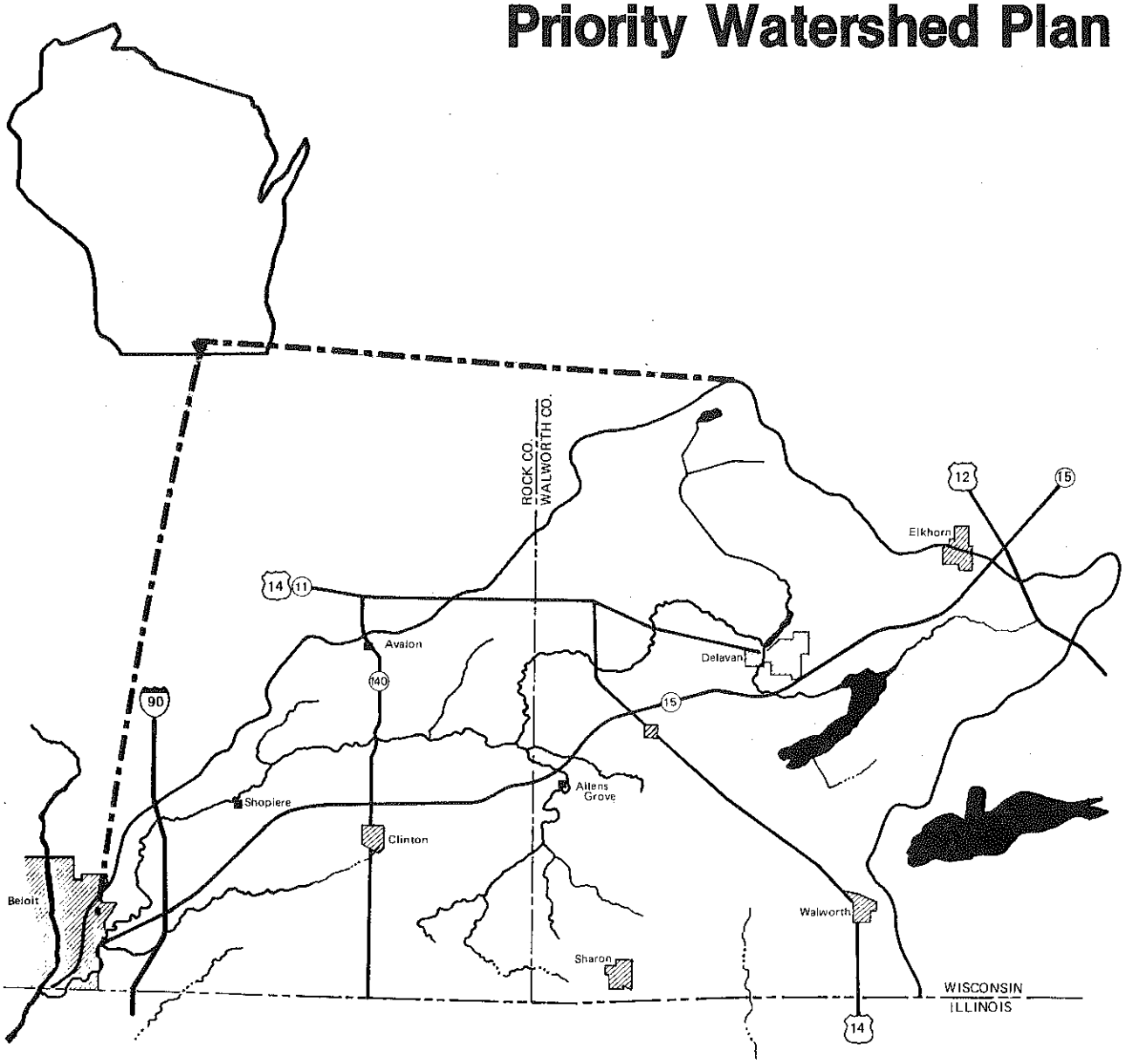
Turtle Creek Priority Watershed Plan



Prepared Jointly By:

Rock County Land Conservation Committee
Walworth County Land Conservation Committee
Wisconsin Department of Natural Resources

In Cooperation With:

University of Wisconsin — Extension
U.S.D.A. Soil Conservation Service
U.S.D.A. Agricultural Conservation and Stabilization Service
Southeastern Wisconsin Regional Planning Commission

ROCK COUNTY, WISCONSIN

Department of Land Conservation
51 South Main Street
Janesville, WI 53545
608/755-2187

April 3, 1984

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

Dear Mr. Besadny:

The Rock County Department of Land Conservation functioning as the Lead Designated Management Agency for the Turtle Creek Watershed, has reviewed and approve the Turtle Creek Watershed Plan.

The Rock County Department of Land Conservation will proceed with the watershed plan implementation upon final Department of Natural Resources approval.

Sincerely,

William Breidenstein

Wm. Breidenstein, Chairman
Rock County Land Conservation Committee

WB/lh

RESOLUTION NO. 2-4/84

TURTLE CREEK WATERSHED PLAN

WHEREAS, the Walworth County Board of Supervisors on March 17, 1981 did adopt Resolution No. 197 supporting the designation of the Turtle Creek Watershed as a "priority watershed" by Department of Natural Resources; and

WHEREAS, the Walworth County Board of Supervisors on July 20, 1982, did adopt Resolution No. 61, designating the Land Conservation Committee responsible for working with the Department of Natural Resources; Southeastern Wisconsin Regional Planning Commission and Rock County on this project; and

WHEREAS, Rock County Land Conservation Committee has been designated lead management agency, and therefore will maintain all the accounting records for reimbursement and has approved the Turtle Creek Watershed plan; and

WHEREAS, water quality best management practices can be implemented and cost-shared, with monies available for both Rock and Walworth Counties through the Wisconsin Non-point Source Agreement between Rock County Land Conservation and the Department of Natural Resources; and

WHEREAS, the Walworth County Land Conservation Committee has approved the Turtle Creek Watershed Plan; which states the objectives of the non-point source water pollution abatement program contained in s. 144.25 Statutes; and

WHEREAS, the Turtle Creek Watershed Plan is a plan for protecting and enhancing water quality which considers the interrelationship of water quality and land and water resources by landowners volunteering to participate; and

WHEREAS, the Turtle Creek Watershed Plan has been formulated; along with the Non-point Source Grant Agreement and Local Assistance Agreement signed with Rock County and the Wisconsin Department of Natural Resources.

NOW, THEREFORE, BE IT RESOLVED that the Walworth County Board of Supervisors go on record as accepting the priority watershed project designation and the Turtle Creek Watershed Plan; and

BE IT FURTHER RESOLVED that the Land Conservation Committee be responsible for working with the Department of Natural Resources, Rock County Land Conservation Committee and the various agencies involved on this project.

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the Department of Natural Resources.

Dated this 17th day of April, 1984.

WALWORTH COUNTY LAND CONSERVATION

Gerald Byrnes
Ernest Pickle
Bill Kay
Roger Jacobson

Resolution drafted by

This resolution ~~was~~ adopted, rejected, laid over.

Ayes Noes

Date 4/19/84

PARK & PLANNING COMMISSION

Allen L. Morrison
Emil Klemint
E.L. Nashold
[illegible]

APPROVED FOR PRESENTATION

DATE: 4-13-84

[illegible]
[illegible] Stevenson
Karl Janowski
[illegible]

FINANCE COMMITTEE

FISCAL NOTE:

1. [illegible] estimate of any anticipated change in appropriations, fiscal liability or revenues -

n/a

2. If funds were included in budget, the amount and account number -

n/a

3. If transfer between accounts is necessary, the account numbers involved -

n/a

4. Will adoption of this resolution cause a repeated expenditure (revenue) in succeeding years -

n/a

5. A projection of the anticipated change in appropriations, fiscal liability or revenues in future fiscal years -

n/a

☐ DRAFTED ☒ REVIEWED BY

CORPORATION COUNSEL

DATE: 4/11/84

Russ Dewitt

g.k.

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PREFACE

The Turtle Creek Watershed was selected in 1981 as a Priority Watershed under the Wisconsin Nonpoint Source Water Pollution Abatement Program. Since the program was enacted by the State Legislature in 1978, sixteen other Priority Watersheds have been selected.

There are two general categories of water pollution sources: point sources and nonpoint sources. Point sources usually cause acute, highly visible water quality impacts. They are generally concentrated discharges of wastewater from distinct sites such as municipal sewage treatment and industrial plants. Nonpoint sources are generally land areas where pollutants are carried to lakes and streams by runoff causing acute or chronic water quality impacts. Examples of nonpoint sources include stormwater and snowmelt runoff from urban areas, agricultural fields, livestock operations and construction sites. The severity of the impacts of nonpoint sources on water quality generally increases as the extent of land disturbance and the intensity of the land use increases. Point and nonpoint sources require different management schemes to achieve water quality objectives. Point sources require the control of a discrete entity. Control of nonpoint sources requires a comprehensive approach which addresses a number of land management problems over a larger land area, most effectively an entire watershed.

The Wisconsin Nonpoint Source Water Pollution Abatement Program was developed to provide cost-sharing and technical assistance to landowners and operators for the control of nonpoint sources of pollution. It is the primary source of funding available for implementing nonpoint source controls in Wisconsin. The purpose of the program is to reduce water pollution in watersheds with severely degraded water quality and preserve higher quality streams and lakes.

Priority watersheds, including the Turtle Creek Watershed, are selected, in general, because of the severity of water quality problems in the watershed, the importance of controlling nonpoint sources in order to attain water quality standards, and the capability and willingness of local government agencies to carry out the planning and implementation of the project. The watersheds are selected through a three-step process involving an impartially ranked list of watersheds, regional advisory groups and the State Nonpoint Source Coordinating Committee. Once a Priority Watershed is selected, local agencies, with assistance from the Department of Natural Resources, prepare a watershed plan. The plan, which follows, is divided into two parts. Part one is an assessment of existing water quality and watershed conditions followed by the identification of the actions necessary to reduce the water quality problems in the watershed. Part two identifies the tasks necessary to carry out the actions presented in the plan and the agencies responsibilities for each task, as well as the time frame for completing those tasks.

TURTLE CREEK PRIORITY WATERSHED PLAN
PART I: THE MANAGEMENT PLAN

INTRODUCTION

In June of 1982 the Turtle Creek drainage area was recommended to be made a priority watershed and thus became eligible to participate in the Wisconsin Nonpoint Source Pollution Abatement Program. Rock and Walworth Counties accepted this recommendation and work on the project began in August of 1982.

The priority watershed project is carried out in two steps. This document is a result of that first step - the planning phase. During this period, the Department of Natural Resources, the County Land Conservation Department, and other local agencies worked together to produce a watershed plan.

The purpose of this Priority Watershed Plan is to develop and document water quality and land use information about the Turtle Creek Watershed so that the specific causes and critical areas contributing to nonpoint source pollution in the watershed can be identified and the most practical means for abating the pollution can be developed.

The Priority Watershed Plan is divided into two parts. Part I: The Management Plan, sets the goals and objectives for the watershed project by:

a) assessing the existing water quality problems;
b) identifying the significant nonpoint sources of pollution and determining the significance of other pollution sources such as point sources;
c) identifying the water quality improvements or objectives that can be reasonably achieved through nonpoint source controls;
d) identifying the priority management area and the best management practices that will be effective in abating the nonpoint source pollution; and
e) estimating the costs of implementing the recommended nonpoint source control practices.

Part II: The Implementation Strategy, outlines the process for achieving the project objectives. It identifies:

a) the tasks necessary to accomplish the needs identified in the Management Plan;
b) the agencies responsible for carrying out those tasks;
c) the time frame for carrying out the tasks;
d) the estimated hours of staff time needed to carry out the project; and
e) the administrative procedures to be used in carrying out the program.

The second step of the project is the implementation phase. It will begin after this plan has been reviewed by the public and government agencies; and approved by Rock and Walworth Counties, and the Department of Natural Resources. At that time, the local and state agencies will begin to carry out the plan. The implementation phase may last up to eight years. There is an initial three year period during which critical landowners in the watershed will be contacted and will be eligible to receive cost sharing for the

practices which are recommended in the plan. The cost share agreement signed by the landowner and county outlines the practices, costs, cost share amounts, and schedule of installation. Practices can be scheduled for installation up to five years from the date of signing the agreement. Thus, after the the three year sign up period there could be up to a five year installation period depending upon how the county and landowners schedule the installation of practices.

The Priority Watershed Plan has several other uses. Because the plan represents a thorough inventory of pollution sources and control needs within the watershed, it can be used to pinpoint critical areas of the watershed where other resource management efforts can be directed. It can also serve an important educational function by showing the cause and effect relationship between land management and water quality. The plan is important because it is a guide for managing the watershed project and details procedures and responsibilities to aid staff in working more effectively. Finally, the inventory in this plan gives an accurate "before project" picture of the nonpoint source conditions in the watershed. A similar inventory after the project will allow for an assessment of changes that have occurred during the project. This document can be revised during the implementation phase if there is a need to change procedures or other portions of the plan.

WATERSHED DESCRIPTION

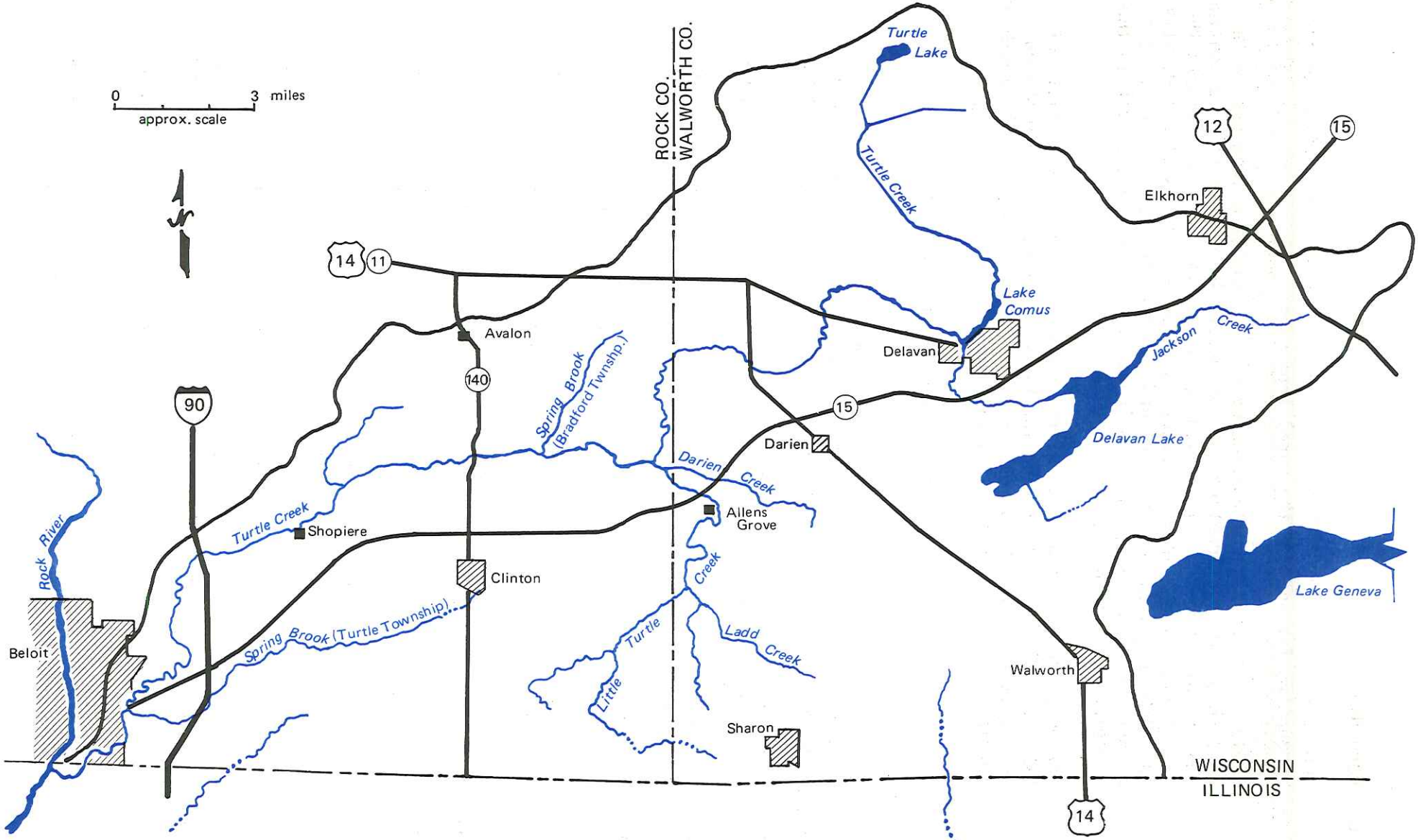
A. Water Bodies and Drainage Area

The Turtle Creek watershed is located in western Walworth and eastern Rock Counties in southern Wisconsin. It is 231 square miles in size with 38 percent in Rock County and 62 percent in Walworth County. Turtle Creek is a tributary to the Rock River and joins the river just south of Beloit in Illinois. The major tributaries to Turtle Creek are Spring Brook in Turtle Township, Spring Brook in Bradford Township (both in Rock County); Little Turtle Creek (in Rock and Walworth Counties), and Jackson Creek (in Walworth County). Also within the watershed are Delavan Lake, Comus Lake, and Turtle Lake. In addition to the drainage area to Turtle Creek; the watershed, for administrative purposes includes the drainage area to two small creeks which flow directly out of Wisconsin into Illinois. These are Dry Creek in Rock County, and Piscasaw Creek in Walworth County. Figure 1 is a map of the watershed.

B. Soils and Topography

The Turtle Creek watershed contains a variable topography due to the effects of glaciation. The eastern half of the watershed has long regular slopes generally in the 0-4 percent range. The soils in this area are deep silt-loams and moderately well drained. The land is steeper in Rock County, generally in the 2-8 percent range, but many croplands exceed slopes of 10 percent. The soils in this area are also deep, well drained, silt loams. Irregular slopes occur along a one mile wide band from the Village of Walworth through Darien and north to the community of Richmond. This band is an end moraine left by a glacier. Except for this area, the rest of the watershed generally has regular slopes well suited for large continuous parcels of cropland.

Figure 1: Turtle Creek Priority Watershed project area.



C. Land Use

The Turtle Creek watershed is mostly a rural watershed with agriculture accounting for most of the rural land uses.

Table 1 indicates the significance of cropland as a land use in the watershed. Of the cropland, approximately 70 percent is in a continuous row cropping pattern. This high percentage of cropland reflects the suitability of the area for cropping purposes. It is also indicative of the high potential for sediment and nutrient loading to the surface waters. Erosion rates on these lands will be presented later in the inventory portion of the plan.

The only incorporated areas within the watershed are the Cities of Elkhorn, Delavan, Beloit, and the Villages of Clinton, and Sharon. The only city over 10,000 in population is Beloit located at the mouth of Turtle Creek as it enters Illinois.

Table 1 Turtle Creek Watershed Land Use[1]

	Subwatersheds						
Land Use	Lower Turtle	Little Turtle	Middle Turtle	Spring Brook	Delavan Lake	Comus Lake	Entire Watershed
Cropland	11,892 (74%)	18,148 (82%)	3,454 (54%)	3,558 (81%)	6,692 (65%)	2,655 (69%)	46,399 (73%)
Pasture	608 (4%)	797 (4%)	119 (2%)	143 (3%)	175 (2%)	460 (12%)	2,302 (4%)
Woodlot	882 (6%)	383 (2%)	372 (6%)	186 (4%)	357 (3%)	381 (10%)	2,561 (4%)
Grazed Woodlot	78 (0%)	36 (0%)	14 (0%)	71 (2%)	13 (0%)	0	212 (0%)
Vacant Grassland	698 (4%)	360 (2%)	615 (10%)	173 (4%)	420 (4%)	0	2,266 (4%)
Wetland	464 (3%)	1,267 (6%)	1,140 (18%)	65 (1%)	561 (5%)	270 (7%)	3,767 (6%)
Farmstead	228 (1%)	378 (2%)	79 (1%)	83 (2%)	164 (2%)	0	932 (1%)
Residential	802 (5%)	339 (1%)	347 (5%)	73 (2%)	1,439 (14%)	60 (11%)	3,060 (5%)
Commercial Industrial	450 (3%)	299 (1%)	283 (4%)	63 (1%)	522 (5%)	40 (1%)	1,607 (3%)
Total	16,100	21,957	6,423	4,415	10,343	3,866	63,106

[1]This information is based on an inventory conducted within a quarter mile of the watershed's channel system as part of the planning process. A detailed description of the inventory process is on page ___.

DESCRIPTION OF THE WATER RESOURCES AND PROBLEMS

The Turtle Creek Watershed project area contains all the lands draining to the Turtle Creek plus two small areas with intermittant channels draining directly to Illinois. The named streams within the watershed include: Turtle Creek, Little Turtle Creek, Jackson Creek, Ladd Creek, Darien Creek, Spring Brook (in Turtle Township), and Spring Brook in Bradford Township, Dry Creek and Piscasaw Creek. In addition to these streams there are three lakes: Turtle Lake, Lake Comus, and Delavan Lake. The water resources are discussed individually below.

In several of the streams in the watershed species of fish which are endangered or threatened in Wisconsin have been found. These are fish that at one time were probably common in the southern part of the state, but now have declining populations and are few in number. The importance of these fish species is that all of these species require clear water and gravely stream bottoms to survive. These requirements indicate that at one time the streams of the Turtle Creek area had those characteristics. The reduction in the populations of these species is likely a result of change in the stream's habitat from clear water with gravel bottoms to turbid water with silty bottoms. An improvement in these species' populations in the future would be an indication that the nonpoint source controls are having a positive impact on the water quality. Figure 2 indicates where the endangered and threatened fish have been found.

A. Turtle Creek Mainstream

For purposes of this discussion Turtle Creek will be divided into four sections starting at the headwaters.

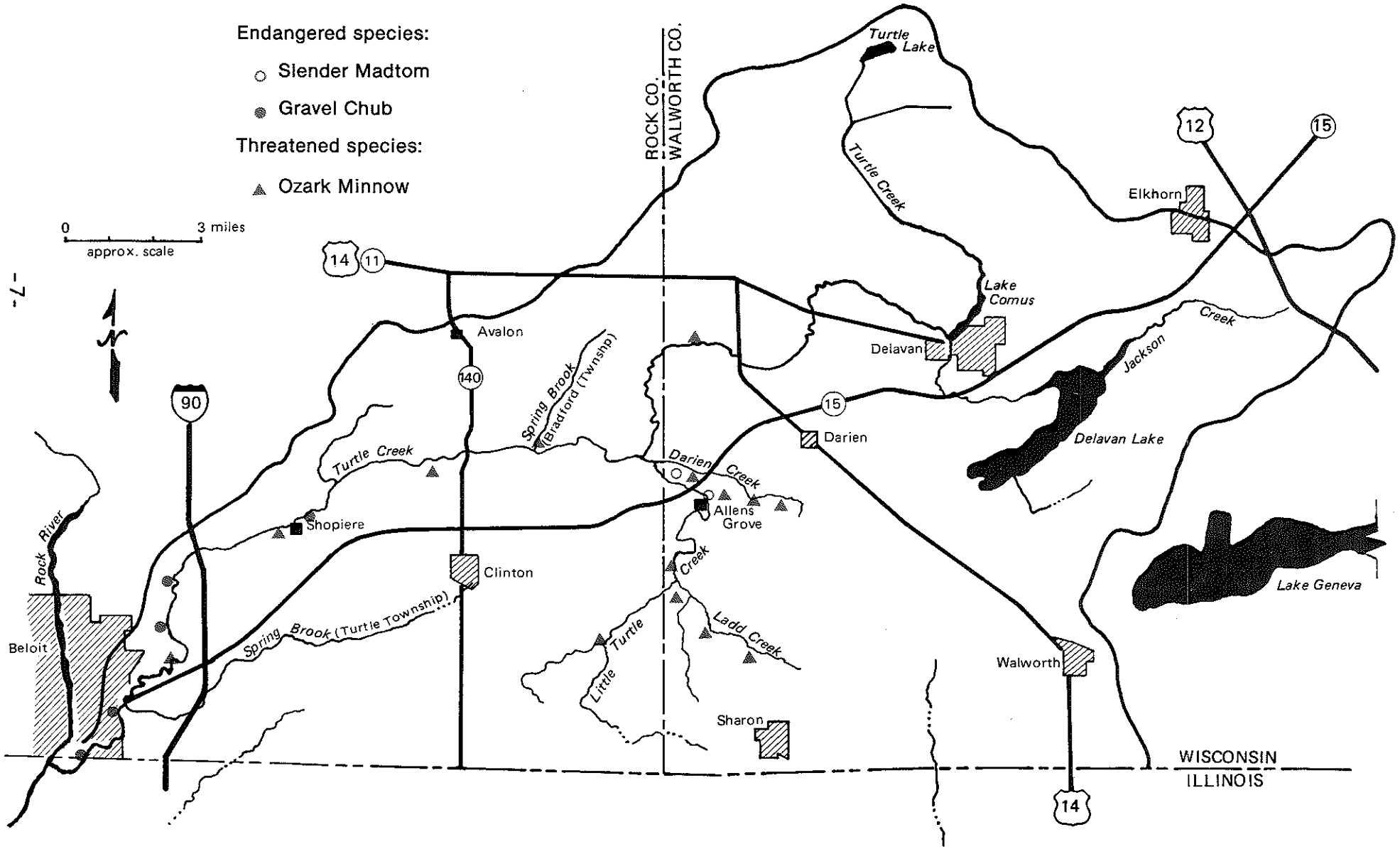
1. Above Comus Lake.

