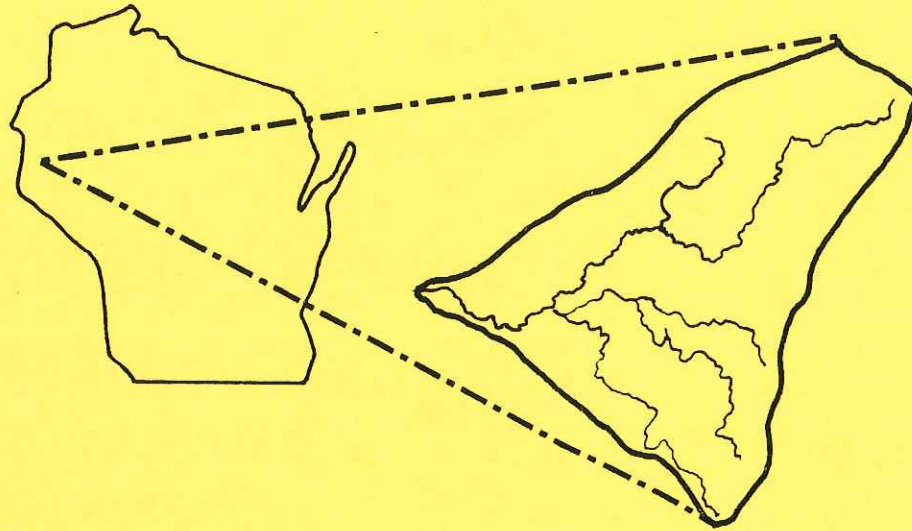


The Upper Willow River Priority Watershed Plan



Designated Management Agencies

City of New Richmond
Polk County Board
Polk County Soil and Water Conservation District
St. Croix County Board
St. Croix County Soil and Water Conservation District

Cooperating Agencies

Agricultural Stabilization and Conservation Service
Board of Soil and Water Conservation Districts
St. Croix County Planning Office
Soil Conservation Service
University of Wisconsin Extension Service
Upper Willow River Rehabilitation District
West Central Wisconsin Regional Planning Commission
Wisconsin Department of Natural Resources

This plan was prepared with the assistance of the Wisconsin Department of Natural Resources under the provisions of the Wisconsin Nonpoint Source Water Pollution Abatement Program.



St. Croix County Soil and Water Conservation District

P.O. Box 85 Baldwin, Wisconsin 54002

Phone 684-2894

January 13, 1982

Mr. C.D. Besadny
Secretary
Department of Natural Resources
Box 7921
Madison, WI 53707

Dear Mr. Besadny;

The St. Croix County Soil and Water Conservation District, as the Lead Designated Management Agency for the Upper Willow River Watershed, has reviewed and approve the Upper Willow River Water Quality Management Plan.

The St. Croix County Soil and Water Conservation District will proceed with the watershed plan implementation upon final Department of Natural Resource approval.

Sincerely,

WILLIAM THOMPSON
Chairman

cc: John Konrad

POLK COUNTY SOIL AND WATER
CONSERVATION DISTRICT

Box 204

Balsam Lake, Wisconsin - 54810



January 4, 1982

Department of Natural Resources
No-Point Pollution Program
Box 7921
Madison, WI 53707

Dear Sirs:

On January 4, 1982, the Polk County Soil and Water Conservation District reviewed and approved the Upper Willow River Priority Watershed Plan.

Sincerely,

Earl Paulson, Chairman
Polk County SWCD

EP:aeh

UPPER WILLOW RIVER WATERSHED PLAN

TABLE OF CONTENTS

WATERSHED PLAN	Page
Introduction	1
Watershed Description	1
Coordination of Programs	1
Water Quality Conditions	3
New Richmond Flowage	3
Willow River	4
South Fork Willow River	4
Black Brook	5
Carr Creek	5
Hutton Creek	5
Groundwater Quality	5
Nonpoint Source Assessment	5
Cropland Sources	5
Livestock Sources	6
Pollution Analysis	6
Water Quality Objectives	8
Sources of Pollution	9
Cropland Erosion	9
Livestock Operations	10
Streambank Erosion	12
Roadside Erosion	13
Urban Nonpoint Erosion	13
Point Sources	13
Best Management Practices	13
Summary	15
DETAILED PLAN OF IMPLEMENTATION	
Introduction	16
Potential Funding	16
Designated Management Agencies	16
Other Participating Agencies	17
Program Management	17
Coordinating Committee	17
Program Manager	18
Record Keeping	18
Fiscal Management	18
Program Review	18
Implementation Schedule	19
Technical Assistance	21
Information and Education	24
Landowner Assistance	25
Procedures	25
Maintenance of Best Management Practices	26

WATERSHED PLAN

INTRODUCTION

The Wisconsin Nonpoint Source Water Pollution Abatement Program (Wisconsin Fund) was enacted in 1978 by Wisconsin's Legislature. It provides for cost-share and technical assistance funding to local units of government for implementation of best management practices for control of nonpoint sources of pollution. The program objective is to meet national water quality goals established in 1972 by Public Law 92-500, Federal Water Pollution Control Act. Financial and technical resources are focused in on watersheds where water quality conditions are critical and abatement is practical.

In 1980, the Upper Willow River Watershed was selected as one of four priority watershed projects. Five watershed projects were selected in 1979. Selection was made through a four step process including; identification by water quality conditions on a statewide list, review by one of nine regional committees, review and recommendation by the State Nonpoint Source Coordinating Committee and finally, selection by Wisconsin Department of Natural Resources.

This plan was prepared jointly by St. Croix and Polk County Soil and Water Conservation Districts and Wisconsin Department of Natural Resources. The priority watershed plan is consistent with the areawide water quality management plan for the St. Croix River Basin.

This Upper Willow River priority watershed plan has two parts. The first is a report of technical assessment of water quality problems and associated nonpoint sources contributing to problems and identification of actions needed to minimize water quality problems. The second part is the detailed plan of implementation. It identifies tasks necessary to carry out actions identified in part one; agencies which will carry out needed action tasks; a schedule of implementation; and the type and amount of staff resources needed.

WATERSHED DESCRIPTION

The Upper Willow Watershed is located in St. Croix and Polk Counties and drains approximately 113,600 acres (177.5 square miles) before emptying into New Richmond Flowage, a 200 acre impoundment at New Richmond. The drainage network includes the Willow River, South Fork of Willow River, Black Brook, Carr Creek, Hutton Creek, Dry Run and several small intermittent streams (see Map 1).

Seventy-nine percent of the watershed area is in St. Croix County. Major villages or cities include Deer Park and part of New Richmond. Unincorporated villages include Emerald, Forest and Cylon. Remaining area of the watershed is in Polk County and includes the village of Clear Lake.

Surface relief in the watershed is a gently rolling glacial topography. Numerous seepage lakes are located in the northwestern part of the watershed. Most soils are silt loams, 20 to 30 inches thick over glacial till (20-48 inches thick) and dolomite bedrock.

