Olsen P method, 18-24" soil depth)

  = 25 ppm (Bray 1, 18-24" soil depth)

  = 2.5 ppm (Morgan P method, 18-24" soil depth)

- ❑ Fields with runoff:

  PTH = 40 ppm (Olsen P method, 0-12" soil depth)

  = 60 ppm (Bray 1, 18-24" soil depth)

  = 6 ppm (Morgan P method, 18-24" soil depth)

.

If soil test phosphorus is below PTH, regulations allow for land application of nitrogen equal to rates recommended by the University of Idaho Fertilizer Guides. The regulations identify no agronomic advantage to nutrient application on soils at or above PTH, however, they allow for land application of animal manure at rates equal to crop uptake of phosphorus at soil test levels above PTH. ISDA regulatory soil testing on livestock operations will be conducted every three years to determine trend data, based on PTH.

Unless a shortage of acreage exists for land application of manure, it is recommended to have your nutrient management plan written for land application of solid and liquid manure to the rate of crop uptake. Application of the manure resource to this rate is a sustainable practice and is always allowed under ISDA regulations. Regardless of the rate prescribed by your nutrient management plan, soil testing at the 0-12 inch and 12-24 inch soil depths is required for nitrogen management.

The 590 Standard requires the Nitrogen soil test within 3 months and the Phosphorus and Potassium soil test within 9 months of the application any nutrients source.

If the soil pH is > 6.2 use the Olsen (Sodium bicarbonate test method. If the soil pH is <6.2 use the Morgan (Sodium acetate method) or Bray-1 test method.

- ❑ Spring soil test for nitrogen (recommended to be taken annually)
  Southern Idaho 0-12" and 12-24" (NO_3-N and NH_4-N) nitrogen test

  Northern Idaho 0-12" (NO_3-N and NH_4-N) nitrogen test and 12-24" (NO_3-N) nitrogen test
- ❑ Soil test for phosphorus (optional if plan written for land application of manure at the rate of crop uptake, required if plan is written for land application of manure above crop uptake) depths required if plan written for land application of manure above crop uptake:
  0-12": for all fields
  18-24": additional requirement for fields with no runoff
- ❑ Other parameters (optional)

FIELD SOIL TEST INFORMATION

Field Name: _____ **Soil Test Date:** _____

Soil Texture: _____

Phosphorus Test Method: _____

Soil Test Parameter	0-12"	12-24"	18-24" (required if no runoff from field)
EC			
pH			
% Lime			
Organic Matter			
CEC			
Nitrate Nitrogen (NO_3)			
Ammonium (NH_4)			
Phosphorus (P)			
Potassium (K)			
Boron (Bo)			
Manganese (Mn)			
Iron (Fe)			
Zinc (Zn)			
Copper (Cu)			
Calcium (Ca)			
Magnesium (Mg)			
Sodium (Na)			

Note: Additional soil test tables are provided in Appendix J

FERTILIZER PLACEMENT AND TIMING

- ❑ Phosphorus Fertilizer Placement: check which applies
  - ❑ Phosphorus fertilizer placed with a planter or plowed deeper than 2 inches
  - ❑ Phosphorus fertilizer incorporated greater than 3 inches by disking or chiseling
  - ❑ Phosphorus fertilizer surface applied, no incorporation
  - ❑ Phosphorus fertilizer surface applied on frozen ground
- ❑ Organic Phosphorus (manure/biosolids) Fertilizer Placement: check which applies
  - ❑ Organic phosphorus injected or plowed deeper than 2 inches
  - ❑ Organic phosphorus incorporated greater than 3 inches by disking or chiseling
  - ❑ Organic phosphorus incorporated less than 3 inches by harrowing, etc.
  - ❑ Organic phosphorus surface applied, no incorporation
  - ❑ Organic phosphorus surface applied on frozen ground
- ❑ Nitrogen fertilizer application timing: check which applies
  - ❑ No nitrogen fertilizer applied
  - ❑ Nitrogen fertilizer application split with nitrification inhibitor
  - ❑ Nitrogen fertilizer application split with some applied pre-plant and some applied during the growing season.
  - ❑ Nitrogen fertilizer application pre-plant in the Spring
  - ❑ Nitrogen fertilizer application pre-plant in the Fall

BEST MANAGEMENT PRACTICE INFORMATION

Best management practices help to decrease the amount of erosion off the field and leaching below the root zone. Your nutrient management planner will want to know if you have BMPs on your fields.