   This portion of Turtle Creek is highly channelized and has a very low gradient. There is only an 11 foot vertical drop over the 5.5 mile stretch between Turtle Lake and Lake Comus. The bottom lands of this area are very flat with organic soils. The land is mainly used for grain crop production. Although the stream only supports a marginal forage fishery the lower portions are used as a spawning area by northern pike from Lake Comus. Also the endangered Eastern Massasauga Rattlesnake inhabits the wetlands along the lower portion of the creek just above Lake Comus. The stream has sedimentation problems from the slumping, channelized banks, and wind erosion. Also the stream has high nutrient levels which most likely comes from the title drainage of the croplands.

2. Comus Lake to the County line

   This 13 mile stretch supports a marginal smallmouth bass and forage fishery. According to the DNR fish manager the fishery is somewhat limited by the low volume of water at times of the year. Much of the land along this portion of the creek is owned by the state and

Figure 2. Location of endangered and threatened fish species (from fish surveys 1974-1981).



managed as a wildlife area. Generally the streambanks and bottoms provide good fish habitat however low dissolved oxygen levels and high turbidity have been measured during low flow periods. It is unknown if the Walworth County Metropolitan Sewage Treatment Plant, which discharges to the creek is affecting the oxygen levels. This facility has generally been meeting its required permit limits for BOD and suspended solids. The Ozark Minnow (a threatened fish species) has been found in feeder streams along this portion of the creek.

3. Rock-Walworth County line to the Shopiere Dam

Turtle Creek along this portion has a good gradient and generally good fish habitat. The sport fishery consists of smallmouth bass and panfish along with carp, sucker, and other forage fish. The fish managers believe feel that there has been a steady decline in the bass population over the past 20 years in this section of the stream. There are isolated severe streambank erosion sites and some silt-filled pools. It is believed that the turbidity of the water, for long periods after rain, limits the ability of the bass to feed. Just above the Shopiere dam a fish survey found the highest diversity of fish species in the entire Rock River Basin. At this site were also found the endangered Gravel Chub and the threatened species of the Ozark Minnow and the River Redhorse.

4. Shopiere Dam to the state line

Below the dam the creek's fishery becomes more like that of the Rock River. Walleye, catfish, and northern pike have been found in this portion of the creek along with smallmouth bass, panfish, and rough fish. The Gravel Chub and Ozark Minnow have also been found in this portion of Turtle Creek. Below the interstate highway bridge there are several severely eroding streambank sites associated with the developing portions of Beloit. It is believed that the high turbidity in the water for long periods of time is a factor in keeping the bass population depressed.

B. Jackson Creek

Jackson Creek is the main tributary to Delavan Lake and is also the outlet stream from Delavan Lake. It meets Turtle Creek in the City of Delavan. Above the lake, Jackson Creek supports mainly a forage fishery and is a nursery area for northern pike from the lake. The flow in this portion of the creek is too low to support a sport fishery. Below the lake, Jackson Creek supports a diverse warmwater fishery including walleye, perch, largemouth bass, and panfish.

C. Little Turtle Creek

This is a tributary to Turtle Creek which flows from the state line north along the Rock-Walworth county line. It meets Turtle Creek just west of the county line. Above Ladd Creek, Little Turtle Creek's flow is too low to support a sport fishery. There has also been extensive channelization of the creek in this area. The Ozark Minnow has been found in this stretch. Little Turtle Creek supports a diverse fish population in the lower portions including smallmouth bass and the Slender Madtom (an endangered species in Wisconsin). Little Turtle Creek not only supports its own sport fishery but acts as a spawning and nursery area for fish from Turtle Creek. Fish managers have observed sedimentation problems, very turbid water, and algal growths in the creek. The algal growths is an indication of high nutrient levels in the water and could contribute to low oxygen levels in the creek. Also high fecal coliform levels have been measured. The most likely source for this bacteria is the livestock wastes in the watershed runoff.

D. Ladd Creek and Darien Creek

Both of these creeks are tributaries to Little Turtle Creek. Flow limits these creeks to supporting only forage fish. However, these forage species are an important source of food for the sport fish in Little Turtle Creek. The Ozark Minnow is found in both of these creeks and the Slender Madtom is also found in Darien Creek. Darien Creek receives the treated effluent from the Darien wastewater plant and there is no evidence of water quality impacts from this point source.

E. Spring Brook (Bradford Township, Rock County)

Spring Brook enters Turtle Creek from the north about three miles west of the county line. At one time trout were stocked, although there was little or no carryover. Currently the creek supports a forage fishery. The stream flows through Carver-Roehl County Park. The high fecal coliform counts measured in this creek are probably from livestock waste runoff.

F. Spring Brook (Turtle Township, Rock County)

This 9.5 mile creek begins near Clinton and flows southwest to Turtle Creek just north of the state line. The fishery is currently made up of rough and forage fish. The stream flow is too low to support a sport fishery. There has been considerable channelization in the upstream portions. In the past, chemical spills from an industry in Clinton have caused fish kills. Also, the Clinton sewage treatment plant discharges to Spring Brook. The plant has been exceeding its effluent limits and corrective measures are being reviewed by the city and the DNR at this time. This stream provides a nursery area for sport fish in Turtle Creek and the forage fish serve as a food source for other sport fish Turtle Creek.

G. Dry Creek

Dry Creek is a small creek orginating in southern Rock County and flowing for about five miles in Wisconsin before it enters Illinois. The creek supports only a forage fishery and it does not receive much public use in Wisconsin. There are no industries or municipalities discharging effluent to this creek.

H. Piscasaw Creek

This is a highly channelized creek orginating a few miles west of Village of Walworth. Piscasaw Creek flows about 2.5 miles south to the state line. The Village of Walworth does discharge treated effluent to the creek. There is little fishing pressure on this creek and it supports only a forage fishery. It has been reported that the flow is intermittant during some dry years.

I. Turtle Lake

Turtle Lake is a 140 acre headwater lake to the Turtle Creek. The lake supports largemouth bass, northern pike, and panfish. There have been no reported water quality concerns for the lake. The lake has extensive residential development around it and limited public access.

J. Comus Lake

Comus Lake is an impoundment on Turtle Creek near the City of Delavan. The dam creating the lake was established in 1840. Historically the impoundment was known to have a good fishery including largemouth bass, panfish, northern pike, and perch. In the last 25 years the fishery has been deteriorating and there have been several winterkill episodes. Also during this period there has been an increase in the sediment accumulation, algae, and aquatic weed growth. Presently the lake supports a remnant sport fishery but is dominated by rough fish. The lake is only 2-3 feet deep and this inhibits boating and other recreational uses.

A lake district was formed and after years of effort a lake rehabilitation project is currently in progress. The lake will be hydraulically dredged to remove the bottom sediments. When the dredging is completed fish will be restocked.

K. Delavan Lake

This 2,000 acre lake is located a couple miles southeast of the city of Delavan. The shoreline is highly developed and there is an active sanitary district around the lake. Carp and Buffalo dominate the fish population, but there are also walleye, perch, and white bass in the lake. There has been a commercial rough fish removal operation on the lake for the past few years.

Before 1981 the lake received treated sewage from the City of Elkhorn, Walworth County Institutions, and residents around the lake. This pollution had been entering the lake for many decades. In 1981, sewage from the residences around the lake and the City of Elkhorn began discharging to a new treatment plant downstream from the lake. The results of the past pollutant loads has been severe algal blooms during several summers. There have been many times when the water was unfit for contact recreation.

Studies have shown that there are enough of nutrients presently in the lake sediments to cause algal and weed problems for many years to come. The sanitary district is financing a water quality monitoring project in cooporation with the United States Geological Survey. The monitoring began in the fall of 1983 and will measure the quality of the water entering the lake, in the lake, and leaving the lake. Upon completion of the monitoring project, the sanitary district will have a better idea of how to best manage the lake in order to improve the recreational benefits of the lake.

PUBLIC USE AND BENEFITS OF THE WATER RESOURCES

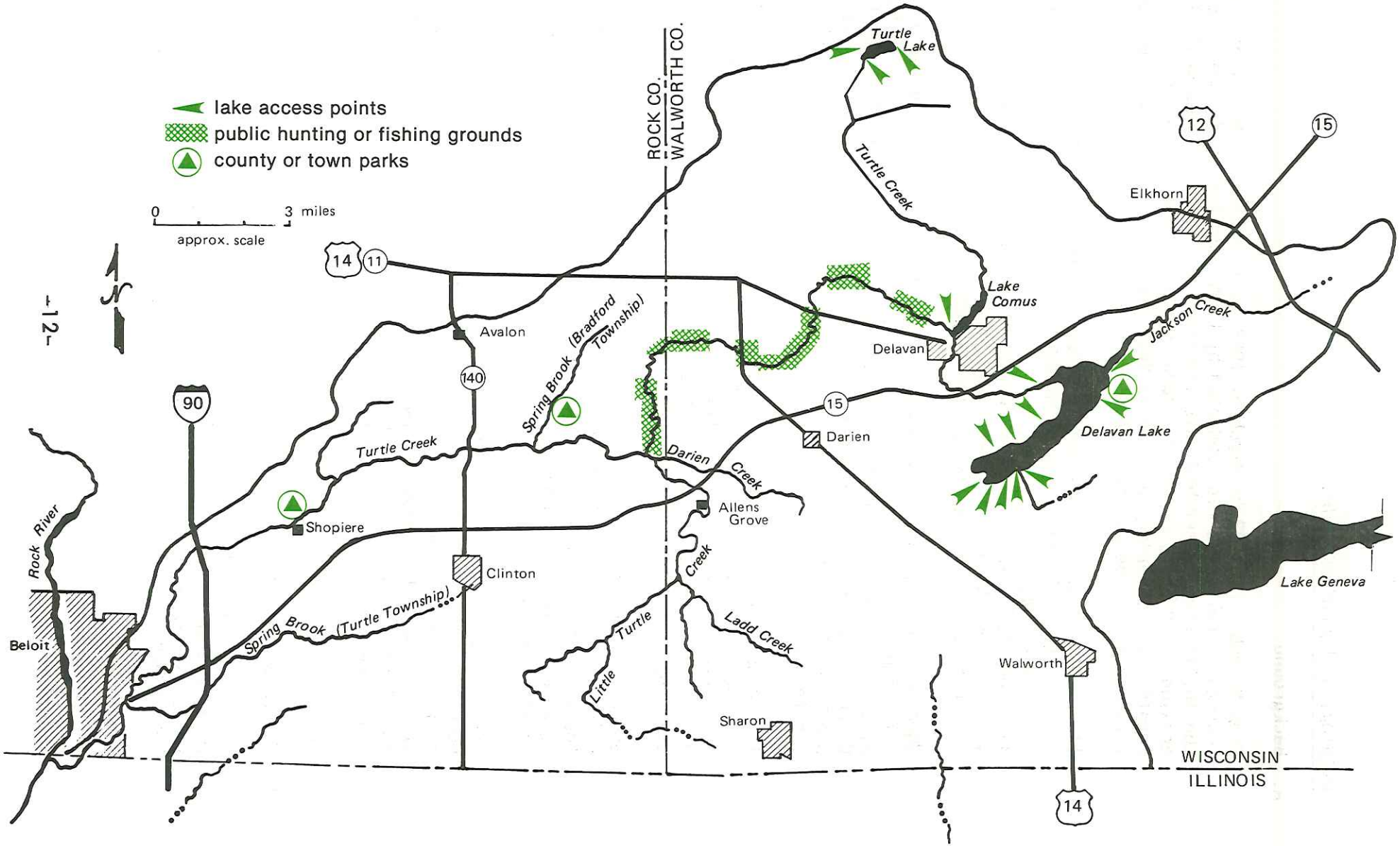
One of the major justifications for the spending of state funds for the control nonpoint source pollution is that the subsequent improvement of water quality will result in increased public benefit and use of the water resources. The steams and lakes of the Turtle Creek project area receive extensive recreational use. The major reason for this is its location in relation to population centers. The lakes and streams of the watershed are within easy driving distance of Beloit, Madison, Milwaukee, and Chicago.

The mainstem of Turtle Creek is popular for canoeing and the portion in Rock County is listed in canoe guide books. The mainstem is also heavily fished, especially for smallmouth bass and other sport fish in the lower stretches of the creek. There is public access for fishing at numerous points in Beloit, at a town park in Shopiere, and at public hunting and fishing grounds in Rock and Walworth Counties.

The lakes of the watershed are also an important recreational resource. Lake Delavan is the largest lake. There are many public boat ramps, a park and resorts on the lake. The lake is especially popular for walleye fishing. comus Lake in the Ciry of Delavan also has a public boat ramp and a city park on its shore. In the past Comus Lake has been heavily fished. Upon completion of the lake rehabilitation project the lake will be deeper and restocked with sport fish.

There is no assurance as to how much increase in public use will occur as a result of a successful nonpoint source pollution control project. However, it is clear that without control of nonpoint source pollution, the lakes and streams in this watershed will continue to degrade and lose their recreational use.

Figure 3: Public access to the water resources of Turtle Creek Watershed.



INVENTORY OF POLLUTION SOURCES

A. Background

From November of 1982 to March of 1983 an extensive inventory of nonpoint sources of pollution was conducted by both counties in the watershed. For the Turtle Creek watershed this inventory included an assessment of land erosion and runoff, barnyard manure runoff, streambank erosion, and urban runoff. The inventory process is very important. From the inventory, information can be obtained on:

1) location of the most severe nonpoint sources of pollution;
2) the quantity and costs of management practices needed to control the pollution;
3) the staff time needed to design and install these practices; and
4) the condition of the watershed before the start of the project to be compared with the post-project conditions.

When determining the areas to be inventoried, the watershed was divided into eight subwatersheds (see Figure 4). It was then determined that all of the critical lands draining to the mainstem of Turtle Creek within Wisconsin would be inventoried. Six subwatersheds make up this area. Dry Creek and Piscasaw Creek Subwatersheds were not inventoried. The reasons for this were:

1) both creeks have intermittent or very low flow within the state;
2) both creeks drain directly to Illinois and have no impact on the water quality of Turtle Creek;
3) neither stream supports a viable sport fishery
4) there is little or no public use of the creeks.

Because of these reasons it was also determined not to make these areas eligible for state funding of nonpoint source control practices through the watershed program at this time. There would be little, if any, water resource or public benefit from the control of nonpoint source pollution in the Dry Creek and Piscasaw Creek subwatershed.

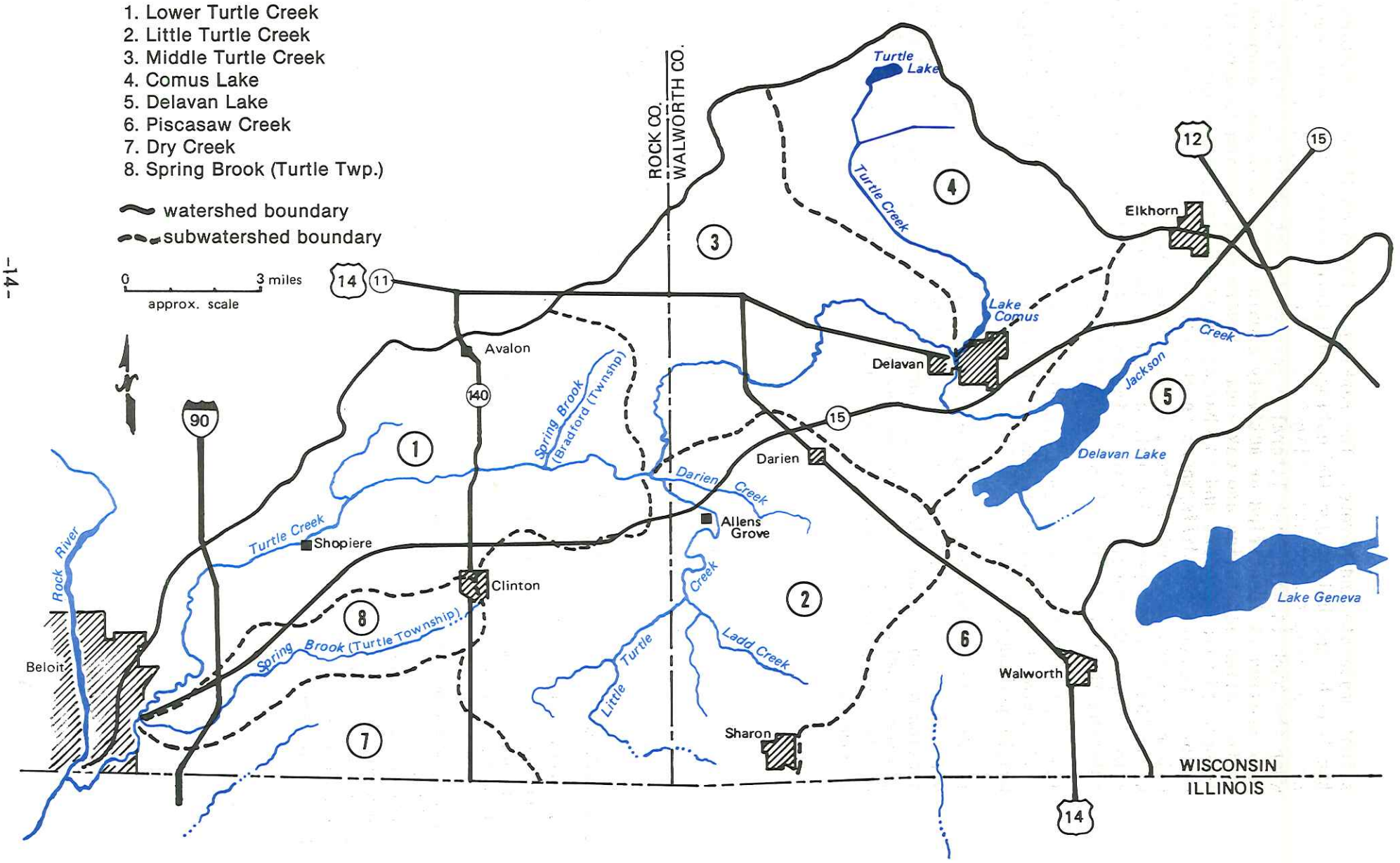
For the other six subwatersheds all the permanent and intermittent streams were located and drawn on air photos. Then all the potential nonpoint sources of pollution within a quarter mile of this channel system were inventoried. The assumption made in using this "corridor" approach is that land activities occurring more than 1/4 mile from a defined channel have very little potential for affecting water quality.

The inventory procedures and results are discussed below.

B. Streambank Erosion

Streams in the watershed were surveyed for streambank erosion. A modification of phase II of the Land Inventory Monitoring (LIM) process which is commonly used by SCS to estimate streambank erosion, was used. This process ranks streambank erosion according to four categories: none,

Figure 4: Subwatersheds of the Turtle Creek Watershed project.



slight, moderate and severe. The ranking is based on three parameters: the length, the height and the estimated lateral recession rate of each area of eroding streambank. Slight bank erosion is defined as occurring when the bank is bare, but lateral recession is not obvious. Moderate bank erosion is identified by actively eroding banks with many exposed roots, fallen vegetation and cave-ins. Severe bank erosion is generally associated with meanders and is characterized by massive washouts and slumps. Because the differences in the slight, moderate, and severe categories are not always clear, table 2 below gives two results - one using the "slight" recession rate and one using the "severe" recession rate. Thus, the results indicate the estimated annual range of sediment entering the waters from streambank erosion.

The results of the LIM process can also be used to estimate the tons of soil coming from eroding streambanks by assigning an estimated average weight per cubic foot of soil loss.

The details of how the streambank erosion sediment loading compares to the sediment loading from land erosion will be discussed in the "Conclusion" section of this plan. It is important to note that the actual volume of sediment coming from a streambank may not be as detrimental to the fish population as the loss of fish habitat and cover from an eroding streambank.

Table 2 Streambank Erosion Inventory Results

Location	length (ft)	Volume (cubic feet/year) using "slight" erosion rate	Volume (cubic feet/year) using "severe" erosion rate	Tons of Sediment/Year using "slight" erosion rate	Tons of Sediment/Year using "severe" erosion rate
Lower Turtle Subwatershed					
Turtle Mainstem	12,000	4,050	13,500	183	610
Springbrook (Bradford)	2,000	375	1,250	17	57
Unnamed Tributaries	9,000	3,037	10,125	137	458
				337	1,125
Springbrook Subwatershed (Turtle Twp)	5,500	1,031	3,437	47	155
Little Turtle Subwatershed (Rock Co)	4,500	1,181	3,937	53	178
Little Turtle Subwatershed (Walworth Co)	17,900	6,712	22,375	304	1,012
Delavan Lake Subwatershed	3,800	660	2,200	29	99
				770	3,236

C. Land Erosion Inventory

All of the 58,380 acres of land that are within one quarter mile of the channel network were inventoried for soil loss potential. On air photos the channel network and 1/4 mile corridor were drawn for the entire watershed. Within the corridor, parcels of lands were inventoried for their soil loss potential using the Universal Soil Loss Equation (USLE). This equation uses six factors: rainfall, soil erodibility, slope (percent), slope length, cropping cover and management, and support practice to calculate an average annual soil loss in tons of soil per acre. The parcels were drawn so that the USLE factors were as uniform as possible within the parcel. Parcel size varied from two to twenty acres. Over 4,000 parcels were delineated in this manner and inventoried.

The soil loss calculation does not determine the amount of soil entering the surface waters. It is only an estimate of the sheet and rill erosion on a given parcel of land. The calculation is not a direct estimate of the amount of soil actually entering the surface waters. It is assumed that lands with high soil loss rates in this corridor are contributing the most sediment to the surface waters. Although the inventory data was collected on all of the lands within the corridor, the calculation of soil loss was done only on the croplands, pastures, woodlots, and vacant grasslands. Soil loss calculations were not done for wetlands, farmsteads, and established residential/commercial areas which (because of their land cover) have very little soil erosion occurring.

The results of the inventory are summarized by subwatersheds on tables 3, 4, 5, and 6. The first table shows the estimated soil loss within each subwatershed and for the entire watershed by land use. This table indicates that nearly all of the soil erosion is occurring on cropland. The cropland category includes both continuous row crop and rotation crop practices. Based on this information, effective control of sediment entering the surface waters can be largely achieved by treating the cropland erosion problems. Sediment from the other land uses appears to be of little concern.