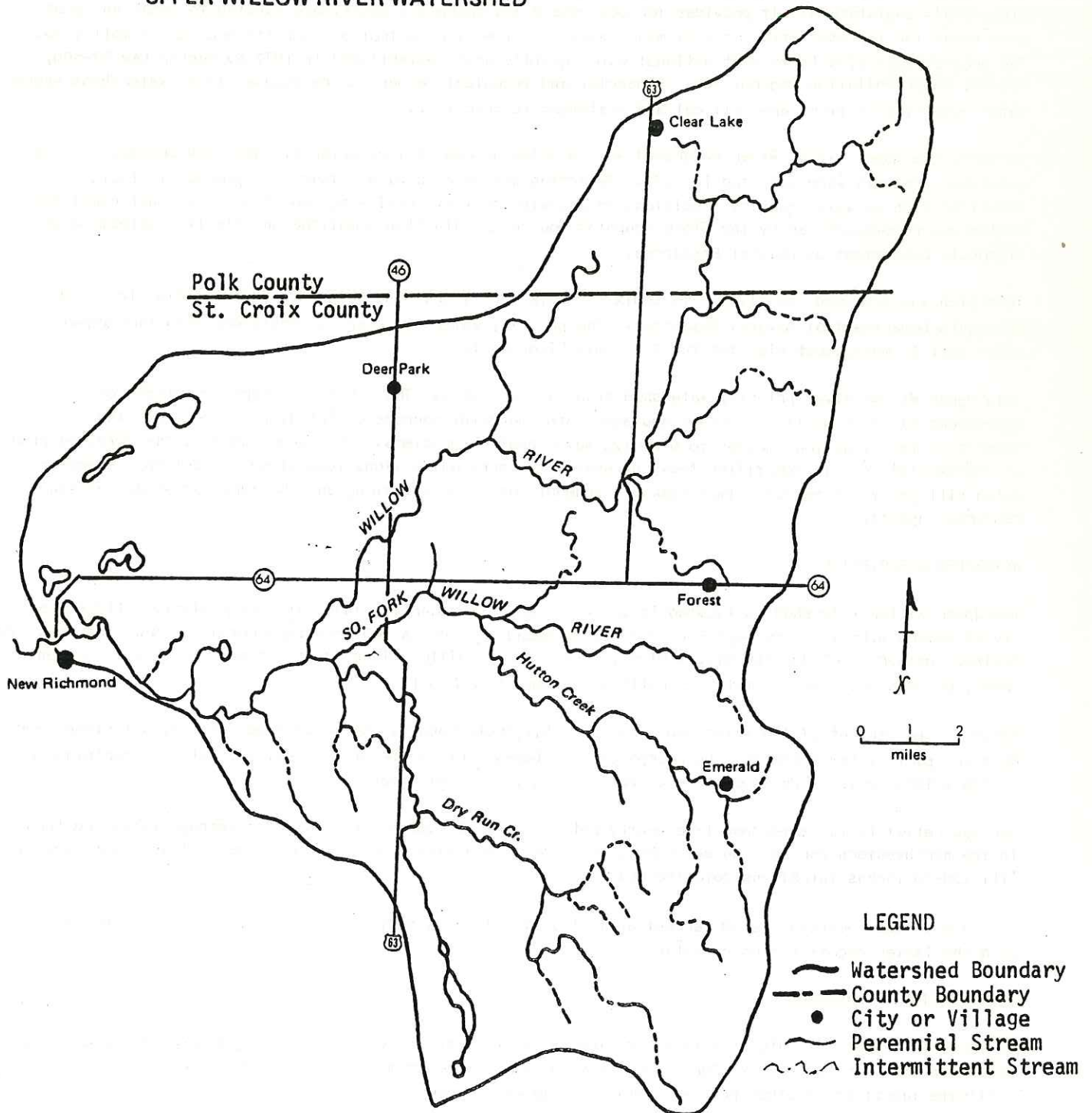
Land use in the watershed is 80 percent agricultural. It is a mixture of dairy farming and cash cropping, with the latter becoming more prevalent.

COORDINATION OF PROGRAMS

An important aspect of this plan is to provide the groundwork for coordinating the Wisconsin Nonpoint Source Pollution Abatement (Wisconsin Fund) program with existing programs. This program is not intended to duplicate functions of other programs, but to complement them.

Map 1.

UPPER WILLOW RIVER WATERSHED



An Inland Lake Rehabilitation Project is currently in progress at New Richmond. The intent of this project is to enhance water quality in the flowage and to improve its recreational potential. Proposed construction activities include dredging a portion of the impoundment and limited installation of streambank protection practices along lower reaches of the Willow River. This project was instrumental in the selection of the Upper Willow River as a priority watershed.

The Wisconsin Nonpoint Source Water Pollution Abatement Program (Wisconsin Fund) will not become involved in installation of Inland Lake Rehabilitation proposed projects. The Wisconsin Fund Program involvement is designed to complement Inland Lake Rehabilitation Program objectives. Installation of land management practices in the watershed will reduce sediment movement into the lake and will complement the dredging activity.

Coordination between the lead designated management agency and the Upper Willow Inland Lake Rehabilitation District is essential. Joint meetings and periodic updating of accomplishments of respective programs will be conducted regularly.

The Agricultural Conservation Program (ACP) administered by USDA Agricultural Stabilization and Conservation Service, provides cost-share money for many best management practices similar to those of the Wisconsin Fund. Continued support of ACP in the Upper Willow River Watershed will provide strong working relationships between agencies that are striving for a common objective.

WATER QUALITY CONDITIONS

Cursory water quality sampling has been done in the Upper Willow Watershed. More advanced monitoring was conducted in a 1976 study for New Richmond Flowage in conjunction with an inland lake rehabilitation study. Results and analyses of this study are available from Wisconsin Department of Natural Resources, Inland Lake Renewal Section. Climatological records indicate that 1976 was nearly a drought year. Summer months were exceptionally dry and winter months were near normal. Spring runoff dominated nutrient and sediment loads as determined by intake monitoring. Additional water quality information was collected from local fish managers, biologists and water quality planners concerning the flowage and tributaries in the watershed. The following summary addresses primary water bodies within the watershed.

New Richmond Flowage

New Richmond Flowage is a 200 acre lake with a maximum depth of 12 feet. The flowage is considered to be mesotrophic with respect to its eutrophic condition. (Uttormark and Wall).

Gradual accumulation of sediment has reduced lake depth. Emergent and submergent vegetation chokes off most of the flowage during summer months, leaving an appearance of a narrow open channel throughout most of the impoundment. Probe measurement data indicated an estimated 1.8 million cubic yards of soft sediment in the flowage. Inlet accumulation is slightly over 1 inch per year compared to under 0.4 inches near the outlet. Trapping efficiency ranges between 40 and 85 percent depending on flow conditions. Little or no sediment is trapped during periods of peak flow (1976-1,280 cfs) because of rapid flushing. Sediment trapping occurs mostly during mean (1976-131 cfs) and low (the 10 year low was 15 cfs) flow conditions. River flow ranges between mean and low flow during most of the year.

Nutrient concentrations in the flowage have had a severe impact. An aquatic plant survey in the summer of 1976 for estimates of biomass and relative abundance indicated that plant growth was excessive and severely inhibited recreational activities. Monitoring data indicated that 66,343 pounds of phosphorus were delivered in 1976.

Low dissolved oxygen concentration is a potential problem during periods of low flow both in the summer during certain weather conditions and in late fall and winter. This occurrence is not unusual for this size of lake with heavy macrophytic growth. Low dissolved oxygen levels potentially exist when heavy weed growths die and create a biological oxygen demand. Heavy weed growths result from nutrients delivered to the small flowage, primarily from agricultural land uses in the large watershed.

Existing fishery in the flowage includes largemouth bass, panfish, northern pike and some trout.

Present conditions in New Richmond Flowage impacting water quality are sediment, excessive weed growth and potential low dissolved oxygen levels.

Sediment is being delivered from the watershed above the flowage which is eighty percent in agricultural land use. Sediment is a primary carrier of nutrients into the flowage.

Excessive weed growth problems should be expected when comparing the ratio between watershed and flowage size. A high ratio indicates a nutrient rich flowage and provides proper conditions for excessive weed growth. This is usually true even if land use is in a close to natural state. The Upper Willow watershed has a high ratio (568 to 1).

Willow River

The Willow River originates in southeast Polk County and flows southwesterly to New Richmond. It passes through agricultural land except for occasional wetland borders. In agricultural areas, intensive livestock grazing and tillage operations occur along the shoreline.

Most of the stream is considered trout water of either classes II or III. Predominant species are brown trout, northern pike, walleyes, largemouth bass, bluegills, perch, black crappies, occasional rainbow and brook trout and a variety of forage fish.

Apparent fishery limitations are fluctuating flow levels, intermittent low dissolved oxygen, degradation of habitat and sediment deposition.

Current conditions which are impacting water quality in the Willow River and tributaries are sediment, fluctuating water levels, potential ammonia toxicity and potential low dissolved oxygen levels.

Sediment delivery from streambank and cropland erosion covers fish spawning and habitat areas. Turbidity degrades water quality and reduces overall aesthetics.

Fluctuating water levels in some tributaries are a natural occurrence dependent on weather conditions and compounded by poor land use. The affect of these fluctuations on water quantity generally can't be controlled with best management practices.

Ammonia toxicity and low dissolved oxygen in streams are the result of livestock waste from barnyard runoff.

Willow River Tributaries

South Fork Willow River - is currently managed for trout and it is considered a class II trout stream with some reproductive capabilities. Sedimentation and fluctuating water levels are problems in this stream. Heavy brush growth is evident along some of the shoreline which creates problems for fish habitat.

Black Brook - is not a trout stream and has little potential for improvement. Overland runoff is the primary source of water. Problems include siltation and fluctuating water levels. It is a feeder stream to the Willow River.

Carr Creek - is intermittent and does not support a game fishery. During spring months, the flow is flashy and diminishes to stagnant pools in summer months.

Hutton Creek - supports only a forage and minnow fishery. Water quality and quantity is influenced by runoff and its a flashy flow characteristic. During late summer the stream diminishes to stagnant pools. Livestock pasturing causes streambank degradation and nutrient enrichment.

Groundwater Quality

Assessment of groundwater quality is difficult. Determination of groundwater quality is very subjective when little actual evidence of well pollution has been documented in the Upper Willow River Watershed. Local landowners are hesitant to report contaminated well water. They fear that they may be required to construct a new well, especially if they are in the dairy business.

