ATCP 50.89 Strip-cropping. (1) DEFINITION. In this section, "strip-cropping" means growing crops in a systematic strip arrangement in which strips of grass, legumes or other close growing crops are alternated with strips of clean tilled crops or fallow, and in which all of the strips are established on the contour or across a slope to reduce water or wind erosion.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of establishing a strip-cropping system, including costs for the necessary removal of obstructions.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of establishing a strip-cropping system unless all of the following conditions are met:

(a) The strip-cropping operations are performed, to the maximum extent feasible, on the contour.

(b) The strip-cropping system complies with all of the following that apply:

1. NRCS technical guide obstruction removal standard 500.

2. NRCS technical guide contour strip-cropping standard 585.

3. NRCS technical guide field strip-cropping standard 586.

4. NRCS technical guide wind strip-cropping standard 589.

(c) The landowner agrees to maintain the strip-cropping for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.90 Subsurface drains. (1) DEFINITION. In this section, "subsurface drain" means a conduit installed below the surface of the ground to collect drainage water and convey it to a suitable outlet.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a subsurface drain as part of a manure storage system, barnyard runoff control system, or erosion control system.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant may not reimburse the cost of establishing a subsurface drain unless all of the following conditions are met:

(a) The subsurface drain is a necessary component of a manure storage system, barnyard runoff control system or erosion control system.

(b) The subsurface drain complies with all of the following that apply:

1. NRCS technical guide subsurface drain standard 606.

2. NRCS technical guide underground outlet standard 620.

(c) The landowner agrees to maintain the subsurface drain for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.91 Terrace systems. (1) DEFINITION. In this section, "terrace system" means a system of ridges and channels installed on the contour with a non-erosive grade and suitable spacing.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse any of the following costs related to a terrace system:

(a) Costs to install the system, including necessary costs for necessary leveling, filling and obstruction removal.

(b) Costs to purchase and install necessary underground pipe outlets and other necessary mechanical outlets.

(c) Costs to modify an ineffective system, unless the system has been rendered ineffective because of changes in cropping patterns or equipment usage.

(d) Costs to establish permanent vegetative cover, or to provide temporary cover until permanent cover is established. This may include costs for mulch, fertilizer and other necessary materials.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant may not reimburse terrace system costs unless all of the following conditions are met:

(a) The terrace system includes a stable outlet or waterway of adequate capacity.

(b) The terrace system complies with all of the following that apply:

1. NRCS technical guide critical area planting standard 342.

2. NRCS technical guide grassed waterway standard 412.

3. NRCS technical guide lined waterway or outlet standard 468.

4. NRCS technical guide obstruction removal standard 500.

5. NRCS technical guide terrace standard 600.

6. NRCS technical guide subsurface drain standard 606.

7. NRCS technical guide underground outlet standard 620.

8. NRCS technical guide water and sediment control basin standard 638.

(c) The landowner agrees to maintain the terrace system for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.92 Underground outlets. (1) DEFINITION. In this section, "underground outlet" means a conduit installed below the surface of the ground to collect surface water and convey it to a suitable outlet.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing an underground outlet as part of a manure storage system, barnyard runoff control system, or erosion control system.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of establishing an underground outlet unless all of the following conditions are met:

(a) The underground outlet is a necessary component of a manure storage system, barnyard runoff control system or erosion control system.

(b) The underground outlet complies with all of the following that apply:

1. NRCS technical guide subsurface drain standard 606.

2. NRCS technical guide underground outlet standard 620.

(c) The landowner agrees to maintain the underground outlet for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.93 Waste transfer systems. (1) DEFINITION. In this section, "waste transfer system" means components such as pumps, pipes, conduits, valves, and other structures installed to convey manure and milking center wastes from buildings and animal feeding operations to a storage structure, loading area or treatment area.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a waste transfer system which is a necessary component of a manure storage system, barnyard runoff control system or milking center waste system funded under this chapter, provided that the waste transfer system is designed and used for that sole purpose.

(3) INELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may not reimburse the costs for any of the following:

(a) Portable equipment for spreading wastes on land or for incorporating wastes into land.

(b) Buildings or modifications to buildings. This paragraph does not apply to building modifications that are essential for the installation of a milking center waste control system.

(4) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of installing a waste transfer system unless all of the following conditions are met:

(a) The waste transfer system complies with all of the following that apply:

1. NRCS technical guide manure transfer standard 634.

2. NRCS technical guide underground outlet standard 620.

(b) The landowner agrees to maintain the waste transfer system for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.94 Water and sediment control basins. (1) DEFINITIONS. In this section:

(a) "Manure storage facility" has the meaning given in s. ATCP 50.62(1)(c).

(b) "Water and sediment control basin" means an earthen embankment or a ridge and channel combination which is installed across a slope or minor watercourse to trap or detain runoff and sediment. "Water and sediment control basin" does not include a manure storage facility or a structure designed to collect runoff and sediment from concentrated animal feedlots.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a water and sediment control basin, including practices necessary to protect the basin from livestock.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant may not reimburse the cost of installing a water and sediment control basin unless all of the following conditions are met:

(a) The water and sediment control basin complies with all of the following that apply:

1. NRCS technical guide critical area planting standard 342.

2. NRCS technical guide fencing standard 382.

3. NRCS technical guide water and sediment control basin standard 638.

4. NRCS technical guide underground outlet standard 620.

(b) The landowner agrees to maintain the water and sediment control basin for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.95 Waterway systems. (1) DEFINITION. In this section, "waterway" means a natural or constructed watercourse or outlet that is shaped, graded and covered with a vegetation or another suitable surface material to prevent erosion by runoff waters.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse any of the following costs related to a waterway system:

(a) Costs for site preparation, grading, shaping and filling.

(b) Costs to establish permanent vegetative cover, or to provide temporary cover until permanent cover is established. This may include costs for mulch, fertilizer and other necessary materials.

(c) Costs for the necessary removal of obstructions, the necessary installation of subsurface drains and underground outlets, and the necessary installation of machinery crossings.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse costs for a waterway system unless all of the following conditions are met:

(a) Waterways are permanently covered by vegetation or other suitable surface materials to prevent erosion. Close-sown small grains, annual grasses or mulches may be used for temporary protection if followed by an appropriate permanent vegetative cover.

(b) The system complies with all of the following that apply:

1. NRCS technical guide critical area planting standard 342.

2. NRCS technical guide fencing standard 382.

3. NRCS technical guide grassed waterway standard 412.

4. NRCS technical guide mulching standard 484.

5. NRCS technical guide obstruction removal standard 500.

6. NRCS technical guide subsurface drain standard 606.

7. NRCS technical guide underground outlet standard 620.

(c) The landowner agrees to maintain the waterway system for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.96 Well decommissioning. (1) DEFINITION. In this section, "well decommissioning" means permanently disabling and sealing a well to prevent contaminants from reaching groundwater.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse costs to design and implement a well decommissioning, including costs to fill the well, seal the well, and shape the land to protect the abandoned wellhead from precipitation and runoff.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of well decommissioning unless the well decommissioning complies with all of the following that apply:

(a) NRCS technical guide well decommissioning standard 351.

(b) Section NR 812.26, related to well and drillhole decommissioning.

ATCP 50.97 Wetland development or restoration. (1) DEFINITION. In this section, "wetland development or restoration" means the construction of berms, or the destruction of tile line or drainage ditch functions, to create or restore conditions suitable for wetland vegetation.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse any of the following costs related to the development or restoration of wetlands:

(a) Costs for earth moving to construct or remove berms, levees or dikes.

(b) Costs for earth moving to fill in portions of drainage ditches.

(c) Costs to destroy portions of tile lines.

(d) Costs to establish vegetative cover to develop or restore wetlands, consistent with the practice goals.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse wetland development or restoration costs unless all of the following conditions are met:

(a) The wetland development or restoration complies with NRCS technical guide wetland restoration standard 657.

(b) The landowner agrees to maintain the wetland restoration practice for at least 10 years.

EFFECTIVE DATE. The rules contained in this order shall take effect on the first day of the month following publication in the Wisconsin administrative register, as provided under s. 227.22(2)(intro.), Stats.

Dated this _____ day of _____, _____.

STATE OF WISCONSIN
DEPARTMENT OF AGRICULTURE,
TRADE AND CONSUMER PROTECTION

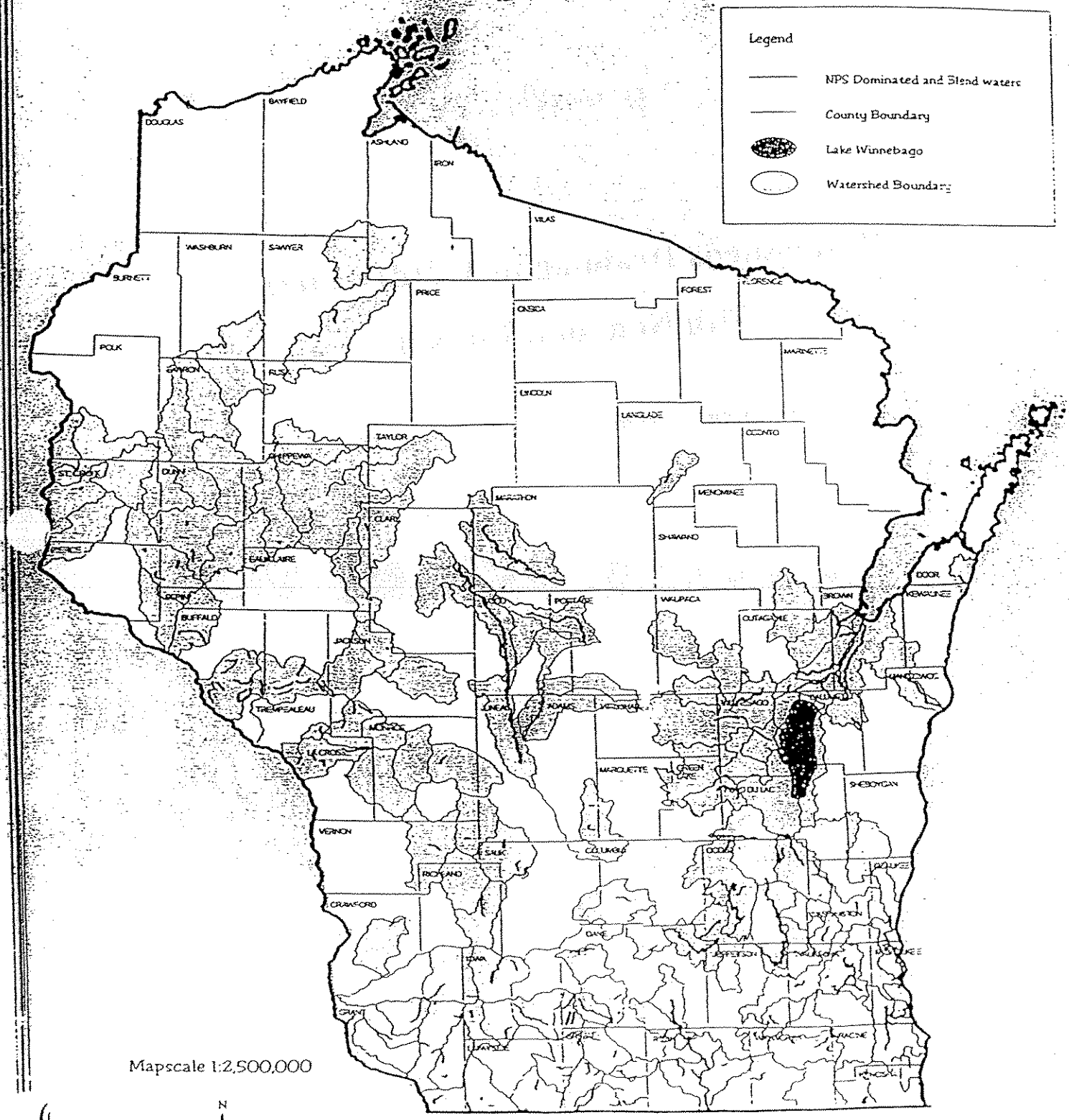
By _____
James E. Harsdorf, Secretary

Appendix A

Watersheds Draining to 303(d)Waters With Nonpoint Impacts

Wisconsin Department of Natural Resources

Watersheds Draining to 303(d) Waters* with Nonpoint Impacts



* The 303(d) waters are still under review. This map is provided as DRAFT only.