It is not known precisely what level of erosion is required to protect the water quality and fishery within the Turtle Creek watershed. An average target rate of 5 tons/acre/year was chosen as a reasonable rate of erosion to design management practices for. Table 4 gives an indication of how much of the present soil erosion would be controlled in all the lands eroding at 6.0 tons/acre/year or greater were brought down to the level of 5 tons/acre/year. It is believed that achievement of this target value would have a positive impact on the sediment conditions in the streams and lakes of the watersheds. The amount of sediment control that can be expected from this proposal (reduce soil erosion to 5 +/ac/yr) varies from 33% (for Comus Lake Subwatershed) to 63% (for Spring Brook Subwatershed). The reason that Lake Comus watershed has the lowest projected reduction in overall sheet and rill erosion is that it has the highest percent of land that is presently eroding at low levels. In the Spring Brook and Lower Turtle subwatersheds, much more of the soil loss is occurring in the

Table 3 Soil Erosion Inventory Results

Land Use	Lower Turtle			Little Turtle			Middle Turtle			Spring Brook			Delavan Lake			Comus Lake			Entire Watershed		
	Acr.	Av. Soil Loss T/Ac/Yr	Total Soil Loss T/Yr	Acr.	Av. Soil Loss T/Ac/Yr	Total Soil Loss T/Yr	Acr.	Av. Soil Loss T/Ac/Yr	Total Soil Loss T/Yr	Acr.	Av. Soil Loss T/Ac/Yr	Total Soil Loss T/Yr	Acr.	Av. Soil Loss T/Ac/Yr	Total Soil Loss T/Yr	Acr.	Av. Soil Loss T/Ac/Yr	Total Soil Loss T/Yr	Acr.	Av. Soil Loss T/Ac/Yr	Total Soil Loss T/Yr
Cropland	11,892	10.8	128,953	18,148	7.3	133,251	3,454	7.7	26,625	3,558	12.0	42,789	6,692	6.4	43,029	2,655	6.7	17,873	46,399	8.2	392,520
	(84%)		(99%)	(92%)		(100%)	(75%)		(98%)	(86%)		(98%)	(87%)		(98%)	(76%)		(98%)	(86%)		(99%)
Pasture	608	0.2	118	797	0.1	92	119	0.1	10	143	1.2	178	175	0.1	11	460	0.8	364	2,302	0.2	773
	(4%)		(0%)	(4%)		(0%)	(3%)		(0%)	(3%)		(0%)	(2%)		(0%)	(13%)		(2%)	(4%)		(0%)
Woodlot	882	0.2	216	383	0.1	40	372	1.2	436	186	0.11	20	357	1.2	427	381	0.2	82	2,561	0.4	1,221
	(6%)		(0%)	(2%)		(0%)	(8%)		(2%)	(4%)		(0%)	(5%)		(1%)	(11%)		(0%)	(5%)		(0%)
Grazed	78	12.4	943	36	4.0	137	14	1.9	27	71	10.5	743	13	22.4	292	-	-	-	212	10.1	2,142
Woodlot	(1%)		(1%)	(0%)		(0%)	(0%)		(0%)	(2%)		(2%)	(0%)		(1%)				(1%)		(1%)
Vacant	698	0.1	100	360	0.1	43	615	0.2	100	173	0.2	32	420	0.1	58	-	-	-	2,266	0.1	333
Grassland	(5%)		(0%)	(2%)		(0%)	(14%)		(0%)	(4%)		(0%)	(6%)		(0%)				(4%)		(0%)
All Land Uses Combined	14,156	9.2	130,329	19,724	6.8	133,564	4,574	5.9	27,198	4,131	10.6	43,761	7,657	5.7	43,816	3,496	1.5	18,319	53,740*	7.4	396,989

* Since the Universal Soil Loss Equation was not applied to the land uses of: wetlands, farmsteads, and residential/commercial, this figure does not include these lands within the inventoried areas.

Table 4 Potential Soil Loss Reduction in Turtle Creek Watershed

Erosion Rate Cat.	Subwatersheds																				
	Lower Turtle			Little Turtle			Middle Turtle			Spring Brook			Delavan Lake			Comus Lake			Entire Watershed		
T/Ac/Yr	Acres	Total Soil Loss T/Yr	Soil Loss* Red. T/Yr	Acres	Total Soil Loss T/Yr	Soil Loss Red. T/Yr	Acres	Total Soil Loss T/Yr	Soil Loss Red. T/Yr	Acres	Total Soil Loss T/Yr	Soil Loss Red. T/Yr	Acres	Total Soil Loss T/Yr	Soil Loss Red. T/Yr	Acres	Total Soil Loss T/Yr	Soil Loss Red. T/Yr	Acres	Total Soil Loss T/Yr	Soil Loss Red. T/Yr
0.-5.99	6,362	14,049	-0-	12,470	33,465	-0-	3,225	6,885	-0-	1,493	2,821	-0-	5,746	13,181	-0-	2,631	7,975	-0-	31,927	78,377	-0-
	(45%)	(11%)		(63%)	(25%)		(70%)	(25%)		(36%)	(7%)		(75%)	(30%)		(75%)	(43%)		(60%)	(20%)	
6-9.99	2,274	17,953	3,908	2,024	15,719	5,599	301	2,407	902	573	4,505	1,640	243	1,987	772	162	1,053	243	5,577	43,627	15,692
	(16%)	(14%)	(5%)	(10%)	(12%)	(9%)	(7%)	(9%)	(7%)	(14%)	(10%)	(6%)	(3%)	(4%)	(4%)	(5%)	(6%)	(4%)	(10%)	(11%)	(7%)
10-19.99	3,885	53,012	33,584	4,043	53,001	32,786	913	11,736	7,171	1,406	19,877	12,847	1,400	17,931	10,931	658	7,896	4,606	12,305	163,452	101,927
	(27%)	(41%)	(45%)	(21%)	(40%)	(51%)	(20%)	(43%)	(53%)	(34%)	(45%)	(46%)	(18%)	(41%)	(52%)	(19%)	(43%)	(77%)	(23%)	(41%)	(49%)
20-29.99	1,221	28,745	22,640	979	22,603	17,708	39	923	728	547	12,455	9,720	52	1,201	941	-0-	-0-	-0-	2,838	65,927	51,737
	(9%)	(22%)	(30%)	(5%)	(17%)	(28%)	(1%)	(3%)	(5%)	(13%)	(29%)	(35%)	(1%)	(3%)	(4%)	(0%)	(0%)	(0%)	(5%)	(17%)	(25%)
30 & up	414	16,573	14,503	208	8,777	7,737	94	5,248	4,778	112	4,103	3,543	216	9,518	8,438	45	1,395	1,170	1,089	45,615	40,170
	(3%)	(13%)	(20%)	(1%)	(6%)	(12%)	(2%)	(20%)	(35%)	(3%)	(9%)	(13%)	(3%)	(22%)	(40%)	(11%)	(8%)	(19%)	(2%)	(11%)	(19%)
Total	14,156	130,332	74,635 (57%)	19,724	133,565	63,830 (48%)	4,572	27,199	13,579 (50%)	4,131	43,761	27,750 (63%)	7,657	43,818	21,082 (48%)	3,496	18,319	6,019 (33%)	53,736	396,998	209,526 (53%)

*The "Soil Loss Reduction" column represents the amount soil that could be controlled (in tons/year) if all the lands within a subwatershed which are eroding above 5.99 t/ac/yr were brought down to an erosion rate of 5 t/ac/yr.

Table 5. Rock County Erosion Analysis
(all subwatersheds combined)

Present Conditions According to the Inventory*

Erosion Rate Category tons/acre/year	Acres	Total Soil Loss tons/year
0.00 - 5.99	12,541 (46%)	29,351 (12%)
6.99 - 9.99	4,473 (16%)	35,062 (14%)
10.00 - 19.00	7,269 (26%)	99,161 (40%)
20.00 - 29.99	2,646 (10%)	61,327 (24%)
30.00 -	671 (2%)	25,551 (10%)
Totals	27,600*	250,452

*This does not include the acres of wetlands, farmsteads, residential and commercial lands within 1/4 mile of the channel system on which the USLE was not applied.

Table 6. Walworth County Erosion Analysis
(all subwatersheds combined)

Present Conditions According to the Inventory*

Erosion Rate Category tons/acre/year	Acres	Total Soil Loss tons/year
0.00 - 5.99	19,386 (74%)	49,015 (33%)
6.99 - 9.99	1,104 (4%)	8,554 (6%)
10.00 - 19.00	5,036 (19%)	64,295 (44%)
20.00 - 29.99	192 (1%)	4,603 (3%)
30.00 -	418 (2%)	20,064 (14%)
Totals	26,136*	146,531

*This does not include the 6,088 acres of wetlands, farmsteads, residential and commercial lands within 1/4 mile of the channel system on which the USLE was not applied.

higher erosion rate categories. The most important point brought out in table 4 is, that in every subwatershed a small percentage of the land contributes a large percentage of the soil loss. How this data is used to pin point which fields are the most critical for their sediment contribution is explained in the "Implementation Approach" section.

D. Barnyard Runoff Survey

A total of 166 barnyards were assessed for their livestock waste runoff potential. This was the total number of barnyards in operation within the quarter mile "corridor" when the inventory was conducted.

Information on all of the barnyards in the corridor was collected for use in a mathematical model which estimates the phosphorus and chemical oxygen demand load from each barnyard to the stream during a rain storm. Chemical oxygen demand, COD, is a measure of how much of the stream's dissolved oxygen is potentially used up during decomposition of the organic material from the barnyards. The barnyard runoff model, An Evaluation System to Rate Feedlot Pollution Potential (Young, 1982), is used to evaluate the potential pollution problems from animal feedlots.

Information on number and types of animals, size of areas draining through the barnyards, distance of the barnyard from the stream and vegetative cover on the buffer area as well as existing management practices was collected by LCD personnel. At the same time information on the management needs and manure storage needs was recorded for each barnyard.

The estimated phosphorus load was used to rank each barnyard in terms of how critical they are to water quality. In this manner the most important and least important barnyards can be determined. During the analysis of the barnyard inventory results the barnyards for each subwatershed were ranked as high, medium, or low priority. The "high" barnyards are the yards which contribute the most pollutants and probably are the most cost effective to control. The "medium" barnyards are those yards which are less cost effective to control but, when grouped with the high priority barnyards contribute 80% of the total pollutants due to barnyard runoff within a subwatershed. For Comus Lake and Lake Delavan subwatershed the cutoff is 84% because lakes have a greater sensitivity to nutrient pollutants than stream. Those barnyards which collectively contribute less than the 80% (or 84%) level are ranked as low priority. Table 7 shows how many barnyards fall into these categories in each subwatershed and the entire watershed.

Table 7 Barnyard Runoff Inventory Results

Subwatershed	Barnyard Ratings High	Medium	Low	Total Number
Lower Turtle	18	10	23	51
Little Turtle	11	6	42	60
Middle Turtle	4	3	6	13
Springbrook	4	1	3	8
Delavan Lake	5	4	12	21
Comus Lake	2	7	4	13
Total Watershed	44	31	90	166

The use of these ratings to determine eligibility for technical and financial assistance is discussed in the implementation section of this document.

E. Urban Runoff

During the land management survey the acres of land in urban land cover within the corridors were recorded. The land uses that fell into this urban category included residential, commercial, and industrial. The USLE cannot be applied to these land uses.

Past water quality monitoring projects have shown that runoff from urban areas (high density residential, commercial, and industrial) runoff in Wisconsin can have the same range of annual sediment loading to a stream as agricultural parts of the state (Bannerman, et. al 1983). Although these urban areas may not have as much exposed soil as the rural area, there is a much higher volume of water running off the urban areas. The urban runoff is generally lower in sediment concentration, but this extra volume of water makes the annual tons of sediment from an urban area similar to that of agricultural areas.

The area with the highest percent of land in the residential and commercial land use is in the Delavan Lake subwatershed. However, most of this area is in the developed area around Lake Delavan. This is a very low density established residential area and sediment runoff from this land use has been shown to be very low (Bannerman, et. al 1979). It is unlikely that this area around the lake is contributing much sediment to the lake.

In the Middle Turtle subwatershed most of the developed lands are in the city of Delavan. Only nine percent of the subwatershed is in the residential or commercial land use categories. According to a questionnaire completed by the City of Delavan in December of 1982, the city sweeps the downtown streets twice a week and once a month for the remainder of the city streets. Most of the storm drains also have catch basins which are cleaned annually. The combination of these practices minimizes the amount of sediment and nutrients entering the surface waters.

The only other subwatershed with any significant amount of developed area is the Lower Turtle. Most of this area is in the City of Beloit. Only the very lowest portion of Turtle Creek, before it leaves the state, is potentially affected by the urban runoff. The eastern portion of Beloit (which is mainly residential and commercial) is in the Turtle Creek watershed. The downtown and high density residential areas of the city flow to the Rock River. There are several severe streambank erosion sites along Turtle Creek in and near the City of Beloit. Because of the location of this urban area in relation to the watershed, it is not believed that urban runoff is causing water quality impacts within the watershed.

F. Point Sources of Pollution

There are four point sources that discharge process wastewater to the inventoried areas of the watershed. They are the municipal treatment plants of Sharon, Darien, Clinton, and Walworth County Metropolitan Sewerage District (Walco Met). In Wisconsin every point source is regulated as to the quality and quantity of effluent that is allowed to be discharged to the state's surface waters. These limits are established for each point source to protect the water quality of the receiving stream. Each facility is discussed below.

a. Sharon Wastewater Treatment Plant

This plant discharges to a tributary in the headwaters of Little Turtle Creek near the state line. The facility has had a history of not meeting its permitted effluent limits. Currently the plant is being upgraded and is scheduled to be operational in the spring of 1984. It is expected that the new facility will be able to meet its permit limits.

b. Darien Wastewater Treatment Plant

The Darien Wastewater Treatment Plant discharges to Darien Creek which flows into Little Turtle Creek near the Rock-Walworth county line. This plant has been meeting its effluent limits and there is no evidence of water quality impacts from the plant.

c. Walworth County Metropolitan Wastewater Treatment Plant

This facility receives the sewage from the communities of Elkhorn, Walworth County Institutions, Delavan, and the Lake Delavan Sanitary District and discharges the treated wastes to Turtle Creek just below the City of Delavan. The plant became fully operational in June 1982.

There has been some controversy as to whether the new plant with the new effluent limits will still impact the stream's water quality. Water quality monitoring in 1982 showed that although the phosphorus concentrations are generally higher below the plant than above it,

there is no change in the BOD or dissolved oxygen levels in the stream above and below the plant. These monitoring results indicate that there are little or no measurable water quality impacts on Turtle Creek from the Walco Met. plant. The treatment facility has been meeting its permitted effluent limits.

d. Clinton Wastewater Treatment Plant

The Clinton treatment plant discharges to the headwaters of Spring Brook (in Turtle Township, Rock County). Poor water quality had been measured in Spring Brook below the plant in 1980. Since that time, the facility has been upgraded. For the past year it has still violated the permitted limits of BOD, suspended solids, chlorine, ammonia and dissolved oxygen several times. The plant is designed to meet these limits and improvements in the operation and management of the facility have resulted in recently improved effluent quality.

G. Wastewater Sludge Disposal

Wastewater sludge which contains the concentrated waste from municipal sewage treatment is a valuable source of organic material and nutrients, that when applied to the land surface can improve soil productivity. However, when improperly handled wastewater sludge can become a potential source of pollutants. Major water quality concerns include the contamination of waterways through runoff of nutrients, organic material, pathogens and heavy metals.

To control the land application of wastewater sludge the Wisconsin Department of Natural Resources requires all sludge applicators to acquire a permit for each field (State Administrative Code NR 110.26). Under this permit program all sites must meet the minimum requirements outlined in table 8. Figure 5 illustrates the areas in the Turtle Creek watershed on which sludge spreading occurs. As a condition of the permit the applicator must meet the requirements listed below. If these requirements are followed there should be little potential for surface runoff impacting surface waters.

For areas where sludge is incorporated:

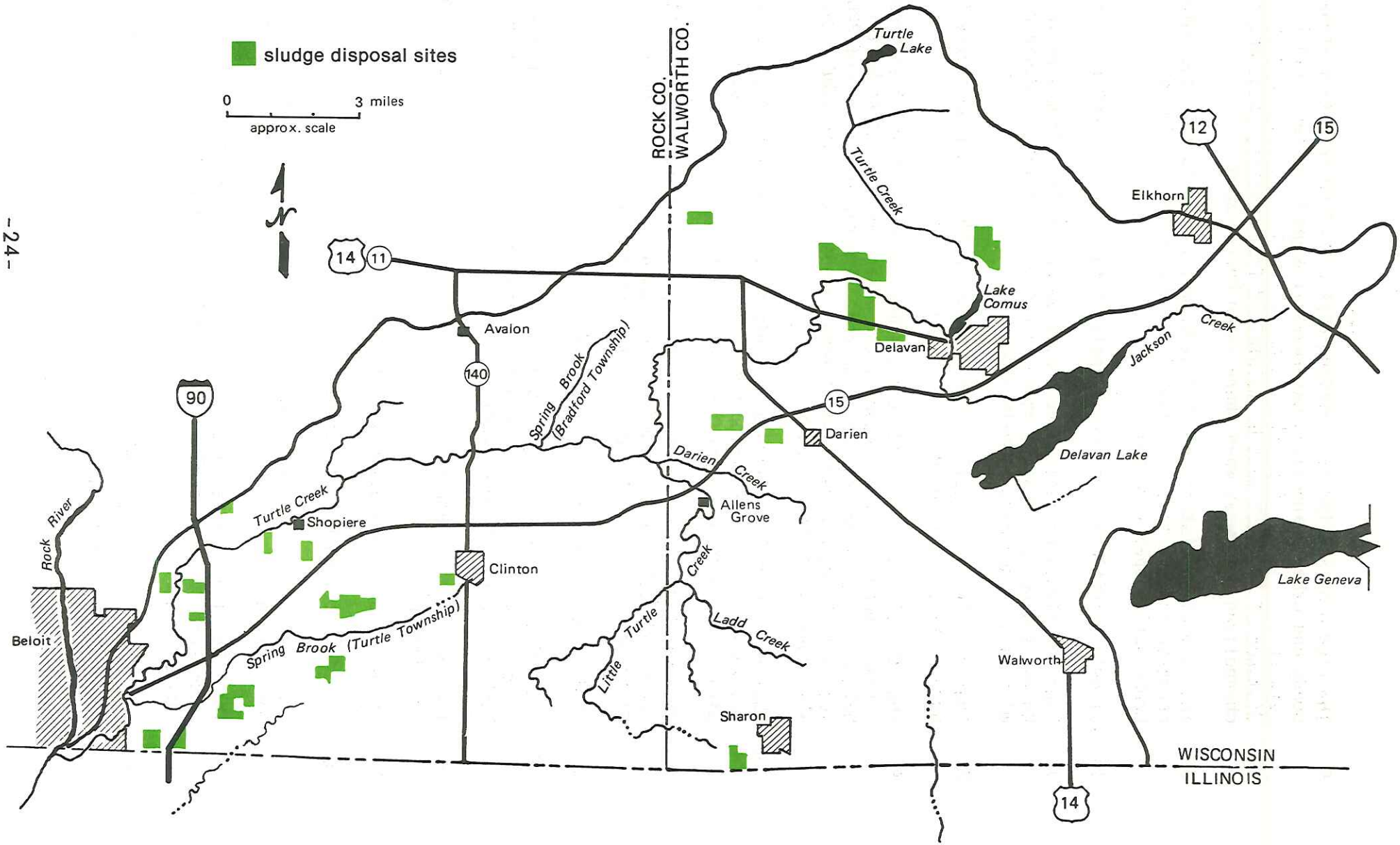
1. The sludge be immediately incorporated with the soil.

2 The sludge be applied at a rate in accordance with the latest application rate as determined on DNR form 3400-54.

3. The sludge be applied at a minimum distance of 200 feet from the nearest residence.

4. The sludge be applied at a minimum distance of 200 feet from the nearest private water supply and 1000 feet from the nearest public water supply well.

Figure 5: Sludge disposal sites in the Turtle Creek Watershed.



5. The sludge be applied at a minimum distance of 50 feet from streams, ponds and other channelized waterways if a grass buffer strip is between the sludge disposal site and the water source. A minimum distance of 100 feet must be maintained from streams, ponds and other channelized waterways when there is no buffer zone.

6. That a minimum distance of 25 feet be maintained to dry runs unless conservation practices are installed in accordance with Soil Conservation specifications.

The following additional conditions apply if the sludge is not incorporated

7. That the sludge be applied at a minimum of 500 feet from a residence unless the house occupants agree to a smaller distance. However the minimum distance must be maintained.

8. That the sludge be applied at a minimum of 200 feet from a private water supply and 1000 feet from a public water supply.

9. That the sludge be applied at a minimum distance of 100 feet from streams, ponds and other channelized waterways if a grass buffer is between the site and the water source. A minimum distance of 200 feet must be maintained from streams, ponds and channelized waterways when there is no buffer zone.

10. That the sludge be applied at a minimum distance of 50 feet of any dry runs unless conservation practices are installed in accordance with Soil Conservation Service specifications.

11. That no sludge be spread in a single application than the soil can accept without causing runoff. The remainder of the allowable nitrogen loading may be applied at a later time.

12. That no raw sludge be surface applied.

13. The DNR also recommends: (1) that there be close monitoring of runoff in areas where sludge is surface applied; and (2) the sludge be broken up with a drag or raking device.

14. That no sludge be applied to soils within the 10-year frequency or less floodplain.

The following conditions apply at all times:

15. That the soil pH be maintained at 6.5 or above.

16. That a competent resident inspector be provided during the time of application.

17. That the sludge be applied in accordance with all other recommendations identified in DNR Technical Bulletin No. 88 not discussed above.

18. That no sludge be applied to soil from December 1 to April 1 due to frozen ground conditions unless permitted be the DNR.

Table 8. Soil Limitations for Sludge Spreading

	[a] Slight	[b] Moderate	[c] Severe
Slope	Less than 6%	6 to 12%	More than 12%
Depth to Water Table	More than 5ft	3 to 5 ft	Less than 3 ft
Flooding & Ponding	None	Rare	Common to frequent
Permeability (in/hr)	0.6 to 0.2	0.2 to 0.6 2.0 to 6.0	Less than 0.2 More than 6.0
Available Water Capacity	More than 6 in	3 to 6 in	Less than 3 in

a. Slight is acceptable for year-round application, except for winter spreading restrictions.

b. Moderate soils are acceptable for restricted periods of application.

c. Severe soils are not acceptable for any sludge spreading, except as determined on a case by case basis.

WATER QUALITY OBJECTIVES

The water quality objectives for the watershed project identify the desired water quality improvements that can be achieved by installing the nonpoint source controls recommended by this plan.

Excess sediment is a major cause of water quality problems in the streams and lakes of the Turtle Creek Watershed. This sediment destroys fish habitat, impairs fish reproduction, feeding, and growth, and interferes with recreational uses of the lakes. The sediment also carries with it nutrients, adding to the algae and weed growths in the lakes, and pesticides which can harm fish populations.

Organic inputs (especially from livestock wastes) are also a cause for water quality problems. The degradation of this organic material in the waters uses up the oxygen required by the fish and other aquatic life. It also is a potential source of ammonia which can be toxic to the aquatic life of a stream. In addition, the organic wastes are another nutrient source adding to the algae and weed problems in the lakes.

Specific water quality and water use objectives for the Turtle Creek Watershed Project are:

1. Improve the smallmouth bass fishery in the mainstem of the Turtle Creek and Little Turtle Creek. Decreasing the instream suspended sediment and the siltation of the stream bed are the main water quality changes needed to meet this objective.

2. Protect and improve the fish habitat and water quality of the tributaries to Turtle Creek. These feeder creeks are important in that they act as nursery areas for the smallmouth bass and they provide forage fish as a food source Again, a reduction in the instream sediment is the most important water quality change in order to achieve this objective.

3. Protect and improve the fish habitat in the creeks which currently support remenant populations of Wisconsin's endangered and threatened fish species. One thing these species have in common is that they all require clear water with gravely bottoms in order to survive an reproduce. Sediment reduction is needed to maintain the habitat required by these species.