Reports of poor well water quality conditions have been reported in scattered locations in the watershed. Reports include detectable taste and discoloration problems with some well water. Severity of the problem usually coincides with periods of heavy runoff and occurs regularly during spring runoff. The scope of the problem is not known nor is its duration. There is however, evidence that some problems do exist.

Apparently, the source of groundwater pollution is surface water that enters the ground through sinkholes which are common on the landscape in the Upper Willow River Watershed. Caverns in limestone have been carved out over the years and provide direct surface water inlets to groundwater. Some small streams in the watershed actually disappear below the surface through the sinkholes.

NONPOINT SOURCE ASSESSMENT

Cropland Sources

The Universal Soil Loss Equation was used to estimate significant nonpoint sources of sediment and critical areas of soil loss within the watershed. Field surveys were conducted to :1) determine crop management factors and length of slope for the Universal Soil Loss Equation, length of slope, 2) to identify streambank erosion areas and 3) to update a livestock inventory conducted earlier by New Richmond High School vocational agriculture class. Remaining data for the Universal Soil Loss Equation was collected from soil survey information and available aerial photography. Collection of data was done by St. Croix County Soil and Water Conservation District staff.

Sediment and phosphorus loading to the stream network from overland runoff was estimated by use of the Model Enhanced Unit Load (MEUL) method. The MEUL method is a planning tool developed for use in estimating significant nonpoint sources and critical areas within a watershed. It is not intended for use on specific sites.

The MEUL method is a simplified version of the LANDRUN model. LANDRUN is a urban and rural nonpoint source hydrologic model developed as part of PLUARG (Pollution Landuse Activities Reference Group) studies on pollution of the Great Lakes from land use and management. For rural areas, LANDRUN uses soil and management factors from the Universal Soil Loss Equation, infiltration factors, and depression storage factors. The MEUL method was developed by using the LANDRUN model to calculate results for selected urban

and rural land use activities for selected slope and soil groupings. For example, results were calculated for corn grown continuously on very shallow, moderate, and steep slopes in sandy, loamy, clayey, and organic soils. Cropping and management factors of the Universal Soil Loss Equation are used in rural lands to make adjustments from model simulated results.

Data was collected by 40 acre cells for 100 percent of the watershed. Two zones were analyzed for impact on water quality. One zone extended 1/8 mile from intermittent and perennial streams. A second zone extended from 1/8 mile to 1/4 mile from intermittent and perennial streams. One set of data on soil hydrologic group, slope, land use, and land management was determined for each 40 acre cell.

Livestock Sources

Phosphorus reaching streams and eventually the New Richmond Flowage from livestock wastes was also estimated using a modified technique proposed by I.C. Moore. The technique is based on a literature review of phosphorus carried in runoff from field plots and barnyards where manure has been spread. In addition, attenuation rates and distances have been integrated into the method. That is to say, in general the closer the field or barnyard to the stream, the higher the percentage of phosphorus reaching the stream. Moore indicated that at a distance of 130 feet, all phosphorus will have been tied up in the soil. The technique has not been calibrated or verified.

Barnyard Runoff - For barnyard runoff, any livestock operation farmstead within 250' of the stream network is considered to have little or no attenuation i.e., 100% delivery.

Any farmstead between 250' and 660' of the stream network is assumed to have 50% attenuation; i.e. 50% delivery.

Any farmstead located between 660' and 1,330' of the stream network where the slope between the farmstead and stream is steep (c slope or greater) is assumed to have 50% attenuation; 50% delivery.

All others; 0% delivery.

Manure Spreading - For manure spread on fields in winter - it is assumed most of the manure is spread within a "short" distance of the farmstead.

Any farmstead within 250' of the stream network where the field slopes are 6% or greater is considered to have a 25% attenuation or 75% delivery.

Any farmstead between 250' and 1,330' of the stream network where the field slopes are 6% or greater, the attenuation rate is 50%; 50% delivery.

If the field slopes are less than 6%, the attenuation rate is considered to be 100%; 0% delivery.

POLLUTION ANALYSIS

Excessive sediment and nutrients, especially phosphorus, are being delivered to the Willow River System and eventually to New Richmond Flowage. Monitoring for water quality and flow was conducted in 1976 in an attempt to quantify nutrient and sediment load. Sediment probing data was collected in New Richmond Flowage to determine amounts of "soft" sediment and chemical composition. Monitoring stations were placed at either end of the flowage to measure flow and collect water samples. Sampling was done by Donohue and Associates in conjunction with Wisconsin Department of Natural Resources as part of an Inland Lake Rehabilitation study.

Water quality samples and flow measurements were collected throughout 1976. Precipitation around New Richmond during 1976 was nearly 40 percent below average. The severe drought months were May, June, and July when actual precipitation was only one third of normal. Precipitation during winter and early spring was near normal. Consequently, the sampling results showed that spring runoff dominated the water level and nutrient loadings. Seventy-six percent of total water flow entered the flowage between January 14th and April 30th. Eighty-six percent of total phosphorus loading entered during the same period, and only 1 percent entered during the growing season. Phosphorus concentration delivered to the flowage during spring runoff was very high. During the growing season phosphorus concentration of incoming water was moderate.

Interpretation of data from a dry year is difficult. In years with normal precipitation, spring runoff will be similar to that of 1976. Summer flow would be estimated to be 3 to 4 times greater during an average year.

Retention of phosphorus in the New Richmond Flowage depends on flow and time of year. Nine percent of delivered phosphorus is retained during periods of spring runoff and high flow. This is due to rapid flushing and low plant uptake. Chlorophyll a data indicated algae dominance during this time. During the growing season, it was determined that 36 percent of the delivered phosphorus was retained. This is partially due to lower flow characteristics and increased plant uptake. Chlorophyll a data indicated a low algal biomass during the growing season.

Phosphorus delivery to New Richmond Flowage contributes to eutrophication and excessive weed growth. This excessive weed growth makes the lake generally undesirable for recreational activities during most summer months. New Richmond Flowage is naturally fertile because the watershed size is so large compared to the lake size. It is unlikely that installation of best management practices in the watershed will influence phosphorus delivery significantly. Phosphorus influence on water quality in the Willow River and tributaries is not a problem.

Dissolved oxygen levels occasionally become depressed in the flowage. Occurrences coincide with periods of prolonged overcast, diminished sunshine and warm weather during summer months and again in late fall or early winter when weed growth dies and decays. Depressed dissolved oxygen levels in the flowage is natural under existing conditions. Installation of best management practices may protect against early recurrence of this problem following flowage dredging.

Dissolved oxygen levels in the Willow River system are apparently adequate and are not considered a problem to the fishery. Best management practices could probably improve dissolved oxygen in streams.

High fecal coliform concentration in streams of the Willow River network is a potential health hazard. Sources of bacteria include runoff from livestock facilities and from livestock waste spread on cropland. Livestock waste runoff control practices installed in barnyards and spreading areas would reduce the potential for high bacteria concentrations.

Ammonia toxicity in streams of the Willow River network is a potential hazard. Livestock barnyards or feedlots may contribute toxic concentrations of ammonia. Installation of best management practices would lower the potential for toxic levels to occur.

Sediment delivery to the river system most commonly occurs during and shortly after peak storm events and during spring runoff. Some sediment load is deposited along stream channels while that remaining is delivered to the New Richmond Flowage. Sediment deposition in tributaries affects water quality by degrading fishery habitat, increasing turbidity and decreasing aesthetics. Sediment delivery to streams can be substantially reduced by use of best management practices in the priority management area.

Sediment delivery to New Richmond Flowage was monitored during 1976. Monitoring results indicated that little deposition occurs during peak flow because of rapid flushing. During periods of mean and low flow, sediment trapping efficiency ranges between 40 and 85 percent.

TABLE I

Detention Time and Trap Efficiency at Various Flows

Flow	Detention Time	Trap Efficiency %
Peak (1976-1,280 cfs)	8 hours	0
Mean (1976-131 cfs)	75 hours	40
Low (1976-15 cfs)	29 days	85

*From the Upper Willow Flowage Management Alternative Report, 1977

Based on probing data there has been an estimated 1.8 million cubic yards of "soft" sediment deposited in the flowage. Sediment core samples indicate silt loam to loamy sand materials are being deposited. Chemical analyses indicate that nutrient contents range from 4-10 times greater than a typical silt loam soil. Present desposition rates are slightly in excess of 1 inch per year at the upper end of the flowage and slightly under 0.4 inches per year near the outlet. Best management practices installed in the watershed can substantially reduce sediment delivery and accumulation.