Wisconsin Department of Natural Resources
Water Division
Bureau of Watershed Management
1997

Appendix B

Nutrient Management - *Fast Facts*

Nutrient and Pest Management Program, University of Wisconsin-Extension

Manure info.

Approx. 1st & 2nd year available nutrient content with 2nd year in brackets [ ]

	N (manure not incorporated)	N (manure incorporated by 24 hrs)	P_2O_5	K_2O
Dairy manure				
Solid (lb/ton)	3 [1]	4 [1]	3 [0]	8 [1]
Liquid (lb/1000 gal)	8 [3]	10 [3]	8 [1]	21 [3]
Beef manure				
Solid (lb/ton)	4 [1]	4 [2]	5 [1]	8 [1]
Liquid (lb/1000 gal)	10 [4]	12 [4]	14 [2]	23 [3]
Swine manure				
Solid (lb/ton)	4 [1]	5 [1]	3 [1]	7 [1]
Liquid (lb/1000 gal)	22 [6]	28 [5]	15 [3]	26 [3]
Poultry manure				
Solid (lb/ton)	13 [2]	15 [3]	14 [2]	9 [1]
Liquid (lb/1000 gal)	35 [7]	41 [7]	38 [7]	25 [3]

Manure output

Animal and size	lb/day	tons/year
Dairy (1400 lb)	120	21.9
Beef (1250 lb)	75	13.7
Swine (200 lb)	13	2.4
Poultry (4 lb)	0.21	0.038

Determining manure application rate :

Step 1: Figure load size :

Weight spreader in tons — Solid or semi-solid

90% tank capacity in gallons — Liquid

Step 2: Determine field acreage :

$$\frac{\text{field length (ft)} \times \text{field width (ft)}}{43{,}560 \text{ ft}^2/\text{a}} = \text{acres}$$

Step 3: Calculate manure application rate :

$$\frac{(\text{\# of loads}) \times (\text{load size})}{\text{field acreage}} = \text{tons or gallons / acre}$$

Guideline for unincorporated manure:

Do not apply more than 25 tons of solid dairy manure per acre or its phosphorus equivalent for other manures.

	Solid (tons)	Liquid (gallons)
Dairy	(25)	9000
Beef	14	5000
Swine	25	5000
Poultry	5	2000

NUTRIENT MANAGEMENT *FAST FACTS*

Nutrient and Pest Management Program (NPM), University of Wisconsin-Extension. Call (608) 265-2660 for additional copies. 3/5

indicates information pertains to Wisconsin only

Harvest info.

Nutrients removed by crop at harvest

	P_2O_5	K_2O
	approximate lb	
Alfalfa[2] / red clover, 1 ton/a	13	50
Barley[1], 50 bu/a	19	13
Corn		
Grain (1 bu = 56 lb @ 15.5% moisture)		
90-110 bu/a	40	25
110-130 bu/a	45	30
130 - 150 bu/a	55	35
150 -170 bu/a	60	40
Silage, 1 ton/a	4	11
Oats[1]		
Grain, 100 bu/a (1 bu = 32 lb @ 13% moisture)	25	19
Straw, 1 ton/a	5	30
Potatoes[1], 100 cwt/a	13	58
Sorghum[1], 1 ton/a	15	58
Soybean[2], 40 bu/a (1 bu = 60 lb @ 13% moisture)	35	40
Wheat[1]		
Grain, 50 bu/a (1 bu = 60 lb @ 13% moisture)	31	19
Straw, 1 ton/a	3	40

*Nitrogen removal by alfalfa (1 ton) is 60 lb and by soybeans (40 bu) is 115 lb.

USING THIS TABLE IS NOT A SUBSTITUTE FOR SOIL TESTING

Source: University of Wisconsin Extension unless noted
1 From Modern Corn Production, A.R. Aldrich, et al., 1966
2 From Minnesota Extension Bulletin 262

Converting pounds harvested to bushels with % moisture content corrections:

Shelled Corn

(lbs harvested x (1 - % moisture in corn)) ÷ 47.32 = bu @ 15.5% moisture

Ear corn

lbs harvested ÷ number from chart below = bu @ 15.5% moisture

moisture %	15	15.5	16	17	18	19	20	21	22	23	24	25	26	27
equation #	68.1	68.8	69.2	70.4	71.6	72.8	74.1	75.4	76.8	78.0	79.4	80.7	82	83.4

Soybeans or wheat

lbs harvested x (1 - % foreign matter) = adjusted lbs harvested

[adjusted lbs x (1 - % moisture)] ÷ 52.2 = bu soybeans @ 13% moisture
bu wheat @ 0% moisture

Calculating acres harvested:

acres harvested =
[row length(ft) x row width(ft) x # of rows harvested] ÷ 43,560 ft²/acre

Example with corn harvested by combine :

Step 1: 12,560 lbs corn harvested @ 21.35% moisture
12,560 lbs x (1 - .2135) ÷ 47.32 = 209 bu of corn @ 15.5 % moisture

Step 2: Four-row harvester 18 rows, each 30 inch row is 1210 feet long
30 inches = 2.5 feet
(1210 ft x 2.5 ft x 18 rows) ÷ 43,560 ft²/acre = 1.10 acres

Step 3: 209 bu of corn ÷ 1.10 acres = 190 bu/acre

Fertilizer analysis

	N-P-K
Nitrogen	
Anhydrous ammonia	82-0-0
Ammonium nitrate	34-0-0
Urea	46-0-0
UAN solution - 28 and 32%	28-0-0
(Urea ammonium nitrate)	32-0-0
Aqueous ammonia	20-0-0
Ammonium sulfate (AMS)	21-0-0-24(S)
Phosphorus	
Triple superphosphate (TSP)	0-46-0
Diammonium phosphate(DAP)	18-46-0
Monoammonium phosphate (MAP)	11-52-0
Ammonium polyphosphate liquid	10-34-0
Ammonium polyphosphate	15-62-0
Potassium	
Potassium chloride (muriate of potash)	0-0-60 to 62
Potassium sulfate	0-0-50-18(S)
Potassium-magnesium sulfate	0-0-22-22(S)-11(Mg)
Potassium nitrate	13-0-44

1 gallon water weighs 8.3 lbs
1 gallon UAN (28%N) weighs 10.6 lbs

Conversions

Take column 1	multiply by column 2	to get column 3
acre (a)	43,560	square feet (ft^2)
acre (a)	0.405	hectare (ha)
square mile (mi^2)	640	acres (a)
cubic yard (yd^3)	27	cubic feet (ft^3)
cubic feet (ft^3)	7.48	gallons (gal)
bushel (bu)	1.244	cubic feet (ft^3)
bushel (bu)	8	gallons - dry
bushel (bu)	9.31	gallons - liquid
ounces (oz)	29.6	milliliters (ml)
gallon (gal)	3.78	liters (l)
gallon (gal)	128	fluid ounces (fl oz)
gallon (gal)	4	quart (qt)
acre-foot	43,560	cubic feet (ft^3)
acre-foot	325,851	gallons (gal)
chain (ch)	66	feet (ft)
chain (ch)	4	rods (r)
rods (r)	16.5	feet (ft)
mile (mi)	5280	feet (ft)
ton (short)	2,000	pounds (lb)
ton (long)	2,230	pounds (lb)
gallons/acre (gal/a)	9.354	liters/hectare (l/ha)
miles/hour (mph)	88	feet/minute (ft/min)
pounds/acre (lb/a)	1.12	kilograms/hectare (kg/ha)
P_2O_5 (lb)	0.44	P (lb)
K_2O (lb)	0.83	K (lb)
ppm-plow layer (6 in)	2	lb/acre (lb/a)
ppm-top soil (12 in)	4	lb/acre (lb/a)

Appendix B

Soybean nutrient recommendations

	Yield goal (bu/a)	Soil test level of the field: Very Low	Low	Optimum	High	Very High	Ex. High
		lbs/acre of P_2O_5 to apply					
Phosphate	15-25	30	30	20	10	--	0
	26-35	35	35	25	15	--	0
	36-45	45	45	35	20	--	0
	46-55	55	55	45	20	--	0
	56-65	60	60	50	25	--	0
	66-75	70	70	60	30	--	0
	76-85	80	80	70	35	--	0
		lbs/acre of K_2O to apply					
Potash	15-25	60-75**	35-50**	20	10	0	0
	26-35	70-85**	45-60**	30	15	0	0
	36-45	80-95**	55-70**	40	20	10	0
	46-55	90-105**	65-80**	50	25	10	0
	56-65	100-115**	75-90**	60	30	15	0
	66-75	110-125**	85-100**	70	35	20	0
	76-85	120-135**	95-110**	80	40	20	0

** Very high category does not exist for soil test phosphorus
** Use lower values on sandy or organic soils

Alfalfa nutrient recommendations

	Yield goal (tons/a)	Soil test level of the field: Very Low	Low	Optimum	High	Very High	Ex. High
		lbs/acre of P_2O_5 to apply					
Phosphate	1.5-2.5	55-75*	45-65*	25	10	--	0
	2.6-3.5	65-85*	55-75*	35	15	--	0
	3.6-4.5	80-100*	70-90*	50	25	--	0
	4.6-5.5	95-115*	85-105*	65	30	--	0
	5.6-6.5	105-125*	95-115*	75	35	--	0
	6.6-7.5	120-140*	110-130*	90	45	--	0
		lbs/acre of K_2O to apply					
Potash	1.5-2.5	135-150**	125-135**	100	50	25	0
	2.6-3.5	185-200**	175-185**	150	75	40	0
	3.6-4.5	235-250**	225-235**	200	100	50	0
	4.6-5.5	285-300**	225-285**	250	125	60	0
	5.6-6.5	335-350**	325-335**	300	150	75	0
	6.6-7.5	385-400**	325-385**	350	175	90	0

** Very high category does not exist for soil test phosphorus
* Use lower values on sandy soils
** Use lower values on sandy or organic soils

Special Situations

Legume Forage — Where an alfalfa stand is to be maintained for more than three years increase the annual top-dressed K_2O by 20%.

Apply 30 lb N/acre in the seeding year if grown on soils with less than 2% organic matter.

Apply 40 lb N/acre for legume pasture on sandy soils and 20 lb N/acre on soils with less than 2% organic matter.

Nurse Crops — Where barley or oats are seeded with legume forage, reduce N for the small grain by 50%.

Corn nutrient recommendations

	Organic matter (%)	Soil texture: Sands or loamy sands — Non-irrigated	Sands or loamy sands — Irrigated	Other Soils — Yield potential* Low/medium	Other Soils — Yield potential* High/very high
		lbs/acre of N to apply			
Nitrogen	< 2	120	200	150	180
	2.0 - 4.9	110	160	120	160
	5.0 - 20	100	120	90	120
	> 20	80	80	80	80

Credit starter fertilizer N >20 lb against the overall N recommendation

* To determine yield potential consult UWEX publication A2809 or contact your agronomist or county agent
† Irrigated non-sandy soils with a low/medium yield potential should use the high/very high recommendation

Grain

	Yield goal (bu/a)	Soil test level of the field: Very Low	Low	Optimum	High	Ex. High
		lbs/acre of P_2O_5 to apply				
Phosphate	71-90	60-90*	50-70*	30	15	0
	91-110	70-100*	60-80*	40	20	0
	111-130	75-105*	65-85*	45	25	0
	131-150	85-115*	75-95*	55	25	0
	151-170	90-120*	80-100*	60	30	0
	171-190	100-130*	90-110*	70	35	0
	191-210	105-135*	95-115*	75	40	0
		lbs/acre of K_2O to apply				
Potash	71-90	50-80**	40-65**	25	15	0
	91-110	55-85**	45-70**	30	15	0
	111-130	60-90**	50-75**	35	15	0
	131-150	65-95**	55-80**	40	20	0
	151-170	70-100**	60-85**	45	20	0
	171-190	75-105**	65-90**	50	20	0
	191-210	80-110**	70-95**	55	25	0

* Use higher values on sandy or organic soils
** Use lower values on sandy or organic soils

Silage

	Yield goal (tons/a)	Soil test level of the field: Very Low	Low	Optimum	High	Very High	Ex. High
		lbs/acre of P_2O_5 to apply					
Phosphate	< 16	80-110*	70-90*	50	25	--	0
	16 - 20	95-125*	85-105*	65	30	--	0
	20 - 25	115-145*	105-125*	85	40	--	0
	> 25	130-160*	120-140*	100	50	--	0
		lbs/acre of K to apply					
Potash	< 16	125-155**	115-140**	100	50	25	0
	16 - 20	145-175**	135-160**	120	60	30	0
	20 - 25	160-190**	150-175**	135	70	35	0
	> 25	175-205**	165-190**	150	75	40	0

** Very high category does not exist for soil test phosphorus
* Use higher values on sandy or organic soils
** Use lower values on sandy or organic soils

Special Situations

Conservation tillage — If > 50% residue cover remains on the surface, increase N requirement for corn by 30 lb N/acre for the first two years

High P soils — If P levels exceed 150 ppm, do not apply additional P, except for a maximum of 20 lb/a of starter P_2O_5 for row crops.