4. Retard the eutrophication process occurring in Lake Delavan and Lake Comus.

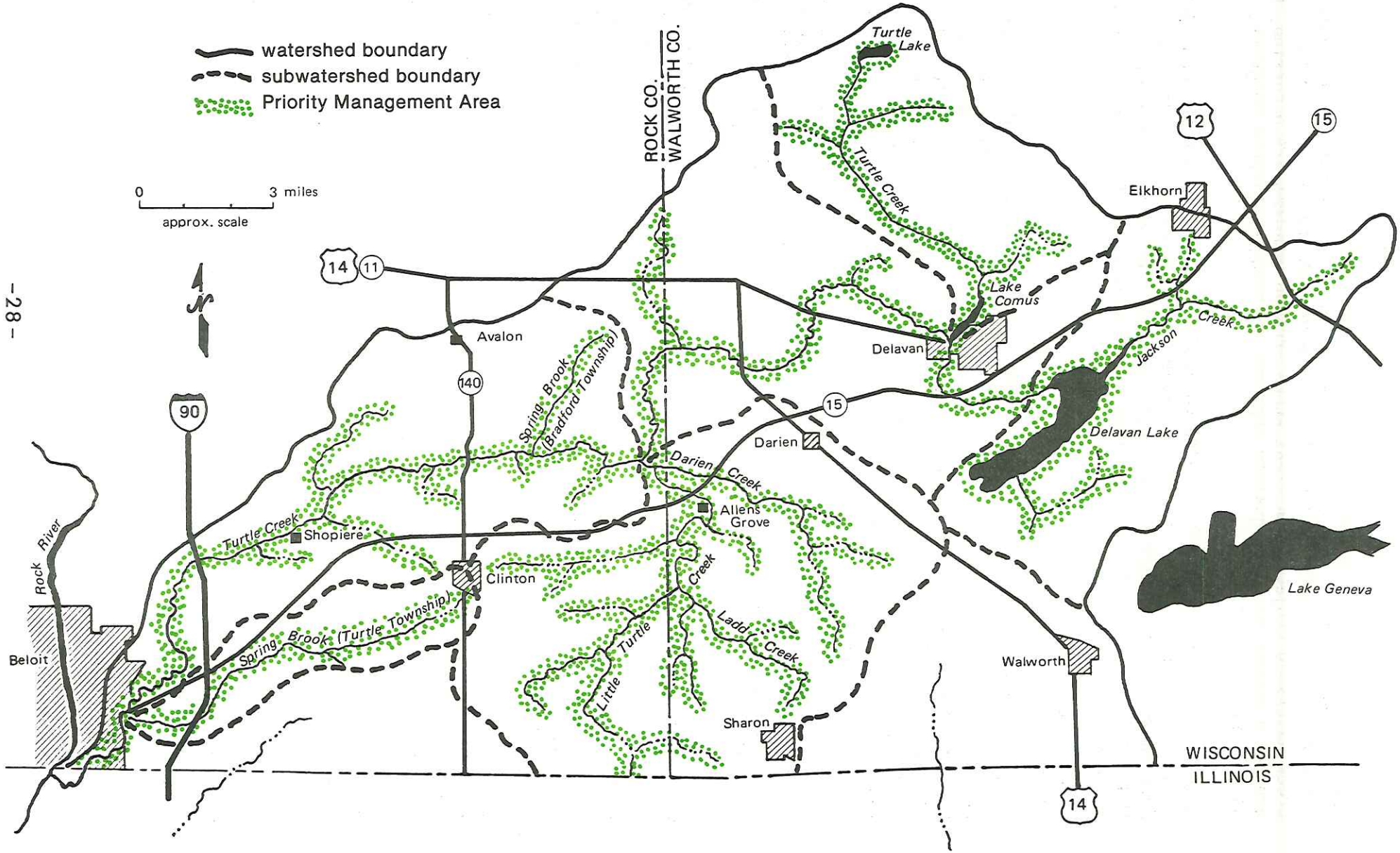
Especially in Lake Delavan, the control of sediment and nutrients will not result in a dramatic change in the lake's algae problems in the near future. However, a reduction in the pollutants entering the lakes now is needed if there is to be any chance of reducing the duration and intensity of the algal booms. It will take many years to reach this stage - after the in lake nutrient levels have been reduced to a point where the lake can no longer support the intense algal blooms. Controlling both the sediment and the nutrient loadings to the lakes will be necessary in order to meet this objective.

PRIORITY MANAGEMENT AREA

The priority. management area (PMA) of the watershed is that part of the land area where pollutant laden runoff has the greatest potential to reach streams and channels, and where application of best management practices will be the most effective at improving water quality. In general, the areas with high soil losses and uncontrolled livestock wastes, near the streams and lakes are the most critical because they contribute to high pollutant loads to the streams and lakes.

In the Turtle Creek Watershed the PMA is defined as a corridor a quarter mile either side of the defined channel network. The channel network is drawn on U.S.G.S. 7.5 minute topographic maps in each county office. The channels were defined by county staff during the inventory phase of the project. If individual channels were overlooked during the inventory, the PMA can be revised upon agreement by both the Counties and the DNR.

Figure 6: Priority Management Area of the Turtle Creek Watershed.



Only landowners in the PMA with significant nonpoint sources are eligible for cost-sharing assistance to install best management practices under the Turtle Creek Watershed Project. In areas where erosion problems are occurring, but are not a source of water quality impacts, existing cost-share programs, such as ACP, may be used.

A general approximation of the area covered by the Priority Management Area is shown on figure 6. Detailed maps showing the lands within the PMA are in the Rock Walworth County Land Conservation offices. These maps should be consulted by any landowner interested in determining if their land is within the PMA.

RECOMMENDATIONS

The recommendations made below are a result of the identified water quality conditions in the watershed, and the inventoried nonpoint sources of pollution. The recommendations are also based on the Areawide Water Quality Management Plans which have been prepared for this area. These plans are: The Rock River Basin Areawide Water Quality Management Plan and SEWRPC Planning Report No. 30, A Regional Water Quality Management Plan for Southeastern Wisconsin - 2000. Both documents contain recommendations for the reduction of pollutants from nonpoint sources within the watershed. The recommendations made below are as stringent or more stringent than those made in the Areawide Water Quality Management Plans. This is because the areawide plans are general documents designed to guide agencies in making decisions on water quality management issues. The watershed plan is a more detailed plan on a smaller area which allows for more specific recommendations.

1. Cropland Erosion - Cropland erosion is the major source of sediment to the watershed's streams and lakes. There are over 21,000 acres of land in the PMA loosing soil at greater than 6 tons/acre/year. Practices should be installed on these lands in order to bring the calculated soil loss down to the target level of an average of 5 tons/acre/year. If this recommendation is carried out on 100 percent of the 21,000 acres mentioned above it would result in approximately a 53 percent reduction in gross soil loss from sheet and rill erosion in the entire project area.

2. Barnyard Runoff Management - The major nonpoint source of organic wastes and bacteria to the watershed's surface waters is livestock waste runoff from barnyards. There are 4 barnyards ranked high and 31 barnyards ranked medium in terms of their potential for causing water quality impacts. The runoff from these barnyards should be controlled so as to minimize the organic loadings to the surface waters. If this recommendation is carried out on all the eligible barnyards (75) in the watershed it would result in approximately an 80 percent reduction in the calculated phosphorus load to the surface waters.

3. Streambank Erosion - Although streambank erosion may not be as large a source of sediment as croplands, degraded streambanks can have a very significant impact on the fish habitat of a stream. Streambank erosion on Turtle Creek near highway 140 and downstream from the interstate highway bridge are especially severe. It is recommended that these sites along with other less severe streambank erosion sites be stabilized.

4. Runoff from Urban and Other Developed Areas - Compared to the rural nonpoint are not having as widespread an impact on water quality. However, there may be local impacts on the water quality from developed areas especially on the lakes of the watershed. In these areas there are certain "house keeping" which individual landowners can do in order to minimize the runoff from their lands. These activities will be explained to landowners in the developed areas as part of the education program described in this plan. In addition to these activities he developed areas will need to be assessed as to their need for critical area stabilization and shoreline stabilization practices by the county technical staff. If needs are identified through this process than it is recommended that these sources be controlled through the installation of the appropriate management practices.

5. Wind Erosion Control - Through the watershed planning process it was determined that wind erosion in the Comus Lake Subwatershed was a potential source of nutrients and sediments to Turtle Creek and Comus Lake. This is because of the unique combination of the organic soils and the exposure of the fields to the wind. Wind erosion controls have not traditionally been considered a best management practice; however in this case it is believed that wind erosion controls are necessary in order to improve the water quality of Comus Lake. Practices for the control of wind erosion have been determined and it is recommended that these practices be installed on the lands within the Comus Lake Subwatershed which have severe wind erosion problems.

6. Other Nonpoint Sources - There are other numerous sources of sediment and nutrients not above (such as gullies) which will be identified by the field staff during their landowner contacts. These sources and related management practice needs will be assessed and controlled through the development of cost share agreements and the subsequent installation of management practices.

BEST MANAGEMENT PRACTICES FOR SURFACE WATER PROTECTION

Best Management Practices (BMPs) are defined as practices, techniques, or measures identified to be the most effective and practical means of eliminating or reducing nonpoint source pollution. The best management practices needed in the Turtle Creek Watershed are listed below. Although some other practices may also be appropriate, only those anticipated to meet the most typical situations in the watershed are included in this list. See Appendix A of this plan for a complete list of BMP's eligible for cost sharing under the Nonpoint Source Program. A more detailed description of the practices, and the conditions under which they are cost-shareable is given in the Department's Administrative Rules NR 120 which is on file at the county offices.

1. Contour Strip Cropping - This practice involves rowing crops on the contour of the land in alternated swaths generally of corn, oats, and hay. Contour strip cropping can be used for field that are currently in a hay row crop rotation with high levels of erosion. This normally applies to dairy operations.

2. Terraces and Diversions - These are earthern berms constructed to:
a) divert excess water to sites where it can be transported safely; and
b) break up slope lengths on cropland in order to reduce soil loss.

3. Conservation Tillage - This practice includes a number of different planting, tilling, and cultivating methods all designed to leave a vegetative residue on the surface of the soil in order to reduce both soil erosion and nutrient/pesti cide runoff from croplands. Regardless of the terminology used to define these various systems all forms of conservation tillage must conform to the requirements in NR 120 and the conditions. described below:

1) insecticides (except for needed mid-season insectides) and phosphorus fertilizers must be applied through injection, in row applied, or incorporated in some manner. They may not be surface applied with no form of incorporation in order to prevent runoff.

2) manure spreading is not allowed without some form of incorporation.

3) if a surface crust forms, which retards water infiltration, the crust must be broken up.

4. Grassed Waterways - A natural or constructed water course shaped, graded, and established in a suitable vegetative cover as needed to prevent erosion by runoff waters. This practice can be used to stabilize small gullies on croplands.

5. Critical Area Stabilization - Planting suitable vegetation, such as trees or permanent grass on highly erosive areas. These areas may include: roadsides, gullies, intermittent stream channels, and steeply sloped lands.

6. Streambank Protection - This practice involves several measures designed to stabilize and protect the banks of streams against erosion. Specifically this practice could include: fencing to control livestock access to streams, rip rap, livestock or machinery stream crossings, and shaping and seeding of eroded banks.

7. Livestock Exclusion from Woodlots - Protection of woodlots, especially those on steep slopes, from livestock grazing by fencing or other means.

8. Barnyard Runoff Management - A system designed to reduce the quantity of manure related pollutants carried by runoff water to streams and lakes. The systems includes: prevention of surface water from running through the livestock concentration area, and the safe distribution or containment of waters leaving the barnyard area.

9. Manure Storage - A structure for the temporary storage of manure. The storage allows the farm operator to time his manure spreading so that runoff to surface waters is minimized.

BEST MANAGEMENT PRACTICE NEEDS AND COSTS

The Best Management Practices needed in the Turtle Creek Watershed are listed on Table 9. The quantities of BMPs needed were estimated based on the assumptions outlined on the page following Table 9. The estimated costs for each unit of practice were made based on the county's experience and the costs of similar practices in other watershed projects. For 100% landowner cooperation, the estimated state cost-share amounts to $3,817,345. Because 100% participation is not very likely due to the voluntary nature of the Wisconsin Nonpoint Source Water Pollution Abatement Program, a participation level of 75% has been used to more accurately estimate the budget needs.

Table 9: Quantity and Costs of Rural Best Management Practice - Both Counties*

Practice	Estimated Quantity	Cost/Unit	Total Cost	Cost Share Rate	Total Cost Share Amount
Cropland					
terraces	489,715 ft	2.50/ft	1,224,287	70%	$977,912
contour farming	3,523 ac	12.00/ac	42,276	50%	2,138
contour strips	3,539 ac	4.00/ac	84,936	50%	42,468
con. tillage	12,878 ac	90.00/ac	1,159,020	50%	579,510
(special practice)					
con. tillage (on rotations)	436 ac	6.00/ac	6,976	50%	3,488
waterways	539 ac (469,577 ft)	1.75/ft	821,759	70%	575,232
diversions	45,956 ft	2.00/ft	91,912	70%	64,338
Grade Stable. Str.	31 un	8,000 ea	48,000	70%	173,600
Woodlot Fencing	23,208 ft	0.75/ft	17,406	70%	12,184
Streambank					
rip rap	20,000 ft	18.50/ft	370,000	70%	259,000
shaping & seeding	31,500 ft	6.00/ft	189,000	70%	132,300
fencing	17,000 ft	0.75/ft	87,750	70%	61,425
livestock crossing	44 un	575.00 ea	25,300	70%	17,710
Critical Area Stabilization	24 ac	450.00/ac	10,800	70%	7,560
Barnlot Runoff Mgmt	76 un	12,000 ea	912,000	70%	638,400
Manure Storage	70 un	10,000 ea	700,000	70% ($6,000 max)	420,000
			$5,911,422		$3,817,345

with 75 participation: $2,863,009**

* This table is to be used to estimate budget needs only; it does not limit the amount of funding that will be available for any one practice. Also, the urban practice needs will be determined on a case-by-case basis during the implementation phase of the project.

** The 75% participation level is not a project goal; it is used for the purpose of budget estimation only.

NOTES ON THE ESTIMATES FOR THE BMP NEEDS IN THE TURTLE CREEK WATERSHED[1]

Terraces: Estimate based on the acres in R-R-R with erosion rates at and above 25 t/ac/yr; plus 33% of the acres in R-R-R between 20-24.99t/ac/yr; used a rate of 200 ft of terrace per acre.

Contour Plowing: Based on the total acres in R-R-R with erosion category of 6-9.99 t/ac/yr

Contour Strips: Based on the acres in rotation with erosion rates at and above 10.00 t/ac/yr

Conservation Tillage: Based on the total acres in R-R-R with erosion rates at and above 10.00 t/ac/yr; also includes acres in rotation with erosion rates at and above 20.00 t/ac/yr

Waterways: Based on the county estimates; several farm plans within each county were used to determine the acres of waterway per total acres of cropland, this ratio was applied to the watershed; a 50 ft wide waterway was used to convert acres to feet.

Structures: Based on county estimates

Woodlot Fencing: Based on the inventory data; average parcel site of grazed woodlot was determined within each county; the perimeter of that size parcel was determined and it was assumed that one half of the perimeter needed fencing.

Streambank Stabilization: Fencing, Shaping & Seeding, and Rip Ran estimates were based on county figures

Critical Area Stabilization: county estimate

Barnlot Runoff Management: Based on inventory data, all lots in the "essential" and the "eligible non-essential" categories.

Manure Storage: Estimate based on the storage needs noted during the inventory process

[1]Table 7 on the next page shows the acres of land and cropping practices which fall into the various erosion categories used for making some of the practice estimates

Table: 10. CROPLAND EROSION RATES IN THE TURTLE CREEK WATERSHED PMA

Cropping Type	Erosion Category (t/ac/yr)	Rock (acres)	Walworth (acres)	Total Watershed in PMA (acres)
Rotation	0 - 5.99	3,009	6,433	9,422
	6 - 9.99	1,595	469	2,064
	10 - 19.99	2,433	201	2,634
	20 - 29.99	237	63	300
	30 & up	122	14	136
Continuous Row Crop	0 - 5.99	6,076	9,368	15,444
	6 - 9.99	2,858	665	3,523
	10 - 19.99	4,757	4,155	8,912
	20 - 24.99	1,732	61	1,793
	25 - 29.9	695	543	1,238
	30 & up	531	404	935
Total		24,045	22,376	46,421
Acres eroding above 6 t/ac/yr.:		14,960	6,575	

PROJECT EVALUATON

The success of the Turtle Creek Watershed Project will depend on the number of critical landowners who choose to participate in the project, as well as the short and long term changes in water quality. Evaluating the success of the project will include consideration of both the landowner participation rate as well as estimated reductions in nonpoint source pollution due to changes in land management and measured changes in water quality.

The following detailed evaluation procedure is a more comprehensive approach to evaluating the success of priority watershed projects than has been included in the watershed plans in the past. Currently, the Department is in the process of reviewing the components of this evaluation approach. Necessary modifications identified as part of the review should be applied to the activities presented as part of this evaluation procedure before they are implemented.

The following activities will be used to evaluate the achievements of the Turtle Creek watershed project:

A. Practice Installations - Maps showing acres under cost-share agreement and units of practices planned and installed, along with tables summarizing total practices installed will be reviewed quarterly and compared with projected goals. The maps should indicate that landowner contacts and practices are directed purposefully into subwatersheds and critical areas according to the implementation schedule identified in the Implementation Strategy.

B. Water Quality Improvements - Quantifiable biological and physical water quality information will be collected at the beginning of implementation of the watershed project and again after all practices have been installed. Also, indirect measurements, as indicated by the number of practice sign-ups, and the calculated reduction in the pollutant loads, will be used at the time of the evaluations. Because much of the evaluation will be based on the calculated reduced pollutant loadings, it will be very important to keep careful records on the condition of a landowner's property before practice installation (based on the inventory and farm visits), and after practice installation. A "landowner tracking" form will be provided to the Counties by the Department for this purpose.

TURTLE CREEK PRIORITY WATERSHED PLAN
PART II: IMPLEMENTATION STRATEGY

INTRODUCTION

The purpose of the Implementation Strategy is to serve as a guide for the efficient implementation of the recommendations which were identified in the Management Plan.

This Implementation Plan identifies:

1. the tasks necessary to implement the recommendations in the Management Plan;

2. the agencies and units of government responsible for carrying out those tasks;

3. the time frame for completion of those tasks; and

4. the type and amount of staff needed.

The general procedure used for achieving the water quality objectives identified in the Management Plan is through the voluntary installation of corrective land management practices to control the critical nonpoint sources. Cost-share funds are provided to contract with landowners to cover a percentage of the costs of and installing the practices. In addition, funds are made available to the implementing agencies to cover the accelerated work effort required to carry out their responsibilities.

AGENCIES INVOLVED

Designated Management Agencies

Designated Management Agencies (DMAs) are those local units of government identified in the areawide water quality plans as having responsibility for soil and water conservation, including implementation of best management practices to improve water quality. For unincorporated areas, the Rock and Walworth County Boards will serve jointly as DMAs, being represented by their respective Land Conservation Committees. The Cities of Beloit, Elkhorn, Delavan and the Villages of Clinton and Sharon are identified DMAs for nonpoint source responsibilities within their respective incorporated limits. Together these units of government are able to provide project cost-share funding to landowners and install practices on public lands.

The Rock County Land Conservation Committee, acting for the Rock County Board, was selected as the Lead Designated Management Agency (LDMA) for the Turtle Creek Watershed Project by the other DMAs involved. The LDMA is responsible for coordinating activities among all other DMAs in the watershed. The LDMA is also contractually and financially responsible to the State of Wisconsin for overall management of the project, and responsible for coordinating activities of all the agencies involved.

These DMAs have been named by the DNR to manage the nonpoint source water pollution abatement project for the Turtle Creek Watershed. The responsibilities for the DMAs, which are defined in the Wisconsin Administrative Rules, NR 120.06, are summarized below:

1. Assist with the development and approval of the priority watershed plan;

2. Recommend revisions to the plan to allow for necessary changes as the project is implemented;

3. Carry out education and information programs about nonpoint source pollution and land management needs;

4. Administer the cost-sharing element of the project including sign-ups, approval, authorization of payments, and record keeping;

5. Certify installation, operation, and maintenance of best management practices;

6. Coordinate and control cost-sharing monies with local contributions;

7. Report to DNR on project progress and recommended project modifications;

8. Screen applications for variances to established cost-sharing rates; and

9. Determine priority for assistance among grant applications.

All of these activities may be carried out by the DMAs or by delegation to other agencies of units of government.

Cooperating Agencies

In addition to the designated management agencies, the Turtle Creek Watershed Project will receive assistance from the other agencies listed below.

1. Soil Conservation Service (SCS) - This agency works through the local Land Conservation Committee for Rock and Walworth Counties. The SCS provides technical assistance for installing conservation practices. The Rock and Walworth County SCS personnel worked with other project personnel to provide inventories of conservation needs, estimated costs of best management practices. They also will aid the county in planning, designing, layout, supervision, and certification of practice installations.

2. University of Wisconsin Extension - County Extension agents will provide expertise in planning, coordinating and conducting public information, education, and participation efforts. UW-Extension will also assist the DMAs in the development of watershed tours, workshops, and newsletters.

3. Agricultural Stabilization and Conservation Services (ASCS) - Under contract to the Rock County Land Conservation Committee, the Rock County ASCS office of the U.S.D.A. will provide assistance for fiscal management of the Turtle Creek Watershed project. In addition, cost-sharing provided by the ongoing ACP program (Agricultural Conservation Program) will be coordinated with the Wisconsin Fund project in the Turtle Creek Watershed.

4. Southeast Wisconsin Regional Planning Commission (SEWRPC) - For the Walworth County portion of the watershed, SEWRPC provided much information during the planning phase of the project including: air photos, maps, nonpoint source pollution conditions, and water quality data. This agency will also review this plan to insure that it complies with the Areawide Water Quality Management Plan.

5. Department of Natural Resources - The Department has overall administrative responsibility for the Wisconsin Nonpoint Source Water Pollution Abatement Program of which the Turtle Creek priority Watershed is part. The DNR is responsible for allocation of funds to the project, for water quality surveys and for evaluation of the watershed plan and project.

IMPLEMENTATION APPROACH

Best Management Practices

Those land management practices which will effectively control the water pollutants from nonpoint sources are called best management practices (BMPs). The practices eligible for the Turtle Creek Watershed project for cost-sharing under the Wisconsin Fund program are listed in Table 11. The cost-sharing rates which were determined by the LCC range from 50% to 70% and fall within the maximum state cost-share rates established for the Nonpoint Source Program in Administrative Rule NR 120.

TABLE 11: Best Management Practices and Maximum Cost-Share Rates

Practice	Maximum Project Cost Sharing Rate
Terrace	70%
Conservation Tillage	50%*
Contour Strip Cropping	50%*
Contour Farming	50%*
Diversions	70%
Waterways	70%
Critical Area Stabilization	70%
Grade Stabilization Structure	70%
Streambank & Shoreline Protection (including livestock crossings)	70%
Settling Basins	70%
Barnyard Runoff Management	70%
Manure Storage Facilities	70% ($6000 max.)
Livestock Exclusions from Woodlots	50%
Street Cleaning	50%
Leaf Collection	50%
Wind Erosion Controls (Comus Lake Subwatershed only)	70%

* A flat rate per acre equal to the cost-share rate applied to an average installation may be used.

The BMPs included in Table 11 are those practices which will help meet the water quality objectives set for the watershed. The specifications used for these practices must meet the Soil Conservation Service requirements concerning technical design. It is possible some practices may be recommended that are not included on the BMP list. Administrative Rule NR 120.10(4)(b) and (c) provides for substitute practices under conditions which are set on a case by case basis.

Appendix A describes the practices and cost-share procedure in further detail.

Cost-Sharing for Best Management Practices

Cost-share funding is available to landowners for a percentage of the costs of installing the best management practices on their land that are necessary to meet the watershed project objectives. Landowners have three years to sign up for cost-share dollars after the formal approval of the watershed plan and Grant Agreement development. The cost-share agreement is a legal contract between the landowner and the appropriate DMA, (either the Rock County or Walworth County Land Conservation Department). The cost-share agreement (see Appendix B for example) includes the number and types of practices that are needed, the estimated installation dates, estimated practive costs, cost-share percentage rate, and estimated cost-share reimbursement amount. The agreements also include practices which are needed to meet water quality objectives but are not cost-sharable under the Nonpoint Source Program (such as crop rotation). Once the agreement is signed, the landowner has five years to install the practices.

The following general policies apply to the cost-share eligibility under the Wisconsin Fund Program:

1. Only BMPs installed at specific locations necessary to improve or protect water quality are eligible.

2. Rural and urban areas are eligible.

3. Cost-sharing is limited to areas of the state with approved areawide water quality management plans.

4. Cost-sharing is limited to priority management areas of priority watersheds.

Cost-sharing is not available for practices which:

1. are normally and routinely used in growing crops;

2. are normally and customarily used in cleaning of streets and roads (increased street cleaning is eligible if it benefits water quality);

3. have drainage of land as the primary objective;

4. installation costs can reasonably be passed on to potential consumers.

It is possible some practices may be "custom" designed and do not fit the established definition for a particular practice. The Nonpoint Source Program will provide for substitute management practices after review and approval by the DNR and the DMAs to make a determination on eligibility for cost-sharing and assign a maximum cost-sharing rate. Design specifications will be recommended by the SCS Technical Guide Work Group.

For certain areas within the project, local, state, or federal permits may be needed in order to install some of the management practices. The land areas most likely to require permits are the zoned wetlands of a county and the shoreline of streams and lakes. These permits are required regardless of whether the activity is associated with the watershed project or not. The Planning and Zoning Office or the Land Conservation Office in each county should be consulted to determine if any permits are required in specific cases.

Implementation Schedule

Landowners have three years to sign up for the priority watershed cost-share funds once the Turtle Creek Watershed Plan has been approved and Wisconsin Fund cost-share dollars have been appropriated to the project. Each eligible landowner identified during the planning process in the Priority Management Area will be contacted by project personnel during the first year of the project. The manner by which the landowners with critical problems were identified is explained below.

During the preparation of this plan, the landowners within the priority management area were ranked as to their need for nonpoint source control practices in cropland erosion and barnyard runoff management. The landowners were ranked as: "eligible-essential", "eligible-nonessential", and "not eligible".