WATER QUALITY OBJECTIVES

Water quality objectives identify improvements in the Upper Willow River including tributaries and New Richmond Flowage that can be obtained through installation of best management practices. Control of nonpoint sources of pollutants as identified in this plan will result in water quality improvements in the watershed.

A primary objective for this watershed plan is to reduce sediment deposition in stream channels and in New Richmond Flowage. Some phosphorus will be controlled when sediment is controlled, but since the watershed size in comparison to the size of the flowage is so large, it is not cost-effective to reduce all sources of phosphorus. New Richmond Flowage will continue to be a naturally fertile lake.

An objective is also to seek protection of groundwater resources from contamination by surface water entering through sink holes. Identification of groundwater contamination sources is difficult, therefore a careful evaluation of each suspected source will be conducted before protective measures are taken.

An objective of this plan is to reduce the potential for fish toxicity from ammonia by controlling livestock waste from entering the streams. Control of livestock waste will be done on operations immediately adjacent to streams.

A final objective of this plan is to provide an acceptable interface with the inland lake rehabilitation project for New Richmond Flowage. It is imperative that coordination of the projects be conducted to eliminate duplication of effort and to enhance impacts of each project.

SOURCES OF POLLUTION

A land use survey was conducted in 1980 by St. Croix County Soil and Water Conservation District. Data were collected for 100 percent of the watershed. Survey results included current land use, critical erosion areas and suggested alternatives, streambank erosion locations, an update of New Richmond High Schools 1976 livestock inventory and collection of information for the MEUL method and the I.C. Moore technique. St. Croix County Soil and Water Conservation District was assisted by Polk County Soil and Water Conservation District and Wisconsin Department of Natural Resources.

Cropland Erosion: Agricultural cropland is identified as a nonpoint source of pollution. Analyses was conducted by the Universal Soil Loss Equation (USLE) for each 40 acre unit, use of the previously discussed Model Enhanced Unit Load Method (MEUL) and by field observations made by technical staff during data inventory. Data collection indicated that agricultural cropland is the primary source of sediment to the Willow River System.

Calculations made with the USLE indicate approximately 390,450 tons of soil are moved annually in the entire watershed by water erosion. The MEUL method indicates approximately 14,800 tons of soil actually gets into streams annually (see Table 2). Most soil moved by water erosion is deposited before reaching the stream network. Sediment reaching the stream network is partially deposited in stream channels. Remaining sediment is eventually transported to New Richmond Flowage. Deposition of sediment in the flowage does occur and is indicated by probing data collected in 1976.

Table 2

Estimated Cropland Erosion and Sediment Delivery

Sub Watershed	Soil Erosion (USLE)		Soil Delivery (MEUL)	
	Tons/Subwatershed	% of Total	Tons/Subwatershed	% of Total
1	34,471	8.8	1,169	7.9
2	56,522	14.5	1,992	13.5
3	25,561	6.6	1,058	7.1
4	23,182	5.9	1,329	9.0
5	49,743	12.7	3,259	22.0
6	11,950	3.1	709	4.8
7	18,334	4.7	1,159	7.8
8	7,173	1.8	325	2.2
9	56,384	14.4	642	4.3
*10	28,707	7.4	-	0.0
11	19,392	5.0	850	5.7
12	27,299	6.9	1,387	9.4
13	9,995	2.6	251	1.7
14	21,739	5.6	682	4.6
Total	390,452	100.0	14,812	100.0

*Subwatershed #10 does not drain directly into the Willow River

Table 3

Estimated Phosphorus Loading From Cropland

Sub watershed	Phosphorus Delivery (lbs)	Per Cent of Total
1	3,416	7.8
2	5,621	12.8
3	3,136	7.2
4	3,887	8.9
5	10,299	23.5
6	2,028	4.6
7	3,300	7.5
8	967	2.2
9	1,855	4.2
10	-	0.0
11	2,470	5.6
12	4,061	9.3
13	738	1.7
14	2,068	4.7
Total	43,846	100.0

Agricultural cropland contributes phosphorus to the Willow River System. Analysis of phosphorus delivery by use of the MEUL method indicates that approximately 43,800 pounds reach the river system annually (Table 3). Monitoring, conducted in 1976 at the New Richmond Flowage indicated that an estimated 50,735 pounds of phosphorus are delivered from agricultural land sources (Table 4) of a 66,343 pound total (based on work by Uttormark, 1974). Agricultural sources accounted for 76% of the phosphorus loading according to the 1976 monitoring data.

Table 4

Phosphorus Loading to Upper Willow Flowage (1976)

Sources	lbs/year	% of Total
Sanitary Treatment Plants	1,500	3.6
Livestock Operations	5,859	9.0
Agricultural Nonpoint	50,735	76.0
Forest Nonpoint	5,564	8.0
Urban Nonpoint	1,639	2.0
Total	66,343	100.0

Factors contributing to high soil losses include tillage operations adjacent to streams, lack of best management practices in use, gradual conversion from livestock production to cash cropping and naturally steep erosive soils in some parts of the watershed. Based on analysis, subwatersheds that contribute large amounts of sediment are identified in Table 2 and on Map 2.

Livestock Operations: Pollution from livestock occurs throughout the watershed. Livestock operations were identified by inventories conducted in 1976 and updated in 1980. Estimation of phosphorus loading from livestock operations was calculated by use of a technique by I. C. Moore. Results of this analysis are shown in Tables 5 and 6. Estimates of phosphorus loading from livestock total 20,480 pounds annually. This is higher than the estimated phosphorus loading delivered from livestock operations of the 1976 study (Table 4). Possible causes for the higher estimate are different distances and attenuation rates used in the model technique.

Map 2.

UPPER WILLOW RIVER WATERSHED

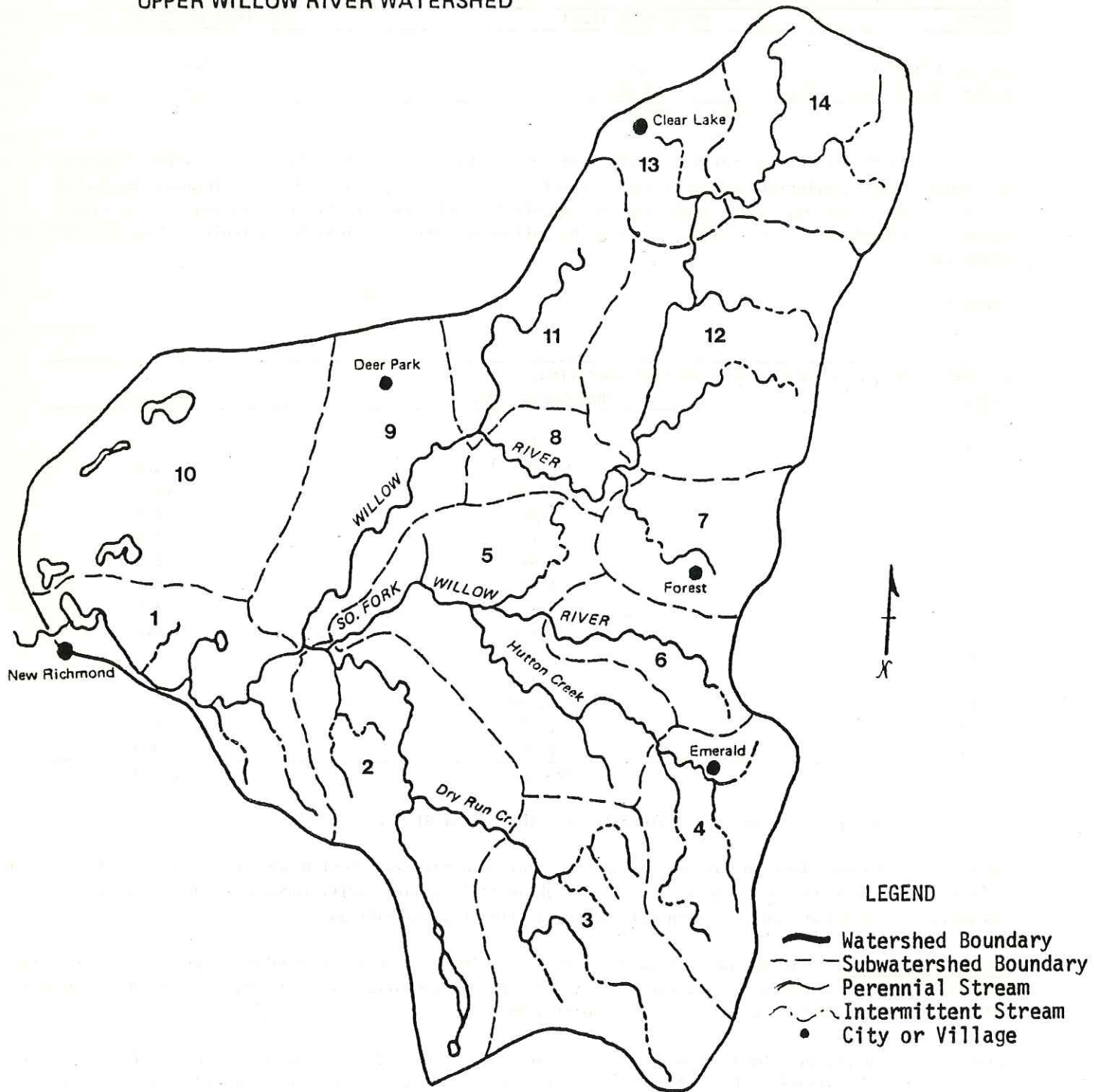


Table 5

Estimated Total Annual Phosphorus Loading from Livestock Waste

Source	Phosphorus (lbs)	Per Cent of Total
Barnyard Runoff	12,800	62.5
Winter Spread Manure Runoff	7,680	37.5
Total	20,480	100.0