Enter field name, and check all best management practices that apply to that field:

Best Management Practice Type	Field Name									
Name										
Chiseling and Subsoiling										
Conservation Cover										
Conservation Tillage										
Contour Farming										
Contour Stripcropping										
Cover/Green Manure Crop										
Critical Area Planting										
Crop Rotation										
Field Stripcropping										
Grade Stabilization										
Mulching (Full Season)										
Mulching (Part Season)										
Residue Management										
Subsurface Drains										
Windbreak										
Terraces										
Drip Irrigation										
Irrigation Management (Without Cutback)										
Irrigation Management (With Cutback)										
Land Leveling										
Polyacrylamide (PAM) (Full Season)										

Best Management Practice Type	Field Name									
Name										
Polyacrylamide (PAM) (Part Season)										
Sprinkler System										
Surge Irrigation										
Tailwater Recovery & Pumpback										
Brush Management										
Composting Facility										
Grazing Mechanical Treatment										
Heavy Use Protection										
Prescribed Grazing										
Roof Runoff										
Use Exclusion										
Watering Facility										
Buffer Strip										
Channel Stabilization										
Channel Vegetation										
Dike or Berm										
Diversion										
Filter Strip										
Fish Stream Improvement										
Grassed Waterway										
Riparian Forest Buffer										
Sediment Basin										
Streambank Protection										
Gully Plug										
Wetland Development										
Irrigation Sediment Pond										

Note: Additional Best Management tables are provided in Appendix K

RESOURCE CONCERN INFORMATION

- **Field Resource Concerns:**

  There may be physical features on your fields which may increase the potential for nutrient transport to surface or ground water. The following are resource concerns nutrient management planners look for on each field.

1. **Irrigation Canals/Laterals –** Irrigation tail water can deliver nutrients to surface water via open canals. Nutrient loading of open canals can have a detrimental affect on the health of receiving waters.
2. **Wetlands –** Typically wetlands are low-lying areas of groundwater discharge with water loving plants. Nutrient introduction into wetlands increases the potential of groundwater and surface water contamination.
3. **Surface Waters** (Streams/Lakes/Springs)
4. **Sink Holes –** Sink holes are low-lying areas which may collect runoff and/or irrigation water. They may be areas of increased water and contaminant movement to groundwater.
5. **Rock Outcrops –** Rock outcrops are areas where there is exposed rock with little soil. They may be direct links to groundwater through cracks and fissure. Nutrients should not be applied on rock outcrops unless the outcrop has been sealed. Sealing methods include one foot of compacted soil with 15% clay content or gypsum sealing.
6. **Groundwater Discharge Zones –** Groundwater discharge zones are areas in the field where groundwater table surfaces typically during the spring or during irrigation season. Nutrient introduction into these areas strongly increases the vulnerability of groundwater contamination.
7. **Well Heads –** Well heads offer a direct link to groundwater. If well heads receive runoff from animal corrals or agricultural fields the potential for groundwater contamination is very high. Runoff should be diverted from the well head and new wells should be properly placed up gradient from contamination sources, following all state and federal setbacks.
8. **Subsurface Tile Drains –** Subsurface drains can deliver nutrients to surface water. Subsurface drains run the risk of decreased time for contact of the nutrients to adsorb onto soil particles or to be utilized by the crop. Irrigation management is also affected because shallow soils have a lower water holding capacity.
9. **Limiting Layers –** Limiting layers in the soil such as a hard pan or rock decrease the depth of soil in which the crop will grow. Shallow soils run the risk of decreased time for contact for the nutrients to adsorb onto soil particles or to be utilized by the crop causing the potential for runoff or leaching.

Enter field name, and then check all resource concerns that apply to that field:

Resource Concern Type	Field Name											
Name												
Shallow Soils over Bedrock												
Wetlands												
Open Irrigation Water Conveyances												
Surface Water												
Sink Holes												
Rock Outcrops												
Seeps												
Well heads												
Drain Tile Outlet												
Injection Well												

Note: Additional resource concern tables are provided in Appendix L

APPENDIX A
FIELD IDENTIFICATION

Copy and use as needed

One Plan develops a nutrient management plan based on individual fields and the cropping practices on these fields. Completing the following table will provide the information needed to complete required information for the plan.

Field Name	Land Use	Distance to Waterway	Field BMPs	Irrigation BMPs	Livestock BMPs	Waterway BMPs

Select from the following land use types and BMPs for each field which will be used by the program.

