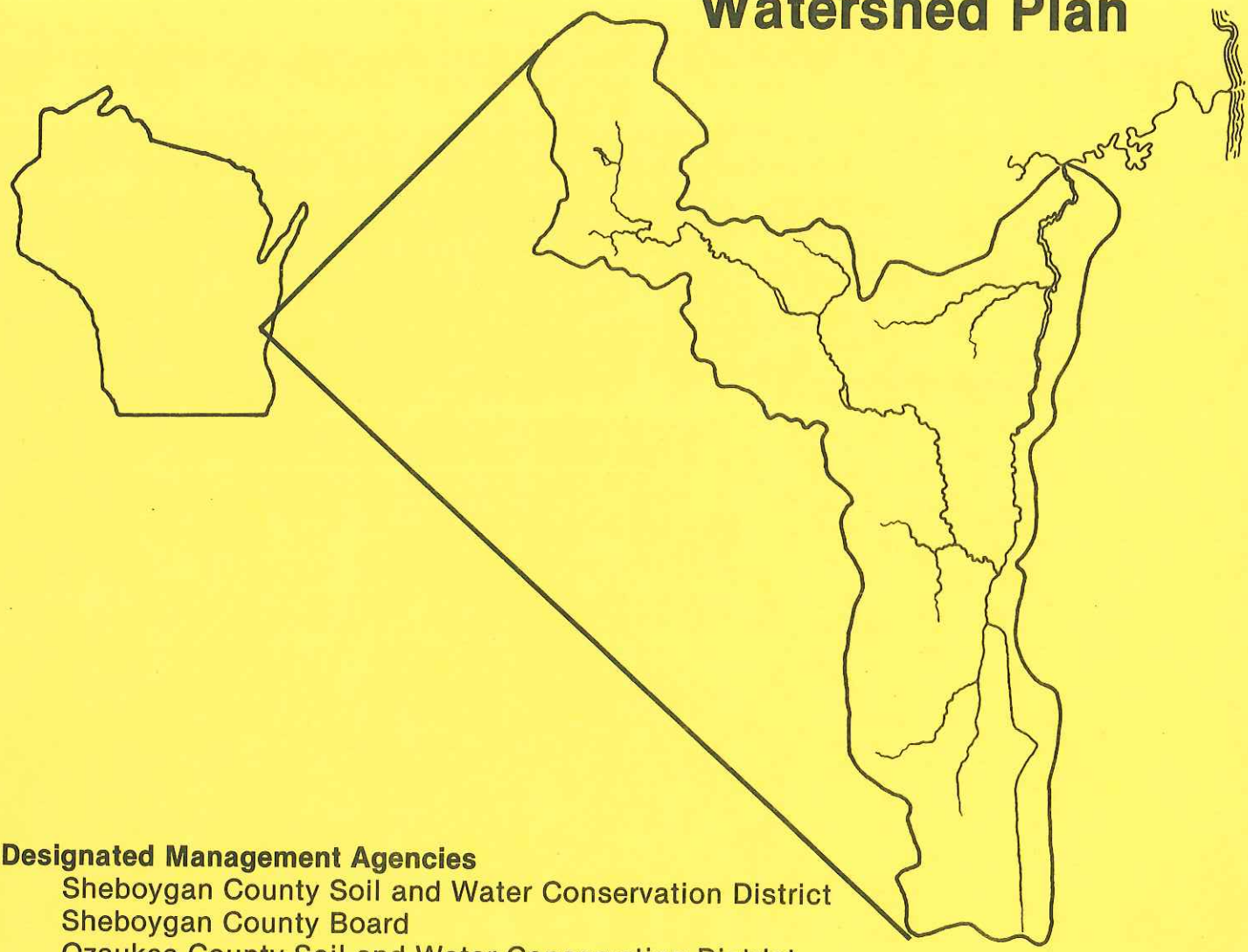
The Onion River Priority Watershed Plan



Designated Management Agencies

Sheboygan County Soil and Water Conservation District
Sheboygan County Board
Ozaukee County Soil and Water Conservation District
Ozaukee County Board
Village of Belgium
Village of Waldo
Town of Belgium

Cooperating Agencies

Wisconsin Department of Natural Resources
U.S.D.A. Soil Conservation Service
U.S.D.A. Agricultural Stabilization and Conservation Service
University of Wisconsin Extension
Wisconsin Board of Soil and Water Conservation
Southeast Wisconsin Regional Planning Commission

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

Ozaukee County Soil and Water Conservation District

P.O. BOX 307 PORT WASHINGTON, WISCONSIN 53074

MAY 12

May 7, 1981

Special Studies Section
Bureau of Water Quality
Box 7921
Madison, WI 53707

The Ozaukee County Soil & Water Conservation District at the March 18, 1981 Public Hearing on the Onion River Priority Watershed Plan, made a motion to approve the Onion River Watershed Plan developed by the Bureau of Water Quality, Department of Natural Resources, in conjunction with the District and a Detailed Implementation Program put out by the local designated management agencies.

No objections or comments by citizens to the Priority Watershed Plan were received during the two-week reply period. Therefore, the plan as presented at the March 18th public hearing meets the approval of the Ozaukee County Soil & Water Conservation District.

Sincerely,

Milton Krumhus

Milton Krumhus, Chairman
Ozaukee Soil & Water Conservation District

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MANAGEMENT PLAN

INTRODUCTION

Two general categories of water pollution sources are point sources and nonpoint sources. Point sources of pollution are defined as concentrated discharges of wastewater from discrete, specific sites. Examples of point sources are sewage treatment plant outfalls and industrial waste outfalls. Nonpoint sources of water pollution are defined as diffuse discharges of pollutants which cannot be readily identified as a point source. Nonpoint sources include stormwater and snowmelt runoff from urban and rural land surfaces, livestock operations and construction activities.

The Wisconsin Nonpoint Source Water Pollution Abatement Program (Wisconsin Fund) was enacted by the Wisconsin Legislature in 1978 to provide cost-sharing and technical assistance to local agencies for the control of nonpoint sources of water pollution. Since then, this program has been a primary source of funding for implementing nonpoint source pollution control in Wisconsin. The overall purpose of the program is to abate of water pollution in severely degraded watersheds while preserving good water quality in less disturbed watersheds.

The Onion River watershed is one of the first nine priority watersheds throughout the state. Priority 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. The Onion River watershed was selected because of the severity of water quality problems, the relative importance of nonpoint sources to the achievement of water quality standards, and the capability and willingness of local governmental agencies to carry out the planning and implementation program.

The following water pollution control plan is within the framework of the areawide water quality management plan for the Sheboygan River Basin. It is wholly consistent with that plan and serves to implement it.

THE PURPOSE OF A PRIORITY WATERSHED PLAN

The purpose of a priority watershed plan is twofold: to set project goals and objectives and to outline an implementation program to reach those objectives. As part of accomplishing this purpose the following must be identified:

1. water quality problems;
2. significant nonpoint and point sources;
3. water quality objectives;
4. priority management area;
5. needed best management practices;
6. implementing and participating agencies and responsibilities; and
7. costs.

Aside from the above purpose there are other uses for a priority watershed plan. The plan represents a thorough inventory of pollution sources and control needs in a watershed and as such, highlights the cause and effect relationship between land management and water quality. This can be very useful from an educational standpoint. Also, the plan is a guide for managing the project. It details procedures and responsibilities and aids staff in working more effectively. And, finally, the watershed plan functions as an application for state and federal funding.

PARTICIPATING AGENCIES

The areawide water quality management plans for the Sheboygan River Basin identify the following designated management agencies (DMA's) for the Onion River Priority Watershed:

In unincorporated areas:
Sheboygan County Soil and Water Conservation District jointly with Sheboygan County Board;

Ozaukee County Soil and Water Conservation District jointly with Ozaukee County Board and Town of Belgium.

In incorporated areas:
Village of Waldo;
Village of Belgium.

Each designated management agency is responsible for coordinating implementation of water quality programs within its jurisdiction.

The Sheboygan County Soil and Water Conservation District was selected as the lead designated management agency by the DMA's involved. As such, it is responsible for coordinating activities among all other designated management agencies within the watershed. Sheboygan County Soil and Water Conservation District has also taken the lead in identifying nonpoint sources within the watershed.

Several U.S. Department of Agriculture agencies will assist the local designated management agencies: the Soil Conservation Service will help provide technical assistance to landowners and operators; the Agricultural Stabilization and Conservation Service will perform certain fiscal management functions; and the University of Wisconsin-Extension will assist in information and education. The Wisconsin Department of Natural Resources approves the watershed plan and appropriates funds for the project. (Further discussion of agency roles is contained in the Implementation Plan, Part 2 of this plan).

WATERSHED DESCRIPTION

Physical, Social and Economic

The Onion River (Figure 1) drains approximately 101.5 square miles of the southernmost portion of the Sheboygan River Basin. The river is formed by the confluence of Ben Nutt and Mill Creeks in the Kettle Moraine region and eventually empties into the Sheboygan River immediately southeast of Sheboygan Falls. Except for two shallow impoundments located at Waldo and Hingham, the river flows freely.

Sheboygan County makes up 90.0 square miles, or 89%, of the Onion River watershed. The Village of Waldo as well as a small amount of the City of Sheboygan Falls are contained in this portion. The remainder of the watershed, 11.5 square miles, is in northern Ozaukee County and includes most of the Village of Belgium. Information from the most recent census places the population in the watershed at approximately 3,700 people.

The surface relief of the Onion River watershed is typical of glacial topography. Slopes across the watershed are complex and range from nearly level to very steep. West of Waldo, the watershed drains a portion of the Kettle Moraine area. Here the surface is very irregular and has many kames, eskers, and potholes. The soils (Figure 2) in this area are primarily the well-drained Hochheim-Theresea association with some well-drained to excessively well-drained Casco-Fox-Rodman. The eastern portion of the watershed, approximately two-thirds of the total area, is characterized by a nearly level to gently sloping plain. Commonly known as the red clay area, the soils (Figure 2) here belong to the somewhat poorly drained Kewaunee-Waymor-Manawa association. These soils are erosive with some soils severely limited for onsite sewage disposal systems due to their moderately low permeability. The soil survey shows that half of the soils in the watershed have lost one to two-thirds of the topsoil by erosion.

The climate of the Onion River watershed is typical of a continental location in the middle latitudes. Although somewhat modified by the proximity to Lake Michigan, winters are long, cold and snowy and summers are warm and occasionally humid. The average annual rainfall is 28.3 inches and the growing season averages 155 days.

Land use in the Onion River watershed is typical of rural Sheboygan County. Eighty percent of the land is in agricultural use with urban, farmsteads, woodlands, wetlands, and parks making up the remaining 20%. Dairy farming and cash cropping are the two major kinds of agriculture in the watershed although there are some miscellaneous livestock operations. According to town assessor's data, the Onion River watershed supports roughly 12,365 animal units* of livestock.