Livestock operations are generally located close to streams, compounding potential pollution problems. Nutrients, organic material, bacteria and sediment are often easily transported to streams. Bacterial contamination, dissolved oxygen depletion and ammonia toxicity are potentially hazardous to the river system. Sediment and organic material are being delivered from operations but definite values are hard to establish.

Table 6

Estimated Phosphorus Load from Livestock Operations

Subwatershed	Phosphorus (lbs)	Percent
1	864	4.2
2	1,967	9.6
3	2,052	10.0
4	1,817	8.9
5	1,766	8.6
6	647	3.2
7	1,263	6.2
8	827	4.0
9	2,138	10.4
*10	1,062	-
11	1,122	5.5
12	3,148	15.4
13	1,276	6.2
14	1,593	7.8
Total	*20,480	100.0

* Subwatershed #10 does not drain directly into the Willow River.

Most livestock operations do not have adequately managed barnyards. During period of runoff, pollutants may move directly into surface waters. Most livestock waste is handled daily throughout the year. Winter spreading on frozen ground is common with daily handling type operations.

Streambank Erosion: Streambank erosion has been identified as a critical problem. The stream network was surveyed in 1980 and eroding areas were identified. From observation it was estimated that approximately 23,000 feet of streambank need protection (Total need).

Livestock pasturing and close cropping practices are major causes for streambank erosion. Streambanks are a major source of sediment that is delivered directly to the stream network and eventually to New Richmond Flowage.

Roadside Erosion: Watershed inventories concluded that roadside erosion is not critical in the Upper Willow Watershed.

Urban Nonpoint Erosion: Developed areas are not considered critical sources since there is minimal urbanized area within the watershed.

Point Sources: There are no significant point sources in the watershed. Sanitary treatment plants make up a very small percentage of the nutrient load as indicated by the study in 1976 (see Table 4).

PRIORITY MANAGEMENT AREA (PMA)

A condition of eligibility for cost-sharing under the Wisconsin Nonpoint Source Pollution Abatement Program is that the parcel of land must be within the priority management area. Intensity of management needed to meet water quality objectives varies for different lands within the priority management area. Some lands within the boundaries may not be significant sources due to physical conditions (such as flat slopes) or may be properly managed at this time. Intensity of management should be based on most cost-effective, practical means of achieving water quality objectives.

Scientists have looked at overland flow as a means of predicting runoff, flooding and sediment delivery. It is commonly concluded that not all lands within a watershed will produce runoff waters that reach a stream network. Areas that do produce runoff have been termed "hydrologically active areas." Generally these areas are defined as those with saturated soil or areas that become saturated during rainstorms.

However, hydrologically active areas do not always have the same delivery ratio. Generally, the delivery rate will be nearly 100 percent at the streambank and zero at extreme boundaries of hydrologically active areas. Actual delivery rate is dependent upon a number of variables such as distance from a stream, slope, and soil texture. Delivery generally diminishes rapidly with increasing distance from the stream.

The priority management area boundary for the Upper Willow watershed is defined as all land within one eighth mile (660') of a perennial or intermittent stream, lakeshore, or wetland. Also lands with slopes of 6 percent or greater or where the hydrologic class is C or D are included if they are within one-fourth mile (1,320').

BEST MANAGEMENT PRACTICES

Estimates of best management practice (BMP) needs were based on inventories conducted in 1980. Inventory information provided total needs estimates for each BMP to adequately treat the entire watershed (see Table 7). It is unrealistic to expect total implementation in a voluntary program. In addition, total implementation is not needed to meet water quality objectives. Seventy-five percent implementation has been established as a realistic implementation goal in the watershed (see Table 7). Consequently, it is essential that the most significant nonpoint sources be brought into the program.

To meet water quality objectives in the Upper Willow River Watershed, the following BMP's will be eligible for cost-sharing:

Contour Cropping	Stream Fencing
Contour Strip Cropping	Shaping and Seeding of Shoreline
Field Diversions	Riprap
Terraces	Livestock Crossing
Grass Waterways	Animal Waste Runoff Control
Minimum Tillage	Animal Waste Storage
Critical Area Stabilization	
Grade Stabilization Structures	
No Till	

Table 7

Best Management Practices: Estimated Needs

BMP	Total Watershed Need (within PMA)	75% Participation Installation Goal
Contour Strip Cropping	6,000 acres	4,500 acres
Diversions	16,000 feet	12,000 feet
Terraces	60,000 feet	45,000 feet
Grass Waterways	80 acres	60 acres
Minimum Tillage	8,000 acres	6,000 acres
Grade Stabilization Structures	28 structures	21 structures
Critical Area Stabilization	28 acres	21 acres
Shaping and Seeding of Shoreline	15,000 feet	11,250 feet
Riprap of Shoreline	8,000 feet	6,000 feet
Livestock Crossing	16 units	12 units
Animal Waste Runoff Control	49 units	36 units
Animal Waste Storage	34 units	25 units
Fencing	29,333 feet	22,000 feet

Cost estimates of BMP Installation and respective cost-share rates were established by local soil and water conservation districts in accordance with Administrative Code Chapter NR 120. Estimates were based on Implementation goals and are shown in Table 7. Administrative rules require that the most cost-effective BMP's must be used. These include such practices as contour strip cropping and minimum tillage. Higher priced practices such as terraces and animal waste storage are to be used when no other practice is practical.

Table 8

Best Management Practices: Estimated Cost Summary Based on 75% Participation

BMP	Unit Goal	Average Unit Cost	Total Cost at 75% Participa- tion	Cost-Sharing
Contour Strip Cropping	4,500 ac.	\$9.00/ac.	\$ 40,500	\$ 40,500
Diversions	12,000 ft.	\$1.25/ft.	\$ 15,000	\$ 10,500
Terraces	45,000 ft.	\$1.00/ft.	\$ 45,000	\$ 31,500
Grass Waterways	60 ac.	\$1,500.00/ac.	\$ 90,000	\$ 63,000
Minimum Tillage	6,000 ac.	\$10.00/ac.	\$ 60,000	\$ 60,000
Grade Stab. Structure	21	\$8,000.00/ac.	\$168,000	\$117,600
Critical Area Stab.	21 ac.	\$400.00/ac.	\$ 8,400	\$ 5,880
Shaping and Seeding	11,250 ft.	\$6.00/ft.	\$ 67,560	\$ 67,560
Riprap	6,000 ft.	\$20.00/ft.	\$120,000	\$120,000
Livestock Crossing	12	\$1,000.00/ea.	\$ 12,000	\$ 8,400
Animal Waste Runoff Control	36	\$1,500.00/ea.	\$ 54,000	\$ 37,800
Animal Waste Storage	25	\$6,000.00/ea.	\$150,000	\$105,000
Fencing	22,000 ft.	\$.40/ft.	\$ 8,800	\$ 8,800
Total			\$839,260	\$676,540

SUMMARY

Implementation of this plan should improve water quality in the Upper Willow River Watershed. Reduction in sediment delivery to streams will improve fishery habitat and general stream aesthetics. Reduction in sediment delivery to New Richmond Flowage will increase its life expectancy as a recreational facility. Reduction in sediment carried nutrients being delivered to the stream network may reduce potential for ammonia toxicity and fertile condition in New Richmond Flowage.

A key to success of this program is landowner participation.

DETAILED PLAN OF IMPLEMENTATION
UPPER WILLOW RIVER WATERSHED

INTRODUCTION

A detailed program for implementation has been developed by designated management agencies assuming funding from the Wisconsin Nonpoint Source Pollution Abatement Program (Wisconsin Fund). It is designed to meet all requirements of NR 120, Wisconsin Administrative Code. Revisions may be required if other funding sources become available.