For cropland erosion the first category ("eligible-essential") are those landowners in a subwatershed whose combined lands accounted for 90% of the total erosion in the subwatershed. Within this "eligible-essential" category are two groups: Group I and Group II. Group I is the highest priority landowners for cropland erosion. Together they make un 50% of the subwatershed's total erosion. These landowners should be contacted before the lower categories. Group II landowners account for the next 40% of the subwatershed's total soil loss. The second major category ("eligible-nonessential") includes the landowners whose combined lands make up the bottom 10% of the total soil loss within a subwatershed. The "not eligible" landowners are people whose lands are not eroding above the target value of 5 tons/acre/year. These lands have no need for erosion control practices. Table 12 shows how many landowners are in these categories for both counties.

For barnyard runoff concerns, the three major categories mentioned above correspond with the "high", "medium", and "low" groups described on page 21 of the barnyard runoff inventory discussion. What these categories mean in terms of the installation of best management practices is described below.

Eligible-Essential: These are nonpoint sources which must be controlled in order to achieve any significant effect on the pollutant load in a subwatershed. A landowner with cropland or barnyard needs in this category must agree to control this source in order to have other practices on the land cost-shared. Control of the nonpoint sources in this category would be the county's first priority.

Eligible-Nonessential: Croplands and barnyards in this category are less critical in the effects on water quality. Practices on these lands are eligible for cost sharing dollars but it is not mandatory that a landowner control these sources in order to receive cost sharing for other critical needs on his/her land.

Not Eligible: This category includes croplands and barnlots that are not affecting the water quality. Cost share money is not available for practices on croplands or barnyards in this category.

One of the reasons for establishing these management categories is that it is a policy of the Turtle Creek Watershed Project to control all critical nonpoint sources on a landowner's property. This means that if a landowner is in the "eligible-essential" category for barnyard runoff and in the "eligible-nonessential" category for cropland erosion, the landowner must agree to cost-sharing for control of the barnyard runoff in order to receive cost-sharing for the cropland erosion. Control of nonpoint sources in the "eligible-nonessential" category is optional to the landowner.

TABLE 12: Number of Landowners Eligible for Cropland and Barnyard Management Practices*

	Cropland Erosion			Barnyard Runoff	
	Eligible-Essential Group I	Group II	Eligible-Not Essential	Eligible-Essential	Eligible-Not Essential
Rock Co.	58	127	95	29	17
Walworth Co.	38	90	60	15	14

* There is some overlap among the categories so that the total number of eligible landowners is less than the total of the numbers on the table. There are actually 342 individuals eligible for these practices in the watershed.

For practices other than cropland erosion control and barnyard runoff management (such as streambank stabilization or critical area stabilization), an eligibility determination will be made be a field technician during a site visit.

It is important to note that the ranking of landowners in these categories is based on inventory data that was collected in the spring of 1983. Nonpoint source conditions may change during the project. Changes in these conditions may result in changes in the eligibility of certain landowners for cost sharing of practices.

EDUCATIONAL ACTIVITIES FOR TURTLE CREEK WATERSHED PROJECT

The educational activities for the Turtle Creek Watershed project are designed to put up-to-date information into the hands of all people included in the entire watershed. By the use of various educational methods, we will inform farmers and the general public of the location of the watershed project and how it was developed. Information on the approved conservation practices will increase recognition of how they can reduce erosion and nonpoint source pollution, and result in improved water quality.

The objectives of the educational activities are three-fold: 1) to supply information about the project; 2) to educate landowners about practices that will result in reduced nonpoint source pollution; and 3) to teach the skills and management needed by the landowners to become efficient users of the conservation practices. The educational program shall include such things as listing advantages and disadvantages of various conservation tillage methods, grassed waterways, rotation of crops, streambank protection, manure handling, and other conservation practices which will be available for cost sharing. The education staff will assist farmers with any problems that they encounter with their new farming practices or systems which they voluntarily install.

Field data will be gathered from farmers who have joined programs of conservation tillage. Things such as machinery, herbicide, seed, fuel, labor and insecticide costs will be gathered along with yields and net return per acre. This information will be published and made available to all landowners in the watershed to encourage them to compare their methods of farming with that of conservation tillage.

U.W.-Extension will develop an informational network which will include the use of newspapers, newsletters, fact sheets, meetings, radio and television to promote communication between project personnel and landowners in the watershed. Opportunities for communication between farmers that have entered the project and their neighbors who have not signed up will be identified and used to increase information exchange.

Plans will be developed to use the farmer-frequented businesses in the community to distribute all watershed information. Businesses involved in this effort may include restaurants, corn elevators, mills, implement dealers, and farmer cooperatives.

Newsletters

Newsletters are designed to supply all people in the watershed with the who's, what's, why's, and where's of the Turtle Creek Watershed project. Emphasis will be placed on increasing landowner understanding of land use/water quality relationships and how the ongoing activities in the watershed can protect and improve water quality.

Goals of the newsletters will include: developing cooperation between all the agencies and individuals involved in the project; supplying needed fact sheets to the public; giving updates on the progress of the watershed; introducing conservation management practices to the landowners; developing ongoing communication between all the people in the watershed; and encouraging landowners to become involved in the watershed activities.

The theme throughout all of the newsletters should address the relationship of land use to water quality. The newsletters will be a source of information on the people who are involved with the project and what practices are being used to improve water quality.

The responsibility of the newsletters' development, writing and printing will lie with the Soil Conservation Service, Land Conservation Committee and U.W.-Extension personnel.

Group Meetings

Group meetings will be cooperatively organized and implemented by the Land Conservation Committee and U.W.-Extension. It will be emphasized to all people that this is a total watershed project and that it needs the cooperation of all groups and individuals to be successful in improving water quality.

The informational meeting will explain the following things to the general public: how it was decided to create the project; the history behind the project; to show the need for the project; who is involved in implementing the activities; to explain what nonpoint source pollution is; display examples of approved practices proposed to reduce nonpoint source pollution; to define the area that will be included in the project; to inform the farmers of which practices will be cost-shared and at what levels; and to explain what educational activities will be used in implementing the plan.

Group Meetings For Lake Interests

Meetings will be coordinated with the Delavan Lake and Lake Comus Associations. These meetings will be designed to explain how the watershed activities will affect the different bodies of water that these groups are interested in. Input from these groups will be encouraged and the full understanding of all individuals and groups, including urban as well as rural landowners, will be the goal of these meetings.

Farm Visitations

It is estimated that an average of fifty farm calls will be made per year by U.W.-Extension staff in Rock and Walworth Counties. The purpose of these farm visits will be to educate farmers in the use of new farming skills needed with approved conservation practices. Examples of practices would be: conservation tillage, crop rotation, streambank stabilization, and manure handling systems.

The agents will be helping farmers deal with the problems that can occur when farmers are using new practices that they haven't dealt with before. Examples of this support would be to help farmers select their planting rates, fertilizer rates, equipment to use, and selection and application methods of herbicides.

These visits are also designed to answer questions of farmers who are concerned about signing up because they are not familiar with certain farming practices. The visits will encourage farmer participation in the program by explaining the benefits and management needs related to use of recommended conservation practices on their farms.

Educational Activities for Comus Lake Subwatershed Muck Farmers

Activities shall consist of meeting with all the major muck farmers in the Comus Lake Subwatershed and discuss the need for wind control of soil loss. At this meeting, the recommended types of wind control methods will be discussed. As a result of this meeting, we will propose the types of established methods which the farmers and UWEX personnel believe will be the most effective. Steps will then be taken to establish these practices on the farms.

News Releases

News releases will be used to give short updates on information pertaining to ongoing activities in the watershed. News releases will also highlight landowners who have cooperated in the project. These releases will help to develop a very positive public image toward the watershed project.

They will stress the importance of water quality to all people in the community. These news releases will be the responsibility of U.W.-Extension, Land Conservation Committee personnel and the Soil Conservation Service.

Watershed Slide Program

A slide set will be used to create an awareness of the Turtle Creek Watershed project and to promote approved conservation practices. The slide set will be developed by U.W.-Extension and Land Conservation Committee personnel.

Slides will be taken of conditions before approved practices have been installed, thus showing the need for the practices. Slides will then be taken to show the procedures involved in installing various practices. As a follow-up, slides will be taken after they are completed and will show how they are effectively controlling nonpoint source pollution. These slides will also be an ongoing record of landowners that have cooperated with the project.

The slide set will be used at various meetings and presentations to show what is being done and which landowners are involved.

Tours, Demonstrations and Field Days

These activities will focus on conservation tillage, the use of tillage, and no-till crop production. In addition, approved practices for control of barnyard run-off and streambank stabilization will be emphasized. It is anticipated that these projects will be coordinated by both counties in order to avoid duplication.

It is imperative that farmers see firsthand how approved practices have been installed and how they have worked for other farmers. Personal exchange between farmers is essential to allow farmers who have completed these projects an opportunity to speak to others and explain the procedures that were used and how they helped them control their conservation problems.

The intensive cash cropping practices of row crops which are followed in Rock and Walworth Counties is one reason that almost the entire areas of both counties are potentially eligible for future priority watershed status. Conservation tillage is the major cropland management practice in terms of total acreage which is being recommended for the Turtle Creek Watershed Project.

It is requested that a specialist be employed to coordinate the implementation of an accelerated conservation tillage education/demonstration project in these counties. Specialist responsibilities will include:

1. Developing agreements with implement companies for use of equipment in demonstration;

2. Developing agreements with farmers to plant demonstration fields (plots);

3. Developing and conducting tours of demonstration sites;

4. Making farm visits to assist farmers in evaluating or using conservation tillage;

5. Developing and distributing results from demonstration sites;

6. Developing news releases and participating in radio and TV programs to present information on conservation tillage;

7. Developing an evaluation that will determine if there is a significant difference between landowners within the Turtle Creek Watershed and other areas of the county in:

    a. The level of landowner adoption of conservation,

    b. Farmer recognition of conservation tillage as a practice to protect water quality.

Activities of this specialist will not only increase the level of adoption of conservation tillage in the watershed, but will accelerate the rate of its adoption in other areas of the counties. Thus, the level of nonpoint source pollution will be reduced prior to funding as a priority watershed.

Funds Needed

Salaries for Nonpermanent Staff:

Faculty/Academic Staff	$16,540.00	
Paraprofessional	$---------	
Classified	$---------	
LTE	$---------	
Student Help	$---------	
Total Salary Dollars Requested		$16,540.00
Fringe Benefits		$ 3,704.95
Supply and Expense (including travel)		$ 2,400.00
Capital (integrated departments must indicate for Cooperative Extension use only)		$---------
Total Requested		$22,644.95

Funds for support of this position have been provided by the University of Wisconsin Extension.

Fact Sheets

The U.W.-Extension staff will produce two fact sheets. The first fact sheet will deal with the economics of conservation tillage. Included in the fact sheet will be such things as fuel cost, equipment costs, labor requirements, horsepower needed, etc.

The second fact sheet will give information on conservation tillage in soybeans. The latest information available on management practices and cost will be included.

Both sheets will include economic information from local farmers and information on their views of advantages of conservation tillage in conjunction with reducing soil erosion and improving water quality. This activity will be designed and implemented by U.W.-Extension personnel.

Best Management Practice Meeting

This meeting (one/county) will be used to discuss and define the major problems of the watershed. After the major problems have been defined, the remainder of the meeting will be spent defining and explaining the best management practices that can be used to control and correct the problem.

This meeting will be used to explain all of the steps needed to implement a new management practice. One example of the things done at this meeting will be to explain the various conservation tillage systems. Included in this discussion would be the pros and cons of these systems, rate of fertilizer, rate of seed, types of herbicides, insect control and others.

The practices highlighted at this meeting would be those that were determined to most effectively improve water quality and be the most widely used in the entire project. Primary responsibility for this activity would lie with U.W.-Extension.

TABLE 13: Turtle Creek Watershed Educational Program Cost in Dollars

Product	Cost/Unit	Project Year 1	2	3	4	5	6	7	Total
Newsletters	$460.00	(3) $1,380.00	(4) $1,840.00	(3) $1,380.00	(2) $920.00	(2) $920.00	(1) $460.00	(2) $920.00	(17) $7,820.00
Group Meetings	25.00	(2) 50.00							(2) 50.00
Farm Visitations	470.00/ Year	(50) 470.00	(50) 470.00	(50) 470.00	(50) 470.00	(50) 470.00	(50) 470.00	(50) 470.00	(350) 3,290.00
News Releases	5.00	(20) 100.00	(20) 100.00	(20) 100.00	(20) 100.00	(20) 100.00	(20) 100.00	(20) 100.00	(140) 700.00
Watershed Slide Program	360.00	(1) 360.00							(1) 360.00
Tours, Demonstrations & Field Days	512.40		(2) 1,025.00	(1) 512.50	(1) 512.50				(4) 2,050.00
Best Management Practice Meeting	142.50	(1) 142.50	(1) 142.50						(2) 285.00
Fact Sheets	300.00		(1) 300.00	(1) 300.00					(2) 600.00
Demonstration/ Tour Organizer	$22,644.95								$22,644.95

Educational Activities - Capital Outlay

A vital component of the total education program involves demonstration and research. Demonstration of a concept such as "conservation tillage" on lands owned by cooperating farmers and in U.W.-Extension trials have proven to be a highly effective tool in motivating change. Allowing a landowner/farmer to experiment with a new production practice and/or seeing the final outcome of that practice on his own land is an excellent way to teach the merits of the practice. This also allows the landowner/farmer to evaluate his own management capabilities.

In order to facilitate the demonstration of conservation tillage within the watershed on a large scale basis and allow for expanded conservation tillage research on county owned demonstration centers, it is essential that adequate equipment be made available. The project is requesting $22,000 for the purchase or lease of the following equipment:

1.	conservation tillage planter	$12,000
2.	conservation tillage cultivator	4,000
3.	Soil saver chisel plow	6,000
	TOTAL	$22,000

It is anticipated that this equipment would receive 30% usage by U.W.-Extension agent/specialist(s) in demonstration/research work, and be available for use by priority watershed landowner/farmer(s) the remaining 70%. Landowners would be changed a per acre fee for use of the equipment. These monies would be returned to the priority watershed fund to offset the purchase of this equipment.

Cooperating users would receive guidance and technical assistance in using the equipment from their respective U.W.-Extension Agent and the Conservation Tillage Demonstration Specialist.

This equipment would be made available for landowner/farmer use throughout the duration of the entire Turtle Creek Watershed Program. An agreement will be drafted and signed by both counties and their Extension offices defining where this equipment will be housed, who will maintain and operate it, and how it will be used in each county.

ADMINISTRATIVE AND TECHNICAL ASSISTANCE NEEDS

The program management and technical needs for carrying out the watershed project have been developed by the Rock and Walworth LCC's along with the DNR. A large number of the program management activities involve fiscal management. The Lead DMA will handle most of the project management activities and within the Lead DMA, a project manager has been identified.

Lead DMA Responsibilities

The Lead DMA, Rock County acting through its Land Conservation Committee, will be responsible for the day-to-day operations of the project and coordination with the other DMAs and governmental agencies, groups, organizations and educational institutions. The Lead DMA will maintain complete project records at the Rock County LCD office. These records should include: correspondence, contracts and subcontracts, financial transactions, memoranda of understanding, project status and evaluation reports landowner contacts and landowner cost-share agreements. A system of recording landowner contacts and project progress, including a map of areas under cost-share agreement, will be developed. The map should be of sufficient detail to identify upland, barnyard and streambank practices needed and installed. The watershed project landowner files will be kept separate from LCC cooperator files. For landowners who have signed cost-share agreements, the files need to include: the agreement with any amendments, conservation plan, practice design information, practice certification, progress reports, bills, proofs of payment and other records of financial transactions, and the Landowner Tracking Form.

Walworth County will maintain project files for the landowners in the Walworth County area of the watershed. However, copies of the cost-share agreements, practice certification and progress reports will be mailed to the Rock County LCD office. The Lead DMA will be accountable to the Department of Natural Resources for maintaining complete records.

Project Manager Responsibilities

The Project Manager is identified to serve as a liaison between the state and federal agencies involved in the program and the DMAs. The Rock County Conservationist will act as the project manager and will be accountable to the DMAs. The major responsibilities of the project manager include monitoring contracts between DMAs and other agencies, organizations and individuals throughout project implementation, managing finances, supervising project staff and coordinating technical assistance with information and educational activities. Specifically, the project manager will need to keep track of landowner cost-share encumbrances and Wisconsin Fund grant balances, as well as process the local assistance reimbursement, including Walworth County activities, quarterly through the DNR.

Administrative Procedure

Under project management, the majority of the activities involve handling the different steps of cost-share agreement development and reimbursement. The routine administrative procedure developed by the Lead DMA to handle each of the specific steps and coordinate activities between Walworth and Rock County is given in Table 14.

Briefly, once the landowner has signed a cost-share agreement, the LCC in Walworth or Rock County will be responsible for approving the Turtle Creek Watershed cost-share agreements with landowners within their county. A complete file of all the landowners in the watershed with cost-share agreements will be kept at the Lead DMA office. Each County will additionally be responsible for the design, layout, installation and certification of BMPs in their respective counties.

The landowner will be responsible for contacting the contractor and getting two bids for barnyard work, grade stabilization structures and riprapping projects. Once the practice is completed, the technician certifies that it is completed, with the technician having the responsibility to make sure the installation meets proper standards and specifications.

The Nonpoint Source Program is designed to reimburse the landowner after the practice has been installed, certified by the technician, and the landowner has paid the contractor. However, in the Turtle Creek Watershed Project there are two ways a landowner can be reimbursed: 1) the landowner could pay the full bill, submit the paid bill and receive a check from the ASCS office in the landowner's name, or 2) if the bill is not paid in full, a check would be issued by the ASCS office in both the landowner's and contractor's name for the states' portion of the total costs. In any event, the county can only send in a request for reimbursement to the state on practices which have been paid in full. There will be one watershed checking account for the cost sharing money and landowners in both counties will be reimbursed through the Rock County ASCS office.

Reimbursement of the watershed project by DNR for payment of landowners will occur as needed. Initially an "up front" amount of funding will be made available to the project to establish the watershed checking account. As landowners are reimbursed for completed practices and the balance is drawn down, the Project Manager will forward the appropriate documents to DNR who will in turn reimburse the project. The necessary documentation includes: a Cost-share Calculation and Practice Certification Form (Form #3200-53) for each landowner being reimbursed and a Request for Advance or Reimbursement Form (Form #3400-70) which indicates total prior pay requests. Examples of these forms are included in Appendix B. The Nonpoint Source Grant Agreement covers the cost-share funds available to the watershed project and will be amended to cover increased encumbrances as additional landowners sign cost-share agreements.

TABLE 14: Fiscal Management Route

1. SIGN-UP

   A. Landowner agrees to apply conservation practices, signs cost-share agreement.

   B. Cost-share agreement is developed with landowner by Rock or Walworth County technicians.

2. APPROVAL

   A. Cost-share agreements are approved at the Rock or Walworth County LCC meeting and are signed by the appropriate county LCC Chairman.

   B. Rock County: Project Manager makes 4 copies of cost-share agreement.

      - One to landowner
      - One to project file (original)
      - One to DNR plus available agreements from Walworth County
      - One to ASCS plus available agreements from Walworth County
      - DMA keeps copies of Practice Certification Form (3200-53)

   C. Walworth County: Project coordinator for Walworth County makes 4 copies of cost-share agreement.

      - One copy to landowner
      - One to project file (if needed)
      - Two to Rock plus copies of 3200-53s as they are needed

3. FILING COST-SHARE AGREEMENTS

   A. With Rock County cost-share agreements, Rock County ASCS draws up form 3200-53, "Cost-Share Calculation and Practice Certification." Form 3200-53 goes back to Turtle Watershed file in DMA office for technicians reference during practice installation. One 3200-53 is made out for each years' practice including the practice installation date.

   B. Walworth County LCC draws up 3200-53 from original cost-share agreement and sends copies of 3200-53s to Rock County.

4. PRACTICE INSTALLATION

   A. Walworth or Rock Counties will design, layout and supervise installation and certify practices complete within their respective counties.

   B. Landowner contacts contractor and technician.

C. Practice is installed. Technician completes practice certification on form 3200-53. Technician returns form to Land Conservation Department's Turtle Creek watershed file.

5. REPORTING INSTALLATION

A. Rock County: Landowner reports to ASCS office to turn in project bills and copies of bids (if needed). ASCS sends original of 3200-53 to DMA project manager for LCC approval.

Project Manager: Sends signed copies back to ASCS for payment including signed agreements from Walworth County. Sends originals of Walworth and Rock County 3200-53s to DNR, after check number is received from ASCS, attached to reimbursement form.

B. Walworth County: Landowner reports to LCC office to turn in project bills and copies of bids (if needed). LCC committee approves.

Project Manager: One copy to file (if needed). One copy and original to Rock County.

6. PAYMENT

A. Rock County: When Rock County ASCS receives copies of certified 3200-53s, payment is made to landowners in the appropriate county with a letter of notice of evidence of payment and copy of 3200-53 sent to the county LCC office.

TECHNICAL ASSISTANCE

Technical assistance includes: contacting landowners, assessing site needs, developing cost-sharing agreements, designing best management practices, certifying completing of practices, and inspecting operation and maintenance of the practices. SCS will provide some of the technical assistance along with the Rock and Walworth County LCD's.

The estimated technical assistance needs can be calculated from the predicted best management practice needs (Table 15), and the average amount of time required for each activity, based on the county's experience. The estimated technical assistance needs in hours, at a 75% landowner participation rate is shown on Table 15. At this level of participation, the total hours required for the project over an eight year period is approximately 47,000 hours. Based on past watershed projects, 75% participation is an optimistic prediction. Thus, the hours of technical assistance required at this level should be used as a "maximum predicted need". This participation rate is <u>not</u> a goal of the project; it is only used to estimate budget and staff needs.

TOTAL ESTIMATED WORK EFFORT NEEDED

The total amount of work effort needed to implement the recommendations of the Management Plan include Education, Project Management, Fiscal Management, and Technical Assistance needs, with Technical Assistance comprising the majority of the hours. A Local Assistance Agreement will be developed annually with the lead DMA to cover accelerated effort necessary under these categories of activities to carry out the watershed project.

The costs of the educational activities completed each year are eligible for reimbursement under the Local Assistance Agreement. The activities and subsequent hours are greatest during the first three years of the project and taper off towards the later years. UW-Extension will be responsible for the majority of the educational activities, hours and costs.

While Rock County ASCS has been given the major fiscal management responsibilities, both county LCDs will also have some responsibilities. The number of hours necessary to complete the fiscal management tasks will be dependent on the number of landowners who sign cost-share agreements. As an example, if 257 landowners sign cost-share agreements (75% participation) approximately 1,671 hours of fiscal management time will be needed spread over the eight year project life, most likely peaking in the third, fourth and fifth years of the project. This estimate is based on .5 hour for the development of the paperwork for each cost-share agreement and three reimbursement requests per cost-share agreement at two hours each.

The DMAs, with SCS, will have the majority of the project management and technical assistance responsibilities. The technical assistance and project management hours needed for the Turtle Creek Watershed Project are summarized in Table 15 based on a 75% participation level to be used as an estimate of the actual hours which will be needed.

In addition, a reasonable schedule of how the project management and technical assistance might be divided among the 8 year project life is also given in Figure 7 and Table 16. This is to aid the DMAs in knowing how much and what type of staff will be needed throughout the project to insure successful implementation.

The Counties will be reimbursed for the work done above a certain level. This level is called the project's base level. The determination of this base level takes into account the number of personnel available in the County's offices, the percent of the county within the watershed, and an accelerated work level to account fort the acknowledgement that the Priority Watershed is a critical area of the county. This base level may change throughout the project, however for the example in Figure 7, a base level of 828 hours was used. This figure is an example of how the work could be scheduled. Even at a lower projected level of participation (40%), there will be a need for additional staff to complete the project. The figure shows that at different times during the project, there will be a need for staff with different abilities. In the first three years, the major portion of the work is with landowner contacts and planning practices. After that period, design, installation, and certification of the practices make up the major portion of the effort.