*1 animal unit = 1,000 pounds live weight

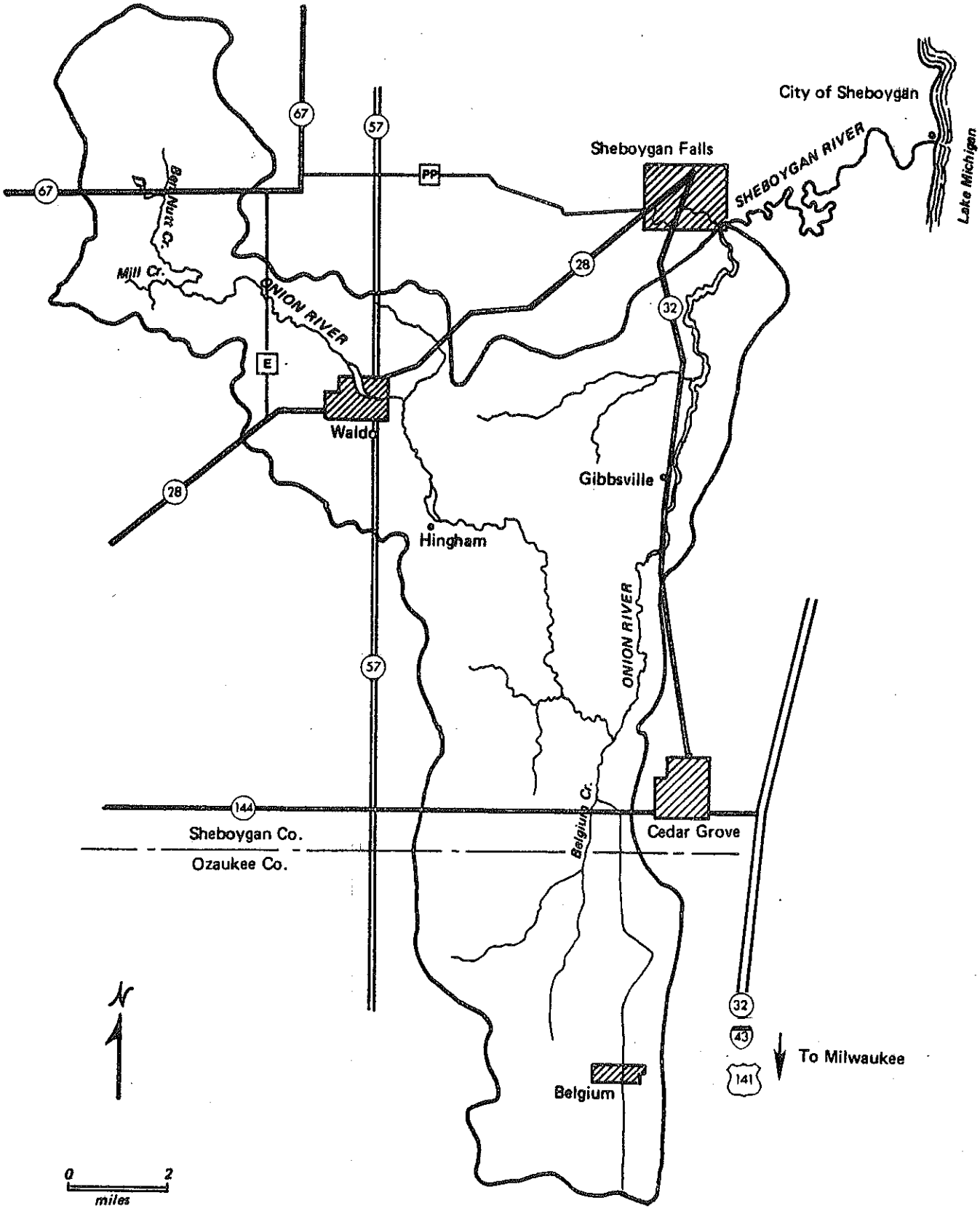

Figure 1. Onion River priority watershed.

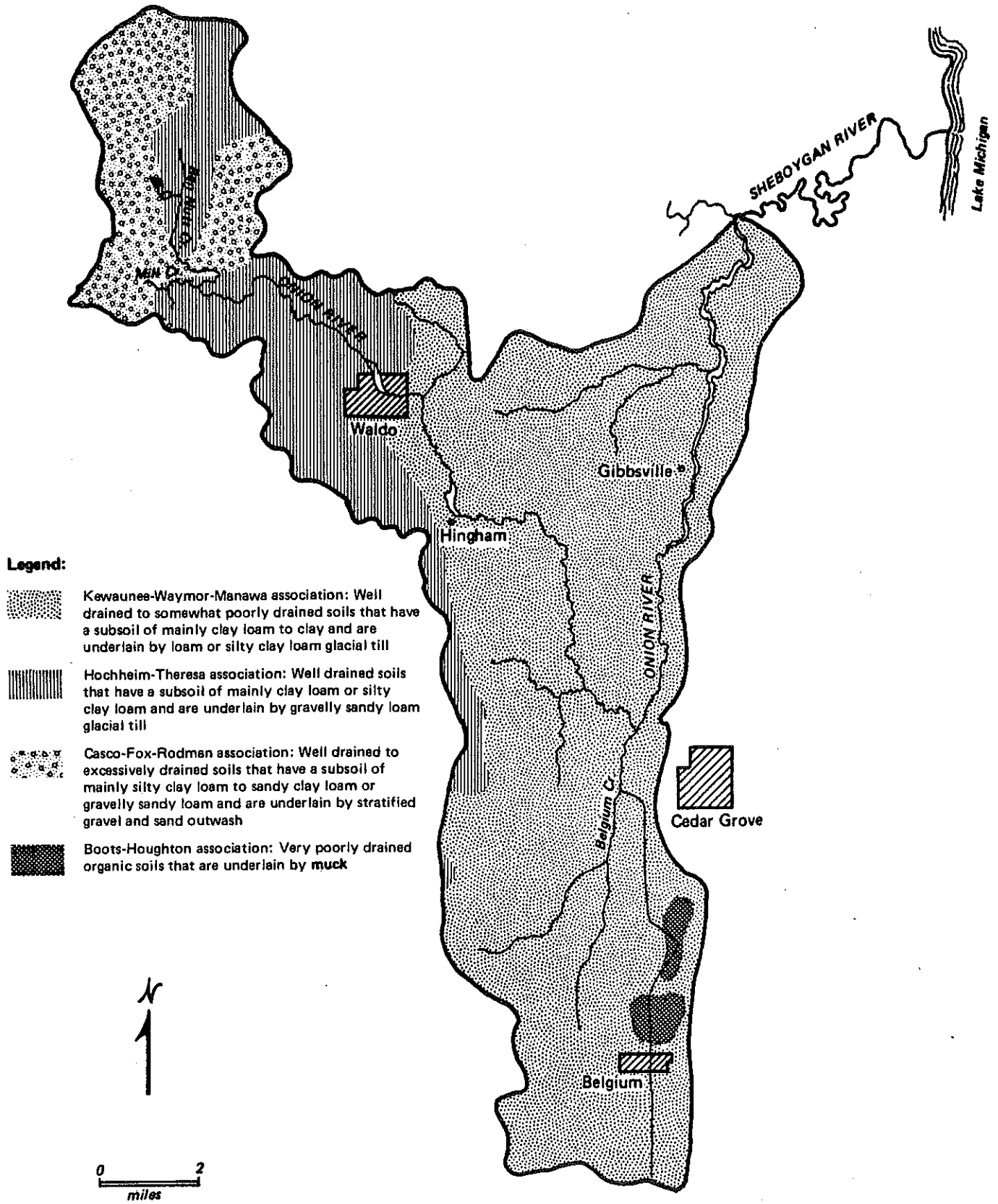

Figure 2. General soil associations of the Onion River priority watershed.

Water Quality

The Onion River watershed has been the subject of a number of water quality sampling programs in recent years. Results and analysis of these studies are contained in the Sheboygan River Basin Comprehensive Water Quality Plan, Water Quality Appendix and the Southeastern Wisconsin Regional Planning Commission Planning Documents. The following description of Onion River water quality summarizes the sampling information. Figure 3 shows the location of the sampling sites from which this data is based. If more detailed information is required, please refer to the above documents.

1. Summary - The condition of the surface waters within the Onion River watershed ranges from trout stream quality in upstream areas to water not acceptable for recreation nor capable of sustaining desirable fish and stream life in the lower section of the watershed. The cause of this variation and degradation in stream quality is in part natural, but to a great extent man-induced and controllable. The mainstem of the Onion River is required to meet fish and aquatic life and recreational use standards. Belgium Creek, a major tributary of the Onion River, has been granted a variance to intermediate aquatic life and marginal surface water.

   Figure 4 shows the nine subwatersheds of the Onion River watershed. The headwater area includes subwatersheds (1) through (3). Subwatersheds (4) through (9) are generally considered the Lower Onion area.

2. Headwater Area - The headwaters of the Onion River rise from cold water springs in the Kettle Moraine area north and west of Waldo and exhibit the best water quality conditions of the watershed. This section of the Onion River along with the two major tributaries, Ben Nutt Creek and Mill Creek, supports a fairly well balanced community of fish and other aquatic life and is classified as trout water. During dry seasons when there is little surface water runoff, this headwater region supplies nearly all of the water to the Onion River.

   Although the present water quality in this area is good, there are several signs of degrading water quality. Natural trout reproduction has been virtually eliminated and trout must now be planted annually. The small insect stream communities (fish food organisms) do not show the balance and diversity expected in a trout stream. Bacterial counts exceed state standards for recreational use and suspended material clouds the water during intense rain storms and settles to the bottom reducing aquatic life habitat, especially in pool areas.

   Agricultural nonpoint sources of pollution are the major cause of this declining water quality condition. Unrestricted stream access by cattle is deteriorating the otherwise good stream bank cover resulting in erosion and subsequent siltation. Agricultural cropping, while only moderate in this area, is on steep slopes and winter spreading of manure is a common practice. There are no point sources of pollution in the Onion River headwaters region and few developed urban areas. Domestic wastes are usually disposed of on soils suitable for septic systems.

3. Lower Onion - The water quality of the Lower Onion River, which extends from the impounded waters at Waldo to the confluence with the Sheboygan River at Sheboygan Falls, is fair to poor. Impoundments at Waldo and Hingham slow the river's flow allowing warming of the water above the temperature necessary to maintain the upstream trout fishery. There is little groundwater entering this section because of the tight clay soils throughout this area. Most of the water in this section comes from surface water runoff over highly erosive soils and the headwater springs. There are 10 point sources which discharge treated wastewater either directly to the river or through its tributaries in this section.

   The Lower Onion River supports a degraded warm water fishery and poorly balanced communities of other aquatic life. Large carp populations swimming in cloudy water characterizes this section. High nutrient levels typically capable of producing nuisance growths of algae and water weeds exert little effect in the river because growth is limited by the poor water clarity and the shifting bottom. Bacterial counts violate water recreation use standards indicating the Onion is unacceptable for most recreational use.

   Both point sources and nonpoint sources of pollution limit the quality of the water. Point source dischargers of consequence to water quality include the Waldo and Hingham publicly owned sewage treatment facilities on the main stem of the Onion River and Belgium's sewage treatment plant along with Krier Preserving Co. (Belgium) waste lagoon system which discharge to Belgium Creek. The major nonpoint pollutant sources are inadequate private waste disposal (septic) systems, poorly managed agricultural and pasturing practices, land spreading of agricultural wastes and stream bank erosion.

   The water quality condition of the Onion River in the Waldo-Hingham area down to the confluence with Belgium Creek degrades rapidly. The water warmed in the two impoundments supports a diversity of forage fish with the numbers of carp increasing dramatically downstream of Hingham. Water clarity diminishes as eroded clay soils make their way into the river from agricultural lands and broken down stream banks. The number and kind of bacteria in the river indicate human waste contamination.