The detailed program for implementation provides guidance to designated management agencies in performing their role. Specific record keeping requirements are found in NR 120, Wisconsin Administrative Code and examples of forms are published in "Preparing Your Implementation Program."

This detailed program of implementation identifies: (1) tasks necessary to implement the Upper Willow River Watershed Plan, (2) agencies responsible for carrying out identified tasks, (3) scheduled time frame for carrying out tasks, (4) kind and amount of staff and resources needed to carry out tasks.

Where financial assistance is needed to carry out tasks, a Local Assistance Agreement will be developed with the Department of Natural Resources. Estimates in the implementation strategy will be reviewed annually based on implementation progress and a new Local Assistance Agreement will be developed after each annual review.

POTENTIAL FUNDING

This plan was designed to meet requirements of funding under the Wisconsin Nonpoint Source Water Pollution Abatement Program. However, the Wisconsin Legislature, in 1978 legislation, instructed Wisconsin Department of Natural Resources where possible to seek funding for projects from federal sources.

Federal funding sources potentially available are: (1) Public Law 566 Small Watershed Program, (2) Clean Lakes (Section 314 of Public Law 92-500), (3) Rural Clean Water Program, and (4) Agricultural Conservation Program. It is assumed that this plan can readily be modified to meet eligibility of each of these federal programs.

DESIGNATED MANAGEMENT AGENCIES

Designated management agencies (DMA) are local units of government identified in the areawide water quality plans having responsibility for soil and water conservation including implementation of best management practices to improve water quality. Soil and Water Conservation Districts from St. Croix and Polk Counties will serve as DMAs jointly with respective county boards along with the City of New Richmond.

St. Croix County Soil and Water Conservation District has been selected as lead designated management agency (LDMA). Responsibilities include coordination of watershed implementing activities, coordination between DMAs and governmental agencies, and contractual and financial responsibility to the State of Wisconsin for overall management of the project. Responsibilities of DMAs and LDMA are listed in Chapter NR 120.06, Wisconsin Administrative Code.

OTHER PARTICIPATING AGENCIES

Agricultural Stabilization and Conservation Service (ASCS) - Will assist in fiscal management of the Upper Willow River Watershed project. Coordination of Agricultural Conservation program (A.C.P.) to compliment the Wisconsin Nonpoint Source Pollution Abatement Program.

Board of Soil and Water Conservation Districts (BSWCD) - Assist designated management agencies during implementation. The BSWCD will also assist in information and education.

County Boards - St. Croix and Polk County Boards have authority in unincorporated areas of the watershed along with respective SWCDs.

St. Croix County Planning Office - Assist designated management agencies implement the program.

Soil and Water Conservation Districts (SWCD) - Serve as designated management agencies in unincorporated areas of the watershed with County Boards. Staff will carry out technical, fiscal and assist in educational activities.

Soil Conservation Service (SCS) - Private technical assistance for planning the design and installation of best management practices. Will provide assistance in supervision and certification of best management practices as to meeting design standards and specifications.

University of Wisconsin Extension Service (UWExS) - Provide leadership in a watershed information and education program. This will include developing watershed tours, workshops, newsletters, and landowner contacts.

Upper Willow River Rehabilitation District - Assist in coordination of the lake rehabilitation project with the watershed project.

West Central Wisconsin Regional Planning Commission (WCWRPC) - Assist designated management agencies implement the program.

Wisconsin Department of Natural Resources (WDNR) - Provides overall administrative responsibility for the Wisconsin Nonpoint Source Water Pollution Abatement Program. The WDNR is responsible for allocation of funds for implementation.

PROGRAM MANAGEMENT

St. Croix County Soil and Water Conservation District, the lead designated management agency, will be responsible for daily operation and coordination.

Coordinating Committee

In a multicounty project, it is essential that a coordinating committee be established. Each DMA should be represented on such a committee. Meetings will be conducted on a regularly scheduled basis. Functions include; (1) maintaining lines of communication, (2) periodic review of implementation progress in each county, (3) provide an opportunity for settling disputes, and (4) provide a forum for discussion of cost-share agreements. This committee has no direct authority but can provide valuable guidance to the lead designated management agency in decisions that must be made.

Program Manager

St. Croix County Conservationist will serve as program manager. The program manager will serve as a liaison between state and federal agencies involved in the program and designated management agencies. The program manager is responsible for monitoring contracts between designated management agencies, state and federal agencies, organization, and individuals during implementation. Program managers responsibilities include fiscal management, coordination of technical assistance, coordination of information activities and coordination with Wisconsin Department of Natural Resources.

Record Keeping

An important part of the Upper Willow River Watershed Program is for accurate and complete implementation records be kept by designated management agencies. This will enable state and local agencies an opportunity to analyze progress of implementation and thus be able to make appropriate adjustments in strategies. It is important that all landowners in the priority management area have an opportunity to participate in the program and must be contacted as required by Administrative Code Chapter NR 120.

The lead designated management agency (St. Croix County SWCD) has overall responsibility for program record keeping. It is responsible for all watershed correspondence, grant agreements, contractual arrangements with other agencies, for projects status and evaluation reports and financial transactions. St. Croix County SWCD is accountable to Wisconsin Department of Natural Resources for overall program responsibility. Respective designated management agencies are responsible for all records of correspondence, landowner agreements, and landowner work commitments.

Fiscal Management

St. Croix County Soil and Water Conservation District (lead DMA) is responsible for fiscal management. Contractual arrangement will be made with St. Croix County Agricultural Stabilization and Conservation Service (ASCS) to provide fiscal record keeping services for the program. Records kept will be comparable to those of the Agricultural Conservation program (ACP) and will utilize similar forms. ASCS will track implementation progress of cost-sharing agreements and of individual best management practices. Completion of installation will be reported to St. Croix County SWCD to initiate landowner payment. ASCS will be reimbursed for services as spelled out on TABLE Hours Required for Fiscal Management. All records are subject to an annual program review by Wisconsin Department of Natural Resources.

Program Review

Periodic review and evaluation of Watershed plans are required under provisions of Chapter NR 120, Wisconsin Administrative Code. The lead designated management agency is responsible to Wisconsin Department of Natural Resources for all reviews and subsequent revisions.

An annual meeting will be conducted with all designated management agencies, participating agencies, and interested citizens to evaluate progress in implementing the watershed plan. Suggested strategy revisions to better implement the plan will be made to Wisconsin Department of Natural Resources for possible amendments.

Wisconsin Department of Natural Resources will conduct an annual program review. The review will focus on effectiveness of best management practices, impact on water quality, fiscal audit and adherence to implementing strategy set forth in the watershed plan.

A continuous fiscal audit will be conducted by Wisconsin Department of Natural Resources as designated management agencies provide the following on a monthly basis; copies of landowner agreements, proof of payment for installed practices, certification of installed practices and cost-share calculations for installed practices.

Adjustments and revisions can be made in the plan, grant agreement or local assistance agreement. Minor revisions can be made by mutual agreement of the Secretary of Wisconsin Department of Natural Resources and the Chairperson of St. Croix County Soil and Water Conservation District. An amendment would be signed by each party and attached to appropriate document (Grant Agreement). A major revision in this plan requires an additional public hearing as required by Chapter NR 120 of Wisconsin Administrative Code. For example, a change in plan objective would be considered a major revision.

IMPLEMENTATION SCHEDULE

Based on watershed inventories, subwatersheds were separated into three groups. Groupings reflect severity of impact on water quality and provide a systematic approach to implementation and to enable most efficient use of time and cost-share funds within the priority management area. All eligible landowners in the priority management area of group one must be contacted before those of group two are contacted and similarly for successive groups. Unique situations may require that a contact be developed for a landowner in group two or three before schedule, but this should be the exception and not the general rule. (Table 9 and Map 3).

TABLE 9

IMPLEMENTATION SCHEDULE

Group	Subwatersheds	Project Year
1	2, 3, 5, 6, & 14	1st year
2	1, 4, 9, & 13	2nd year
3	7, 8, 11, & 12	3rd year

*Subwatershed 10 does not drain directly into the Willow River.

Table 10 identifies estimated needs of each individual best management practice. Estimates are based on seventy five per cent of total watershed needs as identified by inventories conducted during the planning process. This table also provides installation estimates of best management practices for each year of the project. These estimates may vary slightly, but provide field office staff a basis for determining future installation schedules.

Map 3.