Sandy soils — N should be applied as single sidedress application or as split applications

Legume N credits

Legume crop	Nitrogen credit	Exceptions
Forages		
First Year Credit		
Alfalfa	190 lb N/acre for good stand (more than 70% alfalfa or more than 4 plants/ft²)	Reduce credit by 50 lb N/acre on sands and loamy sands.
	160 lb N/acre for fair stand (30 - 70% alfalfa or 1.5 - 4 plants/ft²)	
	130 lb N/acre for poor stand (less than 30% alfalfa or less than 1.5 plants/ft²)	Reduce credit by 40 lb N/acre if less than 8 inches of regrowth after last harvest.
Red Clover & Birdsfoot Trefoil	80% of alfalfa credit for similar stands	
Second Year Credit	50 lb N/acre, following a good or fair stand.	No credit on sands and loamy sands.
Green manures		
Sweet clover	80-120 lb N/acre	Use 20 lb N/acre credit if field has less than 8 inches of growth before tillage.
Alfalfa	60-100 lb N/acre	
Red clover	50-80 lb N/acre	
Soybeans	40 lb N/acre	
Vegetable Crops		
Peas, snap beans & lima beans	20 lb N/acre	No credit on sands and loamy sands.

Appendix C

Nutrient Management Plan Checklist Form

To Assist in Following Wisconsin's Nutrient Management Standard 590

12/23/99

Appendix C

NUTRIENT MANAGEMENT PLAN CHECKLIST

For Following Wisconsin's NRCS 590 Nutrient Management Standard

County name:________________ Date Plan Submitted:________ Growing season year NM plan is written for ________
(from harvest to harvest)

Name of qualified nutrient management planner **Circle the planner's qualification:** *1*-NAICC; *2*-CCA; *3*-ARCPACS –Agronomist, Crop Specialist, Crop Scientist, Soil Specialist, or Soil Scientist; *4*-DATCP approved training course; *5*- Other credentials approved by DATCP	Planner's business name, address, phone:	
	Cropland Acres	Name of farmer receiving nutrient management plan: Circle relevant program or ordinance: County ordinance, DNR watershed, USDA, DATCP, NR 243 - NOD, NR-243 - WPDES

590 Requirement	Provided By	Yes	No	Location in NM plan/Comments
1. Farm Aerial Photographs or Maps a. Photos or map indicate field boundaries and field ID numbers? b. Fields with manure spreading restrictions are identified?	*Conservation staff*	a. b.	a. b.	
2. Soil Survey Maps a. Are soil series and slope consistent with the plan?	*Conservation staff*	a.	a.	
3. Soil Test Reports (conservation staff require hard copy with NM plan) a. Are all the soil test reports from an approved lab? b. Have all fields been tested within the last four years? c. Is soil sample size 5 acres or less per sample? d. Does the soil test field ID correspond with the NM plan field ID? e. Are yield goals identified (for P2O5 & K2O recommendations)? f. Have the predominant soil series for each field been identified?	*Farmer and Consultant*	a. b. c. d. e. f.	a. b. c. d. e. f.	
4. Written Plan Components for individual field nutrient recommendations a. Crop to be grown and previous crop grown are indicated? b. Fertilizer recommendations are indicated? c. Legume and manure credits are indicated? d. Manure application rates and spreading sites are indicated? e. Additional fertilizer needs are indicated?	*Farmer and Consultant*	a. b. c. d. e.	a. b. c. d. e.	
5. Are fields receiving manure or organic byproducts less than or equal to "T"?	*Conservation staff will determine based on conservation plan on file. Farmer & the consultant may require a new assessment if rotations and tillage have changed.*	a.	a.	
6. Farm Information Sheet items for manure quantity and spreader capacity: a. Animal numbers, average weight, confinement, consistency b. Estimated annual manure production and amount collected c. Does the manure available correspond to the manure used?	*Farmer and Consultant*	a. b. c.	a. b. c.	

I certify that the nutrient management plan represented by this checklist complies with Wisconsin's NRCS 590 nutrient management standard.

Signature of qualified nutrient management planner ______________________________

Appendix D

Wisconsin's Nutrient Management Standard 590

With The Wisconsin Technical Note

For Nutrient Management Planning Guidance

NUTRIENT MANAGEMENT

(Acre)

Code 590

Natural Resources Conservation Service
Conservation Practice Standard

Definition

Managing the amount, form, placement, and timing of applications of plant nutrients.

Scope

This standard establishes the minimum acceptable requirements for *a plan that addresses* the application of plant nutrients associated with organic wastes (manure and organic byproducts), commercial fertilizer, legume crops, and crop residues.

Purposes

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- Supply plant nutrients for crop production.
- Minimize entry of nutrients to surface water.
- Minimize entry of nutrients to groundwater.

Conditions Where Practice Applies

On lands where plant nutrients are applied.

Criteria

Because this is the first conservation practice standard designed to use the new NRCS planning procedure, a short explanation of the application of criteria based on identified purpose is provided.

In order to address the purpose of supplying nutrients for crop production, Criteria I must be applied.

It would be extremely rare in Wisconsin to find a field with an identified concern of nutrients applied for production where there would not also be a concern for the entry of nutrients to either surface or groundwater. Criteria I would only be used alone where Total Resource Planning did not identify a surface or groundwater concern. Food Security Act and Farmland Preservation Plans are not Total Resource Plans.

In order to address the purpose of minimizing the entry of nutrients to surface water, Criteria I and III must be applied.

The criteria for minimizing the entry of nutrients to surface water will be applied to the majority of the fields in Wisconsin.

In order to address the purpose of minimizing entry of nutrients into groundwater, Criteria I and II must be applied.

The criteria for minimizing the entry of nutrients to groundwater will be applied in areas with groundwater concerns, ie, Lower Wisconsin River Valley, Central Sands, Atrazine Prohibition Areas, etc.

This practice would be used to treat these identified resource concerns:

Soil Resource

Soil Contaminants:

Excess Animal Wastes and Other Organics

Excess Fertilizer

Water Resource

Quality:

Nutrients and Organics in Groundwater

Nutrients and Organics in Surface Water

Plant Resource

Management:

Nutrient Management

I. Minimum Criteria to Provide Nutrients for Crop Production and to Minimize Entry of Nutrients to Surface Water and Groundwater

A. General Cases:

1. Soils shall be tested a minimum of once every four years.

2. Develop field by field nutrient budget for all major nutrients consistent with UWEX Publication "A-2809". Conservation Planning Tech Note WI-1 spells out the minimum requirements for a Nutrient Management Plan.

3. Available nitrogen, including nitrogen from legumes, manure, sludge, organic byproducts, and commercial sources, shall not exceed nonlegume crop needs, except that, available nitrogen may exceed crop needs by up to 20% if legumes, manures and organic byproducts are the only sources of nitrogen.

4. Commercial fertilizer shall not be applied to frozen or snow covered ground except for grass pastures on slopes of six percent or less north of Wisconsin Highway 29 and on winter grains throughout the state.

B. Manure and organic byproducts applied to crops for harvest.

1. Organic byproducts other than manure or septage shall be analyzed for nutrients. Other analyses may be required as prescribed by state, federal, or local regulations. These materials shall be spread as prescribed by federal, state, or local regulations (see Wis. Department of Natural Resources Code, NR214 (industrial wastes), NR204 (municipal sludges), NR113 (septage)). Required documentation shall be maintained by the applicator. These materials may require injection or incorporation within specified time periods.

2. Surface spread liquid manures and organic byproducts shall not run off the intended site during application. Application must be stopped if ponding or runoff begins.

C. Manure and organic byproducts applied on land where vegetation is not harvested. This does not include non-farmed wetlands.

1. Liquid materials shall be injected across slopes that are 3% or greater or be surface spread.

2. Application rates shall not exceed 75 lb available P2O5/acre (32.8 lb P/acre) total for a 5-year period unless incorporated.

3. Application of manure shall occur between July 15 and freeze-up to minimize damage to wildlife habitat.

II. Additional Criteria to Minimize Entry of Nutrients to Groundwater

A. Manure shall contain a nitrification inhibitor if it is injected in the fall on sands, and loamy sands when the soil temperature is above 50 degrees F.

B. Commercial nitrogen fertilizer for spring seeded crops shall not be fall applied on sands and loamy sands.

C. Manure and organic byproducts shall not be applied to the following areas unless injected or incorporated within 72 hours:

1. within 200 feet upgradient of sinkholes, creviced bedrock at the surface, or other direct conduits to the groundwater, such as gravel pits and wells.

2. In other locally identified areas documented as having a high potential to pollute groundwater resources.

D. Commercial Nitrogen application rates shall not exceed recommendations based on crop need.

III. Additional Criteria to Minimize Entry of Nutrients to Surface Water

A. Manure shall not be applied at rates exceeding 75 lb available P2O5/acre/ year (32 lb P/acre) unless these materials are incorporated within 72 hours after application, in which case, the nitrogen content of the manure becomes the restricting nutrient. Applications of manure cannot be at a level which delivers more nitrogen than the crop needs. The nutrient content of manure shall be determined through a laboratory analysis or from SCS Conservation Planning Technical Note 1.

B. The soil loss tolerance will not be exceeded on soils receiving manure and organic byproducts.

C. Manure and organic byproducts shall not be spread in established waterways, non-farmed wetlands, terrace channels or other areas where runoff concentration occurs.

D. Manure and organic byproducts shall not be applied to the following areas unless injected or incorporated within 72 hours:

1. within the 10-year floodplain or within 200 feet of streams, rivers, or lakes, whichever is greater,

2. within 200 feet upgradient of sinkholes, creviced bedrock at the surface, or other direct conduits to the groundwater, such as gravel pits and wells.

E. Manure and organic byproducts shall not be applied on frozen or snow covered ground in the following areas:

1. areas identified in III(D) (above),

2. slopes of greater than 9%, except for manure on slopes up to 12% with well grassed waterways, that are either contour stripcropped with alternate strips in sod, or contour farmed with all the residue from a corn crop taken for grain remaining on the surface.

3. other locally identified areas documented as having a high potential to pollute surface water resources.

F. Manure and organic byproducts may be applied on frozen or snow covered ground on locally identified areas documented as having a low potential to pollute surface water.

G. Commercial phosphorus application rates shall not exceed recommendations based on crop need.

H. Additional guidance for reducing entry of nutrients into surface water may be found in Conservation Planning Technical Note 1.

PLANNING CONSIDERATIONS

1. Manure should not be winter spread on sites that are likely to deliver nutrient runoff to surface waters and/or groundwater. See Conservation Planning Technical Note 1 for guidelines concerning areas with high pollution hazard for surface runoff.

2. Manure should be stored in properly located and constructed facilities during periods when land application is not suitable. (See UWEX Publication A-3466 for more information.)

3. Manure applications to no-till cropping systems should be injected to avoid nutrient runoff and maximize nutrient availability. Surface applications should be avoided.

4. Vegetative filter strips, along with other erosion control practices, should be maintained adjacent to surface water, wetlands, sinkholes, and rock outcrops in order to reduce the amount of sediment and nutrients which actually reach surface water and/or groundwater.

5. Evaluate federal, state, and local water quality standards and designated use limitations, such as city, county, and township zoning ordinances.

PLANS AND SPECIFICATIONS

Plans and specifications will be prepared for a specific site based on this standard, and planning instructions provided in Conservation Planning Technical Note 1.