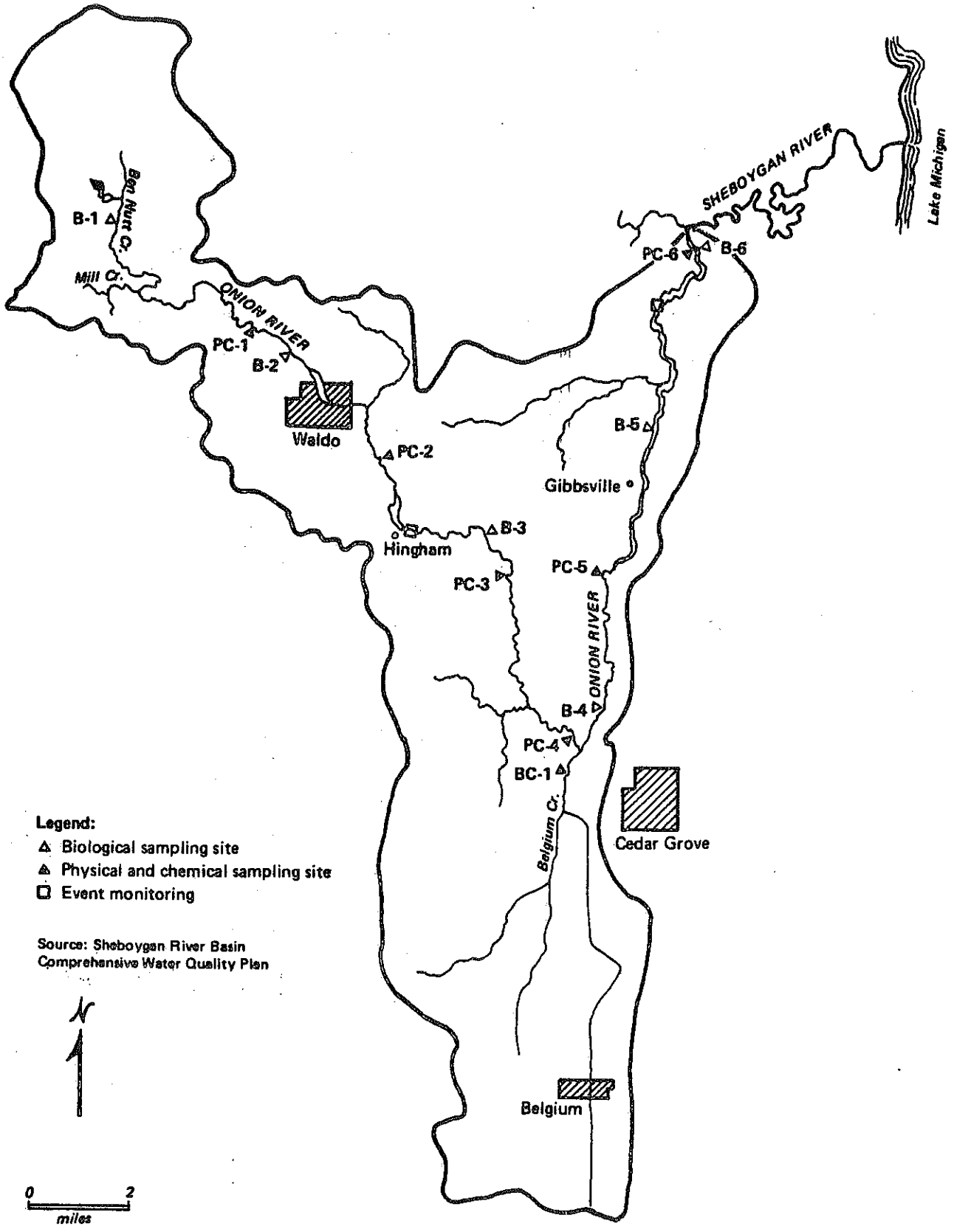

Figure 3. Water quality sampling sites of the Onion River priority watershed.

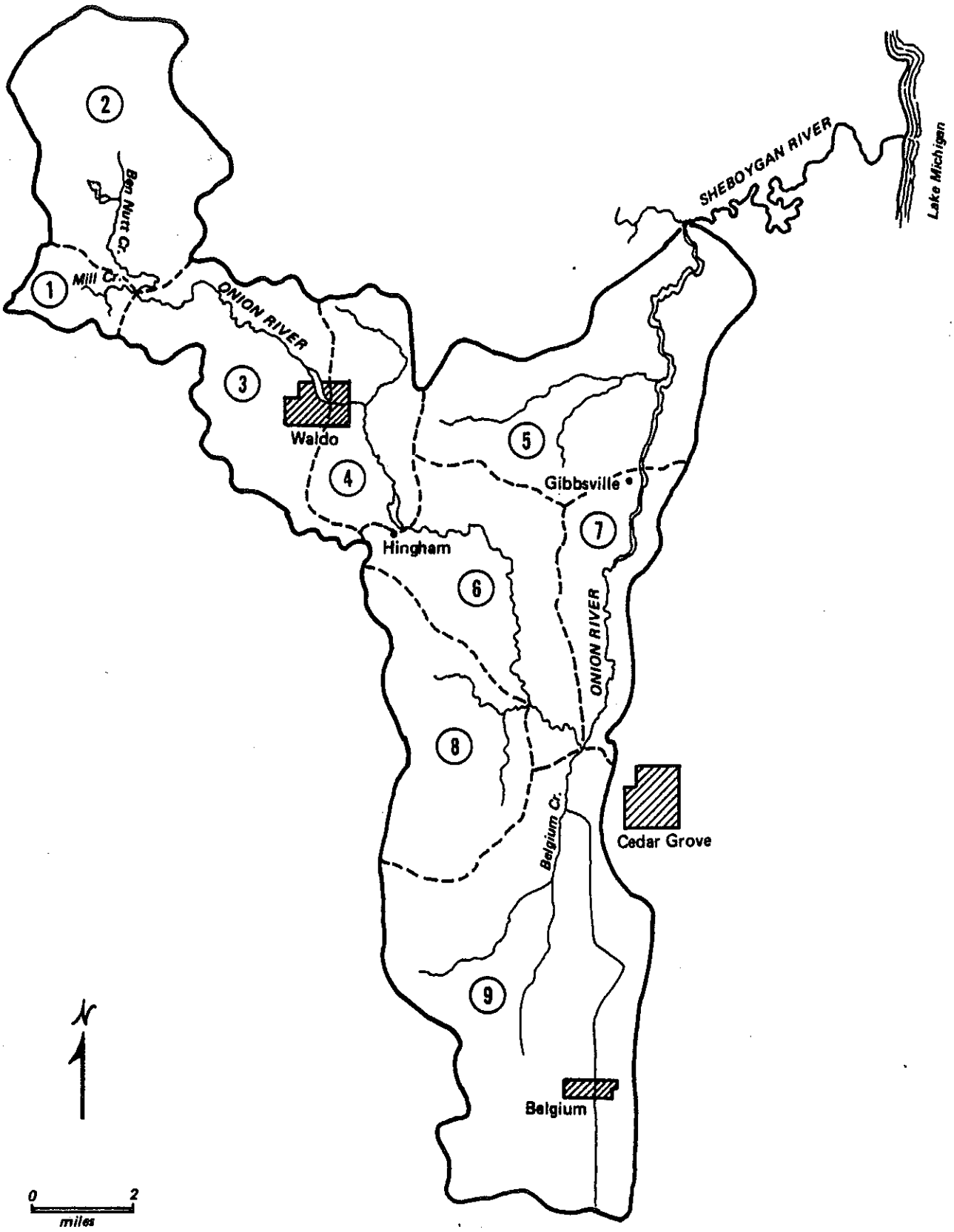

Figure 4. Subwatersheds of the Onion River priority watershed.

The poorest water quality condition in the watershed is manifested in Belgium Creek and in the main stem of the Onion River below the confluence with this creek. This area shows signs of strong organic pollution as well as a substantial increase in the level of nutrients. Dissolved oxygen levels are depressed and ammonia values surpass critical levels for sustaining fish and other aquatic life. Organic bottom deposits are extensive and the fish population is reduced in species and number. Bacteria counts are the highest in the watershed and indicate human waste contamination as well as contamination from farm animals especially during runoff periods. The Onion River gradually recovers downstream of Gibbsville from the excessive pollutant loading and returns to a quality similar to that of the Waldo-Hingham area.

Belgium Creek's poor water quality and problem causing pollutant loads to the Onion River stem primarily from the two point source discharges to the creek. Krier Preserving Co. overloads the creek with excessive oxygen demanding solid materials and nutrients. Belgium's wastewater treatment plant is outdated and adds to the organic waste overloading. The facility also contributes high numbers of bacteria to the creek. Both of these dischargers are currently undergoing facilities planning and much of the overloading of Onion River from Belgium Creek should be rectified by July, 1983.

Agricultural nonpoint sources of pollution continue to cause water quality problems throughout the lower section of the Onion River. Cattle are often seen in the river below the Waldo area down to Gibbsville. In the Gibbsville area the number of private waste disposal (septic) systems increases even though the soils in the area are generally inadequate to handle such wastes. The recently built treatment facility at Gibbsville should alleviate some of this problem.

Due to polychlorinated biphenyl (PCB) contamination of the bottom sediments in the lower Sheboygan River, a fish consumption advisory is in effect for the Onion River downstream from Gibbsville. Contaminated fish from the lower Sheboygan River are often migratory and have access to the Onion River. This situation is being monitored annually by the Department of Natural Resources, although no significant improvement has yet been seen.

4. Lake Michigan Nearshore Zone - The nearshore zone of Lake Michigan is the 2-6 mile wide strip of water closest to the shore. As a result of shoreline currents, the waters in the nearshore zone do not mix completely with the open waters. Therefore, many of the pollutants carried by the Sheboygan River, including the tributary Onion River, as well as other rivers remain in the nearshore zone. Concentrations of phosphorus and other pollutants can be two or three times higher in the nearshore zone than in open waters.

The water quality problems of the nearshore zone include: excessive quantities of phosphorus, high bacterial levels and sedimentation of the harbor. Phosphorus promotes algae growth, reducing water clarity and creating taste and odor problems. Sedimentation of the harbor requires dredging to maintain shipping channels. The International Reference Group on Great Lakes Pollution from Land Use Activities recommended, in its final report to the International Joint Commission (IJC) entitled "Environmental Management Strategy for the Great Lakes System," further reductions of phosphorus to Lake Michigan. Further reductions will help "to reduce local nearshore water quality problems and to prevent future degradation."

Recreational and Other Uses*

The Onion River watershed is located an easy driving distance from roughly 1.5 million persons in the southeastern region of Wisconsin. On a per capita basis, outdoor recreation and open space resources there are relatively limited, while demands are excessive. Furthermore, economic and energy concerns have resulted in people deciding to reduce the distances they travel to recreate. Sheboygan County is an area that is tending to be "rediscovered" for its outdoor resources.

Demand projections in the Sheboygan County Comprehensive Outdoor Recreation and Open Space Plan indicate the following resident and non-resident activity demands on an average weekend day in 1980: Inland Waters Fishing = 8,588; Hunting = 16,871; Canoeing = 4,211; Swimming = 20,970; and, Hiking (nature observation) = 8,334. On an improved Onion River, improved opportunities would exist for fishing, small game and waterfowl hunting, canoeing, nature observation, and (to a lesser extent) swimming. An improved land and water environment within the Onion River watershed could attract greater numbers of outdoor recreationists from both Sheboygan County and the densely populated counties to the south.

1. Existing Uses - Although the Onion River is not generally considered a recreational stream, fishing and hunting are activities occurring within the watershed. Essentially all riparian lands are privately-owned, so legal access is "by permission only" or must be gained at public road crossings. The only municipally-owned land is a 2 acre parcel at the Waldo millpond dam-site. No recreational facilities have been developed on either the Waldo or Hingham millponds, but those communities are planning to do so. Camp Riversite, a developed, 60 acre recreational camp, owned and operated by the County 4-H Leaders Association, lies on the Onion immediately east of Hingham. It is the only recreational facility on the river that can be reserved for public use.

*Source: Mark Leider, Sheboygan County Planner. The complete report, "Relationship of Water Quality and Recreational Use," is available on request.

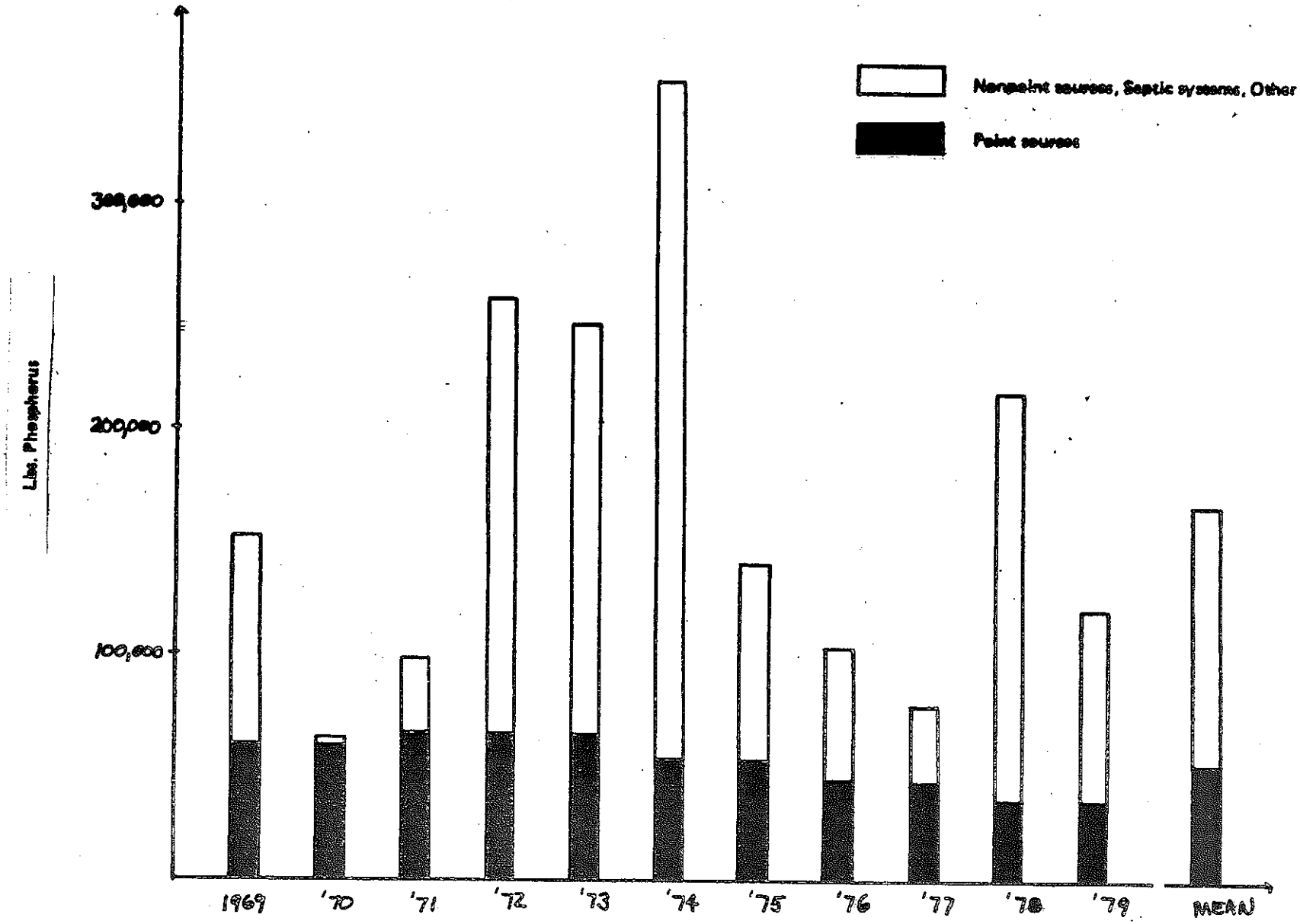

Figure 5. Total phosphorus loads in the Sheboygan River.