UPPER WILLOW RIVER WATERSHED

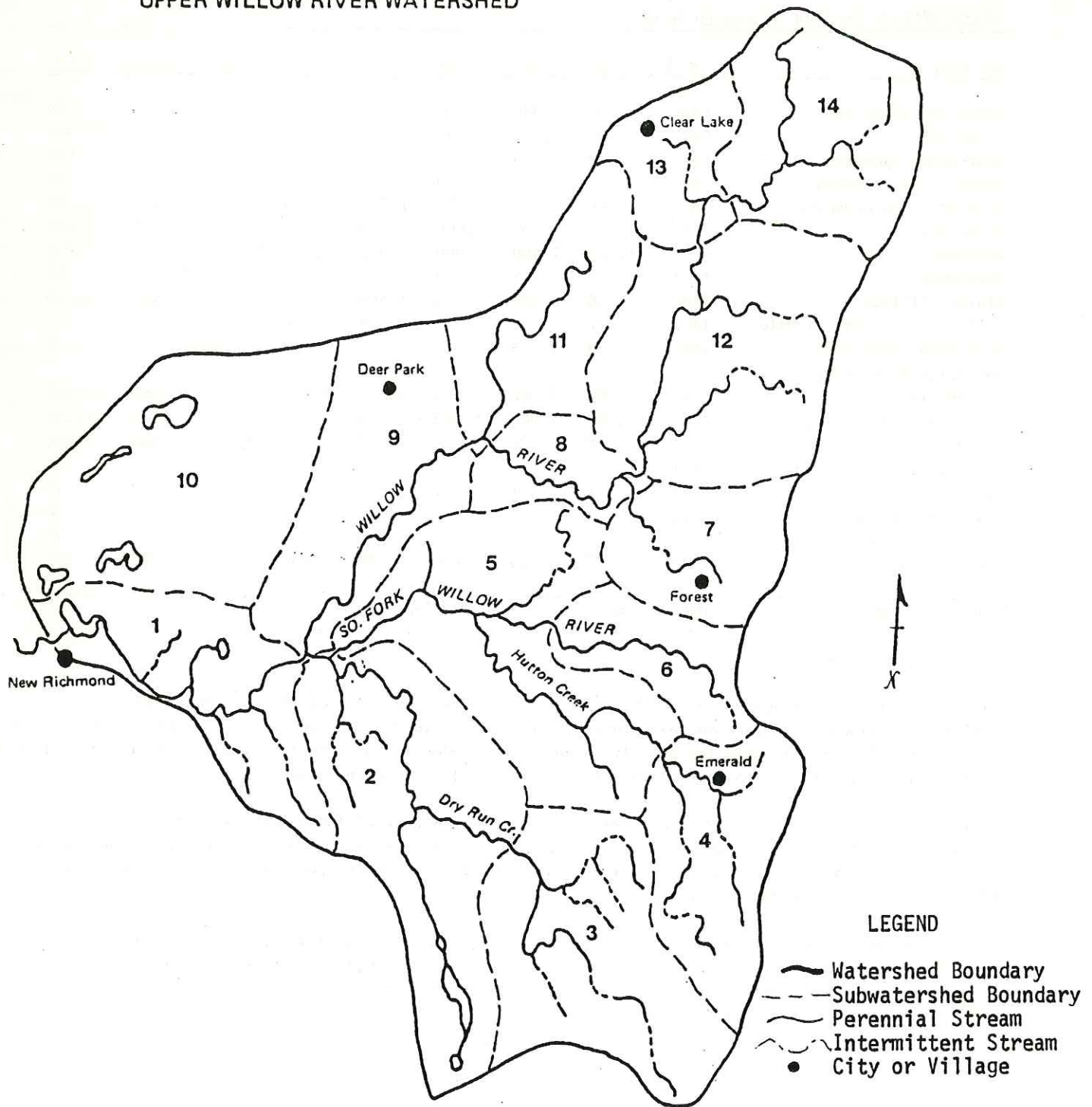


TABLE 10

IMPLEMENTATION GOALS OF WATERSHED PROJECT

Activity	Unit	1982	1983	1984	1985	1986	1987	1988	Total
Landowner Contacts	(No)	300	300	300	-	-	-	-	900
Conservation Planning	(Ac)	7,500	7,500	7,500	-	-	-	-	22,500
Cost-Share Agreements	(No)	60	60	60	-	-	-	-	180
Revision of Agreements	(No)	-	5	10	20	10	3	-	48
Contour Strip Cropping	(Ac)	100	100	100	1,200	1,200	1,200	600	4,500
Diversion	(Ft)	1,000	1,000	1,000	2,500	2,500	2,500	1,500	12,000
Terraces	(Ft)	1,500	1,500	1,500	12,000	10,000	10,000	8,500	45,000
Waterways	(Ac)	5	5	5	20	20	5	-	60
Minimum Tillage	(Ac)	500	500	500	1,500	1,500	1,500	500	6,000
Critical Area Stabilization	(Ac)	2	2	2	4	4	4	3	21
Grad Stab. Structure	(No)	3	3	3	3	4	4	1	21
Shoreline Protection									
Fencing	(Ft)	2,000	2,000	2,000	5,000	5,000	5,000	1,000	22,000
Shaping & Seeding	(Ft)	1,000	1,000	1,000	2,500	2,500	2,500	760	11,260
Riprap	(Ft)	500	500	500	1,200	1,200	1,200	900	6,000
Livestock Crossing	(No)	2	2	2	2	2	2	-	12
Sink Holes	(No)	1	1	1	3	3	3	3	15
Animal Waste Runoff Control	(No)	4	4	4	13	6	4	1	36
Animal Waste Storage Fac.	(No)	3	3	3	9	3	3	1	25
Annual Review of BMP's	(No)	15	75	100	125	150	200	200	865

*Units are expressed as: No = Number; Ac = Acres; and Ft = Feet

TECHNICAL ASSISTANCE

The lead designated management agency has responsibility of acquiring needed additional technical assistance. Wisconsin Department of Natural Resources will fund a portion of total technical assistance needs identified by this detailed plan implementation. To meet the objectives and time limits of this plan, additional staff, along with reallocation of existing staff will be needed.

Tables 11, 12, 13, and 14 identify estimated needs in technical assistance hours to implement best management practices identified in Table 10. Table 11 identifies hourly rates per practice and numbers of hours required for each program. Table 12 identifies hours needed for program management and Table 13 and 14 identifies fiscal management needs.

Anticipated annual needs in hours for implementation provides management information to the lead designated management agency. This information provides a base of long range planning to enable them to make most efficient use of staff time. Table 15 is a summary of hours needed for implementation, hours available from existing staff and additional hours needed.

TABLE 11

HOURS OF TECHNICAL ASSISTANCE REQUIRED FOR IMPLEMENTATION

Activity	Rate/ Unit	1982	1983	1984	1985	1986	1987	1988	Total Hours
Landowners Contacts	2hr/ea	600	600	600	-	-	-	-	1,800
Conservation Planning	.25hr/ac	1,875	1,875	1,875	-	-	-	-	5,625
Cost-Share Agreements	8hr/ea	480	480	480	-	-	-	-	1,440
Revision of Agreements	2hr/ea	-	10	20	40	20	6	-	96
Contour Strip Cropping	.33hr/ac	33	33	33	396	396	396	198	1,485
Diversions	.02hr/ft	20	20	20	50	50	50	30	240
Terraces	.02hr/ft	30	30	30	240	200	200	170	900
Waterways	.20hr/ac	100	100	100	400	400	100	-	1,200
Minimum Tillage	.1hr/ac	50	50	50	150	150	100	50	600
No Tillage	-	-	-	-	-	-	-	-	-
Critical Area Stabilization	8hr/ac	16	16	16	32	32	32	24	168
Grade Stab. Structure	90hr/ea	270	270	270	270	360	360	90	1,890
Shoreline Protection									
Fencing	.25hr/ft	50	50	50	125	125	125	25	550
Shaping & Seeding	.05hr/ft	50	50	50	125	125	125	38	563
Riprap	.1hr/ft	50	50	50	120	120	120	90	600
Livestock Crossing	32hr/ea	64	64	64	64	64	64	-	384
Sink Holes	10hr/ea	10	10	10	30	30	30	30	150
Animal Waste Runoff Control	45hr/ea	180	180	180	585	270	180	45	1,620
Animal Waste Storage	45hr/ea	135	135	135	405	135	135	45	1,125
Annual Review of BMP's	1hr/ea	15	75	100	125	150	200	200	865
Total Hours		4,028	4,098	4,133	3,157	2,627	2,233	1,035	21,301

TABLE 12

HOURS OF PROGRAM MANAGEMENT REQUIRED FOR IMPLEMENTATION

Activity	1982	1983	1984	1985	1986	1987	1988	Total Hours
Information & Education	300	300	300					900
Coordinating Meeting	240	240	240	200	200	200	150	1,470
Annual Program Meeting	50	50	50	50	50	50	50	350
Staff Coordination	200	200	200	180	150	150	125	1,205
Coordination with DNR	100	100	100	100	75	50	50	575
Management of Cost-Share Funds	100	100	100	100	100	100	100	700
Management of Implementation Funds	100	100	100	100	100	100	100	700
Total Hours	1,090	1,090	1,090	730	675	650	575	5,900