1. Nutrients shall be applied consistent with federal, state, and local regulations.

2. Industrial wastes and byproducts are regulated under NR214, Wisconsin Administrative Code. They must be spread in accordance with a Wisconsin Pollution Discharge Elimination System (WPDES) Permit as obtained from the Wisconsin Department of Natural Resources (WDNR).

OPERATION, SAFETY AND MAINTENANCE

1. Minimize operator exposure to potentially toxic gases associated with manure, organic wastes and chemical fertilizers, particularly in enclosed areas. Wear protective clothing appropriate to the material being handled.

2. Protect commercial fertilizer from the weather, and agricultural waste storage facilities from accidental leakage or spillage. See Chapter Ag 162 of Wisconsin Administrative rules and County Waste Storage Facilities Ordinances concerning regulations on siting, design, operation and maintenance of these facilities.

3. When cleaning equipment after nutrient application, remove and save fertilizers or wastes in an appropriate manner. If system is flushed, use rinse water in the following batch of nutrient mixture, where possible, or dispose of according to state and local regulations. Always avoid cleaning equipment near high runoff areas, ponds, lakes, streams, and other water bodies. Extreme care must be exercised to avoid contaminating wells.

4. Application equipment must be calibrated to achieve the desired application rate.

Working Tools -

1. SCS Conservation Planning Technical Note 1

2. University of Wisconsin-Extension (UWEX) Publication "A-2809, Soil Test Recommendations for Field, Vegetable, and Fruit Crops", Rev. 1991.

3. University of Wisconsin-Extension (UWEX) Publication "A-3512, Wisconsin's Preplant Soil Profile Nitrate Test".

4. University of Wisconsin-Extension (UWEX) - Wisconsin Department of Agriculture, Trade, and Consumer Protection (UWEX-DATCP) Publication "A-3466, Nutrient and Pesticide Best Management Practices for Wisconsin Farms", June 1989.

5. University of Wisconsin-Extension (UWEX) Publication "A-2100, Sampling Soils for Testing".

6. University of Wisconsin-Extension (UWEX) Publication "A-3517, Using Legumes as a Nitrogen Source", May 1991, with revised 1992 Forage Legume Nitrogen Credit Table.

7. University of Wisconsin-Extension (UWEX) Publication "A-3537, Nitrogen Credits for Manure Applications", May 1991.

8. University of Wisconsin-Extension (UWEX) Publication "A-3557, Nutrient Management: Practices for Wisconsin Corn Production", May 1992.

9. University of Wisconsin-Extension (UWEX) Publication "A-3568, A Step-by-Step Guide to Nutrient Management", May 1992.

10. University of Wisconsin-Extension (UWEX) Publication "Wisconsin Irrigation Scheduling Program".

11. University of Wisconsin-Extension (UWEX) Publication "WISP: Managing Irrigation for Corn Production", March 1991.

12. Wisconsin Department of Natural Resources Codes NR214, (Land Treatment of Industrial Liquid Wastes, By-product Solids and Sludges); NR204 (Municipal Sludge Management) and NR113 (Septage).

13. WISPer Model, The Wisconsin Integrative Soil Program Ver. 2.0 for Economic Recommendations, University of Wisconsin-Extension.

Wisconsin Technical Note - Conservation Planning WI-1

October 21, 1993

Subject: Nutrient Management

Nutrient management planning is an important yet oftentimes cumbersome process. This Technical Note has been developed in order to provide guidance for nutrient management planning, specifically:

Conservation Planning Technical Note 1.

Part 1.1 Minimum requirements for a nutrient management plan

Part 1.2 Items to consider in nutrient management planning that may provide additional benefit over and above the criteria in the nutrient management standard

Part 1.3 A procedure for estimating nutrient credits available from manure

Part 1.4 A sample procedure for identifying areas that pose a pollution hazard to water quality from winter spread manure.

Part 1.5 Example water budgets

Technical Note– Conservation Planning – WI-1, Part 1.1

Minimum requirements for a nutrient management plan

A nutrient management plan shall be developed according to the following criteria and steps.

A. Assemble the following background information for the plan:

1. Aerial photographs of the farm containing

   a. Boundaries and identification numbers for all crops fields, pastures, and waste spreading sites.

   b. Identification of fields or portions of fields with waste spreading restrictions.

2. A soil survey map and other appropriate maps will be used to identify:

   a. Soils for sampling and making nutrient recommendations.

   b. Drainage features and other environmentally sensitive areas including waterways, springs, creviced bedrock, streams, lakes, sinkholes, quarries, tile outlets and wells.

   c. Percent land slope.

   d. The map may also be used to identify environmentally vulnerable soils including those less than 20 inches to bedrock, having permeabilities greater than 6.0 inches/hour or having water tables shallower than 1.0 foot (unless drained) as given in Section II-G of the Field Office Technical Guide (FOTG).

3. As a minimum, the amount of nutrients from all sources shall be identified including (legumes), manure, other organic byproducts, and commercial fertilizers.

4. A crop history identifying the previous season's crops and future cropping plans, including crop type and rotation shall be recorded. UWEX Soil Analysis Laboratory has developed a "Soil Information Sheet" to record and utilize this information as part of a soil test program.

B. The producer or land manager is responsible for developing and maintaining a current nutrient budget on a field by field basis. Soil test reports from UWEX soil analysis laboratories (including ASCS approved labs) provides an existing method of developing a budget.

Technical Note – Conservation Planning – WI-1, Part 1.2

Items of benefit for nutrient management planning

The items listed in Part 1.2 of the technical note should be considered in nutrient management planning. These items may provide additional water quality benefit over and above the criteria in the Nutrient Management Standard

The rate, timing and placement of nutrients are important considerations that may affect water quality.

I. The following considerations look at timing of nutrient applications in order to reduce the impacts on water quality.

A. Nutrients should be applied as near to the time of crop use as possible.

B. Minimize nutrient applications on frozen or snow-covered ground.

C. Seasonal water budgets can be used to identify potential leaching and runoff events and to select management options to control these losses. Example water budges are in Part 1.5 of this Technical Note.

D. Manure and other organic byproducts should not be applied on sandy or loamy sand soil in the fall when soil temperatures are greater than 50 degrees F unless a cover crop is present to use the nitrogen.

II. The following considerations look at managing the rate of nutrients applied and the placement of nutrients in order to reduce the impact on water quality.

A. Use soil test levels to prioritize manure application sites. Apply manure to the least environmentally sensitive areas first. Criteria to consider include: soil permeability, infiltration capacity, slope, erodibility, accessibility, present crop, potential fate of runoff and presence of conservation practices.

B. Manure injection or incorporation within 72 hours minimizes nitrogen volatilization losses.

C. When concerned with the rate and placement of nitrogen, consider these things.

1. Risk of nitrogen movement to ground water is greatest for highly permeable soils, shallow soils over permeable bedrock, and soils with a high water table. A map of groundwater contamination susceptibility in Wisconsin is found in UWEX-DATCP publication "A-3466" between p. 66 and 67.

2. Nitrogen losses to the atmosphere from denitrification are greatest on poorly drained soils.

3. Unused or residual nitrate may be leached from the soil and pollute groundwater. In years of normal fertilizer application and unexpected low yields, excess nutrients, including nitrate, may accumulate in the soil. Soil profile nitrate tests can be used to measure carryover nitrogen and adjust nitrogen applications (see UWEX publication "A-3512"). Additional options for reducing the amount of nitrogen subject to leaching include:

a. Growing a winter cover crop to use carryover nitrogen.

b. Growing legume crops (when managed without supplemental N inputs) to "scavenge" N remaining in the profile.

c. Growing high N demanding crops such as corn and forage grasses.

4. Nitrification inhibitors used with ammonium or ammonium-forming N fertilizers can improve N efficiency and limit loss of fertilizer N on soils where the potential for nitrate loss through leaching or denitrification is high (see page 29 of the UWEX publication "A3466" for more information).

D. When concerned with the rate and place of phosphorus, consider these things.

1. Appropriate management practices for phosphorus on individual farms will vary with specific cropping, topographical, environmental and economic conditions. See UWEX publication A-3466 and A-3557 for more information.

2. Soil test values are primarily interpreted for crop response and economic return.

3. Consider reducing or eliminating applications of P sources, including manure and other organic byproducts, if soil test levels exceed 75 ppm P (150 lbs P/acre).

4. Where soil test P levels are 75 to 150 ppm (very high to excessively high) the following practices are recommended:

a. Use runoff and erosion control practices such as residue management, conservation tillage, and contour farming.

b. Rotate to P-demanding crops such as alfalfa.

c. Limit starter P applications on row crops to 20 lbs P_2O_5/acre.

d. Where possible, apply manure on fields with lower P tests.

5. Where soil test levels exceed 150 ppm P, these additional practices are recommended:

a. To the extent possible, eliminate all non-starter P applications.

b. Consider using additional runoff and erosion control practices such as buffer (filter) strips.

6. Where soil test P exceeds 150 ppm on all land available for manure or other waste material applications, apply to the least environmentally sensitive areas first at rates needed to supply the crop N requirements or the anticipated crop removal of P and/or K. Criteria to prioritize application sites may include soil permeability and infiltration capacity, slope, erodibility, soil test P level, potential fate of runoff, presence of conservation practices, and field accessibility.

III. Other Considerations

A. Phosphorus losses are greatest on eroding sites with high runoff.

B. Use appropriate pH management to keep soil pH in the proper range for optimum crop production. Soil pH affects the availability of almost all of the essential elements (see UWEX Publication "A-2809").

C. Barnyards, feedlots, and manure storage facilities should be thoroughly cleaned prior to abandonment. High N demanding crops such as alfalfa or corn should be planted at the site to use soil nitrate.

D. Good soil tilth should be maintained. good soil tilth encourages infiltration and reduces runoff. this is especially important when the objective is to protect surface water but may not be desirable if the objective is protection of groundwater.

1. Organic matter additions promote good soil tilth.

2. 2. Equipment travel on saturated soils should be avoided to reduce soil compaction and rutting.

E. Practices such as crop rotation promote efficient nutrient use.

Technical Note – Conservation Planning – WI-1, Part 1.3

Determining manure nutrient credits

Proper crediting of manure nutrients can lower commercial fertilizer needs and reduce the potential for surface and ground water pollution. Manures contain the major plant nutrients (N, P and K) and other essential nutrients. Only a portion of the nutrients from a field spread manure are available in the first year. The rest become available over time as the nutrients are released from the organic fraction. Calculating the fertilizer value of manure involves three steps:

STEP 1: Determine Available-Nutrient Content
STEP 2: Determine Manure Application Rates.
STEP 3: Calculate the Manure Nutrient Credit

STEP 1: Determine Available-Nutrient Content

Because the nutrient content of manure varies so much, it is recommended that a representative (well-agitated) sample be sent to a laboratory to determine its fertilizer value.

Where manure is tested:

Multiply the total nutrient content by the appropriate percent available nutrients from Table 2. See Equation 1.

Equation 1. Calculating Available Nutrient Content

Total Nutrient Content	X	Manure Nutrient Availability	=	Available Nutrient Content

Express Total Nutrient Content as pounds per ton if working with solid manure or pounds per 1,000 gallons if working with liquid manure.

Express Table 2 percentage as a decimal and use that as the Manure Nutrient Availability term in Equation 1.

Where manure is not tested:

Use Tables 3 and/or 4 to estimate the available nutrient content of various solid and liquid manures after one application or consecutive annual applications.

STEP 2: Determine Available-Nutrient Content

Identify the fields that have received or will receive manure.

Then, determine how much manure per acre has been applied or will be applied to each field. UWEX Publication A3381, "Determining Manure Application Rates", contains more information.

STEP 3: Calculate the Manure Nutrient Credit

After you know the manure's available nutrient content and the application rate to a particular field, you can calculate the manure nutrient credit from Equation 2.

Multiply the Manure Application Rate from STEP 2 by the Available Nutrient Content from STEP 1.

Maintain proper units for this calculation by using the appropriate conversion terms in Table 5.

Equation 2. Manure Nutrient Credit Calculation

Available Nutrient Content	x	Manure Application Rate	=	Manure Nutrient Credit

MANURE CREDITING EXAMPLES

Example 1: Producer Smith surface applied 20 ton/acre of fresh solid dairy manure to corn ground last fall without testing the manure. Estimate the amount of *N*, P205, and K20 available to the next corn crop from manure.