IDENTIFIED POLLUTANT SOURCES

Sheboygan County Soil and Water Conservation District (SWCD), the lead designated management agency, conducted in the fall of 1980, a thorough inventory, including Figure 6, of nonpoint pollutant sources in the Onion River watershed including Sheboygan and Ozaukee Counties. Sheboygan SWCD was assisted in this inventory by staff from Ozaukee County SWCD and the Department of Natural Resources. The following information summarizes the conclusions of the inventory and also includes data on septic systems and point sources.

1. Cropland Erosion

Cropland erosion is critical throughout the watershed and particularly in subwatersheds 5 through 9. The soil survey done by the U.S. Soil Conservation Service shows that approximately 25% of the cropland has lost one-third to two-thirds of its topsoil. The result of this erosion can be seen in sediment deposited in stream beds, muddy water during heavy storms, deltas, gullying, and increased streambank scour.

*Data from the inventory were complied on 1" = 800' aerial photographs with overlays. These photographs have been permanently mounted and are available for inspection at the Sheboygan SWCD office.

Many factors contribute to cropland erosion. Assesor's data along with cropland rental information and the proximity of food preserving companies point to a high percentage of cropland in the Onion River Basin used for cash cropping. Approximately fifty percent of the cropland in the watershed is planted without a crop rotation of grasses or legumes. Naturally erosive soils, plowing up and down slopes, cropping too close to the streambank and lack of or poorly maintained waterways compound the problem.

Phosphorus Load from Cropland

Soil eroded from cropland can be a critical source of nutrients when delivered to a stream channel. The Model Enhanced Unit Load (MEUL) method (Novotny, et al, 1979), based on the Univeral Soil Loss Equation, is a tool that provides an estimate of the phosphorus load to a surface water from cropland erosion.

Each of the nine subwatersheds in the Onion River Watershed were analyzed by this method to provide more information regarding the phosphorus load from the Onion River. Land areas were categorized by soils, land use, slopes, nearness to streams and land management practices in order to arrive at the amount of soil eroded. The amount of phosphorus attached to the eroded soil was determined through use of an enrichment ratio. The values generated for sediment and phosphorus were then adjusted based on depression storage. Finally a delivery ratio based on hydrologic classification and nearness-to-stream was applied to produce an annual load for both sediment and phosphorus.

Table 3 shows the estimated phosphorus and sediment load from cropland erosion for the Onion River Watershed. The results are presented such that they correspond with the monitored phosphorus data from the previous section. The area above Hingham Millpond contributes 57% of the sediment and 54% of the phosphorus load despite having the smaller drainage area. This is primarily due to a greater frequency of slopes greater than 6% combined with a lack of conservation practices in that area.

Table 3

Summary of Onion River Watershed MEUL Analysis for Cropland Erosion

Area	Sediment tons	(%)	Phosphorus lbs.	(%)
Subwatersheds 1-4 (30,000 acre drainage area)	4,502	(57)	13,960	(54)
Subwatersheds 5-9 (35,000 acre drainage area)	3,401	(43)	11,915	(46)
Total Watershed	7,903	(100)	25,875	(100)

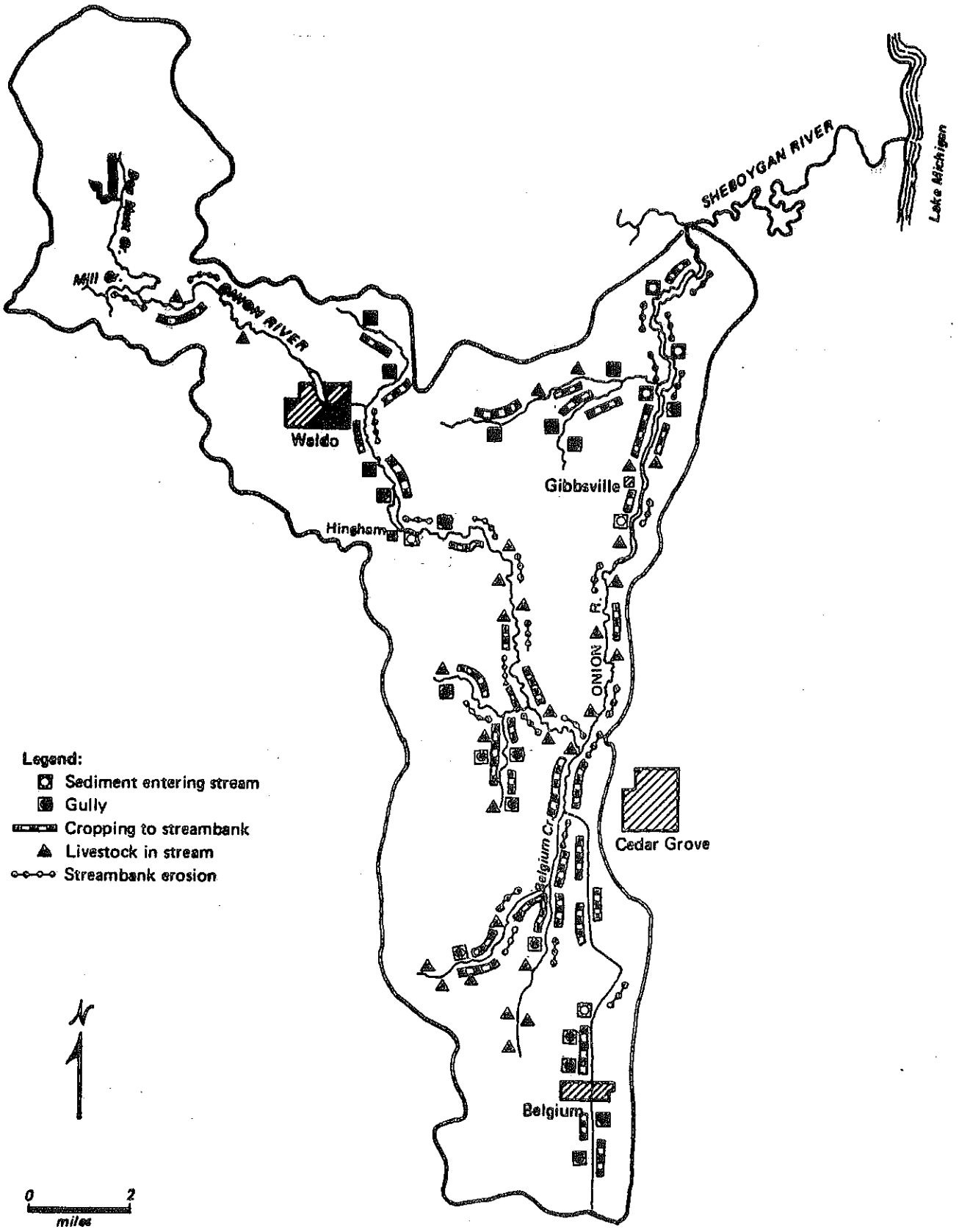

Figure 6. Nonpoint sources of pollution in the Onion River priority watershed.

2. Animal Wastes

Pollution from livestock wastes is critical throughout the watershed. Based on the watershed inventory it is estimated that 35% of the operations with 0-49 animal units, 57% of the 50-99 animal unit operations and 70% of the 100+ operations are contributing nutrients, bacteria and sediment to watershed streams. Only 20% of the livestock operations in the watershed were considered to have adequately managed barnyards and manure storage systems. Most operations are immediately adjacent to streams or have drainage ditches leading to the nearest stream channel and 80% of these operations must handle manure daily due to lack of storage facilites.

Phosphorus Load from Animal Wastes

Animal wastes can be a critical source of nutrients and bacteria when delivered to a stream channel. Currently there are no calibrated, verified models for estimating the phosphorus in runoff from livestock operations. Use of values cited in literature, analysis of topography and analysis of livestock waste management are necessary in order to assess the magnatude of the phosphorus load. The following technique used for the Onion River Watershed was developed by I.C. Moore (1979) specifically for the Lake Michigan drainage area of Wisconsin as part of the Environmental Protection Agency funded Washington County Project.

Winter spread manure, barnyards and above ground manure storage facilities are the three most common sources of phosphorus in runoff from livestock wastes. In general the amount of phophorus in runoff is related to:

a) Amount of total phosphorus produced in manure.
b) The percentage of phosphorus spread or deposited within a critical distance to a channelway.
c) The percentage of phosphorus in deposited manure that enters overland flow.
d) The attenuation of phosphorus that does enter overland flow.

The Onion River Watershed supports 12,365 animal units of livestock. Of this number, 98% are found on dairy operations. Based on American Society of Agricultural Engineers data 335,985 pounds of manure phosphorus are produced annually in the watershed. Results of the Moore method applied to data collected during the Onion River Watershed inventory are shown in Table 4. 9197 lbs., approximately 3% of the total manure phosphorus produced, is delivered to surface waters. Of this 59.0%, is contributed from barnyards and 35.1% from manure spread on frozen ground. A small amount 5.9, represents the contribution from manure stored in above ground facilities. These numbers are consistant with the previously discussed monitored phosphorus load from the Onion River Watershed.

Table 4

Total Annual Phosphorus Load from Animal Wastes

Component	Phosphorus (lbs.)	Percent
Barnyard Runoff	5430	59.0
Winter Spread Manure Runoff	3225	35.1
Runoff from Storage Facilities	542	5.9
Total 9197	100.0%	

3. Streambank Erosion

Streambank erosion is a problem on the Onion River, whether by natural or man-made causes. It appears to be worse on the lower half of the river. About 170 miles of the stream network was walked or surveyed from maps by the Sheboygan County SWCD. From observation it was estimated that approximately 8 miles of streambank are eroding. Fifty-three instances of livestock pasturing along streambanks were noted.

Some streambank erosion occurs naturally but is aggravated by such practices as cropping too close to the stream and pasturing of livestock, as well as by sediment that has been deposited in the channel, and fallen trees and brush growing on the curves of the riverbanks.

4. Roadside Erosion

The watershed inventory concluded that, presently, roadside erosion is not critical in the Onion River watershed. No eroding roadsides were noted.

5. Urban

Developed urban areas are not critical nonpoint sources in the Onion River watershed. There are three small established villages: Waldo, Hingham, and Belgium. Leaf collection and street sweeping are done on a regular basis.

New construction in the watershed occurs on a limited basis. None was noted during the inventory.

6. Failing Septic Systems

Failing septic systems contribute nutrients, bacteria and, in many cases, untreated sewage to surface waters in the Onion River watershed.