Land Use Types
1 - Center Pivot Irrigated Cropland
2 - Surface Irrigated Cropland
3 - Non-Irrigated Cropland
4 - Center Pivot Irrigated Pasture
5 - Surface Irrigated Pasture
6 - Non-Irrigated Pasture
7 - Rangeland
8 - Hand/Wheel Line Irrigated Cropland
9 - Hand/Wheel Line Irrigated Pasture

Field BMPs
1 – Chiseling and Subsoiling
2 – Conservation Cover
3 – Conservation Tillage
4 – Contour Farming
5 – Contour Stripcropping
6 – Cover/Green Manure Crop
7 – Critical Area Planting
8 - Crop Rotation
9- Field Stripcropping
10- Mulching (Full Season)
11- Mulching (Prat Season)
12- Residue Management
13- Subsurface Drains
14- Windbreak
15- Terraces

Irrigation BMPs
1 – Drip Irrigation
2 – Irrigation Management (Without Cutbacks)
3 – Irrigation Management (With Cutbacks)
4 – Land Leveling
5 – PAM (Full Season)
6 – PAM (Part Season)
7 – Sprinkler System
8- Surge Irrigation
9 – Tailwater Recovery Pumpback System
10- Irrigation Sediment Pond

Livestock BMPs
1 – Brush Management
2 – Composting Facility
3 – Grazing Mechanical Treatment
4 – Heavy Use Protection
5 – Prescribed Grazing
6 – Roof Runoff
7 - Use Exclusion
8 – Watering Facility

Waterway BMPs
1 – Buffer Strip
2 – Channel Stabilization
3 – Channel Vegetation
4 – Dike or Berm
5 – Diversion
6 – Filter Strip
7 – Fish Stream Improvement
8 – Grassed Waterway
9 – Riparian Forest Buffer
10- Sediment Basin
11- Streambank Protection
12- Gully Plug
13- Wetland Development

APPENDIX B
LIVESTOCK INFORMATION

Copy and use as needed

Nutrient management planners estimate annual manure production based on animal type, animal weight, and number of animals. The nutrient content of manure (N,P,K) is estimated from animal type and bodyweight. Fill out the form below for each class of livestock on your operation. Proportioning annual bedding needs between classes of livestock may not be possible. At minimum, estimate the total annual amount of bedding used on your operation.

Animal Class	Housing Type	Number of Animals	Average weight per animal (lbs)	Bedding Type	Tons of bedding used/yr

Animal Classes
Dairy Lactating Cow
Dairy Dry Cow
Dairy Heifer
Dairy Calf
Beef – High Forage
Beef – High Energy
Layer
Pullet
Broiler
Turkey
Duck
Sheep
Swine – Grower 40-220#
Swine – Replacement Gilt
Sow Gestation
Sow Lactation
Boar
Nursery Pig 5 – 40#
Goat
Horse

Housing Types
Freestall
Open Lot
Covered Shed
Covered Pens
Crates
Concrete Pens
Litter Building
Cages
Open Lot non-vegatated
Winter Feeding Area

Bedding Types
Sand
Compost
Long Straw
Chopped Straw
Shavings

APPENDIX C
MANURE DISTRIBUTION ON THE FARM

Copy and use as needed

Identifying the manure distribution and handling systems on the farm is critical in developing a plan based on the best estimates of nutrients available from bio-nutrient sources. In the preceding section, animal units were identified. In this section, the manure that is being produced by the various animal units on the farm are assigned to manure groups where they will be evaluated for nutrient losses. Some assumptions will be made on the distribution of manure based on the responses provided for manure handling when the program is used in the Assisted Mode. The planner can use a manual mode and assign his/her own values for manure groups.

Animal Class (Y or N)	Flush Feed Area (Y or N)	Flush Housing Area (Y or N)	Scrape Parlor (Y or N)	Scrape Holding Pen (Y or N)	Days on Pasture

Solid Separation

Solid separators are often used to reduce the amount of solids going into the waste storage. If a separator is used the amount of solids that are being separated from the liquids will automatically be calculated. This will create a separated solids bio-nutrient group. The planner should select the appropriate type of separator(s) being used. Note: the expected rate of solid separation is displayed in the appropriate columns.