Step 1: Use Table 3 to estimate available nutrients from surface spread solid dairy manure as 3-3-8/ton.

Step 2: Use Equation 2 to calculate the manure nutrient credit from a 20 ton/acre application rate.

(3-3-8/ton)(20 ton/acre) = 60 lb N/acre, 60 lb P205/acre, 160 lb K20/acre

Table 1. Rule of Thumb Average Nutrient and Dry Matter Content from Various Solid and Liquid Manures +

Species/mgt	%Dry Matter	N	P205	K20
		------	lb/ton	------
Dairy, solid, fresh*	12.7	10	5	10
Beef, solid, fresh*	11.6	14	9	11
Swine, solid, fresh*	9.2	10	6	9
Poultry, solid, fresh*	25.2	25	25	12
		---- lb/1,000 gal---		
Dairy, liquid*	8.5	28	14	28
Veal calf, liquid**	1.5	12	12	25
Beef, liquid*	7.7	39	25	31
Swine, liquid, finishing unit***	7.6	55	27	34
Swine , liquid farrow-nursery***	3.8	30	10	10
Poultry, liquid*	16.8	69	69	33

* Adapted from Table 1, UWEX Publication A3411, "Manure Nutrient Credit Worksheet", 1987.

** Adapted from Table 10-7, Midwest Plan Service Publication 18, "Livestock Waste Facilities Handbook", Rev. 1985, with 50% dilution water added. NOTE: Rainfall and flush water, may contribute significantly more water than 50%.

*** Adapted from Table 3, Iowa State University Extension Service Publication Pm-1164, Animal Manure: A Source of Crop Nutrients", 1984.

\+ Sample analysis will give a better estimate for subject farm.

Table 2. Estimated First-Year Nutrient Availability (%)* from Various Manures

Species	N	P205	K20
Dairy, surface applied**	30%	55%	75%
Dairy, incorporated**	35%	55%	75%
Veal calf, surface applied***	40%	55%	75%
Veal calf, incorporated***	50%	55%	75%
Beef, surface applied**	25%	55%	75%
Beef, incorporated**	30%	55%	75%
Swine, surface applied**	40%	55%	75%
Swine, incorporated**	50%	55%	75%
Poultry, surface applied**	50%	55%	75%
Poultry, incorporated**	60%	55%	75%

* If manure has been applied to the same field at similar rates for 2 consecutive years, increase the nutrient values in the table an additional 10 percentage points. If manure has been applied to the same field at similar rates for three or more consecutive years, increase the nutrient values in the table an additional 15 percentage points. (See example 2, step 1)

** Modified from Table 3, UWEX Publication A3411, "Manure Nutrient Credit Worksheet", 1987.

*** Modified from Table 10-7, Midwest Plan Service Publication 18, Livestock Waste Facilities Handbook", Rev. 1985

Example 2: Producer Jones surface spread and incorporated 8,000 gal/acre of fall-applied stored liquid dairy manure on a 20 acre corn field for two consecutive years. A manure analysis from a private lab showed a total nutrient value of 32-15-36/1,000 gal. Next spring he will plant corn and apply 100 lb/acre of 9-23-30 starter fertilizer. A UWEX Soil test recommended 160 lb N/acre, 60 lb P205/acre, and 120 lb K20/acre. Calculate the amount of nutrients in the manure and starter fertilizer, and how much additional nutrients must be supplied from other sources.

Step 1: Table 2 shows the percent available nutrients in dairy manure as 35% N, 55% P205, and 75% K20 for. first year nutrient availability. However, since similar manure rates have been applied for two consecutive years, increase these values an additional ten percentage points for each nutrient to 45% for N, 65% for P205, and 85% for K20. See the first footnote in Table 2.

Step 2: Use Equation 1 to calculate the available nutrient content.

(32-15-36)/1,000 gal.	X	(0.45-0.65-0.85)	=	14.4 lb N/1,000 gal., 9.8 lb P205/1,000 gal. 30.6 lb K20/1,000 gal.

Step 3: Use Equation 2 to calculate the manure nutrient credit from an 8,000 gallon rate.

(14.4	lb N/1,000 gal.)	X	8,000 gal/acre	=	115 lb N/acre
(9.8	lb P205/1,000 gal.)	X	8,000 gal/acre	=	78 lb P205/acre
(30.6	lb K20/1,1000 gal.)	X	8,000 gal/acre	=	245 lb K20/acre

Now, subtract the manure and starter P205 and K20 credits from the soil test recommendations to determine if additional nutrients are required. Round the resulting positive numbers to the nearest 10 lb/acre.

(160 - 115) lb N/acre	=	45 lb N/acre or 50 lb N/acre
(60 - 78 - 23) lb P205/acre	=	-41 lb P205/acre (excess P)
(120 - 245 - 30) lb K20/acre	=	-155 lb K20/acre (excess K)

The total amount of additional N needed is: 50 lb N/acre X 20 acres = 1000 lb N

If Phosphorus or Potassium are a water quality concern, this producer may want to reduce the amount of manure being applied to these acres.

Table 3. Rule-of-thumb Estimates of Available Nutrients from Solid Manure by Species and Management Systems for up to Three or More Consecutive Years of Application*

Species/mgt. System	Dry Matter	Total Available Nutrients		
		N	P205	K20
	%		lb./ton	
One Year of Application				
Dairy, surface applied	12.7	3	3	8
Dairy, incorporated	12.7	4	3	8
Beef, surface applied	11.6	4	5	8
Beef, incorporated	11.6	4	5	8
Swine, surface applied	9.2	4	3	7
Swine, incorporated	9.2	5	3	7
Poultry, surface applied	25.2	13	14	9
Poultry, incorporated	25.2	15	14	9
Two Consecutive Years of Application				
Dairy, surface applied	12.7	4	3	9
Dairy, incorporated	12.7	5	3	9
Beef, surface applied	11.6	5	6	9
Beef, incorporated	11.6	6	6	9
Swine, surface applied	9.2	5	4	8
Swine, incorporated	9.2	6	4	8
Poultry, surface applied	25.2	15	16	10
Poultry, incorporate ' d	25.2	18	16	10
Three or More Consecutive Years of Application				
Dairy, surface applied	12.7	5	4	9
Dairy, incorporated	12.7	5	4	9
Beef, surface applied	11.6	6	6	10
Beef, incorporated	11.6	6	6	10
Swine, surface applied	9.2	6	4	8
Swine, incorporated	9.2	7	4	8
Poultry, surface applied	25.2	16	18	11
Poultry, incorporated	25.2	19	18'	11

* Based on values given in Tables 1 and 2, calculated using Equation 1. Figures are rounded to the nearest whole pound.

Table 4. Rule-of-thumb Estimates of Available Nutrients from Liquid Manure by Species and Management Systems for up to Three or More Consecutive Years of Application*

Species/mgt. System	Dry Matter	Total Available Nutrients N	P205	K20
	%		lb./1000 gal.	
One Year of Application				
Dairy, surface applied	8.5	8	8	21
Dairy, incorporated	8.5	10	8	21
Veal calf, surf. appl.	3.0	12	14	38
Veal calf, incorp.	3.0	14	14	38
Beef, surface applied	7.7	10	14	23
Beef, incorporated	7.7	12	14	23
Swine, f.u.**, surf. appl.	7.6	22	15	26
Swine, f.u.**, incorp.	7.6	28	15	26
Swine, f.n.***, surf. appl.	3.8	12	6	8
Swine, f.n.***, incorp.	3.8	15	6	8
Poultry, surface applied	16.8	35	38	25
Poultry, incorporated	16.8	41	38	25
Two Consecutive Years of Application				
Dairy, surface applied	8.5	11	9	24
Dairy, incorporated	8.5	13	9	24
Veal calf, sur. appl.	3.0	14	16	43
Veal calf, incorp.	3.0	17	16	43
Beef, surface applied	7.7	14	16	26
Beef, incorporated	7.7	16	16	26
Swine, f.u.**, surf. appl.	7.6	28	15	29
Swine, f.u.**, incorp.	7.6	33	15	29
Swine, f.n.***, surf. appl.	3.8	15	7	9
Swine, f.n.***, incorp.	3.8	15	7	9
Poultry, surface applied	16.8	42	45	28
Poultry, incorporated	16.8	48	45	28
Three or More Consecutive Years of Application				
Dairy, surface applied	8.5	13	10	25
Dairy, incorporated	8.5	14	10	25
Veal calf, surf. appl.	3.0	16	17	46
Veal calf, incorp.	3.0	18	17	46
Beef, surface applied	7.7	16	17	28
Beef, incorporated	7.7	18	17	28
Swine, f.u.**, surf. appl.	7.6	30	19	31
Swine, f.u.**, incorp.	7.6	36	19	31
Swine, f.n.***, surf. appl.	3.8	17	8	9
Swine, f.n.***, incorp.	3.8	20	8	9
Poultry, surface applied	16.8	45	48	30
Poultry, incorporated	16.8	52	48	30

* Based on values given in Tables 1 and 2, calculated using Equation 1. Figures are rounded to the nearest whole pound.

** finishing unit

*** farrow-nursery

Technical Note - Conservation Planning - WI-1, Part 1.4

Guidelines for identifying areas that represent a surface water pollution hazard from winter spread manure and other organic by products.

DIRECTIONS:

A. On a copy of the aerial photo, identify:
-perennial streams, lakes, and natural wetlands -"Discharge Points" -"Other channels -Cropland field boundaries

B. For fields not within 900 ft. of waterbodies or discharge points identify distances (either 50, 100, or 150 ft.) from identified channels by using section II. of the table.

C. For fields within 900 ft. of waterbodies or discharge points:
1. Determine the cropping system (crops, rotation, tillage, contouring, etc.) for each field.
2. Based on slope, flow type and surface conditions, determine the area of high hazard by selecting a distance from section I. of the table.

Note: If the minimum distance cannot be achieved within the boundaries of the selected slope, flow type and surface condition, prorate the distance by estimating a representative slope, flow type and surface condition.

DEFINITIONS:

A. Discharge Point = In addition to mapped waterbodies, discharge points include: impoundments, natural wetlands, intermittent streams, drainage ditches, grassed waterways or other channels having a drainage area as indicated in the following table. For the purposes of establishing hazard areas this definition expands the standard definition of waterbodies to include a broader drainage network active during peak runoff events.

B. OH = Means that part of a crop rotation in which small grains as a companion crop or hay is grown.

C. Other Channels = Channels that can be identified on aerial photos, soil maps or field observation (eg. waterways, gullies, etc.) that have drainage areas less than those specified for Discharge Points.

D. Overland Flow = The assumed mode of runoff flow in the absence of well established rills and channels.

E. Shallow Concentrated Flow = The assumed mode of runoff flow commonly occurring with long slopes, characterized by well established rills but devoid of open channels.

1 gallon = 8.3 pounds
1 ton = 2,000 pounds
1,000 gal. = 4.17 tons
1 bushel =77.5 Pounds (liquid)
1 bushel =1.25 cubic feet (liquid)
1 cu.ft. =62 pounds (liquid dairy)
1 cu.ft. =60 pounds (liquid beef & swine)
1 cu.ft. =60 pounds (fresh, solid poultry)
1 cu.ft. =62 pounds (semi-solid dairy)
1 cu.ft. =55 pounds (semi-solid beef & swine)**
1 cu.ft. =45 pounds (solid dairy)
1 cu.ft. =7.5 gallons
1 acre-inch = 27,225 gallons

* When sizing manure spreaders, use manure unit conversions based on cubic feet, rather than bushel, measurements.
** UWEX estimates

Technical Note - Conservation Planning - WI-1. Part 1.5

Water Budgets

Water budgets in Appendix A are based on CREAMS computer model runs. CREAMS (Chemical, Runoff, and Erosion from Agricultural Management Systems) is a mathematical model developed to evaluate non-point source pollution from field-sized areas.

Rainfall records for the following locations were used:

Rice Lake, Wisconsin for Spencer silt loam; Lancaster, Wisconsin for Tama silt loam; Plainfield, Wisconsin for Plainfield loamy sand.

The watershed size used was 12 acres. The average field slope was 5.5% and the overland flow slope length was 200'.

The representative water budgets show rainfall, runoff, evapotranspiration and percolation below the root zone.