TABLE 15: Estimated Technical Assistance Hours - 75% Participation

Activity	Total Watershed Needs		County Needs	Rate Hrs/Unit	County Hours	Total Watershed Hours
Project Management	2,750 hrs	R:	2,200		2,200	2,750
		W:	550		550	
Landowner Contacts	342	R:	202	6 hrs ea	1,212	2,052
		W:	140		840	
Cost Share Agr. Devel.	257	R:	152	2 hrs ea	304	514
		W:	105		210	
Conservation Planning	16,151 ac	R:	11,220	.25 hrs/ac	2,805	4,038
		W:	4,931		1,233	
Practice Design & Installation/Certification						
Terraces	367,286 ft	R:	270,413	.03 hr/ft	8,112	11,018
		W:	96,873		2,906	
Contour Farming	2,642 ac	R:	2,143	.2 hr/ac	429	529
		W:	499		100	
Contour Strips	2,654 ac	R:	2,094	.4 hr/ac	838	1,062
		W:	560		224	
Conservation Tillage	9,985 ac	R:	6,055	.20 hr/ac	1,210	2,000
		W:	3,930		790	
Waterways	404 ac	R:	222	20 hrs/ac	4,440	8,080
		W:	182		3,640	
Diversion	34,467 ft	R:	29,011	.04 hr/ft	1,160	1,378
		W:	5,456		218	
Grade Stabe. Structure	23	R:	14	60 hrs/ea	840	1,320
		W:	8		480	
Woodlot Fencing	17,406 ft	R:	11,617	.01 hr/ft	120	180
		W:	5,789		60	
Strmbk. Riprap	15,000 ft	R:	11,250	.15 hr/ft	1,687	2,249
		W:	3,750		562	
Strmbk. Shape & Seed	23,625 ft	R:	13,500	.07 hr/ft	945	1,654
		W:	10,125		709	
Strmbk. Fencing	87,750 ft	R:	72,700	.01 hr/ft	727	877
		W:	15,000		150	

TABLE 15: Continued

Activity	Total Watershed Needs		County Needs	Rate Hrs/Unit	County Hours	Total Watershed Hours
Livestock & Machinery Crossing	33	R:	30	8 hr/ea	240	264
		W:	3		24	
Critical Area Stabe.	18 ac	R:	11	20 hr/ac	220	360
		W:	7		140	
Barnlot Runoff Mgmt.	57	R:	35	70 hr ea	2,450	3,990
		W:	22		1,540	
Manure Storage	47	R:	32	60 hr ea	1,920	2,820
		W:	15		900	
						47,135 hrs

Rock County: 31,859 hrs - Walworth County: 15,276

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Figure 7: Schedule of staff needs over the project period.

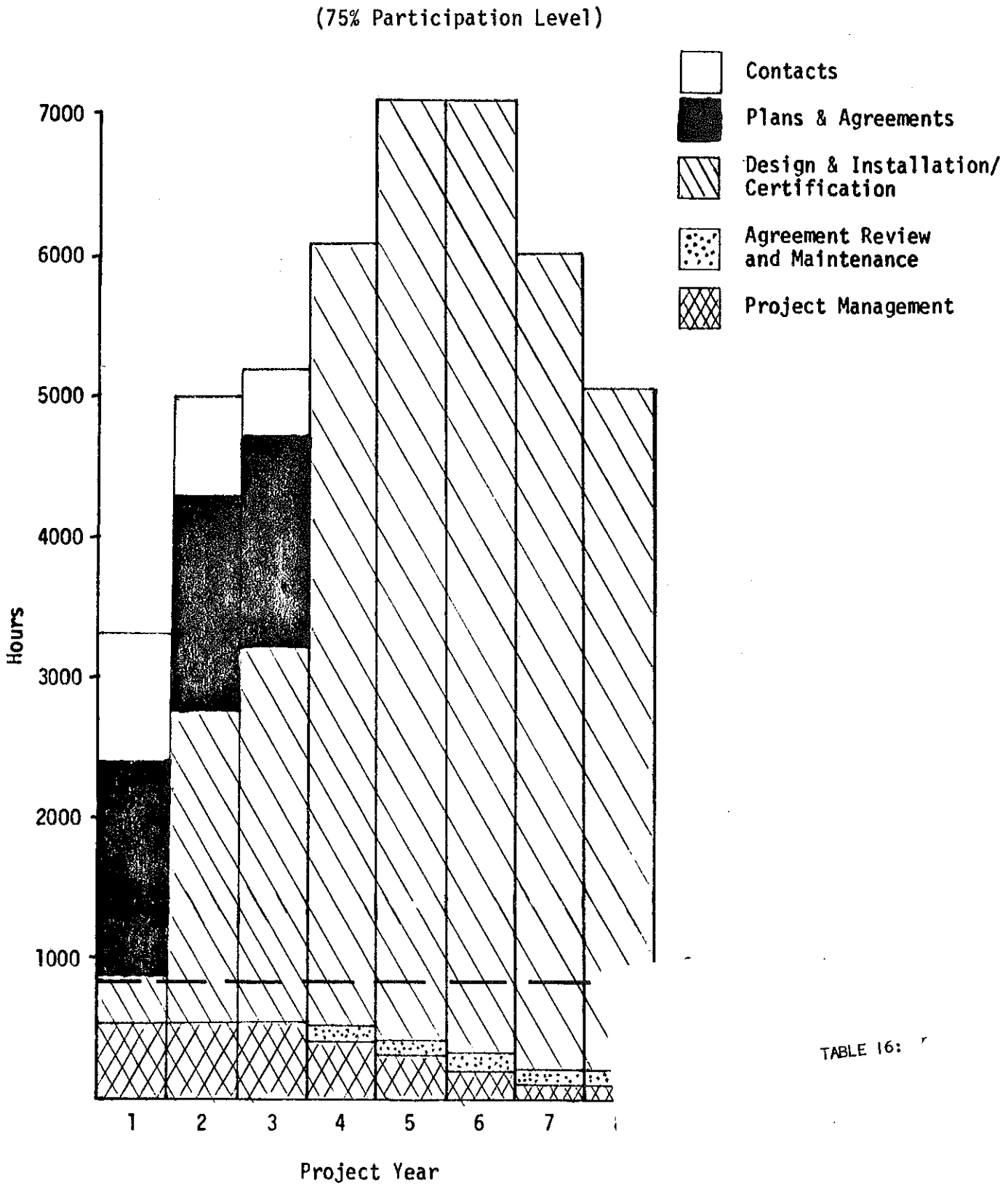

TABLE 16:

Estimated Schedule of Personnel Hours Over the 8 Year Project Life - 75% Participation Level

Activity	Total Project Hrs		Project Yr 1		Project Yr 2		Project Yr 3		Project Yr 4		Project Yr 5		Project Yr 6		Project Yr 7		Project Yr 8	
Landowner Contacts	1212	840	538	372	403	279	271	189	-	-	-	-	-	-	-	-	-	-
	2052 hours		910 hours		682 hours		460 hours		-		-		-		-		-	
Pre-contact Office Inventory	100	70	100	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	170 hours		170 hours		-		-		-		-		-		-		-	
Practice Planning	2802	1236	934	412	934	412	934	412	-	-	-	-	-	-	-	-	-	-
	4038 hours		1346 hours		1346 hours		1346 hours		-		-		-		-		-	
Cost-Share Agreement Dev.	304	210	100	70	1001	70	100	70	-	-	-	-	-	-	-	-	-	-
	514 hours		170 hours		170 hours		174 hours		-		-		-		-		-	
Design & Installation/Cert.	23370	11452	200	200	1520	744	1806	884	3757	1840	4475	2191	4606	2162	3786	1854	3220	1577
	34882 hours		400 hours		2264 hours		2690 hours		5597 hours		6666 hours		6768 hours		5640 hours		4797 hours	
Annual Cost-Share Agrmt. Review	300	210	-	-	50	35	50	35	50	35	50	35	50	35	50	35	-	-
	510 hours		-		85 hours		85 hours		85 hours		85 hours		85 hours		85 hours		-	
Practice Maintenance Check	300	210	-	-	-	-	50	35	50	35	50	35	50	35	50	35	50	35
	510 hours		-		-		85 hours		85 hours		85 hours		85 hours		85 hours		85 hours	
Project Management	2675	575	450	100	450	100	450	100	325	75	250	50	250	50	250	50	250	50
	3250 hours		550 hours		550 hours		550 hours		400 hours		300 hours		300 hours		300 hours		300 hours	
Totals	31063	14803	2322	1224	3457	1640	3665	1725	4182	1985	4825	2311	4956	2282	4136	1974	3520	1622
	45866 hours		3546 hours		5097 hours		5390 hours		6167 hours		7136 hours		7238 hours		6110 hours		5182 hours	

R = Rock County W = Walworth County Project hours are listed below the county's hours.

Current Annual Project Base Level: Rock County 387 hours
Walworth County 439 hours

ASSUMPTIONS MADE IN ESTIMATING THE PROJECT SCHEDULE - 75% PARTICIPATION

Year One

Landowner Contacts
Contact all landowners 1 1/3 times
Rock: 202 @ 2 hrs/contact = 538 hrs
Walworth: 140 @ 2 hrs/contact = 372 hrs — 910

Pre-contact Office Inventory
Organize landowner tracking sheet, air photos, etc.
Rock: 202 @ .5 hrs each = 100 hrs
Walworth: 140 @ .5 hrs each = 70 hrs — 170

Conservation Planning
Plan 1/3 of total acres at expected participation rate
Rock: 75% x 1/3 x 14960 acs. x .25 hrs/ac = 934 hrs
Walworth: 75% x 1/3 x 6575 x .25 hrs/ac = 412 hrs — 1346

Cost Share Agreement Development
Assume 1/3 of total expected participants sign up
Rock: 75% x 1/3 x 202 = 50 @ 2 hrs. ea = 100 hrs
Walworth: 75% x 1/3 x 140 = 35 @ 2 hrs ea = 70 hrs — 170

Design & Installation
Assume: 3000' terrace; 20 ac contour farm; 20 ac contour strips; 40 ac conservation tillage; 1 ac waterway; and 1 barnyard runoff management system per county
Rock = 200 hrs
Walworth = 200 hrs — 400

Cost-Share Agreement Review; BMP Maint. Checks
None — 0

Project Management
Rock: 450 hrs
Walworth: 100 hrs — 550

3546

Year Two

Landowner Contacts
Contact remaining landowners 1 1/3 times
Rock: 152 x 1 1/3 x 2 hrs/contact = 404
Walworth: 105 x 1 1/3 x 2 hrs/contact = 279 — 683

Pre-contact Office Inventory
None — 0

Conservation Planning
Plan 1/3 of total acres at expected participation rate
Rock: 75% x 1/3 x 14960 ac x .25 hr/ac = 934
Walworth: 75% x 1/3 x 6575 ac x .25 hr/ac = 412 — 1346

Year Two (continued)

Cost Share Agreement Development		
Assume 1/3 of total expected participants sign up		
Rock: 75% x 1/3 x 202 = 50 @ 2 hrs ea =	100 hrs	
Walworth: 75% x 1/3 x 140 = 35 @ 2 hrs ea =	70 hrs	170
Design & Installation/Certification of Practices		
Rock: 1520 hrs		
Walworth: 744 hrs		2264
Cost-Share Agreement Review; BMP Maint. Checks		
Assume 1 hr/agreement; Rock = 50 Walworth = 35		85
Project Management		
Rock: 450 hrs		
Walworth: 100 hrs		550
		5097

Year Three

Landowner Contacts		
Contact remaining landowners 1 1/3 times		
Rock: 102 x 1 1/3 x 2 hrs/contact =	271 hrs	
Walworth: 70 x 1 1/3 x 2 hrs/contact =	186 hrs	460
Pre-contact Office Inventory		
None		0
Conservation Planning		
Plan 1/3 of total acres at expected participation rate		
Rock: 75% x 1/3 x 14960 ac x .25 hr/ac =	934 hrs	
Walworth: 75% x 1/3 x 6575 ac x .25 hr/ac =	412 hrs	1346
Cost Share Agreement Development		
Assume 1/3 of total expected participants sign up		
Rock: 75% x 1/3 x 202 = 50 @ 2 hrs ea =	100 hrs	
Walworth: 75% x 1/3 x 140 = 35 @ 2 hrs ea =	70 hrs	170
Design & Installation/Certification of Practices		
Rock: 1806 hrs		
Walworth: 884 hrs		2609
Annual Cost-Share Agreement Review		
Assume 1 hr/agreement		
Rock = 50 hrs		
Walworth = 35 hrs		85

Year Three (continued)

Practice Maintenance Check
Assume 2 checks/agreement signed @ 2 hrs/check; these total hours are spread evenly throughout the remaining 6 yrs of the project
Rock = 50 hrs
Walworth: 35 hrs — 85

Project Management
Rock: 450 hrs
Walworth: 100 hrs — 550

5390

Year Four

For the remainder of the project the estimated required hours are divided up so that each year the total hours is approximately a full or half work year above the project base level. This amount of time above the base level would be reimburseable by the state through the Local Assistance Agreement. The hours above base level during the first three years of the project are also reimburseable by the state.

PROGRESS EVALUATION

Project progress will be evaluated quarterly and reported using the form provided by DNR. Annually, more detailed evaluations will be conducted by DNR and the LCCs.

PLAN REVIEW

At the end of the first and second project years, the practice needs and cost per practice identified in the plan will be reviewed and adjusted as needed. The Turtle Creek Watershed Plan was written with the best information available at the time of its preparation. Situations and conditions may change during the implementation of this plan which may require changes in this document. The plan may be revised at any time upon agreement by both the DMAs and the Department of Natural Resources.

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APPENDIX A

DESCRIPTION OF BEST MANAGEMENT PRACTICES

Cost-sharing for Best Management Practices

I. Introduction

The overall goal of the Wisconsin Nonpoint Source Water Pollution Abatement Program is to make the state's lakes and streams swimmable and fishable. In order to help meet this goal the program offers financial assistance to landowners, operators and municipalities for installing or applying best management practices. Best management practices are defined as:

> practices, techniques or measures which are determined to be most effective, practicable means of preventing or reducing pollutants generated from nonpoint sources to a level compatible with water quality goals. They are identified in the areawide water quality management plans and priority watershed plans.

The purposes of this booklet are to identify: 1. the rural and urban best management practices and the components of those practices eligible for cost-sharing; 2. the state maximum cost-share rates for each eligible practice; 3. the cost-sharing conditions designated management agencies must certify are being met by land users; and 4. the minimum cost-sharing conditions the land user must meet to comply with the cost-sharing agreement. Some best management practices do not require cost-sharing because they are low-cost or no-cost or provide a high degree of benefit to the land user. The practices which will not be cost-shared are listed in Section VI of the booklet. Efforts have been made to make the cost-sharing under this program as compatible as possible with the Agricultural Conservation Program (ACP), administered by the Agricultural Stabilization and Conservation Service. This booklet will be reviewed annually.

II. Cost-share rates

The Department of Natural Resources [redacted] is required to identify a maximum cost-sharing rate for each best management practice. The maximum cost-sharing rate identified in this booklet represents a ceiling. Local designated management agencies may use any rate at or below the ceiling.

Section 144.25 of the Wisconsin Statutes states cost-share payments shall not exceed 50% of the cost of implementing the best management practice except as follows:

1. The maximum rate may be increased to as much as 70% where: a) the practice produces benefits for the applicant but the main benefits to be derived are related to improving offsite water quality and b) limiting the cost-sharing to 50% would place an unreasonable cost burden on applicants.

2. The maximum rate may be increased above 70% for certain practice where: a) the practice produces negligible benefit to the applicant with the benefits to be derived related to improving offsite water quality and b) limiting the cost-sharing payment to 70% would place an unreasonable cost burden on applicants.

In order for a specific practice to receive cost-sharing above 70%, county cost-sharing must be provided. The county cost-sharing may be matched by supplemental state cost-sharing up to 10%. For example, a streambank protection practice could have 80% state cost-sharing if the county provides 10% cost-sharing.

State funds may be the sole source of cost-sharing or may be used together with federal cost-sharing, such as ACP, up to 70%. The remaining costs must be met by county cost-sharing or borne by the landowner. For example, a manure storage facility could receive 70% cost-sharing in state funds or 35% federal funds and 35% state funds. In either case, the cost to the land user is the remaining 30%.

Additional guidance for determining cost-share rates is provided in NR 120 of the Wisconsin Administrative Code. They are:

1. Practices which are very effective for pollution control and which have high capital costs should have higher rates.

2. Practices normally used for crop or livestock production or street sweeping should have lower rates.

Table 1. summarizes an evaluation of the cost-share eligible practices in relation to four major criteria and identifies the state's maximum cost-share rate.

Table 1.

		Effectiveness	Capital Cost	Private On-site Benefit	Relationship to Customary Operating Practices	Maximum State Cost-sharing
C1	Contour Cropping	High	Low	Moderate	Moderate	50%***
C2	Strip Cropping	High	Low	Moderate	Moderate	50%***
C3	Diversions	High	Moderate	Moderate	Low	70%
C4	Terraces	High	Moderate	Moderate	Low	70%
C5	Waterways	High	Moderate	Moderate	Moderate	70%
C6	Minimum Tillage (Conservation Tillage)	High	Low	Moderate	High	50%***
M1	Critical Area Stabilization	High	High	Low	Low	70%*
M2	Grade Stabilization Structure	High	High	Low	Low	70%*
M3	Shoreline Protection	High	High	Low	Low	70%*
M4	Settling Basins	High	High	Low	Low	70%*
L1	Barnyard Runoff Management	High	Moderate	Moderate	Low	70%
L2	Manure Storage Facilities	High	High	Moderate	Moderate	70%**
L3	Livestock Exclusion From Woodlots	High	Low	Low	Moderate	50%
U1	Leaf Collection	High	Low	Low	High	50%
U2	Street Sweeping	Moderate	Low	Low	High	50%
U3	Infiltration System	Moderate to High	Moderate	Low	Low	70%
S1	Special Practice Conservation Tillage					50%
S3	Cover Crop-Wind Erosion					70%
S4	Field Windbreak-Wind Erosion					70%
S5	Stripcropping-Wind Erosion					70%

C: Generally used in cropland but may be applicable in urban areas as well
M: Applicable in both rural and urban areas
L: Livestock
U: Urban

* May be increased to 80% according to the conditions in section II
** A dollar ceiling of $6,000 is set for priority watershed projects

*** A flat rate per acre equal to the cost-share rate applied to an average installation may be used

III. General Policies

1. Only best management practices installed at specific locations necessary to improve or protect water quality are eligible.

2. Rural and urban areas are eligible.

3. Cost-sharing is limited to areas of the state with approved areawide water quality management plans.

4. Cost-sharing is limited to priority management areas in priority watersheds or areas likely to be within a priority management area in other watersheds.

5. Cost-sharing is not available for the following:

   a. mining activities
   b. construction activities* on privately-owned lands (e.g. erosion control practices for construction of subdivisions)
   c. silviculture activities (excluding farm woodlots)
   d. septic systems (small scale onsite human domestic waste disposal systems)
   e. dredging activities
   f. practices installed primarily for flood control purposes

6. When two or more practices are of equal pollution control effectiveness and compatible with the use and management of the land, the maximum cost-share will be based on the least-cost practice. For example, a manure storage tank ($50,000) and a solid stacking pad ($8,000) may provide equal pollution control of manure. While the farmer may desire to install the more expensive manure storage facility in order to enhance his operation, cost-sharing will be based on the least cost alternative.

7. Cost-sharing is not available for practices which:

   a. are normally and routinely used in growing crops

   b. are normally and customarily used in cleaning of streets and roads

   c. have drainage of land as the primary objective

   d. installation costs can reasonably be passed on to potential consumers.

   *This does not include construction of best management practices.

IV. Best Management Practices Eligible for Cost-Sharing

The pages following Table 1 identify the best management practices and their components eligible for cost-sharing and conditions the land user must meet to comply with the cost-sharing agreement. The conditions represent a statewide minimum. Designated management agencies may make the conditions more stringent.

Designated management agencies are encouraged to coordinate local adjustments to cost-share rates and conditions with the County Agricultural Stabilization and Conservation Committees.

C1 Contour Cropping

Maximum cost-share rate 50%
or flat rate per acre $6.00

Definition - Farming sloped land so all cultural operations from seed bed preparation to harvest are done on the contour.

Conditions:

1. Cost-sharing is limited to establishment of a contour farming system and the removal of obstacles, where applicable.
2. All agricultural operations must be performed as nearly as practicable on the contour.
3. To the extent practical, on acreage devoted to rowcrops:
   a) A crop stuble or residue must be left on the surface over the winter;
   b) A winter cover crop must be established; or
   c) Protective tillage operations must be performed.
4. The contour cropping system must be maintained for 5 years after the year of establishment.

Specifications: SCS technical guide specifications 330 and 344

9/79

C2 Strip cropping

Maximum cost-share rate 50%
or flat rate per acre $12.00

Definition: Growing crops, usually on the contour, in alternated strip$ of close growing crops, clean tilled row crops, and grass-legumes.

Conditions:

1. Cost-sharing is limited to establishment of the strip-cropping system and, if necessary, removal of obstacles.
2. All cultural operations must be performed as nearly as practicable on the contour.
3. To the extent practical, on acreage devoted to row crops:
   a) A crop stuble or residue must be left on the surface over the winter;
   b) A winter cover crop must be established; or
   c) Protective tillage operation must be performed.
4. The strip cropping system must be maintained for 10 years after the year of establishment.

Specifications: SCS Technical Guide specifications 585A, 585B, 585C

9/79

C3 Diversions Maximum cost-share rate 70%

Definition: Structure installed to divert water from areas where it is in excess to sites where it can be used or transported safely. Usually the system is a channel with a supporting ridge on the lower side constructed across the slope at a suitable grade.

Conditions:

1. An adequate outlet must exist.
2. Cost-sharing is authorized for:
   a) Diversions, ditches, dikes or subsurface drains. Cost-sharing for subsurface drains is limited to areas on sloping land where the internal water seeps to the surface and causes the land or cover to lose its stability.
   b) Installation of structures such as pipe, underground outlets, or other outlets, if needed, for proper functioning to a ditch or dike, for more even flow, or to protect outlets from erosion.
   c) Necessary leveling and filling to permit installation of an effective system.
   d) Removing obstructions necessary to permit establishment of the practice.
3. Cost-sharing is not authorized for ditches or dikes designed to impound water for later use, or which will be a part of a regular irrigation system.
4. The system must be maintained for a minimum of 15 years following the year of installation.

Specifications: SCS Technical Guide specifications 362, 606, 607, 412

9/79

C4 Terrace Systems Maximum cost-share rate 70%

Definition: A system of ridges and channels constructed across the slope on a non-erosive grade at a suitable spacing.

Conditions:

1. Cost-sharing is authorized for:
   a) Terraces and the necessary leveling and filling to permit installation of an effective system.
   b) Removal of obstructions necessary to permit installation of an effective system.
   c) Materials and installation of underground pipe outlets and other mechanical outlets.
   d) Converting the present system to a new system only if the present system is not serving its intended conservation purpose. Cost-sharing will not be authorized if the sole purpose of the conversion is to accommodate changes in cropping patterns or equipment used by the farmer.
2. A protective outlet or waterway is required.
3. The system shall be maintained for a minimum of 20 years following the year of installation.

Specifications: SCS Technical Guide specifications 412, 600 and 606

9/79

C5 Waterways

Maximum cost-share rate 70%

Definition: A natural or constructed watercourse shaped, graded and established in suitable cover as needed to prevent erosion by runoff waters.

Conditions:

1. Cost-sharing is authorized for site preparation, grading, shaping, filling, and establishing permanent vegetative cover. Cost-sharing is also authorized for subsurface drains necessary for proper functioning of the waterway.

2. The cover may consist of sod-forming grasses, legumes, mixtures of grasses and legumes or other types of vegetative cover that will provide the needed protection from erosion.

3. Close-sown small grains, annuals or mulching may be used for temporary protection if followed by eligible permanent vegetative cover established by seeding or natural revegetation.

4. The practice shall be maintained for a minimum of 10 years following the year of installation.

Specifications: SCS Technical Guide specifications 342, 412, 484, and 606

9/79

C6 Minimum tillage system (Conservation tillage)

Maximum cost-share rate 50%
or flat rate per acre $8.00

Definition: Tillage practices which disturb and roughen the entire soil surface but not to the extent of mold board tillage systems. Some vegetative residue must remain on the surface.

Conditions:

1. Cost-sharing is based on the custom rate for minimum tillage plowing for a single year.

2. Cost-sharing is not authorized where the farmer has already adopted a satisfactory tillage system.

3. Cost-sharing for this practice will not be approved for a person more than once.

4. The land involved must be protected by crop residue, temporary cover, or other permitted management methods to the extent practical from harvest until the next planting.

5. Eligible tillage operations include:

   a) Chisel plowing with other limited operations,

   b) Plow-plant, or

   c) Light tillage without plowing.

6. On sloping land all tillage operations must be performed as nearly as practicable on the contour or parallel to terraces.

7. The system must be maintained for a minimum of 5 years following the initial year.

Specifications: SCS Technical Guide specification ~~478~~ 329

9/79

L1 Barnyard Runoff Management

Maximum cost-share rate 70%

Definition: Using structural practices such as gutters, downspouts and diversions to intercept and redirect surface runoff around the barnyard, feeding area or farmstead, and/or to collect, convey and temporarily store runoff from the barnyard, feeding area or farmstead.