Soils in most of the watershed are, at best, only marginally suited for onsite waste disposal systems. The same soils have also been extensively tiled for growing field crops. In an effort to determine whether septic systems are discharging directly through field tile lines a study of tile outlets was conducted as part of the watershed inventory. Twelve sample sites were randomly selected and samples collected for comparison purposes. In each case samples were taken both upstream from the site being tested and at the tile or drainage way.

All samples were tested for whiteners, organic and inorganic components of detergents and fecal coliforms. These materials are commonly associated with human wastewater and are used to pinpoint areas of untreated discharge. Laboratory analysis for total phosphorus, nitrate and nitrite nitrogen and fecal coliforms were also performed to support leachate detection results.

These tests and laboratory analysis verify that large concentrations of phosphorus, nitrogen and coliforms are entering the Onion River via tile systems. Since these results represent only a small percent of tile outlets along the river, the potential impact is much greater than observed in the original analysis. The discharges mentioned represent not only an important nutrient load, but a potential health hazard reflected by extremely high concentrations of fecal coliforms. See Appendix A of this plan for additional data analysis and results.

7. Point Sources

There are 10 point sources discharging to the Onion River or its tributaries. All but two of these are functioning reasonably well and meeting permit limits. Krier Preserving Company and the Village of Belgium wastewater treatment plant are both experiencing difficulties and are in the process of updating their systems. Improvements to the Krier Preserving Company lagoon are scheduled to be finished and on-line by mid-1982. The new Village of Belgium plant is scheduled to be operating by mid-1983.

Because Belgium Creek is classified as a marginal surface water, the effluent limits for treatment plants are less stringent. It is likely that even with improved facilities, water quality standards will not be met in the lower Belgium Creek, a classified intermediate stream. Water quality, however, will improve markedly when these two sources are under control.

WATER QUALITY OBJECTIVES

The water quality objectives for the Onion River Priority Watershed project are:

1. A 40% reduction, from Table 5, in the amount of nonpoint source phosphorus reaching the Sheboygan River and subsequently the nearshore zone of Lake Michigan from the Onion River Watershed.

2. Reduction of the bacteria (fecal coliform) count in the Onion river and its tributaries to a level meeting water quality standards.

3. Improvement of trout carrying capacity and holdover potential in existing Class II trout streams in the watershed. These include Ben Nutt and Mill Creeks and the Onion River above Waldo Millpond.

4. Improvement in the population and diversity of the existing warmwater fishery in the Lower Onion River (below Waldo Millpond).

Phosphorus Reductions

Table 5 lists the anticipated nonpoint source phosphorus reductions for the Onion River watershed. These reductions are based on the efficiency of practices to control phosphorus and a 75% level of implementation.

Table 5. NPS Phosphorus Reduction By Source Categories

Sources	Phosphorus Load in lbs/year		
	Existing	Expected Reduction	Remaining
Cropland Erosion*	25,880	11,650	14,230
Livestock Wastes**			
Barnyards	5,430	2,440	2,990
Manure spreading	3,230	1,450	1,780
Storage facilities	540	230	310
Streambank erosion and septic systems	10,220	2,350	7,870
Total (NPS)	45,300	18,120	27,180

*MEUL analysis
**Phosphorus load from animal wastes analysis.

PLANNED ACTION AND MANAGEMENT NEEDS

Priority Management Area

The analysis of pollutants and the inventory of pollution sources were based on the Onion River watershed as a whole; however, only a portion of the watershed will actually be eligible for cost sharing grants to landowners. The priority management area (PMA) is that part of the watershed where pollutant laden runoff has the greatest potential to reach streams and channels and where application of best management practices will be most effective in improving water quality. The priority management area for the Onion River watershed covers approximately 64 square miles and is generally defined as all lands within 1/8 mile of an intermittant or perennial stream, lake, wetland, ditch or stormsewer system. For lands with slopes 6 percent or greater or where the soil hydrologic class, as defined in the soil survey, is C or D, the priority management area is expanded to 1/4 mile. This situation is common throughout the Onion River watershed. Subwatersheds 1 through 3 have many areas with slopes in excess of 6 percent. The remainder, subwatersheds 4 through 9, is characterized by soils with C or D hydrologic classifications.

The priority management area does not identify the significant sources of pollutants. For a variety of reasons not all lands having the potential to contribute pollutants will actually do so. Slopes in some small localized areas may be either nearly level or internally drained and runoff will not move very far. In other instances the land may already be adequately managed for water quality purposes. The intensity of management needed within the priorty management area will be determined case by case based on the most cost effective, practical means of achieving water quality objectives.

Management Needs

Best management practices (BMP) are defined as practices, techniques or measures identified in the Sheboygan River Basin Comprehensive Water Quality Management Plan to be the most effective, practical means of preventing or reducing pollutants generated from nonpoint sources.

The best management practices needed in the Onion River watershed are listed below. Although many practices would also be appropriate only those anticipated to meet most typical situations i the watershed are included in this list. See Appendix B of this plan for a complete list of cost-sharable BMPs.

1. Conservation (minimum) Tillage - 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. The watershed inventory determined that 30% of cropland would benefit from this practice regardless of other practices.

2. Contour Strip Cropping - Growing crops, on the contour in alternated strips of close growing crops, clean tilled row crops and grass legumes.

3. Waterways - A natural or constructed water course shaped, graded and established in suitable cover as needed to prevent erosion by runoff waters. Waterways are typically installed with tile in areas with heavy clay soils in order to allow the vegetation to take hold. A large number of waterways are planned for the Onion River watershed due to the very few existing waterways.

4. Diversions - A structure installed to divert water from areas where it is in excess to sites where it can be used or transported safely. This practice is primarily aimed at land planted in cash crops in lieu of an expensive and cumbersome terrace system.

5. Winter Cover Crops - 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. Cover crops are most useful in the Onion River watershed following the removal of canning crops.

6. Grade Stabilization Structure - A structure used to stabilize the grade in a channel or to prevent the formation or advance of gullies.

7. Barnyard Runoff Management/Manure Storage Facilities - A planned system to manage liquid and solid waste including runoff from concentrated waste areas in a manner which prevents or minimizes degradation of air, soil and water resources and protects public health and safety.

8. Streambank Protection - Stabilizing and protecting banks of streams and lakes against erosion. Includes riprapping, fencing, shaping and seeding, livestock and machinery crossing and buffer strips. Ninety percent of the need for these practices occurs below Waldo Millpond. Considering the kind of livestock and the water quality goals, single-strand electric fencing will be cost sharable. This is in contrast to the U.S. Soil Conservation Service Technical Guide specifications requiring four-strand fences. No water quality improvements are gained by four-strands and a four-strand fence is more difficult to maintain.

Extent of Best Management Practices and Estimated Cost

Table 6 lists the management needs and extent, the unit cost, the total cost and the state cost share. For 100% landowner cooperation, the state cost share amounts to $1,676,644.00. A program goal of 75% cooperation has been set, however, bringing the state cost share down to approximately $1,257,500.00.

Table 6. Extent of BMPs and Estimated Cost

Best Management Practice	Units Needed	Cost/Unit ($)	Total Cost ($)	Maximum State Cost Share (%)	Total Cost Share ($)
Cropland					
Conservation Tillage	12,782 acres	12/acre	$ 153,384	50	76,692
Contour Strip Cropping	8,988 acres	9.50/acre	85,386	50	42,693
Waterways (w/tile)	267,700 feet (216 ac.)	2.50/foot	669,250	70	468,475
Diversions	239,600 feet	1.50/foot	359,400	70	251,580
Winter Cover Crops	6,563 acres	neglible	-	none	-
Grade Stabilization Structure	18 units	2,000/unit	36,000	70	25,200
SUBTOTAL			$1,303,420		$ 864,640
Animal Wastes					
Barnyard Runoff Management	106 farms	2,000/farm	212,000	70	148,400
Waste Storage Facilities	60 units	20,000/unit	1,200,000	70 (with a $6,000 ceiling)	360,000
SUBTOTAL			$1,412,000		$ 508,400
Streambank Protection					
Riprapping	12,672 feet	10/foot	126,720	70	88,704
Fencing	2,660 rods	6/rod	15,960	70	11,172
Shaping and Seeding	27,408 feet	5/foot	137,040	70	95,928
Livestock and Machinery Crossings	30 units	1,000/unit	30,000	70	21,000
Bufferstrips	62,200 feet	2/foot	124,400	70	87,080
SUBTOTAL			$ 434,120		$ 303,884
Total			$3,149,540		1,676,924
			(with 75% cooperation)		1,257,693

PROJECT MONITORING AND EVALUATION

Documentation of water quality improvement is a necessary part of a water quality program. The Wisconsin Department of Natural Resources will continue as part of its ongoing program to monitor the water quality within the Onion River watershed. Three distinct Department activities have been planned.

1. Water Quality and Flow Monitoring - The water quality and flow monitoring station located at the Ourtown Bridge near the mouth of the Onion River is being continued on an interim basis. Additional funding will be necessary to continue this monitoring over the life of the Onion River Priority Watershed Project. This station should provide consistent phosphorus load data over the course of the project.

2. Five-year Basin Assessment Program - The comprehensive water quality assessment program that is conducted routinely by the DNR Southeast District. The next assessment of the Sheboygan River Basin, including the Onion River, will begin in 1983. This program should provide biological, physical and chemical data regarding the overall water quality in the watershed.

3. Belgium Tributary Follow-up - A repeat of the 1979 Wasteload Assimilation Study covering Belgium Creek and the affected downstream portion of Onion River. This will provide more complete information about the affect of the Belgium Creek point sources on the Onion River.

Implementation Plan

INTRODUCTION

The Implementation Plan, also referred to as the Detailed Program for Implementation, has been developed by the Sheboygan County Soil and Water Conservation District, the lead designated management agency (DMA). The plan was developed assuming Wisconsin Nonpoint Source Pollution Abatement Program (Wisconsin Fund) funding for implementation. Revisions of the detailed program may be required in the event that other funding sources become available to the Onion River watershed. The detailed program for implementation identifies: (1) the tasks necessary to implement the Onion River Priority Watershed Plan, (2) agencies responsible for carrying out those tasks, (3) the time frame for carrying out tasks, (4) and the kind and amount of resources needed. A series of public and agency meetings were conducted to obtain commitments and to define the program responsibilities.

Objectives, goals and strategy for implementation identified in the priority watershed plan are based on the results of the inventory and water quality monitoring data. This program for implementation serves as a general guide for the Designated Management Agencies (DMAs) involved in the watershed program. It must be reviewed periodically and updated as experience and developments occur in the program.

PARTICIPANTS

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 Soil and Water Conservation Districts of Sheboygan and Ozaukee Counties will serve as DMAs jointly with their respective County Boards along with the Town of Belgium in Ozaukee County. Together these units of government are able to provide program funding to landowners, to install practices on public lands, and develop regulatory processes to protect water resources if voluntary programs prove unsuccessful.

In incorporated areas the Villages of Waldo and Belgium can implement BMPs and assume other DMA responsibilities.

Lead Designated Management Agency

The Sheboygan County Soil and Water Conservation District was selected as the Lead Designated Management Agency (LDMA) for the Onion River Watershed Project by the other DMA's 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. Functions of the DMAs and LDMA are listed in Chapter NR 120.06 of the Wisconsin Administrative Code.

Other Agencies and Governmental Units

Many agencies are involved in implementing a successful watershed project. The following agencies will have specific responsibilities.

1. Soil and Water Conservation Districts (SWCD) - Serve as DMAs in the unincorporated areas of the Onion River watershed. Staff will be provided to carry out the technical, fiscal, and educational activities of the program. Sheboygan and Ozaukee Counties SWCD will maintain budget responsibilites for personnel and program operation cost.

2. County Boards - Sheboygan and Ozaukee County Boards have broad authority in unincorporated areas of the counties and are DMAs in the watershed project along with the respective SWCDs. Many committees and departments of the county can be utilized to carry out various portions of the watershed project. (See also, number 6, Sheboygan County Planning and Resource Department.)

3. Agricultural Stabilization and Conservation Service (ASCS) - Under contract to the lead designated management agency (Sheboygan County SWCD) the Sheboygan County ASCS office of the USDA will provide assistance for fiscal management of the Onion River 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 Onion River watershed.