F. Winter Spread Manure = The practice of spreading manure during that time of the year (winter and portions of fall and spring) when incorporation' is not practical and the potential for runoff is greatest.

BACKGROUND: The table values for areas of high pollution hazard are derived from the Velocities For Upland Method of Estimating Time = of Concentration (NRCS National Engineering Handbook Sec. 4, Fig 15-2) using a delivery time of five minutes.

GUIDELINES FOR AREAS OF HIGH POLLUTION HAZARD TO SURFACE RUNOFF FROM WINTER SPREAD MANURE

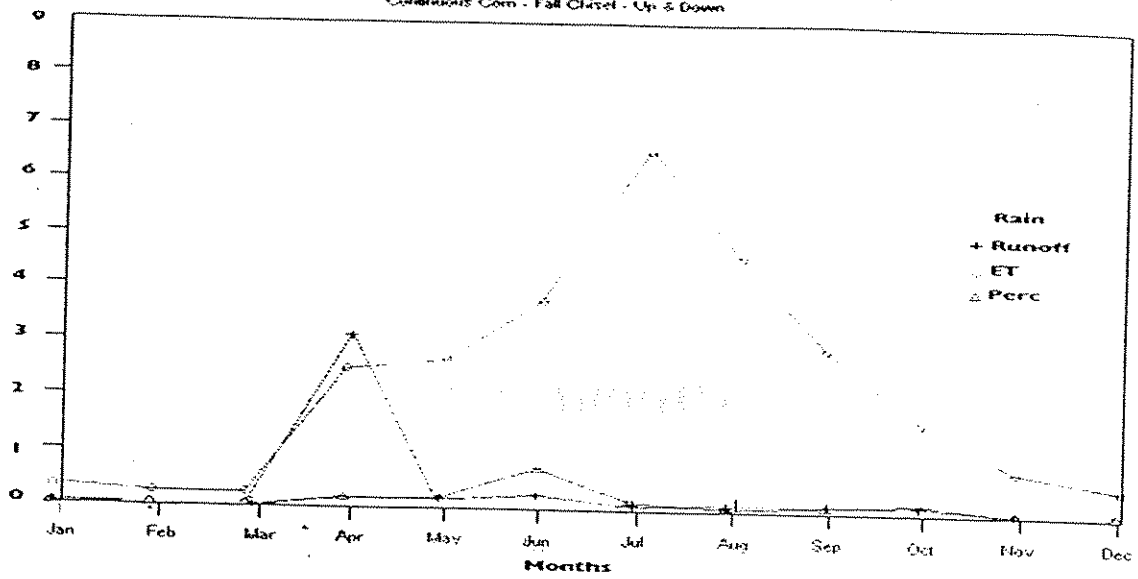
	Flow Type and Surface Condition	A	B	C	D	E
High Hazard Areas	Overland Flow*: -Perm. long grasses -Woodland with heavy cover	200	200	200		
I. Distance (ft.) from Water Bodies and Discharge Points	Overland Flow: -Contour Strip -Contoured, with Rotations >50% OH* (all tillage) -Contoured with OH <50%, >30% residue -Perm. Hayland				All High Hazard	All High Hazard
	Overland Flow: -Rotations >50% OH -Contoured with OH <50%, <30% residue -Short grass pasture -Woodland with moderate cover	250	450	650		
	Overland Flow: -Rotations <50% OH, all tillage Woodland with minimal cover Shallow concentrated Flow*	300	600	900		
II. Distance from Other Channels	All flow types and surface conditions	50	100	150		

See Definitions

Hydrologic Soil Group	Drainage Area Greater than:
A	100 ac
B	40 ac
C, D * (or use drained condition)	20 ac

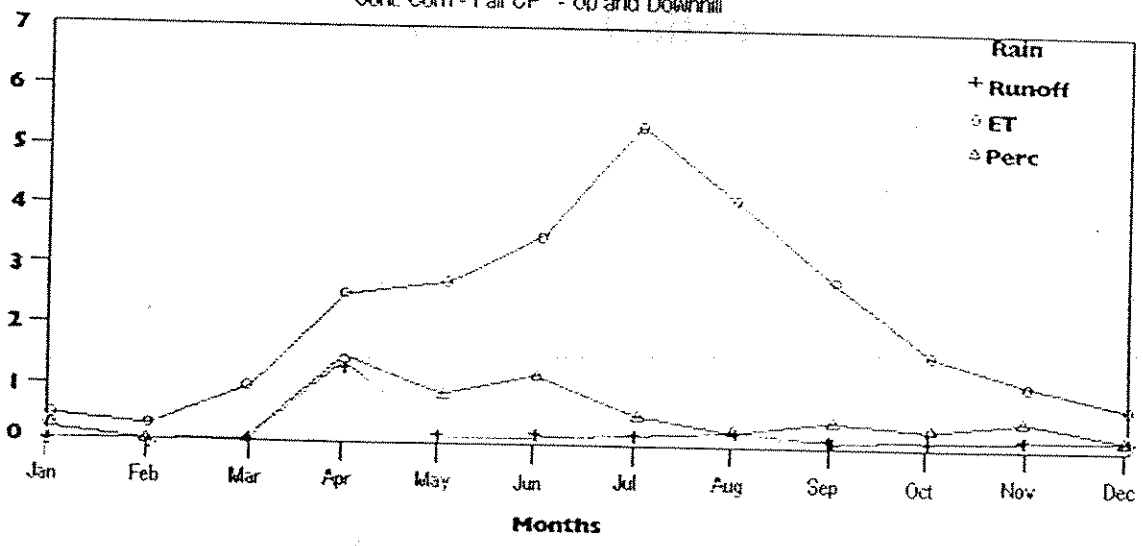
Spencer silt loam - Wisconsin

Continuous Corn - Fall Chisel - Up & Down



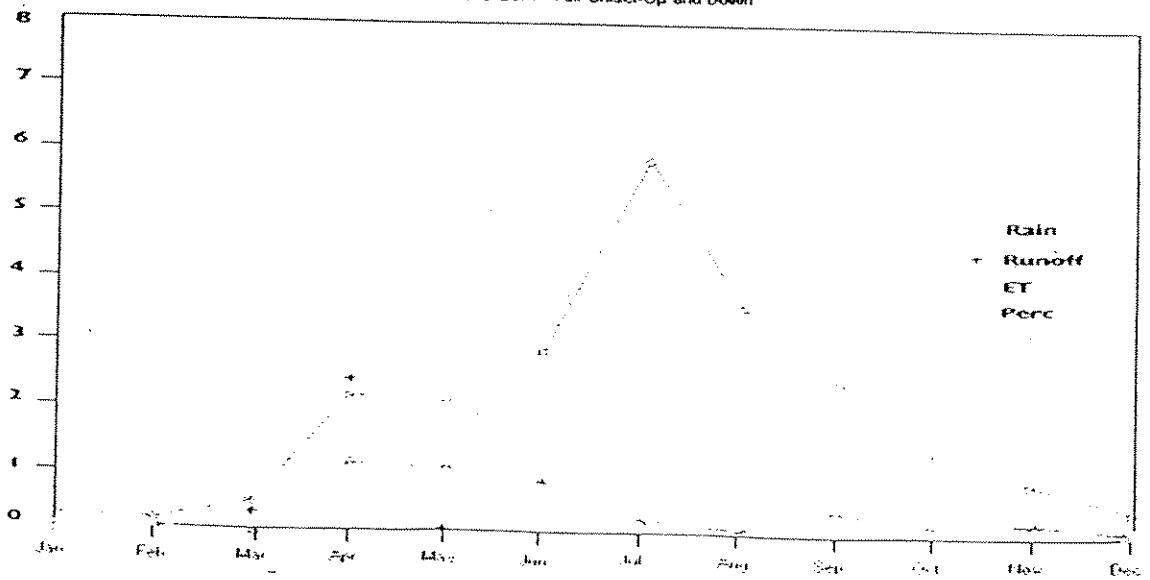
Tama Silt Loam - Wisconsin

Cont. Corn - Fall CP - Up and Downhill



Plainfield loamy sand - Wisconsin

Continuous Corn - Fall Chisel-Up and Down



Appendix E

Agricultural Engineering Practitioner Certification Form

Wisconsin Department of Agriculture, Trade, and Consumer Protection

WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION
AGRICULTURAL ENGINEERING PRACTITIONER; CERTIFICATION

1/99

PRACTITIONER _____ OFFICE _____

(SIGNATURE) _____ TITLE _____ DATE _____ Original Revised Revised

CONCURRED BY _____ TITLE Supervisor DATE _____

CERTIFIED BY _____ TITLE DATCP Agricultural Engineer DATE _____

CONCURRED BY _____ TITLE _____ DATE _____

STD. CODE	PRACTICE	SUB-PRACTICE	CONTROLLING FACTORS	UNITS	JOB CLASS I	II	III	IV	V	CERTIFICATION RATING DESIGN	CONST
560	ACCESS ROAD		GRADE	%	10	ALL					
		CULVERT	DRAINAGE AREA	ACRES	10	20	40	160	ALL		
		LIVESTOCK AND EQUIPMENT STREAM CROSSING	VELOCITY	F.P.S.	4	6	8	10	ALL		
575	ANIMAL TRAILS AND WALKWAYS		GRADE	%	ALL						
410	GRADE STABILIZATION STRUCTURE	EARTHEN EMBANKMENTS	HAZARD	CLASS	a	a	a	a	a		
350	SEDIMENT BASIN (EXCEPT FOR ANIMAL WASTE)		DRAINAGE AREA	ACRES	20	40	160	320	640		
378	POND (EMBANKMENT)		EFFECTIVE HEIGHT (a)	FEET	10	15	20	25	35		
587	STRUCTURE FOR WATER CONTROL		STORAGE (b)	AC.FT.	5	15	30	50	85		
402	DAM, FLOODWATER RETARDING		CONDUIT (SINGLE)	INCH	12	18	24	36	48		
		BOX DROP TO CULVERT	NET DROP	FEET	2*	3*	4*	4	6		
			WEIR CAPACITY	C.F.S.	100*	200*	300*	400	500		
		TOEWALLS	NET DROP	FEET	2*	3*	4*	3	4		
			WEIR CAPACITY	C.F.S.	100*	200*	300*	300	300		
		CHUTES	NET DROP	FEET	4	6	8	10	12		
			CAPACITY	C.F.S.	50	100	200	250	300		
362	DIVERSION		DRAINAGE AREA	ACRES	10	20	40	160	ALL		

AGE 1 OF 3

1/99

STD. CODE	PRACTICE	SUB-PRACTICE	CONTROLLING FACTORS	UNITS	JOB CLASS					CERTIFICATION RATING	
					I	II	III	IV	V	DESIGN	CONST
393	FILTER STRIP	SEDIMENT RELATED	WIDTH	FEET	ALL						
		BARNYARD	CONTRIBUTING AREA	SQ. FT.	15000	40000	ALL				
		MILKING CENTER	VOLUME	G.P.D.	300	600	ALL				
		OTHER WASTES	FILTER AREA	SQ.FT.	1000	2500	5000	10000	ALL		
412	GRASSED WATERWAY		DRAINAGE AREA	ACRES	50	200	600	1300	ALL		
561	HEAVY USE AREA PROTECTION		AREA	SQ. FT.	15000	40000	ALL				
468	LINED WATERWAY OR OUTLET		DESIGN CAPACITY (c)	C.F.S.	10	30	100	150	ALL		
582	OPEN CHANNEL		DESIGN VELOCITY	F.P.S.	2	4	6	8	10		
584	STREAM CHANNEL STABILIZATION		DESIGN CAPACITY	C.F.S.	100	200	300	400	500		
516	PIPELINE, LIVESTOCK WATER		LENGTH	MILES	1/4	1	3	30	ALL		
378	POND (EXCAVATED)		VOLUME OF EXCAVATION	CU. YD.	20000	ALL					
521	POND SEALING OR LINING, WATER PONDS		AREA TREATED	ACRES	1/4	1/2	1	2	ALL		
558	ROOF RUNOFF MANAGEMENT		ROOF SIZE	SQ. FT.	1500	3000	4500	7000	ALL		
350	SEDIMENT BASIN, LIVESTOCK		WALL HEIGHT	FEET	2*	4*	5*	6*	8*		
			CONTRIBUTING AREA	SQ. FT.	15000	40000	ALL				
574	SPRING DEVELOPMENT		ESTIMATED FLOW	G.P.M.	ALL						
580	STREAMBANK AND SHORELINE PROTECTION	LAKESHORES	WAVE HEIGHT	FEET	-	3	ALL				
		STREAMBANKS	CAPACITY	C.F.S.	100	300	1000	2000	4000		
			VELOCITY (d)	F.P.S.	2	4	6	8	10		
606	SUBSURFACE DRAIN		PIPE SIZE	INCH	4	6	8	12	ALL		
607	SURFACE DRAIN FIELD DITCH		DRAINAGE AREA	ACRES	10	20	50	100	ALL		
608	SURFACE DRAINAGE, MAIN OR LATERAL		DRAINAGE AREA	ACRES	100	320	640	2000	ALL		
600	TERRACE	GRADIENT	EMBANKMENT HEIGHT	FEET	2	3	ALL				
		UNDERGROUND OUTLET	EMBANKMENT HEIGHT	FEET	3	4	6	8	ALL		
614	TROUGH OR TANK		NUMBER	EACH	ALL						
620	UNDERGROUND OUTLET		PIPE SIZE	INCH	4	6	8	12	ALL		
638	WATER AND SEDIMENT CONTROL BASIN		EMBANKMENT HEIGHT	FEET	5	10	15				
725	CREVICE AND SINKHOLE TREATMENT		NUMBER	EACH	ALL						