TABLE 13

FISCAL MANAGEMENT

Activity	1982	1983	1984	1985	1986	1987	1988	Total Hours
Recording of Cost-Share Agreement	60	60	60	-	-	-	-	180
Maintain Total Allocation Ledger	60	60	60	-	-	-	-	180
Project Completion Ledger	60	60	60	-	-	-	-	180
Issuance of Referral	30	55	85	130	100	70	30	500
Recording of Practice Certification	30	55	85	130	100	70	30	500
Preparation of Payment Vouchers	30	55	85	130	100	70	30	500
Prep. of Agreement Form for Approval	60	60	60	-	-	-	-	180
Filing of Plan and Contract	60	60	60	-	-	-	-	180
Service of Referral	30	55	85	130	100	70	30	500
Preparation of Referral for DMA Approval	30	55	85	130	100	70	30	500
Collection of Referral & Receipts	30	55	85	130	100	70	30	500
Prepare Check	30	55	85	130	100	70	30	500
Internal Audit	30	55	85	130	100	70	30	500

TABLE 14

FISCAL MANAGEMENT

Activity		1982	1983	1984	1985	1986	1987	1988	Total Hours
Recording of Cost-Share Agreement	.25hr/ea	15	15	15	-	-	-	-	45
Maintain Total Allocation Ledger	.25hr/ea	15	15	15	-	-	-	-	45
Project Completion Ledger	.2hr/ea	12	12	12	-	-	-	-	36
Issuance of Referral	.2hr/ea	6	11	17	26	20	14	6	100
Recording of Practice Certification	.3hr/ea	9	16.5	25.5	39	30	21	9	150
Preparation of Payment Vouchers	.2hr/ea	6	11	17	26	20	14	6	100
Prep. of Agreement Form for Approval	.25hr/ea	15	15	15	-	-	-	-	45
Filing of Plan and Contract	.25hr/ea	15	15	15	-	-	-	-	45
Service of Referral	.25hr/ea	7.5	13.75	21.25	32.5	25	17.5	7.5	125
Prep. of Referral for DMA Approval	.25hr/ea	7.5	13.75	21.25	32.5	25	17.5	7.5	125
Collection of Referral & Receipts	.25hr/ea	7.5	13.75	21.25	32.5	25	17.5	7.5	125
Prepare Check	.25hr/ea	7.5	13.75	21.25	32.5	25	17.5	7.5	125
Internal Audit	.25hr/ea	7.5	13.75	21.25	32.5	25	17.5	7.5	125
Total Hours		130.5	179.25	237.75	253.5	195.0	136.5	58.5	1,191

TABLE 15

ESTIMATED PERSONNEL REQUIREMENTS FOR WATERSHED PROJECT

Work Effort	1982	1983	1984	1985	1986	1987	1988	Total Hours
Technical Assistance	4,028	4,098	4,133	3,157	2,627	2,223	1,035	21,301.0
Program Management	1,090	1,090	1,090	730	675	650	575	5,900.0
Fiscal Management	130.5	179.25	237.75	253.5	195.0	136.5	58.5	1,191.0
Total Watershed Needs	5,248.5	5,367.25	5,460.75	4,140.5	3,497	3,009.5	1,668.5	28,392
Available From Local Units of Government								
Additional Watershed Needs								

INFORMATION AND EDUCATION

The educational program of the Upper Willow River Watershed has been developed to reach three main area audience; namely, the land owners and operators, general public, and organizational and educational groups.

Educational program funds have been requested by the lead DMA (The St. Croix County Soil and Water Conservation District) to fund a thorough educational effort. The lead D.M.A. will be responsible for the implementation of the educational program.

The DMA will be working jointly with UW-Extension specialists in the implementation of the educational program. Agencies including SCS, ASCS, SWCD, DNR, and local units of government will assist in the development of educational materials and programs.

The Upper Willow River Watershed educational program will include the following educational activities as indicated by table 16 and 17.

TABLE 16

WILLOW RIVER WATERSHED EDUCATION ACTIVITY GOALS

PRODUCT	Rate/Unit	FY '81	82	83	84	85	86	87	TOTAL
Newsletter	\$844	4	4	3	2	2	2	2	19
Watershed Brochure	411	1	-	-	-	-	-	-	1
News Releases	21	16	16	16	12	8	6	4	78
Radio Programs	21	20	20	20	12	8	6	4	90
BMP Demos.	755	3	2	2	-	-	-	-	7
W.S. Tours	967	1	2	2	-	-	-	1	6
Township Village, City Meetings	110	2	2	2	-	-	-	-	6
Practice Maintenance Planning	20	4	6	10	15	20	10	10	75
Displays	290	1	1	-	-	-	-	-	2
Slide Program Development	521	1	-	-	-	-	-	-	1
Program Admin. & Coordination	12.65/hr.	120/hr.	120/hr.	120/hr.	80/hr.	40/hr.	40/hr.	20/hr.	540/hr.
Elected Official Fact Sheets	257	2	2	1	1	1	1	1	9
Watershed Meetings	464	2	2	2	-	-	-	-	6
TOTAL		57	57	58	42	39	25	22	300 activities 540 Ad. hrs.

TABLE 17

WILLOW RIVER WATERSHED EDUCATION ACTIVITY COSTS

PRODUCT	Rate/Unit	FY '81	82	83	84	85	86	87	TOTAL
Newsletter	\$844	\$3,376	\$3,376	\$2,532	\$1,688	\$1,688	\$1,688	\$1,688	\$16,036
Watershed Brochure	411	411	-	-	-	-	-	-	411
News Releases	21	336	336	336	252	168	126	84	1,638
Radio Programs	21	420	420	420	252	168	126	84	1,890
BMP Demos.	755	2,265	1,510	1,510	-	-	-	-	5,285
W.S. Tours	967	967	1,934	1,934	-	-	-	967	5,802
Township Village, City Meetings	110	220	220	-	-	-	-	-	440
Practice Maintenance Planning	20	80	120	200	300	400	200	200	1,500
Displays	290	290	290	-	-	-	-	-	580
Slide Program Development	521	521	-	-	-	-	-	-	521
Program Admin. & Coordination	12.65/hr.	1,518	1,518	1,518	1,012	506	506	253	6,831
Elected Official Fact Sheets	257	514	257	257	257	257	257	257	2,313
Watershed Meetings	464	928	928	928	-	-	-	-	2,313
NTOTAL		11,846	11,166	9,635	3,761	3,187	2,903	3,533	2,784 46,031

LANDOWNER ASSISTANCE

Implementation of the program as spelled out by this plan will be done by St. Croix and Polk County Soil and Water Conservation Districts and participating agencies. All eligible landowners will be contacted by personnel from these agencies during the initial three year sign up period. Conservation plans and cost-share agreements will be developed for individual cooperators. The cost-share agreement (form 3400-68) is a contract between the landowner and designated management agency, which specifies the best management practices, the expected life expectancy of practices and estimated costs.

Procedures

1. Upon completion of the cost-share agreement (form provided by the state) and approval by responsible designated management agency, a copy will be forwarded to the appropriate fiscal management agency not to Wisconsin Department of Natural Resources.
2. Upon receipt of an approved agreement, cost share funds shall be encumbered. Records will be kept of all best management practices installed during the time period covered by the cost-share agreement.
3. Referrals issued to designated management agencies for technical determination will be done on available local forms. Issued referrals to responsible designated management agencies will then be completed with detailed cost estimates and installation procedures.
4. Upon completion of installation, payment receipts, and construction costs will be provided by the landowner to the agency responsible for fiscal record keeping.
5. Responsible designated management agency will certify that installed best management practices meets design specifications. This will be forwarded to the designated management agency for final approval and authorization of payment to the landowner.

MAINTENANCE OF BEST MANAGEMENT PRACTICES

Wisconsin Department of Natural Resources guidelines for the Nonpoint Source Water Pollution Abatement Program, Chapter 120 of the Wisconsin Administrative Code, sets requirements for maintenance and expected life span of best management practices (BMPs) and describes penalties for failure of landowner to carry out obligations.

The following procedure shall be used to evaluate proper maintenance of best management practices:

1. Identification of violations of required maintenance measures shall be obtained through annual status reviews of installed practices by the designated management agencies.
2. Where violations are identified, designated management agencies will contact the landowner/operator in control of the management practice in violation. Contact will be followed with a formal letter explaining details of the violation and possible alternatives that may be undertaken to bring the violation into compliance.
3. Final action will be to submit violations to the county corporation counsel for further action and proceedings.