4. Soil Conservation Service - The Soil Conservation Service (SCS) of the USDA, working through the local soil and water conservation district, provides the technical assistance for design and installation of best management practices. The Soil Conservation Service will provide staff for planning, designing, installing, supervising and certifying the constructin of conservation practices. SCS will also provide staff specialist assistance in many areas such as resource planning, engineering, forestry, and wildlife habitat management.

5. Department of Natural Resources - The Department has overall administrative responsibility for the Wisconsin Nonpoint Source Water Pollution Abatement Program of which the Onion River Priority Watershed is a part. The DNR is responsible for allocation of funds to the Onion River Project, for water quality monitoring, and for evaluation of the watershed plan.

6. Sheboygan County Planning and Resource Department - The Planning and Resource Department will work with the LDMA in informing developers of the pollution potential from roadside erosion. The Planning Committee can assist the DMA's in developing ordinances or road standards which incorporate seeding and erosion control standards for developing towns or subdivisions.

7. University of Wisconsin-Extension Service - County Extension agents will provide expertise in planning, coordinating, and conductig public information, education, and participation efforts. UW-Extension will also assist the DMA's in the development of watershed tours, workshops, and newsletters.

8. Belgium Drainage Districts No.1 and No.2 - Drainage districts have legal authority to plan, construct and operate drainage and flood control structures. Agricultural drainage districts have played an important role i land and water resource management in the Belgium Creek subwatershed. Agricultural drainage activities will need to be carefully coordinated with nonpoint source management activities in order to maximize water quality improvement while maintaining agricultural production.

PROGRAM MANAGEMENT

The Lead DMA (Designated Management Agency), Sheboygan County Soil and Water Conservation District, will be responsible for day-to-day operations and coordination between: other DMAs, other agencies and units of government groups, organizations and educational institutions.

Consortium of Designated Management Agencies

For timely decisions to be made and to communicate efficiently and effectively with other DMAs in the watershed, a consortium of DMAs will be formed to govern the project. The consortium of DMAs will have equal representation from each DMA. A systematic set of procedures will be followed, including: meeting regularly, keeping each DMA informed of what the others are doing, sharing problem-solving resources, and providing for citizen input to the project. The role of the consortium should not be confused with that of the Lead DMA. The Lead DMA is the legal entity with which the state agencies, administering the program can deal. The function of the consortium of DMAs is to provide guidance to the Lead DMA. Therefore, it is essential that the consortium of DMAs keep open these lines of communication and accountability.

Program Reviews

Periodic evaluation of the Watershed Plan and revision, as necessary, is required under the provisions of Chapter NR 120 of the Wisconsin Administrative Code. The Lead DMA will be responsible for filing the evaluation report. The annual project evaluation report will be utilized for making needed adjustments in the watershed program. The DMAs and assisting agencies will meet annually to review the implementation strategy and to coordinate activities for the following:

1. A financial report, including expenses for both cost-sharing and program management.

2. Record of participating landowners and installed conservation practices.

3. Evaluation of the effectiveness of these practices. The Department of Natural Resources (DNR) is responsible for water quality monitoring. Visual inspection, landowner acceptance, and other factors will be used to evaluate the effectiveness of conservation practices.

4. Overall evaluation - what has project accomplished so far, problems encountered with plan strategies for correcting these problems.

5. Any needed adjustments in the project's goals, objectives, and activities.

Record Keeping

The Lead DMA will maintain all records of correspondence, landowner contacts, landowner agreements, and contract arrangements at the Sheboygan County SWCD office. Landowner files will be kept separate from District Cooperator files and sub-divided alphabetically by sub-watersheds. Index cards will also be maintained alphabetically on landowners in the watershed to record contacts and progress. At a minimum, the following records will be kept: correspondence, contracts and sub-contracts, file on financial transactions, memoranda of understanding and other agreements, files on grant receiving landowners (including all forms, agreements, plans, certifications, progress reports, bills, proofs of payment and other records of financial transactions), and project status and evaluation reports. The DMAs of Ozaukee County will maintain their own landowner files for their respective watershed areas. However, copies of the landowner agreements, Best Management Practices (BMP) certification and progress reports will be mailed to the Lead DMA (Sheboygan County SWCD). The Lead DMA will be accountable to the Department of Natural Resources for maintaining complete records.

Project Manager

The Sheboygan County SWCD Coordinator will serve as the Project Manager. He will serve as a liason between the state and federal agencies involved in the program and the DMAs. He will monitor contracts betweeen DMAs and other agencies, organizations, and individuals during the implemation program. The Project Manager's time will include: managing finances, supervising project staff, coordinating technical assistance and information and educational activities. The Project Manager is the official agent of the DMAs and is directly accountable to them.

Fiscal Management

The Lead DMA (Sheboygan County Soil and Water Conservation District) will contract with the Sheboygan County Agricultural Stabilization and Conservation Service (ASCS-USDA) to administer the cost-share monies for BMPs (Best Management Practices) for the Wisconsin Nonpoint Source Pollution Abatement Program. The contract will be reviewed on an annual basis by both agencies. The Executive Director for the Sheboygan County ASCS Office will serve as a contact agent for ASCS. The ASCS office and Lead DMA will provide sufficient time annually to meet audit responsibilities. ASCS will submit to the Lead DMA a monthly financial progress report and an annual report. The Agricultural Stabilization and Conservation Service shall be reimbursed by the Sheboygan County Soil and Water Conservation District for administrative services performed in the implemation of the watershed plan. Cost-share monies received by the Lead DMA from the Wisconsin Department of Natural Resources will be deposited into the Onion River Watershed account managed by the Sheboygan County ASCS Office. When a BMP has been installed and upon receipt of construction costs and DMA certification by the respective county SWCD, the responsible DMA will request payment from the Onion River Watershed account to the landowner for that portion of the cost-shared amount in the landowner/DMA contract.

IMPLEMENTATION APPROACH

Based on the watershed inventory and monitoring data, the nine subwatersheds of the Onion River watershed were separated into three groups as listed in Table 7. The intent in ranking the subwatersheds was to provide for an efficient use of time and cost-share funds. The intent is not to exclude any part of the priority management area but to deal with the most critical areas first. These subwatershed groupings will be used to focus landowner contacts and information and education activities during the first three years of the project (the sign-up period). Landowners may sign-up anytime during the first three years regardless of which implementation group is the current priority.

Table 7. Implementation Groups

Group	Subwatersheds*	Project Year
A	3, 4, 6 and the Ozaukee County portion of 9	1st
B	7, 8 & the Sheboygan County portion of 9	2nd
C	1, 2 & 5	3rd

* Refer to Figure 4 for subwatershed locations.

Subwatersheds were identified in the "A" or first group after determination that: 1) nonpoint sources are of a critical nature and; 2) a high degree of control can be reached through application of best management practices. Group "B" subwatersheds also have critical nonpoint sources. It was concluded, however, that since two of these subwatersheds were affected by poorly treated point source discharges, nonpoint source implementation should be delayed until upgrading the point sources is partially completed. Group "C" subwatersheds were determined to have either: 1) less critical nonpoint sources or; 2) control is less practicable. Table 8 breaks out for each prioirty group the management needs and total costs identified previously in Table 6.

Table 8

Management Needs and Total Cost by Implementation Group

BMP	Group A		Group B		Group C	
	Units Needed	Cost	Units Needed	Cost	Units Needed	Cost
CROPLAND						
Conservation Tillage	4,474 acres	$ 53,688	5,752 acres	$ 69,024	2,556 acres	$ 30,672
Contour Strip Cropping	3,146 acres	29,887	4,044 acres	38,418	1,798 acres	17,081
Waterways (w/tile)	93,695 feet	234,238	120,465 feet	301,162	53,540 feet	133,850
Diversions	83,860 feet	125,790	107,820 feet	161,730	47,920 feet	71,880
Winter Cover Crops	2,297 acres	0	2,953 acres	0	1,313 acres	0
Grade Stabilization Structure	6 units	12,000	8 units	16,000	4 units	8,000
Subtotal		455,603		586,334		261,483
ANIMAL WASTES						
Barnyard Runoff Management	37 farms	74,000	48 farms	96,000	21 farms	42,000
Waste Storage Facilities	21 units	420,000	27 units	540,000	12 units	240,000
Subtotal		494,000		636,000		282,000
STREAMBANK PROTECTION						
Riprapping	4,435 feet	44,350	5,702 feet	57,020	2,535 feet	25,350
Fencing	931 rods	5,586	1,197 rods	7,182	532 rods	3,192
Shaping and Seeding	9,593 feet	47,965	13,334 feet	61,670	5,481 feet	27,405
Livestock and Machinery Crossings	10 units	10,000	14 units	14,000	6 units	6,000
Buffer Strips	21,770 feet	43,540	27,990 feet	55,980	12,440 feet	24,880
Subtotal		151,441		195,852		86,827
Group Totals		$1,101,044		$1,418,186		$630,310

INFORMATION AND EDUCATION PROGRAM

The success of a project such as the Onion River Priority Watershed is dependent on the landowners and operators, the participating agency personnel, the various organizations and educators involved, as well as the general public.

The information and education program has to provide the landowners and operators with a clear understanding of what is needed and how water quality improvements can be accomplished.

The Onion River education plan involves four areas of concern:

1. General watershed information.
2. Livestock problems.
3. Cropland problems.
4. Streambank problems.

The University of Wisconsin-Extension agents in Sheboygan and Ozaukee counties will have major responsibility for implementing the information and education program with help from the SWCD, SCS and ASCS personnel and contributions from other agencies, under the guidance of the Lead Designated Management Agency.

A strong education program, with clear objectives, will be executed through the media, direct mail, public meetings, newsletters, tours and demonstration areas. Where answers are needed, research will be used to find them.

Objectives of the information and education program will focus on four major target audiences to provide:

1. Current information to the public regarding the general structure, purpose and provisions of the Priority Watershed Plan.

2. Information to the DMAs along with other agencies and groups within the watershed team, that will insure good coordination and smooth, progress in all phases of the implemenation.

3. Information to landowners and farm operators that will clearly outline the problems within the watershed, the best management practices that will help reduce or eliminate the problem, and what financial and technical assistance is available to them.

4. Research and information to canning companies, town and village leaders and others that have an influence on the watershed, and point the way for each to contribute to the improvement of the watershed.

Implementation methods to reach these objectives:

Objective #1

Target audience--the public

	Method	Frequency
a)	Public information meetings	1 - 2/yr.
b)	Watershed newsletter, 4-H and Homemaker newsletters	Alternate months
c)	Newspaper articles, features	Monthly
d)	Radio talk shows, news items	3 - 4/yr.
e)	Public tours, demonstrations	1 - 2/yr.
f)	Watershed signs	

Objective #2

Target audience--DMAs and Agency personnel

	Method	Frequency
a)	DMA committee meetings	
b)	Newsletter	Alternate Months
c)	Direct mail	
d)	Inter-personal contacts	
e)	Tours	1 - 2/yr.

Objective #3

Target audience--Landowners and operators

	Method	Frequency	Materials Needed
a)	Watershed newsletter	Alternate months	Production materials
b)	Direct mail		Production materials
c)	Neighborhood group meetings	4/yr.	Slides, literature
d)	Farm visits, one on one contact	1/yr/individual	BMP literature
e)	BMP demonstration areas	as needed	Model BMP, signs, equipment
f)	Field days, tours	1 - 2/yr.	Signs, vehicles
g)	Watershed oriented 4-H projects and activities	timely	Literature
h)	Camp Riversite riverbank improvement demonstration project		

Objective #4

Target audience--Canning companies, town and village leaders, other business agencies

	Method	Frequency	Materials Needed
a)	Establish research plots on tillage methods	annual/3 yrs.	Seed, fertilizer, tools, signs
b)	Watershed newsletter	alternate months	
c)	Fieldman to grower meetings, clinics	1 - 2/yr.	literature, visuals
d)	Town and Village meetings with leaders, businessmen, home-owners	3 - 4/yr.	literature, slides, visuals

Table 9 and 10 detail the annual information and education program goals as well as the unit costs and annual costs per product.