STD. CODE	PRACTICE	SUB-PRACTICE	CONTROLLING FACTORS	UNITS	JOB CLASS					CERTIFICATION RATING	
					I	II	III	IV	V	DESIGN	CONST
312	WASTE MANAGEMENT SYSTEM		ANIMAL UNITS	EACH	75	150	300	600	1000		
313	WASTE STORAGE FACILITY (INCLUDES CLOSURE)	STRUCTURAL FACILITIES	DESIGN CAPACITY	CU. FT.	5000	25000	75000	150000	300000		
			PREQUALIFIED (e)	EACH	ALL subject to design capacity						
			WALL HT.(STANDARD)	FEET			4*	6*	8*		
			WALL HT. (f) (NON-STANDARD)	FEET			4	6	8		
		EARTHEN FACILITIES	EFFECTIVE HEIGHT (a)	FEET	10	15	20	25	ALL		
		UNLINED POND	DESIGN CAPACITY	CU.FT.			100000	500000	1.5M		
		CONCRETE LINER	DESIGN CAPACITY	CU.FT.			100000	500000	1.5M		
		CLAY LINER	DESIGN CAPACITY	CU.FT.			100000	500000	1.5M		
		MEMBRANE AND GEO-SYNTHETIC CLAY LINER	DESIGN CAPACITY	CU.FT.			100000	500000	1.5M		
634	MANURE TRANSFER		TYPE	EACH	PUMP	RAVITY	ALL				
			RECEPTION TANK (g) (subject to wall height class under 313)	EACH	STAND. DRAW-ING	NON-STAN-DARD	ALL				
351	WELL DECOMMISSIONING		ESTIMATED DEPTH	FEET	100	200	300	500	ALL		
657	WETLAND RESTORATION	SCRAPE	SURFACE AREA	ACRE	1/2	1	ALL				
		TILE BREAK	DRAIN DIAMETER	INCH	6	8	12	ALL			
		DITCH PLUG	DEPTH	FEET	4	6	8	ALL			
			DRAINAGE AREA	ACRES	80	160	320	640	ALL		
		EMBANKMENT	EFFECTIVE HEIGHT	FEET	4	6	8	10	ALL		
			DRAINAGE AREA	ACRES	20	40	80	120	160		
			STORAGE (b)	AC.FT.	5	15	30	50	50		

* STANDARD DETAIL DRAWINGS

NOTES:

1. CERTIFICATION IS NOT GRANTED FOR PRACTICES NOT SHOWN.
2. OTHER RESTRICTIONS MAY APPLY AS NOTED.

FOOTNOTES:

a. DIFFERENCE IN ELEVATION IN FEET BETWEEN THE EMERGENCY SPILLWAY CREST (TOP OF EMBANKMENT IF NO EMERGENCY SPILLWAY) AND THE LOWEST POINT IN THE CROSS SECTION TAKEN ALONG THE CENTERLINE OF THE EMBANKMENT.

b. STORAGE - TOTAL STORAGE CAPACITY AT THE TOP OF THE DAM IN ACRE-FEET.

c. LINED WATERWAY OR OUTLET (468) - THE JOB CLASS WILL BE BASED ON THE 10 YEAR 24 HOUR DURATION PEAK DISCHARGE.

d. MAXIMUM DESIGN VELOCITY.

e. PREQUALIFIED STRUCTURES CAN BE FOUND IN CHAPTER 17 OF THE ENGINEERING FIELD HANDBOOK.

f. THE MNTC DRAWING Nos. 5.E-33,001 AND 5.E-33,002 ARE CLASSIFIED UNDER WALL HEIGHT (NON-STANDARD).

g. THE MNTC DRAWING Nos. 5.E-33,001 AND 5.E-33,002 ARE CLASSIFIED AS NON-STANDARD DRAWINGS.

Appendix F

Scheduled Completion Dates for Priority Watershed Projects, 2001 – 2009

Wisconsin Department of Agriculture, Trade and Consumer Protection

APPENDIX F

SCHEDULED COMPLETION DATES FOR PRIORITY WATERSHED PROJECTS, 2001 - 2009

County	Priority Watershed Project Codes	Priority Watershed Project End Dates
Adams	NEE	2002
Barron	YEL	2004
Bayfield	WTC	2006
Brown	DAA	2008
	EAS	2002
	BRB	2006
	RLS	2007
Buffalo	MTR	2004
	WMD	2001
Burnett	BIG	2009
Calumet	WNE	2003
Chippewa	DUN	2004
Clark	UYL	2004
Columbia	BDR	2005
	NEE	2005
	YME	2008
Dane	DLP	2004
	YME	2008
Dodge	BDR	2005
Door	RLS	2007
Douglas	USC	2008
Dunn	SFH	2005
Fond du Lac	EWB	2001
	FDL	2009
	SHB	2002
	WNE	2004
Grant	LGR	2002
Green	LEP	2002
Jackson	UTR	2006
Jefferson	ROC	2004
Juneau	DEL	2009
Kewaunee	RLS	2007
Lafayette	LEP	2003
Langlade	SPR	2008
Manitowoc	BRB	2007
	PIG	2009
	SHB	2002
Marathon	LBE	2002
	LRR	2009
	UYL	2004
Marinette	MIN	2006
	MPT	2009
Marquette	NEE	2005
Monroe	LTM	2002
	MKR	2003
Oconto	PEN	2008
Outagamie	ARD	2002
	DAA	2009
Ozaukee	CCK	2003
	MNB	2001
	MRS	2003
Pierce	KNC	2009
Polk	BAL	2006
	HSC	2009
	OSC	2007
Portage	WPC	2007
Racine	SHC	2006
Richland	MKR	2004
Rock	SPC	2004
Rusk	SMH	2007
Saint Croix	SCL	2008
	SFH	2005
	KNC	2009
Sauk	DEL	2009
	NBR	2004
Shawano	PEN	2007
Sheboygan	MNB	2001
	PIG	2009
	SHB	2003
Trempealeau	MTR	2004
	UTR	2005
Vernon	HIL	2005
	MKR	2004
Walworth	SHC	2008
Washington	CCK	2004
	EWB	2001
	MNB	2001
Waukesha	MWL	2005
	UFR	2005
Waupaca	LLW	2008
	WPC	2006
Waushara	PWR	2009
Winnebago	ARD	2004
	FDL	2009
	PWR	2009
Wood	UYL	2004

State of Wisconsin
Department of Agriculture, Trade and Consumer Protection

NOTICE OF HEARING

Rule Related to Soil and Water Resource Management

The state of Wisconsin Department of Agriculture, Trade and Consumer Protection announces that it will hold public hearings on a proposed rule to amend ATCP 3.02(1), to repeal and recreate ch. ATCP 50, and to create ATCP 40.11 Wisconsin Administrative Code, relating to the soil and water resource management program. The department will hold five hearings at the times and places shown below. The department invites the public to attend the hearings and comment on the proposed rule. Following the public hearing, the hearing record will remain open until September 14, 2001, for additional written comments.

You may obtain a free copy of this rule by contacting Bonnie Shebelski at the Wisconsin Department of Agriculture, Trade and Consumer Protection, Bureau of Land and Water Resources, 2811 Agricultural Drive, P.O. Box 8911, Madison, Wisconsin 53708-8911, telephone: 608/224-4620. Copies will also be available at the hearings.

Hearing impaired persons may request an interpreter for these hearings. Please make reservations for a hearing interpreter by **August 20, 2001**, by writing Bonnie Shebelski, DATCP, P.O. Box 8911, Madison, WI 53708-8911, telephone 608/224-4620. Alternatively, you may contact the department TDD at 608/224-5058. Handicap access is available at the hearings.

Hearings are scheduled at:

Tuesday, August 28, 2001, 1:00 - 4:30 p.m.
Jefferson County Courthouse, Room 202
320 S. Main Street
Jefferson, Wisconsin

Tuesday, August 28, 2001, 1:00 - 4:30 p.m.
Multipurpose Room
Dunn County Judicial Center
615 Parkway Drive
Menomonie, Wisconsin

Wednesday, August 29, 2001, 1:00-4:30 p.m.
Richland Center Community Center
600 W. Seminary Street
Richland Center, Wisconsin

Wednesday, August 29, 2001, 1:00 - 4:30 p.m.
UWEX Meeting Rooms A and B
County Normal Building
104 S. Eyder Avenue
Phillips, Wisconsin

Thursday, August 30, 2001, 1:00 to 4:30 p.m.
Brown County Agriculture and Extension Center, Room 114
1150 Bellevue Street
Green Bay, Wisconsin

Analysis Prepared by the Department of Agriculture, Trade and Consumer Protection

Statutory authority: ss. 92.05(3)(c) and (k), 92.14(8), 92.15(3)(b), 92.16, 92.18(1), 93.07(1), and 281.16(3)(b) and (c), Stats.
Statutes interpreted: s. 91.80, ch. 92, and s. 281.16, Stats.

This rule repeals and recreates current rules related to Wisconsin's soil and water resource management program. The department of agriculture, trade and consumer protection ("DATCP") administers this program under ch. 92, Stats. Among other things, this rule:

- Requires farm conservation practices.
- Creates a farm nutrient management program.
- Updates standards for county soil and water conservation programs, including county land and water resource management plans.
- Updates standards and procedures for DATCP grants to counties.
- Updates standards and procedures for county cost-share grants to landowners.
- Establishes technical standards for cost-shared conservation practices.
- Transfers some nonpoint source pollution abatement grant programs from DNR to DATCP, as directed by the Legislature.

Background

General

DATCP administers Wisconsin's soil and water resource management program under ch. 92, Stats. The program is designed to conserve the state's soil and water resources, reduce soil erosion, prevent nonpoint source pollution and enhance water quality. This rule spells out program standards and procedures.

DATCP administers this program in cooperation with county land conservation committees, the state land and water conservation board ("LWCB"), the department of natural resources ("DNR"), the natural resource conservation service of the U.S.

department of agriculture ("NRCS") and other agencies. DATCP coordinates soil and water management efforts by these agencies. DATCP funds county soil and water conservation programs, and finances county cost-share grants to landowners to implement conservation practices. DNR administers a related cost-share program aimed at preventing nonpoint source pollution.

In 1997 Wis. Act 27 and 1999 Wis. Act 9, the Legislature mandated a comprehensive redesign of state programs related to nonpoint source pollution. Among other things, the Legislature directed DATCP and DNR to establish conservation standards and practices for farms. The Legislature also directed DATCP to adopt rules related to nutrient management on farms. This rule implements the redesigned nonpoint program.

County Programs

DATCP administers soil and water conservation programs in cooperation with county land conservation committees. Counties adopt land and water resource management plans, administer county ordinances, adopt conservation compliance standards for farmers claiming farmland preservation tax credits, provide information and technical assistance, and make cost-share grants to landowners installing conservation practices.