Conditions:

1. Cost-sharing is authorized for:

   a) Diversions, gutters, downspouts, collection basins, infiltration areas, waterway outlet structures, piping and land shaping needed to manage runoff from areas where livestock manure accumulates.

   b) Measures needed for the establishment of perennial grasses, including fertilizers and other minerals.

   c) Permanent fencing.

2. The practice must be maintained for a minimum of 15 years following the year of installation.

Specifications: SCS Technical Guide specifications 312, 342, 362, 382, 412, 425 and 606.

9/79

L2 Manure Storage Facilities

Maximum cost-share rate 70% up to a maximum of $6,000.00

Definition: A structure for temporary storage of manure.

Conditions:

1. Cost-sharing is authorized for:

   a. Aerobic or anaerobic lagoons, liquid manure tanks and solid manure stacking facilities and equipment necessary for transporting manure to the storage facility required as part of a manure management plan.

2. Cost-sharing is not authorized for:

   a. Operations where manure can be spread on location which are nearly flat land or which do not drain to surface waters.

   b. Portable pumps and other portable equipment;

   c. Buildings or modifications to buildings;

   d. Equipment for spreading or incorporating manure; and

   e. That portion of the facility installed under or attached to buildings serving as part of the building or its foundation.

3. Storage facility must have a minimum of 180-day storage capacity.

4. Runoff from solid manure stacking facilities must be controlled.

5. Manure must not be spread when the ground is frozen or saturated.

6. Manure must be incorporated into the soil as soon as practicable after spreading.

7. Lagoons must be constructed to assure sealing of the bottom and sides in order to prevent contamination of wells and groundwater.

8. The practice must be maintained for a minimum of 20 years following the year of installation.

Specifications: SCS Technical Guide specifications 313, 425 and 359

9/79

L3 Livestock Exclusion from Woodlots* Maximum cost-share rate 70%

Definition: Protection of woodlots from livestock grazing by fencing or other means.

Conditions:

1. Cost-sharing is authorized for permanent fencing.
2. Livestock must be excluded from the woodlot.
3. The practice must be maintained for a minimum of 20 years following the year of installation.

Specifications: SCS Technical Guide specifications 382, 472.

* Livestock exclusion from streambanks is included as part of shoreline protection.

9/79

M1 Critical Area Stabilization Maximum cost-share rate 70%

Definition: Planting suitable vegetation on highly erodable areas (e.g. gulleys, roadsides, construction activities on public lands).

1. Cost-sharing is authorized for:

   a) Permanent fencing to protect the site.

   b) Planting trees, shrubs, perennial grass cover.

   c) For shaping and smoothing prior to the installation of protective structures or plantings.

2. The practice must be maintained for a mimum of 25 years after the year of installation.

Specifications: SCS Technical Guide specifications 342, 472, 484, 512 and 612.

9/79

M2 Grade Stabilization Structures Maximum cost-share rate 70%

Definition: A structure used to reduce the grade in a channel in order to protect the channel from erosion or to to prevent the formation or advance of gullies.

Conditions:

1. Cost-sharing is authorized for:

   a) Channel linings, chutes, drop spillways, and pipe drops to discharge excess water.

   b) Fencing and vegetative cover (including mulching needed to protect the structure) and for leveling and filling to permit the installation of the structure.

2. The structure shall be maintained for a minimum of 25 years following the year of installation.

Specifications: SCS Technical Guide specifications 402, 350, 382, 410, 425 and 468.

9/79

M3 Shoreline Protection (Streambank Protection) Maximum cost-share rate 70%

Definition: Stabilizing and protecting banks of streams and lakes against erosion.

Conditions:

1. Cost-sharing is authorized:

   a) For permanent fencing to protect banks from damage by domestic livestock.

   b) For planting trees, shrubs, perennial grass cover as filter strips or buffer zones along banks.

   c) To limit livestock access to water.

   d) To install livestock and machinery crossings that will minimize disturbance of the stream channel and banks.

   e) For placement of riprap and other materials on the bank when other practices are not practical.

   f) For shaping and smoothing banks prior to the installation of protective structures or plantings.

2. Livestock must be excluded from the sloped and planted area.

3. The practice shall be maintained for a minimum of 10 years following the calendar year of installation.

Specifications: SCS Technical guide specifications 326, 382, 580 and 342

9/79

M4 Settling Basin Maximum cost-share rate 70%

Definition: An impoundment created to retain sediment and other pollutants carried by runoff waters.

Conditions:

1. Cost-sharing is authorized:

   a) For detention or retention structures, such as erosion control dams (excluding water storage type dams), desilting reservoirs, sediment basins, debris basins, or similar structures.

   b) For channel linings, chutes, drop spillways, and pipe drops that dispose of excess water.

   c) For fencing and vegetative cover (including mulching needed to protect the structure) and for leveling and filling to permit the installation of the structure.

2. Cost-sharing is not authorized for structures with a primary purpose of flood control or creation of a permanent pool.

3. The structure must be maintained for a minimum of 25 years following the year of installation.

Specifications: SCS Technical Guide specifications 402, 350, 382, 410, 425 and 468

9/79

U1 Leaf collection

Maximum cost-share rate 50%

Definition: Collection or management of leaves, seeds, grass clippings and other vegetative matter in order to prevent accumulation in gutters and leaching of nutrients.

Conditions:

1. Cost-sharing is authorized for equipment (or prorated portion of time that equipment is used) or manpower required to increase the frequency and/or efficiency of vegetative matter collection for a one-year period.

2. Cost-sharing for this practice will not be approved for a municipality more than once.

3. The practice must be maintained for a minimum of 5 years after the initial year.

9/79

U2 Street sweeping

Maximum cost-share rate 50 %

Definition: Mechanical street sweeping to remove vegetative matter, debris and particulates from gutters.

Conditions:

1. Cost-sharing is authorized for equipment (or prorated portion of time that equipment is used) and manpower required to increase street sweeping efficiency or frequency to more than once every two weeks during the period of April 1 to November 1 for a one-year period.

2. Cost-sharing for this practice will not be approved for a municipality more than once.

3. The practice must be maintained for a minimum of 5 years after the initial year.

9/79

U3 Infiltration systems

Maximum cost-share rate 70%

Definition: Structures such as dutch drains, porous pavement, lattice blocks and dry wells which increase infiltration and reduce runoff from impervious surfaces.

Conditions:

1. Cost-sharing is authorized for:

   a) excavation, grading and shaping;

   b) construction materials and

   c) installation of materials

2. Cost-sharing is not authorized for the portion of the total costs normally associated with conventional systems (i.e. costs associated with conventional paving of parking lots or roadways is not considered as an eligible cost).

3. The practice must be maintained for a minimum of 10 years after the year of installation.

9/79

V. Substitute Practices

The Wisconsin Nonpoint Source Water Pollution Abatement Program allows for substitute management practices. Substitute management practices are simply innovative or rarely used - yet effective and practicable management practices-not identified as best management practices in areawide water quality management plans. They may be eligible for cost-sharing.

Substitute management practices must be reviewed and approved by the designated management agency and the Board of Soil and Water Conservation Districts. The Department of Natural Resources will identify whether the practice is eligible for cost-sharing and assign a maximum cost-sharing rate.

SCS Technical Guide standards and specifications will be used where available. If standards and specifications are not available, the SCS Technical Guide work group will review the request and recommend design criteria.

VI. Best Management Practices not Eligible for Cost-sharing

The following best management practices are not eligible for cost-sharing. All are very effective practices. However, they are either low-cost,no-cost or high benefit to the land user. Their use should be encouraged.

Cultural Management - Proper timing, location, and intensity of cropping operations from seedbed preparation to harvest to reduce nonpoint source pollution while achieving optimum production. Spring plowing as opposed to fall plowing is an example of a type of cultural management prevalent in Wisconsin.

Facility Location - An alternative pollution control measure for barnyards, feedlots, and supporting activities is properly locating the facility.

Fertilizer and Irrigation Water Management - The correct application of fertilizers to reduce their potential as a pollutant. This will involve the proper timing and placement of fertilizer applications and using the proper type and quantities for the crops being grown. While excessive fertilizer applications can be detrimental to water quality, soils low in fertility are often more subject to erosion because of reduced ground cover. Fertilizer management is most critical in irrigated areas where proper coordination of fertilizer application with irrigation activities is essential.

Livestock Management - To prevent damages from overgrazing. This can involve rotational grazing, measures to promote uniform grazing, and delayed or deferred grazing to allow plant growth. Livestock management is also applicable in barnyards and feedlots for animal waste control.

Pesticide Management - The proper timing, placement, and quantities of pesticides to prevent degradation of water quality. Also included are proper container disposal and proper clean-up methods.

Waste Disposal Management - The proper timing, rate, and location of animal waste disposal to prevent discharge of organic wastes and nutrients into receiving waters. Wastes would include manure and collected barnyard runoff.

Winter Cover Crop - A crop of close-growing grasses, legumes, or small grain used to control erosion during periods when the major crops do not furnish adequate cover. In Wisconsin these crops are applicable on sloping land where corn is removed for silage, soybeans harvested, and in orchards. Cover crops are also used following removal of tobacco, potatoes, and canning crops.

Crop Residue Use - Using plant residues to protect the soil during critical erosion periods. This involves leaving plant residues on the surface after harvesting and incorporation into the soil just prior to planting operations. The protection afforded the soil varies with the amount of residues produced and amount remaining on the surface after tillage. Crop residues also conserve moisture and increase infiltration. Crop residues can be a source of organic wastes if subjected to excessive runoff and utlimate discharge into receiving waters. Decay of plant residue makes soluble phosphorus available to runoff.

Crop Rotation - Growing different crops in a regular sequence as part of a planned cropping system to reduce erosion. Crop rotation is routinely used by many landowners in Wisconsin and serves as an example of a management practice that is beneficial to the farmer and reduces pollutant discharge.

Pasture and Hayland Planting - Establishing and reestablishing long-term stands of adapted species of perennial or reseeding forage plants.

S-1 Special or substitute practice - Conservation tillage on croplands planted in row crops year after year. (A separate practice from C-6, Minimum Tillage.)

(a) Description: Tillage and/or planting practices which leave roughened surfaces and substantial amounts of crop residue on the soil surface after crops are planted. Croplands planted in row crops year after year are defined as fields where corn, soybeans or other crops grown in rows are normally grown on that specific field at least four out of five years. The installation period of the practice is considered to be three years. Chisel systems ridge or till-plant systems and disking systems are included under the definition of conservation tillage. "No-till" systems can be used only if conditions which limit runoff of nutrients and pesticides are included. Specific conditions for use of "no-till" systems will be identified in the appropriate Priority Watershed Plan.

(b) Conditions

1. Cost-sharing shall be based on the custom rate for the tillage and planting operations as well as any increased costs needed to establish the practice. The maximum installation costs are identified below.

2. Cost-sharing shall not be authorized where a satisfactory tillage system is currently used, [redacted] or another suitable practice may be installed at a lower cost. Separate and additional cost-sharing for contour cropping is not authorized.

3. The practice must be operational and certified the third year of the installation period. Payments for the first and second years may only be made if the appropriate system is used and appropriate levels of surface cover are achieved. Appropriate systems are defined in section (c).

   For example, if the appropriate system is used and the appropriate level of surface cover and other requirements are achieved the first year, the cost-sharing payment will be made. If requirements are not achieved in the first year, cost-sharing payment will not be made that year. Then if the requirements are achieved in the second year, payments for the first and second year will be made, etc.

4. The practice shall be maintained for a minimum of five years following the third year of the installation period.

5. The designated management agency with the advice of UW-Extension, may approve the use of a moldboard plow or other tillage or cultivation implement not normally part of the minimum tillage system once during the maintenance period, if required to alleviate insect, weed, or disease problems. (This applies to the dormant season, it is not intended as a restriction on the use of cultivation equipment during the growing season.) The above mentioned implements may be used only upon written approval by the designated management agency.

6. Any conservation tillage method used must conform to the following conditions:

   1) Insecticides (except for needed mid-season insecticides) and phosphorus fertilizers must be applied through injection, in row applied, or incorporated in some manner in order to prevent runoff. They may not be surface applied with no form of incorporation.

   2) Manure spreading is not allowed without some form of incorporation.

   3) If a surface crust forms, which retards water infiltration, the crust must be broken up.

(c) Cost-sharing applies to the systems using one primary tillage pass in the fall or spring and one or two passes with a light or secondary tillage equipment prior to planting. The tillage and planting should be on the contour or across slope if it is not practical to till and plant on the contour. Regardless of what conservation tillage method is used, at least 30 percent surface cover should be remaining after planting during a normal year.

Examples of eligible systems are as follows:

1. Chisel plowing in the fall or spring with one or two uses of a secondary tillage implement (light disk, cultivator) before planting. The plowing and planting must be on contour or across slope.

2. Ridge or till-plant systems on the contour or across slope.

3. Disking in the fall of spring with a light disk before planting on the contour or across slope.

4. "No-till" systems with specific conditions for use are identified in a Priority Watershed Plan.

(d) Rates

Year of Installation Period	Installation Cost per Acre	Cost-Share %	Cost-share Rate Per Acre
1	$30	70	$21
2	$30	50	$15
3	$30	30	$ 9
Total	$90	150	$45

(Practice C-6 Minimum Tillage applies for minimum tillage systems using additional passes of tillage equipment prior to planting or minimum tillage used with crop rotations.)

Wind Erosion Control Practices

These practices are unique to the Turtle Creek Watershed Project and apply only to the lands within the Comus Lake Subwatershed which are subject to severe wind erosion.

S-3 Cover Crop - Wind Erosion

(a) Description: A crop of close-growing grasses, legumes, or small grain grown primarily for seasonal protection of the soil from wind erosion. It's purpose is to control wind erosion during periods when the major crops do not furnish adequate cover.

(b) Conditions
1. Cost-sharing is authorized for seed and the seed planting operation
2. A good growth and stand must be maintained until the following spring
3.
4. Cost-sharing is not authorized for:
   a. volunteer stands of vegetation
   b. designated acreage conservation reserve
5. The practice must be maintained for 5 years after the initial year

(c) Rates
1. Cost-sharing will cover 70% of the authorized costs for the first year of installation

(d) Specifications: SCS technical Guide specification #340

S-4 Field Windbreak - Wind Erosion

(a) Description: A strip or belt of trees or shrubs established within or adjacent to a field. It's major purpose will be to reduce wind erosion throughout the year.

(b) Conditions
1. Cost-sharing is authorized for:
   a. Planting trees or shrubs as needed for restoring or establishing field wind preaks
   b. Permanent fences needed to protect the planted area from grazing, excluding boundary road fences.
2. Cost-sharing is not authorized for planting orchard trees or plantings for ornamental purposes.
3. Plantings must be protected from fire and grazing
4. Chemicals used in performing this practice must be federally, state, and locally registered and must be applied strictly in accordance with authorized registered uses, directions on the label, and other federal or state policies and requirements.

5. Wildlife and environmental protection considerations must be given shen designing this practice.
6. The system shall be maintained for a minimum of 10 years following the calendar year of installation.

(c) Rates
1. Cost-sharing will cover 70% of the authorized costs for the first year of installation

(d) Specifications: SCS Technical Guide specifications #'s 382, 392, 650

S-5 Stripcropping - Wind

(a) Description: Growing wind resisting crops in strips alternating with row crops and arranged at angles to offset adverse wind effects on the soil. Includes any perennial herbacous vegetative wind barrier that reduces wind velocities of both leeward and windward flow of air across a land surface.

(b) Conditions
1. Cost-sharing is authorized for fertilizers, eligible seed and seed planting operation
2.
3. a good growth and stand must be maintained for the practice life
4. The practice must be maintained for a minimum of 5 years after the year of installation
5. Cost-sharing is not authorized for the planting of vegetation which is normally used for forage or cash cropping purposes.

(c) Rates
1. Cost-sharing will cover 70% of the authorized costs for the first year of installation

(d) Specifications: SCS Technical Guide specifications #589

APPENDIX B

FORMS USED IN A WATERSHED PROJECT

Nonpoint Source Grant Agreement (Form 3400-67)

This form is used to convey cost-sharing money for the installation of practices from the Department to the Lead Designated Management Agency. It is in effect for the duration of the project. The amount of the grant increases as the amount of money encumbered increases. The grant is signed by the Department of Natural Resources and the Lead Designated Management Agency.

Local Assistance Agreement

The Local Assistance Agreement is signed by the Department and the Lead DMA. This agreement outlines what the reimbursement will be to the project for the additional staff needs. It defines the work which needs to be done by the county to implement the project and what the reimbursement for that work will be. The agreement is usually for one year and is renegotiated each year.

Request for Advance or Reimbursement (Form 3200-54)

The county uses this to request their initial "advance" money for cost-sharing funds or to reimburse their cost-sharing account when they have paid landowners for the installation of practices. When used for reimbursment purposes the form must be accompanied by a contractor's itemized invoice, evidence of payment by the landowner, and a copy of the Practice Certification Form (see below).

Landowner Tracking Sheet (No Form Number)

This form has many uses. It is filled out before a landowner contact is made. It indicates the conditions of an individual's land according to the inventory. After a contact it should show any changes in the land from the inventory data. It is also used to justify any changes in a landowner's eligibility status. Finally, if the landowner signs a cost-share agreement it indicates the changes in nonpoint source conditions due to the agreed upon best management practices.

Cost-Share Agreement (Form 3400-68)

This form is signed by the county and the landowner. It outlines the needed practices, the locations of the practices, the estimated total cost, cost-share rate, and cost-share amount; the scheduled year of installation, and the practice maintenance period. The form also describes the responsibilities of both the landowner and the designed management agency. This is a binding contract betwen the two parties.

Cost-Share Agreement Amendment (Form 3400-68A)

This form is used whenever there is a need to change a cost-share agreement. Examples of changes needing an amendment are deletion or addition of a practice, and a change in the cost of a practice by more than $500.00. This form must be signed by the landowner and the DMA before the change becomes effective.

Cost-Share Calculation and Practice Certification (Form 3200-53)

There are two functions served by this form. It is filled out by the county and sent to the Department when requesting reimbursement for cost-share funds. The first part of the form is simply the calculation for the amount of cost-share money the landowner received and is being requested for reimbursement. The second part is the county's certification that the practices on the form meet the required specifications. This replaces the ACP 247 certification form.

State of Wisconsin
Department of Natural Resources

NONPOINT SOURCE GRANT AGREEMENT
Section 144.25, Wis. Stats.
Form 3400-67 Rev. 5-82

Wisconsin Nonpoint Source Water
Pollution Abatement Program

☒ Priority Watershed Project

☐ Local Priority Project

PART I. Purpose

To set out the conditions and restrictions under which the Wisconsin Department of Natural Resources (Department) will reimburse Lake County, lead designated management agency (DMA), for funds used for the cost-sharing of best management practices (BMP) to control nonpoint sources of water pollution through the Clearwater River Priority Watershed project.

PART II. Grant Administration Data

1. Designated Management Agency/Recipient
Lake County

2. Authorized Representative
Dave Soilsaver

Title
County Conservationist

3. Street or Route
101 Main St

City, State, Zip Code
Anytown Wi 53333

4. Telephone Number (Include Area Code)
(414) 123-5000

5. Grant Number
P001

6. Department District
Southeast District

7. Maximum Grant Amount
$ 100,000

8. Eligible Period for Entering Into Cost-Sharing Agreements
July 1 1984 to June 30, 1987

9. Installation Period
5 Years from the signing of the cost-sharing agreement

10. Grant Period
From July 1, 1984 Through June 30, 1992

11. Eligible Costs
Eligible costs are those costs incurred for the installation of the BMPs listed on line 12 of part II on the sites listed on line 13 of part II. Costs for BMPs whose installation is started before the signing of a cost sharing agreement between the landowner or user and the DMA are not eligible costs. Costs for BMPs which do not meet the specifications and conditions of sec. NR 120.13, Wis. Admin. Code, are not eligible costs.

12. **Eligible Best Management Practices**

Terrace
Conservation Tillage
Contour Strip Cropping
Contour Farming
Diversions
Waterways
Critical Area Stabilization
Grade Stabilization Structure
Shoreline Protection
  Shoreline Fencing
  Rip Rap
  Shaping and Seeding
  Livestock and Machinery Crossing
Settling Basin
Barnyard Runoff Management
Manure Storage Facility
Livestock Exclusion from Woodlot
Street Cleaning

13. **Eligible Sites**

Eligible sites are those areas within the Priority Management Area (as defined in the Clearwater River Priority Watershed Plan) which contribute nonpoint sources of pollutants to the surface waters.

The Department and the DMA, in mutual consideration of the provisions of this document, do hereby agree as follows:

1. This agreement is subject to the provisions of Section 144.25, Wis. Stats.
2. This agreement is subject to the provisions of Chapter NR 120, Wis. Admin. Code.
3. The Department shall reimburse the DMA for a percentage of each eligible cost incurred by the DMA during the grant period listed on line 10 of part II. The amount of each eligible cost to be reimbursed shall be determined in accordance with sec. NR 120.14, Wis. Admin. Code. The total amount reimbursed by the Department shall not exceed the maximum grant amount listed on line 7 of part II. The DMA shall provide the Department with itemized payment requests on forms to be provided by the Department.
4. All amendments to this agreement shall be executed in writing and be mutually agreed upon between the Department and DMA.
5. The DMA shall use the cost-sharing agreement form provided by the Department for all contracts reimbursable through this agreement.
6. The DMA shall document that all best management practices for which reimbursement is requested under this agreement meet the technical specifications and design criteria identified in Section NR 120.10(4), Wis. Admin. Code, and any other conditions set out in this agreement.
7. Quarterly during the grant period, the DMA shall submit a progress report to the Department including the following:
   A. The number of cost-sharing agreements signed during that quarter;
   B. The number of eligible grant recipients who have indicated an interest in entering into a cost-sharing agreement during that quarter, but have not done so;
   C. The amount of funds included in cost-sharing agreements during that quarter;
   D. The number or units of each best management practice included in cost-sharing agreements during that quarter;
   E. The number or units of each best management practice installed during that quarter; and
   F. Other measurements of participation or accomplishment agreed upon by the DMA and the Department.
8. DMA accountability.
   A. Financial management. The DMA is responsible for maintaining a financial management system which shall adequately provide for:
      (1) Accurate, current and complete disclosure of the financial results of each cost-sharing agreement awarded in accordance with generally accepted accounting principles and practices, consistently applied, regardless of the source of funds.
      (2) Records which identify adequately the source and application of funds for grant-supported activities. These records shall contain information pertaining to grant awards and authorizations, obligations, unobligated balances, assets, liabilities, outlays and income.
      (3) Effective control over and accountability for all project funds, property, and other assets.
      (4) Comparison of actual with budgeted amounts for each grant.
      (5) Procedures for determining the eligibility and allocability of costs in accordance with the provisions of Sections NR 120.10 and NR 120.12, Wis. Admin. Code.
      (6) Accounting records which are supported by source documentation.
      (7) Audits to be made by the DMA or at its direction to determine, at a minimum, the fiscal integrity of financial transactions and reports, and the compliance with the terms of the grant agreement. The DMA shall schedule such audits with reasonable frequency, usually annually, but not less frequently than once every 2 years, considering the nature, size and complexity of the activity.
      (8) A systematic method to assure timely and appropriate resolution of audit findings and recommendations.
   B. Records. The following record and audit policies are applicable to this grant and to all cost-sharing agreements awards under this grant.
      (1) The DMA shall maintain books, records, documents, and other evidence and accounting procedures and practices, sufficient to reflect properly:
         (A) The amount, receipt, and disposition by the DMA of all assistance received for the project, including both state assistance and any matching share or cost-sharing; and
         (B) The total costs of the project, including all direct and indirect costs of whatever nature incurred for the performance of the project for which this grant has been awarded. In addition, contractors of DMAs, including contractors for professional services, shall also maintain books, documents, papers, and records which are pertinent to this grant award. The foregoing constitute "records" for the purposes of this section.

(2) The DMA's records and the records of its contractors, including professional services contracts, shall be subject at all reasonable times to inspection, copying, and audit by the Department.

(3) The DMA and contractors of DMAs shall preserve and make their records available to the Department:

(A) Until expiration of 3 years from the date of final settlement, or

(B) For such longer periods, if required by applicable statute or lawful requirement; or

(C) If a grant is terminated completely or partially, the records relating to the work terminated shall be preserved and made available for a period of 3 years from the date of any resulting final termination settlement.

(4) Records which relate to appeals, disputes, litigation on the settlement of claims arising out of the performance of the project for which a grant was awarded, or costs and expenses of the project to which exception has been taken by the Department or any of its duly authorized representatives, shall be retained until any appeals, litigation, claims or exceptions have been finally resolved.