Table 9

ONION RIVER WATERSHED
INFORMATION AND EDUCATION GOALS

PRODUCT	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	Total
Newsletter	6	6	6	3	3	3	3	30
Watershed Brochure	1							1
News Releases	7	7	7	2	2	2	2	29
Radio Programs	3	3	3					9
Watershed Meetings	2	1	1	1	1	1	1	8
Neighbor Group Meetings	6	6	6	2	2	2	2	26
Village Industry Meetings	2	2	2	1	1	1	1	10
BMP Demonstrations	6	6	6					18
BMP Workshop	2	2	2					6
Tours	2	2	2					6
Schools & Organizations Meetings	3	3	3					9
Slide Program	1							1
Farm Management Planning	15	30	30					75
Project Coordination & Management (hrs)	80	80	80	40	40	20	20	360

Table 10

ONION RIVER WATERSHED
INFORMATION AND EDUCATION COST IN DOLLARS

PRODUCT	Rate/Unit	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	Total
Newsletter	404.00	2424.00	2424.00	2424.00	1212.00	1212.00	1212.00	1212.00	12120.00
Watershed Brochure	399.10	399.10							399.10
News Releases	23.65	165.55	165.55	165.55	47.30	47.30	47.30	47.30	685.85
Radio Programs	16.43	49.29	49.29	49.29					147.87
Watershed Meetings	287.92	575.84	287.92	287.92	287.92	287.92	287.92	287.92	2303.36
Neighbor Group Meetings	86.72	520.32	520.32	520.32	173.44	173.44	173.44	173.44	2254.72
Village Industry Meetings	100.45	200.09	200.09	200.09	100.45	100.45	100.45	100.45	1004.50
BMP Demonstrations	209.40	1256.04	1256.40	1256.40					3769.20
BMP Workshop	807.60	1615.20	1615.20	1615.20					4845.60
Tours	454.75	909.50	909.50	909.50					2728.50
Slide Program	95.70	113.70	113.70	113.70					341.10
Farm Management Planning	34.38	95.70							95.70
Project Coordination & Management (hrs)	12.65	1012.00	1012.00	1012.00	506.00	506.00	253.00	253.00	4554.00
TOTAL		9853.20	9586.18	9586.18	2327.11	2327.11	2074.11	2074.11	37828.00

LANDOWNER ASSISTANCE

Technical assistance in carrying out the implemation program of this plan will be provided by the Sheboygan and Ozaukee County Soil and Water Conservation Districts, the U.S. Department of Agriculture, Soil Conservation Service and the University of Wisconsin-Extension. Landowners will be contacted by personnel from these agencies during the initial three year sign-up period. During this period, the Soil and Water Conservation Districts have the primary responsibility for the development of individual cooperator and cost-share agreements and also for the design and layout of soil conservation practices. The cost share agreement is a contract between the appropriate DMA and landowner, which specifies the best management practices the landowner will install, the expected practice life span and provides a general cost estimate.

The following procedures will be adhered for signing up participants in the program:

1. Cost-share Agreement - The cost-share agreement is a contract between the Lead DMA and landowner which specifies the best management practices the landowner will install and provides a general cost estimate. Upon completion of the cost-share agreement and approval by the responsible DMA and also by the Lead DMA, a copy of the agreement shall be forwarded to the Sheboygan County ASCS Office, and the Department of Natural Resources. The landowner also is to sign ASCS form ACP-245, Request for Cost Sharing Assistance.

2. Upon receipt of the approved agreement by the Sheboygan County ASCS Office, cost share funds shall be encumbered. Form ACP-245, Request for Cost Sharing Assistance, shall be forwarded to the ASCS Office who will complete ASCS form ACP-247, Referral for Technical Determination. One for each practice to be completed that particular year as determined by the agreement.

3. The Sheboygan County ASCS Office shall forward form RE-247 to the responsible DMA, who will prepare a detailed cost estimate and arrange for installation of the practice. Form RE-247 shall be returned to the Sheboygan County ASCS Office.

4. Upon receipt of needs on form ACP-247, the Sheboygan County ASCS Office shall complete form ACP-245, Request for Cost Sharing Assistance. This form and attached letter, advising the landowner of practice approval, cost share rate and amount of eligible funds, shall be sent to the landowner by the Sheboygan County ASCS Office. Form ACP-247 is to be returned to responsible DMA, pending completion of practice.

5. Immediately following the Best Management Practice construction, the landowner shall submit a signed ACP-245, itemized payment receipts and construction costs to the Sheboygan County ASCS Office. ASCS will then notify responsible DMA the practice is complete.

6. Responsible DMA shall complete ACP-247, performance data, and certify the practice meets specifications in Chapter NR 120, Wisconsin Administrative Code. This information will be forwarded to the Sheboygan County ASCS Office. ASCS will forward ACP-245, ACP-247, receipts and construction costs to the SWCD Supervisors for their approval.

7. Upon receipt of committee's approval, the cost share payment check will be issued to the landowner by the Sheboygan County ASCS Office. Maintenance of Management Practices

Maintenance of Management Practices

The Wisconsin Department of Natural Resources' guidelines for the Nonpoint Source Water Pollution Abatement Program, Chapter 120 of the Wisconsin Administrative Code, sets requirements for maintenance and expected life span of Best Management Practices (BMPs) and describes penalties for failure of non-compliance by the landower to carry out obligations.

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

1. Identification of violations of the required maintenance measures shall be obtained through annual status reviews of implemented management practices by the Sheboygan County Soil and Water Conservation District.

2. Where violations are identified, the Sheboygan County SWCD will contact the landowner/operator or designated management agency in control of the management practice in violation. Contact will be followed with a formal letter explaining details of the violation and possible alternatives that may be followed to bring the violation into compliance.

3. Final action will be to submit violations to the respective county corporation counsel for further action and proceedings by the appropriate county SWCD.

TECHNICAL ASSISTANCE

The lead Designated Management Agency will contract with the USDA Soil Conservation service to provide the additional technical services and resource planning expertise needed for the accelerated program. To assure timely completion of goals, proper staffing will be needed to install practices during the limited installation season of the year.

Technical assistance rates expressed in hours are based on prior experience and Soil Conservation Service time keeping system which documents the various categories of time expenditures.

Tables 11 and 12 detail the annual implementation goals and the technical assistance needs in hours over the course of the project. THe SWCD personnel from each county will be available on a limted basis to the incorporated areas of the watershed. Arrangements will be made through village staffs and the respective SWCD.

Table 13 summarizes the estimates personnel requirements for the Onion River watershed. Present staffing levels of Sheboygan and Ozaukee SWCD's indicate the total availability of 1,566 hours, 0.87 equivalent employees, per year for implementation of the program.

Table 11

ONION RIVER WATERSHED
PRACTICE IMPLEMENTATION GOALS

ACTIVITY	Unit	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	Total
Landowner Contacts	no.	80	160	160	0	0	0	0	400
Planning with DMA's	no.	36	36	36	0	0	0	0	108
Conservation Plans	acre	3750	7500	7500	0	0	0	0	18,750
Conservation Plan Revision	no.	0	6	6	6	6	6	0	30
Cost Share Agreements	no.	30	60	60	0	0	0	0	150
Contour Strips	acres	270	1011	1483	1483	1011	1011	472	6741
Conservation Tillage	acres	383	1438	2109	2109	1438	1438	671	9586
Waterways (with tile)	acres	6.5	24	35	35	24	24	12.5	161
Diversions	feet	7188	26955	39534	39534	26955	26955	12579	179,700
Grade Stabilization Structure	no.	1	2	2	3	2	2	2	14
Barnyard Runoff Management	no.	4	12	17	17	12	12	6	80
Manure Storage Facility	no.	2	7	9	9	7	7	4	45
Streambank Protection*	feet	6268	17267	22637	22637	17267	17187	5367	108,630
Critical Area Stabilization	no.	1	3	6	6	3	3	2	24
Annual BMP Review	no.	5	5	5	5	5	5	5	35

Table 12

ONION RIVER WATERSHED
TECHNICAL ASSISTANCE NEEDS IN HOURS

ACTIVITY	Rate Per Unit	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	Total
Landowner Contacts	2 hr/ea	160	320	320	0	0	0	0	800
Planning with BMA's	1 hr/ea	36	36	36	0	0	0	0	108
Conservation Plans	.25 hr/ac	938	1875	1875	0	0	0	0	4688
Conservation Plan Revision	5 hr/ea	0	30	30	30	30	30	0	150
Cost Share Agreements	5 hr/ea	150	300	300	0	0	0	0	750
Contour Strips	.30 hr/ac	81	303	445	445	303	303	142	2022
Conservation Tillage	.02 hr/ac	8	29	42	42	29	29	13	192
Waterways (with tile)	20 hr/ac	130	480	700	700	480	480	250	3220
Diversions	.02 hr/ft	144	539	791	791	539	539	252	3595
Grade Stabilization Structure	50 hr/ea	50	100	100	150	100	100	100	700
Barnyard Runoff Management	45 hr/ea	180	540	765	765	540	540	270	3600
Manure Storage Facility	50 hr/ea	100	350	450	450	350	350	200	2250
Streambank Protection*	.07 hr/ft	439	1209	1584	1584	1209	1203	376	7604
Critical Area Stabilization	35 hr/ea	35	105	210	210	105	105	70	840
Annual BMP Review	2 hr/ea	10	10	10	10	10	10	10	70
Total		2461	6226	7658	5177	3695	3689	1683	30,589

*includes fencing, riprapping, shaping and seeding and buffer strips.

Table 13

ONION RIVER WATERSHED
ESTIMATED PERSONNEL REQUIREMENTS

WORK EFFORT	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	Total
Technical Assistance	2461	6226	7658	5177	3695	3689	1683	30,589
Program Management	850	850	850	475	425	325	275	4,050
Fiscal Management	101	306	411	330	225	225	105	1,703
Information and Education	TO BE DETERMINED LATER							
Total Watershed Needs	3412	7382	8919	5982	4345	4239	2063	36,342
Available from Local Units of Government	1566	1566	1566	1566	1566	1566	1566	10,962
Additional Watershed Needs	1846	5816	7353	4416	2779	2673	497	25,380

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APPENDIX A

APPENDIX A

RESULTS OF SEPTIC LEACHATE SCAN AND LABORATORY ANALYSIS OF WATER DISCHARGED FROM TILES ALONG THE ONION RIVER, SHEBOYGAN, WISCONSIN

INTRODUCTION

Swanson Environmental, Inc. (SEI) has been retained by the Soil and Water Conservation District (SWCD), Sheboygan Falls, Wisconsin, to conduct a septic leachate scan and laboratory analysis of water samples collected from tiles discharging into the Onion River, Sheboygan County, Wisconsin.

PROCEDURES

Water samples were collected by SWCD personnel and delivered to the SEI laboratory in Sheboygan, Wisconsin on 11/19/80. In each case, a test sample and background sample were collected for comparison purposes. Background samples were scanned prior to the tile sample. Initial readings for both samples were recorded along with relative changes in both organic and inorganic levels.

The septic leachate scan was conducted using an ENDECO Model 1200 Septic Snooper ™ to monitor levels of organic and inorganic material in the sample water. The leachate detector scans samples for whiteners, surfactants and natural degradation products which fluoresce in the U.V. range, and for chlorides and sodium which are highly conductive. These materials are commonly associated with human waste water and are used to pinpoint areas of untreated discharge.

Laboratory analysis for total phosphorus, nitrate + nitrite - nitrogen and fecal coliforms were performed to support and quantify leachate detection results. Procedures correspond to those outlined by the American Public Health, Assoc., 1976. Standard Methods for the Examination of Water and Wastewater.

RESULTS

Results of the leachate detection scan are presented in Table 1. Background concentrations of both organic and inorganic materials were very high. During the scan, four sample sites (#3, #4, #L-3 and #H-5) showed dramatic increases in both parameters providing positive evidence of septic discharge.

Six sample sites had increases in only one parameter. These included #1, #2, #7, #L-1, #L-2 and #L-4. The analysis indicates some type of loading, quite likely septic related, is occurring at these points. Sites #5 and #6 showed reductions in both inorganic and organic levels and do not represent a source of septic discharge into the Onion River.

Results of laboratory analysis for nutrients and coliforms are presented in Table 2. Concentrations of total phosphorus, nitrate + nitrite and fecal coliforms were very high for both background samples. A majority of tile samples reflected excessively high concentrations of one or more parameters. Samples #1, #3, #4, #L-4 and #H-5 were the most severe, this compares well with leachate detection results. The extremely high concentrations of fecal coliforms at sample sites #1, #3, #4, #L-4 and #H-5 deserve special mention. The presence of fecal coliforms in these numbers very likely represent a health hazard. Sample sites #2, #6 and #7 were very clear in appearance and generally showed lower than background concentrations of nutrients and coliforms.