DATCP awards soil and water grants to counties. Grants reimburse county staff and support costs, and finance county cost-share grants to landowners. DATCP reviews county grant applications and awards grants according to an annual grant allocation plan reviewed by the LWCB. Counties must ensure that cost-shared practices are installed according to state standards, and must account for all grant funds received.

Soil and Water Conservation on Farms

Farm Conservation Practices

DNR is primarily responsible for adopting farm performance standards to prevent nonpoint source pollution. DATCP must prescribe conservation practices to implement the DNR standards. DATCP must also establish soil conservation and farm nutrient management requirements. Counties will take the lead role in implementing conservation practices on farms. Counties will receive staff funding from DATCP. Counties will receive cost-share funding from DATCP and DNR.

Under this rule, every farm must implement conservation practices that achieve compliance with DNR performance standards. This rule cross-references, but does not restate or duplicate, DNR performance standards. Conservation requirements are contingent on cost sharing (see below).

DATCP (not DNR) is primarily responsible for establishing conservation requirements related to cropland soil erosion and nutrient management. This rule

establishes the following soil erosion and nutrient management requirements, which are contingent on cost sharing (see below):

- *Soil erosion.* A farmer must manage croplands and cropping practices so that soil erosion rates on cropped soils do not exceed a tolerable rate ("T"). For most soils, the tolerable rate ("T") is equivalent to 3 to 5 tons of soil loss per acre per year. DNR rules will establish more specific runoff standards for riparian areas and waterways.

- *Annual nutrient management plan.* A farmer applying manure or commercial fertilizer must have an annual nutrient management plan, and must follow that plan.

- *Nutrient management plan; preparation.* A qualified nutrient management planner (see below) must prepare each nutrient management plan required under this rule. A farmer may prepare his or her own nutrient management plan if the farmer has, within the previous 4 years, completed a department-approved training course.

- A person selling bulk fertilizer to a farmer must record the name and address of the nutrient management planner who prepared the farmer's nutrient management plan (if the farmer has a plan).

- *Nutrient management plan; contents.* A nutrient management plan must be based on soil tests, and must comply with standards under this rule. Nutrient applications may not exceed the amounts required to achieve applicable crop fertility levels recommended by the university of Wisconsin in UWEX publication A-2809, *Soil Test Recommendations for Field, Vegetable and Fruit Crops (copyright 1998),* unless the nutrient management planner documents a special agronomic need for the deviation. *Appendix B* contains a convenient summary of the UW recommendations for selected crops.

County Implementation

Counties will take the lead role in implementing farm conservation practices under this rule (see below). Counties must adopt land and water resource management plans to implement the conservation practices on farms. DATCP must approve county plans, as provided in ch. 92, Stats. Counties must update conservation standards for farmers claiming farmland preservation tax credits, and may adopt ordinances requiring other farmers to implement conservation practices. With DATCP financial help, counties may also provide cost-share grants, technical assistance and information to farmers.

Installing Conservation Practices; Technical Standards

A farmer may implement the conservation practices under this rule in a variety of different ways. DATCP, UW-extension, NRCS and the counties will provide information and recommendations.

If a landowner receives cost-share funding to install a conservation practice, the practice must comply with technical standards under this rule. The county must also determine that the funded practice is cost-effective. This rule specifies technical standards (including required maintenance periods) for the following cost-shared practices:

- Manure storage systems
- Manure storage system closure
- Barnyard runoff control systems
- Access roads and cattle crossings
- Animal trails and walkways
- Contour farming
- Cover and green manure crop
- Critical area stabilization
- Diversions
- Field windbreaks
- Filter strips
- Grade stabilization structures
- Heavy use area protection
- Livestock fencing
- Livestock watering facilities
- Milking center waste control systems
- Nutrient management
- Pesticide management
- Prescribed grazing
- Relocating or abandoning animal feeding operations
- Residue management
- Riparian buffers
- Roofs
- Roof runoff systems
- Sediment basins
- Sinkhole treatment
- Streambank and shoreline protection
- Strip-cropping
- Subsurface drains
- Terrace systems
- Underground outlets
- Waste transfer systems
- Water and sediment control basins

- Waterway systems
- Well decommissioning
- Wetland development or restoration

This rule does not change or eliminate any current technical standards, or add any new technical standards, except that this rule:

- Adds a standard for cover and green manure crops.
- Adds a standard for riparian buffers (the new standard is similar to the existing standard for filter strips).
- Adds a standard for sinkhole treatments.
- Splits the nutrient and pesticide management standard into 2 separate standards.
- Eliminates the standard for cattle mounds.
- Renames several standards.
- Eliminates restrictions on the length of cost-share contracts for the following practices:

    * Residue management
    * Contour farming
    * Cover and green manure crops (new standard)
    * Prescribed grazing
    * Nutrient management
    * Pesticide management

This rule spells out a procedure by which DATCP may change technical standards in the future. DATCP will adopt future changes, if any, by rule (as it has in the past). The rulemaking process provides opportunity for public review and input. DATCP will make available complete copies of any technical standards that it incorporates by reference in a rule. DATCP will prepare a fiscal estimate and small business analysis on each proposed rule change, and may seek input from a DATCP advisory council.

DATCP will cooperate with the current Standards Oversight Council (SOC) in the development of technical standards. DATCP will consider SOC technical recommendations, but is not bound to adopt SOC recommendations as rules. SOC is a voluntary, multi-agency committee that works to share technical information and coordinate state and federal technical standards. SOC has no rulemaking authority. This rule does not change SOC's current role or operations. DATCP will encourage SOC to seek public input and cost information as SOC develops technical recommendations.

Cost Sharing Required

Many landowners will need to install new conservation practices in order to comply with this rule. This rule clarifies that a landowner is not *required* to do any of the following unless the landowner receives at least 70% cost sharing (90% if the county finds that there is an "economic hardship"):

- Discontinue or modify that part of a facility or practice that exists on the effective date of the rule.

- Obtain or implement an annual nutrient management plan.

- Change annual cropping or tillage practices.

This rule clarifies that the 70% (90% hardship) cost-sharing requirement applies to all of the following:

- The landowner's reasonable and necessary out-of-pocket expenditures to install and maintain the conservation practice.

- Reasonable compensation for necessary labor, equipment and supplies provided by the landowner.

- The value of the landowner's cost to take land out of agricultural production. The rule provides a formula for determining value, authorizing payment for the *greater of*:

    - The prevailing agricultural land rental rates in the county (as determined by USDA).
    - The payment that would be offered under the state-federal conservation reserve enhancement program (CREP), whether or not the land is eligible for the program.

This rule clarifies that the 70% (90% hardship) cost-sharing requirement does *not* apply to any of the following:

- A conservation practice for which DATCP "technical standards" specify a minimum cost-share contract period (typically 10 years) if the landowner has *already received* a cost-share grant (at the rate required in this rule) for that period. *But a county must continue to provide cost sharing in subsequent years if the county requires the landowner to keep land out of agricultural production.*

- A conservation practice (such as conservation tillage or nutrient management) for which DATCP rules specify no minimum maintenance period if the landowner has *already received* a cost-share grant (at the rate required in this rule) for at least 3 years. For example, if a county has *already paid* a landowner to implement nutrient management for at least 3 years, the county may require the landowner to comply with state nutrient management standards in subsequent years without further cost-sharing.

- Conservation practices or costs for which this rule prohibits cost sharing.

This rule clarifies that:

- Cost-share grants from any public or private source, or combination of sources, may be counted toward the 70% (90% hardship) cost-share payment.

- A loan is not a grant.

- The 70% (90% hardship) cost-sharing requirement also applies to conservation practices required by county and local ordinances.

Cost-Share Funding for Conservation Practices

Under this rule, DATCP will finance county cost-share grants to farmers and rural landowners who install conservation practices – including practices designed to abate nonpoint source pollution. But DATCP will no longer finance cost-share grants to landowners who receive specific pollution discharge notices from DNR. Funding for that purpose is transferred to DNR. DNR will also continue to fund cost-share grants to urban landowners.

DATCP and DNR will jointly review county funding requests to determine the appropriate source of cost-share funding. Each county will determine its cost-share priorities based on the county land and water resource management plan. DATCP will allocate available cost-share dollars among the counties, based on state and county priorities.

DATCP will enter into an annual funding contract with each county receiving cost-share funds. The county, in turn, must enter into cost-share contracts with individual landowners. DATCP must be a party to a landowner cost-share contract if the contract is for more than $50,000. This rule spells out requirements for county cost-share contracts with landowners (see below).

DATCP reimburses cost-share payments after the county certifies that the cost-shared practice has been properly installed and paid for. Some conservation practices must be designed and certified by a professional engineer, a certified agricultural engineering practitioner or a qualified nutrient planner (see below).

County Cost-Share Grants to Landowners

This rule spells out standards for county cost-share grants to landowners. The county must enter into a cost-share contract with the landowner. The county may cost-share conservation practices identified in this rule (or other practices specifically approved by DATCP). The cost-shared practice must comply with "technical standards" specified in this rule.

This rule clarifies that a cost-share grant may include a landowner's cost to *maintain* (not just install) a cost-shared practice for the period specified in the cost-share contract. The county and landowner may negotiate the contract maintenance period,

but DATCP "technical standards" require a minimum maintenance period (typically 10 years) for many practices.

Cost-Share Payments for Land Taken Out of Production

If a cost-share contract requires a landowner to take land out of agricultural production, the landowner's cost is calculated as the sum of the annual costs that the landowner will incur over the contract maintenance period.

The landowner's projected annual cost, for each year of the maintenance period, equals the *greater of* the following:

- The number of affected acres multiplied by the per-acre weighted average soil rental rate in the county (as determined by the United States department of agriculture) on the date of the cost-share contract. (That annual cost is then multiplied by the number of years in the maintenance period.)

- The annual value of payments that would be offered under the combined state-federal conservation reserve enhancement program (CREP) if the affected lands were enrolled in that program. (That annual value is then multiplied by the number of years in the maintenance period.)

If a county pays a landowner to take land out of production, the county may require the landowner to grant the county an easement on the land taken out of production. The county must record the easement with the county register of deeds.

Maximum Cost-Share Rates

A cost-share contract reimburses a portion of the landowner's cost to install the cost-shared practice. The county must implement cost-containment procedures (such as competitive bidding or other procedures described in this rule) to ensure that costs are reasonable.

This rule limits cost-share rates as follows:

- Generally speaking, a county may not use DATCP funds to pay more than 70% of the cost of a conservation practice (see s. 92.14(6)(gm), Stats.).

- A county may pay 90% if the county makes an "economic hardship" finding. A county may do so if it finds that the landowner has inadequate cash flow to make the normal 30% cost-share contribution. This must be verified by a CPA or an accredited financial institution.

- A county land conservation committee may combine DATCP and DNR funds, up to the above limits.

- The cost-share limits in this rule do *not* apply to cost-share funds provided by non-state sources. A county may combine state funds with funds from other sources.

- A county may provide additional cost-share funds to replace a cost-shared practice that is damaged or destroyed by natural causes. The same cost-share limits apply to the replacement funding.

- For installation of the following practices, the county may pay the maximum percentage or the following maximum amount, whichever is higher:

    * For contour farming, $9 per acre.
    * For cover and green manure crop, $25 per acre.
    * For strip-cropping, $13.50 per acre.
    * For field strip-cropping, $7.50 per acre.
    * For high residue management systems, no-till systems, ridge till systems or mulch till systems, $18.50 per acre.
    * For riparian buffers, $100 per acre.
    * For nutrient management or pesticide management, $7.00 per acre.

- No cost-share grant to relocate an animal feeding operation may exceed 70% of the estimated cost to install a manure management system or 70% of eligible relocation costs, whichever is less.

If a county cost-share grant to a landowner exceeds $50,000, DATCP must be a party to the contract (with the county and the landowner). If the cost-share contract exceeds $25,000, the county or landowner must record the contract with the county register of deeds.

Cost-Share Contracts with Landowners

A county land conservation committee must enter into a written contract with every landowner to whom the committee awards a cost-share grant financed by DATCP. The contract must include the following terms, among others:

- The location where the cost-shared practice will be installed, and a specific legal description if the cost-share grant exceeds $25,000.

- Design specifications for the cost-shared practice. Cost-shared practices must be designed and installed according to this rule.

- The estimated cost of the practice.

- The rate and maximum amount of the cost-share grant.

- A construction timetable.