C. Audit.

(1) Preaward or interim audits may be performed on grant applications and awards.

(2) A final audit shall be conducted after the submission of the final payment request. The time of the final audit will be determined by the Department and may be prior or subsequent to final settlement. Any payment made prior to the final audit is subject to adjustment based on the audit. DMAs and subcontractors of DMAs shall preserve and make their records available pursuant to condition 8B of part III of this agreement.

9. This agreement will remain in effect beyond the grant period described in part II, line 10 through the maintenance period for all best management practices cost-shared. During the grant period, either the DMA or the Department may on thirty (30) days written notice, unilaterally and without cause, shorten the grant period of this agreement without liability, except that: (1) the Department shall reimburse the DMA for all eligible costs incurred against cost-sharing agreements signed before the final date of the amended grant period, (2) the DMA annually shall report to the Department as described in condition 7 of part III of this agreement, (3) the DMA shall be accountable to the Department as described in condition 8 of part III of this agreement, and (4) the DMA shall enforce all provisions of all cost-sharing agreements in effect as of the final date of the grant period.

10. In connection with the performance of work under this agreement, the DMA agrees not to discriminate against any employe or applicant for employment because of age, race, religion, color, handicap, sex, physical condition, developmental disability as defined in Section 51.01(5), Wis. Stats., or national origin. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The DMA agrees to post in a conspicuous place available for employes and applicants for employment, notices to be provided by the Department setting forth the provisions of this clause.

11. Disputes regarding quality and quantity may be settled by arbitration in accordance with Chapter 298, Wis. Stats., if the party alleging such a dispute notifies the other party in writing thereof within ten (10) days after the notifying party became aware of, or reasonably could have become aware of, such dispute.

State of Wisconsin
Department of Natural Resources

By Secretary of DNR

Date Signed _____

Authorized Representative of Lead
Designated Management Agency

By County Board Chairman

Date Signed _____

GLOSSARY 0016 (P)

LOCAL ASSISTANCE AGREEMENT FOR
Clearwater River PRIORITY WATERSHED PROJECT

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Lake COUNTY

This agreement is entered into by and between the Wisconsin Department of Natural Resources (hereinafter referred to as the Department) and Lake County acting as the lead designated management agency under section NR 120.02(8), Wisconsin Administrative Code (hereinafter referred to as the County).

I. PURPOSE OF THIS AGREEMENT

The purpose of this agreement is to identify the circumstances under which the Department will reimburse the County for completing tasks, over and above a base level, necessary to implement the Clearwater River Priority Watershed Plan in accordance with the detailed program for implementation developed as part of that plan. Only tasks over and above the base level, consistent with this agreement, are reimbursed by the Department.

II. PROJECT LIAISONS

For Department: John G. Konrad, Chief
Nonpoint Source Section
Bureau of Water Resource Management
Department of Natural Resources
P.O. Box 7921
Madison, WI 53707-7921

For County: Dave Soilsaver

III. DURATION OF AGREEMENT: July 1, 1984 to June 30, 1985

IV. MAXIMUM REIMBURSEMENT AMOUNT: $ 10,000

V. GUARANTEED MINIMUM REIMBURSEMENT AMOUNT: $ 6,000

VI. CONDITIONS:

A. The general conditions for conduct of local assistance activities are those appearing in sections NR 120.50 through NR 120.53 of the Wisconsin Administrative Code.

B. Tasks completed prior to July 1, 1984, are not eligible for reimbursement under this contract.

C. The project base level is determined to be 1,000 hours for the duration of this agreement using the procedure identified in Section NR 120.52(3)(a), Wisconsin Administrative Code based on professional staff levels of the Land Conservation Committee and the Soil Conservation Service.

D. The accelerated task hours are all hours associated with eligible tasks greater than the project base level of hours.

E. All subcontracts shall be submitted to the Department for review prior to signing of the subcontract.

F. Landowner or land user contacts under technical assistance are covered under this agreement only when the lands are within the priority management area identified in the priority watershed plan and are anticipated to have significant nonpoint sources.

G. Conservation plan development is covered under this agreement as follows:

1. For the "most critical" landowners,, as defined in Section VII, conservation planning is eligible for reimbursement independent of a signed cost-share agreement.

OR

2. For all other landowners, conservation planning is eligible for reimbursement only when an agreement is reached with the landowner or land user to install all the necessary best management practices.

H. Design, installation and certification of best management practices is covered under this agreement only for landowners and practices identified as eligible in the Clearwater River Priority Watershed Plan providing:

1. The practices are included in a cost-share agreement (DNR Form 3400-68 or 3400-68A)

OR

2. A written agreement is reached between the County and the landowner or land user to install and maintain the best management practices necessary to control all the critical nonpoint sources on the landowner's/land user's property in accordance with the conditions in NR 120 and the Clearwater River Priority Watershed Plan.

VII. SCOPE

This agreement covers the tasks listed in Tables 1, 2, 3, and 4 provided they are carried out within the priority management area identified in the Clearwater River Priority Watershed Plan and meet the intent of that plan.

For purposes of this agreement, "most critical" landowner is defined in the Clearwater River Priority Watershed Plan to be:

Table 1. Technical Assistance Tasks and Hours Per Task

TASK	AGREED UPON EFFORT PER TASK
1. Contacts	
2. Precontact Review of Landowner Information	(See Section VIII,
3. Cost-Share Agreement Development	Line A.1)
4. Conservation Plan Development for Landowners Other than the "Most Critical" Landowners	
5. Conservation Plan Revisions	
6. Conservation Plan Development for the "Most Critical" Landowners	
7. Design of Best Management Practices	
Contour Cropping	_____ hr/acre
Contour Strips	_____ hr/foot
Diversions	_____ hr/foot
Terraces	_____ hr/acre
Waterways	_____ hr/acre
Minimum Tillage	_____ hr/acre
Critical Area Stabilization	_____ hr/structure
Grade Stabilization Structures	_____ hr/foot
Shoreline Fencing	_____ hr/foot
Shoreline Shaping/Seeding	_____ hr/foot
Shoreline Rip-Rap	_____ hr/crossing
Stream Crossing	_____ hr/site
Barnyard Runoff Control	_____ hr/facility
Manure Storage Facility	_____
Livestock Exclusion from Woodlots	_____
Other (specify)	_____
8. Installation & Certification of Best Management Practices	
Contour Cropping	_____
Contour Strip Cropping	_____
Diversions	_____ hr/foot
Terraces	_____ hr/foot
Waterways	_____ hr/acre
Minimum Tillage	_____ hr/acre

	Critical Area Stabilization	_____ hr/structure
	Grade Stabilization Structures	_____ hr/structure
	Shoreline Fencing	_____ hr/foot
	Shoreline Shaping/Seeding	_____ hr/foot
	Shoreline Rip-rap	_____ hr/foot
	Stream Crossing	_____
	Barnyard Runoff Control	_____ hr/site
	Manure Storage Facility	_____ hr/facility
	Livestock Exclusion from Woodlots	_____
9.	Review of Cost Share Agreement	_____ hr/farm or municipality
10.	Best Management Practice Maintenance Review	_____ hr/farm or municipality

Table 2. Fiscal Management Tasks

TASK	AGREED UPON HOURS PER TASK
Development of cost-sharing agreement file and update of project ledgers	0.5 hour per cost-share agreement
Handling of requests for reimbursement for installed best management practices	2.0 hours per request[1]

(1) A single request shall include all best management practices installed under a cost-share agreement concurrently.

Table 3. Project Management Tasks

TASK	AGREED UPON HOURS PER TASK
Coordination of activities between counties; activities with Department; technical assistance tasks; fiscal management tasks; and educational tasks.	550

Table 4. Education Tasks

TASK	AGREED UPON NUMBER	ESTIMATED DIRECT COSTS
Newsletters	4	#1,800

VIII. REIMBURSEMENT

A. The Department agrees to reimburse the County for completed, eligible tasks for accelerated task hours as follows:

1. For technical assistance, the eligible tasks and agreed upon effort per task are identified in Table 1.

   a. For tasks 1 through 5, Table 1, Section VII, reimbursement shall be based on actual hours for these tasks up to 1500 hours.

   b. For task 6, Table 1, Section VII, reimbursement shall be based on the actual hours for this task up to 750 hours.

2. For fiscal management, the eligible tasks and agreed upon hours per task are identified in Table 2.

3. For project management, the eligible tasks are identified in Table 3. The actual hours incurred in carrying out these tasks up to 550 hours will be eligible for reimbursement plus a maximum of $ 150.00 for costs associated with attending an annual meeting with the Department.

4. For educational activities, the eligible tasks are identified in Table 4. The actual direct costs for printing, postage, contractual editing and layout associated with these tasks up to $ 1800.00 and for actual hours incurred by LCC or SCS staff in carrying out these tasks up to 40 hours.

B. The reimbursement rate for accelerated task hours shall be $12.50 per hour.

C. The guaranteed minimum reimbursement in Section V of this agreement will be made to the County even if the total accelerated task hours actually expended by the County under the agreement is less than 00 hours provided:

1. That 1500 task hours have been spent on tasks 1) through 5) of Table 1, Section VII, and

2. That a minimum of 20 conservation plans for "most critical" landowners [task 6), Table 1, Section VII] have been developed, and

3. That the county has provided .5 additional full time equivalent staff years for the period covered by this agreement through either direct hiring or contracting.

D. Reimbursement shall be requested quarterly within 15 days of the end of the quarter on forms provided by the Department. The quarterly project base level shall be 250 hours. Any quarterly base level not met in a quarter shall be carried over to the next quarter.

IX. MODIFICATIONS OF THE AGREEMENT

A. The Department and County agree that any amendments to this contract shall not be effective unless agreed to by the parties in writing.

B. Either the County or the Department may, on thirty (30) days written notice, unilaterally and without cause, terminate this contract without liability, except that the County shall be paid for services actually rendered by it up to and including the termination date and it shall provide to the Department a report summarizing work products to the date of termination.

X. NONDISCRIMINATION

A. In connection with the performance of work under this contract, the County agrees not to discriminate against any employe or applicant for employment because of age, race, religion, color, handicap, sex, physical condition, developmental disability as defined in Section 51.01(5), Wisconsin Statutes, sexual orientation, or national origin. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Except with respect to sexual orientation, the county further agrees to take affirmative action to ensure equal employment opportunities. The county agrees to post in conspicuous places, available for employes and applicants for employment, notices to be provided by the county setting forth the provisions of the nondiscrimination clause.

B. A written affirmative action plan is required as a condition for the successful performance of the contract. Excluded from this requirement are contractors whose annual work forces amount to less than ten employes. The affirmative action plan shall be submitted to the Department within fifteen (15) working days after the award of the contract.

XI. HOLD HARMLESS CLAUSE

"HOLD-HARMLESS: The Contractor agrees to save, keep harmless, defend and indemnify the State of Wisconsin, Department of Natural Resources and all its officers, employees and agents, against any and all liability claims, costs of whatever kind and nature, for injury to or death of any person or persons, and for loss or damage to any property

(state or other) occurring in connection with or in any way incident to or arising out of the occupancy, use, service, operation or performance of work in connection with this contract or omissions or contractor's employees, agents or representatives."

XII. INDEPENDENT CONTRACTOR

The County is an Independent Contractor for all purposes including Worker's Compensation, and not an employe or agent of the Department.

XIII. AUDIT, ACCESS TO RECORD

The County shall, for a period of three (3) years after completion and acceptance of the project by the Department, maintain books, records, documents and other evidence directly pertinent to performance on grant work under this contract in accordance with generally accepted accounting principles and practices. The County shall also maintain the financial information and data used in the preparation or support of the cost submission in effect on the date of execution of this contract and a copy of the cost summary submitted to the Department. The Department, or any of its duly-authorized representatives, shall have access to such books, records, documents, and other evidence for the purpose of inspection, audit and copying. The County shall provide proper facilities for such access and inspection.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

_____ Secretary of DNR
Date C. D. Besadny, Secretary

_____ County Board Chair
Date Chair
County Board

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

REQUEST FOR ADVANCE OR REIMBURSEMENT
WISCONSIN FUND - NONPOINT SOURCE PROGRAM

SECTION 144.25, WIS. STATS.
FORM 3200-54 5-83

Complete Items 1 through 8 and 13 for all payment requests. See instructions on reverse side for completing Items 9 through 12. Send one copy of this form to:

Wisconsin Department of Natural Resources
Bureau of Finance, Audit Section
Box 7921
Madison, Wisconsin 53707

1. GRANTEE/DMA	2. COUNTY	3. GRANT NO.	4. PAY. REQ. NO.
Lake County	Lake	P 555	1

5. MAIL CHECK TO:

Lake County LCC
101 Main St
Anytown, WI. 53333

6. PERIOD COVERED BY THIS REPORT (MO-DAY-YR):
FROM TO

7. TYPE OF PROJECT
- [X] PRIORITY WATERSHED
- [ ] LOCAL PRIORITY

8. TYPE OF REQUEST
- [X] ADVANCE
- [ ] PARTIAL
- [ ] FINAL

	AMOUNT	LEAVE BLANK DNR USE ONLY
9. Request for Advance Payment		
a. Initial State Grant Amount	$300,000	
b. Advance Payment Requested (Maximum 10% of Above)	30,000	
10. Summary of Payment Requests		
a. Reimbursement Requested This Claim ~~(From Form 4400-47)~~		
b. Total Prior Pay Requests (Including Advance)		
c. Total All Payment Requests to Date		
11. Computation of Maximum Partial Payment		
a. Total Cumulative Grant to Date		
b. Enter 95% of Above Total		
12. Computation of Net Payment Due		
a. Enter 95% of Total Cumulative Grant (Line 11b. Above)		
b. Less: Total Prior Payment Requests (Line 10b. Above)		
c. Net Payment Due (Line 12a. Minus Line 12b.)		
	Amount Allowed This Claim	

13. CERTIFICATION:

I certify that to the best of my knowledge and belief the billed costs of expenditures are based on actual payments of record and are in accordance with the terms of the project agreement and the reimbursement represents the grant share due which has not been previously requested.

Auditor Initials _____

Date _____

Bur. Finance Initials _____

Date _____

SIGNATURE OF AUTHORIZED REPRESENTATIVE
Dave Soilsaver

DATE SIGNED
3/1/84

TYPED OR PRINTED NAME AND TITLE
Dave Soilsaver, County Conservationist

TELEPHONE NO. (INCLUDE AREA CODE & EXTENSION)
(414)123-5000

INSTRUCTIONS

Item 9 - Complete for Advance Payment Request Only

9a Enter the amount of grant shown on the original agreement.
9b Advance requested may not exceed 10% of original grant amount.

Item 10 - Complete for Partial and Final Payment Requests. (See required attachments below.)

10a Enter total amount from worksheet (Form 4400-47) attached to this pay request.
10b Enter total amount of all previous payment requests, including the advance.
10c Sum of 10a and 10b.

Item 11 - Complete for Partial Payment Requests Only

11a Enter the sum of the original grant amount and any amendment increases.
11b Enter 95% of the above amount, which represents the maximum that shall be paid on a grant prior to final accounting and audit. (Compare this amount with Item 10c before completing Item 12.)

Item 12 - Complete for Partial Payment Requests Only when the amount shown on line 10c above exceeds the amount shown on line 11b.

12a & b Self-explanatory.
12c The net result when subtracting line 12b from line 12a is the maximum amount which may be paid with this pay request.

REQUIRED ATTACHMENTS

Attach the following documentation with each Partial and Final Payment Request:

1. One copy of reimbursement claim worksheet (Form 4400-47) listing individual payments on cost share agreements.

2. Photocopy of cost share agreements (Form 3400-68) for each payee listed in this report. (If not previously submitted.)

3. Photocopy of form showing approval of final cost share amount by the DMA for each practice listed in this report.

LANDOWNER TRACKING SHEET

Clearwater River WATERSHED PROJECT

Landowner: A. Landowner

Property Description: T 13 N, R 3 E, Sect.: 7 NE¼, NE¼

Other Identifiers: LT 123 County: Lake

Cost Share Agreement No.: _____

Contact Record	Date	Contacted By	Response
	4/1/84	D. Soilsaver	interested in barnyard + cropland work

Comments: cropland + barnyard inventory data looks accurate; gully formed in woodlot plus some streambk erosion; will recontact with cost estimates by 4/15/84

Inventory Summary, Update, and BMP Status

Nonpoint Source	Inventory	Update	BMP Status
Animal Lot Runoff Animal Units	65		
Model Results	Eligible - 533.	same	
Ranking	#3 in LT Subws.		
Streambank Erosion Feet	none	100'	
Severity		medium	
Cropland Erosion acres at 6-10 t/ac	20 ac.		
acres at 11-19	40 ac	same	
acres at 20-29	10 ac		
acres above 30	none		
Other Nonpoint Sources		gully in woodlot	

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM COST-SHARE AGREEMENT
SECTION 144.25, WIS. STATS.
FORM 3400-68 REV. 8-82

Cost-Share Agreement Number: 1	Total Est. Grant Amount: $ 14,834 00
Name of Grant Recipient: A. Landowner	Telephone Number: 123-4567
Street or Route: Corn Rd	
City, State, Zip Code: Habale Wi 53333	
Legal Description of Property: NE 1/4, NE 1/4, Sec 7, T13N R3E	
Name of Landowner (if other than Grant Recipient)	Telephone Number
Name of Designated Mgt. Agency: Lake County	Telephone Number: 414/123-5000
Street or Route: 101 Main St	City, State, Zip Code
City, State, Zip Code: Anytown, Wi 53333	Installation Period: From To

SECTION 1. AGREEMENT PROVISIONS

1. The grant recipient agrees:
   A. To install the best management practice(s) listed in section 2 consistent with the specifications listed in section 3 during the installation period identified above.
   B. To operate and maintain each best management practice for the life span identified in section 2.
   C. To certify, on forms provided by the designated management agency, best management practices installed under this agreement are being maintained.
   D. To repay the full amount of the cost-share payments made and forfeit all rights to future cost-share payments if:
      (1) Any best management practice is rendered ineffective during its life span due to improper maintenance, operation or neglect;
      (2) The applicable conditions identified in section 3 are not met; or
      (3) The grant recipient adopts any land use or practice which defeats the purposes of the best management practices.
   E. To retain responsibility for this agreement if a change in ownership occurs unless the new owner assumes, in writing, the operation and maintenance of the best management practices and other provisions of this agreement pertaining to the grant recipient.
   F. Not to discriminate against contractors because of age, race, religion, color, handicap, sex, physical condition, developmental disability, or national origin, in the performance of responsibilities under this agreement.

2. The designated management agency agrees:
   A. To provide technical assistance for best management practices identified in section 2.
   B. To make cost-share payment after receipt of a payment request and evidence of completion status.

3. Satisfactory evidence of completion status will consist of a technical performance report signed by a technician assigned by the designated management agency.

4. The total state cost-share payment for each practice identified in section 2 shall be based on the cost-share rate for the practice as applied to the eligible costs actually incurred, as substantiated to the designated management agency. If the total cost-share payment for a practice identified in section 2 exceeds the estimated grant amount for that practice, payment of the overrun will be made only if there are funds available.

5. The agreement may be amended, by mutual agreement, during the installation period as long as the changes will provide equal or greater pollution control.

SECTION 2. BEST MANAGEMENT PRACTICES, COSTS, INSTALLATION SCHEDULE, LIFE SPANS

This section contains all best management practices, both those eligible for cost-sharing and those not eligible, needed to control significant nonpoint sources in eligible areas owned or operated by the grant recipient.

1. Cost-shared best management practices

Location (Field Number)	Practice Code	Practice Title	Quantity	Units	Estimated Total Cost	Cost-Share Rate	Estimated Cost-Share Amount	Cost-Sharing From Other Programs*	Year of Installation	Practice Life-span
Farmstead	L1	Barnyard Runoff Mgmt.	1	-	$3,800.00	70%	2660	-	1984	15 yrs
3,5,8,10	C2	Contour Strips	80	ac	1920.00	50%	960	-	1985	10 yrs
4,6	M3	Shoreline Prot.	2000	ft	—	—	—	—		
4	MF	Str. Bank Fencing	1800	ft	1350.00	70%	945	-	1986	10 yrs
4	MR	Str. Bank Rip Rap	100	ft	1850.00	70%	1,295	-	1986	10 yrs
4	MS	Str. Bank Shape+Seed	200	ft	1200.00	70%	840	-	1986	10 yrs
4,7,9	C5	Grass Waterway	2.0	ac	3049.00	70%	2134	-	1985	10 yrs
Farmstead	L2	Manure Storage	1	-	12,000	50%	$6,000	$2,400*	1984	20 yrs.
				Total	$25,169	Total	$14,834	*Identify program		

2. Noncost-shared best management practices

Location (Field Number)	Practice Code	Practice Title	Quantity	Units	Year of Installation	Practice Life-span	
3,5,8,10	-	Crop Rotation	80	ac	1983	10yrs	*ACP Program

SECTION 3. BEST MANAGEMENT PRACTICE CONDITIONS

Attached are the conditions for each best management practice listed in section 2.

Grant Recipient or Authorized Representative's Signature	Date Signed	Authorized Representative of Des. Mgt. Agency - Signature	Date Signed
A. Landowner	May 1, 1984	J. Supervisor	May 15, 1984
Title: Landowner		Title: L.C.C. Chairman	

State of Wisconsin
Department of Natural Resources

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT
PROGRAM COST-SHARE AGREEMENT AMENDMENT
Section 144.25, Wis. Stats.
Form 3400-68A 4-83

Cost-Share Agreement Number	Amendment Number
001	1

Name of Grant Recipient: A. Landowner

Name of Designated Mgt. Agency: Lake County

New Total Est. Grant Amount: $ 14,834.00 + 2656.50 = $17,490.50

1. Cost-shared best management practices ADDED

Location (Field Number)	Practice Code	Practice Title	Quantity	Units	Estimated Total Cost	Cost-Share Rate	Estimated Cost-Share Amount	Cost-Sharing From Other Programs*	Year of Installation	Practice Life-span
10	C5	Grass Waterway	0.5a	ac	$770.00	70%	$539.00	—	1987	10 yrs
6	MS	Streambank Shape + Seed	100	ft	600.00	70%	$420.00			
6	MF	Streambank Fencing	100	ft	75.00	70%	52.50			
				New Total	$1445.00	New Total +	$1011.50	*Identify program		

2. Cost-shared best management practices DELETED

Location (Field Number)	Practice Code	Practice Title	Quantity	Units	Estimated Total Cost	Cost-Share Rate	Estimated Cost-Share Amount	Cost-Sharing From Other Programs*	Year of Installation	Practice Life-span
6	MR	Streambank Rip Rap	100	ft	$1850.00	70%	$1,295.00			
				New Total		New Total −	$1,295.00	*Identify program		

3. Cost-shared best management practices CHANGED

Location (Field Number)	Practice Code	Practice Title	Updated Quantity	Units	Updated Estimated Total Cost	Cost-Share Rate	Updated Estimated Cost-Share Amount	Cost-Sharing From Other Programs*	Year of Installation	Practice Life-span
Farmstead	L1	Barnyard Runoff Mgmt	1	-	$8,000.00	70%	$5600.00	—	1984	15 yrs
				Change (+/−)	+ $4,200.00	Change (+/−)	+ $2,940.00	*Identify program		

Grant Recipient or Authorized Representative's Signature	Date Signed	Authorized Representative of Des. Mgt. Agency — Signature	Date Signed
A. Landowner	Aug. 12, 1984	J. Supervisor	Aug 20, 1984
Title: Landowner		Title: LCC Chairman	

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State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM — COST SHARE CALCULATION AND PRACTICE CERTIFICATION FORM
Section 144.25, Wis. Stats.
Form 3200-53 9-82

Clearwater R. Priority Watershed Project: Lake County

Agreement Number	Name and Address
001	A. Landowner Corn Rd Habale, WI 5333
Telephone Number (Include Area Code) (000) 123-4567	

COST SHARE CALCULATION

Practice Code	Practice Name	Units Installed	*	Total Cost of Practice	Cost Share %	Cost Share For Practice
C5	Waterway	1 ac.	0	$ 1438.00	70%	$ 1,006.60
C2	Contour Strips	80 ac.	1	1920.00	50%	960.00
MF	Strm bank Fencing	800 Ft.	0	648.00	70%	453.60
					TOTAL	$ 2,420.20

*Place 0 if there are more of this type of practice on this agreement to install.
Place 1 if these units complete the installation of this practice for this agreement.

Amount Paid	Check Number	Check Date YY – MM – DD
2,420.20	117	85/9/22

PRACTICE CERTIFICATION

I certify the above practice or practices and practice units have been installed in accordance with the appropriate standards and specifications.

Signature	Title	Date Signed
Dave Soilsaver	County Conservationist	85/9/10

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