The laboratory analysis verified septic leachate scan results very well and and definitely implicate tile discharge as a source of nutrient and bacterial discharge to the Onion River.

CONCLUSIONS

The leachate scan and laboratory analysis verify that large concentrations of phosphorous, nitrogen and coliforms are

entering the Onion River via tile systems. Since these results only represent a small percent of tiles along the river, the potential impact is substantially greater than observed in this analysis. This discharge represents not only an important nutrient load, but a potential health hazard reflected by extremely high concentrations of fecal coliforms.

TABLE 1 Septic Leachate Scan Results, Tile Discharge Samples. Onion River Watershed, Sheboygan SWCD, 11/19/80 *

Sample	Conductivity Span	Conductivity Zero	Fluorescence Span	Fluorescence Zero	Septic Waste
Background 1	-	-	594	762	
#1	-	966	594	533	Possible
Change	Very High			-229	
Background 2	994	736	594	687	
#2	994	812	594	338	Possible
Change		+76		-349	
Background 3	994	384	594	462	
#3	994	822	594	952	Yes
Change		+438		+490	
Background 4	994	386	594	378	
#4	994	495	594	610	Yes
Change		+109		+232	
Background 5	994	415	594	395	
#5	994	405	594	335	No
Change		-10		-60	
Background 6	994	474	594	248	
#6	994	180	594	101	No
Change		-294		-147	
Background 7	994	316	594	302	
#7	994	445	594	139	Possible
Change		+129		-163	
Background L-1	994	367	594	295	
L-1	994	355	594	326	Possible
Change		-12		+31	
Background L-2	994	367	594	295	
L-2	994	472	594	270	Possible
Change		+105		-25	
Background L-3	994	323	594	243	
L-3	994	376	594	313	Yes
Change		+53		+70	
Background L-4	994	323	594	243	
L-4	994	353	594	173	Possible
Change		+30		-70	
Background ll-5	994	382	594	734	
ll-5	994	386	594	839	Yes
Change		+4		+105	

* 1) All samples run at 44° F.
2) Very High Conductivities were observed in all cases. Run on Range Channel 2 which is normally used in Brakish waters or Freshwaters with extremely high conductance.

TABLE 2 Laboratory Analysis of Tile Discharge Samples.
Onion River Watershed
Sheboygan SWCD, 11/19/80.

Sample	Parameter		
	Total P (mg/l)	NO_2+NO_3 (mg/l)	Fecal Coliforms Colonies/100 n
#1	9.06	0.299	1100
#2	0.134	2.84	1
#3	9.52	0.168	4520
#4	4.81	1.05	4860
#5	0.219	6.02	74
#6	0.233	0.026	643
#7	0.026	4.46	0
L-1	0.224	1.56	74
L-2	0.439	2.44	349
L-3	1.54	0.009	8
L-4	0.138	6.22	976
H-5	0.186	3.08	1085
Background - 3	0.316	3.44	496
Background -H-5	0.222	3.17	493

APPENDIX B

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 in consultation with the Board of Soil and Water Conservation Districts 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.

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.

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	High	Low	Moderate	High	50%***
C7	No-till	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%

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 on page 1
** A dollar ceiling of $6,000 is set for priority watershed projects and $4,000 is set for local priority projects
*** A flat rate per acre equal to the cost-share rate applied to an average installation may be used

C1 Contour Cropping

Maximum cost-share rate _____
or flat rate per acre _____

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

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C2 Strip cropping

Maximum cost-share rate _____
or flat rate per acre _____

Definition: Growing crops, usually on the contour, in alternated strips 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 _____

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 _____

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 _____

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 _____
or flat rate per acre _____

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.

9/79

C7 No-till system (conservation tillage)

Maximum cost-share rate _____
or flat rate per acre _____

Definition: Planting systems using a narrow slot or disturbing a narrow strip of soil rather than disturbing and roughening the entire soil system.

Conditions:

1. Cost-sharing is based on the custom rate for no-till planting.
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. On sloping land all operations must be performed as nearly as practicable on the contour or parallel to terraces.
5. The system must be maintained for a minimum of 5 years following the initial year.

Specifications: SCS Technical Guide specification 378.

9/79

M1 Critical Area Stabilization Maximum cost-share rate ____.

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 _____

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 _____

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 and DNR fish management specifications.

9/79

M4 Settling Basin Maximum cost-share rate _____

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

L1 Barnyard Runoff Management Maximum cost-share rate _____

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 _____

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 _____

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

U1 Leaf collection Maximum cost-share rate _____

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 _____

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.

U3 Infiltration systems

Maximum cost-share rate _____

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.

APPENDIX C

RESOLUTION NO. 41 (1980-81) RE: ONION RIVER WATERSHED PLAN

WHEREAS, Section 208(C)(2), The Federal Clean Water Act (PL 92-500) establishes criteria for the selection of designated management agencies to carry out non-point source elements of the area-wide water quality management plans; and

WHEREAS, the Sheboygan River Basin area-wide water quality plan designates Sheboygan County and the Sheboygan County Soil and Water Conservation District (SWCD) as designated management areas in unincorporated areas of Sheboygan County and cities and villages as designated management agencies within their boundaries; and

WHEREAS, the Sheboygan County Board of Supervisors, through the Sheboygan County SWCD, has the broad powers necessary to carry out the non-point source water quality program, and the SWCD has the experience, technical expertise and authority to administer programs for land management practices including cost sharing aspects; and

WHEREAS, the Onion River Watershed has been selected as a priority watershed by the Wisconsin Department of Natural Resources; and

WHEREAS, a committee of the designated management agencies has endorsed the Sheboygan County SWCD as the lead designated management agency; and

WHEREAS, the County will be reimbursed for costs incurred including indirect costs, from state and federal funds;

NOW, THEREFORE, BE IT RESOLVED that the Sheboygan County Board of Supervisors does hereby endorse the selection of the Sheboygan County Soil and Water Conservation District as the lead designated management agency to coordinate development of the Onion River Watershed plan and administer all portions of the plan within its area of responsibility and capability, including administration of state or federal funds that will be provided to implement this program.

BE IT FURTHER RESOLVED that the Sheboygan County Soil and Water Conservation District be authorized, at no cost to the County, to set up a separate Onion River Watershed account(s) and to receive state and federal watershed funds to cover project costs and part-time personnel hired to plan and implement the program.

Respectfully submitted this 19th day of August, 1980.

AGRICULTURE COMMITTEE

Dean Livingston jsb
Dean Livingston, Chairman

Raymond Karsteadt jsb
Raymond Karsteadt, Vice-Chairman

Milford Harmelink
Milford Harmelink, Secretary

Clarence Kwekkeboom
Clarence Kwekkeboom

Allen S. Raeder
Allen S. Raeder

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM COST-SHARE AGREEMENT

FORM 3400-68
REV. 4-80

Cost-Share Agreement Number	Total Est. Grant Amount $
Name of Grant Recipient	Telephone Number
Street or Route	
City, State, Zip Code	
Legal Description of Property	
Name of Landowner (if other than Grant Recipient)	Telephone Number
Street or Route	
City, State, Zip Code	
Installation Period From	To

Name of Designated Mgt. Agency	Telephone Number
Street or Route	
City, State, Zip Code	

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; and
      (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.

APPENDIX D

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 Grant-Amount	Cost-Sharing From Other Programs	Year of Instal-lation	Practice Life-span

2. Noncost-shared best management practices

Location (Field Number)	Practice Code	Practice Title	Quantity	Units	Year of Installation	Practice Life-span

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
Title		Title	

☆ U.S. GOVERNMENT PRINTING OFFICE: 1979 — 630-579

-3-

Form Approved OMB No. 40R-3944

ACP-245 (8-21-79)

U.S. DEPARTMENT OF AGRICULTURE
Agricultural Stabilization and Conservation Service

REQUEST FOR COST SHARING

FARM NO.	NAME AND ADDRESS	FISCAL YEAR

PHONE NO.

AGREEMENT (Check one)
ACP ANA ☐ LTA ☐
FIP ANA ☐ LTA ☐
ECP ☐ WBP ☐ OTHER ☐

COST-SHARES POSTED TO RE - 259

	DATE APPROVED		DATE EARNED
1		2	
3		4	
5		6	

7. DESCRIPTION OF CONSERVATION AND/OR ENVIRONMENTAL PROBLEM

EXPIRATION NOTICE

8. PRACTICE MUST BE COMPLETED AND REPORTED B

9. DELETE PHRASE WHICH DOES NOT APPLY
The Extent Performed — The Word "Yes"

10. *FOR COUNTY COMMITTEE USE*

NO. A	PRACTICE TITLE B	EXTENT REQUESTED	EXTENT APPROVED C	RATE D	COST/SHARED APPROVED E	F	G
				$	$		$

H.

APPROVAL ISSUED FOR THE COUNTY COMMITTEE — DATE

BY

APPLICANT'S CERTIFICATION

I request cost-sharing under the current program to solve the problem shown above. The practice solution is needed to conserve soil and water resources on the farm identified above, and would not be performed to the extent requested and needed by me without Federal cost-sharing.

I PLAN TO START PRACTICE *(Month)* — AND COMPLETE IT BY *(Month)*

SIGN HERE — DATE

COMMITTEE ACTION

ESTIMATED COST-SHARE VALUE — C/S COC WILLING TO APPROVE

$ — $

The county committee approves the extent shown in Col. C and the cost shares shown in Col. E for this practice.

FOR THE COUNTY COMMITTEE — DATE

BY

STATISTICAL DATA	EXTENT	EARNED
		$

CONSERVATION PLAN	YES	NO
For farm by SCS		
Forest management by FS		
Other *(Written)*		

OTHER FARMS

REMARKS

☆ U.S. Government Printing Office: 1979—631-898

ID5345

ACP-247
(10-3-79)

U.S. DEPARTMENT OF AGRICULTURE
Agricultural Stabilization and Conservation Service

REFERRAL FOR TECHNICAL DETERMINATION

AGREEMENT *(Check one)*
ACP: ANA ☐ LTA ☐ | FIP: ANA ☐ LTA ☐ | ECP ☐ | WBP ☐ | OTHER ☐

REFERRED TO: SCS ☐ FS ☐

FARM NO.	NAME AND ADDRESS	FISCAL YEAR

ACP-301 *(Page and Line No.)*

PRACTICE TO BEGIN *(Month)*

PHONE NO.

REFERRAL EXPIRES *(Date)*

FARM LOCATION *(And Practice Location, If Desired)*

FOR COUNTY COMMITTEE

DATE

PRACTICE OR COMPONENT(S)					
NO.	DESCRIPTION	EXTENT	PRACTICE UNITS NEEDED	PRACTICE UNITS PERFORMED	ACRES SERVED *(Actual or estimated)*
A	B	C	D	E	F

SECTION I - NEEDS STATEMENT

THE PRACTICE SHOWN IN COLUMN B WITH THE UNITS SHOWN IN COLUMN D IS NEEDED AND PRACTICAL FOR THE FARM.

SIGNATURE *(Designated Technician)* | DATE | ESTIMATED COST *(If needed)*

PRACTICE EVALUATION DATA BEFORE COMPLETION

WATER EROSION		WIND EROSION	
R		I	
K		K	
L		C	
S		L	
C		V	
P		LCC	
AVE. T/A		AVE. T/A	

SECTION II - PERFORMANCE REPORT

THE PRACTICE SHOWN IN COLUMN B HAS BEEN PERFORMED TO THE EXTENT SHOWN IN COLUMN E AND MEETS PROGRAM REQUIREMENTS. IF THE PRACTICE DOES NOT MEET PRACTICE SPECIFICATION OR IF ADDITIONAL WORK IS REQUIRED, EXPLAIN.

SIGNATURE *(Designated Technician)* | DATE

PRACTICE EVALUATION AFTER COMPLETION

WATER EROSION		WIND EROSION	
R		I	
K		K	
L		C	
S		L	
C		V	
P			
AVE. T/A		AVE. T/A	

WISCONSIN NOTICE RE-309

EXHIBIT 3

ACP
-245 CONTINUATION

PRACTICE APPROVAL AND PAYMENT APPLICATION	EXTENT PERFORMED -F-	
	$	
MACHINERY:	$	
	$	
LABOR:	$	
	$	
MATERIALS:	$	
	$	
	$	

Attach invoices and statement to support claim.

5-25-76

MAY 26 1976