Type of Separator Being Used	First Separator	Second Separator
Gravity Concrete	☐ 60%	☐ 40%
Gravity Earthen	☐ 50%	☐ 30%
Sloped Screen Mechanical	☐ 15%	☐ 0%
Mechanical	☐ 30%	☐ 0%
Double Screen Mechanical	☐ 40%	☐ 0%

APPENDIX D
NUTRIENT CONTENT OF MANURE OR OTHER BIO-NUTRIENT

Copy and use as needed

Bio-Nutrient Group	Storage System	Application Method	Days to Incorporation

Storage System
Anaerobic Lagoons
Imported Liquid Manure
Imported Solid Manure
Manure and Bedding Held in Roofed Storage
Manure and Bedding Held in Unroofed Storage
Manure Liquids/Storage Stored in Covered Structure
Manure Liquids/Storage Stored in Uncovered Structure
Manure Stored in Open Lot, Arid Region
Manure Stored in Open Lot, Humid Region
Manure Stored in Pits Beneath Slatted Floors
Non-manure Liquid Bio-Nutrients
Non-manure Stored Bio-Nutrients
Pasture
Waste Storage Pond, Diluted <50%
Waste Storage Pond, Diluted >50%

Application Method
Irrigation
Broadcast, Incorporated deeper than 3”
Broadcast, Incorporated less than 3”
Broadcast, No incorporation, with containment
Broadcast, No incorporation, with no containment

Days to Incorporation
1-3 days
4-7 days
>3 days

APPENDIX E
RUNOFF AREA

Copy and use as needed

On all dairies, liquid storage ponds are sized to contain contaminated runoff from cow yards, feed lanes, and feed storage areas. The volume of runoff is dependent on the type of surface and the slope. Your nutrient management planner will need to know if runoff is diverted to your liquid waste storage.

Name of Area Contributing Runoff	Surface Type	Width (ft)	Length (ft)	Slope	Containment Method

Type of Surface	Slope	Containment Method
Earth	>3%	Storage Pond
Concrete/Paved	< 3%	Containment Berms
Roofed		Containment within
Concrete/Paved Scraped		Corrals
Daily		Not Contained

Mandatory Description of slope pattern, runoff, and containment practices for facility

APPENDIX F
CROP ROTATIONS

Copy and use as needed

Rotation Name / Number_____

Year	Crop	Avg Yield	Lbs/ Bu	Bio-Nutrients Used
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

APPENDIX G
CROP FIELD ROTATION INFORMATION

Copy and use as needed

Each field must have a crop rotation pattern assigned. This rotation pattern will be used to evaluate nutrient needs for each year in the plan. To complete the table, enter the field name, give the rotation a name and identify which year the field falls within the rotation.

Field Name	Rotation Name	Year in Rotation	Residue Management

*Crop residue management options: *Enter the number for the practice used and a value for tons if residue is incorporated*

1) Residue Burned
2) Residue Incorporated in Late Summer (around August 15)
3) Residue Incorporated in Early Fall (around September 15)
4) Residue Incorporated in Fall (around October 15)
5) Residue Incorporated in Late Fall (around November 15)
6) Residue Incorporated in Early Spring (around March 15)
7) No-till or Direct seed
8) Residue Removed with or after Crop Harvest
9) Perennial Crop/no tillage

.
.

APPENDIX H
IRRIGATION INFORMATION
Copy and use as needed

Information your Nutrient Management Planner will need:

- ❑ *Wheel lines/handlines (per field, per crop)*
  Field name:_____Acres:_____Crop:_____
  Nozzle flow rate:_____ (gpm) *OR* Nozzle diameter:_____ (in) Pump pressure:_____ (psi)
  Number of nozzles:_____
  Date of Initial Irrigation:_____ Date of Final Irrigation:_____
  No. of days to completely irrigate field:_____ Down time per day:_____ (hrs)
  Days between irrigation:_____
  Evaporation/Drift Losses (5-10):_____ (%) Estimated runoff:_____ (%)
- ❑ *Pivot (per field, per crop)*
  Field name**:** _____ Acres:_____
  System flow rate:_____ (gpm) Pivot lateral length:_____ (ft)
  Date of Initial Irrigation:_____ Date of Final Irrigation:_____
  Time to complete one cycle:_____ (hrs) Days between irrigation:_____
  Evaporation/Drift Losses (5-10):_____ (%) Estimated runoff:_____ (%)
- ❑ *Surface Irrigation (per field, per crop)*
  Field name:_____Acres:_____Slope of field:_____(%)
  Condition of field at the end of the furrows:
  ❑ Less than 6 inches from field level grade to bottom of tail water ditch
  ❑ More than 6 inches from field level grade to bottom of tail water ditch
  Longest furrow length:_____ (ft) Furrow border spacing:_____ (ft)
  Time to reach end of furrow:_____ (hrs) Furrow flow rate:_____ (gpm) *OR*
  Date of Initial Irrigation:_____ Date of Final Irrigation:_____
  Set Time for Single Furrow Run _____(hrs)
  Delivery Method: ❑ Gated pipe ❑ Siphon tubes ❑ Earthen ditch with cutouts
  ❑ Gated pipe: Width of opening:_____ (in) Height of opening:_____ (in)
  Elevation difference between head ditch water surface and gate:_____ (in)
  ❑ Siphon tube: Tube diameter:_____ (in) Number of tubes per furrow:_____
  Elevation difference between head ditch water surface and furrow:_____ (in)
  ❑ Earthen ditch with cutouts

APPENDIX I
WELL TEST

Copy and use as needed

Nutrient management planners typically provide the latest well test information in the Nutrient Management Plan. The Idaho State Department of Agriculture has tested the wells of every dairy in Idaho. Dairy producers were provided with the report of that test.

Well Test Information (if applicable)

Well Name	Test Date	Nitrate (ppm)	Nitrite (ppm)	Ammonia (ppm)	Bacteria (present)	Sodium (ppm)	TDS (ppm)	Hardness	EC (uS/cm)	pH

APPENDIX J
FIELD SOIL TEST INFORMATION
Copy and use as needed

Field Name: _____ **Soil Test Date:** _____

Soil Texture: _____

Phosphorus Test Method: _____

Soil Test Parameter	0-12"	12-24"	18-24" (required if no runoff from field)
EC			
pH			
% Lime			
Organic Matter			
CEC			
Nitrate Nitrogen (NO_3)			
Ammonium (NH_4)			
Phosphorus (P)			
Potassium (K)			
Boron (Bo)			
Manganese (Mn)			
Iron (Fe)			
Zinc (Zn)			
Copper (Cu)			
Calcium (Ca)			
Magnesium (Mg)			
Sodium (Na)			

APPENDIX K
BEST MANAGEMENT PRACTICES INFORMATION

Copy and Use as Needed

Best management practices help to decrease the amount of erosion off the field and leaching below the root zone. Your nutrient management planner will want to know if you have BMPs on your fields.

Enter field name, and check all best management practices that apply to that field:

Best Management Practice Type	Field Name									
Name										
Chiseling and Subsoiling										
Conservation Cover										
Conservation Tillage										
Contour Farming										
Contour Stripcropping										
Cover/Green Manure Crop										
Critical Area Planting										
Crop Rotation										
Field Stripcropping										
Grade Stabilization										
Mulching (Full Season)										
Mulching (Part Season)										
Residue Management										
Subsurface Drains										
Windbreak										
Terraces										
Drip Irrigation										
Irrigation Management (Without Cutback)										
Irrigation Management (With Cutback)										
Land Leveling										

Best Management Practice Type	Field Name									
Name										
Polyacrylamide (PAM) (Full Season)										
Polyacrylamide (PAM) (Part Season)										
Sprinkler System										
Surge Irrigation										
Tailwater Recovery & Pumpback										
Brush Management										
Composting Facility										
Grazing Mechanical Treatment										
Heavy Use Protection										
Prescribed Grazing										
Roof Runoff										
Use Exclusion										
Watering Facility										
Buffer Strip										
Channel Stabilization										
Channel Vegetation										
Dike or Berm										
Diversion										
Filter Strip										
Fish Stream Improvement										
Grassed Waterway										
Riparian Forest Buffer										
Sediment Basin										
Streambank Protection										
Gully Plug										
Wetland Development										
Irrigation Sediment Pond										

APPENDIX L
RESOURCE CONCERNS INFORMATION
Copy and Use as Needed

Field Resource Concerns
There may be physical features on your fields which may increase the potential for nutrient transport to surface or ground water. The following are resource concerns nutrient

Enter field name, and then check all resource concerns that apply to that field:

Resource Concern Type	Field											
Name												
Shallow Soils over Bedrock												
Wetlands												
Open Irrigation Water Conveyances												
Surface Water												
Sink Holes												
Rock Outcrops												
Seeps												
Well heads												
Drain Tile Outlet												
Injection Well												